



DigiGo - Apprenticeships in the digital era

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Module 5

Methodology for the digitalization of apprenticeships

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I

Brief overview of the methodology

The methodology for digitalization of apprenticeships is a guide which helps the teachers and the company mentors to provide an effective digital apprenticeship for students. The methodology supports VET teachers and company trainers to develop the digital apprenticeship programs for enhancing digital competences to the students.

The Methodology for the digitalization of apprenticeships is created, in order to support the VET teachers and company trainers to organize digital apprenticeships in these digital times. Alongside, it will pay attention to the issues like collaboration between VET institutes and companies. The Methodology for the digitalization of apprenticeships, is based on the DigiComp 2.2 framework, focusing on the digital competences' development of students during the digital apprenticeships. The content of the methodology will consist of guidelines, instructions, practical examples, and templates. The Methodology for digitalization of apprenticeships is divided in 6 chapters:

1.1 Preparing the organization for apprenticeship digitalization

It is important to have the support bodies and partnerships in their own network, which will help to intermediate between both the VET and the business world. These bodies and partnerships will enable both to share experiences and tools to enhance digitalization of apprenticeships. The partnerships referred to here, are mostly best organized on the regional level, so the three steps are:

- To find support buddies and partnerships which could help you to digitalize apprenticeships;
- Think thoroughly about funding you will need and research how you could acquire it to make apprenticeships more digital;
- Reflect what you already have established and what could still be achieved to enhance the digitalization of apprenticeships.

1.2 VET and company partnerships establishment for the above

Over the years the importance of public-private partnership has increased. Companies can offer a new perspective to students, which is different than what they are taught at school. That is why it is important to identify at which company or institution students or employees can enhance their knowledge. In the previous steps you looked at your strong and weak aspects of yourself, in this step you should look at who can enhance your weaker aspects. This means the following steps would be:

- To identify which companies or institutions can contribute to your weak spots; and
- To identify which values should be the same for the institution and the company.

1.3 Planning the digital apprenticeships including learning objectives and outcomes

As you know how to prepare a digital apprenticeship and know what you want from the partnership it is important to start planning the digital apprenticeships. To plan a digital apprenticeship, you should know what a prospective student should learn from the digital apprenticeship. This means that you should identify the curriculum. Firstly, you should have clear which skills you want to have in relation to digitalization. Skills that are important are: Information and data literacy, Communication and collaboration, Digital content creation, Safety, and Problem solving. Next to practical skills, you should also consider soft skills. Skills to consider are critical thinking, teamwork, negotiation skills, analytical skills, creativity, and intercultural skills. This makes students more effectively once they enter the labor market.

1.4 Enhancing digitalization during the apprenticeship process

As this program is set for digital apprenticeships, this part will discuss what is important for institutions or companies in order to adapt to digitalization. Since there are many changes happening on a digital level in the contemporary society, it is important that companies and institutions are able to adjust to those changes. Enhancing digitalization can be done through several ways:

- Explain the use of the digital tools:
- Make sure you have the best tools:
- Look at the latest opportunities for tools: and
- Do not fear the cost if the tool is worth it.

1.5 Virtual apprenticeships

While most apprenticeships would take place at a location, within the digital sector there is also the possibility that apprenticeships take place online. As digital apprenticeships can have some troubles it is important to make some clear control points for the institutions and companies, so that it is clear on what the virtual aspects add. To make the curriculum possible in an online setting, you should look at how your curriculum can intertwine with different tools. Possibilities to make the apprenticeship digital are: Online courses, digital simulation, digital assessment, learning analytics and artificial intelligence.

1.6 Follow up of the apprenticeships: assessment and evaluation

Once the program has been shaped it is also important to have a follow-up system in place. Not only does a follow-up system help with the development of the apprenticeship, but it also details the worth of the program. This would include:

- Follow up with the involved parties:
- Follow up on the digital tools: and
- Follow up on the digital tools used.

★ **Tip: Keep up-to-date with the latest versions of [DigCompEdu \(europa.eu\)](https://europa.eu) framework.**

II

Methods of digitalized apprenticeships

2.1 Presentation of the IT tools in a company

Technology can be used to protect financial data, confidential executive decisions and other proprietary information that leads to competitive advantages. Each company has specific types of tools which the employees use during their work. However, the company's tools can be sync in few subgroups:

- Document management tools
- Project management tools
- Meeting apps
- Communication apps
- Whiteboard tools
- Marketing tools
- Finance tools
- Outsourcing tools

These tools should be presented to every new student/apprentice who will come to do his/hers apprenticeship in the specific company.

2.2 Use of the IT tools

Once the presentation of the tools is done, the apprentices should start using them. Having in mind the digitalization, the apprentices should focus on the use of the IT tools. The importance of information technology in an organization helps the organization improve the quality of products, increase the profit, be aware about the competitor, control the management, improve the decision making process and find the opportunities in the market. The students must have an IT knowledge how they can easily transfer their gained knowledge at work. They should know the PC work, MS Office, Excel work, web work etc. and help the organization in their everyday work, improve the organization's digitalized persistence and most important, practice their knowledge at work, in a digitalized way.

2.3 Work from home

During their apprenticeships, the students can practice their knowledge from home. They can use their given tasks by the employer from home. Since, the society aims towards digitalization, the apprentices should be encouraged to do their apprenticeship from home. However, this option might produce some obstacles. Not every apprentice has an opportunity to work from home. There are marginalized groups of students who are not very digitally equipped at home. That's is why, they should be given the opportunity to use the premises and infrastructure of the school.

2.4 Work from school (through the studying process)

Having in mind that the dual educational system is consisted of studying from school and studying through work, the students should practice their gained knowledge through work. However, the students, while doing their apprenticeships, can work from school, as well. The digitalization way of learning is giving options for the students to practice their knowledge from everywhere. Hence, while at school, the students can use the premises of the school to do their job which is given to them by the employers. This is especially important, for the marginalized groups of students who do not have many opportunities to work from home (no WI-FI access, no PC, laptop, smart gadgets etc.). While at school, the students should be allowed to use the digital equipment, how they can study, practice and work for an employer at the same time. The work from school option, is good for the apprentices, since they can contact their teachers during their apprenticeship's period. If the students are not familiar with something, they can consult with their teachers, how they can do their job more qualitatively.

This is the best way of learning.

2.5 Digitalization of the Work based learning method

A comprehensive model of work-based learning is illustrated combining explicit and tacit forms of knowing and theory and practice modes of learning at both individual and collective levels. The model is designed to bring together epistemic contributions which are typically studied in isolation. The learning types produced from the model represent processes the intersection of which can contribute to the development of a comprehensive theory for integrating learning and work. Applications of the model can spur conceptual and practical developments that might lead to a comprehensive theory of work-based learning. The work based learning method is a model which is designed to make a connection among the VET schools and companies in order to better prepare VET students for the real work market, as well as helps the real work market find the best future employees.

The Work based learning model, as of today, has been used as part time study at school and part time work in a company, how the students can practice their knowledge. However, this model is starting to transform. Digital transformation has changed society and the economy with an ever-deepening impact on everyday life, and demonstrated the need for higher levels of digital capacity of education

and training systems and institutions. The on-line education process has made the first part of the Work based learning method digitalized. The teachers are teaching the students on-line (in separate conditions). The companies can also offer their practical placements on a digitalized way. The students can do their internships/jobs on their PC, or, depends on the nature of the work, they can use different types of digitalization in order to do their job qualitatively.

III

Acquisition of technical, transferable and digital skills

For an apprenticeship to be digital, there are a couple of skills which the apprentice needs to have. The needed skills for undergoing the digital apprenticeships might have benefits and limitations, however, the students will need to have these skills in order to do an effective digital apprenticeship.

3.1 Virtual apprenticeships

The move from 'Traditional Classroom or Work-based Learning' into an 'Online, Virtual or Remote learning is one path-breaking change we are embracing; allowing us to work from the safety and comfort of our homes.

Also, as part of these new ways of learning and working, 'In-Person Apprenticeships' had to make the inevitable transition to 'Virtual Apprenticeships'. It's a novel innovative concept and is slowly becoming a reality.

So, what are the virtual apprenticeships?

Most of the introduction and familiarization of the work content is done virtually i.e. online. This is done using the computer, smartphone, and internet.

Actual work practice requiring physical presence in the physical workplace is sparingly done, mostly towards the end, depending on the role or occupation. However, the key thing to note is, although remote, you still learn and work.

Virtual Apprenticeships with their radically new approach have introduced an effective alternative to 'In-person' Apprenticeships. The person i.e. the Apprentice, no longer to be physically present at the work-place to learn the skills or trade.

With Virtual Apprenticeships, the apprentices can learn and up-skill the craft or work remotely, from the safety and comfort of their home.

Also, in many cases, you can piggy-back this home-based learning experience with 'Work from Home' career opportunities. Then, continue to work on a 'Virtual Platform' with just your computer or smartphone, online.

Benefits of the virtual apprenticeships

- Extremely flexible

Being an excellent 'remote learning and working' process, it gives extreme flexibility for both the Apprentice and the Employer.

For the Apprentice, it frees you from the hassles of tiresome commutes to the office or workplace.

For the Employer, you do not need a special training center set up for Virtual Apprenticeships due to 'remote and online learning'; thus optimizing 'expensive' office space costs.

This is the biggest plus of Virtual Apprenticeships!

- Increased access

Virtual Apprenticeships expand access to the general masses. Being mostly 'remote learning' it is especially suited to persons with physical disabilities; since it obviates the need to physically move and be present at the actual workplace.

- Saves time and costs

Virtual Apprenticeships if effectively designed and implemented, offers the lowest hiring, training, and retention costs for employers, giving them the proverbial 'value for money'.

Employers can have leaner HR teams; Training time and costs are optimized because most of the introduction and familiarization is completed online.

Also, more importantly, being flexible, the Apprentices and Employees are extremely happy, and self-motivated with high levels of commitment.

Limitations of Virtual Apprenticeships

- Technical snags

Snags in the technical infrastructure required for effective online learning can severely impair Virtual Apprenticeships. E.g. Weak Internet or data connectivity can be a severe impediment and an unnecessary distraction, say in the middle of a 'live – online' class.

- Change in Mindset, Adaptability, and Extreme discipline

Although flexible, a change in the mindset, adaptability, and extreme discipline are the seeds for successful 'remote learning and working' Apprenticeships.

The Apprentice has the added responsibility to prepare and work on a regular schedule; exactly similar to 'In-person' Apprenticeships.

Both, the online trainer and student have to adapt to the realm of new technologies and methodologies involving 'non-classroom' training and mentoring.

This could be extremely daunting and challenging, especially for the 'non-tech savvy' students or trainers!

Hence, adapting to the new ways of learning and teaching is extremely critical to the success of Virtual Apprenticeships.

- Improper segregation of online curriculum

Most Virtual Apprenticeships fail because the curriculum does not clearly demarcate between what can be learned or done remotely, versus what cannot.

Also, being a blended learning model, there needs to be a seamless transition between 'online learning' and 'real-life' interactive work practices at the 'actual workplace'.

Unless these drawbacks are addressed properly, Virtual Apprenticeships may not be effective!

3.2 Plug-and-play learning

Plug and Play, sometimes, abbreviated PnP, is a catchy phrase used to describe devices that work with a computer system as soon as they are connected. The user does not have to manually install drivers for the device or even tell the computer that a new device has been added. Instead the computer automatically recognizes the device, loads new drivers for the hardware if needed, and begins to work with the newly connected device.

For example, if you connect a Plug-and-Play mouse to the USB port on your computer, it will begin to work within a few seconds of being plugged in. A non-plug-and-play device would require you to go through several steps of installing drivers and setting up the device before it would work.

While Plug and Play usually refers to computer peripheral devices, such as keyboards and mice, it can also be used to describe internal hardware. For example, a video card or hard drive may be a Plug and Play device, meaning the computer will recognize it as soon as it is installed. The only difference is that internal components usually require the computer to be turned off when they are installed, while external devices can typically be installed while the computer is running.

Having the upper said in mind, the plug-and-play learning is a way to teach and learn during the study process. Different hardware and USBs are used in the study process. The plug-and-play system can be used during the apprenticeships, as well.

Using technology as part of the apprenticeship, is developing a plug-and-play curriculum in which different skill units are connected in various configurations for different stakeholders and specific purposes. The technology can be set up in one common location with apprentices logging in from any location to learn. Resources and assessments are also shared and should be available 24/7.

The plug-and-play approach, delivering small chunks of learning, may become the norm in future – bearing in mind the fact that the curriculum is digital but also combined with a hands-on learning component. Apprenticeships, on average, require about 20 per cent of the training to be classroom-based instruction.

3.3 E-learning

New e-learning technologies are changing the ways in which skills can be acquired. The E-learning approach allows apprentices to access online learning resources, including videos, interactive simulations and theory assessments, at any time and from any device – mobile phone, tablet or computer. New technologies have been transforming the delivery of apprenticeship programs, particularly in terms of methodologies and location. Advances in ICT tend to blur the conventional boundaries between workplace and classroom, where on- and off-the job training has traditionally taken place. In recent years, teleworking has become increasingly common – some people work remotely, at home or at multiple sites. At the same time, e-learning platforms have also transformed off-the-job training, which traditionally involved face-to-face teaching. Today, the conventional day-release arrangement for apprentices may no longer be relevant, since online learning can take place in almost any location.

IV

Digitalization of apprenticeships

The digitalization of apprenticeships in itself incorporates the digital knowledge of the apprentices, the digital skills of the students, the digital tools provided by the companies, as well as a follow up with the improvement of the digital tools. There are several steps to enhance the apprentice their level of digital skills:

- The level of the knowledge of the digital skills of the apprentice when he/she begins with the apprenticeships;
- Keeping up to date with the right digital tools:
- Input from the students for the digital tools.

Prior starting the apprenticeships, it is good for the mentors in the company to know the level of the digital knowledge of the apprentice. Once, the mentor is acquainted with the digital skills of the apprentice, he/she can know what kind of work activities to assign for him/her. If the students have little digital education, then the mentor in the company can offer a training for using the proper digital tools, needed for the work. (Exercise 1: Questionnaire for the apprentice)

When the mentor of the company is acquainted with the level of knowledge of the digital skills of the apprentice, he/she should present the digital tools which are used in the company, in order the apprentice to get to know to collaborate with them. The digital tools used in a company, should be updated continuously, and keep up-to-date with the newest improvements of the digital tools used in the current area of work.

Furthermore, in order to obtain good and productive digital apprenticeships, the mentor in the company should have an input from the apprentice for the digital tools. Sometimes, in some parts of the work, the students have better knowledge about the digital tools, than the experienced mentors in the company for the current work. Hence, it should be discussed between the company mentor and the apprentice, what the apprentice can offer within his/her gained digitalized knowledge. (Exercise 2: mutual discussion)

When the digital apprenticeship is done, the company mentor can provide an informative test to the apprentice, to see to what level the digital skills of the apprentice have improved. (Exercise 3: informative test)

V

Use of smart working devices

5.1 Mobile phone

Using mobile phones while working can boost productivity, mobility and safety. In general, mobiles can help employees to:

- improve customer service
- remain in contact with the office, customers and suppliers
- increase mobility
- increase productivity
- work remotely (e.g. work from home or away from an office)

Connecting a mobile phone or a laptop to the internet can give employees an even greater degree of flexibility.

The apprentices are also encouraged to use their mobile phones, in order to be more productive while the digital apprenticeship. Having in mind that the students are up-to-date with the newest technology, they can even present new ways of using the mobile phones in order the work to be done more productively.

5.2 Laptop and tablets

Tablet computers are devices that run cut-down versions of 'standard' office software packages and similar applications to automate tasks or access/share information. Their small size can make extended use inconvenient, but they are ideal for remote access to email, schedules and documents.

Laptop computers, netbooks and some tablet devices give you the full functionality of a desktop PC and can handle the full range of office software.

Reasons to use laptops in business

Mobile networking devices such as laptops and tablets can be used for a wide variety of purposes. Key features include immediate access to data and more flexible ways of doing business. It is often possible to carry out the same tasks that you would in an office while on the move, as many mobile devices operate the same software as office PCs.

Examples:

- salespeople can use laptops and handhelds to make presentations, check stock levels, make quotations, and place online orders while on customer premises
- laptops are ideal for 'hot-desking' and other types of flexible working, such as homeworking and working while traveling away from the office
- laptops and tablet computers allow users to keep in touch via email while out of the office

5.3 Wireless items

A wireless network uses radio waves instead of cables to connect devices such as laptops to the internet, or to your business network. It removes the need for expensive and messy wires, and allows access to the company's documents, emails and other resources from any location within your network's coverage area or any Wi-Fi hotspot. By removing the need for wiring, wireless networks can be a quick and cost-effective small business networking solution. The wireless items which are used during working have many advantages, such as:

Increased efficiency

Improved data communications lead to faster transfer of information within businesses and between partners and customers. For example, salespeople can remotely check stock levels and prices while on sales calls.

Access and availability

Because wireless technology allows the user to communicate while on the move, you are rarely out of touch - you do not need extra cables or adaptors to access office networks.

Flexibility

Office-based wireless workers can network without sitting at dedicated computers and can continue to do productive work while away from the office. This can lead to new styles of working, such as home working or direct access to corporate data while on customer sites.

New opportunities

Wireless networking could allow you to offer new products or services. For example, many airport departure lounges, train stations, hotels, cafes, and restaurants have installed 'hotspot' Wi-Fi services to allow mobile users to connect their equipment to their 'home' offices while traveling.

Exercise 1:

Questionnaire for the apprentice

1. What IT subjects do you learn at school?
2. What do you practice mostly, at school?
3. What type of digitalization do you use in your everyday life?
4. Can you use this digitalization during work?
5. Can you name at least 5 software, digital gadgets or digital tools which you think will be found effective and productive during this job?

Exercise 2:

Mutual discussion

1. Your work activities at this workplace will be the following: (Naming the work activities).
2. In this company we use the following digital tools: (naming the digital tools in a company). Have you heard of them?
3. Have you used these digital tools before?
4. Please offer some other digital tools which you find relevant for this job? If you cannot think of any, please tell us what you use in your daily routine?
5. Please give us an assumption of what might be your outcome during this digital apprenticeship.
6. What we expect from you is the following: (naming the outputs of the digital apprenticeship).

Exercise 3:

Informative test

1. What digital tools did you have before starting the digital apprenticeship?
2. Did you find any of them useful during your digital apprenticeship?
3. Did you undergo training in the company, related to the digital tools which are used in the company for the job needs? If yes, how many hours/days? Do you find it productive?
4. What type of digital tools did you use in the company for obtaining your work activities?
5. Will you use these tools at school? Do you find them relevant for your schools' activities, and also for your daily routine, in general?

Self-Evaluation form

1. I found the Module for Methodology for the digitalization of apprenticeships helpful:

4. Very helpful 3. Helpful 2. Somewhat helpful 1. Not helpful

2. The methods for digital apprenticeships can be implemented during the digital apprenticeships in our company/our school:

4. Absolutely 3. To some extent 2. Very little 1. No

3. Using the Methodology for digitalization of apprenticeships can improve the digital skills of the apprentices to a:

4. Higher level 3. Satisfactory level 2. Low level 1. Cannot be improved

4. I am acquainted with digitalization of apprenticeship:

4. Yes, I have been working with this 3. I have heard of it, but not worked with it
2. I have heard of on-line work and study 1. It is the first time I hear something like this

5. According to this Methodology for digitalization of apprenticeships, the use of smart working devices:

4. Can improve the digital apprenticeships 3. Can help to some point while doing the apprenticeship
2. Does not improve the digital apprenticeship 1. Is wasting our time

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