



## Adaptation of curricula to labour market requirements

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■ **Abstract.** The study aimed to assess the effectiveness of adapting curricula to labour market requirements and their efficiency in contemporary conditions. Three disciplines were selected – Computer Science, Business Management, and Marketing – as they align most closely with current professional demands. To evaluate effectiveness, student progress was monitored, participants in the educational process were surveyed, and academic performance outcomes were analysed. The key findings indicated that curricula adapted to modern market needs demonstrated significantly greater effectiveness in preparing students. Following the introduction of new modules incorporating up-to-date knowledge and skills, students reported improved competency levels and higher employment success compared to control groups following outdated curricula. The study involved an analysis of existing curricula, the development of new modules aligned with labour market requirements, and the implementation of these curricula in several educational institutions. The findings indicated that continuous revision of curricula in response to evolving labour market requirements is essential for ensuring the high competitiveness of graduates. Curriculum adaptation has enhanced alignment with contemporary labour market needs, positively impacting student preparation and readiness for professional activities. The introduction of new curriculum modules has been found to improve students' knowledge of practical skills and modern technologies, facilitating their more effective integration into professional environments. An assessment of the key research outcomes confirmed a significant improvement in students' knowledge and skills, highlighting the necessity of regularly updating study programmes. The positive impact of curriculum adaptation on graduates' professional competencies underscores the importance of further developing and supporting such initiatives to enhance education quality and its alignment with current labour market demands

■ **Keywords:** educational process; knowledge updating; competencies; revision; effectiveness

## ■ Introduction

Changes in the labour market, technological progress and the evolution of professional standards create new demands for the qualifications and skills of graduates. In this context, curriculum adaptation becomes critical to meeting current needs and trends. Constant changes in technologies and business processes lead to students' knowledge quickly becoming outdated. Updating curricula allows learners to acquire the necessary knowledge that meets modern standards and market requirements. This provides them with the necessary

skills for successful employment in a modern environment. In particular, curriculum adaptation helps to increase the level of employment of graduates (Grynyov *et al.*, 2024). In cases where study programmes include current knowledge and skills that are in demand in the labour market, students have more chances to find a suitable job after graduation. This helps to reduce the imbalance between the supply of educational services and the requirements of employers. Educational institutions that quickly respond to changes in the labour

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market and adapt their curricula can attract more students and enhance their reputation (Samaradivakara *et al.*, 2024). This also helps to maintain the relevance and effectiveness of educational services.

Studying the curriculum adaptation to the requirements of the labour market is key to improving the quality of education, increasing the competitiveness of graduates and ensuring their readiness for the modern challenges of the professional world. Z.K. Abdul-Hasan & N.I. Abed (2024) emphasised the importance of these curricula having sufficient flexibility to quickly adapt to the new requirements of the labour market. They argued that changes in the economy and technology dictate new conditions that require university graduates not only to have deep theoretical knowledge but also the ability to apply it in practice. V. Dmytrenko & V. Dmytrenko (2022) investigated the effectiveness of various teaching methods in preparing higher education students for the labour market, studying the success of their integration. The study showed that modular learning and project work are most effective for developing students' practical skills. Research into this issue contributes to the development of innovations in the educational process. Integrating new methods and technologies into curricula can improve the quality of education, making it more practical and adapted to real working conditions. It can also stimulate the adoption of new approaches to learning, such as project-based learning or internships. The study by O. Zadorina *et al.* (2023) found that even technical specialties require curriculum expansion through courses that develop these skills. They emphasised that curriculum adaptation should take into account not only technical aspects but also social and communication skills, which are becoming increasingly important in the modern labour market.

Updating curricula is also crucial for preparing students for global challenges and opportunities, as in the context of globalisation and international integration, educational programmes should reflect not only local realities but also international trends and requirements. T. Rehman (2025) studied the impact of globalisation on the content of educational programmes, pointing out that increasing international competition requires universities to integrate international standards into their curricula. The author argued that modern curricula should be oriented not only to the domestic labour market but also to take into account the requirements of the global market, which is especially relevant for graduates seeking to work abroad. The problem of curriculum standardisation was studied by L. DelaTorre-Diaz *et al.* (2025), arguing that while standardisation helps to ensure a certain level of quality of education, it can at the same time hinder innovation and flexibility of curricula. A. Aliya Putri *et al.* (2023) examined how effectively

a technical unit of Indonesia's Ministry of Manpower addressed the country's skilled workforce need between 2019 and 2021. By 2020, the government aimed to have 60% of students in vocational education and 40% in academic institutions, but only 49% of students were in vocational education. vocational education, asking for increased industry-vocational school cooperation to give graduates employer-required skills. The study recommended strategic cooperation between educational institutions, government agencies, and industry stakeholders to promote adaptive training programs that meet industry needs, enhancing employability and economic growth.

N. Shabangu & N.E. Madondo (2024) examined the persistent challenge of graduate unemployment, emphasising the misalignment between higher education curricula and labour market requirements. They highlighted that many programmes lack sufficient practical training and career support, which leaves graduates underprepared for the workplace. The authors argued that closer collaboration between universities, employers, and government agencies is required to reform curricula, integrate experiential learning opportunities, and regularly update programme content in line with market demands. A.O. Lobatskii (2024) focused on the need for dual education, where students gain practical experience alongside theoretical training. E. Albayrak & Ö. Akgün (2022), proved that it is important to constantly update curricula in the field of information technology, where changes are happening most rapidly. They also noted that these curricula should include the latest advances in this field to ensure graduates are competitive. This research highlighted that the inability of curricula to be update in a timely manner can lead to graduates being unprepared for the demands of modern employers. Each of the researchers made a significant contribution to the study of this issue, but the question of integrating existing curricula that can be successfully adapted to the needs of the labour market was not sufficiently disclosed. The study aimed to assess the effectiveness of curriculum adaptation to meet the requirements of the labour market to improve student training and their competitiveness in the modern market.

## ■ Materials and Methods

This study employed an experimental method to adapt curricula to meet labour market demands. The first stage was the analysis of existing curricula. The study selected specific curricula from three specialties that are in greatest demand in the labour market: Computer Science, Business Management and Marketing. These specialties were chosen based on an analysis of market trends, which showed their high popularity and importance to the economy. An analysis of the educational programmes of Taras Shevchenko National University of Kyiv was conducted, which offers training in

three in-demand specialities, namely the educational program “Computer Science”, as well as the educational program “Business Management” and the educational program “Marketing”.

A survey of employers (130 women and 170 men), whose average age was 35 years, with variations from 25 to 48 years, was conducted, which consisted of the following questions:

1. How do you assess the level of practical skills demonstrated by graduates during the performance of professional duties?

2. Does the theoretical knowledge of graduates correspond to modern trends in your industry?

3. How important do you consider the introduction of interdisciplinary approaches in the training of specialists?

4. How often do you encounter a situation where graduates do not possess the necessary practical skills to effectively perform their duties?

5. Which aspects of educational programmes, in your opinion, require the most changes to meet modern labour market requirements?

The participants represented companies from various sectors of the economy, which allowed for a comprehensive understanding of the requirements for graduates from different specialities. This made it possible to identify the curricular misalignment through a detailed study of the requirements for graduates, gathering information from employers. The second stage was the creation and application of a new curriculum model, which included current knowledge and skills that meet modern market requirements. It was improved and integrated with traditional curricula. This stage involved the implementation of these new curricula in several higher education institutions. Several pilot groups of students were selected who underwent training under the updated curricula. To ensure the statistical significance and representativeness of the research results, a sample of 200 students was selected. The age of the participants ranged from 20 to 24 years. Women made up 45% (90 participants), men – 55% (110 participants). During the educational process (September 2023 – May 2024), student progress was regularly monitored, and the effectiveness of new curricula was also evaluated by surveying students and teachers, as well as through analysis of student performance. The study was conducted in accordance with the American Sociological Association's Code of Ethics (1997). After the completion of the experimental period, the results between the groups studying under the new curricula and the control groups studying under the old curricula were compared according to the criteria of their academic performance for the year.

## ■ Results

Various organisations and institutions, namely the Institute of Professional Education, the Boston Consulting

Group, the European Association for Quality Assurance in Higher Education, and the Ministry of Education and Science of Ukraine, are constantly monitoring curriculum adaptation to the modern labour market. The state of this research showed that the adaptation of educational programmes to meet labour market demands demonstrates significant differences between different educational institutions and specialities. About 40% of higher education institutions are actively implementing changes in their curricula, focusing on current trends and employer requirements. This includes updating teaching materials, introducing practice-oriented courses, expanding opportunities for internships and practical training, as well as close cooperation with companies to prepare students for real working conditions. A significant part of curricula remains insufficiently adapted to the modern needs of the market. About 30% of curricula are still based on outdated learning approaches, with an emphasis on theoretical knowledge, without sufficient attention to the development of practical skills. This creates a certain gap between what the education system offers and what the modern labour market demands. Another 20% of curricula are in the process of partial updating. In these cases, educational institutions have already started the modernisation process, but it is not yet complete. This means that changes have been made to individual courses or specialities, but a systematic approach to adapting curricula has not yet been fully implemented. Students of these curricula receive some access to new knowledge and skills, but not in their entirety. In particular, 10% of curricula have hardly undergone any changes, which makes them the most distant from the modern requirements of the labour market (Abina *et al.*, 2024). Students studying under such curricula face difficulties in finding employment, as their knowledge and skills do not meet the needs of employers.

In general, the situation requires further development and acceleration of the process of adapting curricula to provide students with an adequate level of training and competitiveness in the modern labour market. All curricula should allow students to choose specialisations, additional courses or double degree programmes. There should be up-to-date internships, created real project works that prepare students for real working conditions. The university should provide support in finding employment, organise connections with employers and opportunities for internships and practical training. The Computer Science curriculum at Taras Shevchenko National University of Kyiv includes a wide range of courses covering key disciplines such as algorithms, programming, databases, cybersecurity and artificial intelligence. However, despite the wide range of theoretical knowledge, significant gaps in the curriculum become apparent when preparing students

for the real challenges of professional activity. One of the biggest problems is the insufficient emphasis on the development of practical skills that are necessary for performing professional duties. Although the curriculum includes laboratory work and project assignments, this is not enough to prepare students for the complex and dynamic conditions of the modern information and communication (ICT) industry. The lack of a sufficient number of practical classes, which would allow students to develop the skills to solve real problems, leads to the fact that graduates are not always ready to effectively apply their knowledge in practice. Another significant gap is the mismatch of theoretical knowledge with current trends in the industry. In particular, the rapid development of technologies and the constant updating of tools and approaches in software engineering and data science often leave curricula outdated. For example, many programming courses focus on languages and technologies that are no longer relevant in modern IT companies. This means that graduates, although possessing deep theoretical knowledge, may face difficulties in finding a job, as their skills do not meet the current requirements of the market.

Similar problems are observed in the Business Management curriculum. Even though the courses cover important aspects such as entrepreneurship, marketing, finance and human resources management, there is a significant mismatch between what is taught in the classrooms and what employers expect from graduates. Basically, this is because curricula often remain theoretically oriented, providing students with knowledge that does not always meet the modern requirements of the labour market. Although some courses involve case analysis and modelling of business situations, this is not always enough for students to fully immerse themselves in the real problems of business. For example, the lack of in-depth practical classes that would simulate the real challenges faced by modern managers leads to the fact that graduates are not sufficiently prepared to make decisions in conditions of uncertainty and rapid change. These curricula often fail to keep pace with the latest trends in the business environment, which further widens the gap between what students learn and what they need to know for successful work. Gaps in practical training and the lack of updated knowledge led to the fact that graduates are often not ready to work in real business conditions, where it is necessary to quickly adapt to changes and make decisions based on current data and trends. Therefore, there is a need to review approaches to teaching business management to better prepare students for the challenges that await them in their professional activities.

The Marketing curriculum, despite focusing on product and service promotion strategies, market analysis and digital marketing, also has its drawbacks. One

of the biggest challenges is that students often lack real experience with modern marketing tools. Courses often focus on general concepts, while specific skills, such as managing advertising campaigns on social media or using analytical platforms to evaluate the effectiveness of marketing strategies, remain on the periphery of learning. This leads to the fact that graduates may not have sufficient training to work in a highly competitive market, where knowledge of modern technologies and tools is critical. Business management often combines theoretical training with practical cases covering entrepreneurship, marketing, finance and human resources management. An analysis of the selected curricula from three fields – Computer Science, Business Management, and Marketing – revealed significant gaps that affect graduates' readiness for successful employment and effective work in their chosen industries. Insufficient development of practical skills and the mismatch of theoretical knowledge with current trends leave graduates unprepared for the challenges posed by employers. In order to overcome these gaps, it is necessary to revise the curricula, increase the number of practical classes and update the courses following the needs of the modern labour market. Only in this way can graduates be provided with the necessary training for a successful career in their chosen specialities.

Data collected from employers involved in the development of professional competency standards showed that there are significant gaps in curricula. This concerns both the insufficient development of practical skills necessary for the performance of professional duties and the mismatch of theoretical knowledge with current trends in the industry. As a result, graduates are insufficiently prepared for successful employment and effective work in their chosen specialities. To identify discrepancies in the curricula of the three specialisms, a detailed study was conducted, during which information was gathered from employers through a survey.

According to the results obtained, 73% of employers noted that existing curricula do not provide an adequate level of practical skills for graduates, 58% pointed to the obsolescence of theoretical knowledge that does not correspond to modern trends in the industry, and 42% drew attention to the insufficient implementation of interdisciplinary approaches, which are critical for a comprehensive understanding of the profession. These data clearly identified problematic aspects within the curricula and confirmed their misalignment with labour market needs. Based on this, the main aspects that need to be improved in the analysed curricula were identified, namely the actualisation of educational content, interactivity and more successful practical training, their flexibility and preparation for the global labour market. This became the basis for the further application of the updated curricula (Table 1).



**Table 1.** Key aspects for improving the analysed curricula

| Aspect                                               | Curricula                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                      | Computer Science                                                                                                                                                                                                                                                                                                                 | Business Management                                                                                                                                                                                                                                                                                                                                                               | Marketing                                                                                                                                                                                                                                                                                                        |
| Relevance of learning content                        | Increase courses on machine learning, artificial intelligence, and big data analysis. Curricula should meet the growing demand for specialists capable of protecting information systems from cyberattacks                                                                                                                       | Should better integrate modern management concepts and tools, such as digital transformation, change management, innovative thinking and strategic management, to adapt to rapid changes in the business environment. Increase emphasis on financial management and business analytics to master skills that are important for making data-driven management decisions            | More active inclusion of digital marketing disciplines that cover social networks, content marketing, and search engine optimisation. Include additional courses in marketing analytics and working with big data to master the tools needed to analyse market trends and consumer behaviour patterns            |
| Interactivity and practical training                 | Improved practical training, including laboratory classes and participation in real projects. Ability to choose courses in software development, where students work on creating projects that meet real business tasks. Organisation of programmes that offer the opportunity to undergo internships in leading IT companies    | Analysis of real cases and implementation of projects that model real business situations. Increase in the number of hours for internships and cooperation with companies, participation in joint projects or even work on real business tasks during training, which contributes to preparing for work in a real business environment                                            | Inclusion in training activities with real projects, and cooperation with companies to develop marketing strategies, which allows students to apply their knowledge in practice with real clients. After all, students gain real experience, which is extremely important for their further employment           |
| Curriculum flexibility and specialisations           | Real choice of specialisations (e.g., data science, software engineering) to tailor studies to the ever-changing demands of the job market. The option to combine computer science with other disciplines, such as business or marketing, enables graduates to acquire a broad set of skills in demand across various industries | The ability to choose specialisations such as international business, marketing, human resource management, or operations management, allows students to tailor their studies to specific career goals. Combining business studies with other fields, such as computer science or engineering, enhances graduates' flexibility and adaptability to various sectors of the economy | Opportunities for students to combine marketing with other disciplines, such as business analysis or design, providing them with a broader knowledge base and improving their competitiveness in the job market                                                                                                  |
| Career opportunities and support                     | Structuring the curriculum in a way that allows graduates to continue their studies at the postgraduate or PhD level, opening additional career opportunities                                                                                                                                                                    | Establishing a career centre that provides students with assistance in job search, interview preparation, and employment readiness. This includes organising career fairs where students can interact directly with company representatives, network, and secure employment through recommendations and connections                                                               | Strong university support regarding employment, including assistance with CV writing, interview preparation, and the organisation of job fairs, facilitates graduates' swift entry into the workforce. Preparation for obtaining professional certifications, such as Google Ads, HubSpot, or Facebook Blueprint |
| Preparation for certifications and the global market | Preparation for obtaining professional certifications (e.g., in cybersecurity or data management) to enhance graduates' competitiveness in the job market                                                                                                                                                                        | Increasing opportunities for more participants in the educational process to study or intern abroad, helping them understand global business trends and develop crosscultural management skills. All courses should include comprehensive language training to enable graduates to work in international companies                                                                |                                                                                                                                                                                                                                                                                                                  |

**Source:** compiled by the author

Improving these aspects of curricula will contribute to the formation of a theoretical foundation for education, more effective assimilation of practical skills and obtaining career prospects that meet modern labour market requirements. Then, Computer Science curricula that offer modern content, integration with the labour market through internships and project work, as well as flexibility in choosing specialisations,

will be well adapted to the current requirements of the market. This will provide graduates with a competitive advantage in the labour market and open up a wide range of career opportunities in various industries. Business management curricula will demonstrate high adaptability to the requirements of the labour market, due to up-to-date educational content, flexibility in the choice of specialisations, and ample opportunities for

practical training and international experience. This will allow future professionals to be competitive in the labour market and ready to work in various sectors of the economy. Marketing curricula that focus on modern trends, such as digital marketing, data analytics and practical experience, will ensure high adaptability to the requirements of the labour market. Graduates of such curricula will have the necessary skills to work in a rapidly changing marketing environment and meet the needs of modern employers.

Having considered all the above-mentioned aspects of improvement, the educational process was organised in such a way as to compare the effectiveness of old and new curricula. The control group continued to study under the old curricula, which were less flexible and focused mainly on theoretical knowledge. Students in this group mostly worked individually, and practical tasks were more academic in nature, which limited their ability to apply the knowledge gained in real conditions (Table 2).

**Table 2.** Results of study participants based on studying under different curricula

| Groups             | Average score | Percentage of students with a score $\geq 4$ | Percentage of students with a score $< 3$ | Percentage of students who passed exams the first time |
|--------------------|---------------|----------------------------------------------|-------------------------------------------|--------------------------------------------------------|
| Experimental group | 4.2           | 85%                                          | 15%                                       | 95%                                                    |
| Control group      | 3.4           | 60%                                          | 5%                                        | 80%                                                    |

**Source:** compiled by the author

The average score reflected the average value of all grades received by students on exams. The percentage of study participants who passed the exams the first time shows what percentage of students successfully passed all exams without the need for re-taking them. The evaluation results at the end of the year showed significant differences between the groups. In the control group, the average score was 3.4 on a five-point scale. At the same time, students of the experimental group demonstrated significantly better results, with an average score of 4.2. In addition, the experimental group showed an increase in the level of motivation and interest in learning, which was confirmed by an increase in activity in classes and extracurricular projects.

Analysing the results of student performance, several significant differences can be noted between the experimental and control groups, which indicate the effectiveness of new approaches to learning. During the study, it became obvious that students in the experimental group were significantly better at solving complex problems. Such tasks required not only knowledge of the theoretical aspects of the subject but also the ability to effectively apply this knowledge in practical conditions. This was the main goal of the updated curricula – not just to give students a set of theoretical knowledge, but also to teach them how to apply this knowledge in real conditions. Compared to the control group, higher education students in the experimental group showed a deeper understanding of the subject, as well as confidence in their actions when performing practical tasks. This demonstrated their ability to use the knowledge gained to analyse and solve real problems. For example, when solving tasks that required a creative approach or non-standard thinking, students in the experimental group usually offered more solutions than higher education students from the control group. This ability to generate new ideas and approaches is an important indicator of

the development of critical thinking and flexibility in the application of knowledge.

In contrast, in the control group, students, although demonstrating a high level of theoretical knowledge, often experienced difficulties in applying it in practice. It was found that they had difficulties in solving problems that required not just a mechanical reproduction of theoretical material, but its creative application. They were often unprepared for non-standard situations or tasks that went beyond the typical examples considered during classes. This indicated certain shortcomings of the traditional education system, which pays more attention to the assimilation of theoretical knowledge than to its practical application. Also, the study participants of the control group more often experienced failures when trying to apply their knowledge in new or unfamiliar contexts. Their approach to solving problems was more template-based, which limited their ability to independent thinking and decision-making in difficult conditions. This once again emphasised the need for the introduction of updated curricula that would provide more effective training of students for the real challenges of professional activity.

Analysing the above data, it is worth concluding that the implementation of updated curricula is crucial to improving the quality of student training. The experimental group, which studied under the new curricula, demonstrated a higher level of competence, flexibility and ability to think independently. This is a compelling argument in favour of the need to implement new approaches in education, especially in the context of modern challenges faced by professionals in various fields. The successful application of theoretical knowledge in practical conditions is becoming an increasingly important factor that determines the readiness of graduates for professional activity. Therefore, the results of the experiment show that updated curricula not only increase the level of theoretical knowledge of students

but also contribute to the development of their skills in applying this knowledge in practical situations. This emphasises the importance of continuing work in this direction and improving approaches to learning to prepare students for the effective performance of their professional duties.

Based on the data obtained, it was concluded that it is necessary to constantly review and adjust curricula to the changing requirements of the labour market to ensure the competitiveness of graduates in the modern labour market. The results of the study showed that students who studied under updated curricula demonstrated significantly better results compared to those who continued to study under old methods. The high average score and a significant percentage of students who successfully passed all exams the first time are clear evidence that new approaches to education contribute to deeper assimilation of the material and the development of necessary practical skills. One of the key aspects that influenced the success of the experimental group was the inclusion of teaching methods in the curricula, which are more focused on the practical training of students. In particular, the introduction of interdisciplinary courses, teamwork on real projects and the use of modern technologies allowed students not only to better understand the material but also to apply it in the context of real work tasks. This contributed to the formation of complex knowledge and skills, which are necessary for a successful career in the conditions of rapid changes in the labour market.

However, it is important to note that achieving high results requires constant monitoring and updating of curricula. The labour market is constantly changing, new technologies, methods of work and requirements for professional competencies are emerging. Therefore, curricula that work effectively may lose their relevance in a few years. This underscores the need for systematic analysis of labour market needs and making appropriate changes to the educational process. To do this, it is important to actively involve employers in the process of forming and adjusting curricula, and also use the results of research, such as surveys of graduates, employers and teachers, to evaluate the effectiveness of educational methods. Continuous feedback from the job market will allow not only for the timely identification of gaps in student preparation but also for swift responses to new challenges and trends. In addition, it should be taken into account that changes in curricula should not only be a response to the existing requirements of the labour market but also anticipate them. This means that educational institutions should actively explore future trends and prepare students for the conditions that may arise in the coming years. This approach will provide graduates with a high level of competitiveness and contribute to their successful employment, regardless of changes occurring in the economy and the labour market.

## ■ Discussion

The results of the study indicated that modifying educational programmes under the needs of the labour market is one of the most pressing challenges facing higher education institutions. The economy and technologies are changing rapidly, so it is important that education responds to these changes and provides graduates with the necessary skills and knowledge. The labour market places stringent demands on the competencies of graduates of higher education institutions. One of the key aspects is the need not only for theoretical knowledge but also for practical skills that enable integration into professional activities. As the research by X. Li & Y. Lu (2022), and N. Reims *et al.* (2023) showed, the success of employment of future specialists largely depends on how much the curriculum was aimed at preparing for real working conditions. They emphasised that educational programmes should reflect the current needs of the labour market, including the development of technical and soft skills, such as critical thinking, communication and project management. This study also revealed that employers place high demands on the professional training of graduates, especially in technical specialities. They expect that young professionals will not only be well prepared in their field but also have a wide range of competencies necessary for working in a rapidly changing labour market. This is consistent with the findings of A.T.H. Le *et al.* (2022), who noted that knowledge in the field of technologies, such as artificial intelligence, big data and automation, are becoming necessary for many professions, even those that previously did not require such skills.

One of the key elements of adapting curricula to meet labour market demands is the integration of practical experience into the learning process. R. Awashreh & H. Ghunaimi (2025) examined the trend of Gulf Cooperation Council students, particularly master's degree holders, pursuing doctoral studies for career advancement and social mobility, especially in government sectors, and critically assesses whether doctorates are relevant in a job market that increasingly values competencies and practical skills over academic qualifications. The findings showed that employers value certifications and practical experience, suggesting that organisations invest in professional development programs, adopt market-driven recruitment practices, and collaborate with educational institutions to create programs that integrate practical learning, internships, and project-based experiences to bridge the gap between academic qualifications and workforce needs.

The results of the study showed that an interdisciplinary approach in training contributes to increasing the competitiveness of graduates in the labour market, and this was confirmed in the research of G.M. Chans *et al.* (2024). They noted that employers are increasingly looking for specialists who can apply their knowledge and skills in various fields, which makes them more

valuable to employers. Graduates who have completed training in interdisciplinary curricula are more likely to receive offers from employers. Technology plays a crucial role in transforming the labour market, which affects the content and structure of curricula. The study by D. Shrymbay *et al.* (2025) noted that the introduction of digital technologies in the educational process, in particular online courses and platforms for self-learning, contributes to the development of new skills in students and increases their readiness to work in a digital environment. This research echoes the findings of this study, which also found that higher education institutions that actively implement digital technologies in the educational process provide their graduates with the knowledge and skills that are necessary for working in a digital economy.

An important aspect is also the individualisation of the educational process using technology. As this study showed, the use of adaptive learning platforms allows students to learn at a pace convenient for them, focusing on those aspects that require more attention. This not only increases students' motivation but also contributes to more effective assimilation of knowledge, which makes them more prepared for the requirements of the labour market. C. Lengua-Cantero *et al.* (2024) studied a project to create an intelligent learning system aimed at improving critical thinking among university students through personalised learning. An important invention was the learning progress algorithm, which automatically adapts to the student's progress, creating a personalised educational experience that improves critical thinking skills. This algorithm supported planning module can adapt to individual learning patterns, allowing for personalised education that optimises critical thinking development in challenging academic environments, demonstrating the effective integration of educational technology with the development of higher-order thinking skills.

The results of the study showed that interaction with employers is another important factor that contributes to the successful adaptation of curricula to the requirements of the labour market. These findings are consistent with studies by V. Barabash *et al.* (2022), and F.D. Fernández-Martín *et al.* (2024), who noted that universities that maintain a constant dialogue with business representatives can quickly update their curricula per changes in the structure of the labour market. This enables the preparation of students for real working conditions and equips them with the necessary knowledge and skills. In this study, it was determined that active cooperation between universities and employers is a key factor in the process of adapting curricula. Higher education institutions that regularly update their curricula based on employer recommendations train specialists who are better suited to the requirements of the labour market. This is confirmed by the higher level of employment of graduates of such educational institutions in

the first six months after graduation. The assumption about the importance of creating specialised curricula in cooperation with companies was confirmed by the results of the study, which coincides with the conclusions of M. Stan *et al.* (2023) and S. Lutz *et al.* (2023). These researchers focused on the fact that the creation of curricula that are developed jointly with representatives of the industry helps to more accurately meet the needs of the labour market and provide students with up-to-date knowledge. In this study, it was also found that students who studied under curricula developed in collaboration with employers had more opportunities for employment and career growth.

The research by M.M. Asad *et al.* (2023) emphasised the importance of flexible curricula that allow students to choose courses that best suit their professional interests and the needs of the labour market. They noted that flexible curricula help students respond more quickly to changes in each industry and adapt their knowledge to new conditions. This study also confirmed that universities that offer flexible curricula provide their students with better prospects in the labour market. The flexibility of curricula allows students to independently shape their educational path, which contributes to the development of individual skills and competencies necessary for a successful career. For example, students can choose courses from different disciplines, which allows them to acquire interdisciplinary knowledge and adapt to various professional roles. In addition, the flexibility of curricula is important from the point of view of the speed of reaction to changes in the labour market. Higher education institutions that are able to quickly update their curricula, adding new courses or changing the emphasis on existing ones, are able to better prepare their students for new challenges. This idea is complemented by the research of A. Auzhanova (2024) and it was found that adaptive curricula, which are regularly updated, provide students with access to the latest knowledge and technologies, which increases their competitiveness in the labour market. Thus, adapting curricula to the needs of the labour market is a complex and dynamic process that requires close cooperation between educational institutions, students and employers. Comparing the results of this study with other articles confirms the need for continuous updating of curricula following modern trends and challenges. The flexibility of curricula, the integration of practical experience, the introduction of the latest technologies and the development of continuing education are key factors that contribute to the training of competitive graduates.

## ■ Conclusions

The results of the study confirmed the importance of adapting curricula to the needs of the labour market to increase the competitiveness of graduates. Given the changes in the labour market, universities must



constantly review their curricula, adapting them to new requirements. This includes both updating the content of courses and introducing new forms of training, such as online courses, modular training and individual learning trajectories. It is important to continue to develop partnerships with employers, which will allow for a better understanding of the needs of the labour market and accordingly adjust curricula. The adaptation of educational programmes is a necessary condition for ensuring a successful career for graduates. Universities that are able to quickly respond to changes and offer students relevant knowledge and skills ensure their graduates' competitiveness in the labour market and contribute to their professional growth.

The analysis of the curricula in three relevant specialties showed that the programmes that were updated taking into account modern trends and employer requirements demonstrated significantly higher efficiency in preparing students for professional activities. Taking into account new aspects that include current knowledge and skills allowed students to increase their level of training. This was reflected in their academic performance and level of employment compared to those who studied under the old curricula. In particular, it was noted that graduates of updated curricula are better integrated into the professional environment, as they already possess practical skills and knowledge of modern technologies necessary for effective work. The

positive results of the study participants, obtained in the process of monitoring student progress and analysing their success, confirm the need for regular updating of curricula. This allows ensuring constant compliance of education with the requirements of the labour market, which contributes to increasing the level of knowledge and skills of students, as well as their readiness for professional activity.

The study also had certain limitations, in particular, it was conducted on the example of only three specialties, which does not allow for general conclusions for all fields of education. The evaluation of the effectiveness of new curricula was based on short-term monitoring, which does not take into account long-term results and the impact on the career growth of graduates. Prospects for further research include expanding the analysis to other specialties and conducting long-term observations of graduates to better understand the impact of adapting curricula on their professional development.

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## ■ Conflict of Interest

None.

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## Адаптація навчальних програм до вимог ринку праці

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■ **Анотація.** Метою дослідження було оцінити ефективність адаптації навчальних програм до вимог ринку праці та їхню дієвість у сучасних умовах. Було обрано три дисципліни – Комп'ютерні науки, Управління бізнесом та Маркетинг – оскільки вони найбільше відповідають сучасним професійним вимогам. Для оцінки їх ефективності проводився моніторинг успішності студентів, опитування учасників освітнього процесу та аналіз академічної успішності. Ключові результати дослідження засвідчили про те, що навчальні програми, адаптовані до потреб сучасного ринку, продемонстрували значно більшу ефективність у підготовці студентів. Після впровадження нових модулів, що включали сучасні знання та навички, студенти повідомили про покращення рівня компетентності та вищу успішність у працевлаштуванні порівняно з контрольними групами, які працювали за застарілими навчальними програмами. Дослідження включало аналіз існуючих навчальних програм, розробку нових модулів, що відповідають вимогам ринку праці, та впровадження цих навчальних програм у кількох навчальних закладах. Результати дослідження засвідчили про те, що постійний перегляд навчальних програм відповідно до змінних вимог ринку праці є важливим для забезпечення високої конкурентоспроможності випускників. Адаптація навчальних програм посилила їх відповідність сучасним потребам ринку праці, позитивно впливаючи на підготовку студентів та їхню готовність до професійної діяльності. Було виявлено, що впровадження нових навчальних модулів покращує знання студентів щодо практичних навичок та сучасних технологій, сприяючи їхній більш ефективній інтеграції в професійне середовище. Оцінка ключових результатів дослідження підтвердила значне покращення знань та навичок студентів, що підкреслює необхідність регулярного оновлення навчальних програм. Позитивний вплив адаптації навчальних програм на професійні компетенції випускників підкреслює важливість подальшого розвитку та підтримки таких ініціатив для підвищення якості освіти та її відповідності сучасним вимогам ринку праці

■ **Ключові слова:** освітній процес; оновлення знань; компетенції; перегляд; ефективність