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Management of digitisation of educational institutions – improvement model

Zarzadzanie cyfryzacją instytucji edukacyjnych – model doskonalący

Introduction

The need for a rapid, unexpected transition to remote learning is the challenge that education systems in all pandemic countries faced in the wake of COVID-19. Among other things, an urgent need arose to develop teachers' digital skills and ensure the quality of learning processes. The scale of the phenomenon was significant. According to a report by the Minister of National Education, only in Poland the distance learning system covered

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almost 5 million students from about 245,000 schools. A total of 94.8% of schools provided distance learning.

Research on the interest among the teaching staff in information and instructional materials on distance learning (e.g. recommendations on the organisation of education with the use of methods and techniques of distance learning; issues concerning the security of data, including personal data, etc.) indicates that there is a need to supplement knowledge and skills in this area (Raport Ministra Edukacji Narodowej, 2020).

The insufficient preparation of educational and training institutions and the much greater complexity of the situation of remote education than initially appeared to everyone were also demonstrated by the research conducted by the Faculty of Education at the University of Warsaw (Plebańska, Szyller, Sieńczewska, 2020). The opportunities arising from the availability of a wide range of digital tools for online classes, e-learning platforms, digital educational resources did not protect participants and organisers of teaching processes from numerous challenges. These include the technological equipment of institutions, the availability of equipment and the Internet at home, the level of digital competence of teachers and students, the methodology of online teaching and, above all, a number of social issues related to distance education.

On the other hand, as the analyses of the European Commission (Digital Education Action Plan 2021-2027, 2020) indicate, the experience of the COVID-19 crisis has shown that the education and training systems, and the institutions that had previously invested in their digital capacities were better prepared and better able to keep learners engaged and continue education and training.

It should also be noted that in addition to the obvious catalyst for change in education, which was the sudden outbreak of a pandemic, there are also other factors pointing to a very necessary direction of improvement, which is digital transformation. Modern management of educational entities is oriented towards continuous improvement of the broadly understood quality of the implemented processes, both internal and external ones (UNESCO, (2020)). Ensuring their efficiency and effectiveness, while matching the differentiated needs and expectations of stakeholders, however, requires a thoughtful systemic and innovative approach (Manea, 2015). One of possible answer to this need is ISO 21001:2018 – Management Systems for Educational Organizations (EOMS), the relatively new standard which provides a kind

of framework and basis for implementing the philosophy of continuous improvement and realizing UNESCO's global vision for education by 2030 to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" (Antilla, Jussila, 2016). However, in addition to the implementation of normative guidelines, it is necessary for the education sector to skilfully keep up with rapidly advancing technology, the changing realities of global functioning, and ubiquitous digitalisation, which is almost a sine qua non for the survival of educational institutions in the very demanding, often cross-cultural and unstable realities of functioning (Ciarko, Paluch-Dybek, 2021). Since changes in education are dynamic, complex, and non-linear (Garcia-Huidobro, Nannemann, Bacon, Thompson, 2017), they require multifaceted support. And this assumption provided the impetus for the work of the international team on the process improvement tool for educational organizations presented in the article.

Purpose of the work undertaken

These conditions gave rise to the idea of supporting education and training institutions in digitisation processes. Six institutions from four European countries: Poland (University of Lodz and Lukasiewicz Research Network – Institute for Sustainable Technologies), Italy (European Digital Learning Network), Greece (University of York Europe Campus and ATLANTIS Engineering) and Cyprus (Emphasys Centre) took up the cooperation. The project partnership set itself the ambitious goal of not only focus on online tools, unlike many other initiatives. The main outcome of the two-year cooperation of the partner institutions is a comprehensive methodology for assessing the readiness of education and training institutions to digitise their activities. This is a complex result with several elements:

- competence profile of a Q4EDU expert (i.e., an expert on assessing the readiness of an educational institution to digitise education);
- Q4EDU expert training methodology along with the validation procedure and validation of learning outcomes;
- programme and content of Q4EDU expert training;
- IT tool (DigiRAsT), enabling the assessment of the readiness of a given institution to digitise its activities, both didactic and organizational.

The project is named Quality for digital education readiness in VET (Q4EDU)[3] and its activities carried out in the period 04.2021-03.2023 are mainly aimed at teachers and trainers of continuing education and vocational training, who acquire the competence to assess the readiness of education and vocational training institutions to digitise their activities. They will thus acquire the competences of a Q4EDU expert to allow them to have a greater influence on the quality of the implemented remote and blended education processes. Such a proposal enables vocational education and training institutions to continuously develop, plan and flexibly adapt their offer to their own needs and possibilities, and to the objectives of the learners.

The starting point for the work on the Q4EDU methodology was the quality management systems and tools (used both in education and in other fields), which were benchmarked. The results indicated that, although the quality of digital education is currently a priority for action at both European and national level, there is a lack of a tool to support digital transformation dedicated to the education and vocational training sector.

As a result of the analysis of the used quality assurance methods and tools and the examples of good practice, it was decided that the methodology and tool developed in the Q4EDU project should be based on the assumptions of the digital competence standard DigCompOrg (European Framework for Digitally Competent Educational Organisations), taking into account the quality and customer orientation according to the philosophy of Total Quality Management, and that the obtained results of the self-assessment will be illustrated by a radar diagram based on the EFQM Excellence Model concept.

European Framework of Digitally Competent Educational Organisations as a basis for Q4EDU

DigCompOrg is part of a broader strategy to build a reference framework for the development and understanding of digital competences in Europe. Today, we already have several European standards/frameworks that respond to the needs of the digital economy and society (chronological order):

– DigComp – according to Ferrari A. (2013), as well as Vuorikari, R., Kluzer, S. and Punie, Y. (2022) – the European Digital Competence

[3] ERASMUS+ Project: Quality for digital education readiness in VET (Q4EDU): https://q4edu.eu/ [access: 05.06.2023]

Framework for Citizens describes digital competences and groups them into five areas: Information, Communication, Content Creation, Security and Problem Solving. In today's world, a person with digital competence needs to navigate these five areas fluently, not just be able to use the features of digital technologies. This is an eight-level framework containing use cases.

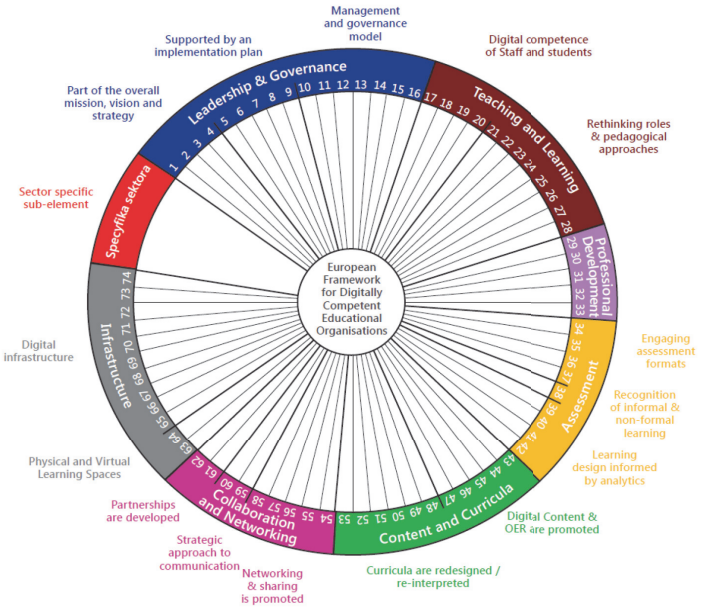
- DigCompOrg – European Framework of Digitally Competent Educational Organisations presents a unified-systemic approach for integrating digital technologies into educational processes in a sustainable way, based on the development of institutional capacities (Kampylis, P., Punie, Y. & Devine, J., 2015).
- DigCompEdu – European Digital Competence Framework for Educators (2017) responds to the growing awareness of the need for educators to have a set of digital competences specific to their profession that will enable them to effectively use the potential of digital technologies to develop quality and innovative education. Twenty-two educator's competencies were defined and grouped into six areas: professional engagement, digital resources, teaching and learning, assessment, empowering learner and facilitating learners' digital competence.

A little more attention is paid to the DigCompOrg framework in this article, as it was the starting point for the work carried out in the Q4EDU project. The main purpose of the 'DigCompOrg standard' is to encourage self-reflection and self-assessment of their progress in the comprehensive integration and effective implementation of digital learning technologies by education and training institutions (including adult education institutions). It can also be used by policy makers as a strategic policy planning tool for the effective use of digital learning technologies by educational organisations at regional, national and European level. The DigCompOrg framework consists of seven key areas and fifteen sub-areas that are common to all education sectors. The full list of key areas reflecting the different aspects of the process of effective use of digital learning technologies includes: Leadership & Governance Practices (LGP), Teaching and Learning Practices (TLP), Professional Development (PD), Assessment Practices (AP), Content and Curricula (CC), Collaboration and Networking (CN), Infrastructure (I).

The standard focuses on the key processes carried out in educational institutions (highlighted in the list above: teaching and learning, assessment,

curriculum design and selection of learning content) and the related support activities undertaken by an educational organisation (e.g. collaboration, staff professional development). A number of descriptors (74 in total) have been defined for each area. The key areas, sub-areas and descriptors are presented schematically as a circle, highlighting their interconnectedness and interdependence. It is also possible to add new elements specific to a given education sector (e.g. higher education, vocational education or the adult education sector) (figure 1).

Figure 1. Structure of the European Framework for Digitally Competent Educational Organisations DigCompOrg.



Source: Kampylis, P., Punie, Y. & Devine, J. (2015). *Promoting Effective Digital-Age Learning – A European Framework for Digitally-Competent Educational Organisations*. EUR 27599 EN. Publications Office of the European Union, Luxembourg. p. 20.

A digitally competent educational organization needs a balanced combination of strong leadership and management (in terms of top-down vision and strategies) and staff and stakeholders capable of taking personal responsibility for the actions they initiate.

Q4EDU and DigCompOrg – common elements

The IT tool developed within the Q4EDU project (DigiRAsT[4]), available in several languages (EN, PL, GR, IT), offers the possibility to register an organisation and to take part in a self-assessment test in seven thematic areas (corresponding to the structure of the DigCompOrg framework). The tool makes it possible to assess the digital readiness of an institution, based on information from different users (e.g. teaching staff, managers, administrators, pupils/students). The self-assessment questionnaires for each area are based on a series of 74 descriptors that define digitally competent educational organisations. For a full understanding of the meaning of each descriptor, the tool is supplemented with relevant explanatory notes (table 1). Users of the tool, when assessing the digital readiness of a given institution, indicate to what extent (on a scale of 1–5) the following statements (descriptors) are correct / true in relation to the audited institution.

Table 1. Descriptors defining Professional development – one of the main areas of a digitally competent educational institution

Main area of analysis – professional development	Descriptors	Additional explanations
	A commitment to Continuous Professional Development (CPD) is evident	The organisation has a commitment to staff professional development in relation to the integration and effective use of digital technologies and digital pedagogy, situated in the wider context of the organisation's vision, mission and CPD provision in relation to teaching and learning generally.
	CPD is provided for staff at all levels	Professional development is organisation-wide and targets leadership as well as front line staff through appropriate CPD interventions with an expectation of wide staff participation.
	CPD is aligned with individual and organisational needs	The organisation has processes in place to identify, design and develop (or procure) professional development programmes that address various facets of digital learning technologies and digital pedagogy, aligned with both individual needs and the particular needs of the organisation.

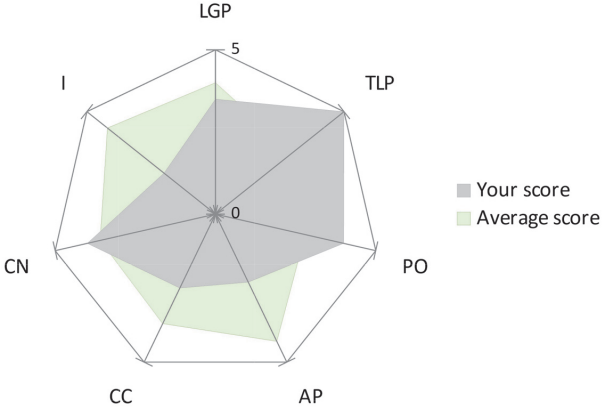
[4] The Digital Readiness Assessment Tool – DigiRAsT [last accessed: 23.10.2023]

Main area of analysis – professional development	A wide range of CPD approaches is evident	The learning organisation utilises a wide range of approaches to staff professional development (incl. coaching and mentoring), blending face-to-face and online delivery within and outside the organisation.
	Accredited/certified CPD opportunities are promoted	Learning organisations will encourage and support staff in undertaking accredited/certified professional development opportunities that contribute to enhanced professionalisation of staff teaching, learning and assessment roles.

Source: Authors' own elaboration.

Self-assessment allows you to generate a graphical presentation of the results (radar chart) and compare the digital level of a given institution with other institutions, also from other countries (figure 2) for areas in need of development (along with access to training in these areas) and the opportunity to re-take the assessment.

Figure 2. Results of the digital readiness assessment of the institution – sample of DigiRAsT. Leadership & Governance Practices (LGP), Teaching and Learning Practices (TLP), Professional Development (PD), Assessment Practices (AP), Content and Curricula (CC), Collaboration and Networking (CN), Infrastructure (I).



Source: The Digital Readiness Assessment Tool – DigiRAsT [last accessed: 23.10.2023]
In addition to a numerical score (range 1–5), the user is provided with recommendations

Training programme and materials for Q4EDU Experts (experts for assessing the readiness of an educational institution for the digitalisation)

The assessment areas correspond to seven training modules that will help the interested teachers/trainers to acquire the key competences to successfully implement digital learning technologies. These are [5]:

Module 1 Leadership & Governance Practices;
Module 2 Teaching and Learning Practices;
Module 3 Professional Development;
Module 4 Assessment Practices;
Module 5 Content and Curricula;
Module 6 Collaboration and Networking;
Module 7 Infrastructure.

For each of the modules listed above, a set of learning outcomes has been defined (following the structure of the European Qualifications Framework: knowledge, skills, attitudes), as well as the programme and training content to achieve them (table 2).

Table 2. Learning outcomes for exemplary Q4EDU expert training modules

Module 3 – Professional development 		
Knowledge (you know & understand) • Competence requirements for staff on the professional use of innovative methods, new media and digital technologies in teaching and learning processes • Internet sources and resources for continuous professional development	Skills (you can) • Analyse changing competence requirements for employees of educational institutions • Identify and analyse various offers for development of competence and optimise the selection in view of the assumed goals	Attitudes (you are ready to) • Use your digital competences for responsible professional development, in accordance with your own needs and those of the institution which you work for • Assess the available information and educational materials with the critical and reflective attitude

[5] Training for Q4EDU experts: https://q4edu.eu/en/training/ [last access: 06.07.2023]

• Rules for the use of open educational resources for professional development and selected educational platforms	• Use open educational resources and educational platforms for professional development	• Take responsibility for the use of available open educational resources in accordance with the principles of ethics and applicable law • Take responsibility for the decisions made
Module 6 – Collaboration & Networking 		
Knowledge (you know & understand) • Pros of the use of digital learning technologies for networking and the appropriate use of them • Variety of online virtual collaboration methods, and peer connection tools as well as digital technologies and professional media platforms for digital learning • Networking methods and techniques for collaboration and exchange of knowledge	Skills (you can) • Network, collaborate and exchange knowledge using Digital technologies and social/ professional media platforms • Prepare a communication strategy plan identifying all appropriate communication channels for different target groups • Organise and take part in knowledge exchange activities and events • Collaborate internally using organisations internal processes, tools, and platforms, to share and exploit internal knowledge and resources	Attitudes (you are ready to) • make all necessary actions to bring internal stakeholder together and build synergies & able to identify different communication channels and systems for different target groups • have a dynamic digital presence (websites, social networks) used as a hub to support networking for sharing and communicating • Support the digital presence of the organisation by using all internal and external communication channels

Source: Authors' own elaboration.

The training content of the individual modules provides support to users (teachers/trainers) in their quest to achieve indicators describing the state of excellence for each of the seven key areas of the DigCompOrg standard.

The programme and training materials have been prepared primarily for the use in self-learning processes. However, the possibility of using them

in traditional classroom sessions is not excluded. The training content for each module, in addition to the original material, also contains numerous references to external sources that can serve to achieve the objectives of the Q4EDU Expert Training. These include, for example, educational platforms and apps, educational material available on social media and private resources of the Internet users, databases and others. All copyright requirements and the types of licences under which such external resources are made available have been respected. The proposed external materials have also been reviewed for factual accuracy and suitability for potential users. The authors have made every effort to ensure that they are useful, attractive and innovative for users.

The programme and training materials are Open Educational Resources, available to anyone interested in the issues of digitisation of education and quality assurance of education. The training content will be made available using Virtual Learning Environment technology.

Each module includes a learning outcome validation element developed and made available to users, using MS Forms. In line with the idea of micro-credentialing, users of the training can collect validations for each of the seven modules (step by step) and do not need to take the entire course. In order to be certified as a "Q4Edu Expert" (according to the developed competence profile[6]), a positive test score for each of the seven modules is required.

Conclusions

In 2020, the European Commission has published a new approach to education and training in the digital age. The new action plan puts forward the idea of improving digital skills at all levels of education and training, and at all levels of e-skills (from basic to advanced). It assigns managers of educational institutions teachers and trainers a key role in the digitalisation of education. The extensive public consultation of this policy document showed, among other things, that digital competence should be a core skill for all teachers and training staff, and should be integrated into all areas of teachers' professional development.

The proposed DigiRAst tool and the digital readiness assessment expert training model ensure complementarity with other strategic education activities

[6] Profile of the Q4EDU Expert: https://q4edu.eu/en/io2-ecvet-profile-and-training-methodology-course-curriculum-design-and-development/ [access: 04.07.2023].

in the post-COVID digital age (DigComp, DigCompEdu, DigCompOrg and others). Q4EDU solutions are the first to fully comply with the structure and subject areas of the European Standard of Digitally Competent Organizations DigCompOrg. They support initiatives taken at national and international level.

DigiRAsT is an on-line tool that allows for a quick assessment of the digital readiness of a VET institution based on the self-reflection of users representing various stakeholders of the institution (employees, students). The testing phase of the solutions, developed as part of the Q4EDU project, allowed – among other things – for the verification of the DigiRAsT tool. The pilot, carried out between January and March 2023, involved participants from four countries. Their level of overall satisfaction with the tool was 94%, with positive feedback collected on the interface.

Based on the results of the testing phase, final versions of the results were prepared, made public and promoted to the educational institutions at all levels and to the decision-makers responsible for education systems. Recommendations were formulated to support awareness building on the benefits of the Q4EDU model. Among others, it is recommended to create in the Q4EDU experts' mind the mission as "ambassadors of deep digitisation of VET institutions" that they have and will have in the future.

In conclusion, it should be emphasized that in addition to the intensive digitalisation of education, which undoubtedly needs proven tools to improve and support the actions taken, the analysis of the latest trends that shape education realizes the complexity and, at the same time, the uncertainty of its future, which will be the result of such variables as progressing climate change, inequalities in society, a changing, multicultural labour market or the phenomenon of knowledge democracy (OECD, 2022). These factors, highlighted in the latest OECD study, should become the impetus for the development of further models to facilitate adaptation to the necessary changes and thus reduce undesirable risks and the resulting negative consequences for the entire education system.

Abstract: The COVID-19 pandemic has disrupted the education process, including the education and vocational training sector, where readiness to switch to remote learning was not common and obvious. In this exceptional situation, the need to digitise both didactic and organizational processes in institutions of continuing education and vocational training, and the need to ensure the quality of these processes has become even more evident. While skilful management with the support of different tools, including improvement models, is a chance for educational units to survive in a turbulent environment and even to build a lasting competitive advantage.
The article presents a proposal to support educational institutions in digitisation processes, developed as part of the international project *Quality for digital education readiness in VET* (Q4EDU), implemented in 2021–2023 by a partnership of seven institutions from four European Union countries (Polish, Greece, Cyprus and Italy). The proposed methodology is a comprehensive and universal solution for assessing the readiness of education and training institutions for the so-called deep digitisation, including pedagogical, technological and organizational aspects of their functioning. It offers the opportunity to monitor and improve the level of digitalisation through the use of an IT tool, based on the European framework DigCompOrg, and the opportunity to acquire and validate the competence of a digital education expert. The pilot phase in four partner countries has yielded promising results as expressed in the feedback of DigiRAsT users.
The tool is available free of charge to staff interested in the development of the institution.

Key words: management of educational institutions, quality of education, digitalisation, DigCompOrg, digitally competent institutions, improvement model

Streszczenie: Pandemia COVID-19 zakłóciła proces edukacji, w tym sektor kształcenia i szkolenia zawodowego, w którym gotowość do przejścia na kształcenie zdalne nie była powszechna i wystarczająca. W tej wyjątkowej sytuacji jeszcze bardziej widoczna stała się potrzeba cyfryzacji, zarówno procesów dydaktycznych, jak i organizacyjnych w placówkach kształcenia ustawicznego i zawodowego oraz konieczność zapewnienia jakości tych procesów. Umiejętne zarządzanie przy wsparciu różnych narzędzi, w tym modeli rozwoju, jest szansą dla jednostek edukacyjnych na przetrwanie w turbulentnym otoczeniu, a nawet na zbudowanie trwałej przewagi konkurencyjnej.
W artykule przedstawiono propozycję wsparcia instytucji edukacyjnych w procesach cyfryzacji, opracowaną w ramach międzynarodowego projektu *Quality for digital education readiness in VET (Q4EDU),* realizowanego w latach 2021–2023 przez partnerstwo siedmiu instytucji z czterech krajów Unii Europejskiej: Polski, Grecji, Cypru i Włoch. Proponowana metodyka jest kompleksowym i uniwersalnym rozwiązaniem pozwalającym na ocenę gotowości instytucji edukacyjnych i szkoleniowych do tzw.

głębokiej cyfryzacji, obejmującej aspekty pedagogiczne, technologiczne i organizacyjne ich funkcjonowania. Oferuje możliwość monitorowania i doskonalenia poziomu digitalizacji poprzez wykorzystanie narzędzia informatycznego opartego na europejskich ramach DigCompOrg oraz możliwość nabycia i potwierdzenia kompetencji eksperta edukacji cyfrowej.
Faza pilotażowych testów w czterech krajach partnerskich dała obiecujące wyniki wyrażone w opiniach użytkowników narzędzia DigiRAsT.
Narzędzie jest dostępne bezpłatnie dla kadry zainteresowanych rozwojem instytucji.

Słowa kluczowe: zarządzanie instytucjami edukacyjnymi, jakość edukacji, cyfryzacja, DigCompOrg, kompetencje cyfrowe instytucji, model doskonalący

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