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Future Competences and the Model of the Contemporary School: Proposals for Staffing, Curriculum, and Technological Changes

Przyszłe kompetencje i model współczesnej szkoły. Propozycje dotyczące kadry, programu nauczania i zmian technologicznych

KEYWORDS
school change, individual change, group change, teacher preparation, educational goals, teaching methods

SŁOWA KLUCZOWE
zmiana w szkole, zmiana indywidualna, zmiana grupowa, przygotowanie nauczycieli, cele edukacyjne, metody nauczania

ABSTRACT

The article examines the challenge of adapting contemporary schools to the demands generated by rapid technological advancement, socio-cultural transformation, and evolving labor market expectations. It takes as its point of departure the concept of *future competences*, defined as an integrated set of interdisciplinary, professional, and socio-emotional skills necessary for functioning in conditions of uncertainty and increasing digitalization. On this basis, the article proposes directions for change in three key areas: human resources, curriculum design, and educational technologies.

In the area of human resources policy, the article emphasizes the need to redefine recruitment procedures for teacher candidates and to strengthen their pedagogical and psychological preparation. Particular attention is given to the development of socio-emotional

SPI Vol. 28, 2025/4
e-ISSN 2450-5366

DOI: 10.12775/SPI.2025.4.005
Nadesłano: 20.08.2025
Zaakceptowano: 05.12.2025

competences, supported by the introduction of virtual reality (VR) tools and educational simulations in teacher education programs. These technologies create a safe environment for practicing interpersonal skills and responding to instructional and educational situations. In terms of curriculum design, the article argues for a shift in educational objectives toward competence-based learning rather than a narrow focus on subject-specific content. It highlights the importance of interdisciplinary problems, activating and student-centered teaching methods, and tasks that foster creativity, collaboration, and critical thinking. With regard to educational technology, the article stresses the need for the systematic integration of artificial intelligence (AI) and virtual reality into the learning process, as these tools can support the simulation of complex phenomena, deepen understanding, and enable more personalized forms of instruction.

The article concludes that the effectiveness of the proposed reforms depends on the coordinated involvement of the school community, academic institutions, and educational policymakers, as well as on a willingness to adopt an innovative and future-oriented model of schooling.

ABSTRAKT

Artykuł analizuje wyzwanie, jakim jest dostosowanie współczesnych szkół do wymogów generowanych przez szybki postęp technologiczny, przemiany społeczno-kulturowe i ewoluujące oczekiwania rynku pracy. Punktem wyjścia jest koncepcja kompetencji przyszłości, które zawierają umiejętności interdyscyplinarne, zawodowe i społeczno-emocjonalne, niezbędne do funkcjonowania w warunkach niepewności i rosnącej cyfryzacji. W artykule zaproponowano kierunki zmian w trzech kluczowych obszarach: zasobach ludzkich, programach nauczania i technologiach edukacyjnych.

W obszarze polityki kadrowej podkreślono się potrzebę redefinicji procedur rekrutacji kandydatów na nauczycieli, a także lepszego ich przygotowania pedagogicznego i psychologicznego. Szczególną uwagę poświęcono rozwojowi kompetencji społeczno-emocjonalnych, wspieranemu przez wprowadzenie narzędzi VR i symulacji edukacyjnych do programów kształcenia nauczycieli. Technologie te tworzą bezpieczne środowisko do ćwiczenia umiejętności interpersonalnych i reagowania na sytuacje dydaktyczne i edukacyjne. W wymiarze programowym pokreślono konieczność reorientacji celów edukacyjnych w kierunku rozwoju kompetencji, a nie wyłącznie przekazywania treści przedmiotowych. Podkreślono znaczenie zagadnień interdyscyplinarnych, aktywizujących

i skoncentrowanych na uczniu metod nauczania, a także zadań, które sprzyjają kreatywności, współpracy i krytycznemu myśleniu. Odnosząc się do technologii, podkreślono konieczność systematycznej integracji sztucznej inteligencji i wirtualnej rzeczywistości z procesem uczenia się. Narzędzia te mogą wspierać symulację złożonych zjawisk, poprawiać zrozumienie i umożliwiać bardziej spersonalizowane formy nauczania.

W artykule stwierdzono, że skuteczność proponowanych reform zależy od skoordynowanego zaangażowania społeczności szkolnej, instytucji akademickich i decydentów edukacyjnych, a także od gotowości do przyjęcia innowacyjnego i zorientowanego na przyszłość modelu nauczania.

Introduction

Change in schools, and more broadly in education, results from the transition of specific elements of the education system from one state to another. In this context, the author's proposals for change presented in this article are analyzed. In particular, the need for change in the areas of human resources as well as curriculum and organizational structures is examined. This does not imply that necessary structural and infrastructural changes are less important; however, the limited scope of the article does not allow for a comprehensive discussion of all areas in which change is required.

There is no doubt that change is a prerequisite for school development. It may be a response to changes occurring in the school's immediate and wider environment (external motives), or it may express the autonomous aspirations of school staff, student councils, and cooperating parents (internal motives). In practice, external motives tend to dominate, including ongoing technical and technological developments, social and cultural transformations, and the expectations of employers and the labor market. Changes in educational law also constitute an external driver for schools, while in the case of vocational schools and technical institutions, changes in professional standards and working conditions play a particularly important role. When external motives are accompanied by internal motivation, there is a high probability of successful implementation. Otherwise, it is difficult to speak of success when changes are introduced against the will of teachers, school administration, student councils, and parents' visions of an appropriate school model for their children.

It should be emphasized that not every change, regardless of its source, leads to the desired development of a school. Educational practice shows that proposed changes that are not subject to thorough discussion may result in regression or, at best, stagnation. The changes of interest here should be considered in terms of a process with evolutionary characteristics. The starting point of this process is individual change, which, at the appropriate time and under suitable conditions, develops into group-level change, initially limited to a single level or selected type of school, and eventually into change encompassing the entire school system. A process understood in this way requires continuous evaluation and the skillful incorporation of findings as corrective factors for specific practical solutions. The contribution of pedagogical research conducted at particular stages of change is therefore difficult to overestimate.

Changes in the HR area

The analysis of the need for change in the personnel area begins with the postulate of reforming recruitment to teacher education programs. Under current regulations, access to pedagogical studies is open to all candidates, regardless of their predispositions for working with children and young people. As a result, kindergartens and schools may employ graduates of teacher education programs who, due to their personality traits, are ill-suited to work in educational settings. The proposed change involves introducing mandatory interviews and psychological tests for teacher candidates. Such a reform would enable more appropriate selection of future teachers capable of meeting the professional demands of the field.

Further proposed changes concern the pedagogical and psychological preparation of future teachers, which should be treated as a priority competence area at all levels of education. Meanwhile, as of July 2025, proposals are being considered to revise the requirements for teachers employed in kindergartens. These changes would allow the employment of individuals without adequate pedagogical preparation, which is an example of an unfavorable reform that may lead to regression.

Proposals for changes in the pedagogical preparation of teachers also concern the development and implementation in educational

practice of models for training subject-specific teachers in different types of schools—primary schools (Grades 4–8), general education schools, primary and secondary vocational schools, technical schools, post-secondary schools, and universities. In this context, the focus is on integrating disciplinary content (e.g., mathematics, physics, chemistry, electronics, computer science, economics, and finance) with pedagogical content (general pedagogy and the methodology of teaching science, technical, and economic subjects).

Particularly evident are deficiencies in methodological preparation, which largely determine learning outcomes. These shortcomings stem from rigid university education models that place emphasis on disciplinary goals and content while marginalizing methodological training. As a result, significant competence gaps emerge among university graduates who, for various reasons, enter the teaching profession. Resolving this issue would require introducing an obligation for academic staff to participate in discipline-specific pedagogical training and methodological workshops.

Other proposed changes relate to the conditions for entry into the teaching profession. These proposals focus on selecting the best-prepared university graduates for didactic and educational work with children and young people. The introduction of competitive selection procedures for teaching positions appears to be a natural solution. However, although such systems operate successfully in many countries, their effectiveness depends on offering competitive remuneration compared to employment in industry and non-educational service sectors.

The perceived shortage of science and technology teachers indicates the need to revise regulations governing the combination of school and university employment. Many university staff members do not hold full teaching loads. Therefore, it seems reasonable to create legal frameworks that allow university employees to supplement their income through teaching in schools.

The deficit discussed above results from the limited interest of graduates of technical universities in pursuing teaching careers. One way to change this situation would be the large-scale introduction of optional pedagogy courses in the later years of such programs. In this model, graduates would receive, alongside their degree, a certificate confirming their pedagogical preparation. This solution is not novel;

rather, it represents a return to practices in place several decades ago and thus exemplifies a change that draws on proven procedures that were later abandoned.

Changes in working conditions and opportunities for real professional development are also important in this area. Working conditions include the equipment of classrooms and subject-specific laboratories, as well as the provision of adequate staff recreation spaces. With regard to professional development, the most important proposed change involves the preparation of individualized plans for continuing education and professional growth, along with their consistent implementation in close cooperation with universities authorized to conduct programs in the relevant fields.

The implementation of these changes would enable a substantive discussion of the requirements set for teachers. These requirements are formulated by scholars in terms of necessary competences, with varying degrees of detail. For example, Kazimierz Denek identified the following core teaching competences:

- praxeological competences,
- communication skills,
- creative competences,
- moral competence,
- cooperation competences,
- IT and media competences (Denek 2000: 29).

Using a similar terminological framework, Wacław Strykowski presented a comprehensive system of teaching competences:

- substantive competences,
- psychological and pedagogical competences,
- diagnostic competences,
- competences related to planning and designing the educational process,
- didactic and methodological competences,
- media and technical competences,
- control and evaluation competences,
- competences in evaluating school curricula and textbooks,
- self-educational competences,
- communication competences (Strykowski 2007: 71–80; see also Mydłowska 2019: 106, 109–110).

The effectiveness of the teaching and educational process depends on teachers' professional preparation—defined as achieving a sufficiently high level of the competences listed above—as well as on socio-emotional competences, which are insufficiently represented in these models. Therefore, another proposed change is to place greater emphasis on socio-emotional content in university-based teacher education programs (lectures, classes, and workshops). The importance of these competences, which combine interpersonal and intrapersonal dimensions, continues to grow in a contemporary world marked by uncertainty and poorly defined threats. The proposed content aimed at developing socio-emotional competences includes, in particular:

1. Self-awareness:
   - identification of emotions,
   - recognition of the relationship between emotions, thoughts, and behavior,
   - accurate identification of one's own strengths and weaknesses,
   - a sense of self-efficacy,
   - optimism.
2. Self-management:
   - regulation of emotions,
   - stress management,
   - self-control,
   - self-motivation,
   - setting and achieving positive life goals.
3. Social awareness:
   - taking different perspectives,
   - experiencing and expressing empathy,
   - demonstrating respect for otherness,
   - understanding social and ethical norms of behavior,
   - identifying potential sources of support and resources.
4. Interpersonal skills:
   - establishing and maintaining positive and mutually beneficial relationships,
   - communication skills,
   - collaboration,
   - problem-solving,
   - seeking and offering help.

5. Responsible decision-making:
    - making decisions that take into account one's own well-being and that of interaction partners,
    - awareness of the obligation to act in accordance with applicable ethical standards,
    - being guided by safety considerations in the decision-making process,
    - assessing the potential consequences of various behaviors,
    - making constructive, thoughtful, and safe choices for all stakeholders (CASEL 2012: 9).

The consequence of broadly introducing content (modules) related to socio-emotional competences into teacher education curricula should be a shift in the approach to developing these competences. This shift requires the use of simulation-based methods employing virtual reality (VR). VR technology allows students to enter a three-dimensional learning environment generated by specialized computer programs. By using VR headsets, students gain the opportunity to interact with children in kindergarten or school settings. In the virtual environment, they can be immersed in simulated scenarios and respond in real time to didactic and educational situations.

These realistic simulations reflect reality in a multisensory manner, giving students a strong sense of immersion in the artificial environment. Importantly, they can also assume the role of a student with specific educational needs and view the school environment from that student's perspective. Through simulation, modern technology develops empathetic understanding of others (in this case, students) and enables participants to experience difficult situations from another person's point of view. Simulating emotionally demanding situations prepares future teachers to respond in crisis or confrontational moments, strengthens emotional resilience, and supports the development of stress-management and emotion-regulation skills (Bailenson 2018; UNESCO 2023).

Changes in the curriculum and organizational area

In this area, changes in the way learning objectives are conceptualized are particularly important. With a view to developing competences that will enable students to function effectively in the future

labor market, the following system—referred to as *future competences*—has been proposed:

1. General competences acquired through formal education (the highest possible level of linguistic, mathematical, digital, social, and civic competences).
2. General professional competences (specific to formal education) shared across groups of professions, including designing and developing project implementation procedures, extensive use of artificial intelligence (AI) tools, teamwork, the creation of teams, including multicultural ones, and team management.
3. General professional competences resulting from the need to perform professional tasks (initially developed within formal education and later through non-formal and informal education), with an industry-specific character.
4. Specific professional competences, involving the transformation of professional skills and the integration of knowledge and skills from different industries.
5. General social competences acquired through interaction with other participants in social and professional life (verbal and non-verbal communication, self-presentation, conflict resolution, social influence, negotiation, organization of one's own work, and the performance of social roles).
6. Specific social competences, including empathy, problem-solving, creativity, cognitive flexibility, emotional intelligence, moral maturity, ethics, courage, responsibility, openness to change, time management, learning ability, and leadership (Kwiatkowski 2020: 26–27).

Developing this type of competence requires a reconsideration of the core curriculum, in which learning outcomes are defined primarily in terms of competences, as well as significant changes in the learning process—particularly with regard to instructional forms and teaching methods.

The decision to adopt a single dominant form of education or a combination of instructional forms is usually driven by economic and/or organizational considerations. Individual forms, such as teacher–student collaboration, are significantly more costly than collective forms, in which one teacher works with a group of students. On the other hand, school-based forms—namely theoretical

and practical classes conducted in school buildings and using school laboratories and workshops—are relatively well established in educational law and school management practice. The situation is different for extracurricular forms, mainly practical classes conducted in workplaces and universities, which make use of advanced technologies and involve specialists from these institutions.

Such classes not only enable a more comprehensive implementation of educational objectives defined by the proposed competence framework, but also strengthen links between schools and their external environment—industrial, service, and academic. Institutions operating in the vicinity of schools have a vested interest in familiarizing students from various types of schools (not only vocational and technical schools) with the realities of professional and research work. This exposure may contribute to more informed and rational choices regarding future fields of study. Moving education beyond the walls of the school is still an unfulfilled goal of educational and career guidance and constitutes an important area for change in educational policy, requiring the removal of legal and organizational barriers.

Changes in teaching methods follow from changes in educational goals and forms. Adopting the proposed system of competence-based goals and expanding extracurricular learning necessitates the use of activating methods in joint teacher–student activities, with an emphasis on independence, creativity, and openness to change—key components of specific social competences. Activating methods, which encourage active student participation, also support the development of teamwork competences, including collaborative problem-solving. In this context, it is important for teachers to formulate interdisciplinary problems that mirror the realities of professional life, regardless of the type or unique profile of graduates' future employment. Effective problem-solving of this kind requires general, general professional, and general social competences, as well as—particularly in vocational and technical education—professional competences, both general and specific.

Creativity and cognitive flexibility, which belong to the category of specific social competences, are in turn prerequisites for the use of heuristic methods as part of activating approaches. These methods assume that students formulate hypotheses to solve problem-based tasks and develop strategies for their theoretical and empirical

verification. Heuristic methods introduce students to a world in which there are no ready-made solutions to technical and technological, social, or personal problems. As a result, they prepare learners to live and work in a society in which algorithmic solutions—based only on memorization and the application of predefined rules provided by the teacher—are increasingly insufficient (Kwiatkowski 2025: 168–173).

The widespread use of activating methods in schools is associated with the need for equally broad application of the already mentioned artificial intelligence and simulation methods based on virtual reality (VR). This certainly represents a qualitative shift in the area of educational resources. As in teacher education, these tools make it possible to explore worlds that would otherwise remain inaccessible—not only to observe them, but also to understand the underlying physical, chemical, or biological processes. Simulating such processes requires the development of appropriate software that enables the operation of models reproducing natural reality.

Conclusions

The analysis presented of the need for change in Polish schools can, of course, be expanded and supplemented by additional areas requiring transformation. However, regardless of the specific domain, it should be remembered that every change in schools—and more broadly in the education system—is a form of social change. Its success depends on how change is perceived by teachers and parents, as well as by educational authorities. In conclusion, it is worth drawing attention to several basic attitudes toward the proposed changes:

- definitely pessimistic,
- moderately pessimistic,
- neutral,
- moderately optimistic,
- definitely optimistic.

It hardly needs to be demonstrated that only the predominance of moderately and clearly optimistic attitudes offers real hope for the successful implementation of any change.

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