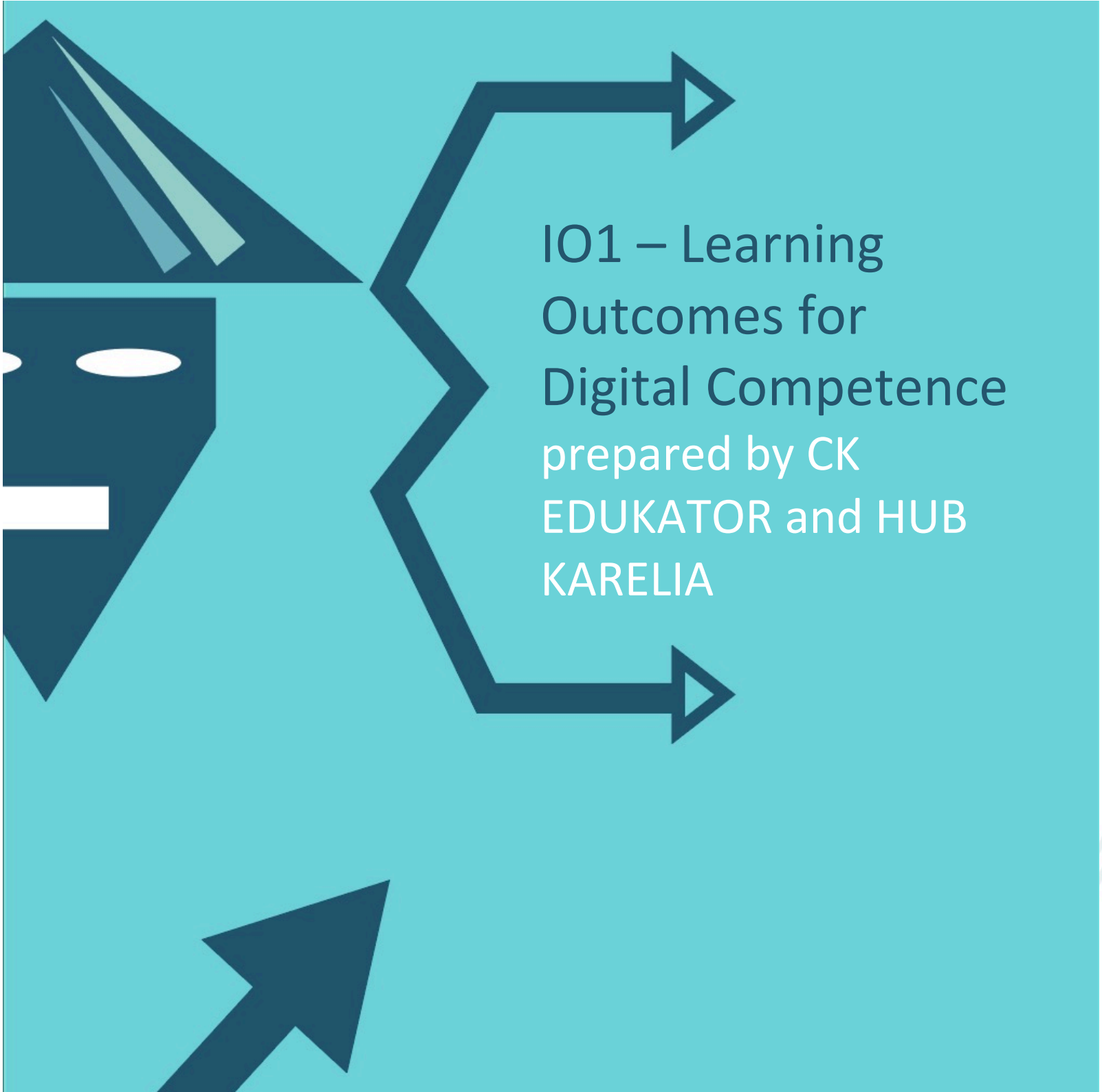


IO1 – Learning Outcomes for Digital Competence

prepared by CK EDUKATOR and HUB KARELIA

Learning Outcomes for IO1 Addressing: Digital Competence

The following learning outcomes matrix presents the knowledge, skills and attitudes, which learners will acquire through engaging with and completing activities presented through the NEET- SYSTEM Online Educational Escape Room challenges.

These learning outcomes will be achieved with respect to the competence area: **Digital Competence**. The matrix describes the learning outcomes of the resources to be developed by **EDUKATOR CK and Hub Karelia** in relation to this competence area.

"Digital competence involves the confident and critical use of Information Society Technologies (IST) for work, leisure and communication. It is underpinned by basic skills in ICT: the use of computers to retrieve, assess, store, produce, present and exchange information, and to communicate and participate in collaborative networks via the Internet "(European Parliament and the Council, 2006).

Digital Competence can be defined as follows:

Information and data literacy it involves ability to browse, search and filter data, information and digital content, identify, locate, access, retrieve, store and organise information.

Communication and collaboration through digital technologies as well as **Digital content creation.**

Knowledge about **Safety** that includes the privacy protection, ability to protect devices and personal data.

Evaluation & Problem solving it's the foundation for creative use of digital technologies, solving technical problems, identifying digital needs and competence gaps.

Nowadays, usage the internet and digital technologies for learning have become highly relevant directions. Today's digital environment of living demands functional digital competence understood as certain knowledge, skills and attitudes.

Teachers need to be able to understand relevance of using technology in transferring knowledge in engaging and entertaining way for learners. Acting and interacting with technology, understanding it and being able to use it for everyday practice is a crucial quality of modern-day student.

"In general, digital competence can be defined as the creative, critical and confident use of information and communication technologies to achieve the objectives related to work, employability, learning, leisure, inclusion and participation in society."[1]

1 https://www.brynmawr.edu/digitalcompetencies/what-they-are/digital-survival-skills/15-strategic-web-and-database-searching

Key Competence Area:	On successful completion of this resource, learners will be able to:			
	Levels	**Knowledge**	**Skills**	**Attitudes**
Digital Competence	***Introductory***	• Understand how information is generated, managed and made available. • Understand how information can be found in different devices and media. • Analyse retrieved information • Transform information into knowledge. • Understand how information is stored on different devices/services.	• Access and search for online information, articulate information needs, find relevant information for own needs. • Collect, process, understand and assess information, data and digital content critically. • Manage, store and organise information, data and digital content for easy retrieval.	• Plan to work individually to integrate technologies into the activities of everyday life. • Demonstrate ability to use the basics (terminology, navigation, functionality) of digital devices for elementary purposes.

	Description of the Escape Room Challenge: This escape room challenges will focus on supporting learners to develop their skills in the areas of identifying, locating, retrieving, storing, organizing and analysing digital information. Moreover, learners will learn how to assess the relevance of information and technology in their life and education. ***Server room – Introductory level*** In this challenge, learners will be promoted to solve tasks about the use of digital technology. They will be invited to an engaging script of the escape room that will set a background of their tasks. Firstly, learners will be asked to figure out how to open QR code. Once they open the encoded message, they will be asked to solve a short riddle. Then, learners will be encouraged to develop their abilities of searching for relevant contents. They will learn to transform information into knowledge.Once they manage to find the password, they will be able to proceed to next level. ***Escaping cyberspace – Introductory level*** In this escape room, students will be asked to solve three tasks bringing them closer, in accordance with the theme of this escape room to escape from cyberspace. At this level, learners will focus on its exploitation and familiarization with the laws governing here. Students will obtain: knowledge of new computer related concepts, knowledge of finding information on various devices and media by entering the appropriate commands. Both tasks will consist in combining a concept or command in pairs with the appropriate definition. After completing the tasks correctly, they will receive a password to proceed to the next level.

	Intermediate	• Aware of different digital communication means (e.g. email, chat, VoIP, video-conference, SMS). • Know how messages and emails are stored and displayed. • Know how technologies and media can enable different forms of participation. • Understand the dynamics of collaborative work and of giving and receiving feedback. • Know about ethical issues in digital media.	• Interact through various digital devices and applications. • Share the location of the information and the digital content found. • Use technologies and media for teamwork and collaboration. • Create, adapt and manage one or more digital identities.	• Apply techniques to express his/her creativity and to improve his/her professional performance. • Demonstrate ability to connect, share, communicate, and collaborate with others effectively in digital environments.

	Description of the Escape Room Challenge: This escape room challenges will build on the first activity to introduce different digital competences. Learners will acquire skills to communicate in digital environments, share resources via online tools, connect and collaborate with others through digital tools, interact and participate in communities and networks. ***Server room – Intermediate level*** In this escape room learners will face three tasks. Firstly, they will be asked to decipher QR code. In the second task, learners will have chance for simple communication with online messenger bot. They will develop their skills of following instructions and creative thinking. Lastly, learners will have to present their skills in searching for information with use of online sources. They will also learn to use useful online tools and aps such as google maps. After completing this level, learners will have an intermediate level of autonomy and they will be able to further develop their digital competence on their own. ***Escaping cyberspace – Intermediate level*** At this stage, students will face three tasks. The first of these will acquire knowledge of various digital communication and data transmission methods, which will allow the student to find a way to move his person trapped in the virtual world between different devices. In the next challenge, they will gain the knowledge of a binary system and ways to convert decimal numbers to binary. In the last task at this stage, students will have to demonstrate knowledge of how to send large files by filling in missing gaps in the text and calculating how many seconds they need to send the specified file.

	Advanced	• Know which software/application fits better the kind of content s/he wants to create. • Contribute to the public knowledge domain (e.g. wikis, public forums, reviews). • Know about different databases and resources that can be remixed and re-used . • Know how digital systems, software and processes work.	• Create digital content in various formats, edit and improve own content creation or others. • Modify, refine, improve and combine existing resources to create digital content and new, original and relevant knowledge.	• Improve ability to gather, organise, analyse and judge the relevance and purpose of digital information. • Demonstrate an informed, open-minded, and balanced attitude towards Information. • Identify opportunities and is comfortable to explore and exploit them. • Apply digital technologies to increase personal and professional effectiveness and efficiency.

	Description of the Escape Room Challenge: In this escape rooms, learners will be challenged to learn more about how to create and edit new digital content, integrate and rebuild prior knowledge and content, make artistic productions and computer programming. ***Server room – Advanced level*** This level will challenge learners with four tasks. First of them will require to undertake a more advanced research in order to find appropriate tools to identify the requested name of the colour. Then, learners will have to prove their knowledge and understanding in the area of types and extensions of digital files. The third task will involve learner's digital creation competences. They will have to use as well their creative and critical thinking skills. In the last task, learners will be introduced to a well-known method of coding messages. Their role will be to understand its way of working and decode the secret message. After completing this level learners will have an advanced digital competence level, they will be able to solve more complex problems to suit their needs. ***Escaping cyberspace – Advanced level*** At this level, students will face four tasks. The theme focuses on using a 3D printer to get out of cyberspace. The next tasks consist in making the right choice of software for achieving a specific result, overcoming the maze of binary numbers in the hardware settings, arranging the order of actions leading to printing the object on a 3D printer.

	Expert	• Understand the risks associated with online use. • Understand the terms of use of online services and can act prudently in this knowledge. • Understand how his/her own digital footprint can be seen by others. • Know sources of information and where to find help for problem-solving and trouble shooting. • Understand how meaning is produced through multimedia and technologies.	• Protect personal devices and digital content. • Identify possible technical problems and solve them. • Adjust and customise digital environments to personal needs. • Innovate using digital technology.	• Demonstrate awareness and knowledge of legal and ethical aspects on the use of digital content. • Demonstrate capacity to protect digital devices. • Lead other people to develop their digital competence.

Description of the Escape Room Challenge:

In this final escape room challenges, learners will be challenged with the knowledge in the area of personal information and data protection, digital identity and digital content protection, security measures and responsible use of technology. They will learn to identify needs in the use of digital resources, make informed decisions about the most appropriate digital tool depending on the purpose or need, solve conceptual problems through digital media or digital tools, use technology creatively, solve technical problems, and upgrade the competence of their own and others.

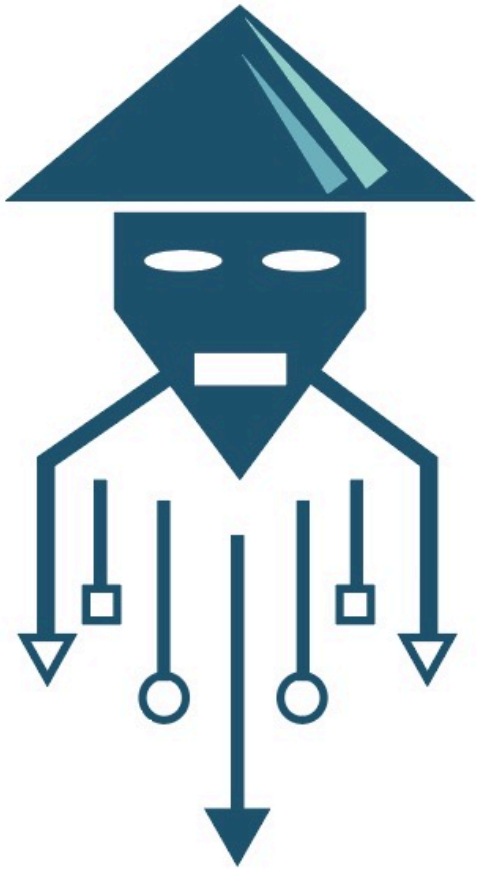
Server room – Expert level

In this escape room learners will face six tasks. Firstly they will build awareness on the digital footprint left in the online environment by their online activities. Then, they will have to solve the quiz proving their knowledge on the topic of online safety. In their third task they will be asked to use in practice their knowledge about MS Excel calculations and formulas. In the fourth question learners will be asked about different kinds of BIAS. Fifth task will require to analyse the strengths and weaknesses of human/computer collaboration. And in the last task they will have to prove their both logical and basic programming skills by making simple program to draw particular shape.

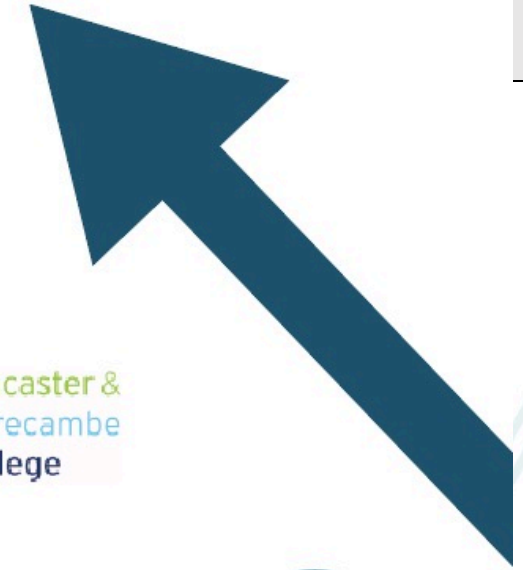
After completing this level, learners will have an expert level of competence so that they can lead others to develop their digital competence in selected areas. They can use technology to suit their needs in complex settings.

Escaping cyberspace – Expert level

In this escape room, students will face six challenges. At first, the narrative will take them to the task of encrypting and decrypting passwords. In the second challenge, they will learn about the essence of computer algorithms and programmatic thinking. In the challenge of information on the protection of personal data, they will learn about the potential risks associated with making sensitive and personal data public on the web. In the programming task, the game at code.org, learners will gain practical skills on basic instructions for performing programmed operations. Another task used in the narrative will be a task related to logic and syllogistic thinking. The last puzzle is related to the subject of cryptography and information encryption - a cryptogram with parallel encryption.



NEET SYSTEM



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