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SOFT SKILLS AND ARTIFICIAL INTELLIGENCE: HOW TECHNOLOGY IS CHANGING THE REQUIREMENTS FOR HIGH SCHOOL STUDENTS SOFT SKILLS

This article examines the complex relationship between artificial intelligence and the cultivation of high school students' soft skills. The research aims to explore AI's impact on expectations for students' social competencies and propose strategies to enhance these skills. Methodologies employed include literature review, questionnaires, statistical evaluation, synthesis, and comparative analysis. Findings indicate that across all surveyed groups - educators, families, employers, and pupils - there is consensus that AI technologies are altering skill requirements for high schoolers. The investigation contributes theoretically by offering fresh insights into soft skills' significance amid technological advancement and illuminating factors shaping student capability demands. Practically, it presents a framework for nurturing social aptitudes within secondary education. Moreover, the outcomes may inform curriculum design and instructional resources focused on fostering essential interpersonal proficiencies in adolescent learners.

Keywords: soft skills, artificial intelligence, high school students, skills requirements, teachers, parents, employers.

Introduction

The relevance of the research topic is that the development of soft skills is a key element in preparing future specialists for work in the modern world. However, traditional teaching methods often do not take into account the impact of new technologies on the formation of these skills. The school education system faces the question of what modern technologies can be used to ensure that the educational process meets new needs (soft skills) and takes into account modern realities (artificial intelligence).

Earlier studies show the necessity of forming soft skills in both students and schoolchildren, but they rarely took into account the influence of artificial intelligence on such educational processes. At the same time, some authors pointed out that in education, modern training programs are not sufficiently adapted to modern technological conditions and do not always effectively develop the required soft skills. The shortcoming of many previous studies is, in our opinion, insufficient emphasis on specific examples of the use of AI intelligence in the school education system and its impact on the development of soft skills. There are also no recommendations on how to integrate new technologies into the learning process of high school students to improve skills.

The purpose of the study is to determine how AI technologies affect the demands for soft skills in high school students and to offer recommendations for their development.

Materials and methods of research

The research approach incorporated bibliographic examination, questionnaires, quantitative data evaluation techniques, synthesis, and juxtaposition.

The bibliographic examination entailed scrutinizing information presented by various scholars in academic publications, research papers, and pragmatic studies pertaining to the subject matter. This methodological choice was predicated on the notion that a thorough literature review facilitates comprehension of the current landscape surrounding the issue at hand and illuminates predominant strategies for addressing identified challenges.

Seminal contributions to the field of inquiry are primarily attributed to international researchers:Adam Grant's works reveal both general issues of leadership, motivation and innovation, and the impact of AI technologies on the development of soft skills [1; 2]. R. Halverson investigates contemporary artificial intelligence systems, demonstrating how expectations for educational frameworks and interpersonal ability cultivation are evolving, using learners as a case study.

[3]. British educators Richard Susskind, Daniel Susskind consider AI technologies and shows how they change professional roles and skills that are necessary for a successful career [4; 5].

Kazakhstani and Russian authors discuss artificial intelligence technologies and how they change the requirements to the educational process and the development of necessary skills of future specialists [6]. A. Asmolov examined artificial intelligence's influence on adolescent interpersonal competency demands, underscoring the significance of nurturing analytical reasoning, inventiveness, and communal duty. [7]. Uskova B.A., Fominykh M.V. draw about attention to the fact that it is necessary to adapt educational programs to the realities of the modern world, where AI plays an increasing role [8]. Muratova G.I. Kalanova on the adaptation of Kazakhstani universities to new educational realities. They point out that AI can be used to improve educational practices and to develop soft skills in students [9]. P. A. Perfilieva writes about the adaptation of educational programs for the digital generation [10].

The following respondents were surveyed: teachers of Secondary school named after M.Alimbayev parents and high school students, as well as employers interested in quality future specialists. Conducting a survey of all stakeholders should allow obtaining the necessary data on what soft skills are really in demand in the current economy and how modern technologies can influence their development.

The method of selection of participants was conducted according to specific parameters, which were chosen from four groups (teachers, parents, employers and high school students). The survey was conducted in the scope of focus groups. The chosen participant categories were identified due to their unique perspectives. Educators, for instance, can offer insights into technological integration in instruction and its impact on adolescents' interpersonal aptitudes. Guardians, conversely, can provide valuable input regarding the perceived future relevance of social competencies for their offspring and their willingness to support skill development through academic curricula and varied technological approaches. From school graduates it is possible to learn about the need and their personal experience in using technology to develop soft skills, to get the opinion of high school students about the level of importance of such skills for future career. Employers can express their opinion on what requirements to soft skills are currently imposed on young specialists and what possibilities of using technologies can be used to assess the level of skills and their further development.

Results and discussions

The literature analysis allowed to obtain a theoretical basis for the study, and to identify existing knowledge in previously conducted studies. All the above-

mentioned authors discuss technology and artificial intelligence and point out that they change the requirements to the educational process in general and to the development of necessary soft skills in future specialists. The results of the analysis also resulted in the definition of skills of high school students as their personal qualities that allow them to work successfully in a team, communicate effectively and solve problems. It has also been found that the introduction of artificial intelligence technologies has led to the following soft skills becoming particularly in demand: critical thinking; communication; teamwork; self-organization and time management; emotional intelligence; flexibility and adaptability; digital literacy; creativity and innovation; analytical skills and problem solving.

The main results of the survey method research on the first group of questions are summarized and reflected in Table 1.

Table 1 – Which soft skills high school students most need to succeed in today's world (by importance)

rank	Teachers' priorities	Parents' priorities	Employers' priorities	Pupil priorities
1	Communication skills	Critical thinking	Teamwork	Communication skills
2	Critical thinking	Teamwork	Adaptability	Creativity
3	Teamwork	Communication skills	Critical thinking	Critical thinking
4	Adaptability	Adaptability	Communication skills	Teamwork
5	Creativity	Creativity	Creativity	Adaptability

Priorities vary from group to group. Teachers first of all emphasize the development of such skills as communication and critical thinking, as these skills, in their opinion, help high school students to better assimilate learning material, analyze information and actively participate in various discussions on the topic under study. To a lesser extent, they evaluated the skills of adaptability and creativity.

According to parents who are more concerned about their children's future and their success in life, more importance should be placed on skills that are considered important for achieving a successful career. Therefore, they put critical thinking at the top of the list. In second place are teamwork skills because most professions involve collaboration with other team members. Middle is communication skills. And they consider adaptability and creativity skills less important.

Employers' opinions - they assessed first of all the ability to work in a team, as most of the projects realized at the production facilities require joint work in cooperation with others. Respondents also emphasized flexibility, recognizing that workers must be prepared for swift and diverse labor market transformations, maintaining constant readiness to adjust.

Concurrently, secondary school pupils exhibit the greatest enthusiasm for cultivating interpersonal competencies they deem pragmatically beneficial in daily scenarios or inherently appealing. That is why they give their preference first of all to communication skills, then to creativity. Critical thinking skills are most often identified in third place. Less important are teamwork and adaptability, as high school students do not yet imagine themselves working in an enterprise.

The summarized materials regarding the opinions about artificial intelligence technology affecting the development of soft skills among high school students are reflected in Table 2.

Table 2 – AI technologies that have the greatest impact on the development of soft skills in high school students

Teachers' opinions	Parents' opinion	Employers' opinion	Opinion of high school students
Automation of routine tasks	Support for out-of-school learning	Soft skills training	Personal development
Personalizing learning	Collaborative learning	Analyzing market needs	Communication and cooperation
Improving classroom interaction	Regulation of the educational process	Automation of business processes	Time management and organization
Development of critical thinking	Help in choosing a profession	Distance learning	Learning foreign languages

Teachers believe that AI systems lead to the automation of mundane tasks, as they can check homework and tests, freeing up teacher time for more creative and interesting work. This fosters creativity and initiative in high school students. AI systems are able to personalize learning by analyzing performance data and taking into account the interests of each student, offering individualized materials and guidance. In this way, AI technology can help high school students develop self-regulation and responsibility skills. AI improves classroom interaction: AI-based technologies (virtual assistants) can assist teachers in teaching lessons by organizing discussions and group projects. In this way, it promotes teamwork and

interpersonal skills in high school students. Formation of critical thinking: since the interactive teaching materials created with the use of AI require high school students to actively participate in the learning process, which develops their critical thinking and analytical skills.

According to parents, AI technologies support forms of extracurricular learning: some parents note that AI-powered mobile apps and platforms help them to learn individual subjects independently. This encourages the development of curiosity and self-learning skills. Regulating the learning process through time management and case planning applications helps children to organize their time correctly, especially develops time management skills, provides an opportunity to assess the interests and abilities of students, helps in choosing a future profession. Thus, they develop self-awareness and responsibility for choice.

According to employers: it is important to train soft skills such as communication, teamwork and problem solving, which AI technologies allow by simulating real work situations, employers better understand also the preferences of future employees. In their opinion, analytical tools help to develop strategic thinking and analytical skills of future employees. And distance learning based on AI-enabled Platforms allow high school students to develop new skills and competencies.

According to high school students themselves, the following are important: personal development, as AI-based apps and games give them the opportunity to learn new topics and thus improve on already known topics and develop skills in research and creativity; communication and collaboration, as virtual assistants and chatbots give them the opportunity to communicate not only with each other but also with teachers; AI-based technologies (planners and organizers) help students better manage their time and complete all tasks.

The results on the question about the use of AI technology in their professional (educational) activities to develop their own soft skills. In terms of activity ranking, teachers were the most active, as they use AI technologies in their everyday lives and also need to constantly adapt to new teaching methods and technologies. Employers often use AI solutions for business improvement and human resource management, but they are less active in applying AI technologies at the personal skills level. Parents are also utilizing AI technologies. Plus, they are eager to find better ways to support their children's education, so AI applications have become increasingly popular among them in recent years.

The results of the farrowing survey on whether current educational programs consider current educational programs good enough to prepare graduates to work in a high-level environment using AI technologies are shown in Table 3.

Table 3 – Opinions about educational programs and preparation of graduates for the conditions of using high AI technologies

Teachers' opinions	Parents' opinion	Employers' opinion	Opinion of high school students
contradictory	do not fully prepare graduates to work in the high-tech labor market conditions	insufficient to produce quality graduates	Individuals acknowledge that they receive some basic knowledge about AI as part of their school curriculum; some feel that this is not enough to fully prepare for the future; many want more hands-on experience and a deep understanding of how to apply AI solutions to real-world work situations

Views on what needs to change in educational programs to better prepare students to use technology to develop soft skills are reflected in Table 4.

Table 4 – Opinions on necessary changes in educational programs

Teachers' opinions	Parents' opinion	Employers' opinion	Students' opinions
1.Expand the curriculum, and add courses in AI fundamentals. 2. increase the number of project work and workshops to practice skills in teamwork and solving complex problems.	1.Introduce more hands-on activities related to the use of AI technologies. 2. include courses in basic programming and data analytics. 3. focus more on developing critical thinking and creativity, to be more successful in a high AI environment.	1. organize closer cooperation between schools and businesses to create more relevant curricula. 2. introduce special courses to prepare for the real working environment 3. develop skills of self-organization, time management in the face of multiple tasks.	1. introduce more interactive teaching methods: virtual reality and gamification. 2. increase the number of practical assignments and project work, to gain real-world experience with AI technologies.

The results of the survey for the latter questions are reflected in Table 5.

Table 5 – Suggestions for improving learning and agile skills development through AI technologies

Teachers' opinions	Parents' opinion	Employers' opinion	Students' opinions
Improving learning and agile skills development through AI technologies			
1Introducing quality AI platforms to personalize the learning experience, 2 Creating online courses and modules 3Development of quality training games and simulations	1 Organize parent groups to share experiences and ideas on using AI in homeschooling. 2 Holding family events where you can together to explore new technologies and create projects using AI.	1.Joint training programs with educational institutions 2.Training programs aimed at mastering new technologies.	1.Include AI projects in school assignments and competitions 2. organize courses on digital creativity and design using AI technologies

As a recommendation, a model for developing soft skills in high school students through AI is developed, which is reflected schematically in Figure 1.

It is also recommended to conduct further research on the indicated topic in the following directions, as they logically follow from the results of the present study: to analyze successful examples; to develop objective indicators to assess the effectiveness of AI-technologies in the development of soft skills; to investigate the impact of AI on the psychological state of high school students, on their motivation and on the indicators of involvement in the learning process.

Conclusion

We have found that modern conditions require high school students to develop certain soft skills for successful career and life in the conditions of high use of AI technologies. So the literature analysis shows that artificial intelligence influences the requirements for the educational process and the development of soft skills. As new technologies and AI require future professionals to be more soft, adaptable and digital skills.

Survey results show that prioritized soft skills vary across groups. Teachers emphasize communication and critical thinking, parents emphasize critical thinking and teamwork, and employers emphasize teamwork and critical thinking. High school students, on the other hand, most often choose communication skills. There

are some general trends regarding soft skills. Communication and critical thinking are highly valued by all groups, albeit to varying degrees. Although the prioritization of soft skills differs, all groups agree on the importance of their development.

All surveyed groups concur that artificial intelligence platforms substantially influence adolescent skill acquisition. Broadly, the principal expectations for AI-augmented competencies among secondary school learners encompass: communication, critical thinking, teamwork, self-organization and time management, emotional intelligence, flexibility and adaptability, digital literacy, creativity and innovation, analytical skills and problem solving. All groups consider it necessary to make changes in educational programs. Thus, teachers suggest expanding curricula and increasing project work, parents insist on increasing practical lessons and introducing courses on programming and data analytics, employers emphasize cooperation between schools and businesses and the development of organizational skills, and students prefer interactive teaching methods and more practical assignments.

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ИКЕМДІ ДАҒДЫЛАР ЖӘНЕ ЖАСАНДЫ ИНТЕЛЛЕКТ: ТЕХНОЛОГИЯ ОРТА МЕКТЕП ОҚУШЫЛАРЫНЫҢ SOFT SKILLS ТАЛАПТАРЫН ҚАЛАЙ ӨЗГЕРТЕДІ

Бұл мақалада жоғары сынып оқушыларының жасанды интеллект арқылы икемді дағдыларды дамыту арасындағы байланысты ашатын проблемалық мәселелер қарастырылады. Зерттеудің мақсаты-жасанды технологияның жоғары сынып оқушыларының икемді дағдыларына қойылатын талаптарға қалай әсер ететінін анықтау және оларды дамыту бойынша ұсыныстар беру. Зерттеу әдістері әдеби талдау, сауалнамалар, статистикалық талдау, жалпылау және салыстыру әдістері болды. Нәтижесінде, сауалнамаға қатысқан барлық төрт топтың (мұғалімдер, ата-аналар, жұмыс берушілер және оқушылар) пікірінше, жасанды интеллект технологиялары soft skilts жоғары сынып оқушыларының даму талаптарын өзгертетіні анықталды. Зерттеудің теориялық маңызы бар, өйткені ол түсінікті кеңейтеді жасанды интеллект технологиясындағы икемді дағдылардың рөлі мен маңыздылығы туралы және орта мектеп оқушыларының жұмсақ дағдыларға қойылатын талаптарына шынымен әсер ететін жаңа көзқарас береді. Практикалық маңыздылығы мектеп деңгейінде икемді дағдыларды дамытудың ұсынылған моделінде жатыр. Сондай-ақ, оның нәтижелері жоғары сынып оқушыларында қажетті икемді дағдыларды дамытуға бағытталған білім беру бағдарламалары мен әдістемелік материалдарды әзірлеу үшін пайдаланылуы мүмкін. Зерттеу сонымен қатар орта мектеп оқушыларын AI технологиясы жағдайында жұмыс істеуге дайындауға бағытталған арнайы курстар мен тренингтер құруға негіз бола алады.

Кілтті сөздер: икемді дағдылар, жасанды интеллект, орта мектеп оқушылары, жұмсақ skills талаптары, мұғалімдер, ата-аналар, жұмыс берушілер.

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ГИБКИЕ НАВЫКИ И ИСКУССТВЕННЫЙ ИНТЕЛЛЕКТ: КАК ТЕХНОЛОГИИ ИЗМЕНЯЮТ ТРЕБОВАНИЯ К SOFT SKILLS СТАРШЕКЛАССНИКОВ

В настоящей статье рассмотрены проблемные вопросы, раскрывающие связь между развитием у старшеклассников гибких навыков посредством искусственного интеллект. Цель исследования - определить, как технологии искусственного влияют на требования к гибким навыкам у старшеклассников, и предложить рекомендации по их развитию. Методами исследования стали литературный анализ, опросы, методы статистического анализа, обобщения и сравнения. В результате установлено что действительно, по мнению всех четырёх опрошенных групп (учителя, родители, работодатели и учащиеся) технологии ИИ изменяют требования к развитию у старшеклассников soft skills. Исследование имеет теоретическую значимость, так как оно расширяет понимание предоставляет новый взгляд о роли и значении гибких навыков в условиях технологий ИИ и на то, что действительно влияет на требования к soft skills у старшеклассников. Практическая значимость заключается в предложенной модели развития гибких навыков на уровне школы. А также его результаты могут быть использованы для разработки образовательных программ и методических материалов, которые можно будет направлены на развитие необходимых гибких навыков у старшеклассников.

Ключевые слова: гибкие навыки, искусственный интеллект, старшеклассники, требования к soft skills, учителя, родители, работодатели.