



Development and Adaption of Learning Tools

Work package n°3 - Training Prototypes

Leading organisation: CWEP



Co-funded by
the European Union

Table of Contents

1. Introduction.....	3
1.1 Expected results	3
1.2 Criteria for tool identification	3
1.3 References.....	4
1.4 Activity timeframe.....	4
2. Learning tools collected by Archivio della Memoria (Italy)	5
2.1 Overview of learning tool trends at national level.....	5
2.2 Identification and selection of data tools	6
2.3 Recommendations	9
3. Learning tools collected by CWEP (Poland).....	10
3.1 Overview of learning tool trends at national level.....	10
3.2 Identification and selection of data tools	11
3.3 Recommendations	14
4. Learning Tools Collected by ELC (Spain).....	15
4.1 Overview of learning tool trends at national level.....	15
4.2 Identification and selection of data tools	16
4.3 Recommendations	18
5. Learning tools collected by GEIGER and PHFR (Germany).....	19
5.1 Overview of learning tool trends at national level.....	19
5.2 Identification and selection of data tools	20
5.3 Recommendations	25
6. Learning Tools Collected by ProEduca (Czech Republic)	26
6.1 Overview of learning tool trends at national level.....	26
6.2 Identification and selection of data tools	27
6.3 Recommendations	30
7. Proposal of learning tools for development	31
7.1 Selected tools	31
7.2 Key findings and recommendations from partners	34

1. Introduction

The activity Development and Adaption of Learning Tools has the main objective of the identification, collection, selection and adoption of learning tools for the context of the project and target audience.

DataPro supports a) young people in understanding data protection; b) teachers by providing T&L tools in this respect. Consequently, the objectives are to a) collect, adapt and develop learning tools and materials; b) exploit and disseminate these tools and materials to schools and other stakeholders.

The Consortium covered the learning goals through 32 learning tools that they identified and some of them will be adopted in DataPro.

Based on the compilation of the learning tools, 5 learning tools will be generated in [MECyS](#).

1.1 Expected results

5 previously developed learning tools will be adapted to serve the needs of the target group in school context. The tools for adaptation were selected based on the research conducted by partners.

Specifically, game-based/quiz-based learning and micro-learning tools will be created.

A compilation of research findings will be published on the DataPro website.

1.2 Criteria for tool identification

While working on the activity, partners considered that the learning tools they were to identify and collect focus on the following criteria:

Compulsory	To be selected	Additional aspects
<ul style="list-style-type: none">✓ Respond to the theoretical foundation of work package 2 in relevance to data protection✓ Online✓ Free to use	<ul style="list-style-type: none">➤ Provide hands-on experience (e.g. online memory cards)	<ul style="list-style-type: none">✓ Provide self-learning materials or that can be used in or adapted for courses organized by trainers.✓ Provide educational resources that can be adopted for school T&L context.
	<ul style="list-style-type: none">➤ Propose game-based learning options (e.g. an online educational escape room)	
	<ul style="list-style-type: none">➤ Are Quiz-based learning tools (e.g. a mobile quiz on GDPR)	
	<ul style="list-style-type: none">➤ Provide mobile micro-learning options (e.g. in a html-based set of micro-learning modules on cybersecurity basics)	

1.3 References

Partners were to consult the following resources when working on the activity:

<https://mecys.eu/results/> (Interactive Learning Resources)

<https://cyber-geiger.eu/> (Fundamentals and technical assumptions for the GEIGER mobile learning app)

<https://community.cyber-geiger.eu/games/> (The 4 learning tools developed in GEIGER)

<https://digitaltrust.pages.fhnw.ch/dpia-tool/#/> (Example of DPIA tool developed by GEIGER)

<https://digitaltrust.pages.fhnw.ch/mecys-assessment/index.html> (Example of MECyS self-assessment tool on data protection)

1.4 Activity timeframe

Task & Responsibility
>>> Activity start <<<
Online meeting with work package activity leading organisations
Activity guidelines from CWEP
Validation of guidelines by partners
Research and activity contributions by partners (with the involvement of associated partners/experts)
Compilation of partner reports and selection of 5 learning tools by CWEP
Overview and mutual quality check session on selected learning tools by concept workshop participants
Updates to the compiled report by CWEP
Validation and confirmation of 5 learning tools for development by cyberGEIGER
>>> Activity end <<<

2. Learning tools collected by Archivio della Memoria (Italy)

2.1 Overview of learning tool trends at national level

In Italy, the integration of advanced educational tools in teaching data protection to young learners and in training teachers on the same topic, has been gaining significant traction. This includes the use of gamification, mobile applications, quizzes, interactive content and VR/AR technologies. Furthermore, blockchain technology is being increasingly explored for its potential in the educational sector.

Gamification has been a prominent trend in Italian education, leveraging game mechanics such as points, levels and badges to enhance student engagement and motivation. Platforms that merge gamification with microlearning are particularly effective, making learning sessions more interesting and less time-consuming through team assignments and leaderboards. Interactive games, such as virtual escape rooms, provide an enjoyable learning experience, facilitating the comprehension of complex concepts like data protection in a playful manner.

Mobile applications have revolutionised the educational landscape by offering flexibility and accessibility, allowing students to learn at their own pace, anytime and anywhere. These apps often incorporate short, focused lessons along with interactive elements to keep students engaged. In Italy, educational apps focusing on data protection have been developed, aiming to provide students with essential knowledge about privacy and digital security.

Online quizzes serve as valuable tools for evaluating and monitoring students' progress. They help in identifying areas where students need improvement and promote active learning and interaction. Quizzes are commonly integrated into educational apps, enhancing the learning process by offering immediate feedback and keeping students engaged.

Virtual Reality (VR) and Augmented Reality (AR) create immersive learning environments where students can interact with educational materials in a more engaging way. These technologies are particularly beneficial for subjects that are abstract or complex, such as data protection, by providing hands-on experiences that deepen understanding.

Blockchain technology is emerging as a significant trend in Italy's educational sector. It offers secure and immutable records of educational achievements, ensuring authenticity and transparency. Blockchain supports reward systems where students can earn tokens for their achievements, thereby motivating engagement. Additionally, blockchain facilitates decentralised education platforms that offer a variety of courses and materials from around the globe, increasing accessibility and diversity in education.

In Italy, several initiatives have been implemented to incorporate these modern educational tools into teaching data protection. For example, educational programs that incorporate gamification are actively being developed to make the learning process more engaging for students. Such programs align with global educational trends and ensure that Italian students benefit from interactive and modern learning methods.

References:

- ANSA. (2023, March 22). Educazione digitale: il trend delle app per la didattica a distanza (Digital Education: the trend for distance learning apps). ANSA. https://www.ansa.it/sito/notizie/economia/2023/03/22/educazione-digitale-il-trend-delle-app-per-la-didattica-a-distanza_41b3f5b8-52f2-48b9-87c4-3d4a9b8a6b64.html
- EduTech Italy. (2023, January 30). Gamification in Education: Enhancing Student Engagement through Play. EduTech Italy. <https://edutechitaly.it/gamification-in-education-enhancing-student-engagement-through-play>
- Ministry of Education (2022). Linee guida per l'uso delle tecnologie digitali nella scuola italiana (Guidelines for the use of digital technologies in Italian schools). Ministry of Education. <https://www.miur.gov.it/documents/20182/2432358/Linee+Guida+Tecnologie+Digitali.pdf>
- Turturro, M. (2023, April 12). The Role of Blockchain in Italian Education. Blockchain Italy. <https://blockchainitalia.it/role-of-blockchain-in-italian-education>
- Valzano, S. (2023, June 5). VR e AR: il futuro dell'educazione in Italia (VR and AR: the future of education in Italy). EdTech Magazine. <https://edtechmagazine.it/vr-ar-futuro-educazione-italia>

2.2 Identification and selection of data tools

Tool name	Tool type	Key words	Description	Link	Adaptability potential
Kahoot!	Quiz-based	Interactive, Game-based, Educational, Assessment	Kahoot! is an interactive learning platform that allows teachers to create quizzes, surveys, and discussions. It engages students through game-based learning, where they can answer questions on their devices in real-time. The platform provides immediate feedback and encourages active participation.	Computer Security and Privacy Quiz	It can be used for lessons on cybersecurity, understanding GDPR, Internet safety workshops and digital literacy curriculum.

Common Sense Education	Self-assessment	Digital Literacy, Online Safety, Interactive, Educational	Common Sense Education offers a variety of interactive lessons and self-assessment tools focused on digital citizenship and data protection. It provides resources and activities to help students understand the importance of online privacy and how to protect their personal information.	Pause and Think Online (for first graders)	Useful for digital literacy curriculum, Internet safety workshops and lessons on understanding data protection and privacy.
Spoofy	Game-based, Interactive Learning	Cybersecurity, Children, Education, Game-based	Spoofy is an online game designed to teach children about cybersecurity in an engaging and interactive way. It covers essential topics such as recognizing phishing attempts, creating strong passwords, and understanding online privacy. The game uses storytelling and challenges to educate young learners about staying safe online.	A fun game about the internet	Ideal for lessons on cybersecurity, Internet safety workshops, digital literacy curriculum, and introductory workshops on data protection principles.
Safer Kids Online	Interactive Learning, Hands-on Learning	Cybersecurity, Awareness, Educational, Interactive	Safer Kids Online is a platform by ESET designed to teach children about online safety and cybersecurity. It offers interactive activities, educational videos, and articles to help youngsters understand how to protect their personal information, recognize cyber threats, and navigate the internet safely.	Kids Zone	This tool is adaptable for lessons on cybersecurity, workshops on understanding GDPR, digital literacy curriculum and Internet safety workshops. It provides resources for both students and teachers to enhance their

					knowledge and skills in online safety.
Data Challenge Game	Quiz-based, Game-based, Interactive Learning, Hands-on Learning	Data Protection, Gamification, Interactive, Educational	The Data Challenge Game is an interactive, educational game designed to teach young learners about data protection and online safety. The game combines engaging scenarios with quiz questions to test and enhance students' knowledge about GDPR and digital privacy. It provides a hands-on learning experience through gamified content, making complex topics accessible and fun.	The Data Challenge	Suitable for lessons on cybersecurity, workshops on understanding GDPR, digital literacy curriculum, and Internet safety workshops.
Band Runner	Game-based, Interactive Learning	Gamification, Online Safety, Education, Interactive	Band Runner is an educational game designed to teach children about online safety. Players navigate obstacles while collecting points and must answer questions correctly to continue. This game emphasizes safe online behaviour through engaging gameplay, promoting critical thinking and decision-making skills regarding internet use.	Learn how to Play Band Runner	Ideal for lessons on cybersecurity, internet safety workshops and digital literacy curriculum. It can be incorporated into broader discussions about digital citizenship and responsible online behaviour.
Safe Online Surfing (SOS)	Game-based, Interactive learning, Self-assessment, Quiz-based	Cyber Safety, Digital Citizenship, Online Safety, Gamified	Safe Online Surfing (SOS) by the FBI is an interactive program designed to educate students in grades 3-8 about cyber safety and digital citizenship. Through grade-specific	Surf City (for sixth graders)	The tool can be adapted for lessons on cybersecurity, workshops on understanding digital

		Learning	games and quizzes, students learn about topics like online etiquette, recognizing scams and safeguarding personal information. The platform also includes a monthly competition where schools can compete nationally, with high-scoring schools receiving visits from FBI agents.		safety principles, digital literacy curriculum, and Internet safety workshops. It provides a comprehensive, engaging approach to teaching online safety and responsible internet usage.
--	--	----------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

2.3 Recommendations

In teaching and learning about Data Protection, Privacy, Cybersecurity and the GDPR, it is important to take into account the following aspects and suggestions:

1. **Incorporating a variety of digital tools**, such as Kahoot! for quiz-based learning, or Common-Sense Education for self-assessment activities. These tools can enhance student engagement and ensure comprehensive understanding of data protection principles.
2. **Integrating platforms for online safe surfing**, such as the one created by the FBI, in order to teach students about online safety and digital citizenship through grade-specific games and quizzes. This kind of interactive learning tool can be adapted for lessons on cybersecurity and digital literacy workshops, providing a practical and engaging approach to online safety education.
3. **Employing gamification methods** to make learning about data protection fun and motivating, create interactive challenges and reward systems that can help reinforce important concepts.
4. **Utilising mobile apps**, which offer flexibility and accessibility, allowing students to learn at their own pace. Customizable lessons on these platforms can focus on data protection vocabulary and scenarios, making the learning process relevant and engaging.
5. **Using interactive learning platforms** to propose or create multimedia-rich lessons that incorporate quizzes, videos, and collaborative activities. These platforms can make abstract concepts more tangible and easier to understand.
6. **Encouraging the use of self-assessment tools** like those offered by Common Sense Education, to help students evaluate their understanding of data protection and identify areas for improvement. These tools can be integrated into regular classroom activities or used as homework assignments.

7. **Exploring the potential of VR and AR technologies** to create immersive learning environments. These tools can help students visualise and interact with data protection concepts in a more engaging and memorable way.
8. **Considering the application of blockchain technology** to maintain secure and immutable records of educational achievements. This can ensure the authenticity of student accomplishments and support a decentralised approach to education.
9. **Ensuring that the selected digital tools and methods are adaptable for different educational settings**, such as lessons on cybersecurity, workshops on understanding GDPR, and comprehensive digital literacy curricula. This flexibility can help cater to the diverse learning needs of students.

3. Learning tools collected by CWEP (Poland)

3.1 Overview of learning tool trends at national level

Educational tools have evolved with advanced technologies like gamification, mobile apps, quizzes, interactive content and VR/AR, making learning more engaging. Blockchain technology is also gaining interest, especially in children's education.

Gamification uses game mechanics (points, levels, badges) to boost engagement and motivation. Platforms combining gamification with microlearning make studying interesting and less time-consuming through team assignments and leaderboards. Interactive games, like virtual escape rooms, make learning enjoyable.

Mobile apps revolutionize education by offering flexibility and accessibility, allowing students to learn anytime, anywhere. These apps use short, focused lessons and interactive elements to keep students engaged.

Online quizzes help evaluate and monitor students' progress, identifying areas for improvement. Quizzes, integrated into educational apps, promote active learning and interaction.

VR and AR create immersive environments for students to interact with educational materials, beneficial in subjects like science and engineering. These technologies make abstract concepts come alive, providing a deeper understanding through hands-on interactions.

Blockchain enables secure, immutable records of educational achievements, ensuring authenticity and transparency. It supports reward systems where students earn tokens for achievements, motivating engagement. Blockchain also fosters decentralized education platforms offering diverse global courses and materials, increasing accessibility.

In Poland, gamification is being actively integrated into education. For instance, the course "Grywalizacja w edukacji – wykorzystanie gier w szkole podstawowej" demonstrates how game-based learning can be applied in primary schools to enhance student engagement and motivation. This approach aligns with global trends, ensuring Polish students benefit from modern, interactive educational methods.

Summarizing, modern educational tools create engaging and effective learning environments by integrating gamification, mobile apps, quizzes, VR/AR and blockchain.

References:

- Grywalizacja jako trend w edukacji. (n.d.). Issuu. https://issuu.com/edukacja-pomorska/docs/ep_114_online/s/17372711.
- Najważniejsze trendy w e-learningu w 2023 roku. (2023, May 22). GroMar. <https://gromar.eu/blog/najwazniejsze-trendy-w-e-learningu-w-2023-roku/>.
Tworzenie aplikacji edukacyjnych za pomocą generatorów aplikacji mobilnych | AppMaster. (n.d.). Appmaster.io. Retrieved July 10, 2024, from <https://appmaster.io/pl/blog/tworzenie-aplikacji-edukacyjnych-za-pomoca-generatorow-aplikacji-mobilnych>.
admin. (2021, March 16). Trends in EdTech that Take Education to the Next Level. Safe Search. <https://www.safesearchkids.com/trends-in-edtech-that-take-education-to-the-next-level/>.
- Raj, N. (2023, March 15). The Future Of Blockchain Technology In Education. ELearning Industry. <https://elearningindustry.com/the-future-of-blockchain-technology-in-education>.
- CRP. (n.d.). Grywalizacja w edukacji - wykorzystanie gier w szkole podstawowej. Centrum Rozwoju Personalnego. Retrieved July 10, 2024, from https://crp.wroclaw.pl/kurs/grywalizacja-w-edukacji--wykorzystanie-gier-w-szkole-podstawowej-108.html?gad_source=1&gclid=CjwKCAjw4ri0BhAvEiwA8oo6F37GbZhEV9U5-n5LHtVeO7krWbU9vv7QlhNqvhqB5MxWKhDNJ5o-2RoCfGkQAvD_BwE.

3.2 Identification and selection of data tools

Tool name	Tool type	Key words	Description	Link	Adaptability potential
Interland (by Google)	Game-based	internet safety, online privacy, cybersecurity	Interland is a web-based game by Google, part of the “Be Internet Awesome” program. It teaches children	Interland	cybersecurity lessons, digital literacy curriculum, Internet safety

			<p>about internet safety, online privacy, and digital citizenship through interactive adventures. Players navigate different lands, each focusing on aspects of safe online behaviour, such as safeguarding personal information and recognizing scams.</p> <p>It helps children develop critical thinking skills for navigating the digital world safely.</p>		workshops
Happy Onlife	Game-based	online safety, digital citizenship, cyberbullying prevention	<p>Happy Onlife is an educational game designed to teach children about online safety and digital citizenship. Through interactive gameplay, children learn how to navigate the Internet safely, recognize cyberbullying, and understand the importance</p>	Happy Onlife	cybersecurity lessons, digital citizenship curriculum, anti-cyberbullying programs

			of protecting personal information.		
Datak	Game-based	data protection, privacy awareness, personal data	Datak is a serious game focused on educating children about personal data and privacy. Players navigate scenarios where they must make decisions about sharing personal information, learning the consequences of their actions. The game aims to raise awareness about data protection and online privacy.	Datak	data protection workshops, online privacy classes, digital literacy curriculum
Be Secure	Quiz-based	online security, digital skills, privacy basics	Be Secure is an online quiz designed to test and enhance children's knowledge of online security and privacy. Through a series of questions, it covers fundamental topics such as password creation, recognizing phishing attempts, and securing personal information online.	Be Secure Quiz	online security workshops, digital skills classes, privacy education

<p>Safer Internet Day Quiz</p>	<p>Quiz-based</p>	<p>online safety, digital literacy, internet awareness</p>	<p>This quiz, aimed at children aged 7-11, is part of the Safer Internet Day initiative. It tests students' knowledge on various aspects of online safety, helping them understand the importance of safe internet practices and how to protect their personal information.</p>	<p>Safer Internet Day Quiz</p>	<p>online safety lessons, internet awareness activities, digital literacy programs</p>
---------------------------------------	-------------------	------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------	----------------------------------------------------------------------------------------

3.3 Recommendations

Integrating advanced educational tools enhances children's learning, especially in digital safety and data protection. Presented tools use gamification, interactive content and quizzes to engage young learners. Interland and Happy Onlife teach internet safety, digital citizenship, and cyberbullying prevention through game-based learning. Datak focuses on data protection and privacy awareness, helping children understand online information sharing through real-world scenarios. Be Secure and the Safer Internet Day Quiz use quizzes to reinforce knowledge on online security, digital skills, and privacy basics. Integrating these tools into educational curriculums creates engaging and effective learning environment. They teach essential digital skills, promote safe online behaviour, and prepare students for a connected world. Utilizing these tools in classrooms, workshops or extracurricular activities fosters a well-rounded digital literacy education, ensuring children navigate the digital landscape responsibly and securely.

4. Learning Tools Collected by ELC (Spain)

4.1 Overview of learning tool trends at national level

Spain has gone through a tremendous transformation regarding educational technology and various trends in the past years. Data protection and privacy concerns have risen, and are now top priority after the Digital Spain 2026 agenda. This initiative promotes the digitalization of schools and public institutions while ensuring that individual rights, including privacy, are respected in the digital environment.

Through the rise of data-protection topics, Spain developed a National Cybersecurity Plan which aims to secure digital infrastructures in education, driven by the growing use of AI and cloud-based learning systems. This is particularly important since schools are now integrating more online learning platforms and data protection measures to safeguard students' information. Spain follows the European GDPR which regulates the student's personal data.

Another great initiative to integrate learning tools at a national level is that schools are adopting technological ecosystems which integrate services and learning tools, providing efficient management and learning of resources and data. Overall, these efforts highlight Spain's commitment to creating a secure and inclusive digital learning environment, providing a wide range of learning tools in schools addressing both the technological advancement of education and the importance of privacy for minors in schools.

References:

- Spain - Digital Spain Agenda 2026. (2023, August 11). Digital Skills and Jobs Platform. <https://digital-skills-jobs.europa.eu/en/actions/national-initiatives/national-strategies/spain-digital-spain-agenda-2026>
- Segarra, R. (2024, July 25). Spanish Government Proposes New Digital Safeguard Measures For Minors. Data Protection - Privacy - Spain. <https://www.mondaq.com/data-protection/1497110/spanish-government-proposes-new-digital-safeguard-measures-for-minors>
- Spain - Digital Spain Agenda 2026. (2023, August 11). Digital Skills and Jobs Platform. <https://digital-skills-jobs.europa.eu/en/actions/national-initiatives/national-strategies/spain-digital-spain-agenda-2026>
- Amo-Filva, D., Mauri, S. A., Escudero, D. F., Sanchez-Sepulveda, M. V., Hasti, H., García-Holgado, A., García-Holgado, L., Vázquez-Ingelmo, A., García-Peñalvo, F. J., Orehovački, T., Krašna, M., Pesek, I., Marchetti, E., Valente, A., Witfelt, C., Ružić, I., Fraoua, K. E., Moreira, F., Pereira, C. S., & Paes, C. (2024). Empowering Student Data Privacy in Schools Through Open Educational Resources. In Lecture notes in educational technology (pp. 253–263). https://doi.org/10.1007/978-981-97-2468-0_25

4.2 Identification and selection of data tools

Tool name & Tool name in English	Tool type	Key words	Description	Link	Adaptability potential
<p>Aula Segura / Secure Classroom</p>	<p>Interactive Learning, Microlearning</p>	<p>Data privacy, Cybersecurity, Safe browsing, Digital literacy</p>	<p>Aula Segura is an interactive learning platform designed for Spanish schools to teach students about digital privacy and safe online behaviours. It includes lessons on personal data protection, recognizing cyber threats and understanding safe practices in digital environments. The platform is aligned with Spain's national cybersecurity curriculum.</p>	<p>Aula Segura</p>	<p>Lessons on cybersecurity for both primary and secondary school students; adaptable workshops for teacher training on safe online practices.</p>
<p>Pantallas Amigas / Friendly Screens</p>	<p>Hands-on Learning, Interactive Learning</p>	<p>Cyberbullying, Privacy protection, Digital identity, Safe internet use</p>	<p>Pantallas Amigas focuses on educating children and teens about the safe and responsible use of digital technologies. The tool offers interactive tutorials,</p>	<p>Pantallas Amigas</p>	<p>Digital citizenship workshops, modules on GDPR understanding for teachers and parents, cybersecurity awareness programs</p>

			workshops, and multimedia resources covering topics such as privacy protection, cyberbullying, and managing digital identity.		for students.
X1RedMásSegura / X1SaferNetwork	Quiz-based, Self-assessment	Cybersecurity basics, Data protection, Safe browsing, GDPR compliance	X1RedMásSegura provides quizzes and self-assessment tools for students to test their knowledge of cybersecurity and data protection. It also includes detailed guides and tutorials for teachers on creating safe digital environments in classrooms, focusing on GDPR compliance and password security.	X1RedMásSegura	Cybersecurity lessons for students, GDPR-focused teacher workshops, password management classes.
Protegiendo Mi Privacidad / Protecting my Privacy	M-learning, Game-based learning	Privacy basics, Data protection, Password creation, Digital rights	An app-based learning tool that uses game-based learning to teach students about privacy rights, creating secure passwords and managing personal data online. The app allows students to simulate real-life	Protegiendo Mi Privacidad	Adaptable for classroom challenges on data privacy, real-world simulations for hands-on workshops and personalized learning tracks.

			scenarios, reinforcing data protection principles in an engaging and practical way.		
CyberEduca	Hands-on Learning, Workshop-based	Cybersecurity training, Privacy policies, GDPR, Online safety	CyberEduca offers cybersecurity workshops for both teachers and students in schools. It includes interactive modules on understanding GDPR, implementing privacy policies in school environments, and ensuring safe online behaviours among students. Teachers can also access professional development courses.	CyberEduca	GDPR-focused workshops for teachers and school administrators, interactive online safety courses for students, adaptable to broader cybersecurity training sessions.

4.3 Recommendations

It is apparent that Spain has come a long way through the years. Moving towards the future, we believe the integration of advanced data protection mechanisms into learning tools to ensure compliance with GDPR and evolving digital safety standards. This can be achieved by increasing collaboration between educational institutions, government bodies and edtech companies. Future learning tools should integrate AI-based monitoring systems that flag potential data breaches while maintaining user privacy, as suggested in Spain's Digital Spain Agenda 2026.

Parallel to this, a multi-stakeholder approach would be the best impact. Schools can adopt a multi-tiered approach and receive help from professional, data-driven approaches. Things that could promote a bigger change include: offering customizable privacy education to students

and professional development for teachers on GDPR and data management; developing a national curriculum around digital citizenship and data protection, alongside tools like Aula Segura and Pantallas Amigas, would be vital in fostering a secure learning environment.

5. Learning tools collected by GEIGER and PHFR (Germany)

5.1 Overview of learning tool trends at national level

General School Education in Germany is not a federal issue but dealt with on the level of the 16 states. This leads to a very scattered field of approaches to educational approaches and services. This implies, for example, that the cyber safety etc. is located at different places in the subject structure and school years in the states' educational programmes.

Nevertheless, there are, of course, also initiatives from the federal government and from private – with different funding backgrounds – organisations that address whole Germany.

Germans are traditionally quite scrupulous in concern of data protection. Thus, main ideas of the GDPR can be traced back to decisions of the German Supreme Court, particularly its definition of 'Informational Self-Determination' already back in 1983.

Elements of data protection foreseen in the currently valid national education plan "Lehrplan21":

Module on Media and Informatics: <https://v-ef.lehrplan.ch/index.php?code=b%7C10%7C0&la=yes>

Reference to Data Protection at the level of individual learning objectives: <https://v-ef.lehrplan.ch/index.php?code=a%7C10%7C0%7C2%7C0%7C3>

References:

- This following review examines multimedia tools in teaching, analysing studies on their effectiveness in enhancing education access and performance. Multimedia elements like audio, video, and 3-D are key to success.
Abdulrahman, M. D., Faruk, N., Oloyede, A. A., Surajudeen-Bakinde, N. T., Olawoyin, L. A., Mejabi, O. V., ... & Azeez, A. L. (2020). Multimedia tools in the teaching and learning processes: A systematic review. Heliyon, 6(11).

- The following review summarises 97 online surveys on schooling during the COVID-19 pandemic, covering 255,955 participants. It analyzes key aspects of distance education, student traits, and home learning resources, providing insights while urging caution in adopting results.

Helm, C., Huber, S., & Loisinger, T. (2021). Meta-Review on findings about teaching and learning in distance education during the Corona pandemic—evidence from Germany, Austria and Switzerland. Zeitschrift für Erziehungswissenschaft, 24, 237-311.

- The following book explores measures to teach internet literacy to youth, analysing the roles of socialising agents and factors like age, gender, and school type. She highlights how creative and critical internet use influences attitudes toward guidance measures. Refers to the Zischtig blog below.

Hipeli, E. (2012). Netzguidance für Jugendliche: Chancen und Grenzen der Internetkompetenzförderung und ihrer Vermittlung. Springer Science & Business Media.

- The JAMES Study 2022 surveyed 1,049 Swiss adolescents on their leisure and media habits. Popular activities include using audiovisual media, sports, and music. Most have smartphones and use social media. Issues like online harassment have increased, affecting girls more.

Külling, C., Waller, G., Suter, L., Willemsse, I., Bernath, J., Skirgaila, P., ... & Süß, D. (2022). JAMES: Jugend, Aktivitäten, Medien—Erhebung Schweiz.

5.2 Identification and selection of data tools

Tool name & Tool name in English	Tool type	Key words	Description	Link	Adaptability potential
Zischtig	Children-targeting blog with information and recommendations	Media competence, Cyberbullying, Youth media protection, Data protection	Safety and media literacy for children, teenagers, and adults. Updates on WhatsApp, smartphones, Instagram, Snapchat, Tellonym, TikTok, data protection, youth media protection,	https://zischtig.ch	cybersecurity courses in person or online, social media privacy, parents education

			online addiction, prevention programs, media education, children's tablets, sexting, cyberbullying, cybergrooming and more. Systematic guidance on media education is available.		
die Fake Hunter	Game-based interactive learning	Public libraries, role-playing game, media literacy related to fake news	Public libraries conduct the role-playing game in collaboration with local schools. Initially developed for public libraries in Schleswig-Holstein, FakeHunter has since spread throughout the German-speaking region.	https://www.diefakehunter.de	game, storytelling, how to protect kids from fake news
Chili Rotes Kreuz	Physical seminar, 1-2 days	Conflict prevention, Social competence, Cyberbullying, Communication skills	The "chili" conflict prevention program teaches children, teenagers, and adults how to handle conflicts constructively, both at school and in the workplace. Participants also improve their communication and	https://www.redcross-educ.ch/de/chili-konfliktpraevention	Lessons cybersecurity for Kids, parents education on how protect the kids

			social skills, with topics like cyberbullying, sexting, and media awareness included. The program is designed for schools and youth organisations, public services and companies.		
Smart@phone	Online games presented as an online course.	Group chats, Social media image, pornography and sexting laws, distraction and addiction	The online course was developed using classroom feedback. It is accessible and engaging for youth through short animated videos, ensuring effectiveness by supplementing traditional education with crucial knowledge and minimising administrative effort for teachers by eliminating the need for emails and passwords.	https://www.smartathome.me/info/	Online quizzes
Pro Juventute online events “Kinder, Jugendliche und digitale	In the online events, parents and caregivers receive information and	Digital media, world of games, cyberbullying, ADHD and digital media	The online events guide parents on digital media use by kids, covering safe practices, managing cyberbullying, and	https://www.projuventute.ch/de/eltern/medien-internet/medienkompetenz-online-	Webinars Cybersecurity, Digital Media, protection in online game

Medien"	tips on how to handle digital media in everyday family life, using concrete examples.		gaming's impact. Tips on age-appropriate media usage for pre-schoolers and insights into social media trends help navigate the digital landscape for various age groups.	veranstaltung#section-5845	
Im digitalen Zeitalter qualitätsorientiert lernen	Manual for teachers	digital learning, research overview, empowering students	Background information on the relevance of digitalisation in concern for schools as well as the chances and challenges of learning / teaching with digital media. The manual is provided by the School Ministry of the state Baden-Württemberg.	https://www.schule-bw.de/themen-und-impulse/uebergreifende-erziehung/medienerziehung/handreichungen/basisband/handreichung-im-digitalen-zeitalter-qualitaetsorientiert-lernen-dl-01.pdf	can be referenced in teacher trainings
Digitale Bildung gestalten: 10 konsequente Leitlinien	Guidance for teachers	data protection	Principles for a data protection friendly educational system. Digital Courage provides a large set of information on further respective topics.	https://digitalcourage.de/kinder-und-jugendliche/leitlinien-digitale-bildung	can be referenced in teacher trainings
Dark Patterns: So wollen Websites und	Informational overview on dark patterns including	dark patterns, cookies, social engineering,	Provides an overview of the different dimensions, functions,	https://www.verbraucherzentrale.nrw/wissen/digitale-welt/datenschutz/dark-	students can play game for awareness raising and - with/out

Apps Sie manipulieren	an online game	deception	structures, interests behind dark patterns. Clicking through the game is as 'frustrating' as trying to avoid being tracked. The Verbraucherzentrale (consumer agency) provides similar materials for other issues: phishing, malware, online-shopping etc.	patternsspiel-wer-zustimmt-verliert-73000	teachers - can use materials for deeper understanding
KI und Social Media	Podcast about how artificial intelligence is used by social media to keep users' attention	social media, attention, algorithm	Social media expert, Simon Hurz, explains in this podcast how social media use artificial intelligence to gather data and keep users online - to earn money. The German Federal Agency for Civic Education provides different tools and materials.	https://www.bpb.de/lernen/digitale-bildung/werkstatt/546422/ki-und-social-media-mit-simon-hurtz/	As the podcast is 40 min parts can be used in class the whole is rather for homework or project work.
Deepfakes und Co.	10 questions about deep fakes	deep fakes, social media, deception	The short quiz touches different aspects of deep fakes. Klick Safe is an EU initiative for safer	https://www.klicksafe.de/materialien/deepfakes-und-co	students can answer the quiz for awareness raising or

			internet for young people. The German branch provides a large set of materials and tools - also in cooperation with other actors. The quiz, e.g., was developed with the public German Children TV.		assessing knowledge
--	--	--	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	---------------------

5.3 Recommendations

DataPro wants to offer learning experiences and tools for the classroom, targeting children of 12-15 years and, in cooperation with the Mecys project, adolescents of 16-19 years. Zischtig can act as a reference and template for selecting and presenting content for children and it can also be a platform for disseminating the DataPro learning experiences and tools. Fake Hunter can act as a reference and template for designing and presenting interactive games for children; however, their targeted children are younger (9-11 years) than those targeted by DataPro. Chili Rotes Kreuz can be a reference and template for designing an in-classroom session of 1-2 days. Several Smart@phone online education modules could be used as components of a DataPro offering or referred to by DataPro. Several Pro Juventute online webinars could be referred to by DataPro, and Pro Juventute can also be a platform for disseminating the DataPro learning experiences and tools.

The entries in the table are mainly exemplary - in different dimensions:

- different pertinent topic;
- main providers of materials and tools for teachers and school, e.g. Klick Safe, consumer agency, Federal Agency for Civic Education, Digital Courage, School Ministry;
- different tools types, i.e. quiz, game, podcast, background information or manual.

Depending on the conditions given by the states' education programs the exemplary tools and materials can help finding also additional input for the development of lessons or projects.

6. Learning Tools Collected by ProEduca (Czech Republic)

6.1 Overview of learning tool trends at national level

The Czech Republic has made some progress in incorporating digital learning tools and technologies into both formal and informal education. The Digital Education Strategy in 2020 had a positive impact on students' digital skills and facilitated distance learning during the COVID-19 pandemic (UNESCO Global Education Monitoring Report, 2024). The 2020-2023 Revised Framework Education Programme for Basic Education now focuses on modernising education to meet the needs of the 21st century (Ministry of Education, Youth and Sports, 2020). The Czech Republic's [Education Strategy](#) as well as the [National Recovery Plan](#) (NRP) emphasises the importance of integrating advanced digital technologies into the educational framework, as well as improving digital competencies among students and teachers, aligning educational practices with modern technological requirements (UNESCO Global Education Monitoring Report, 2024).

In practice, digital textbooks, educational apps and gamification are increasingly being used. Platforms like [Digitalni Knihova](#), a digital library for educational materials, and [Škola v pyžamu](#) (School in Pajamas), a project promoting digital education, exemplify the increased use of digital tools in formal education. A study of Czech primary school teachers showed that 50% of respondents are using digital games in their teaching, mainly to introduce new material and to test students' understanding. The same study found that one of the main barriers to digital tools usage is a lack of information and materials as well as insufficient technical infrastructure (Picka et al., 2022).

Gamification is also becoming popular in informal education. Platforms like [Včelka](#), an educational app for reading development, [Glitr](#), an app based platform offering gamified learning solutions to school students and [MyPrepApp](#), a digital resource providing students with a tailored study plan which also incorporates gamification to motivate students to study, are just a few examples of Czech-developed gamification start-ups for students (Tracxn, 2024).

Digital learning tools and gamification are steadily being integrated into both formal and informal education in the Czech Republic, with several promising Czech-developed tools and platforms. While challenges remain, particularly in terms of infrastructure and teacher training, the country is on a positive trajectory toward more widespread and effective use of these technologies in education.

References:

- Ministry of Education, Youth and Sports. (2020). Strategy for the Education Policy of the Czech Republic up to 2030+. https://msmt.gov.cz/uploads/brozura_S2030_en_fin_online.pdf
- Picka, K., Dosedla, M., Hrbáček, J., & Hodis, Z. (2022). Teachers' experience with digital games in Czech primary schools. *Entertainment Computing*, 42, Article 100483. <https://doi.org/10.1016/j.entcom.2022.100483>

- Tracxn. (2024, July 8). Gamification in Education startups in Czech Republic. <https://tracxn.com/d/explore/gamification-in-education-startups-in-czech-republic/t8xgtVnK9aySWc9jgAsenj-dqmQdXEm1Emho3tHpaBI/companies>
- UNESCO Global Education Monitoring Report. (2024, August 6). Technology. *Education Profiles*. <https://education-profiles.org/europe-and-northern-america/czech-republic/~technology>

6.2 Identification and selection of data tools

Tool name	Tool type	Key words	Description	Link	Adaptability potential
DataDefenders	Game-based interactive learning	data protection, privacy basics, online privacy	DataDefenders is a web-based game which aims to teach players about what happens to their personal data when it is collected, why this is problematic and how to prevent personal data being collected. Players are guided through a tile-matching game and are tested on their knowledge of online privacy via mini-quizzes. They are provided with examples of actions they can take to protect their data online, which will give them benefits in the game if they apply their learnings.	DataDefenders	Lessons on tangible steps you can take to protect your data online. Lessons introducing students to who benefits from personal data and why this can be dangerous.

<p>Digital Connections</p>	<p>Video-series + mini quiz</p>	<p>data protection basics, healthy digital habits, online vigilance</p>	<p>Digital Connections consists of a video series covering topics such as digital habits, online relationships, cyber safety, online misinformation and digital footprint. Users first watch a video in which depicts a variety of different digital situations they may encounter. Actors in the video highlight the dos and don'ts of what to do in each scenario. Users are then tested on what they've learnt via a mini-quiz.</p>	<p>Digital Connections</p>	<p>Self-paced learning, flipped classroom learning on online habits/cyberbullying/ data protection</p>
<p>Nova Labs: Cybersecurity Lab</p>	<p>Scenario game-based</p>	<p>detecting spam/phishing, password creation, basic coding, cybersecurity</p>	<p>In Nova Lab's Cybersecurity Lab, players find themselves the cybersecurity expert of a fake social media company. They are led through examples of real-life scenarios, and through a series of challenges which include</p>	<p>Nova Labs: Cybersecurity Lab</p>	<p>cybersecurity workshop, flipped classroom learning, lesson on real life cybersecurity risks</p>

			basic coding, identifying phishing and a password-cracking duel, the player works to keep the company safe from different types of cybersecurity risks.		
CyberSprinters	Game-based	online threats, staying secure online	In CyberSprinters, players must run and collect coins whilst avoiding Hackers, Clones and Trojans. Throughout the game, players must answer questions based on data privacy and cybersecurity in order to progress through the levels. The game covers topics such as hacking, identity theft and staying secure online.	CyberSprinters	Lesson on cybersecurity, introduction to different online threats
FBI SOS			In FBI SOS, players will find themselves in a virtual world. They must travel to all different zones and navigate around to collect coins and answer questions from characters they	FBI SOS	Data protection workshop, lesson on different types of online threats, flipped classroom learning on online threats

			<p>meet on all things digital - from detecting scams, creating safe passwords, keeping their information private, detecting cyberbullying and more. The game is tailored based on school grade, with versions available from 3rd to 8th grade.</p>		
--	--	--	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--

6.3 Recommendations

Incorporating digital tools and gamified learning into educational curricula offers significant benefits for teaching data privacy, protection and online best practices. These methods engage students more effectively by transforming complex and sometimes abstract concepts into interactive and relatable experiences. Gamification, in particular, enhances motivation, making learning enjoyable and memorable. By meeting characters, solving puzzles, and answering questions related to real-world scenarios, students can practise critical thinking and problem-solving in a safe, controlled environment. This experiential learning encourages deeper understanding and retention of key concepts, equipping students with essential skills for navigating the digital world responsibly.

The tools researched exemplify these advantages, offering diverse approaches to teaching essential digital skills. They cover a wide range of topics, including identifying scams, creating secure passwords and maintaining privacy. By integrating these tools into their teaching, educators can provide students with hands-on learning experiences that are both engaging and educational, ensuring that they are better prepared to protect their personal information and act responsibly online.

7. Proposal of learning tools for development

Based on conducted research and analysis of findings, 5 tools were selected as proposals for further adaptation.

Rationale for NOT choosing other tools researched and presented in this report:

- Some load too long
- There are some that do not open
- Some are repetitive in the aim or tool type
- We want to provide diverse tools

7.1 Selected tools

Proposal 1

[The Data Challenge](#)

Tool name	Tool type	Key words	Description	Link	Adaptability potential
Data Challenge Game	Quiz-based, Game-based, Interactive Learning, Hands-on Learning	Data Protection, Gamification, Interactive, Educational	<p>The Data Challenge Game is an interactive, educational game designed to teach young learners about data protection and online safety. The game combines engaging scenarios with quiz questions to test and enhance students' knowledge about GDPR and digital privacy. It provides a hands-on learning experience through gamified content, making complex topics accessible and fun.</p>	The Data Challenge	Suitable for lessons on cybersecurity, workshops on understanding GDPR, digital literacy curriculum, and Internet safety workshops.

Proposal 2

[Datak](#)

Tool name	Tool type	Key words	Description	Link	Adaptability potential
Datak	Game-based	data protection, privacy awareness, personal data	Datak is a serious game focused on educating children about personal data and privacy. Players navigate scenarios where they must make decisions about sharing personal information, learning the consequences of their actions. The game aims to raise awareness about data protection and online privacy.	Datak	data protection workshops, online privacy classes, digital literacy curriculum

Proposal 3

[Be Secure Quiz](#)

Tool name	Tool type	Key words	Description	Link	Adaptability potential
Be Secure	Quiz-based	online security, digital skills, privacy basics	Be Secure is an online quiz designed to test and enhance children's knowledge of online security and privacy. Through a series of questions, it covers fundamental topics such as password creation, recognizing phishing attempts, and securing personal information online.	Be Secure Quiz	online security workshops, digital skills classes, privacy education

Proposal 4

[DataDefenders](#)

Tool name	Tool type	Key words	Description	Link	Adaptability potential
DataDefenders	Game-based interactive learning	data protection, privacy basics, online privacy	DataDefenders is a web-based game which aims to teach players about what happens to their personal data when it is collected, why this is problematic and how to prevent personal data being collected. Players are guided through a tile-matching game and are tested on their knowledge of online privacy via mini-quizzes. They are provided with examples of actions they can take to protect their data online, which will give them benefits in the game if they apply their learnings.	DataDefenders	Lessons on tangible steps you can take to protect your data online. Lessons introducing students to who benefits from personal data and why this can be dangerous.

Proposal 5

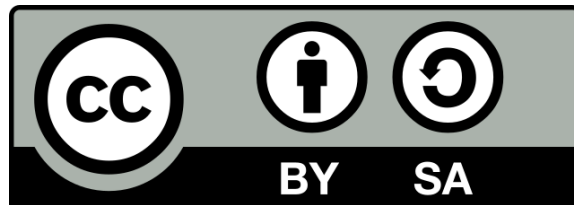
[Nova Labs: Cybersecurity Lab](#)

Tool name	Tool type	Key words	Description	Link	Adaptability potential
Nova Labs: Cybersecurity Lab	Scenario game-based	detecting spam/phishing, password creation, basic coding,	In Nova Lab's Cybersecurity Lab, players find themselves the cybersecurity expert of a fake social media company. They are led through examples of real-life scenarios, and	Nova Labs: Cybersecurity Lab	cybersecurity workshop, flipped classroom learning, lesson on real life cybersecurity risks

		cybersecurity	through a series of challenges which include basic coding, identifying phishing and a password-cracking duel, the player works to keep the company safe from different types of cybersecurity risks.		
--	--	---------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--

7.2 Key findings and recommendations from partners

- Incorporating a variety of digital tools.
- Integrating platforms for online safe surfing.
- Employing gamification methods.
- Utilizing mobile apps.
- Using quizzes to engage young learners.
- Using interactive learning.
- Encouraging the use of self-assessment tools.
- Exploring the potential of VR and AR.
- Considering the application of blockchain technology.
- Ensuring that the selected digital tools and methods are adaptable for different educational settings.
- Offering customizable privacy education to students and professional development for teachers on GDPR and data management.
- Meeting characters, solving puzzles, and answering questions related to real-world scenarios, students can practice critical thinking and problem-solving skills.



<https://www.datapro.education/>



**Co-funded by
the European Union**

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.