



DIGITAL READINESS EVALUATION METHODOLOGICAL FRAMEWORK



Q4EDU:

QUALITY FOR DIGITAL EDUCATION READINESS
IN VET

Author (s): UNIWERSYTET LODZKI - UoL



This project has been funded with support from the European Commission. This communication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein. « Q4EDU- Quality for Digital Education Readiness in VET Project, project number: 2020-1-PL01-KA226-VET-095343.



DIGITAL READINESS EVALUATION METHODOLOGICAL FRAMEWORK

PROJECT INFORMATION

Project acronym:

Q4EDU

Project title:

Quality for Digital Education Readiness in VET Project

Project Number:

2020-1-PL01-KA226-VET-095343

Sub-programme or KA:

KA2 - Cooperation for innovation and the exchange of good practices

KA226 - Partnerships for Digital Education Readiness

Website:

<https://q4edu.eu>

CONSORTIUM:

- Coordinator:
 - UNIWERSYTET LODZKI - UoL (Poland): www.uni.lodz.pl
- Partners
 - EUROPEAN DIGITAL LEARNING NETWORK (Italy) – www.dlearn.eu
 - SIEC BADAWCZA LUKASIEWICZ - Ł-ITeE (Poland): www.itee.radom.pl
 - CITY COLLEGE (Greece): www.itee.radom.pl
 - EMPHASYS CENTRE (Cyprus): www.emphasyscentre.com
 - ATLANTIS ENGINEERING (Greece): www.abe.gr



TABLE OF CONTENTS

Contents

Executive summary	3
1. Introduction	3
2. Comparative analysis on the methods and tools.....	5
3. SWOT analysis for existing, most popular and complex practices.....	11
4. Conclusion.....	16
5. References.....	1Błąd! Nie zdefiniowano zakładki.



Executive summary

The general objective of the Q4EDU project is to develop a methodology for a quality plan to VET centers and trainers. Moreover, the project outputs are aimed at: understanding more deeply the digital education readiness status in the VET sector; assessing a mixture of Quality Assurance (QA) methods and models and providing the novel Q4EDU framework; preparing the ECVET curriculum for an expert and developing a novel methodology for specialised training; developing training content, keeping in mind the quality criteria and performance indicators; developing the Digital Readiness Assessment Tool that incorporates the proposed Q4EDU framework, perform trials and assess results and developing Policy Recommendation/Guidelines documents.

The work within the O1 Methodological framework is divided into two activates as follows:

- IO1/ A1: Selection of Methodologies (M1-M4) lead by Atlantis Engineering and
- IO1/A2: Digital Readiness Evaluation Methodological Framework (M3-M7) lead by UoL

Within IO1/A2 based on the outcomes of O1/A1, the Q4EDU methodological framework for the delivery of Digital Readiness assessments in VET was developed. As a first step, the existing practices were analysed together with the identified skills gaps with regards to assessment methodologies (SWOT analysis). A comparative analysis on the methods and tools currently used in each partner's country and in further EU countries was delivered. Information about existing practices has already been gathered in the pre-grant phase and will be further analysed. A guideline describing the adaptive transformation of the various methodologies (EFQM, DigiComp framework, TQM etc.) for the field of VET, with focus on the specialities of the digital readiness topic was prepared. Aspects of safety and responsibility on use of digital technology were also examined. Capacity of VET centres to properly adapt to new conditions asking for combined education methods (online, blended) was expected to be enhanced.

1. Introduction

The COVID-19 pandemic phenomenon has undoubtedly highlighted the issues related to distance learning and its multidimensional conditions. For example, both the new Skills Agenda for Europe and the Communication on the European Education Area are key documents that underline the importance and need to improve digital skills at all levels of education and training. The prepared Action Plan supports the achievement of the target of 70% of 16-74 year olds having at least basic e-skills by 2025. Furthermore, the new Action Plan also confirms the objectives of the Commission's proposal for a Council Recommendation on vocational education and training (VET) for Sustainable Competitiveness, Social Justice and Resilience, with a special focus on the digital transformation in the VET sector¹.

¹ Digital Education Action Plan (2021-2027) <https://education.ec.europa.eu/>



Therefore, the implemented digital technology should be skillfully integrated with the education and training system, relying primarily on a coherent set of quality standards, guidelines and support tools, enabling an optimal combination of the specifics of distance and classroom learning.

However, most of the available studies deal with topics solely related to the management of the remote education process, primarily in the technical (infrastructure, equipment, applications) and competence (the ability to use devices, applications, but also the organization of work / learning time or methodological preparation)². Additionally, some publications focus on the quality of relationships between the parties involved in digital education³, and also raises issues related to their perception of distance learning in relation to the traditional stationary mode.⁴

The tools available at the moment often have numerous limitations in application, because, for example, such as the Digital Maturity Framework for Higher Education Institutions are directed only to a specific level of education.⁵ At this point, it should be emphasized that there are some initiatives taken at the European level to support schools in using digital technologies in order to achieve better educational results. An example is the free SELFIE tool, which was developed by the European Commission and an international team of experts.⁶

The analysis of world literature, both in the field of general and specialist knowledge, and consultations with representatives of vocational education, clearly indicate a niche in the field of a detailed study concerning tools verifying the level of maturity of VET units in the area of digitization of implemented activities. Despite many universal, generally available model concepts, mainly based on the so-called Digital Maturity Assessment Matrix,⁷ it is difficult to find guidelines for a tool that would take into account the specificity and enable self-analysis by organizations assigned to the VET sector. The results of European research from 2019, so before the pandemic, have clearly demonstrated the need to develop a digital transformation support tool for education, including vocational education. The data obtained as part of the research have shown that, despite the fact that in most countries in Europe there are strategies in the field of digital education in schools, the procedures for their monitoring and evaluation, together with the related policies, are not common, and where they occur, they are rare.

²For example: G. Ptaszek, G.D. Stunża, J. Pyżalski, M. Dębski, M. Bigaj, Edukacja zdalna: co stało się z uczniami, ich rodzicami i nauczycielami, Gdańskie Wydawnictwo Psychologiczne Sp. z o.o., 2020 or Raport Digital Education at School in Europe) EACEA, Eurydice 2019, https://eacea.ec.europa.eu/national-policies/eurydice/content/digital-education-school-europe_en

³ For example: J. Kordziński, Nowoczesne nauczanie, Wolters Kluwers Polska, 2022

⁴ Report: Jak oceniamy naukę zdalną po roku pandemii? Marzec 2021, www.clickmeeting.com

⁵ More information: V. Đurek, N. Begičević Ređep, B. Divjak, Digital Maturity Framework for Higher Education Institutions, Proceedings of the Central European Conference on Information and Intelligent Systems, 2017

⁶ More information: <https://education.ec.europa.eu/self-reflection-tools/schools-go-digital>

⁷ For example :The Digital Maturity Assessment Tool (DMAT), <https://btech.au.dk/forskning/forskningssektioner-og-centre/dbd/dmat> or V. Durek, N. Kadoić, Z. Dobrovic, Digital Maturity of Higher Education Institution: A Meta Model of the Analytical Network Process (ANP) and Decision EXpert (DEX), Proceedings of the 29th Central European Conference on Information and Intelligent Systems, 2018, pp. 223–230.



regularly implemented.⁸ This fact only confirms the legitimacy of developing a tool that, based on already existing good practices, will improve the processes of digital transformation for entities related to vocational education.

However, this requires identification and analysis of the Digital Readiness Evaluation Methodological Framework, including a comparative analysis on the methods and tools currently used in each partner's country and in further EU countries further analyze of information about existing practices and SWOT analysis for the most popular ones.

2. Comparative analysis on the methods and tools

The development of an optimal tool supporting the digitization of the VET sector requires the analysis of already existing methods and techniques, primarily in terms of their adaptability to the specifics of the sector's base Q4EDU project, so for VET.

The results of the analyzes carried out as part of the output O1 / A1 are the characteristics of the most popular Quality Assurance Methodologies used primarily in Industry and Business Sectors. Therefore, in this part of the study, it is necessary to look at the tools used in individual countries in order to develop the best practice based on the results of the SWOT analysis.

ASSESSMENT METHODOLOGIES IN ITALY

The criterion for the selection of tools for analysis is the assumption that the assessment of digital readiness in education and training contexts should constitute a fundamental phase of the training process as can offer teachers not only crucial information to improve the process of teaching and learning, but also to calibrate training courses based on different of each learner.

In Italy there are various forms of evaluation of the knowledge and skills learned, but not so validated tools to assess the digital readiness of learners or of schools and VET organizations they attend. The most common and traditional assessment tool are the following ones, which can be partially used to assess the digital readiness of learners: diagnostic evaluation, formative evaluation, summative evaluation, and indicative evaluation.

Diagnostic evaluation is aimed at detecting the adequacy of the learners' preparation in relation to the planning of new teaching and training activities. This type of assessment can include those tests that are named as 'entrance tests', usually proposed in classes that start a new school phase. Indeed, at the beginning of the new learning units, trainers must ensure that some of the learners and students possess the prerequisites necessary to adequately deal with the proposed activities. Many types of tests that evaluate different characteristics of students are included in the diagnostic assessment: learning motivation, levels of attention, interests, cognitive abilities, learning styles, just to name the most known.

⁸ Report Digital Education at School in Europe) EACEA, Eurydice 2019, https://eacea.ec.europa.eu/national-policies/eurydice/content/digital-education-school-europe_en



The formative assessment is carried out in order to detect how the students receive the new knowledge. This type of evaluation must meet the utility criterion rather than the criteria of validity and reliability. There are different types of formative tests that allow to evaluate how learners are acquiring new knowledge, including: oriented conversation; short oral questions; thinking aloud; objective tests (especially multiple choice); the systematic control of school activities; homework.

Summative assessment is carried out to detect knowledge and skills at the end of the training units. This evaluation also has a training function, since it allows you to have the latest data on the students' learning and to provide them with feedback on the level of their performance. Moreover, it allows you to correct any errors, to carry out the last didactic interventions before moving on to another area of content. To be valid, the summative tests must contain a specific number of questions and / or exercises that cover most of the contents that have been proposed in the training unit carried out and the skills that have been solicited. The types of tests most suitable for summative evaluation are those which guarantee, at the same time, an adequate level of validity and reliability. Therefore, both objective questions (multiple choice, matches, true-false, etc.), and semi-structured questions (structured questions, short essay, etc.) can be used in the same summative test that allow to detect the cognitive objectives of highest level: elaboration, creativity, etc.

The orientation (indicative) evaluation has the function of acquiring useful elements to direct the learners towards subsequent choices appropriate to their potential. The indicative evaluation must go beyond the criterion of scholastic success, it must detect other factors that can be determined in the success in subsequent school curricula. These factors are represented by the characteristics relating to the learner's personality and its environmental context: cognitive styles; type of intelligence; temperamental traits; dominated interests and values; extracurricular skills; attitudes towards oneself and others, study, and work; family and social relationships. This type of evaluation also involves the use of tools such as questionnaires and interviews.

To assess digital readiness of teachers often used is DigCompEdu Check-In. This tool offers schools teachers of all levels the opportunity to identify their strengths and areas for improvement with respect to the use of digital technologies for teaching. It is a self-assessment questionnaire made up of 22 questions that provides detailed feedback and useful suggestions, as well as indications to identify the main stages in the personal development path towards innovative teaching. This tool helps to reflect on the digital skills of primary and secondary (lower and upper) school teachers⁹.

ASSESSMENT METHODOLOGIES IN CYPRUS

In Cyprus, there is a strong need to modernize the education system towards digitization. According to the 2014-20 lifelong learning strategy and its promotion for students to acquire digital competences, new curricula should be adopted in VET institutions. That is why ICT course are implemented in teaching process. In addition, there has been some effort to develop and adopt an

⁹ More information: <https://ec.europa.eu/eusurvey/runner/DigCompEdu-S-IT>



artificial intelligence (AI) strategy since 2019. This strategy aims to create programmes to promote and develop AI in all organizations, upgrade the education system and build an international collaboration through Cyprus' participation in initiatives and programmes organised by the EU and other countries. Yet, to this day, no national training programmes have been developed with a specific focus on enabling adults to understand the implications of AI or to learn AI methods or to assist those who may have been displaced by their jobs because of automation. There are also some requirements for teachers from VET institutions. They must hold an appropriate diploma in their subject area or a degree relevant to the subject they will teach. Pre-service training is an obligatory requirement for all new appointments to the Educational Service. Yet, their personal and professional improvement continues, as they have to attend training programmes (twice a year) which cover all fields of study offered at technical schools and voluntary training programmes which are conducted in the afternoon and are open and free for all teachers.

The ECVET credit system applies in Cyprus. The ECVET is part of the overall project to develop European cooperation in VET and constitutes one of its operational tools. A working committee on the development and implementation of ECVET in Cyprus was appointed in September 2011 and since 2012, the CY NA together with the ECVET experts in Cyprus have organised several events and seminars and managed activities for the promotion, information and development of ECVET at National and European level. The committee has acquired adequate training at National and European level and it has become an expert group that is currently comprised of stakeholders from the public and the private sector.

The second essential component of education in the VET sector is National Qualifications Framework (NQF). The development of a NQF to promote recognition of academic and vocational qualifications acquired in Cyprus is a government priority. To facilitate the process, the Council of Ministers appointed a high-level national committee comprising the Directors-General of MoEC, the MLWSI and the HRDA. The National Coordination Point (NCP) was established in October 2012 and the final version of the Cyprus referencing report was presented and submitted for approval to the European Qualifications Framework (EQF) Advisory Group in December 2016, in Brussels. The report has been updated in 2018 and it is planned to be updated as soon as new changes are developed.

ASSESSMENT METHODOLOGIES IN GREECE

In Greece a national quality assurance framework aligned to the EQAVET (European Quality Assurance Reference Framework for VET), which was officially presented in July 2011 and it was partially implemented over a pilot phase covering post-secondary IVET. For the period 2016-2020, the main aim was to make final the implementation of the quality assurance framework. To this end, quality assurance mechanisms were developed linked to the implementation of the Hellenic qualifications framework and to ensuring the quality of the certification process based on learning outcomes. It resulted in the production of a handbook which was piloted in the tourism sector by developing assessment standards based on learning outcomes.

Moreover, according to the CEDEFOP calculations based on EQAVET Secretariat surveys for 2013 and 2018 data, Greece was above the EU average in IVET and CVET IN 2018, while “all EQAVET



indicators are used, including those on the destination of VET learners upon completion of their training, the use of acquired skills at the workplace, and mechanisms to identify training needs at the workplace” (EQAVET, 2014, 2018)¹⁰.

Finally, the guidelines for VET providers suggested by EOPPEP, which is the National Reference Point for Quality Assurance in VET and represents Greece in the European network for EQAVET, identify key activities that need to be taken into account “in order to improve quality assurance processes in line with the EQAVET Framework¹¹.

Also in Greece an increasing number of companies, institutions and both private and public sector organizations have applied the EFQM (European Foundation for Quality Management) model over the last years. Among the many entities achieving different levels of excellence, there are also many representatives of the VET sector, which proves the great potential of this method¹².

Also TQM (Total Quality Management) guidelines are readily and widely used among VET units. For example in Greek higher education. In Greek universities, there is the Quality Assurance Unit (MODIP) which is responsible for the implementation of the TQM principles and its assessment. It is used in order to improve the educational work and the quality services through internal and external evaluation procedures. Moreover, according to a research study⁴ in private sector Higher Education Institutions in Greece, “the TQM elements mostly adopted by the Greek HEIs concern the following: student focus, leadership and top management commitment, strategic quality planning, process management and teaching staff and employee involvement. On the other hand, the most significant results achieved by the sample HEIs concern quality performance improvement, teaching staff and employee satisfaction, operational performance improvement and the positive impact on society.”¹³

The application of TQM is also applied in the Greek Public Sector as, based on Law 3230/2004, quality tools as the following are used: Management by Objectives, Indicators Measuring Efficiency and Effectiveness, the Common Assessment Framework and the Quality Certification through ISO. What is more, based on the paper on Quality Assurance Mapping in Greek Service Companies, “Greek

¹⁰ More information: <https://www.cedefop.europa.eu/en/country-reports/developments-vocational-education-and-training-policy-2015-19-greece>

¹¹ More information: https://www.eoppep.gr/images/DIASFALISH_POIOTHAS/Quality%20Blocks_En.pdf

¹² More information:

https://www.researchgate.net/profile/YiannisNikolaidis/publication/247834959_The_evolution_of_quality_management_in_DOKPY_Magnesia_-_Greece_from_basic_quality_initiatives_to_EFQM/links/544fc7ac0cf249aa53da833a/The-evolution-ofquality-management-in-DOKPY-Magnesia-Greece-from-basic-quality-initiatives-to-EFQM.pdf ,

<https://news.gtp.gr/2018/12/28/efqm-recognizes-bluegr-hotels-resorts-4-star-excellence/>,

<https://www.sciencedirect.com/science/article/pii/S2212567115017256>,

<https://www.sciencedirect.com/science/article/pii/S1877042814044693>,

<https://reader.elsevier.com/reader/sd/pii/S1877042814044589?token=43E5A7BF59FE5707A2C30327CE1F2AC4D3F1DB2D1E6DBBAF30D1498D3FF1A8CCFF03E14F66BF8726910CE96F10D42865&originRegion=eu-west-1&originCreation=20220120104839>, <https://www.astellas.com/gr/en/news/239>

¹³ More information: <https://www.emerald.com/insight/content/doi/10.1108/QAE-08-2015-0033/full/html>



companies offering services, despite their small size, seem to follow progressively the trends of international and competitive markets, implementing various QMSs. At the same time, it shows that the majority of companies ask for external quality consultants to help them with the proper design and implementation of the selected standards. On the other hand, this review reveals that only few publications presented exhaustively the methodology that was followed by service companies in order to design and apply a QMS¹⁴.

ASSESSMENT METHODOLOGIES IN POLAND

In Poland, there are no defined system tools for assessing digital readiness for VET units. However, there are many studies whose results can be used as an input to the target tool for the Q4EDU project. An interesting example is the newest report prepared by the University of Warsaw - Digital education in COVID-19 era. The report is an analysis of the current situation in Polish schools. The nationwide survey was conducted among 4178 respondents, including 2961 teachers and school heads and 1217 students. The study was conducted in June 2020. The conclusions are the answer to many research questions, including the following issues: the course of digital education in Poland, the course of digital education in Poland and the determination of its further development directions along with the identification of potential barriers and benefits¹⁵.

In addition to numerous studies on the determinants of the distance learning process, both from the perspective of teachers and students and their parents, numerous guides are also available in Poland, containing tips on how to optimally prepare a unit for distance learning. An interesting example is the document prepared by the National Ministry of Education: Good practices regarding the functioning of education system units in the period of preventing, counteracting and combating COVID-19¹⁶.

Referring to the models or methods used to manage the distance learning process, in particular in terms of assessing and improving its quality, it is worth quoting the guidelines recommended by the European Association for Quality Assurance in Higher Education. The European quality assessment is based on eight "assessment types", where the "assessment type" is a combination of a specific method (assessment, accreditation, audit, benchmarking) and specialization (subject, program, institution, domain). Research has shown that institutions typically use several different types of assessment. The individual elements aimed at increasing the quality, according to ENQA documents, operate on the basis of a four-step model. The first level assumes quality control independently by each institution by shaping its own procedures and standards aimed at maintaining and improving quality. The next step is the self-assessment process, which takes place at set periods and is based on a prepared questionnaire

¹⁴ More information: <https://ruomo.lib.uom.gr/bitstream/7000/83/3/Nikolaidis%2C%20Adamidou-2016.pdf>

¹⁵ More information:
https://kometa.edu.pl/uploads/publication/941/24a2_A_a_nauczanie_zdalne_oczami_nauczycieli_i_uczniow_RAPORT.pdf?v2.8

¹⁶ More information:

Jak zorganizować kształcenie na odległość w szkole - <https://www.gov.pl>



(survey). The collected documents are the basis for the next level involving the visit of external experts (in Poland they are members of the National Accreditation Committee). Based on the collected data, a report is created. Publication of the report is the last step of the model¹⁷.

Referring to the VET sector, in the document: Study on EU VET instruments (EQAVET and ECVET), the conditions for the application of the guidelines of the European Quality Assurance Reference Framework for Vocational Education and Training (EQAVET) and the European Credit System for Vocational Education and Training (ECVET) in Poland were defined. Poland produced guidelines on assuring the quality of vocational education (as well as general education) in regulation of the Minister of National Education of 7th October 2009 on pedagogical supervision (OJ of 9th October 2009). It utilises the EQAVET Framework, including reference to the EQAVET quality cycle, indicative descriptors and indicators. It applies only to IVET. Quality standards are developed for the whole country by the Minister of National Education and are used to measure the quality of school work, although these are not necessarily based on EQAVET indicators. Pedagogical supervision and monitoring is also performed by education superintendents, who observe, report and give advice on how to improve the education process in both IVET and CVET. Very important quality mechanism relies on the system of external examination in the formal IVET and CVET. In IVET, providers are required to conduct internal evaluation and use results to improve the future delivery of the programme. Provider internal evaluation utilises some EQAVET indicators on outcomes, as well as indicators on teaching and learner care. In the field of ECVET the Act on the Integrated Qualifications System that establishes the Polish Qualifications Framework and the integrated qualifications registry came into force in 2016. Its main aim is to support lifelong learning. It should be emphasized that Poland does not use credit points in VET¹⁸.

In addition, as part of the internal quality assurance system, many VET type entities apply the assumptions of the EFQM type models as well as the guidelines of ISO 9000 series standards.

OTHERS EXAMPLES:

There are lots of examples of inspiring best practices from business sector in different countries in Europe. For example in Italy it can be: DREAMY model, which is a tool for the audit and check-up of the "readiness for digitalization" which aims to guide manufacturing companies along the process of defining their digital transformation roadmap¹⁹. The second example is a TUR.I.S.I.CO tool. It is a kind of a short questionnaire to define the degree of digital readiness of companies operating in the tourism sector. It is a free tool, designed to immediately provide the operators of the tourism supply chain with

¹⁷ More information: <https://www.enqa.eu/>; P. Różewski, E. Kuztina, O Zikin O., Modele i metody zarządzania procesem otwartego nauczania zdalnego, Modele i metody zarządzania procesem Otwartego nauczania zdalnego INSTYTUT BADAŃ SYSTEMOWYCH POLSKIEJ AKADEMII NAUK, 2008, p.32-47

¹⁸ More information: Study on EU VET instruments (EQAVET and ECVET), 2019 <https://ec.europa.eu>

¹⁹ More information: https://blog.osservatori.net/it_it/digital-readiness-nel-manufacturing-modello-dreamy



initial feedback on their relationship with digital technologies²⁰. In Poland very popular is a digital platform for the industry of the future, which offers a free self-assessment tool for digital maturity, determining at what stage is a company planning a transformation towards industry 4.0²¹. Also, many consulting companies offer diagnosis 4.0, which helps to create a plan for the digital transformation of the enterprise. Also, many consulting companies offer diagnosis 4.0, which helps to create a company transformation plan based on the results of the ADMA - Advanced Manufacturing method, meaning factories of the future, i.e. those that use innovative production processes and care for the sustainable development and social aspect of their operations. It is an initiative promoted by the European Commission²².

Moreover, in terms of challenges and opportunities related to the digital transformation of organizations, many studies are conducted, the results of which constitute a valuable source of knowledge for entities shaping their digital maturity. An example is the annual report of the global Digital Maturity Survey conducted by MIT Sloan Management Review and Deloitte Digital.²³

CONCLUSION:

The above results of the analyzes carried out clearly indicate that the quality of digital education is a priority now, however, despite numerous improvement guidelines, there is no dedicated only for the VET sector, tool supporting digital transformation.

3. SWOT analysis for existing, most popular and complex practices

In order to develop the desired results of the project, specific tools /concepts, commonly used in various European countries, were selected. The main criterion for their selection was, above all, comprehensiveness, which is a rational basis for the development of the target tool specified in the Q4EDU project.

For the general SWOT analysis the following were selected: Total Quality Management, EFQM and DigiCompOrg. The assumptions of the above-mentioned tools have been characterized in the Selection of Methodologies document in the IO1 / A1 framework. However, in the context of the current study, it is worth citing a few examples of the application of the above-mentioned concepts in the field of education.

A good number of scholars find that some TQM tools and techniques are convincingly suitable in education²⁴. The conclusions from various scientific studies clearly indicate that application of Total

²⁰ More information: <https://www.fondazioneisi.org/informazioni/372-turistico?highlight=WyJ0dXJpc2ljbyJd>

²¹ More information: <https://przemyslprzyszlosci.gov.pl/formularze/samooocena-dojrzalosci-cyfrowej/>

²² More information: <https://www.adma.ec/>

²³ More information: <https://www2.deloitte.com/pl/pl/pages/deloitte-digital/Articles/Raport-Digital-Maturity.html>

²⁴ More information: ASM Sohel-Uz-Zaman, U. Anjalin, Implementing Total Quality Management in Education: Compatibility and Challenges, Open Journal of Social Sciences , Vol.4 No.11, November 2016.



Quality Management in education gives better results in all fields of the process of education, primarily in connection with the required never ending improvement through the collaborative efforts of members of the educational organizations. TQM philosophy encourages the students, teachers and the employees for extraordinary performance²⁵

Also the guidelines of the EFQM model are widely used to improve education processes at almost all levels. For example In Portugal, a large-scale project at 47 schools was based on the application of the European Foundation for Quality Management (EFQM) Excellence Model. Each school conducted its own self-assessment process, in accordance with documents and training materials prepared for the project based on an adaptation of the EFQM model of excellence for educational institutions and counting on the support of consultants with specific training as EFQM model assessors.²⁶ Apart from numerous examples of the use of EFQM in higher education²⁷, it is worth mentioning the EFQM-Hamdan Educational Model, which aim is to provide a framework for achieving outstanding performance in Educational Institutions, and for recognizing high performance²⁸.

Finally DigiCompOrg is also a great framework, which can be used by all educational organizations to guide a process of self-reflection on their progress towards comprehensive integration and effective deployment of digital learning technologies. In addition it is also perceived as a quality improvement tool and integrative policy tool, which can be very helpful in many areas in education, like for example in designing and implementing teacher policies²⁹.

SWOT analysis is a strategic planning framework used in evaluation of an organization, a plan, a project, a business activity or others aspects. This tool involves four areas into two dimensions: internal and external. It has four components: strengths, weaknesses, opportunities and threats. Strengths and weaknesses are internal factors, opportunities and threats are external factors and attributes of the analyzed area. It should be emphasized that is an analysis technique that has a general perspective and presents general solutions. Details and specific issues are not the focus of SWOT Analysis, but the other analyses that would follow. In this sense, SWOT Analysis is a road map that guides one from the general to the specific.³⁰

²⁵ More information: M.S. Farooq, M. S. Akhtar, S.Zia Ullah, R.A. Memon, APPLICATION OF TOTAL QUALITY MANAGEMENT IN EDUCATION, "Journal of Quality and Technology Management", Volume III, Issue I1, Dec 2007.

²⁶ More information: P. M. Saraiva, M. J. Rosa, J. L. d'Orey, Applying An Excellence Model To Schools, NOVEMBER 2003, www.asq.org

²⁷ For example: R.Laurett. L.Mendes, EFQM model application in the context of higher education: A systematic review of the literature and agenda for future research, "International Journal of Quality & Reliability Management" February 2019.

²⁸ More information: <https://www.efqm.org/lens-series/education/>

²⁹ More information: G. Halasz, Designing and implementing teacher policies using competence frameworks as an integrative policy tool, "European Journal of Education" 54(3), July 2019.

³⁰ More information: E. Gürel, SWOT ANALYSIS: A THEORETICAL REVIEW, "Journal of International Social Research" 10(51):994-1006, 2017.



EFQM - European Foundation for Quality Management

<p>STRENGTHS</p> <ul style="list-style-type: none"> - holistic approach - universality - a need for systematically obtained data - broad and contrasted guiding framework - a kind of detailed map for management and employees - objective evaluation of organization - creation of quality groups in each functional area - self-assessment is structured method based on facts - link with ISO 9000 Standards - optimizing resources by focusing on strategically important aspects 	<p>WEAKNESSES</p> <ul style="list-style-type: none"> - subjectivity of the results - required implementing training needs - evaluation phase lasts too long (on average 6-9 months) - lack of organizational resources to work with the model (people, knowledge and time) - difficulties in acquiring the principles and criteria of the model and translating them into the language of the organization - lack of awareness and commitment among management and employees - organizational difficulties in creating a new management approach and paradigm in the organization - the complexity of the self-assessment and the time needed to write the report - quality and involvement of external assessors - direct and indirect costs of model implementation
<p>OPPORTUNITIES</p> <ul style="list-style-type: none"> - most used worldwide Excellence Model - using EFQM based self-assessment makes easier carrying out self-assessment according to different frameworks like for example: European Quality Assessment Framework on Quality in Vocational Education and Training (CQAF in VET) - EFQM based model is linked to continuous improvement - EFQM based model is in line with organization strategy - promoting of sustainable excellence - creates a basis for comparison - improves internal awareness of TQM principles and meaning of quality - allows internal transfer of knowledge and experiences - indicates directions for further development 	<p>THREATS</p> <ul style="list-style-type: none"> - resistance to change - the benefits depend largely on the activities of the management team and involvement of employees - in schools lack of management tools that act as EFQM support models - not adapted to advanced organizations - relatively few implementations of the EFQM model guidelines - emphasis mainly on internal improvements, and low focus on improving the quality of the offer - noticeable weak image improvement



<ul style="list-style-type: none"> - possible to integrate with others models, concepts, tools etc. - increased operational efficiency - Radar logic as a tool, which helps to lead change and manage - improvements in an organization 	
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--

Source: own elaboration based on: Saizarbitoria I.H., Viadiu F.M., Fa M.C. (2010), ISO 9001 Vs. EFQM: A comparative analysis based on external independent data, 4th International Conference on Industrial Engineering and Industrial Management XIV Congreso de Ingeniería de Organización Donostia-San Sebastián, September 8th-10th; R.S. Santos, A.C. Abreu, EFQM model implementation in a Portuguese Higher Education Institution, Revista Produção e Desenvolvimento, vol. 5, no. 1, 2019; J. Kacała, E. Kołaczyk, Wdrażanie modelu doskonałości EFQM–determinant, “Zarządzanie i Finanse”2013, 4,2, 145-154

TQM – Total Quality Management

<p>STRENGTHS</p> <ul style="list-style-type: none"> - quality and customer orientation - lowers costs throughout the business infrastructure and organization - improves internal and external communication - increased job security and employee morale - effective participation - improves organizational performance - standardization - more information oriented - more responsive work groups 	<p>WEAKNESSES</p> <ul style="list-style-type: none"> - many strategic barriers to implement requirements of TQM - unwavering management commitment required - proper planning required - TQM addresses many - important issues affecting higher education, but it does not address - the tougher problems of education
<p>OPPORTUNITIES</p> <ul style="list-style-type: none"> - dynamic system - direct control on the employees’ work processes and output - enhanced shareholder and stakeholder value - improved reputation - a long-term investment - good public image - adaptability to changing or emerging market conditions and to environmental and other government regulations - can be a fundamental way of fulfilling the accountability requirements common to educational reform 	<p>THREATS</p> <ul style="list-style-type: none"> - direct control on the employees’ work processes and output - at the beginning can - weaken the worker productivity - needs bureaucracy and regular audits - too much stress on process not final product - resistance to change - discourages creativity and innovation - employees-management relations - demands a change in an organizational culture - high cost of time - long-term resource allocation - not a quick-fix solution - limitations of TQM in education and skeptical



	<p>approach to adopting TQM in education</p> <ul style="list-style-type: none"> - in education poor curriculum design could lead to quality failure
--	--------------------------------------------------------------------------------------------------------------------------------------------------------------------

Source: own elaboration based on :www.asq.com; M.S. Farooq, M. S. Akhtar, S.Zia Ullah, R.A. Memon, APPLICATION OF TOTAL QUALITY MANAGEMENT IN EDUCATION, *Journal of Quality and Technology Management* Volume III, Issue I1, Dec 2007, pg 87-97; P.Mishra, A. Pandey, Barriers in implementing total quality management in Higher Education, “*Journal of Education & Research for Sustainable*” 2013; T. Hazzard, *The Strengths and Weaknesses of Total Quality Management in Higher Education*, October 1993.

DigiCompOrg - European Framework for the Digitally-Competent Educational Organisations

<p>STRENGTHS</p> <ul style="list-style-type: none"> - comprehensive, complex and universal approach - a tool to improve digital competences - defined support methods - indicators to measure Human Capital - sets learning goals - can be used by educational organizations to guide a process of self-reflection on their progress towards comprehensive integration and effective deployment of digital learning technologies - DigCompOrg complements rather than supersedes other frameworks and tools already in use 	<p>WEAKNESSES</p> <ul style="list-style-type: none"> - very extensive tool - too general - some fundamentals and subelements require some detail - time-consuming - the ambiguity of some formulas - it seems that some areas are duplicated - it is not intended to address the full range of administrative and management information systems
<p>OPPORTUNITIES</p> <ul style="list-style-type: none"> - adaptable to the particular contexts within which educational organizations, intermediaries or project developers operate - helps with self-evaluation - identifying training opportunities - facilitating job search - can be used to plan and design education and training offers - it can facilitate transparency and comparability between related initiatives throughout Europe - it can play a role in addressing fragmentation and uneven development across the Member States - can be used as a strategic planning tool for 	<p>THREATS</p> <ul style="list-style-type: none"> - developed from the perspective of specific working groups of mostly scientists and educators - the risk of not developing a reference to the DigiCompOrg a document: Self-Assessment Questionnaire for Digitally-Competent Schools - the risk that the results will not be comparable between different organizations - addressed to EU entities - lack of possibility of certification



<p>policymakers to</p> <ul style="list-style-type: none"> - promote comprehensive policies for the effective uptake of digital learning technologies by educational organizations at regional, national and European level - can be the basis for development of specific framework and assessment tool of specific educational systems - the results of various studies indicate that a common conceptual approach at European level, capable of supporting the development of digital capacity in educational organizations, is both desirable and attainable - facilitates transparency and comparability between related initiatives throughout Europe. 	
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--

Source: own elaboration based on: <https://ec.europa.eu/>; P. Kampylis, Y. Punie, J. Devine, *Promoting Effective Digital-Age Learning. A European Framework for Digitally-Competent Educational Organisations*, 2015 JRC Science Hub <https://ec.europa.eu/jrc>

4. Conclusions

The above analysis indicates a strong need to develop a tool supporting the transformation process of vet-type units. The review of the available methods as well as the SWOT analysis for the selected ones provide the basis for the development of the tool, which will be a compromise, combining the advantages of these most popular options. The tool developed in the project will therefore be based on the guidelines of the DigiCompOrg standard, while taking into account the standardization test and orientation to quality and customer in accordance with the TQM philosophy, and the obtained results of the self-assessment will be additionally illustrated by a radar chart obtained from EFQM. The self-assessment tool will be supplemented with a scale from 1 to 5, so that organizations can optimally locate their level of digital maturity and undertake specific improvement actions.

5. References

1. Digital Education Action Plan (2021-2027) <https://education.ec.europa.eu/>
2. Durek V., Kadoić N., Dobrovic Z., Digital Maturity of Higher Education Institution: A Meta Model of the Analytical Network Process (ANP) and Decision EXpert (DEX), Proceedings of the 29th Central European Conference on Information and Intelligent Systems, 2018, pp. 223–230
3. Đurek V., Begičević Ređep N., Divjak B., Digital Maturity Framework for Higher Education Institutions, Proceedings of the Central European Conference on Information and Intelligent Systems, 2017



4. Farooq M.S., Akhtar M.S, Zia Ullah S., Memon R.A., APPLICATION OF TOTAL QUALITY MANAGEMENT IN EDUCATION, Journal of Quality and Technology Management Volume III, Issue I1, Dec 2007, pg 87-97
5. Gürel E., SWOT ANALYSIS: A THEORETICAL REVIEW, "Journal of International Social Research" 10(51):994-1006, 2017
6. Halasz G., Designing and implementing teacher policies using competence frameworks as an integrative policy tool, "European Journal of Education" 54(3), July 2019
7. Hazzard T., The Strengths and Weaknesses of Total Quality Management in Higher Education, October 1993.
8. <https://ec.europa.eu/jrc>
9. <https://www.asq.com>
10. <https://www.efqm.org/lens-series/education/>
11. <https://www.fondazioneisi.org/informazioni/372-turistico?highlight=WyJ0dXJpc2ljbyJd>
12. <https://przemyslprzyszlosci.gov.pl/formularze/samoocena-dojrzalosci-cyfrowej>
13. <https://www.adma.ec>
14. <https://www2.deloitte.com/pl/pl/pages/deloitte-digital/Articles/Raport-Digital-Maturity.html>
15. <https://www.enqa.eu>
16. https://blog.osservatori.net/it_it/digital-readiness-nel-manufacturing-modello-dreamy
17. <https://ruomo.lib.uom.gr/bitstream/7000/83/3/Nikolaidis%2C%20Adamidou-2016.pdf>
18. https://kometa.edu.pl/uploads/publication/941/24a2_A_a_nauczanie_zdalne_oczami_nauczycieli_i_uczniow_RAPORT.pdf?v2.8
19. https://www.eoppep.gr/images/DIASFALISH_POIOTHTAS/Quality%20Blocks_En.pdf
20. <https://www.cedefop.europa.eu/en/country-reports/developments-vocational-education-and-training-policy-2015-19-greece>
21. https://www.researchgate.net/profile/YiannisNikolaidis/publication/247834959_The_evolution_of_quality_management_in_DOKPY_Magnesia_Greece_from_basic_quality_initiatives_to_EFQM/links/544fc7ac0cf249aa53da833a/The-evolution-ofquality-management-in-DOKPY-Magnesia-Greece-from-basic-quality-initiatives-to-EFQM.pdf
22. <https://news.gtp.gr/2018/12/28/efqm-recognizes-bluegr-hotels-resorts-4-star-excellence>
23. <https://www.sciencedirect.com/science/article/pii/S2212567115017256>,
24. <https://www.sciencedirect.com/science/article/pii/S1877042814044693>,
25. <https://reader.elsevier.com/reader/sd/pii/S1877042814044589?token=43E5A7BF59FE5707A2C30327CE1F2AC4D3F1DB2D1E6DBBAF30D1498D3FF1A8CCFF03E14F66BF8726910CE96F10D42865&originRegion=eu-west-1&originCreation=20220120104839>
26. <https://www.astellas.com/gr/en/news/239>
27. <https://www.emerald.com/insight/content/doi/10.1108/QAE-08-2015-0033/full/html>
28. <https://ec.europa.eu/eusurvey/runner/DigCompEdu-S-IT>
29. <https://education.ec.europa.eu/self-reflection-tools/schools-go-digital>
30. Jak zorganizować kształcenie na odległość w szkole - <https://www.gov.pl>
31. Kacała J., Kołaczyk E., Wdrażanie modelu doskonałości EFQM– determinant, "Zarządzanie i Finanse" 2013 , 4 , 2 , 145-154
32. Kampylis P., Punie Y., Devine J., Promoting Effective Digital-Age Learning. A European Framework for Digitally-Competent Educational Organisations, 2015 JRC Science Hub: <https://ec.europa.eu/jrc>
33. Kordziński J., Nowoczesne nauczanie, Wolters Kluwers Polska, 2022



34. Laurett R., Mendes L., EFQM model application in the context of higher education: A systematic review of the literature and agenda for future research, "International Journal of Quality & Reliability Management" February 2019
35. Mishra P., Pandey A., Barriers in implementing total quality management in Higher Education, "Journal of Education & Research for Sustainable" 2013
36. Ptaszek G., Stunża G.D., Pyżalski J., Dębski M., Bigaj M., Edukacja zdalna: co stało się z uczniami, ich rodzicami i nauczycielami, Gdańskie Wydawnictwo Psychologiczne Sp. z o.o., 2020
37. Report Digital Education at School in Europe) EACEA, Eurydice 2019, https://eacea.ec.europa.eu/national-policies/eurydice/content/digital-education-school-europe_en
38. Report: Jak oceniamy naukę zdalną po roku pandemii? Marzec 2021, www.clickmeeting.com
39. Różewski P., Kusztińska E., Zikin O., Modele i metody zarządzania procesem otwartego nauczania zdalnego, Modele i metody zarządzania procesem Otwartego nauczania zdalnego INSTYTUT BADAŃ SYSTEMOWYCH POLSKIEJ AKADEMII NAUK, 2008, p.32-47
40. Saizarbitoria I.H., Viadiu F.M., Fa M.C. (2010), ISO 9001 Vs. EFQM: A comparative analysis based on external independent data, 4th International Conference on Industrial Engineering and Industrial Management XIV Congreso de Ingeniería de Organización Donostia-San Sebastián, September 8th-10th
41. Santos, R.S., Abreu A.C., EFQM model implementation in a Portuguese Higher Education Institution, Revista Produção e Desenvolvimento, vol. 5, no. 1, 2019
42. Saraiva P.M., Rosa M.J., d'Orey J. L., Applying An Excellence Model To Schools, NOVEMBER 2003: www.asq.com
43. Sohel-Uz-Zaman ASM, Anjalin U., Implementing Total Quality Management in Education: Compatibility and Challenges, Open Journal of Social Sciences , Vol.4 No.11, November 2016
44. Study on EU VET instruments (EQAVET and ECVET), 2019 <https://ec.europa.eu>
45. The Digital Maturity Assessment Tool (DMAT), <https://btech.au.dk/forskning/forskningssektioner-og-centre/dbd/dmat>