



01 Tools and skills for efficient online communities

Part 1 A guide for online community facilitators (strategies, procedures, rules)



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Authors:

Ana Aleknavičienė (VTDK), Andrius Gulbinas (VTDK), Vaiva Mickevičienė (VTDK), Veronika Žvirblė (VTDK), Nele Schmidt (EUF), Martin Vojtek (UPCE), Monika Skalska (UPCE), Dalibor Gottwald (UPCE), Andrea Seidlova (UPCE), Jaromir Široky (UPCE), Michaela Ledvinova (UPCE), Jiri Krupka (UPCE), Michalis Xenos (UPATRAS), Maria Margosi (UPATRAS), Anreas Mallas (UPATRAS), Adam Jakimowicz (BUT), Michal Chodorowski (BUT), Bartosz Sliwecki (BUT), Bartosz Czarnecki (BUT), Agnieszka Modzelewska (BUT), Milena Wiercinska (BUT), Luis Seco (UMAIA), Marta Vazquez (UMAIA), Joana Carreiro (UMAIA), Pedro Teques (UMAIA)

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Partner:

Vilnius College of Technology and Design (VTDK)
University of Maia (ISMAI)
University of Patras (UPATRAS)
University of Pardubice (UPCE)
Bialystok University of Technology (BUT)
Europa-University Flensburg (EUF)

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1 The concept of online learning communities

The pandemic has forced various educational institutions to adopt an online teaching format quickly. On one side, there were technological challenges that software providers adjusted to in a short time. On the other side, the teaching methodology was a huge challenge: Learning online makes it more challenging to keep the student at the computer for a long time, as well as to involve the student in the lecture and help him/her avoid 'distraction syndrome'. Months of lockdown, when teachers and students had to work in the format of distant learning, demonstrated that traditional methods are not optimal, it is necessary to change the approach and help teachers to overcome the challenges posed by online teaching and find new ways to embrace learning online.

Teachers play a critical role in the learning path of their students – they act as initiators, climate builders, guides. However, even if teachers demonstrate a heightened level of familiarity regarding the use of technologies as such, but they have limited knowledge with respect to their didactic-methodological aspects (Modelski, Giraffa, Casartelli, 2019). According to EU Framework for Digital Competence of Educators (2019) teachers are supposed to “implement and/or support collaborative learning activities in which digital devices, resources or information strategies are used”, which requires specific knowledge from the academic staff.

In an initial qualitative study with 60 teachers (CityGo, 2022b), the project consortium has discovered that the teachers made big progress in embracing technology and applying it in their lessons: through self-directed learning, using various IT tools available, teachers have adapted to working online. However, a lot of teachers noted that the problem of active student involvement still is particularly prominent:

“Online teaching has also, in my opinion, led to more passivity among students.”

Many of the teachers say they feel the need for methodological advice on how to activate students' attention in online lectures, stimulate them to be more committed to the project and team members, help them deal with the information more effectively. And in our student survey (CityGo 2022a) students expressed that

“The professors couldn't understand when they were “losing” the students” and “Seeing that some teachers were unmotivated, only having recorded lectures, almost no live ones”

The CityGo project aims to develop methodology and materials that enable higher education institutions (HEIs) to perform quality and engaging problem-based learning in a digital environment. This will be achieved through applying a model of collaborative online communities focused around a particular topic at the HEIs.

During CityGo project a consortium consisting of 6 Higher Education Institutions (CZ, DE, GR, LT, PL, PT) develops and tests a methodology of efficient teaching/learning in collaborative online communities, where students solve societal challenges on the topic of Sustainable City. Solving real-world problems in an online environment requires specific approaches to create trust, build engagement, overcome participants' anxieties, and provide them with

the necessary tools in a timely manner. The community will offer to their members (students and teacher) a digital content library on relevant topics and a collaborative online platform, where members will meet each other and solve various issues.

These guidelines address these issues from the perspective of community facilitators and participants themselves – to include these aspects, the guidelines were prepared based on desk research, a student survey (n=330) and interviews with 60 teachers. These guidelines for facilitators of the online communities include recommendations and how-to-guides on the creation of an efficient and collaborative online learning environment where participant work on real-world problems.

2 A guideline for online learning community facilitators

2.1 How to choose a collaboration platform for an online learning community

Dos

- **Identify your needs for online learning**
- **Choose online platform(s) according to your needs and budget**
- **Try out CityGo's Project choice Discord - install it, choose a channel and start communication**

A way to make digital learning effective is to incorporate it into a collaborative activity. Collaborative activities engage students with their peers and teachers either directly or remotely through online tools. With the social changes resulting from the COVID-19 pandemic, which resulted in an unprecedented massification of the use of online media, it is no wonder that numerous collaboration platforms have been developed. Which of the platforms to use, is the decision of the teacher or the institution and based on the specific needs.

According the student survey (CityGo 2022a) the most popular platform is Microsoft Teams – 29% (110 mentions), in second place is Discord – 20% (75). Facebook and messenger were mention 15 times (4%), Zoom – 14 times (4%), Instagram – 12 times (3%) and Youtube – 7 times (2%). 10 (2%) students indicated that not a single platform is good enough and 4 students (1%) indicated that all platforms are good. Question was not answered by 103 students (27%). Other platforms include Webex and Kahoot 4 mentions each, Google Classes and Moodle 3 mentions each; Trello 2 mentions; Goodnotes, SharePoint, Big Blue Buttons, WhatsApp, Stockoverflow, GitHub, Kaltura, Gather Town, Viber, Skype, Twitter, CKZ, Skillshare and TikTok have been mentioned once.

Some of these platforms will be briefly described in the following paragraphs.

Slack

Slack is a tool that improves the concept of email. It allows users to create topic-based conversations where they can make calls, share files, and connect applications. Using Slack in a learning context is more and more frequent. Courses can be easily sorted into class-sized groups, as well as they can be divided into small groups, allowing spaces for online socializing. Slack also allows you to add third-party applications, such as Zoom, among others.

Google Docs

Google provides numerous productivity tools that are freely accessible from the Internet. These tools include spreadsheets for data processing, slides for presentations, and documents for word processing. All these products support collaborative learning as they can be edited by several people at the same time. The simplest and, perhaps because of this, also the most used, is Google Docs. With Google Docs the user can easily configure a file to share with anyone, sending an email invitation or sharing a link to access the page, where you can change the file. Students can see in real-time where peers are editing the file, making remote collaboration easy.

Trello

Trello is another visual work management tool that empowers teams to devise, plan, manage and carry out group work in a collaborative, productive and organized way. Trello can be adapted to any project, regardless of whether the team is starting something new or organizing existing work. This tool helps simplify and systematize the team's work process in an intuitive way. Trello uses boards, cards, and lists for project management, getting a clear view of who's doing what and what needs to get done

Moodle

Moodle is used by thousands of educational institutions around the world and provides an uncluttered interface to support e-learning strategies. Moodle is an online learning management platform that allows teachers to create dynamic and appealing modules, providing their students with online pedagogical resources and activities and an effective communication channel between all. Whether for e-learning or b-learning modules, as a complement to face-to-face training or to manage learning communities, Moodle is a flexible solution that meets all your needs. It is an extremely customizable learning platform, with numerous features and with enormous potential to achieve successful learning and student motivation. Moodle allows the provision of static tools, such as files of various types, and dynamic items, such as forums, chat rooms, tests, assignments, etc. Relative to some other learning management platforms, Moodle has the advantage of being free and being available in open source, allowing high levels of customization and adaptation to schools and institutions. Therefore, it is perhaps the most used teaching support platform worldwide.

Teams

Teams is Microsoft software designed for team collaboration. The initial concept of the application was designed for collaboration of corporate teams, but lately it has also been used for educational purposes. Thinking about the educational purpose, Microsoft Teams works as a digital hub between teachers, students and module coordination and direction of the educational institution. Microsoft Teams brings conversations, content and applications together in one place, simplifying the workflow for coordinators and principals while allowing teach-

ers to create personalized learning environments. The teacher can create their collaborative classrooms, customize learning with assignments, and connect with students, optimizing communication. In Teams, teachers can quickly chat with students, share files and websites, create a OneNote class notebook, and distribute and grade assignments. Students are free to use the Microsoft tools they are most familiar with – Word, PowerPoint, OneNote, and Excel – as well as accessing websites and other third-party applications. In short, it is a tool that can help teachers with administrative and classroom tasks. Teams also supports online meetings with screen sharing and whiteboard annotation that can be recorded.

Zoom

Zoom is a remote conferencing service that combines video conferencing, online meetings, chat, and mobile collaboration. One of its main advantages over competitors is the stability offered when the tool is used by a large volume of people at the same time. The operation of Zoom Meetings is similar to other solutions in the segment. The meeting administrator can create a room and send an invitation via email or link to anyone to join, even if they don't have a service account. Just access via browser or the app and enter a name to enter. The user who controls the session needs to have the program installed to have access to the main functions, such as muting members and controlling screen sharing. The manager can configure it so that only he can share his own screen, or allow other users to do so at the same time. There are three usage scenarios: for conferences, where one of the members presents to an interactive audience of 100 to 500 people; for meetings, where up to 500 participants have the same assignments and 49 can appear on the screen simultaneously; and the webinar mode, in which it is possible to expand the audience to up to 10 thousand participants with just the right to view.

2.2 Discord – CityGo's project choice

Discord is a VoIP (Voice over IP) and instant messaging social platform. Discord is a platform for synchronous and asynchronous communication and was not developed for commercial purposes. The main user group is the gaming community, so a different marketing and sales strategy prevails. Discord continues to be used primarily in the gaming space and currently has more than 150 million monthly active users. The various Discord servers are entered via an invitation. Users can communicate with voice calls, video calls, text messaging, media, and files in private chats or as part of communities called "servers". A server is a collection of persistent chat rooms and voice channels which can be accessed via invite links. Discord can be used from a web browser or installed on basically any device. The software was initially designed for and with the gaming community. Consequently, a lot of young people know discord from their leisure time activities. But the tool goes beyond chatting in games, it is used for a variety of different communities to exchange thoughts on the topic of interest. This situation gained dimension with the pandemic: from February to July 2020 the number of Discord users increased by 47%. Uong, Nguyen & Nguyen (2022) explored the use of Discord as a learning platform for English classes in Vietnam.

They emphasized that Discord would be recommended for educational institutions with a small budget, since most of the functionalities are freely available. In addition, learners are often already familiar with the platform from the gaming context. Users can use most Discord functionalities free of charge. Only improved sound quality and an increase in the maximum

number of participants in voice channels to more than 50 participants cost a monthly basic fee.

In our students' survey (CityGo 2022a) "Discord" was also mentioned. The students report on their experiences with this platform and gave examples:

"Discord has been an extremely useful online tool, even though our university didn't use it. It has also been used by students as a forum for exchanging opinions, notes, old topics, and even online lectures by older/experienced students to explain topics and exercises."

"Discord because it groups the topics, and the anonymity helps reduce fear and shame when asking something."

Currently, for us Discord is the platform that has the best conditions to be used as a collaboration tool. And this is so for a wide range of reasons, namely:

- **Pricing – Discord is free to use in its basic version.**
- **Availability & Accessibility - Discord is available for almost any operating system and device and can also be run from a web browser.**
- **Students' Knowledge – Discord is the world's most popular communication app for gamers. Chances are that if your students play video games or hang out on the inter-net, they already use the app every day.**
- **Student Motivation – Since Discord is not a learning platform by approach and is not perceived as such by its users, it can be more motivating than using typical LMS such as moodle.**
- **Student Communication – The students can also interact with each other on Discord, ask questions, share experiences.**
- **Teacher Communication – Teachers can communicate with the students asynchronously but also have video chats or lectures.**
- **Forum – All information is saved on the server, for students and teachers to access at any time.**

In the context of the CityGo project, the Discord platform will be used in addition to our digital content library (a platform like a learning management system like moodle, see chapter 2.2.) The website serves as a gateway to the CityGo project, the digital content library will be used to disseminate work materials, and to organize the pedagogical activity, and Discord will be the collaborative platform. It is on Discord that collaboration will take place, whether for tutoring,

presentation of work, group discussion, or even sharing socio-cultural experiences in synchronous and asynchronous matter. Discord, with particularly simple, quick, and easy access, will also be the place chosen for posting posts, doubts, and suggestions.

Download and installation of discord

To download, go to the Discord homepage at discord.com. On the home page click on the option **“Download for Windows”**. If your operating system is different, the same button will bring the option to download to your system. Open the file that was downloaded and start the installation.

Create a new account

To create a new account, on the Discord homepage, click on the **“Register”** option found below the **“Log In”** button. Fill in the requested fields with your email, username, and password. Finally, click **“Continue”**.

You must indicate that you are not a robot by clicking on the requested location. Finally, you will need to access your email account and open the message sent by Discord. Click on the **“Verify Email”** button to complete the registration.

Changing user settings

By clicking on the **“User Settings”** icon it is possible to edit and change your avatar, username, and email.

To make these changes, just be in the **“My Account”** area, click on **“Edit”** and then make the desired changes in the indicated fields. You can also change your avatar by clicking on **“Edit User Profile”** or your password by clicking the respective button.

Create a server, join a server and add members/ students/ lecturers

Discord is organized into private communities known as servers, they will act as your base. Think of the server as a classroom or meeting room, for example. Each server also has individual channels and each channel on a server can represent a topic, homework, or classroom discussion that you can use to chat with your students and/or colleagues. To create a server click on the **“+”** button in the left column. The next window that will appear will have two options: **“Create”** or **“Enter”**.

To create a server, you will need to give it a name, which will be the name of your classroom. You can also choose the **“Change Icon”** option to choose a new server icon, just locate the desired image. Finally, click **“Create”**.

To join a server that already exists, you need a link that acts as an invitation to join the community.

For an example the configuration of discord during the CityGo-project can be analysed. The link to the CityGo project server is:

<https://discord.gg/6bfPpgsw4u>

After the wellcome message available in **“Welcome to CityGo Community”**, you should read our rules in the channel #rules. Then, the CityGo Community would appreciate it very much if you introduced yourself on the channel #introduce-yourself. Depending on the module you want to attend, you should pick your role in the channel #select-role.

After configuring a server, you can add friends to your server without any mystery, it is only necessary that you find the **“Add friend”** button, click on it and write the username of the person you want to add or, alternatively, send the people you want to invite the link of the server.

Create roles and permissions

The Discord permission system is based on roles you assign to participants. Permissions can be assigned to roles either on a per-channel or server-wide level. To start setting up permissions for your group, it is necessary that you have administrator permissions of the server, which means that you have full access to the server.

Before assigning roles to your members, you must configure those roles. Multiple roles can be assigned to the same member. Roles have a name (“@teacher”, “@student”, for example), a set of permissions, and a set of members. Now, to start configuring the roles, do the following:

- **click on the arrow on the right of the server name,**
- **click on “Server Settings”,**
- **click on “Roles”.**

To create a new role click on **“Create Role”**. After naming the role, you can assign server-wide permissions to that role by changing the options in the **“Permissions”** section. In the end, you will have to save the configuration of the created role.

After configuring the permissions that you want to grant to a specific role, you can assign this role to individual members on your server. To assign roles to members, in **“Server Settings”**, click on the **“Members”** tab and then click on the **“+”** symbol next to the username you want to assign a role to. Select the role, which must have been created and configured previously, that you want to assign to this member.

Create categories and channels

A server can be organized into several categories. To do this, click on the arrow on the right of the server’s name and then click on **“Create Category”**, give your category a name and define if it is private or not

The CityGo server is divided, at least, into 11 categories:

- a welcome category, called **“GET STARTED HERE”**,
- a generalist category called **“COMMUNITY”**,
- a category specially dedicated to voice channels, called **“VOICE CHANNELS”**,
- six categories corresponding to each of the six modules,
- a category for sharing cultural experiences, called **“SOCIAL-CULTURAL”**,
- an experience-sharing category exclusively for teachers, called **“TEACHER’S CORNER”**.

During the CityGo project it is possible that other categories will be created. Within each category text and/or voice channels can be created. A text channel will allow anyone to post messages, upload files and share images for others to read at any time. A voice channel allows users to meet, chat, share their screens, and activate their cameras so they can collaborate.

For example, the “3D PRINTING (EUF)” category is subdivided into 4 text channels – “lecture-notes”, “sub-topic-1”, “sub-topic.2” and “work-submission” – and a voice channel named “Classroom”.

You can assign permissions to specific channels (text and voice) by accessing the channel settings menu. To access the channel settings menu, select the channel you want to adjust settings for and click the gear icon next to the channel name.

To set permissions on this channel, click on the **“Permissions”** tab. In the example in the following figure, in addition to the server owner (Luís Seco), members with the **“Admin”** role, the two server bots (MEE6 and My awesome bot), and members with the **“3D Printing”** role have access to this channel. You can add new members/roles by clicking **“Add members or roles”** or deleting the existing ones by clicking the cross after their designation.

Whether within a channel or using direct messages, Discord allows users to share files within the tool. To upload images or files in the tool, the process is very simple. Just drag the files into Discord and they will automatically load. It is also possible to add a comment that will be linked to the file. When you access to a voice channel, your microphone will automatically be turned on. To not leave the microphone always on when accessing a voice channel, it is necessary to follow these steps:

- access user settings in the lower left corner (gear icon right next to your name),
- in **“APP SETTINGS”**, select **“Voice & Video”**,
- check the **“Push to Talk”** option.

If you leave the **“Voice Activity”** option selected, also remember to mute the audio when you leave the channel. Otherwise, your voice will still be heard on that channel even when you are participating in another channel that is text.

Video conference on Discord

Discord can be used as a video conferencing tool. This alternative is possible on voice channels. When clicking on one of these channels, users have the option of **“Video”** or **“Screen”**. The first must be selected by those who want to make a video conference.

By clicking on **“Video”**, allow access to the camera so that other channel participants can see the image. Discord video conferences supports up to 25 users. If you want to share your screen during the videoconference, you must click on **“Screen”**. In this way, the remaining participants in the videoconference will be able to see your screen.

Online guides and tutorials for Discord

Beginner’s Guide to Discord

<https://support.discord.com/hc/en-us/articles/360045138571-Beginner-s-Guide-to-Discord>

Discord for Teachers - Getting Started Tutorial

https://www.youtube.com/watch?v=PCA4TZOyOik&ab_channel=ChupacabraTutorials

How to use Discord for your classroom

<https://support.discord.com/hc/en-us/articles/360040613072-How-to-Use-Discord-for-Your-Classroom>

Teaching with Discord: A beginner’s guide (written by a beginner)

<https://teachingpals.wordpress.com/2020/08/13/teaching-with-discord-a-beginners-guide-written-by-a-beginner/>

Using Discord in online learning

https://www.youtube.com/watch?v=3ooRuvrPQsU&ab_channel=MonashEngineering

2.3 How to share learning materials? The Digital Content Library

Dos

- Sign up with the digital content library and structure the learning journey.
- Use Interactive learning material (see chapter 6).

Don'ts

- Just use the old materials, e.g. papers, scan and upload them.

Today's students are Digital Natives – they grew up with digital technologies, so they have a different style of learning which leads to different requirements for learning. Digital Natives learn by finding meaning in the information they access and seeing its significance in the big picture of their real lives (Kivunja, 2014). They need to take the newfound knowledge and apply it to solve problems and accomplish tasks (Kelly, McCain and Jukes, 2009). These Digital Natives are fast-paced, visually oriented, non-linear, always-on learners, so the former engagement strategies not always resonate with them. Learners of the digital generation need new structures and approaches for learning – today's students prefer images over text; they seek for instant satisfaction and frequent rewards. Thus, online learning material catering to the above-mentioned need of the youth should be developed. This implies not just bringing pre-existing teaching material into digital format. The material must be adjusted to a new learning environment, allowing the student to tackle more precise problems and quick find the necessary information: developed learning materials, designed to teach a specific learning outcome, and comprising of a combination of text, images, audio, video, self-test questions will tailor-made respond to the students' needs. In our study (CityGo 2022a) students mentioned

"My preferred way of learning is videos that I can watch at my own pace and leisure" or

"The biggest contribution of this online learning experience was that our teacher used different techniques/ways of learning – besides learning were used also: audiovisual materials, whiteboard tools and MS Office tools as well."

The Digital Content Library will allow students to study in their own time and at their own pace, will help to ensure students have a baseline knowledge in particular subjects, allow to free contact time of teachers for more complex issues. Moreover, having all the necessary learning resource for the module in one place will help student teams to address their questions while working in group.

The Digital Content Library is a learning platform with interactive learning materials aimed at particular competencies both professional (e.g. using BIM for project design, creating the graphic layout of the project etc.) and transversal (e.g. communication, teamwork etc.). The Digital Content Library on Sustainable City will help both teachers and students, working online on problem-based projects, to improve the students' learning experience, to make the study pathway more efficient and tailor-made in order to make digital teaching student-centred, interactive and immersive.

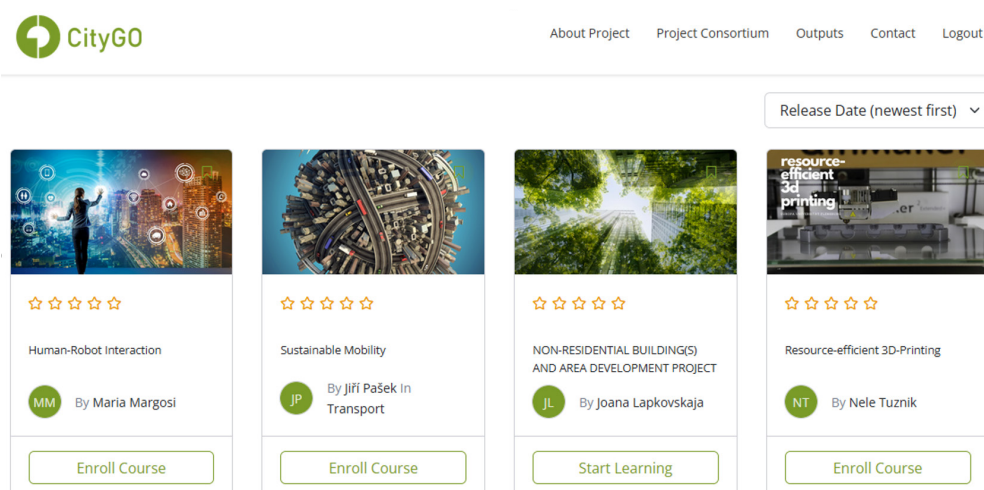


Figure 1: CityGo Digital Content Library <https://citygo-project.eu/courses/>

CityGO student user journey

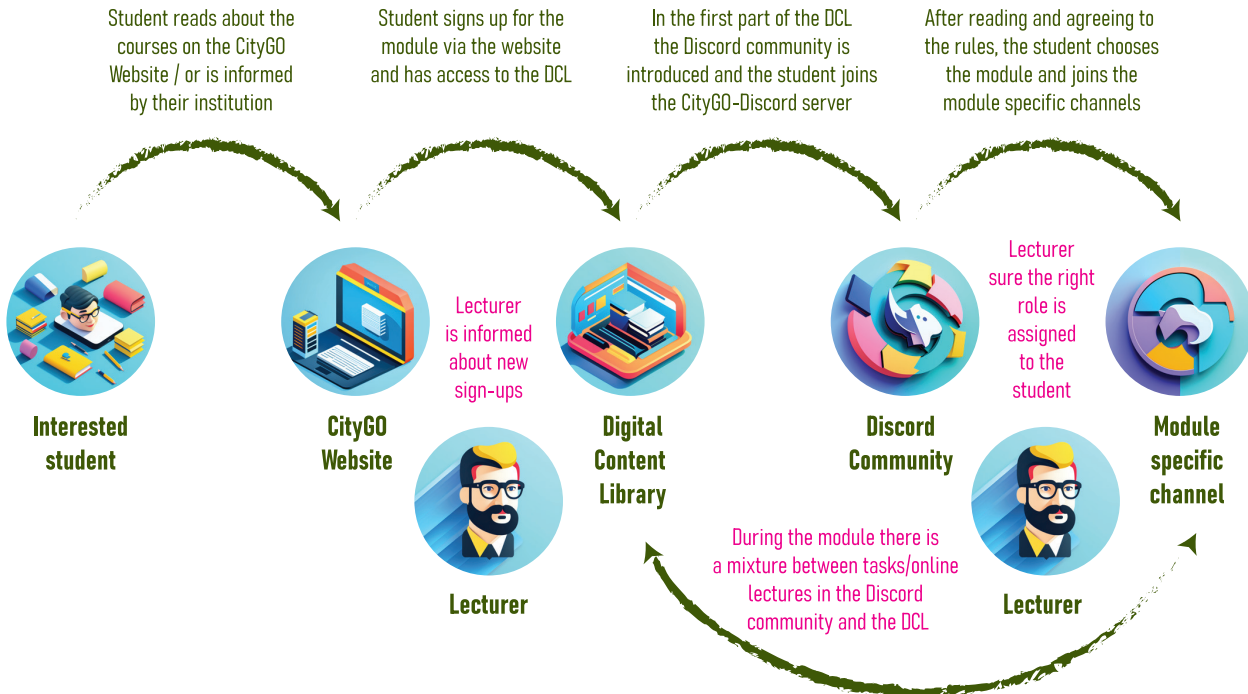


Figure 2: Recommended CityGo student user journey

Recommended CityGo student user journey consist of 6 main steps:

1. First, the interested student/participant reads about all available courses on the CityGo website (<https://citygo-project.eu/courses/>) or is informed by their institution/responsible person for the course. Please note that students from other institutions may also be interested in the courses.
2. Student signs up for the course via the website and has access to the Digital Content Library.
3. At the start of the course, the student is introduced to the Discord community by the course facilitator and he joins the CityGo Discord server.
4. After reading and agreeing the rules, the student selects the course of interest and joins the course specific channels.
5. The facilitator makes sure that the student has chosen the correct channel and is assigned the right role.
6. During the course there is mixture between tasks, lectures, assignments and etc. in the City-GO discord community and the Digital Content Library.

2.4 How to avoid risks in online communities?

Dos

- **Avoid sharing the link to your discord community in public.**
- **Keep an open eye on the community.**
- **Engage students or see yourself as “community manager”.**
- **Use bots for easy community management tasks.**
- **Make sure everyone has read the rules and agrees.**

Don'ts

- **Don't allow illegal content, harassments, etc.**

What kind of risks can occur in online communities?

When it comes to simple communication platforms, Discord tops the list. It is a versatile platform with text, audio and video chat functionality, and Discord servers that let you meet new people and engage in online communities. Arguably, one of the main perks is how easy it is to join servers and engage with other members, which makes us pose the question: Is Discord safe to use in the educational context? Discord is an easy-to-use public chat app, but that ease of use makes it a prime destination for scammers. Phishing scams are the most common type of scam on Discord, where someone may try to gain access to accounts. Thus, the link to the server should not be published publicly. If you want to stay as safe as possible on Discord, your best call is to configure your safety settings to not allow friend requests from everyone, and to avoid joining public servers.

Behind safety issues, the consortium is concerned about the engagement of the members of our community. It is very important to understand how to keep members active, interested, participative, and collaborative. In this sense, there are two important figures: Community Managers and Bots.

Community Managers have a very important role in keeping people engaged on Discord. A community Manager can be a member of the community who wants to take on a larger role in running the server. The community manager can also be the facilitator/ teacher. This helps keep things organized and running smoothly. If there are questions or concerns, these are the people users will go to. These moderators should also be highly active and engaging within the server themselves.

Another tool useful in managing Discord is Bots. A bot is a software application that runs an automated task to imitate human activity. On discord bots are used as hosts for the server, that welcome the participants and interact with them to support them in finding their way on the server. Most bots that can be used are free, but they are all offered by third-party developers, so it is necessary to research well before using them and understand if that bot is right for your group or server and if it can have the result you expect. Another kind that we found

very useful are the ones that track users' activity patterns and engagement. You can learn about things like peak hours which are the times most members are online. With this information, you can capitalize during that time frame to do a plethora of activities from basic conversations to tournaments, giveaways, and other forms of community engagement. Another kind are the moderator bots. These will help take some of the load off you by taking care of tasks like checking for profanity, setting the names of roles, etc. Adding too many bots can also be a negative though. Be mindful of this, and only use bots you truly find useful and have a good impact on your server.

CityGo Discrod Server: Rules

A Community needs a set of rules to work, thus it is one of the first things that new members of a discord server enter:

Welcome to the CityGo community! This community is an area where members can share their ideas, opinions and thoughts. We seek to maintain a space for a vibrant and transparent environment. All participants should consider mutual respect and civility as an active practice in any scenario within the community. Community members are fully responsible for the content of their entries, and the participations should always be constructive, cordial, and respectful.

CityGo reserves the right to delete a registration that is false, offensive, or disrespectful;

CityGo reserves the right to intervene in the participation of community members, being able to highlight, remove or reward the participations of its members at any time, if it is considered not to respect these rules.

The following rules must be strictly respected:

- **Do not post provocative content or otherwise harass and discriminate against groups or individuals.**
- **Do not post anything NSFW (18+), and in general try to keep it family-friendly. Do not use an inappropriate nickname or profile picture.**
- **Do not spam, flood, or post unsolicited advertisements.**
- **Do not insult, attack, troll, or gaslight other people. Do not publish people's private information without their consent. In general apply common sense, be respectful to others, and act in good faith.**
- **We cannot allow posting links or files with pirated content.**

2.5. How to consider the students' proficiencies and prior knowledge?

Dos

- **Evaluate proficiencies of your students.**
- **Focus consistent attention on establishing a relationship between the teacher and students, and at the same time between students and each other.**
- **Respect possible intercultural differences and possible differences in the level of English language proficiency of both students and teachers.**

Don'ts

- **Require proof of past study of a similar topic.**
- **Do not use interactive elements during the course.**
- **Form overly large groups of students.**

How familiar are students with the topic?

The main topic of the project – Sustainable City – has been a much-discussed topic in the last few years, both within the professional and lay public. Based on this fact, it is possible to claim that the students will have a basic knowledge of the topic. And it is a very popular topic as well.

Students do not need to provide proof of previous education or module of study to register for training modules. However, for each module, it is advisable to identify the basic prerequisites (knowledge or necessary technical background) that will facilitate the participants' completion of the module. This stems from the fact that in the case of online communities, the intended target audience needs to be well considered – in the CityGo project, the intended audience is international students joining a – more or less – open learning module.

The main theme of the project is Sustainable City. Students can be expected to have a general level of knowledge of the topic at the outset, with a deeper understanding achieved by studying the individual modules. Specifically, the modules in our first pilot are "3D Printing, Green Buildings, Human-Robot Interaction, Mental Health and Well-being, Sustainable Mobility and Sustainable Zoning Plan".

How to form groups?

According to project research (CityGo 2022a) almost 88 % of the students consider small groups of up to four people to be the optimal group size. Group sizes of 5-10 or even larger are not optimal (see Figure 3). Most of the students surveyed, identified group work as a comfortable method within the educational process. Given the fact that a dominant share of jobs in the current global labor market expects potential job seekers to have transversal competences like communication and “teamwork”, it is appropriate to involve group work in the development of the module.

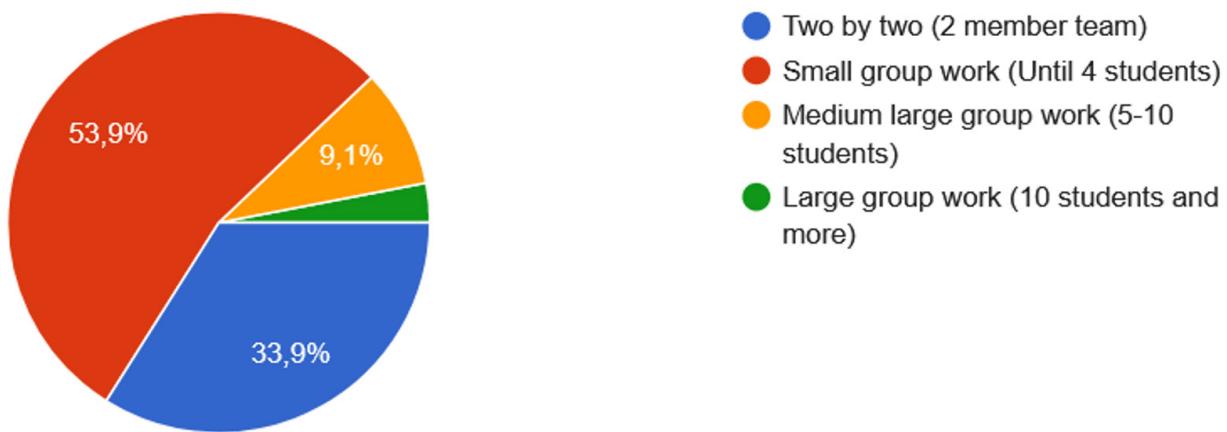


Figure 3: „Which of the digital collaborations enables you to work on a specific task at ease?“ (CityGo 2022a)

Students experience and preference regarding online learning

4. Have you had a great experience with online learning?

330 Antworten

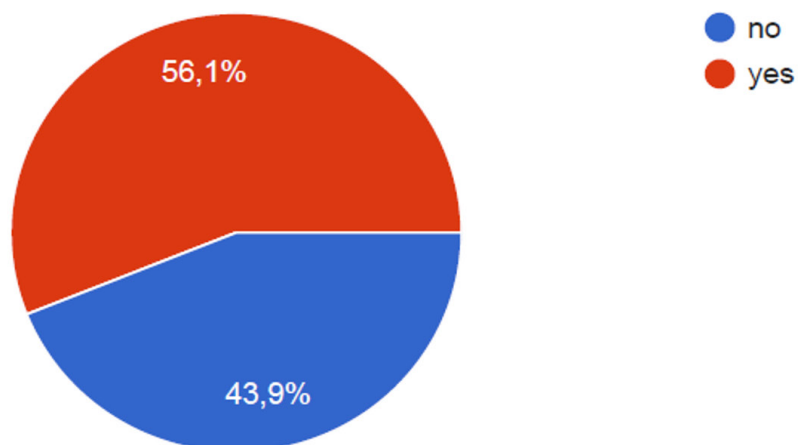


Figure 4: Students experience regarding online learning (CityGo 2022a)

3. Which of the following ways of learning do you prefer?

330 Antworten

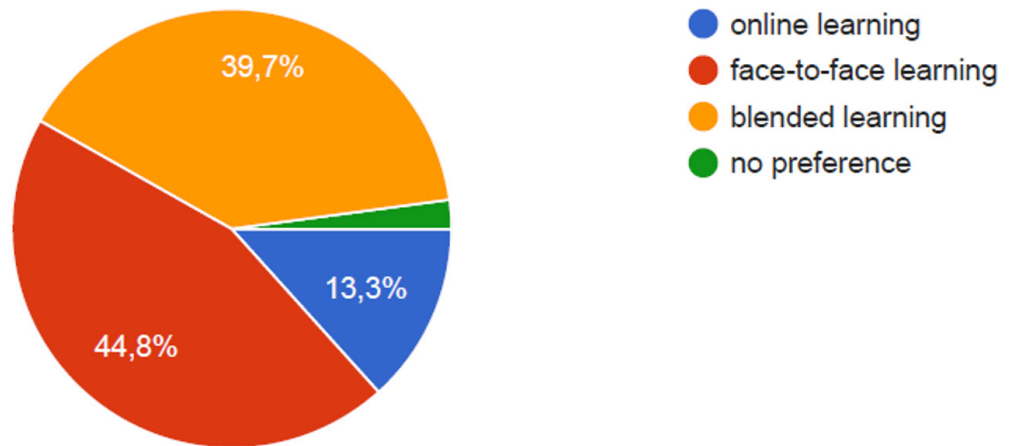


Figure 5: Students preference regarding online learning (CityGo 2022a)

56 % of surveyed students had good experience when online learning (CityGo 2022a), while **44 %** did not have good experiences with online learning.

45 % of surveyed students preferred face-to-face learning, while 40 % prefer blended learning and **13 %** prefer pure online learning.

Even though a lot of students had good experiences with online learning, only a small amount prefers online learning over blended formats or face to face learning. This is most likely due to the challenges in connection to the existing or experienced online teaching methodology. Thus, online communities could be a new way to motivate learners, as they see a lot of advantages in online learning:

"Online learning gave the opportunity to stay connected even when I couldn't physically be present. For cases that someone is sick, leaving in other city/country, working and/or cannot travel for that to university all the time, it is highly valuable."

As well as practical reasons

"It saves more time, because you don't have to travel to the college."

To ensure the added value of online education, it is important that the educational process uses elements that motivate students to be part of the online community. Specifically, elements such as Animations, Whiteboard and pen, PowerPoint presentation or Digital pen can be included.

Students gained experience with the online mode of education, especially during the COVID-19 pandemic when online learning was essentially the only way to engage in the educational process. Based on the results of the questionnaire survey, a little over half of the students had a good experience with online learning. In the open answers students expressed that.

How to assess risks regarding students' technical infrastructure?

Teachers (CityGo 2022b) repeatedly mentioned technical problems like a slow internet connection or software issues as a central problem source in online learning. Particularly these technical problems, in relation to the quality and stability of the internet connection of all members of the online community, could pose a threat to the quality of the learning.

Students (CityGo 2022a) additionally expressed concerns about the technical infrastructure:

“The fact of unstable connection can make your experience unhappy.”

“Internet problems, technical issues not only for students, but for teachers as well – even worse when you can't hear what lector saying”

6. Which of the following devices do you use for your online learning?

330 Antworten

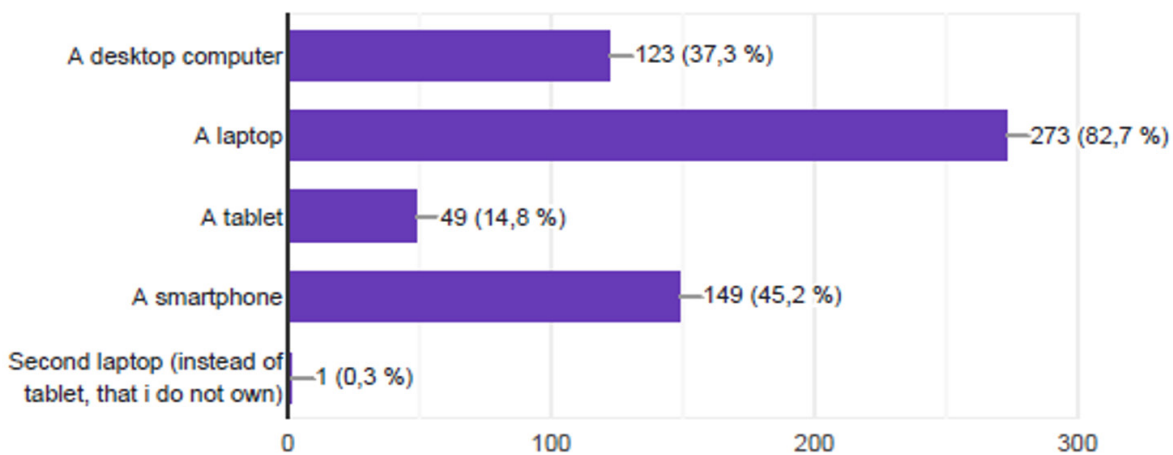


Figure 6: Devices uses for online learning (CityGo 2022a)

Teachers stated a similar concern about students technical infrastructure (CityGo 2022b). As a possible solution, they recommended technical checks and or additional training prior online learning with students.

The risk of connectivity problems can be minimized by the fact that all the material for the modules could be available in different forms (recordings of meetings of the online community members, videos, audios, PowerPoint presentations, quizzes etc.), thus ensuring 24/7 access to these materials for all users.

2.6 How to choose a topic for learning communities?

Dos

- Chose topic related to real-life problem – it gives for participants more engagement and a voice in the overall process.
- Focus on environmental success stories and quality-of-life issues.
- Chose topic that encourage analyse empirical data for participants themselves, rather than receiving predigested analyses from lectures or secondary sources.
- Go interdisciplinary – teaming with a colleague from a different discipline or bringing in guest speakers from the local community allows more opportunities and stronger modelling during the learning process.
- Consider taking a “bioregional” approach to teaching about place, encouraging participants to think about their local watershed as a meaningful way to conceptualize community.
- Include ecological footprints evaluation – it is valuable starting point wishing to engage participants in important dialogues about wide ranging issues of environmental sustainability and resiliency.
- Focus on how the learner will be able to apply their new knowledge in a real-world context, rather than on a learner being able to recite information.
- Learning outcomes should be simple, specific and well defined, be realistic, rely on active verbs in the future tense, align with the module curriculum and focus on learning products and not the learning process.
- Learning outcomes should include a verb that describes an observable action, a description of what the learner will be able to do and under which conditions they will be able to do it, and the performance level they should be able to reach.
- Beware of participant’s overload – feelings of cognitive or emotional overload can cause participants to feel disengaged, disempowered, and even resentful, which can disrupt the learning process.

Don'ts

- Don't chose topics intended only for gaining theoretical knowledge.
- Sustainability IS NOT a hoax.

- **Avoid doom and gloom - focus on success stories.**
- **Don't engage participants in individual activities and works.**
- **Avoid choosing topic only inside own area of expertise – it can be challenging because of the interdisciplinary nature of the problems at stake.**
- **Don't focus on how learner will be able to recite information, rather than how learner will be able to apply their new knowledge.**

How to find a suitable real-world problem?

Students in the survey (CityGo 2022a) stated:

"<...> Explain everything using real world examples and make the lessons more interactive and less podcast like."

Lave and Wenger give answers about how to design a real-world problem by five characteristic cases of situated learning (Lave&Wenger 1991 in Jahnke 2016). "authentic case, complex case, multiple perspectives on the case are supported and possible, group interaction is required for solving the case; articulation and reflection are needed to solve the case properly"

Participants engage in active investigation of a real-world problem. If this topic is related to real-life problem solving it gives participants a voice in the overall process through a process of inquiry, critical thinking, problem solving, collaboration, and communication.

The problems can come from a variety of sources: work tasks, newspapers, magazines, journals, books, textbooks, and even television/movies. Some are in such form that they can be used with little editing; however, others need to be rewritten to be of use.

- **The problem must motivate participants to seek out a deeper understanding of concepts.**
- **The problem should require participants to make reasoned decisions and to defend them.**
- **The problem should incorporate the content objectives in such a way as to connect it to previous courses/knowledge.**
- **If used for a group project, the problem needs a level of complexity to ensure that the participants must work together to solve it.**
- **If used for a multistage project, the initial steps of the problem should be open-ended and engaging to draw participants into the problem.**

Choose a central idea, concept, or principle that is always taught in each module, and then think of a typical end-of-chapter problem, assignment, or homework that is usually assigned to participants to help them learn that concept. List the learning objectives that participants should meet when they work through the problem.

Think of a real-world context for the concept under consideration. Develop a storytelling aspect to an end-of-chapter problem, or research an actual case that can be adapted, adding some motivation for participants to solve the problem. More complex problems will challenge participants to go beyond simple plug-and-chug to solve it. Look at different information sources for ideas on the story line, talk to professionals in the field, searching for ideas of realistic applications of the concept being given for participants.

The problem needs to be introduced in stages so that participants will be able to identify learning issues that will lead them to research the targeted concepts. The following are some questions that may help guide this process:

- **What will the first page (or stage) look like? What open-ended questions can be asked? What learning issues will be identified?**
- **How will the problem be structured?**
- **How long will the problem be?**
- **How much time will it take to complete?**
- **Will participants be given information in subsequent pages (or stages) as they work through the problem?**
- **What resources will the participants need?**
- **What end-product will the participants produce at the completion of the problem?**

Sustainability

Within the framework of the CityGo project, the topic of sustainability was the overarching real word reference. Education for sustainability is an educational approach that aims:

- to develop participants, facilitators and communities with the values and the motivation to act for sustainability – in their personal lives, within their community and also at a global scale, now and in the future;
- to build awareness and knowledge of sustainability issues but also to develop participants and communities that are able to think critically, innovate and provide solutions towards more sustainable patterns of living.

What is Sustainability?

The United Nations World Commission on Environment and Development states: “sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” The UN Sustainable Development Goals (<https://www.un.org/sustainabledevelopment/sustainable-development-goals/>) (SDGs) are the blueprint for achieving a better and more sustainable future for all. The Sustainable Development Goals are the blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including poverty, inequality, climate change, environmental degradation, peace and justice. Learn more and take action.

2.7 How to define Learning Outcomes?

What are learning outcomes?

Learning outcomes are descriptions of the specific knowledge, skills, or expertise that the learner will get from a learning activity. Learning outcomes are measurable achievements that the learner will be able to understand after the learning is complete, which helps learners understand the importance of the information and what they will gain from their engagement with the learning activity (Cornell University 2023).

Why Define Learning Outcomes? Clearly identified learning outcomes allow facilitators to:

- **Make hard decisions about selecting module content;**
- **Design assessments that allow students to demonstrate their knowledge and skills;**
- **Design teaching strategies or learning activities that will help students develop their knowledge and skills;**
- **Measure student learning accurately and effectively.**

Having access to articulated learning outcomes helps students:

- **Decide if the module is a good fit for their academic trajectory;**
- **Identify what they need to do to be successful in the module;**
- **Take ownership of their progress;**
- **Be mindful of what they are learning. (Cornell University 2023)**

A well-written learning outcome will focus on how the learner will be able to apply their new knowledge in a real-world context, rather than on a learner being able to recite information. The most useful learning outcomes include a verb that describes an observable action, a description of what the learner will be able to do and under which conditions they will be able to do it, and the performance level they should be able to reach.

5 types of learning outcomes:

1. **Intellectual skills:** with this type of learning outcome, the learner will understand concepts, rules or procedures. Put simply, this is understanding how to do something.
2. **Cognitive strategy:** in this type of learning outcome, the learner uses personal strategies to think, organize, learn and behave.
3. **Verbal information:** this type of learning outcome is when the learner is able to definitively state what they have learned from an organized body of knowledge.
4. **Motor skills:** this category is concerned with the physical ability to perform actions, achieving fluidity, smoothness or proper timing through practice.
5. **Attitude:** This is the internal state that reflects in the learner's behaviour. It is complex to quantify but can be shown in the learner's response to people or situations.

Before preparing a list of learning outcomes consider the following recommendations (Stanford 2017):

- **Learning outcomes should be specific and well defined.** When developing a list of student learning outcomes, it is important that statements be specific and well defined. Outcomes should explain in clear and concise terms the specific skills students should be able to demonstrate, produce, and known as a result of the module curriculum. They should also exclude the greatest number of possible alternatives so that they can be measured.
- **Learning outcomes should be realistic.** It is important to make sure that outcomes are attainable. Outcomes need to be reviewed in light of students' ability, developmental levels, their initial skill sets, and the time available to attain these skill sets. They should also be in line with what is being taught.
- **Learning outcomes should rely on active verbs in the future tense.** It is important that outcomes be stated in the future tense in terms of what students should be able to do as a result of instruction. For example, the learning outcome "Students have demonstrated proficiency in..." is stated in terms of students' actual performance instead of what they will be able to accomplish upon completion of the program. Learning outcomes should also be active and observable so that they can be measured. For example, outcomes like "Students will develop an appreciation of, and will be exposed to..." are latent terms that will be difficult to quantify. What does it mean to have an appreciation for something, or to be exposed to something?
- **There should be a sufficient number of learning outcomes.** You should include between three to five learning outcomes in your assessment plan. Fewer than three will not give you adequate information to make improvements, more than five may be too complicated to assess.
- **Learning outcomes should align with the module curriculum.** The outcomes developed in your plan need to be consistent with the curriculum goals of the module in which they are taught. This is critical in the interpretation of your assessment results in terms of where changes in instruction should be made. Using curriculum mapping is one way to ensure that learning outcomes align with the curriculum.

- **Learning outcomes should be simple and not compound.** The outcomes stated in your plan should be clear and simple. Avoid the use of bundled or compound statements that join the elements of two or more outcomes into one statement. For example, the outcome “Students completing the BS in mathematics should be able to analyse and interpret data to produce meaningful conclusions and recommendations and explain statistics in writing” is a bundled statement. This outcome really addresses two separate goals, one about analysing and interpreting data and another about writing.
- **Learning outcomes should focus on learning products and not the learning process.** Learning outcomes should be stated in terms of expected student performance and not on what faculty intend to do during instruction. The focus should be on the students and what they should be able to demonstrate or produce upon completion of the module. For example, the learning outcome “Introduces mathematical applications” is not appropriate because its focus is on instruction (the process) and not on the results of instruction (the product).

Learning outcomes examples

Well-written learning outcomes focus on what the learner can concretely demonstrate after they complete the learning activity. A learning outcome is only useful if it is measurable. So, it should include the learning behaviour of the learner, the appropriate assessment method, and the specific criteria that demonstrates success.

The following examples are well-written learning outcomes:

- Learners will be able to identify which scenarios to apply each of the five types of conflict management.
- Learners will be able to use the company’s LMS to effectively engage with and complete all training materials.
- Learners will understand how to interpret marketing data and use it to create graphs.
- Learners will understand how to employ company-prescribed SEO practices while writing copy.
- Learners can properly use company guidelines to create case studies.
- Learners will be able to properly operate and clean the autoclaves.

The following examples are poorly written learning outcomes:

- Learners will understand conflict management.
- Learners will know how to use the company’s LMS.
- Learners will appreciate how to use marketing data.
- Learners will know about the company’s SEO practices.

- Learners will understand what goes into a case study.
- Learners will learn about autoclaves (<https://www.valamis.com/hub/learning-outcomes>)

How to write learning outcomes

- Ask yourself what the most important things a student should know (cognitive), be able to do (skills), or value (affective) after completing the module.
- Consult a list of action verbs, which are verbs that result in overt behaviour or products that can be observed and measured. Bloom's Taxonomy of Educational Objectives provides some useful verbs to write objectives for different levels of learning.
- Avoid verbs that are unclear and cannot be observed and measured easily, for example: appreciate, become aware of, become familiar with, know, learn, and understand.
- Draft a list of possible learning outcomes. Be realistic in considering what is possible for students to accomplish in your module. Only keep the most essential learning outcomes.
- Edit and review the outcomes.

2.8 How to design of the learning process in online communities?

Dos

- **Encourage the students to produce something.**
- **Find a joint enterprise among the participants**
- **Establish shorter learning section in terms of micro tasks.**
- **Design students activating exercises.**
- **Demand students to focus in the – compared shorter – dedicated period of time.**
- **Judge if it is possible to supply offline information (e.g., videos, recordings). These could be longer information but to be used asynchronous by the students.**
- **Request students to prepare in advance (inverted classroom).**
- **Explain the expected workload and clear learning goals.**
- **Give students time to adapt to the learning community approach.**
- **Let the students experience different roles (e.g., being a teacher, expert...).**

- **Just move to online meetings.**
- **Show the students the teaching goals only at the end.**
- **Focus on the teacher role as being the expert.**
- **Interact with the students only during “classes”.**

From the initial student survey (CityGo 2022a) and the teachers' interviews (CityGo 2022b) we can conclude that learning in online settings requires a drastic change from “just moving to online meetings”. Further didactical and methodological decisions are necessary. The following considerations are to be respected when designing the learning process in online communities.

Considerations on the topic and possible learning outcomes can be found in the chapters before. It is important that the learning outcomes or teaching goals are clearly documented and visible for the students. They need to know the criteria for learning success and assessment from the start.

Learning activities

When designing the learning process, learning activities should be chosen that have a focus on active, authentic, constructive/reflective, collaborative actions. This could mean that the students produce something or that the activities are connected to the student's world, e.g., through using real-world problems (compare chapter 2.5) or a real audience or case holder. These learning activities should include sources beyond the usually physical school walls, or virtual room that the students engage in. This could mean, that the students engage with people from outside the online community.

Time planning and organization

Compared with offline learning scenarios synchronous online learning is demanding much more concentration of the students. Since the physical contact is missing, for teachers it is difficult to get feedback to adjust. Regarding the design of online learning communities, it might be necessary to create synchronous learning sections beside longer project/group activities. The following aspects can help to cope with these problems:

- Establish shorter learning sections in terms of micro tasks.
- Design students activating exercises.
- Demand students to focus in the – compared shorter – dedicated period of time.
- Judge if it is possible to supply offline information (e.g., videos, recordings). These could be longer information but to be used asynchronous by the students.
- Request students to prepare in advance (inverted classroom).
- Explain the expected workload.
- Give students time to adapt to the learning community approach.

The teacher role and communication

In the online community learning process, the teacher plays different roles. Being an expert, a process mentor, a learning-companion, or coach, s/he encourages the students to also change their roles. Students thus experience several roles and take active ownership of their learning, by being their peers' teacher, finding own learning aims, creating own learning tasks. The "traditional" teacher supports the students' reflection of the roles and new development of roles. It is important to develop a relationship on equal terms with students. Therefore communication is a critical factor in virtual communities and fundamental to create a community and trust. A good practice is to keep in touch with the students on regular basis (CityGo 2022b). Within CityGo online survey students returned recommendations regarding this topic: "It would be beneficial to ask students for feedback to determine if the module's goals have been met and if there is anything that requires improvement. The most resourceful observations would be through forms sent to students right after the completion of the module." (CityGo 2022a)

Design "learning expedition"

Jahnke recommends designing a learning setup like a "learning expedition" (Jahnke 2016). She compares the "learning expedition" with a national park event where you can explore different things, questions are asked, reflection is done, and something is created. Jahnke argues that the problem has to be in the center, where students are in the role of producers and makers. The learning process in online communities will benefit if these aspects are considered.

Jahnke published a checklist for designing "learning expeditions" including the following aspects to be taken in mind (Jahnke 2018a):

- 1) students' self-reflection,
- 2) they can make autonomous and independent decisions during the learning process,
- 3) design fosters engagement, curiosity, and motivation,
- 4) students can produce something,
- 5) multiperspective thinking is possible (views on the same object),
- 6) developing original, new ideas.

Regarding the design of the learning process in virtual communities of practices, it is important to facilitate a "joint enterprise" which is agreed by the members of the community. This will be the basis for mutual engagement and development of capability which will be more than just sharing a common interest (Lave&Wenger 2008).

2.9 How to create learning material?

Dos

- **Use active language to address the audience. (for example: “What would you do in this case?” instead of – “What should be done in this case?”) Active language is much more dynamic, direct and engaging.**
- **Keep the right balance between words and images.**
- **Use simple language.**
- **Help students to stay in focus by using short words and sentences.**
- **Use power words (such as: you, easy, now, support, compare, describe, why, explain, summarise). Word choice has a significant impact on the audience. Such words are powerful, because they appeal to the listener’s fears and desires.**
- **Keep in mind that most of the written content is to be read on screen (presentation, e-book, blog) and that it is subject to different rules than printed text. Most students absorb information on smartphone screens.**
- **Always have the content proofread.**

Don'ts

- **Use the same media during the complete course**

Digital tools and available technologies have transformed education. They have simplified and enriched, at the same time, the relationship between teaching and learning.

To effectively use these resources for the online modules, it is necessary to choose the best formats of teaching online and place to host them. Students in our survey (CityGo 2022a) mentioned:

“Varying the media in presentation, like a short video here and there, kahoot or discussion in small groups...literally anything that engages the student and makes it easier to focus the attention on the lecture.”

“Include videos”

8.6. I received engaging and high-quality learning materials.

330 Antworten

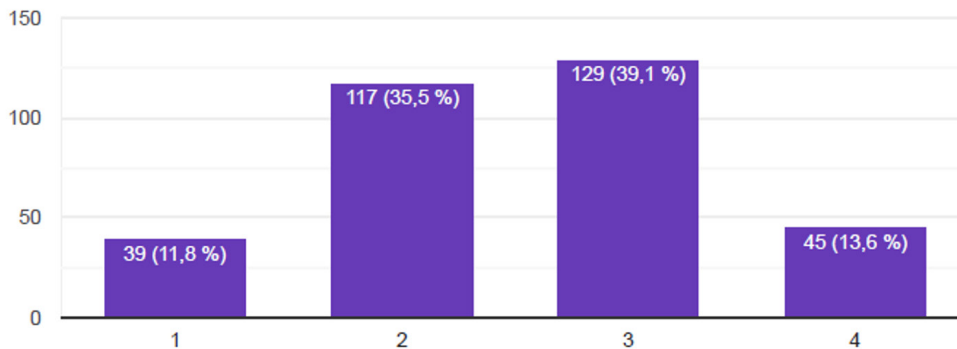


Figure 7: Learning material used in online learning (CityGo 2022a)

Only **13,6 %** of surveyed students (CityGo 2022a) agree that they have received engaging and high-quality learning, while almost the same amount (**11,8%**) disagrees with the statement.

Lesson Plan

Traditionally, it all starts with the lesson plan, which helps to organise individual online classes and helps to create an overall view of the module. It must be done before the start of the recording of any material. It works as a guide for teachers (present and future) and contains the steps to be followed during the module. Teachers can balance overall module time and the order in which themes will be presented. Based on the lesson plan, teachers are able to recognize which formats are best for their subject and when to use these tools.

Lesson plan should include:

- **the structure of the content – syllabus or curriculum,**
- **learning outcomes (see chapter 2.7)**
- **how the learning process is organised, what formats will be used (chap. 2.8).**
- **student evaluation criteria**

Formats for online learning

It is recommended to diversify the tools for the online module content in order to keep students engaged in the module. Therefore, we should take advantage of formats that are available and make them engaging and attractive to keep students involved in the course. Digital tools are fundamental in online modules!

The following are available formats:

Presentation

The most popular tool for presentation is PowerPoint. The slide show should include key module information in a graphic and memorable manner using simple illustrations, diagrams and INFO-GRAPHICS. Significant pictures, graphs, diagrams and catchwords will make the material more intuitive and enjoyable to comprehend. Use of imagery to reinforce module content is crucial. It is more smoothly absorbed by such a representation than by written text. Content must be divided into clear parts, supported with imagery, using a right graphic balance of "solid and void".

Video

Majority of the online modules are in video format. It is the most convenient way to explain module content in detail and demonstrate the whole subject. They can be designed and recorded in advance and broadcast as one lecture or as a sequence of small videos. Videos can be recorded in advance and broadcast as one lecture or as a sequence of small videos.

Live Streaming

It is simultaneously recorded and broadcast in real-time on social media such as Facebook or Instagram. Even though it has an informal aspect to it, the live streaming has to be planned and organised in advance with complete and attractive content.

Podcast

It is an audio content that can be listened to by the student at any time and anyplace that he or she is.

E-Book

It is a very convenient way of sharing knowledge, because an E-book can be downloaded once and used by the student at any time without having to reconnect to the internet. Most students digest information on smaller screens, which makes digital books a popular and easily accessible format. Before publishing the module content, it must be checked. The facts as well as spelling and grammar must be correct.

Discussion Forum

A discussion forum is one of the most important educational tools. Any lecture has to be followed by interaction between the teacher and the audience. Students can clarify doubts, ask questions, share knowledge and interact with the teacher and the group. It should be offered live.

Blog

Teachers can prepare an additional internet platform in written form (not live) outside of the classroom, for exploring the subject, sharing news and stories, articles and other information, questions and answers, anything that keeps students interested in the subject. Possibly to be

shared by the wider public?

Template

Depending on the subject of the module, templates can be posted so the student can download them and follow in their projects. It is often used in design modules to unify the graphics and order of the presentations.

Webinar

In this format, the teacher or a guest speaker performs a live broadcast online of their knowledge to all students. Even though it takes place live, the teacher needs to prepare a script and necessary presentation to cover the intended content.

Quiz

Best educational effects are accomplished when questionnaires are made up of multiple-choice questions and the teacher can discuss the correct answers immediately upon completion.

What tools to use?

This section focuses on the creation of content for the digital content library. First, software solutions will be discussed on their implementation and use, followed by hardware most used in the process of content creation.

Freeware:

Content creators can use freely available graphics editing programs in their module. If they get accustomed to the licensing rules and regulations of each suite. According to [Dessign.net](https://www.design.net) some of the most used free graphic editing software are:

Lunacy (<https://icons8.com/lunacy>)

Canva (<https://www.canva.com/>)

Gimp (<https://www.gimp.org/>)

Vectr (<https://vectr.com/>)

Krita (<https://krita.org/en/>)

Inkscape (<https://inkscape.org/>)

Each one of these softwares can be used “straight out of the box” after registration and/or download and installation, although they might require a decent amount of learning beforehand.

Paid / Licence:

In addition to popular free solutions, a large variety of prosumer to professional grade software is available to those who wish to use a more developed set of tools, backed by support from help-desks and vast forums. Some of the most worldwide known paid for image editing software are:

- **Adobe Creative Cloud package Lightroom, Photoshop, Illustrator, etc.** (<https://www.adobe.com/creativecloud.html>)
- **CorelDRAW Suite** (<https://www.coreldraw.com/en/product/coreldraw/>)
- **Affinity** (<https://affinity.serif.com/en-us/>)

As of recently, most software suites offer a monthly or annual subscription plan for their customers, as newer and more optimized versions are released on a regular basis. Pricing depends on the licence types, as some brands offer discounts to students and educators, while others rely on version locked perpetual licensing. As these tools are used by professionals, they include a steep learning curve.

Images/Graphics

- When working with standard / typical images, it is recommended to use the .jpg format to reduce file size and maintain a standardized file type.
- PNG images are most commonly used in transparent background uses like logos, icons, text, and multi layered applications. They are, however, much heavier than JPG.
- JPG can be converted to PNG, but a backwards conversion will produce problems with transparent backgrounds found in PNG (also known as alpha layers).
- AI driven software solutions allow for graphic designers to increase the resolution of images (also called upscaling), but will commonly produce “artefacts” in certain areas and will not increase the quality of details that are represented by a set of pixels.

Photography

As much as it is important to correctly produce image outputs in the forms of files, being able to correctly capture an image or use available tools to make it is just as crucial to the entire process. Here are a few things to consider when preparing for content creation.

Content creators should be aware that they can prepare photos with any means of digital photography, as the use of professional equipment is not necessary for quality content.

- When taking photos, try to take pictures with as little motion as possible, as to reduce the chance of blurred photos. Setting a camera on top of a flat and stable surface is one method that does not require special hardware.
- Certain times of day / sun positions make it much harder to capture a good and clear image. Try to avoid taking pictures in the direction of the sun.
- If you're not sure about a picture / situation, take more shots. It is much better to take too many pictures than not enough.
- Don't be shy while taking pictures. If the situation allows for it, make good use of it for your benefit of quality content.
- Ask your fellow coworkers to look at your photos and to hear their opinion on which ones are best.

Use of colours

Carefully and wisely apply the psychology of digital design along with universal psychology of colours, fonts, shapes and words.

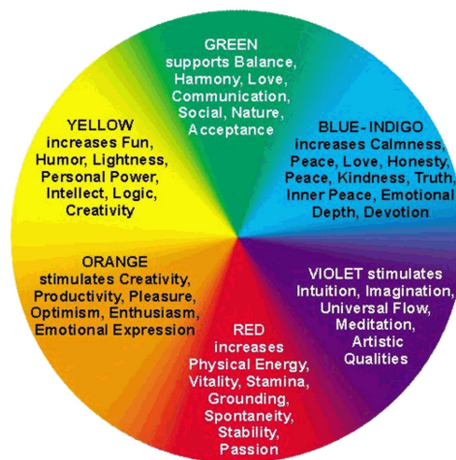


Figure 8: Effect of colours (Agrawal 2020)

Additional online resources for creating learning material:

<https://hotmart.com/en/blog/online-course-content#t7>

<https://elearningindustry.com/7-web-writing-tricks-creating-effective-online-courses>

<https://www.facebook.com/business/learn/lessons/social-media-tips-and-tools>

<https://www.teachmore.com/blog/how-to-build-the-best-content-for-your-online-course/>

<https://www.thinkific.com/blog/10-steps-creating-successful-online-course/2>

2.10 How to assess students' learning?

Dos

- **Keep it real! sufficiently challenging and relevant to the real world**
- **Enable students to apply their prior knowledge!**
- **Built collaboration!**
- **Relate assessment activities to learning goals!**
- **Be adaptable!**

Don'ts

- **Write questions that are all at the same level.**
- **Write questions that can't be answered by analyzing the content they've been given.**
- **Try to "trick" students!**

To effectively teach and learn in an online environment, it is crucial to assess student learning. The assessment process involves learning about the students' already acquired knowledge via their educational experiences. The learning outcomes are often used to pinpoint areas that need development and make sure the module material satisfies student learning requirements, and assessment should be in line to learning them.

According to the definition, assessments generally aim to evaluate and enhance student learning, while specific aims may vary slightly based on the sort of assessment being utilized.

There are two fundamental kinds of assessment: the formative and the summative.

Formative evaluations are conducted throughout an online session or module and intend to measure how well a student understands the topic. They work best when they are ongoing, reliable, and give students important feedback. According to Black and Wiliam's (1998) meta-analysis of 250 formative assessment studies, which sparked more study and interest in the subject, formative assessment frequently led to significant advances in student learning when compared to instruction based solely on summative assessment. These improvements were especially noticeable for students who scored lower on tests. Gaming poses a single topic for formative examinations, particularly those delivered online, as students will frequently guess several possible answers to a formative evaluation until the right answer is finally displayed. The use of multiple-choice questions with multiple answers to make guessing combinatorial prohibitive, the use of a large pool of related formative items, the provision of only hints or cues, or the incorporation of the formative assessment into another activity, such as a game or simulation, are all possible approaches to addressing this (Wiliam, 2007).

Facilitators should keep in mind the following principles for effective online formative assessment:

1. The assessment activities must be genuine by being appropriate to the learner's actual experiences and situations and being seamlessly integrated into the teaching and learning processes. The assignments must be sufficiently challenging and relevant to the real world in order to actively engage students in ongoing critical thought.
2. Through activities that acknowledge and enable students to apply their prior knowledge and experiences to build new knowledge and to demonstrate individually what they are capable of doing, assessment activities must engage and support students in the individual construction of knowledge and meaning. This implies that activities for formative assessment must shed light on learners' perceptions, prior knowledge, and experiences.
3. Assessment activities must give students the chance to build knowledge cooperatively through tasks that demand and promote meaningful communication with other online participants, especially teachers and peers. As a result, the students can interact with one another as a learning community to socially negotiate and construct meaning from many angles. Each learner should be able to express their viewpoint and independently verify meaning.
4. In order to encourage a common purpose and meaning for learning and assessment activities, teachers must be clearer. In order to help students, relate assessment activities to learning goals and to perceive them as real things that will lead to a complete, genuine, and meaningful conclusion, this needs to be taken into account as being just as important as the actual criteria and required standards. Opportunities for ongoing, dynamic, and dialogic interactions between the teacher and students are associated with this, and these interactions are crucial for fostering a shared understanding of learning objectives and assessment requirements, active participation, and a highly cohesive learning community.
5. The assessment activities must be adaptable and allow for a variety of techniques and solutions to give learners a variety of opportunities to display their knowledge and skills, which may also encourage them to engage in self-regulated learning.

Summative evaluations, also known as final exams, gauge how much a student has learned after completing a module. They can guarantee how well your material furthers the module's overarching learning objectives. Summative evaluation measures the final result and, at its finest, provides a comprehensive and qualitative assessment of whether the targeted learning outcomes were attained. Examples of typical summative assessment techniques include capstone final projects and comprehensive final exams (Perera-Diltz, 2009).

Summative evaluation in education is both a method that may be under-theorized in relation to online learning and one that people participating in the instructional process (such as students, teachers, and administrators) are more familiar with. Readers may be experienced with the practice of so-called high-stakes testing, in which a summative assessment is employed as the main or only metric to assess whether students have met their educational goals. When de-signing and conducting an assessment of a learner's experience and accomplishment in online educational environments, the use of summative evaluation – in the form of a midterm and final test only – which is prevalent in higher education, is discouraged. Constructivist, learner-centered, and genuine education approaches may initially appear to be challenging to include in the creation of useful summative assessments. The question of whether instructors can effectively

involve students in online learning environments in order to co-create summative evaluation protocols becomes reasonable when it is remembered that the principles of authentic education include a focus on problem-solving, learner decision-making, and applicability to situations outside of the educational context (Perera-Diltz & Moe, 2014).

Summative evaluation in online learning must be focused on supporting and recording the learner's capacity to integrate personal experiences and perspectives with new texts, media, and other knowledge artefacts. The best use of assessment tools that emphasize problem-solving, critical analysis of media sources, and the expression of the learner's voice as an active co-creator of the educational experience is required for the depiction of achievement as opposed to the evaluation of learners' capacity for rote memorization and repetition. A fundamental framework for summative evaluation in online learning would demonstrate the instructor's proficiency in applying learning management systems to simulate in-person assessment methods like a comprehensive test or final paper. The potential for learning management systems to involve students and make it easier to co-create capstone projects and assignments with their input would be maximized with a sophisticated design for summative assessment (Levia & Quiring, 2008).

However, in practice, research (Seifert, 2020) has shown that the five challenges that facilitators have to overcome regarding assessment are the following: (1) time management; (2) student initiative and responsibility; (3) the online medium's structure; (4) the difficulty of the material; and (5) informal assessment. In this context, facilitators should keep in mind the following recommendations (Kearns, 2012):

- **Divide the assignment into phases** and ask students to turn in intermediate deliverables for review for more difficult written tasks that call for the synthesis of information over the whole semester. For instance, a systems analysis report could be submitted in three stages: (1) a description of the context; (2) an analysis of the problem; and (3) a suggestion for change.
- **Use grading criteria (rubric)** to direct student participation in written tasks and on the discussion board. A simple checklist that lists the desired performance standards for an assignment might serve as a rubric. You can clarify your own ideas about the assignment's goals by creating the rubric in advance. Students can better comprehend your expectations and adjust their performance when they use it as they create their projects. Once you've created the rubric, it can make grading easier. A common set of criteria for an online discussion rubric would be standards for how frequently students should post, how many initial and follow-up posts they must make, and how they should connect their comments to the module material.
- **Utilize synchronous technologies where necessary.** The remote, asynchronous character of the majority of online learning is the cause of many of the difficulties that educators encounter when they teach online. Asynchronous communication can cause a "gap" that can be "closed" through web and phone conferencing. However, given that one of the primary reasons students choose to enroll in online modules is the convenience and adaptability of the asynchronous format, it is probably unrealistic to anticipate that all students in an online class will be able to attend a virtual conference session at the same time each week.
- **Investigate the application of peer-assessment techniques** to promote community growth and provide students with opportunities to learn via evaluating and critiquing the

work of others. For this kind of work, rubrics are a need. To help inexperienced evaluators, they explicitly specify the desired performance criteria and break down a major task into smaller subtasks. Peer evaluation is effective for writing projects with interim results.

- **Give similar feedback to several students at the same time to** cut the amount of time spent or look for appropriate times to address the entire class. Post an announcement describing some of the submission trends along with suggestions for the following actions after a significant assignment. Keep an online “Q&A” forum where students can post queries for everyone to see. Regularly check the board, but also encourage students to help one another out as necessary.

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- In order to cut the amount of time spent offering the same feedback to several students, look for appropriate times to address the entire class. Post an announcement describing some of the submission trends along with suggestions for the following actions after a significant assignment. Keep an online "Q&A" forum where students can post queries for everyone to see. Regularly check the board, but also encourage students to help one another out as necessary.

2.11 How to keep members engaged?

Dos

- **Build a community**
- **Order something uncommon**
- **Use rewarding**
- **Use Gamification features**

Don'ts

- **Create stress for achievement**
- **Forbid collaborative learning**
- **Be afraid to use technology**

Keep engagement

Without involvement, engagement, and active learners in the learning process, there is essentially no learning process at all. Every student must take an active role in their education; the distinction lies in the level of each student's participation. Low, medium and high categories all have engagement and vibrancy. For pupils to engage and actively participate in learning, facilitators must use creativity. In our research teachers mentioned the lack of engagement and motivation as a big factor (CityGo 2022b). The surveyed students (CityGo 2022a) say that it is important to actively participate in the classes for a successful online learning experience.

"<...> be proactive and actively discuss the topics from the classes."

"Students need to actually answer questions and take part in discussions, and not hide behind their desktops"

"Active participation in the quizzes/games/group discussions <...>"

"<...>participate as much as possible, in order to help the flow of the lesson"

Everyone's perception of engagement may be different. The foundation of learning is engagement in the module; a student who is not engaged has a lower chance of success. Engagement that goes beyond test-taking strategies or check-listing procedures is the key to student success. Curiosity, inventiveness, and fulfilling interactions are motivating factors for students who are interested in their studies. Because professors will not meet students every day, student participation in the virtual world will seem significantly different from that in the real world (traditional education). There should be several strategies for teachers to maintain student interaction. Think about some of the more important concepts from grit and growth mindset, and how they can help students take control of their education, which goes hand in hand with increasing student engagement (Lase et al., 2021).

The following strategies are meant to keep and enhance students' engagement and participation in online learning:

Build a community:

Interactions with peers, teachers, and/or teaching assistants help face-to-face learning by fostering a sense of community and encouraging pupils to learn. Through online forums, similar interactions are simulated in online learning. Creating a community assists the collaboration and bonding of a group of learners. Given the potential for students to (a) not feel isolated and alone; (b) encourage students to use discussion-based features; (c) use business hours to engage students in a more casual environment; and (d) Encourage students to stay in touch with each other, community is important in online modules (Groccia, 2018). Perhaps the most significant changes in teaching as a result of the affordances of online technologies are in the area of learner-to-learner engagement. Online technologies connect students to a global audience and promote more meaningful interactions among students in the same class. Meaningful interactions are an essential component of active learning, both online and in face-to-face classes, and must be carefully nurtured. Peer-to-peer interactions have an incomparable value for learning when they are structured for discussion, questioning, explanation, and feedback, according to research (Dorum et al., 2010).

Synchronous & Asynchronous Instructional

According to a study by Huang et al. (2015), asynchronous communication is frequently far better than synchronous design in terms of motivating and engaging pupils. According to additional research by Levin et al. (2006), synchronous online education participants demonstrated higher levels of critical thinking than those who only participated in asynchronous learning.

Consequently, it is typically advised to use both synchronous and asynchronous communication while using distant learning (Zoumenou et al., 2015). When taking into account students' needs, programs, and accessible technical assistance, research supports both synchronous and asynchronous learning, according to Watts (2016)'s library review.

Order something uncommon:

Teachers' favorite strategies for engaging students include humor, surprise, and lessons. Laughter and humor can be useful skills for developing relationships and relaxing in everyday life. It will reduce stress and frustration while also allowing others to see life from a different perspective (Lase, 2019). These elements combine to create a personalized environment that encourages students to think of new ways to connect to a concept. This environment can be created by anything from a demonstration to a song to a game show quiz. Create learning curiosity by using teasers to pique students' interest in a lesson, looking for ways to make lessons relevant to learners' lives, and asking questions to engage students in learning and inquiry. Remember that variety is the spice of life; a variety of learning activities helps students stay engaged. Emotions can be used to enhance attention just as they can be used to distract.

Rewarding

Many teachers utilize rewards for pupils to promote learning and encourage good behaviour. Learners are encouraged to be more productive by rewards because they foster a sense of pride and accomplishment. Being prosperous makes you content. Every success story bolsters pupils' self-assurance. They are inspired to produce another successful outcome and are both proud of themselves.

Digital badges can be used for more than just motivating students, according to Gibson et al. (2015), who wrote that "In education, in particular, badges and badging systems are emerging to:

1. Incentivize learners to engage in positive learning behaviours.
2. Identify progress in learning and content trajectories.
3. Signify and credential engagement, learning, and achievement.

Gamification features

Gamification is a procedure that allows for the modification of student engagement levels to assist in the fulfilment of learning objectives. The extent of student engagement, which covers affective, cognitive, and behavioural dimensions, can have demonstrable effects on learning outcomes. It is possible to choose game characteristics that will help players achieve particular learning goals categorized under the three learning domains of cognitive, emotional, and psychomotor learning. By determining the psychological domain shared between the learning outcome/educational objective and the desired, altering student experience of engagement, it is feasible to choose a game attribute for use in a gamification strategy (Rivera & Garden, 2021). Facilitators, in order to achieve the engagement objective can:

1. Present a series of manageable mini-challenges.
2. Use quests to motivate and engage people.
3. Start with a straightforward query or test.
4. Give learners the chance to discover their errors.
5. Keep learners motivated to keep studying by giving them excellent feedback that explains where they erred and provides them with a second chance.
6. Interact by using audio and video.

In this context, online community moderators are also responsible for building engagement. For example, if someone asks a question and no one responds, they may feel as if they are not being heard – and possibly as if they do not belong in the community. That is why, when there is a post like this, moderators can comment and share their thoughts, or they can ask for more information about what they are discussing. This will encourage other members of the community, who might otherwise remain silent, to participate in the discussion! By taking part in such discussions, moderators are actually strengthening bonds with other members of the community. And because they are there to support and guide them, they'll feel more comfortable sharing their ideas and opinions, resulting in an even larger community.

Of course, monitoring student engagement by regularly reviewing student grades and offering encouragement and reassurance as required; checking on progress and motivating students to continue working and complete assignments on time; encouraging students to continue when they are feeling unsuccessful, is very important (Ruane & Lee, 2016).

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