

Professional/Educational Characteristics of Children of Employed Parents During a Crisis Period

Dana Vicherková, Josef Malach, Kateřina Malachová, Martin Kolář and Tomáš Javorčík

University of Ostrava, Ostrava, Czech Republic

dana.vicherkova@osu.cz; josef.malach@osu.cz, katerina.malachova@osu.cz, martin.kolar@osu.cz, tomas.javorcik@osu.cz

Abstract: The article examines the professional and educational characteristics, as well as the e-competence, of children of workers in the Ostrava coal region of the Czech Republic during the early 21st century. This work represents a component of the REFRESH project, which is dedicated to enhancing research excellence in the Moravian-Silesian Region. The overarching aim of this initiative is to foster the development of a smart region through the transfer of technology in fields such as sustainable energy, the digitalisation of industrial production, environmental technologies, and smart materials technologies. The researchers from the Faculty of Education at the University of Ostrava conducted a questionnaire survey targeting a research cohort comprising disadvantaged and vulnerable social groups. This focus stems from the anticipated significant adverse effects of regional transformation on these groups, who may possess attitudes that could hinder the effective transition of the coal industry in alignment with contemporary European developments. The primary objective of this research was to delineate the professional and educational characteristics of children of miners during a crisis phase of their parents' careers. As part of the investigation into the professional orientation of these employees' children, the study identified the working personality types of participating pupils. It assessed their self-efficacy beliefs regarding career preparedness, particularly in relation to their interest in digital technologies. This evaluation also encompassed the development of their digital literacy, reading, and technical competencies, alongside their preparedness for life in Society 4.0. Findings from the research indicated that children of workers in the mining sector who were enrolled in primary school utilised computers for academic purposes in an irregular manner. Notably, nearly 29% of respondents reported a lack of access to a fast Internet connection at home, and a mere 2% expressed interest in reading scientific and technical electronic texts. This contribution is part of a research initiative within the framework of the Just Transition Operational Programme, project REFRESH (Research Excellence for Region Sustainability and High-tech Industries), registration number CZ10.03.01/00/22_003/0000048.

Keywords: REFRESH project, vulnerable social groups of children, professional and educational characteristics of children, digital competences, transformation of the coal region, Society 4.0

1. Introduction

In the contemporary European and global context, there are significant transformations in the lifestyles of individuals across various age groups, principally driven by technological advancements associated with what is commonly referred to as the Fourth Industrial Revolution. This current phase of industrial evolution is initiating fundamental shifts within the labour market, resulting in the obsolescence of certain professions while simultaneously fostering the emergence of new ones. Specifically, in the Polish border region of the Moravian-Silesian Region of the Czech Republic, energy and heavy industries have been evolving for over two centuries, with a predominant focus on mining activities. However, as we enter the third decade of the 21st century, this sector is experiencing a period of decline that threatens the continued existence of mining-related professions.

As part of the REFRESH project, researchers from the Faculty of Education at the University of Ostrava are dedicated to investigating strategies that contribute to the region's transformation, emphasising the adoption of technologies in sustainable energy, the integration of digital strategies in production processes, and the implementation of innovative environmental technologies and smart materials.

The community of industrial and mining workers, along with their families, represents a specific demographic within the Moravian-Silesian region, particularly pertinent to this research, considering the ongoing industrial transition. This group is characterised as a vulnerable social segment at risk, enduring both psychologically and physically demanding work conditions.

Numerous external and internal factors influence an individual's life satisfaction, including challenges related to lifestyle choices, career adaptability, optimism about life, the spectrum of life needs, and motivation for lifelong learning and professional flexibility. The Briefing of the European Parliament (2016, p. 1) characterises vulnerable social groups as "those presumed to be at risk of poverty or social exclusion due to physical disability, age, ethnic origin, lack of housing, or substance abuse." Furthermore, the OSF Foundation (2021, p. 11) delineates a vulnerable adult as an individual over the age of 18 who may be incapable of protecting themselves from potential harm or abuse due to various factors, including disability, age, illness, situational contexts, or social inequalities.

Janus-Sitarz and Nowak (2014, pp. 9–14) emphasise the significance of enhancing cultural capital, which is influenced by educational opportunities, language competencies, and reading habits within the framework of lifelong professional development. They state, "Language competencies represent the cultural capital of every person and have a substantial impact on their educational opportunities, job prospects, and social status."

2. Reading and digital literacy as part of critical thinking and interpersonal communication

Reading literacy is increasingly recognised as a fundamental right and necessity for individuals, facilitating the development of various literacy components, including reading, digital, media, visual, communicative, mathematical, scientific, and environmental literacy. These components collectively form the foundation of functional literacy, comprising an essential set of knowledge, skills, and competencies necessary for navigating everyday life effectively in the 21st century. In the context of the rapidly evolving landscape marked by robotisation, automation, and digitalisation associated with Society 4.0, there is a pressing need to comprehend information presented in diverse text formats—ranging from artistic and non-artistic to electronic, digital, multifunctional, and hybrid texts. This comprehension is vital for fostering critical thinking and transversal competencies among individuals across various age groups, framed within the parameters of lifelong education.

Grecmanová and Urbanovská (2007, p. 15) articulate critical thinking as the process of curiosity-driven inquiry, employing diverse information-gathering strategies, posing relevant questions, and systematically seeking informed answers. This approach is guided by a healthy scepticism, enabling individuals to explore alternatives, form opinions, and defend these opinions rationally while critically engaging with the arguments of others and evaluating their logical consistency. Engagement with a variety of text types serves to advance both reading and digital literacy among educated individuals. International assessments, notably the PISA and PIRLS, are responsive to the imperative of addressing diverse text formats in the context of digitalisation. For instance, the PIRLS (2021) assessment included traditional written texts alongside electronic and internet-based texts, featuring excerpts of information from simulated websites enriched with multimedia elements. In artistic texts, pupils analysed literary works, while informational texts, biographical data, advertisements, and current events further supplemented the test tasks. The PIRLS (2021) framework encompasses four strategic approaches to ensure comprehension of texts: information retrieval, drawing conclusions, interpretation, and text evaluation, aimed at enabling individuals to gain experience and effectively utilise information from various informational texts. An important element influencing these processes is the dynamics of internal motivation within educated individuals, which plays a crucial role in securing a sustainable future for families as integral components of society, facilitating personal and career growth, and enhancing interpersonal communication skills. Katrňák (2006, pp. 174–177) emphasises the significance of a family's social status, which influences both the quantity and quality of resources available to individuals. Moreover, UNICEF (2025) emphasises the critical importance of digital literacy, which encompasses a broader context that includes not only technical knowledge and skills but also the attitudes and competencies necessary for ensuring safety in the digital realm. Numerous factors affecting the level of digital literacy are discernible, categorised into external and internal influences. Through familial, educational, and extracurricular activities, alongside other experiential and knowledge-driven environments, individuals undergo socialisation processes that shape their perceptions of safety and risk in both the tangible and digital realms. Children progressively learn to navigate the nuances of the immediate and the distant, the real and the digital, each offering a plethora of stimuli and digital experiences that reflect historical, contemporary, and future contexts. Digital literacy is integral to the UNICEF framework, which aims to equip children and adolescents with the skills necessary for success in school, the workforce, and their broader lives. Consequently, digital literacy is a pivotal intersection for acquiring essential and transferable skills necessary for thriving within Society 4.0.

3. Occupational inheritance as a phenomenon

The ability to determine the trajectory of one's future profession in conjunction with aspirations for further education and orientation is termed professional-career competence. Hřebíček (2003, p. 22) conceptualises this competence as "a complex ability, representing a person's potential readiness to address the tasks, roles, and challenges frequently encountered in the interplay between individuals and the world of work." The professional-career competence of an individual evolves through various stages, influenced by growing awareness of one's possibilities, talents, interests, risks, consequences, impacts, and advantages inherent in the selected professional path. Hřebíček (2003, pp. 40-48) emphasises the significance of three factors shaping the strategies leading to professional choices: professional-career awareness, professional-career motivation, and the capacity for professional decision-making.

The occupational decisions of fifteen-year-old pupils at the conclusion of primary education are swayed by both internal and external influences, which may include health status, individual interests and skill profiles, innate abilities and talents, family dynamics, financial constraints, proximity to educational institutions, as well as the influence of peers, siblings, educators, and professional role models. Holland's research into personality typologies identified six categories of work personality types: practical, investigative, artistic, social, enterprising, and conventional (Holland, 1997, p. 1). This selection process is further influenced by various motivational factors, both external and internal, that shape pupils' aspirations for continued education.

In the context of Czech mining families, the phenomenon of intergenerational occupational transfer, predominantly from father to son, is notable. Ožanová (2018, pp. 23–26) investigated the impact of parental influence on children's career decisions and professional orientation, findings regarding the pivotal role played by family social and cultural capital in this intergenerational transfer of occupations.

Průcha, Walterová, and Mareš (2003, p. 274) define occupational choice as "a process involving decisions related to the selection of educational pathways or professional preparation, encompassing the entirety of an individual's professional career." This choice is inherently linked to an individual's professional orientation, which the authors describe as "the formation and development of a concrete professional goal and vision for a young person, encompassing the characteristics and abilities essential for the profession-selection process, its execution, and potential retraining" (p. 181).

Various factors, including family, educational institutions, peers, and individual interests, significantly influence the occupational choices of fifteen-year-old pupils. While personality traits primarily dictate career decisions, the necessary competencies for performing specific occupations also play a critical role. According to Hlaďo (2008, p. 9), the educational institution is tasked with equipping pupils with "the competencies essential for self-awareness and knowledge of the world of work.

Ožanová (2018, p. 29) highlighted the significant transformation in the social context and institutional frameworks following 1989, particularly emphasising the concept of social origin in relation to the diminishing prominence of blue-collar professions and the contemporary standing of the mining sector. She further posits that "certain common values characterise families with lower socioeconomic status, characteristics, approaches to upbringing and education, through which they convey their socioeconomic status to their offspring" (Ožanová, 2018, p. 31). This suggests a noticeable shift in the influence of familial socioeconomic status on child education, moving towards an emphasis on individual capability and parental valuation of education. Children from blue-collar families, therefore, often exhibit a propensity towards manual labour and vocational professions. Rabušicová et al. (2011, cited in Ožanová, 2018, p. 34) advocate for differentiating intergenerational learning within family structures into two levels: peer (for instance, among siblings) and intergenerational (such as that between grandparents, parents, and children). This familial dynamic is particularly evident within the mining industry, where members spanning diverse ages and family roles frequently found employment, thereby underscoring the generational transmission of mining professions.

The educational foundations for mining careers in the Czech Republic trace back to the late 19th century, marked by the establishment of specialised mining schools. The aftermath of World War II marked the emergence of new avenues for mining education through a network of apprenticeships, industrial schools, and programs offered by the Faculty of Mining and Geology at VŠB in Ostrava. The Moravian-Silesian Region boasts a rich mining heritage that dates back to the Middle Ages. Miners continue to uphold their cultural traditions, customs, language, and the collective identity that generations of miners have shaped. The profession has historically been inherited across generations; however, a noticeable decline in mining activities is anticipated in the years 2025–2026. This decline is closely associated with the transformation of the OKD company (Ostravsko Karvinské Doly) as it pivots towards new ventures infused with digital capabilities. Coal mining is gradually diminishing, and the OKD company is preparing to cease operational activities at the ČSM Mine (Důl Československé mládeže) by early 2026. On a positive note, OKD is actively facilitating the transition for its laid-off employees through the establishment of the New Shift department, which aims to help them secure new employment opportunities. Nevertheless, the OKD brand will not be entirely phased out; it will continue to engage in the production of industrial mixtures, the leasing of industrial facilities, the utilisation of mine gas, and the execution of various other business initiatives, all directed towards a systematic transformation of the company that is expected to last until 2050.

4. Research Methodology

This research aimed to explore the professional and educational characteristics of children of miners and other employees of the OKD mining company during a crisis in their parents' careers. It focused on aspects such as

professional orientation, student personality types, self-efficacy, interest in reading, proficiency with digital technologies, development of various competencies, and interest profiling for life in Society 4.0. Additionally, the study examined the children's relationship to the Moravian-Silesian region of the Czech Republic. To guide this investigation, the research problem was structured into a set of specific research questions.

1. Is there a connection between the student's interest in the energy industry and their interest in education in the field of technology, focusing on machines, cars, and IT? (E11/ D2)
2. Is there a connection between pupils' enjoyment of computer activities in their free time and their increased interest in future careers focused on digital technologies? (A8/ E12)

In our research, we administered questionnaires to pupils across three primary schools in the Moravian-Silesian region of the Czech Republic. The study was conducted from October 2024 to January 2025 by staff from the Faculty of Education at the University of Ostrava. We collected data from 318 respondents, consisting of lower secondary school pupils aged 13 to 16, specifically children of OKD employees attending schools in the Moravian-Silesian region. The semi-structured questionnaire included 42 semi-open questions organised into six categories labelled A through F.

A Leisure interests, activities (6 items)

B Interest in reading various types of texts (5 items)

C Educational competences and electronic/digital competences (4 items)

D Professional competences (digital technologies, machines, cars, etc.) (8 items)

E Professional competences (economy) (11 items)

F. Interest in transforming life in the Moravian-Silesian Region (12 items)

4.1 Results

The research objectives and research questions led to the formulation of hypotheses, which are presented together with the results of their statistical verification.

4.1.1 Results of descriptive data analysis

Descriptive data more closely characterise the selected professional, educational, leisure, and reading activities and preferences of individuals, as well as their relationship to the Moravian-Silesian Region.

Question A8: "Do you enjoy engaging in computer activities during your free time? (PC/NB)?" (yes/ no)

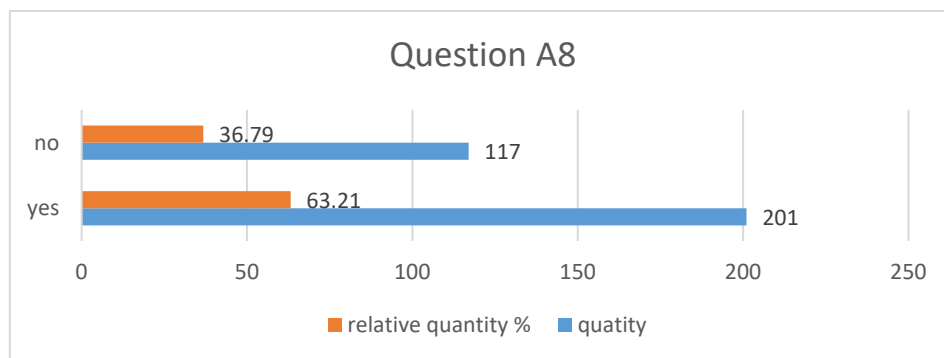


Figure 1. Utilising free time for computer-related activities.

In response to item A8, "Do you enjoy engaging in computer activities during your free time?", nearly two-thirds of respondents (201, or 51.93%) indicated that they prefer computer (PC/NB) activities during their free time.

Question E11: "Are you interested in pursuing a career in the energy industry? (yes/ no)"

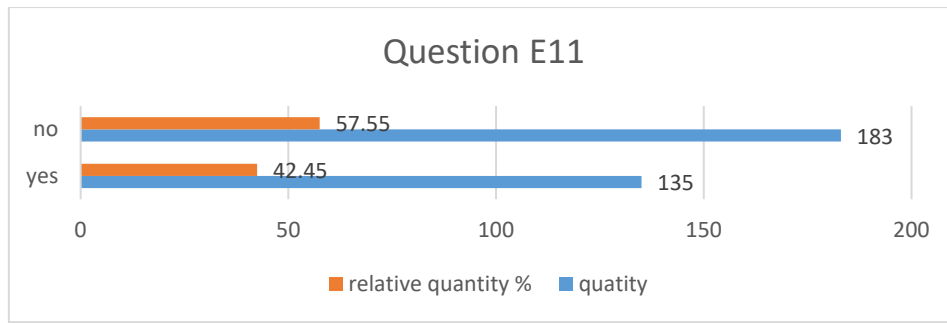


Figure 2. Interest in working in the energy industry.

The responses to item E11, "Are you interested in pursuing a career in the energy industry?" revealed that over half of the participants (183, or 57.55%) expressed interest in working in the energy sector. Conversely, more than two-fifths of the respondents (135, or 42.45%) indicated that they are not interested in pursuing a career in this field.

Question D2: "Are you interested in learning about technology?" (yes/no)

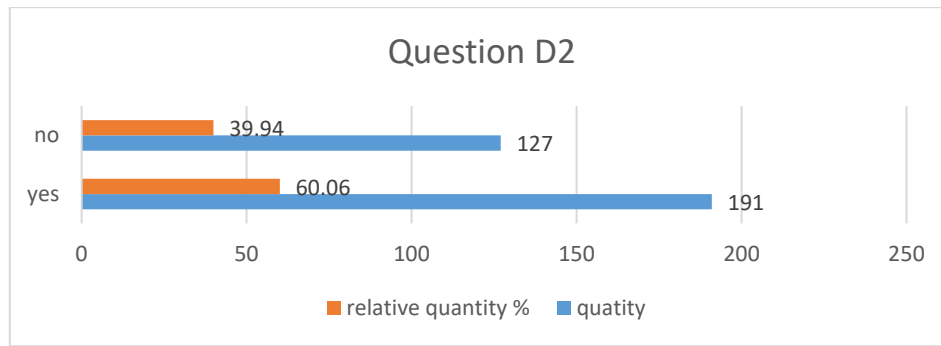


Figure 3. Interest in learning about technology.

The responses to item D2, "Are you interested in learning about technology?" revealed that three-fifths of the participants (191, or 60.06%) are interested in learning about technology. In contrast, 127 respondents (39.94%) stated that they are not interested in pursuing education in this field.

Question E12: "Are you interested in a professional profile/work focused on digital technologies?" (yes/ no)

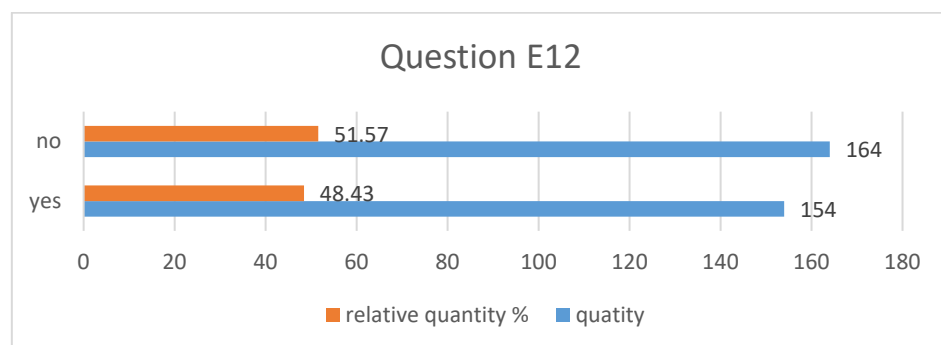


Figure 4. Interest in working with a focus on digital technologies

From the pupils' responses to item No. E12 "Are you interested in a professional profile/work focusing on digital technologies?" it was found that a larger half of the respondents (i.e. 164, 51.57%) are interested in a work focusing on digital technologies and that almost half of the respondents (i.e. 154, 48.43%) are not interested in a work focusing on digital technologies.

Research conducted in the realm of leisure interests and activities has yielded significant insights. The findings indicate that 48% of respondents perceive their leisure activities as varied, while 29% characterise theirs as narrowly focused. Alarming, 18.8% of participants reported experiencing boredom during their free time; moreover, the data highlights varying preferences for specific types of leisure activities. Notably, 41% of

respondents favour physical activities during their leisure time, 32% engage in practical home activities such as DIY projects, 15% enjoy spending time in nature, 7% prioritise relaxation, and 5% dedicate time to school-related preparations. Regarding the perceived variety of leisure pursuits, an overwhelming 69.5% of respondents believe their activities to be diverse, whereas 27.8% view them as monotonous. Storytelling emerges as a prominent leisure activity; 48.9% of respondents reported enjoying storytelling with friends, 25% with classmates, and 24.5% with friends through social media platforms. Remarkably, 45% of respondents indicated a preference for sharing life stories with their grandparents, while 36% valued narratives from parents and grandparents concerning family traditions and memories. A particularly noteworthy finding is that 46% of respondents actively explore locations connected to their ancestral heritage with their grandparents. Meanwhile, 28% reported undertaking such explorations with their parents, whereas 24.1% indicated that they do not participate in these ancestral explorations.

A significant portion of respondents, specifically 46%, indicated a preference for reading artistic texts, such as short stories and novels. In comparison, 38.9% expressed a lack of interest in non-artistic texts, including professional and journalistic writings. Regarding the format of text, 58% of respondents favoured printed materials, while 38.2% preferred digital formats.

When examining interest in various text types, only 12% confirmed an interest in scientific and technical electronic texts; conversely, 55% preferred reading printed materials centred on technical and scientific themes. Additionally, 35% showed general interest in diverse text types, while 64.4% did not. Notably, 32.5% of respondents appreciated texts that can be accessed in both printed and digital forms, with 38.2% favouring printed books compared to 28.1% who preferred digital texts.

In the context of educational competencies related to digital technologies, 55% of respondents reported having a permanent, high-speed Internet connection at home, while 29% did not. Close to half (47%) used digital technologies and PCs regularly for school preparation, although 35.5% reported irregular usage. Regarding computer ownership, 49% possessed their own laptop or PC, 23% shared a computer with siblings, and 9.8% borrowed one from school. Notably, 12% shared a computer with both parents and siblings. Regarding leisure activities, 67.6% prioritised working with a PC during their free time, while 31.2% did not.

A noteworthy interest in developing professional competencies in digital technologies was observed in 51% of respondents, whereas 49.3% reported a lack of interest in this area. A third (32%) expressed a strong interest in enhancing their competencies in technology fields, including automotive and IT sectors. More than half (59.8%) exhibited average interest in technology-related professional growth, while only 6.1% expressed no interest. Concerning economic activity as a professional competence, 11% confirmed a strong interest, and 79% showed average interest, with 7.1% indicating no interest. Interest in future professions revealed that 26.2% were inclined towards mechanical engineering, 21.8% towards healthcare, and 30.1% towards social services. Only 12.4% indicated an interest in economic-focused professions, and 6.4% aspired to enter the same field as their parents, while 2.1% were uncertain about their professional aspirations. When asked about parental employment in mining, 72.5% confirmed positive responses, while 21.8% indicated that their parents did not work in this field.

4.1.1 Relational research results

Two research hypotheses were tested using Pearson's Chi-square for a contingency table. The relevant source data and results of the statistical procedure are presented in the following tables.

H1: Pupils who are interested in technical education (e.g. cars, machinery, IT) are more interested in working/profiling in the energy industry than pupils who are not interested in technical education. (E11 x D2)

Table 1. Detected and expected frequencies for H1

Pearson's chi-square = 13,59183		degree of freedom = 1	significance $p = 0,002272$
Q E11	Q D2 -yes	Q D2 - no	Line totals
yes	97 (81,08)	38 (53,92)	135
no	94 (109,92)	89 (73,08)	183
Column totals	191	127	318

The results indicated a statistically significant relationship between pupils' interest in education in the field of technology and their interest in working in the energy industry. This supports our hypothesis.

Consequently, we accept hypothesis H1 at the 0.05 significance level.

H2: Pupils who enjoy spending their free time with computer activities are more interested in work focused on digital technologies than pupils whose priority is not to spend their free time with computer activities. (A8 x E12)

Table 2. Detected and expected frequencies for H2

Pearson's chi-square = 0,097163		degree of freedom = 1	significance $p = 0,75526$
Q A8	Q E12 -yes	Q E12 - no	Line totals
yes	96 (97,34)	105 (103,66)	201
no	58 (56,66)	59 (60,34)	117
Column totals	154	164	318

The analysis did not confirm a statistically significant relationship between pupils' interest in spending their free time on computer activities and their interest in work related to digital technologies. As a result, we reject hypothesis H2 at the 0.05 significance level.

5. Discussion and conclusion

The research outcomes, obtained through the questionnaire method, present an objective perspective on the leisure and reading activities, as well as the educational and professional competencies, of children whose parents work for OKD in the Moravian-Silesian Region.

The hypothesis H1 was confirmed, indicating a statistically significant relationship between the responses to both queries (E11 and D2). Conversely, the research did not substantiate the validity of hypothesis H2, which posited a statistically significant relationship between the responses to both questions (A8 and E12).

A noteworthy finding from the research is that nearly half (48%) of the respondents categorise their leisure activities as varied; however, 29% perceive their leisure pursuits to be one-dimensional, highlighting a significant concern. Alarming, 18.8% of participants acknowledged experiencing boredom during their leisure time. Additionally, an intriguing result emerged, wherein almost half (48.9%) prefer face-to-face storytelling with friends, while engagement in storytelling via social networks is favoured by over a third (34.5%). In contrast, only 14% indicated a preference for storytelling with classmates. Regarding reading preferences, nearly half (46%) of participants demonstrated a preference for artistic texts, whereas 38.9% favoured non-artistic texts. Furthermore, over one-eighth (15.1%) of respondents indicated a lack of preference for both artistic and non-artistic reading materials. Notably, 18.1% of respondents expressed an interest in pursuing a future career in the energy sector, while a substantial majority (81.6%) showed no inclination toward employment in this industry.

Katrňák (2006, p. 183) examined the educational attainment of parents of fifteen-year-old Czech pupils, highlighting its significance as a factor influencing their children's career choices. His findings indicated that "a higher level of education among both parents correlates with increased aspirations for their children's future endeavours," with maternal education exhibiting a more pronounced impact on educational aspirations than paternal education—particularly in the context of higher education.

Similarly, Swapnil Lange (2024) explored the dynamics of intergenerational occupational mobility, focusing on how parental occupations shape children's career trajectories and contribute to income disparities. His research revealed a palpable influence of occupational inheritance on the perpetuation of income levels, as well as a concerning trend of negative self-selection among children from low-income backgrounds in their career decision-making processes.

Through semi-structured interviews, Ožánová (2018, p. 60) investigated the intergenerational transmission of the mining profession within a cohort comprising five parents who are miners and a community of nine children from mining families. The study aimed to investigate the impact of familial context on individuals' professional choices, the motivating factors behind their decision to pursue a career in mining, and the implications of this transmission within the family unit. The findings indicate that the intergenerational passage of mining professions is significantly shaped by the family environment, parental influence, and broader social contexts, all of which emerge as pivotal factors guiding children's professional orientation towards the mining industry. Moreover, other salient elements contributing to a favourable inclination towards the mining profession include academic performance, the advantages associated with mining employment (such as bonuses), the accessibility of educational opportunities and job placements, public perceptions, the inherent risks associated with the profession, as well as the distinctions between mining and surface employment profiles. From the conducted

interviews, two predominant characteristics emerged regarding individuals' perceptions of their relationship to mining: "I am a miner, who is more" and "I am a miner, what else should I do." In addition, Ožanová delineated two archetypes of typical mining families: (a) an ambitious family that aspires for their offspring to attain the highest possible levels of education and social status, and (b) a static family that exhibits a passive approach to child-rearing. The research identified a correlation between the transmission of mining professions in families and factors such as lower academic performance during compulsory education and the accessibility of relevant studies. Ultimately, the author affirmed that the intergenerational transmission of the mining profession remains an ongoing phenomenon within mining families.

Kuijpers (2025) conducted research concentrated on the Dutch context regarding the integration of career competencies as a compulsory component of pre-vocational and secondary school curricula. The primary objective of this study was to highlight the role of the educational environment in facilitating the development of pupils' career competencies. This was approached through the lens of two international meta-studies that emphasise two prominent theoretical frameworks: Intelligent Career Theory (ICT) and Social Cognitive Career Theory (SCCT).

In a different context, Siddiky and Akter (2021) examined the factors that influence career choice among 120 university pupils at Noakhali Science and Technology University in Bangladesh. Utilising a snowball sampling method, their findings indicate that the decision to pursue a particular professional career is shaped by a complex interplay of social, cultural, and economic influences; however, social class does not appear to affect career preferences significantly. The study also highlighted the effectiveness of self-education strategies as instrumental in guiding pupils towards their chosen professions. Moreover, although completing training programs in career development is integral to enhancing pupils' professional competencies, it was observed that a considerable proportion of pupils demonstrated little interest in enrolling in such courses. Consequently, the research highlighted the need to enhance career guidance for pupils, particularly in light of contemporary labour market dynamics.

Additionally, the International Reading Literacy Research (PIRLS 2021) identified significant issues within the educational landscape, particularly in primary schools, regarding the insufficient competencies of educators. Many teachers reportedly do not integrate digital devices into their instructional practices, even in an era characterised by Society 4.0, thereby restricting pupils' opportunities to cultivate digital and technically oriented competencies. "Approximately three-quarters of pupils have teachers in whose classrooms they never encounter digital devices during individualised activities" (PIRLS, 2021, p. 61).

The problem of different types of teaching texts in educational practice was addressed by research by Ivic (2029), Carpenter, Bullock and Potter (2006) or Van den Ham and Heinze (2018).

Blanc et al. (2025) identified a significant relationship between student autonomy and the utilisation of digital tools and technologies in addressing real-world problems. Their research demonstrated that primary and secondary school pupils from four European countries—Slovenia, Portugal, Spain, and Greece—exhibited a heightened comprehension of the text, evidenced by their understanding of the questions posed in the research questionnaire.

In a methodologically rigorous study, Sowa et al. (2025, pp. 1-2) examined the challenges of supporting children's career aspirations amidst the evolving landscape of career conditions. Their work provides a systematic overview of various intervention approaches by analysing the methodologies of 45 different authors. This study provides valuable insights into the interplay between scientifically grounded approaches and the underlying principles that may help predict the career aspirations of adolescents, thereby influencing their future career trajectories and decisions. It encompasses a broad spectrum of trends, including shifts in career prospects and the impact of job automation, which complicate intervention strategies concerning career aspirations. The authors compile alternative approaches that foster a deeper understanding of occupational transitions, contextualised within the realities of the 21st-century societal evolution influenced by digitalisation and robotic advancements.

The anticipated advantages of this research can be interpreted as factors rooted in both socioeconomic and administrative frameworks. The relevant data derived from research into human resources and their professional prospects holds potential to enhance the retention of qualified workers in the Moravian-Silesian Region, thereby influencing their choices to remain locally rather than pursuing opportunities elsewhere.

Acknowledgement

This contribution is a part of the research initiative under the Operational Programme Just Transformation, specifically the REFRESH (Research Excellence for Region Sustainability and High-tech Industries) project, registration number CZ10.03.01/00/22_003/0000048. The authors express gratitude for the support.

Ethics declaration

I did not need ethical clearance for the research referred to in this paper.

AI declaration

I did not use an artificial intelligence tool to create the presented article.

References

- Blanc, S., Conchado, A., Benlloch-Dualde, J.V. et al. (2025). Digital competence development in schools: a study on the association of problem-solving with autonomy and digital attitudes. *IJ STEM Ed* 12, 13.
<https://doi.org/10.1186/s40594-025-00534-6>
- Briefing European Parliament (July 2016). Vulnerable Social Groups: Before and After the Crisis. Available from: [https://www.europarl.europa.eu/RegData/etudes/BRIE/2016/586605/EPRS_BRI\(2016\)586605_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2016/586605/EPRS_BRI(2016)586605_EN.pdf)
- Carpenter, P., Bullock, A., & Potter, J. (2006). Textbooks in teaching and learning: the views of students and their teachers. *Brooks eJournal Learn. Teach.*, 2, 1–10.
- Grecmanová, H., & Urbanovská, E. (2007). *Aktivizační metody ve výuce, prostředek ŠVP*. Olomouc: Hanex. [Grecmanová, H., & Urbanovská, E. (2007). *Activation methods in teaching, a tool of SEP*. Olomouc: Hanex.]
- Hlaďo, P. (2008). *Svět práce a volba povolání. Studijní text pro učitele*. Brno: Masarykova univerzita. [Hlaďo, P. (2008). *The World of Work and Career Choice. Study Text for Teachers*. Brno: Masaryk University.]
- Holland, J. L. (1997). Making vocational choices: A theory of vocational personalities and work environments (3rd ed.). *Psychological Assessment Resources*.
- Hřebíček, L. (2003). *Teorie a praxe profesně kariérního poradenství pro mládež*. Praha: Vysoká škola Karla Engliše. [Hřebíček, L. (2003). *Theory and practice of professional career counseling for youth*. Prague: Karla Engliš University.]
- Ivic, I. (2019). Printed and Digital Media: Printed and Digital Textbooks. *Center for Educational Policy Studies Journal*, 9(3), 25–49.
- Janus-Sitarz, A., & Nowak, E. (2014). Język ma siłę sprawczą, czyli o kształceniu kompetencji komunikacyjnych. In A. Janus-Sitarz, & E. Nowak (Eds.) *Szkolna polonistyka zanurzona w języku*, (s. 9-14. Kraków: Universitas [Janus-Sitarz, A. and Nowak, E. (2014). Language has a driving force, which means developing communicative competences. In A. Janus-Sitarz and E. Nowak (Eds.), *School Polish studies immersed in language*, p. 9-14. Kraków: Universitas.]
- Katrňák, T. (2006). Faktory podmiňující vzdělanostní aspirace žáků devátých tříd základních škol v České republice. In Matějů, P.; Straková, J. et al.: *Nerovné šance na vzdělání: Vzdělanostní nerovnosti v České republice*. Praha: Academia, p. 173-193. [Katrňák, T. (2006). Factors determining the educational aspirations of ninth-graders of primary schools in the Czech Republic. In Matějů, P.; Straková, J. et al.: *Unequal Opportunities for Education: Educational Inequalities in the Czech Republic*. Prague: Academia, p. 173-193.]
- Kuijpers, M. A. C. T. (2025). Career Competencies, Preparing Pupils for the Future. *Social Sciences*, 14(5), 291.
<https://doi.org/10.3390/socsci14050291>
- Siddiky, R., & Akter, S. (2021). The pupils' career choice and job preparedness strategies: A social environmental perspective. *International Journal of Evaluation and Research in Education (IJERE)*, 10(2), pp. 421-431: 10.11591/ijere.v10i2.21086.
- Nadace OSF (2021, March). *Politika ochrany práv dětí a zvláště zranitelných dospělých*. Dostupné z: https://osf.cz/wp-content/uploads/2021/04/Politika-ochrany-d%C4%9Bt%C3%AD-a-zvl%C3%A1%C5%A1t%C4%9B-zraniteln%C3%BDch-dosp%C4%9B%C3%BDch_Nadace-OSF.pdf. [OSF Foundation (2021, March). *Policy for the Protection of the Rights of Children and Particularly Vulnerable Adults*. Available from: https://osf.cz/wp-content/uploads/2021/04/Politika-ochrany-d%C4%9Bt%C3%AD-a-zvl%C3%A1%C5%A1t%C4%9B-zraniteln%C3%BDch-dosp%C4%9B%C3%BDch_Nadace-OSF.pdf]
- Ožanová, A. (2018). *Mezigenerační přenos hornických povolání v rodině*. (diplomová práce). Brno: Masarykova univerzita, Filozofická fakulta. Ožanová, A. (2018). [Intergenerational transmission of mining occupations in the family. (Master's thesis). Brno: Masaryk University, Faculty of Arts.]
- PIRLS (2021). *Mezinárodní šetření PIRLS 2021: Národní zpráva*. (online 16.05.2023). Praha: Česká školní inspekce. Dostupné z: <https://www.csicr.cz/cz/Dokumenty/Publikace-a-ostatni-vystupy/Mezinarodni-setreni-PIRLS-2021-%E2%80%93-Narodni-zprava>. [PIRLS (2021). *International PIRLS Survey 2021: National Report*. (online 16.05.2023). Prague: Czech School Inspectorate. Available from: <https://www.csicr.cz/cz/Dokumenty/Publikace-a-ostatni-vystupy/Mezinarodni-setreni-PIRLS-2021-%E2%80%93-Narodni-zprava>]
- Průcha, J., Walterová, E., & Mareš, J. (2003). *Pedagogický slovník*. Praha: Portál. [Průcha, J., Walterová, E., & Mareš, J. (2003). *Pedagogical Dictionary*. Prague: Portal.]

- Sowa, S, Xia, J, Smith, J., & Manches, A. (2025). Supporting children's career aspirations under changing career conditions: A systematic review of intervention approaches. *International Journal for Educational and Vocational Guidance*, vol. 25, pp. 23-43. <https://doi.org/10.1007/s10775-023-09596-w>
- Swapnil Landge, N. (2024). *Legacy of Labour: The Impact of Parental Occupations on Children's Careers Choices and Income Inequality* (August 01, 2024). Available at SSRN: <https://ssrn.com/abstract=5083029> or <http://dx.doi.org/10.2139/ssrn.5083029>
- UNICEF (2025). *Digital literacy for children: 10 things you need to know* [online 30. 9. 2025] Available from: <https://www.unicef.org/innocenti/documents/digital-literacy-children-10-things-you-need-know>
- Van den Ham, A. K., & Heinze, A. (2018). Does the textbook matter? Longitudinal effects of textbook choice on primary school students' achievement in mathematics. *Studies in Educational Evaluation*, 59, 133–140.