A METHODOLOGY TO RESEARCH COMPETENCIES OF THE YOUNG GENERATION IN THE ECONOMY OF THE FUTURE. A PROPOSAL OF NEW RESEARCH TOOLS

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Purpose: The aim of this paper is to present an original proposal of a methodology to test the competencies of the young generation and how it may be used for working with young people.

Design/methodology/approach: The research methodology presented in this paper is inspired by the assessment centre method, which is adapted for the purposes of testing the young generation, so that their competence potential may be determined based on original tasks.

Findings: The paper describes what detailed competencies are revealed during the task performance. It allows to determine how a teacher may stimulate the development of a particular competency in a student by using it in the teaching process. It is demonstrated how introducing certain tasks to be done by students as part of their school life allows the young people to face potential challenges of the future labour market.

Research limitations/implications: The paper presents the strengths and weaknesses of the presented methodology of competency test, pointing out to the difficulties caused by the time consumption involved in the completion of it.

Practical implications: The research tools presented in this article allow for a multi-stage and multifaceted process of simulating the challenges which will be faced by young people when choosing a career. This way, young people could face varying challenges to help them determine what requirements and expectations they will face further in the education process and later, when entering the labour market under the Economy 4.0 conditions.

Social implications: The education system must be improved towards a more practical approach to teaching and its better alignment with the requirements set out by the contemporary labour market. The prepared tools allow a teacher to determine the competencies held by a student and encourage his or her further development.

Originality/value: The prepared tasks and the way of analysis of the results of the research are an original achievement of the research team who developed them. The developed methodology may expand the educational toolbox of teachers.

Keywords: competencies of the future, research tools, Economy 4.0.

Category of the paper: Research paper.

1. Introduction

The changes taking place in the contemporary reality evoke unceasing questions about how to prepare the next generations to the challenges that the future will bring for them. Both numerous international institutions and the academia undertake the effort to determine the competencies that are, and will be, indispensable in the future civilisation. As it turns out, the determination of such competencies is not so obvious because of considerable uncertainty about the development trends. We are dealing with the occurrence of phenomena that so far have been deemed highly improbable, even impossible. And yet, they have occurred on a global scale and affected radically the social and economic processes (the 'black swan' metaphor by Nassim Nicholas Taleb (2020) is a perfect reflection of the uncertainty of the contemporary reality and the occurrence of phenomena disrupting the operations of the economy and society). Irrespective of those events, the issue of forming the competencies of the young generation remains valid, and even reinforces the need to and imposes an obligation to seek the best solutions to allow young people to find their own place in the realities of the future. It is undoubted that the transformations involved in Economy 4.0 (also called 'the new economy', 'the digital economy', 'the knowledge economy', 'the information economy', 'the e-economy', 'the cybernetic economy') are at a very advanced stage now and are changing the labour market in every possible way.

This paper is a voice in the discussion about the methods to examine the competencies of young people, supported by the formulated proposal of research tools and pilot research carried out by the research team under the project *The New Generation in the New Economy* (original name: *Nowe Pokolenie w Nowej Gospodarce*)[1]. The aim of this paper is to:

- discuss the methods of researching the competencies of the young generation, developed and handled by the project participants,
- present how they may be used in work with young people as exemplified by the tool developed by the author of this text.

The first part of the paper deals with the understanding of the concept of competencies and determination of the most common competencies of the future. Part two deals with the methods of preparing tools to research the competencies of the young generation developed by the research team.

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[1] As part of the project *The Economics in the New Economy – The Regional Initiative of Excellence* (original name: *Ekonomia w obliczu Nowej Gospodarki – Regionalna Inicjatywa Doskonałości*), funded by the Ministry of Science and Higher Education (The Regional Initiative of Excellence Contest, contract No.: 004/RID/2018/19), the task *The New Generation in the New Economy* was created. The project *The New Generation in the New Economy* is conducted by a team of seven researchers composed as follows: Białowąs S., Gołata K., Krzyminiewska G., Olejnik I., Shelest-Szumilas O., Waligóra A., Zboroń H.

2. The essence of competencies

In the literature on the subject, the issue of competencies is broadly discussed by many disciplines: economics, management, psychology as well as sociology. It may be assumed that competencies are a subject of an interdisciplinary approach due to the universal definition of competencies in the concept of human capital. Their description, classification, usefulness may vary depending on the expected needs of a particular organisation. An in-depth analysis of the understanding of competencies is not possible here due to text size limitations. This is why I am going to present a brief review summarising possible approaches to the matter. According to Oleksyn (2006), when taking account of the object to which the competencies pertain, the following may be distinguished:

1. Professional (general) competencies: Competencies characteristic for particular professional groups or functions served in a specific area. It is a set of competencies to be held by each representative of the particular professional group, regardless of the institution he or she works for and performs his or her profession at.

2. Position-related (detailed) competencies: These pertain to a specific work position or organisational role. Thus, these competencies are a more detailed and specific set of professional competencies.

3. Corporate competencies: Competencies shared by all employees of an organisation or representatives of a profession. They allow a business to develop a consistent, uniform culture among all its employees.

Another classification of competencies is focused on their particular components, i.e. skills and behaviours. They are as follows:

1. The competencies involved in the process of thinking: They regard such skills as analytical thinking, learning, problem solving.

2. The competencies involved in the process of feeling: They regard interpersonal skills, relation-building skills and flexibility of acting.

3. The competencies involved in the process of acting: They regard planning, organising as well as appropriate leading of the actions undertaken.

Usually, competencies refer to those characteristics of an employee that, if used and developed at work, lead to achieving results aligned with the strategic goals of a business. And so, the definitions used by businesses point out to the following: knowledge, skills, abilities, attitudes, motivations, values and personality (Rostkowski, 2005). Based on the considerations of Hopej and Kral (2011), it may be assumed that '(general, theoretical, specialist) knowledge covers everything that an employee has learnt, not only in the formal education process (schools, university), but also as part of self-education. Knowledge in this sense, however, overlaps with the term "qualifications", which should rather be related to formal acknowledgment of a specific education status, such as diplomas or certificates.

Practical (technical, technological, professional) skills regard what an employee can actually do and are often deemed tantamount to experience or abilities to act. Both the categories of competencies are named by all authors dealing with the matter under discussion'. 'A competence refers to a complex combination of knowledge, skills, understanding, values, attitudes and desire which lead to effective, embodied human action in the world, in a particular domain. One's achievement at work, in personal relationships or in civil society are not based simply on the accumulation of second-hand knowledge stored as data, but as a combination of this knowledge with skills, values, attitudes, desires and motivation and its application in a particular human setting at a particular point in a trajectory in time. Competence implies a sense of agency, action and value.' (Hoskins, Deakin, Crick, 2010).

In the context of the subject-matter area with which this paper deals, it is important what competencies should be deemed most important in the long term. Such an approach may be seen in European Union documents implemented by the Member States. The Council and the European Parliament have defined competencies as a combination of knowledge, skills and attitudes appropriate to the context. Key competences are those which all individuals need for personal fulfilment and development, active citizenship, social inclusion and employment. The recommendation of the European Union and the Council of 2018 assumes that competences are defined as a combination of knowledge, skills and attitudes, where knowledge is composed of the facts and figures, concepts, ideas and theories which are already established and support the understanding of a certain area or subject. Skills are defined as the ability and capacity to carry out processes and use the existing knowledge to achieve results. And attitudes describe the disposition and mindsets to act or react to ideas, persons or situations (Recommendation of the European Parliament and of the Council, 2006, 2018). Steps undertaken in this area resulted principally in the development of competencies adopted and disseminated by the European Union and other international institutions, such as the OECD. They are described as Eight Key Competences for Lifelong Learning, and it has been acknowledged that the qualifications framework for lifelong learning are a new paradigm of education. They are competencies in the following areas:

1. Literacy competence.
2. Multilingual competence.
3. Mathematical competence and competence in science, technology and engineering.
4. Digital competence.
5. Personal, social and learning to learn competence.
6. Citizenship competence.
7. Entrepreneurship competencies.
8. Cultural awareness and expression competence (OECD, 2016).

They are deemed the most valuable under the conditions of fast changes, the need to participate in a diverse and cross-dependent society. This perspective, thinking in the categories of the competencies of the future, is also adopted in the research carried out by the OECD as a starting point for the PISA, which in 2018 covered the population of 15-year-olds (PISA 2018). It was deemed that global competencies form a multi-faceted structure that requires a combination of knowledge, skills, attitudes and values successfully applied to global problems or intercultural situations. The global issues refer to those that apply to all people and have deep implications for the current and future generations. The intercultural situations refer to direct, virtual or indirect encounters with people seen as coming from a different cultural background. Having regard to the fact that the development of global competencies is a life-long process, the level of competence of the young people must be monitored along with whether their schools effectively deal with the development of global competencies (OECD, 2016).

3. A proposal of research tools to examine the competencies of secondary school students

The essence of the above-mentioned project was to develop a set of tools to check the economic preparation of the young generation to the tech revolutions, which will allow for a multi-stage and multifaceted process of simulating the challenges which will be faced by young people when choosing a career. The tasks are addressed to students of all types of secondary schools: general education schools, technical schools and vocational schools, and this is where pilot research was conducted in June 2021 to test the prepared tasks. The research was conducted among second-form students: 355 students performed all the tasks, while part of the students only some of them (from 396 to 544 students depending on the tool).

The choice of the competencies to be tested resulted, on the one hand, from numerous analyses of competencies necessary in Economy 4.0 based on the literature of the subject and recommendations of international organisations, and on the other hand – also from discussions with the education management institutions and people, employers and teachers, which showed certain differences in competence-related expectations. As the result of the above, tools were created to test the following competencies:

1. Ethical and civic competence.
2. Communication skills.
3. Creativity.
4. Teamwork.
5. Self-organisation at work and task planning.
6. Creation of digital content and ability to look for information with the use of IT tools.
7. Learning new things.
8. Analytical skills.

The works on the creation of the competence test tools were inspired by the experience with the assessment centre method (see: Krzyminiewska, 2022, p. 19), which based on the literature on the subject may be described as a method of effective professional verification (used in recruitment processes and planning of effective use of human resources). The assessment centre method is a set of test tools that allows to fill high managerial positions and involves some exercises reflecting the nature of the tasks performed at the vacant position (Wąsowska-Bąk, Górecka, Mazur, 2012).

In the case of young people, however, it is not aimed at direct determination of their readiness to take up a job at a given position or professional activity in a given area. It is more about preparing tools that will allow for a multi-stage and multifaceted process of simulating the challenges which will be faced by young people when choosing a career. Thus, the catalogue of the prepared tools does not include any psychometric tests or typical competency tests. It is more a catalogue of various tasks which let young people see what requirements and challenges they will face in further stages of life: further in education and in the labour market, under the conditions of Economy 4.0.

The prepared tasks were of various nature. Their aim was to encourage young people to face potential expectations that may come from employers and that they will have to meet.

The *ethical and civic* competence, underlined by employers, who found behaviours conforming to social norms to be necessary for the business strategy, was designed so as to encourage students to consider and evaluate certain behaviours and to impersonate a business person who has to make difficult choices, whereby the task included the context in which the decisions are made.

The *analytical* competence (mathematical literacy), defined as an ability to carry out a mental process involving an assessment and evaluation of phenomena, assigning value to them, reading and understanding values presented in a text or on a graph and using them to diagnose and forecast phenomena, was tested by varied questions which the students had to answer.

The test and evaluation of the *communication* competence was based on working on a text included in the task. The students' task was to choose the most important piece of information from some chaotic information text, then go on to less important pieces of information, and then prepare another information text of up to 280 characters and expand substantively the text read before by using their own knowledge and all sources available at the moment.

The aim of testing *creativity* was mainly for the students themselves to determine their own strengths and weaknesses in terms of labour market expectations. A series of tasks was used to express the context of a job interview with the use of the English language.

In the time of the digital economy, the creation and edition of content, and knowledge about copyright is priceless. The competence of *creating digital content and ability to look for information with the use of IT tools* was tested based on a presentation to be prepared by the student. This allowed to determine the student's ability to create new content in the graphic,

music or video files available on the internet, as well as to see their ability to modify content created by other users.

The organisation of one's own process of learning, readiness to learn new things were verified in the test of the competence of *learning new things*. With a self-assessment test and creation of hypothetical situations which an employee may be faced with by a future employer, the students' openness to acquire new knowledge and skills was examined.

Teamwork / ability to work with others is a competency tested in three workshops carried out with the students, one for each type of the school. Based thereupon, it was determined how students deal with activities aimed at achieving a common goal. In addition, it allowed to determine their ability to think creatively, of critical self-assessment and assessment, ability to communicate and negotiate.

The tool prepared and developed by the author of this paper was the tool regarding the *self-organisation at work and planning of tasks*, aimed at examining the level of the sense of responsibility for the work process (see: Krzyminiewska, 2022,). During the three weeks of research, the students were tasked to think through and plan a charity action from end to end. Such a task allows to evaluate important skills described in Table 1.

Table 1.
Detailed competencies demonstrated when organising of a charity action

Detailed competency	Description
Creation of a schedule	• student can/cannot plan particular activities and tasks • student demonstrates/does not demonstrate the ability to rationally specify the time needed to perform the particular tasks • student can/cannot use time efficiently • student adds in time buffers for unexpected events and tasks
Cooperation	• recruiting other people to perform particular tasks • managing co-participants (coordination of tasks they have been entrusted with)
Monitoring	• checking in on the task progress • supporting the performance of tasks
Budgeting	• adjusting expenses and assessing the rationale of expenses against the financial situation • managing budget
Result check	• reflecting on the results achieved when planning the charity action • evaluating whether all planned stages allow to complete the action effectively, also after its completion

Source: Own work.

The use of the presented tool by teachers allows to reinforce this particular competency. A teacher or school counsellor may use it as follows:

1. Discuss the task with the class and choose the goal of the charity action together.
2. Assign tasks to smaller groups. Each group is assigned a different task:

   • group one looks for the regulations and legal basis to carry out a charity action on the internet (to arrange a situation where it is necessary to gain knowledge about existing conditions and to prevent superficial action),

- group two works on the promotion of the action and manners to inform about the results,
- group three prepares a plan and a schedule.

3. The students present their work for discussion.
4. The whole class adjusts the tasks to the assumed budget.
5. The groups correct their tasks and again make the final decisions together.

Taking this task as basis, other ones may be arranged too, e.g.: planning a school trip; planning a school event, etc. This will allow to further develop the habits of self-organisation at work and planning of tasks by the young generation.

When presenting the proposed methodology of research of the competencies adopted for the project, let us note what distinguishes the prepared tasks from other ones.

One, the methodology may be easily used directly in the education process. The teachers may use it in various lessons, including form periods, in order to later individually advise students on those competencies (or their elements) that should be especially taken care of.

Two, as mentioned before, the teacher may, based on the tool, introduce their own (similar) content to exercise certain skills to consolidate them.

Three, depending on the needs of the whole group (or an individual student), the teacher may pass on knowledge about the given competence, its meaning in the future labour market, the role it may play in their professional career and in life.

Four, the feedback obtained after the task is completed by a student allows for individual determination of his or her strengths and weaknesses or to identify his or her own development needs.

The most important matter, however, is the possibility to test the competencies in practice, by performing an actual task. The tools are to little extent based on self-assessment or declarations; instead, they shift the evaluation of the given competency to the moment after the task is complete.

Summary

The tasks prepared by the researchers (as well as the methodology to evaluate them, the discussion on which, however, lies beyond the limits of this paper) may help teachers in determining the competencies of their students, in order to introduce some activities in the education process that will support the students in developing those skills and thus meeting the future expectations of the labour market. The evaluation of the tasks performed by the tested population of students showed significant variations and certain competency gaps, especially when comparing various school types. Due to the fact that the skills acquired by an individual during social training, including as part of secondary school education, are a pre-condition to

participate in the contemporary and future economy, it will not be easy for the future participants of social and economic life to be successful and have a good position in the labour market without the internalisation of those competencies. It is essential that the next generation meet the requirements of increased competition, a hallmark of Economy 4.0, which is equally a challenge for education institutions.

Acknowledgements

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Footnotes