ARTIFICIAL INTELLIGENCE AS A NEW TOOL FOR EFFECTIVE ASSESSMENT OF INFORMATION AND DATA LITERACY

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ABSTRACT

The subject of the article is the identification of the possibilities and limits of incorporating work with Artificial intelligence into the process of assessing information and data literacy of pre-service teachers in the process of undergraduate training. The aim of the research was to determine the degree of effectiveness and level of competency assessment using ChatGPT within the components of information and data literacy, by analyzing data from a specific research sample. By analyzing specific data, we confirmed that ChatGPT can adequately process and evaluate the level of information and data literacy of pre-service teachers in the process of their undergraduate training, using specific elements.

KEYWORDS

Europass, Artificial Intelligence, information literacy, data literacy, innovations in education.

1. INTRODUCTION

Education is a multidisciplinary, dynamic and lifelong process that involves systematic transmission, acquisition, internalization and application of knowledge, skills, values and attitudes. Its primary function is to ensure the intergenerational transmission of cultural, scientific and technological heritage, to support individual personality development and at the same time to contribute to the formation of a socially cohesive, competent and adaptable society. This process takes place in various forms – formal, non-formal and informal – and is an integral part of the everyday life of the individual. Formal education, implemented through institutionalized educational systems, represents a structured framework in which individuals prepare to perform professional, civic and cultural roles. School education is an integral part of this framework, its aim being not only the accumulation of knowledge, but also the development of cognitive, affective and psychomotor competences that are essential for active and responsible functioning in society. In the context of globalization and integration processes that fundamentally transform the nature of the international labor market, education becomes a strategic tool for ensuring the competitiveness of individuals and national economies. These processes lead to the intensification of international cooperation between educational institutions, the harmonization of study programs, the standardization of qualification frameworks, and the development of transnational educational initiatives. An important aspect of this cooperation is the support of academic mobility, which allows students, teachers, and researchers to operate in different cultural and academic environments. In the field of higher education, the so-called Bologna Process plays a key role. It was initiated in 1999 to create a single European Higher Education Area (EHEA).

This process involves a series of reform measures aimed at enhancing the transparency, compatibility, and quality of the higher education systems of the Member States. The main components of the Bologna Process include the introduction of a three-cycle study structure (bachelor, master, and doctoral degrees), the implementation of the ECTS credit system, and the development of joint study programmes between universities. In recent decades, the education system has been increasingly transformed under the influence of digital technologies, which are fundamentally changing the way knowledge is created, distributed, and acquired. Digital innovations in education encompass a wide range of tools and approaches – from e-learning platforms, virtual classrooms, adaptive learning systems, to the use of artificial intelligence, augmented reality (AR), virtual reality (VR), and blockchain technologies for qualification verification. These technologies enable the personalization of the educational process, increase the accessibility of education regardless of geographical or social barriers, and support the development of digital competencies that are essential for success in the knowledge economy. Higher education institutions are increasingly implementing hybrid forms of teaching, combining face-to-face and online methods, thus responding to the changing needs of students and the labor market. At the same time, emphasis is placed on open educational resources (Open Educational Resources – OER), which support the democratization of access to education and enable the creation of community-shared content. However, the digital transformation of education also requires new pedagogical approaches, a change in the roles of the teacher, as well as systematic support for digital infrastructure and digital literacy of all actors in the educational process. Ultimately, education becomes not only a tool for cultural reproduction, but also a space for innovation, critical thinking, and the creation of new knowledge, which are essential for the sustainable development of society in the conditions of a rapidly changing technological environment [1]. Within the framework of undergraduate training of students in teacher education programmes, there is still a clear deficit of systematic preparation for working with digital technologies and artificial intelligence tools. Even though digital competences are today an essential part of a teacher's professional profile, many teacher education programme curricula do not pay sufficient attention to the practical development of these skills. There is a lack of connection between theoretical knowledge and the application of modern technologies in the teaching process, which may negatively affect the ability of future teachers to respond effectively to the needs of digitally oriented pupils. This deficiency is also reflected in the European Framework of Digital Competences for Teachers (DigCompEdu), which draws attention to the need to develop specific digital competences of teachers at all levels of education – from acquiring and creating digital resources, through their use in teaching, to supporting the digital literacy of pupils and students [2].

2. ARTIFICIAL INTELLIGENCE ACROSS SOCIETY

As a result of modernization in the 21st century, a new tool has emerged in our daily lives – Artificial Intelligence (AI). AI is a branch of computer science that deals with creating systems capable of performing tasks that traditionally require human intelligence [3]. Such tasks include speech recognition, problem solving, learning, and decision-making [4]. Unlike traditional software systems that operate based on predefined rules and instructions, AI can learn from data, adjust its behavior, and improve performance based on experience. The historical roots of AI date back to the mid-20th century, when scientists began to consider how human thinking could be imitated by machines. Alan Turing, a British mathematician, is often considered one of the pioneers of the field, thanks to his work on the "Turing test," which was intended to determine whether a machine could think like a human [5]. Since then, AI has evolved into a wide range of technologies, from simple algorithms for pattern recognition to advanced neural networks used for complex tasks such as image analysis or natural language generation. Dean et al. [6] defined

AI as computer programs that behave intelligently. There are several approaches to building AI, including symbolic systems, where knowledge and rules are explicitly encoded, and machine learning-based approaches that rely on statistical techniques and huge amounts of data. Machine learning, and particularly its subset called deep learning, is today the dominant technology that powers many modern AI applications. Furthermore, AI has demonstrated excellent performance in fields including voice assistants such as Amazon's Alexa, Apple's Siri, and Google Assistant [7].

The use of AI is reaching almost all areas of life, thanks to its ability to automate complex tasks, analyze large volumes of data, and provide predictive models. Among all spheres, attention can be drawn to:

2.1. Healthcare

UI has enormous potential in healthcare to improve the quality of care and reduce costs. One of the most important applications is disease diagnosis, where AI algorithms can analyze medical images, such as X-rays or MRIs, with high accuracy [8]. It is also used to predict diseases and develop personalized treatment plans [9]. AI systems can also analyze a patient's genetic data,and based on this, recommend specific treatments or predict the likelihood of a certain disease. In addition to diagnostics, AI is also used for disease prediction. Based on the analysis of large data sets that contain genetic information, medical records, and other factors, AI can predict how likely a patient is to develop a certain disease. In this way, it is possible to detect diseases in their early stages and take preventive measures [10].

2.2. Financial Services

In banking and insurance, AI is used to detect fraud, automate processes such as loan approval, and analyze investment opportunities [11]. AI can process a huge number of transactions in real time and identify suspicious behavior patterns that could indicate fraud. AI systems can also effectively track various transaction parameters, such as time, location, or payment method, and compare them with previous behavior patterns [12]. In addition, AI enables personalized financial habits of the user and based on this, recommends ways to invest, manage debt, or plan savings.

In this way, AI can provide individualized advice that is beneficial and timely for the client [13].

2.3. Transportation

In transportation, AI is being used to optimize routes, reduce traffic congestion, and even drive autonomous vehicles. Traffic management algorithms can process vast amounts of real-time data, including data from GPS, cameras, and sensors, to optimize traffic flows and help manage traffic [14]. Autonomous vehicles are one of the most significant advances in AI for transportation. Technologies from companies like Tesla and Waymo use advanced AI systems that combine various sensors, neural networks, and image analysis to safely drive vehicles in real time. Although fully autonomous vehicles are not yet a common reality, developments in this area suggest that AI will have a major impact on the way people travel in the future [15].

2.4. Entertainment and Media

In the entertainment and media sector, AI algorithms have a major impact on how we consume content. AI algorithms are the foundation of services like Netflix, Spotify, or YouTube that

recommend content based on user preferences. These systems learn from what movies or songs a user prefers and offer personalized suggestions based on that [16]. AI is also used to generate content creation. Chatbots can generate text content that can serve as an article, review, or story. This type of AI helps media outlets produce content faster and more efficiently, while providing up-to-date information and interesting facts [17].

2.5. Industry and Manufacturing

Industry is another area where the use of AI is deepening. Thanks to predictive maintenance, companies can monitor the condition of their equipment and predict failures before they occur. AI algorithms analyze data from machines and determine which components are showing signs of wear or excessive stress [18]. This approach not only reduces maintenance costs but also increases production efficiency by minimizing downtime. AI robots are also used in manufacturing, which can perform complex tasks and adapt to new situations. For example, these robots can identify different products, handle them, or package them according to specific requirements. This trend is visible, for example, in the automotive industry, where AI robotic arms are deployed on production lines and can perform tasks with high precision [19].

2.6. Education

Artificial intelligence in education offers several ways to improve teaching and learning. One such area is personalized learning, where AI can analyze the needs and abilities of each student and tailor the learning content to them. AI can also identify areas where a student is lagging and recommend additional exercises or resources to help them improve. AI can be used to automate the assessment process, especially for tasks such as multiple-choice tests, essays, and other written work. These AI systems can also provide immediate feedback to students, allowing them to learn from their mistakes more quickly. One type of AI that is often used as a right hand for both teachers and students is a chatbot, which can translate unfamiliar words, provide explanations to users, put words in context, and create a complex conversation with the user. This chatbot is called ChatGPT [20].

3. CHATGPT – NEW HORIZONS IN HUMAN SOCIETY

Clarifying both the concept and the essence of ChatGPT is difficult. Perhaps the best way to view ChatGPT is from the perspective of an application that uses powerful machine learning software called Generative Pre-trained Transformer (GPT-3.5) [21]. The application is developed based on the OpenAI language model, trained on a large dataset of human conversations, allowing it to perform complex tasks and produce human-like responses [22].ChatGPT has proven to be a breakthrough for the LLM (Language Learning Model), which has been shown to generate large amounts of text and maintain a conversation like human speech [20]. The ChatGPT mechanism works based on pre-set algorithms that find patterns in various data sequences. The most modern version of ChatGPT uses the GPT-3.5 model, which includes a modification of its algorithmic process. ChatGPT Plus (the premium version of the chatbot) uses GPT-4, which can handle more complex tasks compared to previous models. Another key element used by ChatGPT is the technique of deep learning, understanding, processing, and generating natural human language with a high level of complexity, but at the same time with reasonable accuracy and usability [23]. ChatGPT training starts with general data and gradually moves to specific data for various tasks. ChatGPT was trained with a huge number of online texts of various kinds to learn human language and later used numerous transcripts to understand the essence of human communication. Although this chatbot has made huge strides in improvement in a relatively short

time, it is still not possible for ChatGPT to evaluate responses on its own. For this reason, human trainers provide various conversations for the chatbot and rank the various responses based on their correctness. In addition, to maintain the quality of the chatbot training, users can provide feedback to improve the application and customize future conversations with it.

4. EUROPASS AS AN INDICATOR OF INFORMATION AND DATA LITERACY

The result of a comprehensive European Union initiative, introduced under the name Europass, has been in existence since 2005. To increase the transparency of qualifications and skills and to support workforce mobility throughout Europe, users have the opportunity, through the platform at the permanent link: https://europass.europa.eu/sk [cit. 2024-10-5] [24], to streamline and simplify the way they present their education, work experience and skills.Europass provides a standardized format for various documents that aim to help individuals find and choose a job, further education, or mobility within the European Union. Using the Europass tool, individuals can easily demonstrate and effectively present their skills and qualifications to potential educational institutions or employers, regardless of the country in which they are located. For students and graduates, as well as for education and training institutions in Europe, the platform is ultimately both a storehouse of information and a set of free online tools related to lifelong learning and career development. A great advantage is the simplicity and clarity of the platform, which is ensured primarily by the standardized document format, clearly and concisely presenting information. The acceptability of *Europass* documents throughout Europe can also be considered an advantage, which facilitates the process of recognizing an individual's professional education and qualifications. The positive impact of *Europass*can be observed in supporting mobility in the form of facilitating the search for study, internship, or work, by providing clear and understandable documents about the acquired education of a person. The platform is managed by the European Commission, which gives it the necessary amount of respect, and is available in several countries, including languages. The platform is clear, functional, and, above all, open to the public – both students and employed individuals can create a profile. After registering, the user can generate a personal profile in an online, suitably secured tool, in which they set goals and in which they will store documents about their education or educational results. If a student registers on the platform, they can record their completed projects, achieved results, and "career" progress during their studies. The profile, CV, and other documents can be easily shared with other users of the platform and thus demonstrate their skills, experience, and qualifications practically immediately. The most important functions and specific documents that the *Europass* platform offers for creation, editing, and management after registration on the official website include:

A. **diploma** – a document on the acquired education, level of qualification, within a specific educational program, provides context and explanation of academic results.

B. **diploma supplement** – groups important information on the course and completion of higher education in a standard format – assessments, etc., issued by institutions providing higher education,

C. **CV** – in a standardized format, recognized and accepted throughout Europe, an individual records and later presents, including their personal data, their education, skills in specific areas, work experience, courses completed, and other relevant information – uploading a CV to the Europass platform also simplifies job applications or applications to educational institutions for specific educational programs.

D. **motivation letter** – an additional document to the CV, allowing an individual to express their own interest or motivation for choosing a specific position or educational program, but also to highlight the most important qualifications and skills of the person.

E. **European Skills Passport** – a group of documents providing evidence of acquired skills and qualifications, e.g., certificates, certificates from various courses, diplomas, and other relevant documents related to education.

F. ***Europass*** **mobility documents** - used to record skills and experience acquired during studies, study abroad, internships, work- are designed so that educational institutions or future employers of an individual can better assess the international experience of a particular individual.

The linking of the above documents helps to create a comprehensive awareness of the individual in all aspects of his educational awareness for a specific institution. In case of ambiguities, *Europass* also offers the user a section with advice and instructions, for the possibility of better mastering the manipulation of the platform and more intuitive control. The *Europass* platform also offers an online measuring tool to determine the level of information and data literacy of an individual.

5. PILOT TESTING OF INFORMATION AND DATA LITERACY LEVELS USING EUROPASS

As part of the undergraduate preparation of students of teacher education programs, it is necessary to ensure their comprehensive formation in various dimensions of personal and professional development. This formation should include not only the development of moral and ethical attitudes, but also the cultivation of human qualities of personality, which are the basis for building a trustworthy and empathetic pedagogical activity. At the same time, it is necessary to systematically develop professional competencies that allow for effective management of pedagogical situations in the context of a constantly changing educational environment. An irreplaceable role in this process is played by the personality of the educator, from whom not only high professional preparedness is expected, but also the ability to respond flexibly to the dynamics of knowledge, technological progress, and the changing needs of students. The educator should be able to reflect on current challenges in the field of education, actively integrate them into pedagogical practice, and at the same time act as a learning facilitator who supports the autonomy, creativity, and critical thinking of students. Equally important is the personality of the learner – the future teacher – who is exposed to constant changes in the content of study programs in the process of preparation, which he must not only accept, but also critically reflect on and apply in the context of his own professional development [25]. Competences acquired during studies – including skills, abilities, and professional habits – represent a basic prerequisite for managing complex pedagogical situations. Their development should be continuously supported within the framework of practical teaching, where the teacher acts not only as a planner, organizer, or evaluator, but above all as an inspiring and stimulating personality who creates conditions for the holistic development of the student [26]. Rovňanová [27] draws attention to the fact that the preparation of students in teaching professions at universities often remains at the level of basic academic literacy. Although students acquire extensive theoretical knowledge, they do not have sufficient practical skills that are necessary for the formation of professional competencies. The profile of a teacher graduate should represent a synthesis of personal and professional qualities that are formed in the process of professional maturation. Currently, teachers are expected to be able to integrate modern technologies into the teaching process, to design and implement innovative didactic strategies that support the effective

learning of each student, including those with specific needs. Digital technologies, including artificial intelligence tools, bring new opportunities to education, but also challenges and risks that require critical reflection and pedagogical responsibility [28]. As part of the study of the level of Information and Data Literacy of students of the Preschool and Elementary Pedagogy and Primary Education Teaching programs, which was carried out at the Faculty of Education of the University of Constantine the Philosopher in Nitra, the *Europass* measurement tool was used on 77 respondents. For each respondent, the level of digital competence was identified based on the test in6 levels (levels 16) and in five categories: Information and Data Literacy; Communication and Collaboration; Digital Content Creation; Problem Solving; Security. By evaluating all items, the system automatically assigned a level to the student's abilities in individual categories and comprehensively. From the processed data, we found that the initial level of Information and Data Literacy of the respondents was at a low level. In an effort to increase the low entry level of respondents in their digital literacy, the content of the subjects Creation of teaching materials for teaching Slovak language and literature and Basic grammar skills was supplemented during the semester, in addition to printed forms of textbooks and teaching materials, with manipulation of digital forms of textbooks from the aitec publishing house, work with the aitec offline platform and other digital teaching materials. The measures were implemented thanks to the analysis of data from testing. Also on this occasion, it was possible to incorporate skills training and competence development into the teaching content within the individual components covering the overall level of digital competences, with the aim of raising the level of each category and competence comprehensively. To verify the effectiveness of the process, repeated testing of the same group of respondents was carried out after the necessary time (end of the semester), which demonstrated a significantly higher level of digital competencies of the respondents [29].

6. CONCLUSION

Since the *Europass* system provides relatively simplified outputs based on closed items, we decided to supplement the data analysis with a parallel evaluation using ChatGPT. The aim was to compare the outputs generated by the *Europass* system with the outputs obtained through AI analysis,and thus gain deeper insight into the structure of students' digital competences. We found that based on the comparison, it is possible to identify potential differences in the interpretation of the data, as well as to more precisely define areas in which it is necessary to specifically develop the digital competences of future teachers. Combining *Europass* and ChatGPT when assessing the level of Information and Data Literacy in individual categories can be considered a new dimension of using ChatGPT. We can compare the PDF results that *Europass* can generate with the results generated in individual categories using ChatGPT as follows:

Tab 1. Student A.

Student A – Level 1		*Europass*	ChatGPT
Information and data literacy	Level 2	At this basic level, you can deal with simple situations independently and with assistance where necessary. This includes browsing and searching, as well as evaluating and organising data and information (in your folders or in search engines). Examples in this area include knowing which words to use to quickly find what you need (e.g., to search online or within a document); understanding that different search engines can provide different search results; checking the reliability of information found online; organising content.	The student can independently and partially, with assistance, solve basic tasks associated with finding, organizing, and evaluating information. This includes the ability to quickly identify the right keywords for effective searching, recognize the credibility of the information found, and organize content into folders or other organization systems. The student understands the diversity of results in search engines.
Communication and collaboration	Level 1	At this basic level, you can deal with simple situations with help. You can interact, exchange information, and collaborate using digital technologies. This includes using digital services (e.g., using internet banking, shopping online), as well as acceptable online behaviour and managing your digital identity. Examples of skills in this area: you know which communication tools and services (e.g. telephone, email, video conferencing, text messaging) are appropriate to use in different situations; you understand how to apply for a job via a digital platform (e.g. you know how to fill in a form, upload a CV and a photo); you can edit shared online documents; you know how to behave in the online space according to the situation (e.g. formal or informal).	At a basic level, he/she can interact and exchange information digitally, but needs assistance with more complex tasks. He/she has basic skills in using various digital services, such as online banking and ecommerce. He/she understands the norms of behavior in the online environment and can manage his/her digital identity. Specific skills include using appropriate communication tools depending on the situation and basic skills related to online forms and shared documents.

Digital content creation	Level 1	At this basic level, you can solve simple situations with help. This means that you can create and edit digital content (documents, images, videos), understand copyright and licensing issues, and have programming skills. Examples of skills in this area: you know how to create and edit digital text files (e.g., Word, OpenDocument, Google Docs) and how to prepare multimedia presentations; you can edit digital content created by others (e.g. insert text into an image, edit a wiki) and create something new by combining different types of content (e.g. text and images); you distinguish between legal and illegal online content (e.g. software, films, music, books); you know that there are different programming languages (e.g., Python, VisualBasic, Java) for giving commands to a computer.	The student can, with assistance, create and edit digital content such as text documents and multimedia presentations. Has a basic understanding of copyright and licenses. Can edit content created by others and understand the diversity of programming languages.
Safety	Level 2	At this basic level, you can deal with simple situations on your own or with help. This includes protecting your devices (e.g., mobile phone, laptop), personal data, health, and the environment when using digital services. Examples of skills in this area: you can recognise suspicious email messages that are trying to obtain your personal data; you can deny access to your geographical location; you can configure firewall settings on different devices; you can reduce the amount of energy consumed by your devices (e.g., by changing settings, closing applications, turning off WiFi).	The student has a more advanced ability to protect their devices, personal data, and health when using digital technologies. They can identify suspicious emails, configure firewall settings, and actively reduce the energy consumption of their devices.

Troubleshooting	Level 1	At this basic level, you can solve simple situations with help. This includes solving technical problems, identifying technological solutions, and using technology creatively. It also means understanding what digital skills you need. Examples of skills in this area: when you have a technical problem, you can find solutions online; you can choose the right tool, device or service to perform a given task (for example, you can choose a smartphone according to your needs or choose a tool for a work video call); you know that digital technologies can be used as an effective tool to create creative outputs (for example, to create videos, infographics, blogs); you use online learning tools to improve your digital skills (for example, video tutorials, online courses).	At a basic level, they can solve technical problems and search for solutions online. They can choose the right tool or service to complete a given task and use technology for creative purposes. They can identify the necessary digital skills for their education.
Summary:	The student achieves a basic level in several areas of digital skills and shows good skills in information literacy and security. With some guidance and further practice, he/she could significantly improve his/her digital competencies, especially in the areas of content creation, communication and problem solving. The overall profile shows that the student can handle simple tasks with the potential to improve complex skills.		

Tab 2. Student B.

Student B – Level 1		*Europass*	ChatGPT
Information and data literacy	Level 5	At this advanced level, you can find the solution you need and help others. This level includes browsing, searching, evaluating, and organising data and information (in folders or in search engines). Examples of skills in this area: you know which words to use to quickly find what you need (e.g. searching the internet or in a document); you understand that different search engines can offer different search results; you check whether the data you find on the internet is reliable; you can organise content such as documents, images and videos, using folders or tags to make them easy to find later.	Student B achieves a high level of information and data literacy, which allows him not only to effectively search, organize, and evaluate data but also to help others. He can quickly find the information he needs, understands the reliability of sources on the Internet, and can logically organize and categorize content. These skills enable independent and advanced problem-solving in the given field.

Communication and collaboration	Level 2	At this basic level, you can deal with simple situations on your own or with assistance. This level includes interacting, sharing, and collaborating through digital technologies. This also includes using digital services (e.g., e-banking, online shopping), observing online etiquette, and managing your digital identity. Examples of skills in this area: you know which communication tools and services (e.g. telephone, email, video conferencing, text messaging) are appropriate to use in different situations; you can apply for a job via a digital platform (e.g. fill in a form, upload your CV and photo); you can edit shared online documents; you know how to behave online in different situations (e.g. the difference between formal and informal situations).	Student B has a basic ability to create and edit digital content. He/she can process text documents, presentations, and multimedia content, and understands the basics of copyright and licensing. The skills in combining different types of content are at a level that allows for simple solutions, but assistance may be needed for advanced tasks.
Digital content creation	Level 2	At this basic level, you can solve simple situations on your own or with help. This also includes creating and editing digital content (documents, images, videos), understanding copyright and licensing issues, and programming. Examples of skills in this area: you know how to create and edit digital text files (e.g. in Word, OpenDocument, Google Docs) and how to create multimedia presentations; you know how to edit digital content that someone else has created (e.g. insert text into an image, edit a wiki), and create something new by combining different types of content (e.g. text and images); you know how to distinguish between legal and illegal content on the Internet (e.g. software, films, music, books, series); you know that there are different programming languages (e.g. Python, VisualBasic, Java) that are used to create computer programs.	Student B has a basic ability to create and edit digital content. He/she can process text documents, presentations, and multimedia content, and understands the basics of copyright and licensing. The skills in combining different types of content are at a level that allows for simple solutions, but assistance may be needed for advanced tasks.

Safety	Level 4	At this intermediate level, you can deal independently with both simple situations and more complex, unpredictable situations. This also includes protecting your devices (e.g., mobile phone, laptop), personal data, health, and the environment when using digital services. Examples of skills in this area: you can recognize suspicious email messages that try to obtain your personal data; you can deny access to your geographical location; you can configure firewall settings on different devices; you can reduce the amount of energy consumed by your devices (e.g., by changing settings, closing applications, turning off WiFi).	The student has intermediate knowledge in the field of digital security. This means that he can independently solve various situations related to the protection of devices, personal data, and security in the online environment. He can identify and respond to suspicious messages, manage security settings, and implement measures to minimize risks and energy consumption.
Troubleshooting	Level 3	At this intermediate level, you can deal with simple situations independently. This includes solving technical problems, identifying technological solutions, and using technology creatively. This also includes understanding your digital skills needs. Examples in this area include when faced with a technical problem, you can find solutions on the internet; choosing the right tool, device, or service to perform a given task (e.g., choosing a smartphone for your needs, choosing a tool for a professional video call). Knowing that digital technologies can be used as a powerful tool to create creative outputs (e.g., creating videos, infographics, blogs). Using online learning tools to improve your digital skills (e.g., video tutorials, online courses).	The student can independently solve clearly defined technical problems and identify appropriate technological solutions. He has experience in using digital technologies for creative purposes, in solving various tasks. The ability to adapt to different problem situations and actively seek opportunities to improve skills makes him a skilled technical problem solver.
Summary:	The student can independently solve clearly defined technical problems and identify appropriate technological solutions. He has experience in using digital technologies for creative purposes, in solving various tasks. The ability to adapt to different problem situations and actively seek opportunities to improve skills makes him a skilled technical problem solver.		

Tab 3. Student C.

Student C – Level 1		*Europass*	ChatGPT
Information and data literacy	Level 6	At this advanced level, you can find the solutions you need and help others solve complex situations. This level includes browsing, searching, evaluating, and organising data and information (in folders or in search engines). Examples of skills in this area: you know which words to use to quickly find what you need (e.g. searching the internet or in a document); you understand that different search engines can offer different search results; you check whether the data you find on the internet is reliable; you can organise content such as documents, images and videos, using folders or tags to make them easy to find later.	Student C achieves a high level of information and data literacy, which means that he can find solutions not only for himself but also for others in complex situations. He can effectively search and evaluate information, organize it into folders, and quickly identify relevant information using appropriate keywords. He can reliably verify the credibility of the information found and understands the differences between search engine results.
Communication and collaboration	Level 3	At this intermediate level, you can deal with simple situations on your own without assistance. This level includes interactions, sharing, and collaboration through digital technologies. This also includes using digital services (e.g., ebanking, online shopping), observing online etiquette, and managing your digital identity. Examples of skills in this area include: knowing which communication tools and services (e.g. telephone, email, video conferencing, text messaging) are appropriate to use in different situations; knowing how to apply for a job via a digital platform (e.g. filling in a form, uploading your CV and photo); knowing how to edit shared online documents; knowing how to behave online in different situations (e.g. the difference between formal and informal situations).	In the area of communication and collaboration, the student independently manages clear situations. He/she can communicate effectively through digital technologies, use various communication tools, and manage his/her digital identity. He/she can interact and exchange information, including editing shared documents and behaving correctly in an online environment, whether formal or informal.

Digital content creation	Level 4	At this intermediate level, you can independently solve both simple situations and more complex, unpredictable situations. This also includes creating and editing digital content (documents, images, videos), understanding copyright and licensing issues, and programming. Examples of skills in this area: you know how to create and edit digital text files (e.g. in Word, OpenDocument, Google Docs) and how to create multimedia presentations; you know how to edit digital content that someone else has created (e.g. insert text into an image, edit a wiki), and create something new by combining different types of content (e.g. text and images); you know how to distinguish between legal and illegal content on the Internet (e.g. software, films, music, books, series); you know that there are different programming languages (e.g. Python, VisualBasic, Java) that are used to create computer programs.	The student has a medium-advanced ability to create digital content, which means that he/she can independently solve unpredictable situations. He/she can edit digital text documents, multimedia presentations, and can create new digital outputs by combining different types of content. He/she has a good understanding of copyright issues and has basic knowledge in the field of programming.
Safety	Level 3	At this intermediate level, you can deal with simple situations independently. This includes protecting your devices (e.g., mobile phone, laptop), personal data, health, and the environment when using digital services. Examples in this area include identifying suspicious email messages that try to obtain your personal data; denying access to your geographical location; configuring firewall settings on different devices; and reducing the power consumption of your devices (e.g., changing settings, closing applications, turning off Wi-Fi).	In this area, the student can independently resolve clearly defined security situations. He/she can identify suspicious messages, manage security settings such as a firewall, and protect his/her devices and personal data. He/she has a good understanding of health and environmental protection measures when using digital devices.
Troubleshooting	Level 5	At this advanced level, you can find the solution you need and help others at the same time. This also includes solving technical problems, choosing technological solutions, and using technology creatively. Then, you can identify what digital skills you need. Examples of skills in this area: when faced with a technical problem, you can search for a solution on the Internet; you can choose the right tool, device or service for the task (e.g. choose a smart phone according to your needs, choose a tool for a work video call); you know that digital technologies can be used effectively to create creative outputs (e.g. videos, infographics, blogs); you can use online learning tools to improve your	The student achieves an advanced level of problem-solving, which allows him to find solutions not only for himself but also for others. He can solve technical problems, identify appropriate technological solutions, and use technology creatively. His skills also include the effective use of digital tools for learning and improving his own skills.

		digital skills (e.g. video tutorials, online courses).	
Summary:	Student C excels in the areas of information and data literacy and problem-solving, where he achieves an advanced level of skills. In other areas, such as communication, digital content creation, and security, he has intermediate skills that allow him to independently solve various tasks and challenges in the digital environment. The overall profile indicates a capable user of digital technologies with the potential for further development in the areas of creative use of technology and security.		

The tables show the evaluation of random students from the *Europass* test, further analyzed by ChatGPT. In the table, we present in parallel the evaluation of the same student results, as generated by *Europass*, and as subsequently interpreted by ChatGPT.ChatGPT enabled a deeper analysis of the answers, expansion of the interpretation, and identification of specific shortcomings in individual categories. The comprehensive summary in the last row of the table based on the PDF file from *Europass* was generated by ChatGPT, since *Europass* does not provide an overall individual evaluation. It is also important to note that while *europass* generates the same evaluation and recommendation for individual levels (if student A achieves level 1 in the Security component, he will have the same evaluation as student B, who achieves level 1 in the Security component), ChatGPT generates different recommendations and evaluations for individual levels, depending on the specific individual (if student A achieves level 1 in the Security component, he will have a personalized evaluation and also student B, who achieves level 1 in the Security component, will have a personalized evaluation). This procedure represents a new dimension of the use of artificial intelligence in the field of pedagogical diagnostics, as the combination of *Europass* outputs with ChatGPT analytical capabilities allows for more precise targeting of teaching interventions and more effective creation of content and methodological measures for the development of students' digital competences. This confirms that *Europass*, after expanding to include work with ChatGPT and thorough analysis of the results, can help in the creation of curricula and the selection of activities for increasing the level of Information and Data Literacy. In the framework of the research, we applied a combined methodology based on a comparative analysis of outputs from two assessment systems. The primary data source was PDF outputs generated by the *Europass* system, which provides a qualitative verbal assessment of individual categories of a student's digital competence. These outputs were subsequently subjected to secondary analysis using the ChatGPT tool, which, based on the same input data, formulated its own assessment of the level of competence in the relevant categories. The comparison aimed to identify the degree of agreement or deviation between the assessments of both systems, while we monitored the consistency in the interpretation of the competence levels. The result of this analysis was a synthesized assessment that provides a comprehensive picture of the student's digital skills, including the identification of strengths and areas requiring further development.

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