Methodology of digital learning arrangements

The following chapter will discuss the methodology of digital learning arrangements within the Erasmus+ project UnInLeCo. The coaching framework was already presented in Chapter 2. UnInLeCo promotes the mutual learning experience between digital coaches and multipliers and multipliers and beneficiaries.

The main aim of the coaching process is to train and expand digital competencies for all participants. The participants should discuss the digital barriers in the everyday digital world and learn in and with them. The design of **digital learning arrangements** is essential here.

Learning principle of self-regulated learning and action competence

Digital learning arrangements require self-regulated learning. For this reason, the design of digital learning situations is ideally based on the principle of "complete action". For this purpose, learning situations are broken down into individual sequences so that the learner can carry them out independently, and the "teacher" acts as a learning process facilitator.

The learning process facilitator provides information and gives suggestions and assistance in the learning process. Consequently, the learners help shape the learning process and take responsibility for their competence development. This is especially important because, in the UnInLeCo project, we talk about informal learning processes oriented towards vulnerable groups' digital lifeworld.

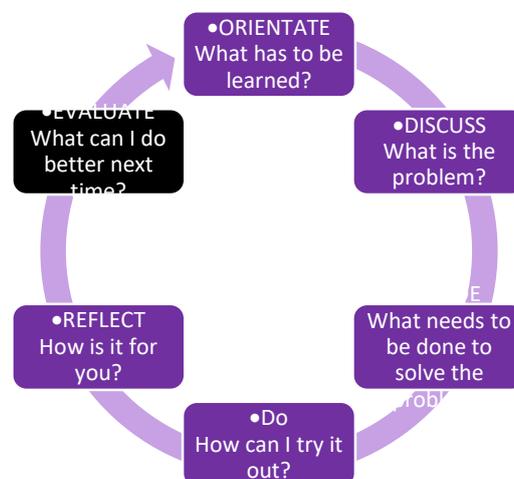The principle of complete action includes the following steps (BIBB, 2021):

Figure 7 Principle of complete action (BiBB, 2021; Wahl, 2005)

For example, the multiplier can inform the client of the possibility of digital technologies as an information platform (function "inform"). To do this, the multiplier tries to "**ORIENTATE**" in the first step and conveys why dealing with information gathering on the Internet is important. For example, the multiplier tells the advantages and disadvantages of information gathering on the Internet: The timeliness of information and multimedia are advantages. However, the spread of disinformation and subjectivity are disadvantages. The "Inform" step also means the multiplier learns more about the client's lifeworld. For example, by activating previous knowledge or asking about interest, e.g. which sources of information do you currently use and what are your experiences with them? In addition, the multiplier can generate attention, for example, by using a current example on disinformation and fake news, which is in the client's life reality.

In the next step, the "**DISCUSS**", the problems are discussed. For example, dealing with disinformation and the fear that fake news can trigger. The learner should get orientation in the learning area and recognise the benefits for him/herself. This is another essential reason for dealing with the learner's life world and needs. The multiplier has the task of dealing with the other person empathetically. This is usually easy because the multiplier knows the client's world well. In some cases, such as disinformation, it can also happen that one has a different opinion or is even shocked at how the other person thinks about certain things, which is why it is important to take on an observer role, to listen and to understand the needs and perspectives of the person.

The "DECIDE" step follows this, i.e. a solution is found in dialogue. Here the multiplier can convey his IT knowledge, for example, by referring to source criticism and fact checks or encouraging critical thinking. Next, the multiplier shows what means are needed to solve the problem. Finally, he explains possible solutions, backgrounds and contexts in simple language and presents practical examples that fit the lifeworld of the counterpart.

Important and, in this context, follows the fourth step, "**DO**". Here the multiplier shows the client how to use the resources, for example, how to check sources of digital content and what fact checks are available. It is important that after the "how-to-do-it", the client tries it out. After all, the practical application and personal engagement are the active learning phase. Ideally, the multiplier has an example up his sleeve that he shows the client and then asks him to critically check the source himself afterwards. The advice must be understood as a suggestion, as appreciative peer feedback, and not as "lecturing". So, the question in this step is, how can I try it out? How do I create a conversation at eye level to teach these digital skills in a low-threshold way?

In the next step, "**REFLECT**", the multiplier asks how the client is doing with it and what he/she thinks of it. Together we reflect and critically question the solution. Further examples or a deepening into the topic may arise, giving the multiplier a deeper insight into the problem.

Finally, there is the "**EVALUATE**" step, which is directed at the multiplier. Either through self-reflection or, if it suits, the multiplier is also given feedback to improve their discussion skills in the long term.

In the interaction between a multiplier and client, as well as a multiplier and digital coach, certain learning content will likely come up repeatedly. In this case, it is helpful to develop **digital learning scenarios** and make them available to the learners, in which existing learning materials are made available (chapter 4.1) or their own learning media are produced (chapter 5).

Here are some examples of digital learning scenarios for the explained topic: What is fake news? How does the fact check work? Basic digital skills are available and that accessibility is comprehensively checked to enable a positive learning experience in the digital space. An example is creating a digital repository with Open Educational Resources (OER).

Open Educational Resources

Also of interest in this context are OER, i.e., educational materials with an open licence that allows free access and free use, editing and redistribution by others without or with minor restrictions. OER can take various forms, including course materials, complete courses, books, curricula, course materials, textbooks, streaming videos, multimedia applications, and podcasts (OERinfo, 2023).

One international example is the "**Khan Academy**", developed by a non-profit organisation that aims to provide a free, world-class education for everyone, everywhere. More information here: https://de.khanacademy.org/

In the following, we present country-specific examples.

Open Educational Resources in Spain

The National Institute of Educational Technologies and Teachers (INTEF) has developed a series of projects that provide access to various online educational resources:

The "**EDIA project**" is a project that promotes and supports innovation and didactic experimentation in the classroom based on the development of open educational resources. It offers a constantly updated repository of open educational resources organized by materials (adaptable, modifiable, and collaborative) created and evaluated by teams of active teachers. https://cedec.intef.es/recursos/

The "**Adventure of Learning**" project aims to make learning produced in non-academic environments visible. It offers videos highlighting the importance of citizen learning experiences in life. These videos have a wide variety of content based on 8 areas or environments: urban, physical, natural, digital, research, intervention, learning, and relationships. http://laaventuradeaprender.intef.es/experiencias/acciones/cuidados

"**Procomun**" is a network of open educational resources where you can search, view, and download learning objects with open licenses for pre-university education. https://procomun.intef.es/

"**Image and Sound Bank**" aims to provide the educational community with audio-visual resources (photographs, illustrations, animations, videos, and sounds) grouped into collections. http://recursostic.educacion.es/bancoimagenes/web/

"**Educational Resources for Online Learning**" is a platform that offers different types of resources and collections according to different didactic itineraries created by active teachers for Primary and Secondary Education: https://intef.es/recursos-educativos/recursos-para-el-aprendizaje-en- linea/itinerarios-didacticos/

"**ExeLearning**" is a free and open program for creating educational content. https://intef.es/recursos-educativos/exelearning/ Also belonging to the Spanish Ministry of Education is the Ed@ad project, which presents a new model of an interactive book (a series of interactive books for each of the subjects in their different courses of Secondary Education), which allows students to take advantage of the benefits of Information and Communication Technologies to improve their autonomous learning and to speed up communication with their tutors, in an advanced technological environment: http://recursostic.educacion.es/secundaria/edad/

In addition to the resources provided by INTEF and the Spanish Ministry of Education, different autonomous communities have created repositories of open educational resources. For example, the Government of the Canary Islands has created Contenidos Medusa, which offers digital educational content (infographics, comprehension games, activities and learning objects) for Infant, Primary, Secondary

and Baccalaureate Education that can be used completely free of charge: https://www3.gobiernodecanarias.org/medusa/ecoescuela/recursosdigitales/

Similarly, the government of Extremadura has created the Educational portal of Extremadura where one can find resources, exercises, activities or very attractive animations organised by stages, levels and content blocks, which greatly facilitates the search for and location of materials: https://www.educarex.es/edutecnologias/recursos.html

This autonomous community has also created Educational Corners, a Website for each subject, where we will find a large bank of resources to enrich the teaching and learning of these subjects using ICT, as well as events, experiences and other news of interest. The materials are classified by courses, subjects, content blocks and type of resource (teaching units, videos, presentations, WebQuests...): https://rincones.educarex.es/

Educarm (Educational Portal of the Region of Murcia) has its own resources and links to ICT tools (authoring software, Internet and web, image, video and sound...) and other materials organised in the stages of Pre-school, Primary, Secondary and Baccalaureate, Vocational Training, Universities and Adult Education: https://www.educarm.es/home

CATEDU (Aragonese Centre of Technologies for Education) offers services to encourage and facilitate the use of ICT in education. Also organised by stages and subjects (from kindergarten to lifelong learning), there is a bank of downloadable teaching resources, as well as a collection of ICT tools for educational use and tutorials: http://facilitamos.catedu.es/

IEDA Project (Distance Learning in Andalusia): from its lifelong learning platform, we can access all the materials for the different courses of Secondary, Baccalaureate, Official Language School (English, French, German, Chinese), Vocational Training, University Entrance Exams, Training Cycles, Spanish Classroom, etc. https://www.juntadeandalucia.es/educacion/permanente/materiales/index.php?etapa=1

Several free digital libraries make it easier to read books without investing money in them. For example, the International Children Digital Library is a research project funded primarily by the National Science Foundation, the Institute for Museum and Library Services and Microsoft Research to create a digital library of outstanding children books worldwide. There are a total of 119 books available in the Spanish language. http://es.childrenslibrary.org/library/lang18.html

Cuentos para Dormir (Bedtime Stories in English) is a different educational idea that, based on the educational power of stories and their influence on memorising, aims to transmit values to children through hundreds of stories written by Pedro Pablo Sacristán. It also offers audio and animated stories. https://cuentosparadormir.com/

Plena Inclusion is an associative movement that fights in Spain for the rights of people with intellectual or developmental disabilities and their families. Plena Exlusción Extremadura has created the BIBLIOTECA FÁCIL EXTREMA DORII, a school library that is cognitively accessible and easy to understand. This virtual library has books in a digital or audio format that are easy to understand for the people who use it.

In addition to reading books, it also offers a series of guides on different topics, such as a guide to home economics, a dictionary guide to technology in an easy reading, 10 tips to educate in the use of the internet and social networks, how to attend a Zoom meeting, how to apply for a digital certificate online, etc. https://sites.google.com/inteligencialimite.org/bibliotecafacilextremadorii/p%C3%A1gina-principal

To address some of the problems faced by Ukrainian refugees or migrants, the Spanish Government has set up several educational resources for displaced Ukrainians. For example, Spanish-Ukrainian pictograms for children and teachers and protocols for schooling, reception and inclusion. Information available here: https://www.educacionyfp.gob.es/atencion-educativa-ucranianos/uk/recursos-educativos.html

The Andalusian Regional Government also provides a series of simple resources for learning the Spanish language, available through this link: https://www.juntadeandalucia.es/educacion/permanente/materiales/index.php?espanol#space

While the government of Extremadura has created a website called Acompañando a Ucrania (Accompanying Ukraine) where they offer emotional support resources, linguistic communicative support, equivalences of the Ukrainian education system and some tools such as google lens or google translator: https://sites.google.com/educarex.es/recurso-educarex-ucrania/recursos?authuser=0

Similarly, the government of Castilla la Mancha provides on this link https://www.educa.jccm.es/es/ucrania/recursos-alumnado-ucraniano resources for Ukrainian students such as illustrated dictionaries, pictograms, a collection of books in Ukrainian and UNHCR educational material for students from 6 to 18 years of age. The Government of Aragon has done something similar, and its resources can be accessed

here https://padlet.com/ecaaragon2022/recursos-para-el- profesorado-elaborado-por-el-equipo-de-coor-y8rqrml8kfcsyuu6

Open Educational Resources in Slovenia

One example is the interactive educational portal ucimse **UČIMse.com** (interactive exercises for grades 1 to 9). Users need to register here: https://ucimse.com

The **DIGITAL COMPETENCE ENHANCEMENT** portal is intended to support the professional development of educators, teachers, and principals in the field of digital competence enhancement. See more http://projekt-ddk.si/

Astra.si is intended for all students, pupils and students, and other knowledge seekers who want to refresh, deepen or acquire new knowledge. A Slovenian teacher, on his initiative, created it. See more https://astra.si/

Online classrooms are a joint initiative led by a private-owned TV network and a group of Slovenian teachers. The classrooms are available at https://voyo.si/5ka

VideoLectures.net is an open-access portal with recorded lectures from conferences, summer schools, workshops and science promotional events with accompanying documents, information, and links: https://videolectures.net/

Open Educational Resources in North Macedonia

From the end of September 2020, the Unique National Platform for Online Learning website was activated at the address: www.schools.mk

Despite some initial issues, it is successfully used to maintain online teaching. This fulfilled the requirements and the need for an optimized and unified platform for online teaching.

To fill the gap and provide good quality educational resources in 2020, we started working on **EDUINO**, a project that aims to collectively improve education through co-creation and innovation. All the resources are uploaded and available for use on the portal EDUINO. The platform provides educational materials and resources in seven segments aiming at three target groups: educators, parents, and kids/students. Segments such as:
- E-kindergarten classroom, preschool education
- E-classroom, primary education
- E-classroom, secondary education
- Video tutorials

- – Webinars
- – Resources intended for educational staff
- – Resources for personal growth and development

EDUINO has three platforms: EDUINO-teaching, EDUINO-Early Childhood Development, and EDUINO-Lab (soon available on the portal).

With schools temporarily closed, digital distance learning, where technology is available, can help children continue learning at home. Education experts have provided a list of free and open digital platforms, apps, and content that can be useful. The digital reading materials created by Unicef are as follows:

"**Think Equal**" programme helps build social-emotional skills in pre-school aged children: empathy, kindness, self-esteem, perseverance, critical thinking, conflict resolution, self-esteem, communication, self-awareness and more. https://issuu.com/unicefmk

"**Druzinata MELA**": Online story books available in Macedonian and Albanian for pre-school and early primary school-aged children: https://issuu.com/unicefmk

Step by Step: Digital audio picture books, digital learning activities, and sign language narration picture books available in Macedonian, Albanian, Turkish, and Bosnian for pre-school and early primary school-aged children. See more here: https://stepbystep.org.mk/en/biblioteka

The latest activity that has gained popularity among the citizens is the application "**The World of Bibi**", which is a collection of educational and entertaining games with the image of Bibi (an animated character from animation series which tell different stories for children) and is intended for children aged 2 to 8 years. Interestingly, this application also observes the social moment, the limited time available for play during the day. After the expiration of the time, the application is locked and will be available for use the next day. Information about the application can be found at this link: https://www.bibi.mk/

Also, there is a free YouTube channel where you can find stories, cartoons, songs, and other interesting interactive digital content. Link of the channel: https://www.youtube.com/@SvetotnaBibi/videos/

Another good initiative is the webpage from the portal "**PORTALB – CTRL+Z**", which promotes news about the latest technology, particularly about social network evolvements. Here citizens can learn more about the use of social media and how to

protect themselves from different digital threats. Here you can learn more about WhatsApp, Instagram, Tik-Tok trends, Twitter, etc. More information about this initiative can be found at this link: https://portalb.mk/ctrl-z-new/

During the Covid-19 pandemic, western Balkan education systems were unprepared for a major digital transformation of teaching and learning processes. The same situation was in the education system in North Macedonia. To overcome this, the project "Creating an environment that enables the improvement of the quality of teaching and learning through co-creation and innovation" marked its 2019 awards with the official launch of the "**EDUINO platform**" during the Covid-19 pandemic in March 2020.

The **ЕДУИНО** collective portal is led by the Bureau of Education Development, an institution that is responsible for preschool, primary and secondary education. The Ministry of Education and Science and the Ministry of Labour and Social Policy, together with the Bureau, are actively involved in the activities of EDUINO and help by promoting available resources, and approve new games, activities, and materials. The project aims to encourage innovation in education and create EDUINO-community, a group for professional cooperation and sharing, to collaboratively create resources and strengthen the skills of the teaching staff. ЕДУИНО – the collective portal for digital educational content, collaboration, and professional development, based on the principles of community building, together with which innovative space, resources and tools for quality education are created. Following these principles, the success of the collective portal is the success of the entire EDUINO community, which counts over 30,000 members. The project is financed by the Government of the United Kingdom through the British Embassy in Skopje, with the support of the Ministry of Labour and Social Policy, the Ministry of Education and Science, the Bureau of Education Development and UNICEF. More information about this project can be found here: https://www.eduino.gov.mk/

Open Educational Resources in Germany

One example is the "**Anton App**" from Germany, a learning platform for schools and an interactive learning app for pupils. It contains basic exercises for the respective subjects, oriented towards the curricula and sorted in each case into grades. There are topics in mathematics, German, physical education, music, and German as a foreign language. The use of the app is mostly free of charge. More information here: https://anton.app/de/

You can find more **OER** from Germany here: https://open-educational-resources.de/materialien/oer-verzeichnisse-und-services/

OER can also be found under "**YouTube**". For example, SlideCampus, which teaches PowerPoint as a medium for good presentations and presents various presentation options and methods: https://www.youtube.com/channel/UC153TuWMm-M_Mz6GZprj6FQ

Another good practice is "**Easy German**", which has over 1,48 million abonnements. Easy German is an organization which helps foreigners to get to know the German culture and to support building German language skills: https://www.youtube.com/@EasyGerman

Interesting in this context is also the initiative "**Silver Tipps**". One of the digital ambassadors is "Helga" who helps elderly people to get to know the digital world and supports them by handling digital devices: https://www.silver-tipps.de/category/helga-hilft/ Her colleague Mr Reitzes has a column about the digital world: https://www.silver-tipps.de/category/reitzes-digitalkolumne/ and https://digital-botschafter.silver-tipps.de/

Another example for peer-learning is **PIKSL**: https://piksl.net/bildungsangebote/ausbildung-digitale-teilhabeberaterinnen/

The "**OPEN vhb courses**"are non-curricular, open online courses Bavarian universities offer. The ongoing courses can be used free of charge by anyone interested at any time. Credit points (ECTS) cannot be earned. The OPEN vhb course program is constantly being expanded and also offers an English course: https://open.vhb.org/

In addition to OERs, which are more informational, there are also learning games that help develop skills through play. The so-called serious games are games with a serious learning objective, i. e. they serve the direct development of competencies.

Especially about media-critical competencies, the following learning games have been well-tested in Germany. The learning game "**Fake It to Make It**" helps us to understand the financial, technical and content mechanisms behind fake news. By creating and managing their own fake news empire, players experience the function of news in social media but can also succumb disturbingly quickly to the pull of success. The game can be played free of charge in German in the web browser here: http://www.fakeittomakeit.de

Another game is "**Bad News**", developed to strengthen media competence. This Dutch game is also dedicated to Fake News but is less extensive than "Fake It To Make It" and gives a playable lesson on how Fake News works. The game is also available in English and can be played free of charge in the web browser here: https://www.getbadnews.de/#intro

In the German game "**Orwell**", the players are tasked by the state to monitor suspicious citizens' social media profiles and websites in search of clues to stop a series of terrorist attacks. A fascinating game about the risks and limits of monitoring people, which simultaneously addresses how people deal with personal information in social networks. The game is available as a paid version for the PC: http://www.surpriseattackgames.com/portfolio-items/orwell

Conclusions: Use existing learning resources

In the last decade, there have been many initiatives by organizations and individuals who support other people in their digital skills development. As a result, there is a large number of video materials, readings, podcasts, etc., in which digital problems are discussed, and possible solutions are shown. The challenge here, however, is the search and selection of suitable material.

Here, the digital coach and the multiplier can also support each other in their strengths. For example, the digital coach can assess whether the content of the learning resource is technically and professionally corrected. The multiplier knows whether his clients can understand and learn with the learning resource (e.g. language, scope and depth of the learning content and type of digital medium). A learning resource can inspire a digital learning arrangement even if inappropriate. For example, when a video is not shown, but the content of the video is reproduced by the multiplier in a face-to-face conversation. Or, if a certain learning topic occurs with several clients, it can be useful to design and produce digital media yourself. This is addressed in the next chapter.