

HIGHER EDUCATION'S CONNECTION WITH THE LABOUR MARKET

Proceedings of the workshop
organised by CEENQA on 13 June 2025





FOREWORD

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DEAR MEMBERS
OF CEENQA,
DEAR COLLEAGUES,

It is our great pleasure to greet you in the foreword to this year's edition of the Central and Eastern European Network of Quality Assurance Agencies (CEENQA) publication dedicated to the Annual General Assembly and accompanying workshop held in June 2025 in Tallinn, Estonia.

I would like to thank our host, Heli Mattisen, director of the Estonian Quality Agency for Education (HAKA) and our Estonian colleagues for their kind welcome and excellent organization of the 2025 Workshop and General Assembly.

We dedicated our gathering this year to a topic that is extremely important for the future economic and social development of our countries and the well-being of their citizens – “Higher education’s connection with the labour market”.

Aligning higher education with the needs of the labour market is a constant challenge for educational policies, especially at a time when we are witnessing accelerated technological development, automation, digitalization, demographic shifts, the green transition, and very challenging geopolitical and social circumstances. These are also significantly reflected in the labour market, which constantly requires new knowledge, skills, and competencies. Cooperation between the academic sector and the economy, primarily achieving greater orientation of the education system towards employers and real jobs, is an imperative, the harmonization of which requires a long-term approach and a stimulating legislative framework.

Guided by a policy of openness and recognition of the needs of the labour market, higher education already recognizes the importance of continuous improvement and greater flexibility of study programmes through the development of innovative models based on the European Approach for Quality Assurance of Joint Programmes to enable lifelong learning, micro credentials and employability. This enables the personalization of educational paths, the improvement of existing and the acquisition of new skills, and the support of continuous professional development.

It is encouraging to see that the cooperation between higher education and the labour market is undoubtedly a two-way process that ultimately benefits society as a whole – on the one hand, higher education institutions, through cooperation with the economy, improve their teaching process and thus contribute to the knowledge, attitudes and, consequently, the employability of students. On the other hand, due to an increasing labour shortage, businesses have grown increasingly proactive in seeking quality personnel and in these efforts, companies and organizations are actively proposing various forms of cooperation to higher education institutions like projects, scholarships or teaching.

The Fourth Industrial Revolution urges everybody involved in education to contribute to training incredibly creative professionals capable of thinking “outside the box”, regardless of the type of education acquired - formal, informal, or non-formal. It is up to HEIs to develop innovative and flexible approaches to fulfilling their key mission of ensuring the quality of education as well as the quality of study programmes to meet the needs of an innovative economy. By combining our efforts, we will be able to meet new challenges and advance the development of higher education.

This issue would not be possible without the expertise, views and insights of the following international experts: Kai Mühleck, senior researcher at the German Centre for Higher Education Research and Science Studies (DZHW); Mislav Balković, rector of Algebra University; Yngve Rosenblad, chief analyst at Estonian Qualifications Authority; Aleksandra Zhivkovikj, policy and project officer at EQAR; Tamara Ciobanu, Executive Committee, ESU; Olgun Cicek, Board member of INQAAHE; Marcus Ehasoo, Chairperson of the Board at the Estonian Student Union and member of the HAKA Supervisory Board; Kristi Raudmäe, Ministry of Education and Research; Andrej Krček, Slovenian Quality Assurance Agency (NAKVIS) and Yuliia Bleshmudt, Foundation for International Business Administration Accreditation (FIBAA).

We sincerely thank them all for their contributions, and on the following pages you will have the opportunity to read the articles they have prepared.

We would like to express our gratitude to Simona Lache and Hasan Ali Bicak, CEENQA Board members who kindly moderated the 2025 workshop.

Finally, special thanks are also due to Nataša Kramar and Maja Milas, our colleagues at the CEENQA Secretariat, for their dedication and expertise in preparing this publication.

Enjoy your reading.

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Linking higher education and the labour market – reflections on the Eurograduate 2022 survey: Interview with Kai Mühleck

— senior researcher at the German Centre for
Higher Education Research and Science Studies (DZHW)



On 14 June 2025, at the CEENQA workshop in Tallinn, Estonia, a presentation entitled “Student Employment in Europe and Subsequent Labour Market Outcomes – An Analysis of the EUROGRADUATE 2022 Data” explored the relationship between higher education and labour market outcomes across Europe. As part of the European Commission’s European Graduate Tracking Initiative (EGTI), EUROGRADUATE provides comparable, comprehensive micro-level data on graduates, supporting in-depth analyses of skills relevance, employability, cross-border mobility, and broader societal engagement. Following a 2013 feasibility study, the first pilot in 2018 involved eight countries and 16,500 graduates, while the second pilot in 2022 expanded to 18 countries, gathering around 170,000 responses from Bachelor’s, Master’s, and—in some cases—short-cycle and doctoral graduates from the 2016/17 and 2020/21 cohorts.

The 2022 results show that student employment is widespread but varies significantly across countries. It increases the likelihood of post-graduation employment, raises salaries, and, when related to the field of study, improves labour market outcomes. However, the strength of these effects differs: in some Western European and Balkan countries, such as Germany, Austria, Slovenia, and Croatia, the impact is low or insignificant, while Eastern and Southern European countries with higher unemployment—such as Latvia, Bulgaria, Portugal, and Hungary—report the greatest benefits. These findings, along with the planned expansion of EUROGRADUATE 2026 to 20–25 countries and its integration into the European Higher Education Sector Observatory (EHESO), underline the project’s growing role in shaping evidence-based higher education policy across the European Economic Area.

The following interview with Kai Mühleck, PhD, conducted by Nataša Kramar and Maja Milas, builds on the Tallinn workshop presentation and explores the implications of these findings for higher education quality assurance and the broader European agenda on graduate tracking.



Q: To begin, could you briefly introduce the EUROGRADUATE 2022 project, outlining its overall purpose, main activities, and intended outcomes?

A: The main goal of EUROGRADUATE is to provide comparable, comprehensive, and regularly collected data on higher education graduates across Europe. This addresses a long-standing data gap. National graduate tracking systems are not directly comparable, while existing international datasets often lack detail, focus too little on higher education, or are based on small sample sizes. EUROGRADUATE fills this gap. Our primary question concerns the relationship between higher education and the labour market. This links to several sub-questions: whether graduates possess the right skills, the level of those skills, any gaps, and the extent to which education aligns with labour market needs. We also investigate employment and unemployment among graduates, which is not a problem in some countries but remains significant in others. A further major theme is mobility—both during studies and after graduation—which also relates to the European Commission’s priorities. We examine whether mobility impacts labour market outcomes and other aspects, such as social trust, political attitudes, or participation. We also address issues of brain drain and brain circulation, identifying where graduates move, which countries they come from, and their main destinations. Only the EUROGRADUATE data allows investigating such movements in the European Economic Area.

Q: Who initiated the project, and which countries are involved?

A: The project was launched by the European Commission in collaboration with the German Centre for Higher Education Research and Science Studies (DZHW). It began with the EUROGRADUATE Feasibility Study in 2013, which developed the basic survey design. Based on this, the European Council adopted a recommendation in 2017 calling for a European Graduate Tracking Initiative, including a pilot survey. This was complemented by advice from a Europe-

an Commission expert group, whose recommendations continue to guide EUROGRADUATE's development.

Q: Could you elaborate on the geographical coverage of the project?

A: The first pilot in 2018 included only eight countries, partly due to budget limitations. More countries applied than could be included, so we selected a mix of small and large countries, covering as many European regions as possible. We also ensured diversity by including a non-Roman script country—Greece—and both experienced and less-experienced participants in graduate tracking. For the 2022 pilot, participation was more inclusive, with 17 or 18 countries (depending on whether Ireland is counted) representing a broad range of contexts.

Q: You mentioned challenges in working with different countries. Was GDPR among the main ones?

A: Absolutely. In the first pilot, GDPR had just entered into force a few months before data collection began, causing considerable uncertainty. Even in the second round, differences in interpretation persisted—not only between countries but even between individual data protection officers. These inconsistencies caused delays in several countries. To address this for EUROGRADUATE 2026, we have already developed guidelines for GDPR-compliant data collection.

Q: What were the main thematic areas covered in the survey?

A: We gathered information on graduates' educational histories, with an emphasis on aspects that administrative data cannot capture—particularly subjective experiences of higher education. We focused on mobility and on teaching and learning methods, including innovative approaches, which policymakers are keen to assess in terms of impact on skills. Our findings suggest that more innovative teaching methods tend to produce a broader skill set than traditional lecture-based formats. On the labour market side, we examined participation, outcomes, income, the match between qualifications and jobs, job satisfaction, and a set of core skills. Skills measurement is a particularly interesting yet challenging area, especially in ensuring cross-country comparability.

Q: Could you summarise the main findings of EUROGRADUATE 2022?

A: Overall, graduates report high satisfaction with their studies and strong employment rates. In some countries—such as Germany and Austria—unemployment among graduates is as low as one to two percent. However, mismatch between qualifications and jobs is significant. Vertical match rates are around 60 %, varying between countries. Bachelor's graduates are more likely to be in jobs not requiring higher education, while Master's graduates more often hold positions that could be filled by someone with a Bachelor's degree. Job satisfaction is generally high, though income satisfaction is the lowest-rated aspect. Other dimensions—such as job content, working atmosphere, and working hours—are rated much more positively.

Q: Which countries perform best in terms of graduate employment?

A: Germany and Austria are clear examples, but there are several others with similarly low unemployment rates among graduates.

Q: Did you identify notable differences between fields of study?

A: Yes. Technology and engineering graduates consistently achieve some of the strongest



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results—high satisfaction with studies, strong alignment between their qualifications and jobs, and among the highest salaries. These results challenge the perception that such fields, while leading to good jobs, may be less enjoyable to study. Our data show that graduates in these areas are generally satisfied with their study experience.

Q: What policy recommendations would you offer, particularly in relation to quality assurance?

A: One recommendation is to encourage higher education institutions to adopt more innovative and participatory teaching methods, as these are linked to broader skill development. Quality assurance frameworks could explicitly support this. At the same time, differences between disciplines must be recognised. More generally, quality assurance should take a broad view of educational outcomes, valuing not only employability but also personal growth, civic engagement, democratic values, and critical thinking.

Q: In some countries, including Slovenia, there are debates about regulating employability tracking across different disciplines. How do your findings inform this discussion?

A: Mismatch is more common in fields such as arts, humanities, and social sciences, where career paths are less clearly defined. However, this is not necessarily negative. While mismatched graduates tend to report slightly lower satisfaction than matched graduates, the gap is not large except in terms of income and job position. For other aspects—such as work–life balance or working atmosphere—differences are minimal. This reinforces the point that higher education outcomes should not be judged solely by unemployment or income data.

Q: Artificial intelligence is becoming a key theme in the labour market. How do you see its impact on employability?

A: AI skills will become a general requirement across most professions, not only for ICT specialists. Higher education should integrate AI competencies into all fields and teach students to engage with AI critically and transparently. How much needs to be taught will depend partly on students' prior knowledge when entering higher education. But AI literacy will be essential for all graduates, and workplace training will complement formal learning.

The interview with Kai Mühleck underscores the value of the EUROGRADUATE project in filling a critical gap in comparable data on higher education graduates across Europe. The 2022 results present an encouraging picture: low graduate unemployment in most participating countries, generally high satisfaction with studies, and strong labour market outcomes in fields such as technology and engineering. At the same time, the data reveal persistent qualification–job mismatches, though their impact on graduate satisfaction is often less significant than anticipated. A key message is that higher education outcomes must be assessed broadly, going beyond employment and salary indicators to include personal development, critical thinking, and civic engagement. Quality assurance agencies have a role in promoting innovative and participatory teaching methods, which the survey links to stronger skills development. With EUROGRADUATE 2026 on the horizon, the project is set to expand its scope and refine its methodologies, offering valuable evidence to support institutional improvement and policy-making—particularly in adapting to the growing role of artificial intelligence across all professions.

In addition, the EUROGRADUATE 2022 Comparative Report has been published, providing an in-depth comparative analysis of the results across participating countries. The full report, Linking Higher Education and the Labour Market, is available for download from the Publications Office of the European Union: <https://op.europa.eu/en/publication-detail/-/publication/bef6111f-9371-11f0-97c8-01aa75ed71a1/language-en>

Higher Education - key driving force of national and European competitiveness

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Importance of education

Importance of education can hardly be overemphasized today, in the past and even more so in the future. Speed of technological development in which we now live will never be slower, till the end of our lives, as long as any of us shall live. This, in fact means that overall quantum of knowledge mankind is producing will continue to grow and this growth will be even faster than what we witness today. In such circumstances importance of education in any of its present and future forms will be growing and significant. This was perhaps best phrased by late US president John F. Kennedy in February 1961 in his Special address to Congress on education when he said: *“Our progress as a nation can be no swifter than our progress in education. The human mind is our fundamental resource.”* These two short sentences emphasize the crucial role of education in national progress, asserting that a nation's advancement is directly tied to the development of its citizens' minds and their access to quality education. Kennedy highlights that a well-educated populace is the fundamental resource for a nation's success in various endeavours, including global leadership and economic growth. As for U.S., this idea stands through for EU or any other nation or society.

Fear of automation

Rapid advancement in technological developments and in research, of which we are today more than aware, changes our environment in numerous ways. Firstly, it opens questions of labour and place for human workers in our future societies. We feared through our history that automation might squeeze human workers from their jobs, and we even witnessed severe expressions of that fear. One such example was attack which took place on 20 March 1812, when a Stockport warehouse belonging to William Radcliffe – one of the first manufacturers to use the power-loom – was attacked by a band of Luddites, trying to destroy machines, they feared might take their jobs.

As history has taught us so far, we did not have mass unemployment as a result of automation but on the contrary, for every job lost a new one was created, increasing productivity and overall living standards. Still, if we look more closely, assertion that no jobs were lost are only partially truth because although number of workers remained the same or increased, many had to acquire completely new skills and knowledge to continue being employed. Example of this transition through the history is well depicted by Stephen R. Covey¹, stating that The Hunter and Gatherer Age was succeeded by the Agricultural Age following the paradigm shift from the use of bows and arrows to the use of farming implements and techniques for food production, raising productivity by over fifty percent. It was succeeded by Industrial Age wherein people-built factories and learnt specializations, delegation and scalability overperformed the Agricultural Age's productivity by some fifty times. Covey

states that each emerging age of civilization development has successively downsized the workers in the preceding age by ninety percent. The most successful persons, being those fast enough to unlearn previous methods while learning and adapting to the latest paradigm shifts, took over and the rest followed their example and transition. The same is the case for our current age of civilization, the Information or Knowledge Worker Age. It will, and it already out-produces the Industrial Age. Individuals, organizations and governments who are fast enough to embrace its paradigm will be the major players, others will most probably follow.

Today's job roles will be downsized and only those who are able to learn the new mind-set, the new skill-set, and the new tool-set of this new age will have their place in the new economy. Transition from one to another was always propelled by two major factors, namely: awareness of need and urgency to upgrade and change, and education which allowed masses to obtain new skills and knowledge. On the other hand, each new transition was more demanding than the previous one because quantum of required new knowledge and skills tremendously increased. Put simply; in order to train 19th century farmer to become factory worker there was only reduced set of new skills he or she had to acquire. Now, to train highly educated bank clerk to become i.e. data scientist would take much, much more time and effort.

Rapid development of technology

Aforementioned need for upskilling, reskilling and overall advancement in education will in the foreseeable future become even more challenging because we now live in double revolution, one of information technology and other of biotechnology. Combined together they will increase further more speed of change. Technology can hardly compete with humans on every job or task, but it has already some noticeable advantages over humans. One of them being ability to fast connect and update, allowing for the information to spread in friction of a second to all interconnected devices globally. In many industries and applications this advantage would be highly valuable. This, in turn, puts a question on the table; What if technology creates a vast useless “class” of people who are “unemployable”? and another one; Is high unemployment and at the same time a lack of people with the necessary knowledge possible?

Answer to these questions is hard to give, but current pace of development of technology on the one hand and of the labour force on the other put some space for fear. Namely, according to the OECD data base on share of LinkedIn users who are AI talents across 30 countries, by gender; share of job postings demanding AI skills across 14 countries (2016-2023)² overall percentage of job postings for AI occupations as well as overall number of workers who possess AI knowledge (representing skillset for new economy) is still tremendously small and it accounts to less than 0,5% of skilled workers and app. 1% of job postings on LinkedIn in 2023.

¹ Covey, S. R. (2004). The 8th Habit: From Effectiveness to Greatness (Book). In Harvard Business Review (Vol. 82, Issue 12).

² <https://oecd.ai/en/wonk/2023-linkedin-data>

More profound results of stated research, one which got deeper into specific job roles and required knowledge for each, shoed that future focus of education should change from routine tasks and low tech requirements to non-routine tasks and technology intensive tasks. Looking at these from educational perspective it seems that job for educators will become more and more challenging because what is easy to teach and assess have now become easy to digitise and automate.

Is high unemployment and at the same time a lack of people with the necessary knowledge possible?

Europe already feels skills shortages in number of sectors (IT, Construction, Accommodation, Scientific) where job vacancy rate (percentage of vacancies that are not filled out of total vacancies) reaches 4,0% or 4,5% which exceeds percentage of people being retired annually. In fact this means that in such sectors it will be hard to maintain even current number of employees, and future growth and development is highly threatened³.

Place for Europe in new economy

If we would like to assess European position now and one we can expect to have in new economy, future is unfortunately not so bright unless there are some significant changes on the horizon, and fast. As Mario Draghi noted in his Report on future of European competitiveness⁴, most of current and past lack of European competitiveness lais in the realm of missed opportunities to embrace digital revolution and its results. To quote; "Europe largely missed out on the digital revolution led by the internet and the productivity gains it brought: in fact, the productivity gap between the EU and the US is largely explained by the tech sector. The EU is weak in the emerging technologies that will drive future growth. Only four of the world's top 50 tech companies are European."

Current results in patent applications globally up until 2020 shows that Europe is laggard standing behind U.S., China, Japan and South Korea. While maybe our position compared to U.S. and China is not a surprise due to difference in size of the countries and hence number of researchers, legging behind Japan and even South Korea show how significantly we need to change. Same source⁵ shows that

during 20 years period (2010-2019) out of 20 top companies listed by their AI patent applications, there are only two European, while the rest mainly goes to U.S. and China. This, in turn, shows what we can expect of the future due to the fact that marginal cost of additional user (or digital product) is in most cases close to zero, meaning that most of the additional value which will be created in digital world will concentrate wealth in the hands of a few (companies) which possess intellectual property (IP). In this Europe has to invest in education which can create new products and IP, opposed to creating new users to existing products, which, in most cases, have IP owners on the other continents.

Influence of technology on political processes

Political developments are rarely linked to development of technology but this aspect should not be overlooked. In fact, as technology increases and will further increase concentration of wealth and power, more and more people will be left more or less behind. In such circumstances few (people or organizations) will become more and more powerful and will have means and positions to more and more influence policy development. This will and already is a good ground for advancement of populism and even nationalism. Put simply, personal insecurity (economic) and concern for the future (technological and environmental) will put populist narratives in the focus of many. With the populist mantra coined more or less over the idea; *us ordinary people against the elites*, we can expect increase of new political elites and narratives, more focused on their nation, region or race than perhaps global peace, environmental threats, hunger in parts of the world and many other sustainable development issues or goals.

Such possible, and already present developments are further emphasized by the digital technology, namely the way how many social networks work and "filter" information for their users. In such circumstances people do not realize their ignorance (and prejudice) because they „surround" themselves with like-minded people who confirm their views. This is happening due to the models developed within many social networks to connect like minded people in order for them to feel good on the platform and spend more time and focus there. While staying longer on the platform, there is higher chance for them (users) to be feed with advertising or even to purchase some goods or services promoted there. Social networks developed their algorithms mostly to increase their economic income, but consequently they serve these days more and more as platforms spreading different, even niche, ideologies and ideas, many of which might have not otherwise become visible to the public⁶.

What lies ahead ?

Well, this greatly depends on what kind of life and values we would like to achieve or at least maintain. Current developments on the labour market can maybe be best depicted

³ The Draghi report on EU competitiveness, https://commission.europa.eu/topics/eu-competitiveness/draghi-report_en#paragraph_47059

⁴ ibid

⁵ A new spirit of Capitalism by The Trilateral Commission, <https://www.hurst-publishers.com/book/a-new-spirit-of-capitalism/>

⁶ The Social Dilemma, <https://thesocialdilemma.com/>

by research made by World economic forum in 2025⁷ which brings together the perspective of over 1,000 leading global employers—collectively representing more than 14 million workers across 22 industry clusters and 55 economies from around the world. Main findings show that broadening digital access is expected to be the most transformative trend – both across technology-related trends and overall – with 60% of employers expecting it to transform their business by 2030. Furthermore, on average, workers can expect that two-fifths (39%) of their existing skill sets will be transformed or become outdated over the 2025-2030 period. Skill gaps are categorically considered the biggest barrier to business transformation, with 63% of employers identifying them as a major barrier over the 2025- 2030 period.

Being aware of technology development, European position depicted within the article, and influence education has on our lives, there are few areas of potential development which are these days not only formalized by Draghi's report, but also by new EU Commissions' communication "Union of Skills"⁸. There, key policy players in Europe, but also each of us, being educators or part of regulatory institutions in education and science are called to implement number of measures listed in four pillars;

- Building skills for quality lives and jobs, where European Union will focus on building Basic Skill Support Scheme, STEM education strategic plan and EU (VET) Strategy.
- Regular upskilling and reskilling, where there is urgent need to expand the use of micro-credentials while Commission is preparing Pact for Skills and a pilot of a Skills Guarantee.
- Helping the free movement of workers, where skills portability initiative will be put in place while trying to see whether there is a place for European degree, European VET diploma and implementation of European School Alliance.
- Attracting, developing, and retaining talent, where EU would like to setup EU Talent Pool, implement new EU level Visa Strategy and put in place 'Choose Europe' initiative.

All stated initiatives might put European higher education and research to a position where it becomes more relevant for economic development of Europe.

In order to support implementation of stated initiatives, each of us might rethink our position and activities having in mind reasons why we and wider society might benefit from transformation and further development of our educational systems and approaches at institutional as well as the system level (here referring also to accreditation agencies and bodies tasked to develop policies shaping HE systems and institutions). These potential incentives to change could be; to combat potential unemployment stemming from skills

shortages, to provide the workforce with the knowledge and skills needed to propel economic growth, to compensate for negative demographics (fewer workers must produce more added value by using more complex knowledge in order to sustain current socio-economic models), to provide knowledge for the creation of intellectual property (IP) and therefore development of solutions necessary to maintain our values and standard of living or to reduce personal insecurity and thus fight ranging populism and nationalisms creating foundation for better and more sustainable political "settings".

Skill gaps are categorically considered the biggest barrier to business transformation.

Future provides numerous challenges but also number of new opportunities for European educators and education systems as a whole. With Draghi's agenda and Union of Skills it becomes more and more clear what would be one of possible and perhaps desired ways to move forward in the attempt to protect our way of life and European values.

⁷ The Future of Jobs Report 2025, <https://www.weforum.org/publications/the-future-of-jobs-report-2025/>

⁸ Union of Skills Communication, https://commission.europa.eu/topics/eu-competitiveness/union-skills_en

Anticipating skills for a smarter future: The role of OSKA in developing higher education in Estonia

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How can a small country like Estonia prepare its education system for an uncertain and rapidly evolving future and be responsive to labour market needs? In 2015, Estonia launched OSKA—a national labour and skills anticipation system—to answer this question. OSKA is a strategic tool that forecasts long-term changes in labour demand and helps align education, training, and labour market policies accordingly. Its influence reaches beyond statistics and charts; it directly impacts how universities, vocational schools, and policymakers think about the future of work and education.

This article explores the OSKA model, its methods, and its concrete impact on higher education in Estonia.

What Is OSKA?

OSKA (short for “Occupational and Skills Forecasting System” in Estonian) is coordinated by the Estonian Qualifications Authority¹. Its primary goal is to identify how many professionals and what kinds of skills are needed for Estonia’s economy over a ten-year horizon. It answers questions such as:

- Which occupations are growing or shrinking?
- What skills are emerging as critical?
- Where and how can people acquire them?
- What changes are needed in policy, curricula, and training systems?

Importantly, OSKA is not just an academic exercise. It is integrated into national policy-making, serving as a reference point for decisions about funding, career guidance, education policy, and migration quotas.

A Holistic, Evidence-Based Approach

OSKA’s methodology is both quantitative and qualitative². It draws on various register data and statistics—but also includes expert insights through interviews and sectoral panels. These panels bring together employers, educators, researchers, and policymakers in each economic sector, from ICT and healthcare to energy and logistics (Figure 1). OSKA produces different kinds of studies and forecasts³:

1. A general forecast report that outlines long-term trends across the economy.
2. Sector-specific studies that assess job needs and skills gaps in particular industries.
3. Ad hoc thematic studies—for instance, exploring green skills or the need for migrant labour force.

These reports are reviewed and approved by a high-level Coordination Council, which includes ministries, employers’ unions, trade unions, Bank of Estonia and the public employment service. Forecasts findings are also reported to the Estonian Government and Parliament, for strategic decisions.

From Data to Action: Impact on Higher Education

The OSKA model is designed not just to predict but to influence. This includes also the higher education system in Estonia.

Through contractual agreements with universities, the Ministry of Education and Science uses OSKA findings to adjust study places, update curriculum content, and prioritize funding in critical areas. For example:

- The growing need for engineers, IT specialists, healthcare professionals, and teachers has led to increased focus and incentives in these fields.
- Programmes related to cybersecurity, data science, and green technologies are being actively supported in response to skills forecasts.

But OSKA’s role goes beyond technical fields. It also highlights the need for versatile, interdisciplinary skills—such as problem-solving, digital literacy, and sustainability awareness—that higher education must increasingly incorporate.

Matching Education with Reality: The Case of STEM

In recent years, much attention in Estonia has focused on

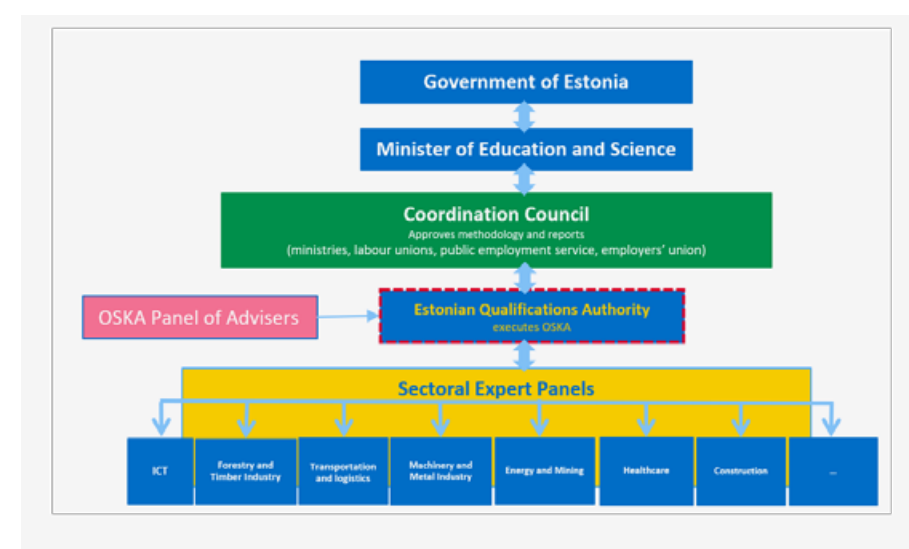


Figure 1. OSKA governance model.

¹ OSKA web page <https://oska.kutsekoda.ee/en/>

² OSKA methodology <https://oska.kutsekoda.ee/en/oska-management-methodology/oska-methodology/>

³ OSKA studies <https://uuritud.oska.kutsekoda.ee/>

the supply of STEM graduates—science, technology, engineering, and mathematics—relative to future labour needs. OSKA data confirms that while public concern over STEM shortages is justified, the picture is more nuanced.

On the one hand, there is growing demand for graduates in ICT, automation, engineering, green energy, and data science. These fields are vital for Estonia's digital and green transitions. OSKA has shown that engineers, IT specialists, teachers and healthcare professionals are among the occupations with the greatest expected shortages at the tertiary education level.

As a positive sign, after years of decline, the share of STEM enrolments has stabilized⁴ (Figure 2). Despite the declining size of the 20–29 age group, enrolment in STEM fields has seen a modest increase. Notably, the proportion of women in STEM has also risen—from 35% to 38% over the past decade—indicating some progress in gender balance.

On the other hand, yet challenges remain. STEM-oriented upper secondary school graduates are a limited pool, and ICT, natural sciences, and engineering programmes compete for the same students. This creates tension between higher education institutions' ambitions and actual demographic constraints.

Education vs. Employment: A Disconnect?

One of the recent findings from OSKA analyses is the mismatch between graduates' field of study and their eventual job. Data on 2012–2022 graduates shows that in some fields of education, a significant proportion of higher education alumni work in jobs unrelated to their formal qualifications (Table 1, next page).

This misalignment can reflect both the flexibility of the Estonian labour market and possible shortcomings in career guidance and curriculum relevance. Other possible reasons might be lack of jobs in some fields, labour market shortcomings in meeting graduates' expectations (in terms of pay, working conditions, etc.). OSKA findings serve as a valuable feedback loop, prompting universities to rethink how the

prepare students—not only in terms of subject matter but also in terms of practical skills and adaptability.

Some fields, such as medicine, ICT, and engineering, show a strong match between education and employment. Others, particularly in the humanities and social sciences, display greater divergence. These insights are helping shape not just programme design but also career counselling practices and student information services.

Broader Trends: What Drives the Skills Agenda?

Labour market dynamics do not exist in a vacuum. OSKA places its forecasts within the context of major megatrends shaping Estonia and the world and has created a specific web tool to monitor those⁵ and analyze their impact to jobs and skills needs (Figure 3, next page). These megatrends include:

- Climate neutrality and green transition
- Digitalisation, automation and artificial intelligence
- Demographic change and ageing societies
- Globalisation and geopolitical risks
- Changing values

These trends are creating demand for a new kind of workforce—one that combines deep expertise with broad, cross-cutting competencies. Employers are increasingly seeking graduates with a strong foundation in their field, but also with digital, green, and social skills.

To meet this demand, higher education must be both wide and deep: offering specialized knowledge and flexible, interdisciplinary learning paths. Applied higher education and master's degrees are often preferred by employers, while most students still opt for bachelor's degrees. OSKA helps identify and bridge this gap.

Conclusion: Shaping the Future, Together

OSKA is not just a forecasting tool—it is a strategic mechanism that enables collaboration between education provid-

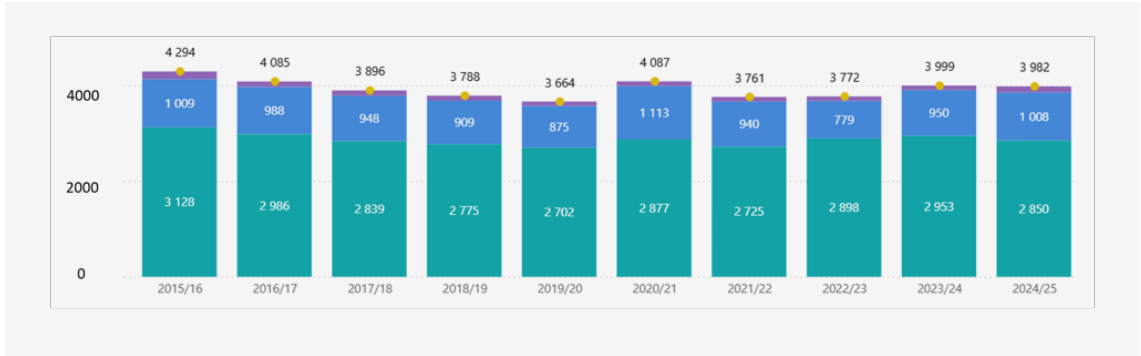


Figure 2. Higher education enrolments in STEM fields in Estonia, 2015/16-2024/25. Source: Estonian Education Data System.

4 Explore further: Haridussilm (Estonian Education Data Register) <https://haridussilm.ee/en>

5 OSKA Labour Market Megatrends tool <https://oska.kutsekoda.ee/trendid/> <https://oska.kutsekoda.ee/en/oska-trend-cards/>

Field of study	Strong match, % of employed graduates	Strong or average match, % of employed graduates
Accommodation and Food Services	23	65
Philosophy and Ethics	28	61
Handicrafts	32	60
Sports	32	59
Travel, Tourism and Leisure	33	67
History and Archaeology	37	58
Manufacturing of Textiles	38	65
Horticulture	38	65
Religion and Theology	38	55
Language Studies	40	63
Political Science and Civics	41	58
Environment and Life Sciences	41	56
Sociology and Cultural Studies	44	66
Literature and Linguistics	44	69
Fine Arts	45	63

* Main job
Source: OSKA 2024

Table 1. 2012-2022 graduates from higher education in Estonia and their employment* in 2022: fields of study with the lowest proportion of graduates in jobs strongly connected to their education.

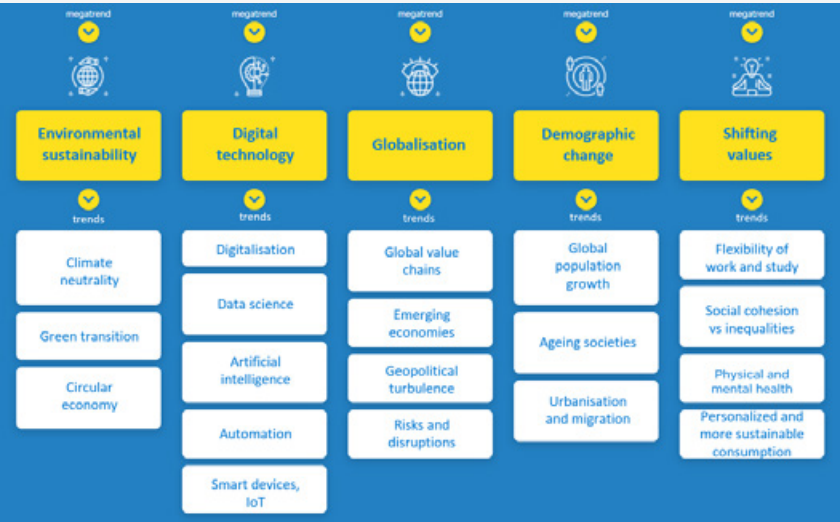


Figure 3. OSKA tool to describe megatrends that affect labour market the most. Source: OSKA

ers, employers, and policymakers. By combining hard data with expert judgement, it helps Estonia prepare its workforce for the challenges of tomorrow.

In the context of higher education, OSKA has proven to be a driver of change. It influences funding, curriculum design, institutional planning, and even individual career choices. As Estonia navigates the twin transitions of digitalisation and sustainability, OSKA's role in aligning education with future skills needs will be more vital than ever.

Estonia's experience shows that future-proofing edu-

cation is possible—when there is shared understanding, cooperation and engagement, timely data, and the courage to act on it.

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Haridussilm (Estonian Education Data Register) <https://haridussilm.ee/en>
OSKA Labour Market Megatrends tool <https://oska.kutsekoda.ee/trendid/> <https://oska.kutsekoda.ee/en/oska-trend-cards/>

From Bologna tools to employer trust: Enhancing the information provision and transparency of micro-credentials

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– *The European Quality Assurance Register for Higher Education (EQAR)*



Introduction

The rapid evolution of Europe's labour market, driven by digitalization and green transition, has intensified demand for flexible upskilling pathways (European Commission, 2020; OECD, 2023). Micro-credentials – small learning volumes which do not lead to a full degree – have emerged as a potential solution, yet their acceptance by European employers and integration into labour markets faces trust barriers.

While initiatives like the Bologna Process and the European Qualifications Framework (EQF) were designed to create transparency and comparability across national systems, their ability to generate meaningful stakeholder trust, including employers, remains uneven in some of the EHEA countries. As Teichler (2015) observes, this disconnect stems from employers prioritizing tangible demonstrations of competence and learning outcomes over, what is often perceived as, bureaucratic documentation and tick-box exercise, creating a complex landscape where institutional reputation, practical training, and sector-specific needs could outweigh formal Bologna tools such as quality assurance and EHEA QF levels. This paradox also reflects the core tension in contemporary quality assurance frameworks: how to balance rigorous standards with the labour market's demand for flexible, skills-focused credentials.

This paper argues that the Bologna Process tools, when innovatively embedded in interoperable digital platforms, can help bridge the gap between higher education and labour market needs by aligning harmonisation efforts with employer expectations. Focusing specifically on quality assurance, this paper demonstrates how trustworthy information from external evaluation and accreditation processes can serve as a 'common language' between higher education providers and employers, addressing the current mismatch in the European Higher Education Area (EHEA).

The paper is divided in four parts. First, it investigates the factors shaping employer trust, drawing on empirical evidence of geographical and sectoral disparities in (micro-) credential acceptance. Second, it evaluates current efforts to apply the Bologna Process tools in structuring and designing micro-credentials - including quality assurance frameworks and transparency measures, such as quality labels - highlighting the policy intentions and stakeholders' innovations on national and European level. Third, focuses on a particular case study of the expansion of the Database for External Quality Assurance Results (DEQAR) to include information on quality assured micro-credentials, assessing its potential to standardize information provision while addressing challenges in gathering the data. Finally, the study synthesizes key findings and discusses the way forward by proposing concrete steps that policy makers and organisations such as EQAR could take to improve the information provision, but also steer further data standardisation which will enable easier transfer of that information in relevant databases and initiatives tackling micro-credentials.

Employers' trust in higher education outcomes and micro-credentials

While micro-credentials, theoretically, offer agile responses to skill shortages, employer adoption remains selective. CEDEFOP's 2023 pan-European survey reveals only 37% of employers actively consider them in hiring decisions, with stark regional and sectoral variations. In this regard, trust isn't uniform across Europe - it depends on national systems, programme design, and employers' direct experience with graduate competencies. Northern European countries, particularly the Nordic systems, demonstrate higher levels of employers' confidence in higher education outputs. Employers in North European countries also demonstrate higher acceptance rates (for example, 55% in Finland) of micro-credentials due to strong alignment with national qualification frameworks. In contrast, Southern and Eastern European employers frequently express scepticism about the outcomes of higher education provisions, including micro-credentials, with McGuinness et al. (2017) and Roberts et al. (2024) identifying significant skills gaps in countries in both regions. In similar fashion, Roberts et al. (2024) research reveals high levels of qualification mismatch¹. This could lead employers to see local qualifications, including micro-credentials, with scepticism despite formal alignment of the outcomes with the national qualification frameworks and external quality assurance mechanisms such as the ESG.

The sector-specific nature of trust in micro credentials also presents another challenge. CEDEFOP (2023) study demonstrate that the mistrust is particularly pronounced in regulated sectors like healthcare (18% acceptance) compared to more flexible fields like IT (62%). In addition, Børing et al.'s (2021) comparative study of STEM employers reveals a preference more practical, job-ready skills tailored to industry needs, while Wilson and Thomas (2020) document how business sectors rely more heavily on institutional prestige and soft skills.

Regarding the use of Bologna tools in the decision-making processes of employers, findings demonstrate some differences too. For example, subsequent studies show that the size of the company matters - multinational corporations use Diploma Supplements and ECTS credits significantly more than small and medium businesses (SMEs), as they operate in international contexts requiring standardized credentials (CEDEFOP, 2018; European Commission, 2016).

And while trusting micro-credentials (and in general higher education outcomes) is a multi-layered process conditioned by geographical, sectoral and other factors, previous research shows that some elements of trust are universal across the EHEA. The primacy of institutional signalling (i.e. reputation), work-integrated learning models including apprenticeship enabling employers with direct, sustained observation of student competencies, employer

¹ The CEDEFOP (2018) report attributes this to several factors: weaker tradition of university-industry collaboration, the legacy of rapidly expanded higher education access, and the pull of Western European labour markets for skilled graduates.

engagement in curriculum design and international mobility experiences, emerge as persistent theme across European contexts in employer decision-making. CEDEFOP's 2023 study also reveals that employer trust remains conditional on three key factors: robust quality assurance, transparent information, and credible certification labels. The top factor, cited by 56%, is accreditation by a trusted industry body, followed by an accreditation by a public body (45%). The relationship with the labour market also matters: 36% value that the educators understand the industry and that micro-credentials demonstrate skills in practice, while another 36% appreciate training tailored to company needs. Specialisation in emerging areas (32%) and recommendations from other companies (28%) also influence trust. Global certifications like Microsoft or Google matter less (18%), as do price (16%) and clarity of information (6%). This study also reveals that brand reputation and trust are linked - when micro-credentials are granted by providers who are not renowned, not officially recognised by national authorities, or not based on industry standards, trust is typically low.

Current initiatives in the EHEA

In order to strengthen the links between the micro-credentials and the labour markets, EHEA countries, as well as the European Union, are developing innovative approaches which embed the Bologna principles and tools to strengthen employer and institutional trust in micro-credentials.

Recent study of the European Commission (2023) outlines several country-specific examples that involve quality assurance, labour market relevance and standardization as set of measures. For instance, in Estonia, all micro-credential programmes must align with the national qualifications framework and are evaluated by the Estonian Quality Agency for Education (HAKA) as part of the institutional accreditation. Estonia has capitalized on its advanced digital infrastructure to implement blockchain-verified micro-credentials. The "DigiVärv" platform allows employers to instantly verify credentials, a feature particularly valued by the IT sector. Estonia's system also integrates with the Europass Wallet, facilitating cross-border recognition.

Looking at other initiatives for strengthening the trust in micro-credentials, a recent study explored the use of quality labels by EQAR registered quality assurance agencies. EQAR's (2024) findings demonstrate that 15 EQAR-registered agencies issue their own quality label(s) following some of their ESG-aligned methodologies. Altogether, 29 distinct labels were identified, out of which some are applicable to micro-credential provisions². The desk study detected two labels targeting continuing education programmes in particular - The Catalan University Quality Assurance Agency (AQU Catalunya) has established quality labels awarded following ESG aligned reviews, including short learning courses

2 See Annex 2 "Table of QA labels implemented by quality assurance agencies" here: <https://www.eqar.eu/assets/uploads/2025/01/Feasibility-Study-QL-for-MCs.pdf>

(micro-credentials). The label is awarded to programmes offered by higher education institutions³. On another hand, FIBAA's Seal for certified continuing education courses is awarded to programmes offered both by higher education institutions and alternative providers. The agency's Premium Seal for certified continuing education courses demonstrates that the programme not only complies, but exceeds the quality standards⁴. The map below presents the quality labels issued by CEENQA members, some of which are applicable to micro-credentials too.



Illustration 1: Quality labels created by quality assurance agencies - members of CEENQA. Source: EQAR (2024)

On European level, the European Union (EU) has developed two key systems to boost trust in digital credentials, including micro-credentials. The European Digital Credentials Infrastructure (EDC) creates standard formats for digital diplomas and certificates, making them easier to recognize across Europe⁵. The European Blockchain Services Infrastructure (EBSI) uses secure digital certificates to prevent fraud, allowing employers and universities to instantly verify credentials⁶. Together, these systems help solve major trust challenges - they ensure micro-credentials are consistent, tamper-proof, and widely accepted across borders. Several public bodies working in the field of higher education in the EHEA, such as the Executive Agency for Higher Education, Research, Development and Innovation Funding of Romania and the Ministry of Education and Science of Ukraine, are currently piloting the use of EDC within the European Digital Identity Wallet as part of the DC4EU project⁷. These efforts are complemented by other national-level initiatives, such as those in Luxembourg and Belgium⁸, which are part of the

3 See more: <https://www.aqu.cat/en/Universities/Programmes-Assessment/Microcredentials>

4 See more: <https://www.fibaa.org/en/accreditation-certification/certification-of-continuing-education-courses/quality-seal/>

5 See more: <https://europass.europa.eu/en/european-digital-credentials-learning>

6 See more: <https://ec.europa.eu/digital-building-blocks/sites/display/EBSI/Home>

7 See more: <https://www.dc4eu.eu/>

8 See more: <https://mindigital.gouvernement.lu/en/dossiers/2022/ebsi-lux.html> (Luxembourg) and <https://belnet.be/en/news-events/news/belnet-and-smals-team-building-infrastructure-european-blockchain-project> (Belgium)

European Blockchain Partnership and have begun deploying elements of the EBSI infrastructure across education and public administration⁹. However, these are public-sector initiatives, not employer-led deployments. At the given time, the primary users of the platforms are higher education institutions, with very little engagement in the employers side.

On a policy level, the Council of European Union adopted the Recommendation to Micro-Credentials for Lifelong Learning and Employability. The document proposes a definition, standard elements for describing and principles for designing and issuing micro-credentials. The aim of the Recommendation is to increase the trust in micro-credentials across Europe by proposing a common framework for creating, applying, and comparing across borders, sectors, and domains in a cohesive manner across Member States, stakeholders, and various providers (ranging from for-profit businesses to educational and training institutions), through, among others, data standardisation (see more in Annex 1 of the Recommendation).

Some of the common data elements include country/region of the issuer, awarding body, learning outcomes, notional workload needed to achieve the learning outcomes, level of the learning experience leading to the micro-credential (EQF, QF-EHEA) and type of quality assurance used to underpin the micro-credential. The data elements proposed by the Recommendation have been mapped and are compatible with the European Learning Model (i.e. the

underlining data standard of the EDC).

The following section will elaborate how some of these elements are incorporated in one of the Bologna supported platforms – the Database for External Quality Assurance Results¹⁰, as well the incorporation of the DEQAR data in the EU digital credential initiatives.

Case studies of information provision on micro-credentials in the EHEA

Database for External Quality Assurance Results (DEQAR)

DEQAR is the Database of External Quality Assurance Results on activities performed by EQAR-registered quality assurance agencies. Managed by the European Quality Assurance Register for Higher Education (EQAR), it serves as a transparency tool to enhance trust in higher education across Europe. DEQAR includes information on higher education providers that underwent institutional and/or programme evaluation by an EQAR registered agency.

By July 2025, DEQAR stored approximately 116 000 reports, uploaded by 57 quality assurance agencies¹¹. The database currently covers information on higher education institutions in 45 out of 47 EHEA systems (95.7%), while for 32 systems (68.1%) there is coverage of over half of active HEIs¹². The map below demonstrates the DEQAR coverage per EHEA system. Aiming to address stakeholders' needs for transparent information on quality assurance following the recent developments in the higher education sector, EQAR

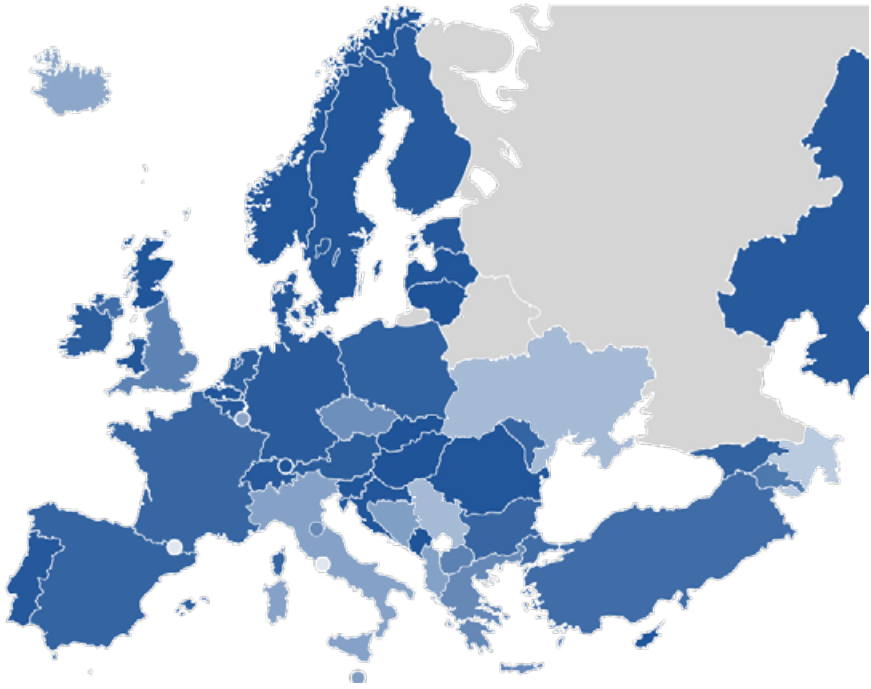


Figure 1: Coverage of DEQAR per EHEA system in July 2025

9 See more: <https://digital-strategy.ec.europa.eu/en/policies/blockchain-partnership>

10 The establishment and the further development of the database have been supported by the Ministerial Communiqués of Paris (2018), Rome (2020) and Tirana (2024)

11 Out of which 53 are currently registered on EQAR

12 At least one report in DEQAR

expanded the DEQAR database to collect information on externally quality assured micro-credentials¹³. Changes involved expansion of the data model, as well as the DEQAR's frontend. Main changes, including the challenges and the current status quo is elaborated below.

Inclusion of information on other, non-traditional, higher education providers

Unlike the traditional degrees, micro-credentials are also offered by growing number of large technology companies, other private companies and non-profit organisations (further referred to other providers) (OECD, 2023).

Since its establishment, DEQAR takes data on higher education institutions from the OrgReg¹⁴ - a comprehensive database providing detailed information on higher education institutions (HEIs) across Europe¹⁵. Unlike OrgReg, at the given time there is no comprehensive mapping of other providers of higher education in the EHEA (nor worldwide), implying that DEQAR should collect and verify manually the information on the other providers.

In order to enable equal treatment, the data on other providers follows the same data standard/model as higher education institutions, including mandatory information including the official name, location and website of the provider.

In order to further guarantee the reliability of the data, which in cases of higher education institutions is already done by OrgReg, EQAR implemented the following steps:

- QA agencies are asked to provide information on the provider, including a unique identifier registered in a publicly accessible database. EQAR recommends the use of VAT number for entities based in the EU whenever possible, as a common denominator of registered business whose format follows EU-wide rules.
- EQAR's Secretariat checks and leads a background list of trusted databases, as well as presents this information publicly. This enables users to learn more about the provider and search for further information in other, trustworthy, sources. In the practice to date, sources include databases of national commerce chambers, institutes of statistics, registries of learning providers, as well as companies and organisation registries led by governmental bodies such as Ministries of Finances.
- DEQAR publicly discloses the name of the quality assurance agency responsible for providing the information on the provider, enabling employers and institutions to contact the agency for further information if needed. See example (next page).

DEQAR also includes information on the educational platform where the (short) programmes are offered. This is

due to the so far practice that the platforms were involved in the external evaluation and, some of them, have been at the forefront of the external evaluation process. The same data is collected for educational platforms as for other providers.

DEQAR currently stores data on 50 other providers, which is manually stored and updated.

Two persistent issues complicate information collection about alternative providers:

(1) Limited public databases and registries exist beyond Europe, hindering the verification of the information on the other providers and further creating transparency gaps for DEQAR users

(2) Many national databases lack open APIs or use own data standards, discouraging interoperability in the EHEA. This fragmentation threatens scalability—if demand rises sharply for adding information on non-traditional providers in DEQAR, EQAR may face unsustainable resource pressures.

Learning outcomes and field of study (ESCO)

As elaborated earlier, information on the particular outcomes of the programme is deemed very important by the employers in the EHEA. DEQAR was expanded to include information on both: the learning outcomes and the field of study (ISCED-F). Both data fields follow the European Skills, Competences, Qualifications and Occupations (ESCO) - multilingual classification system developed by the European Union to standardize descriptions of skills, competences, qualifications, and occupations relevant to the European labour market and education systems¹⁶. In practice, this means that agencies can select an outcome from a pre-defined list drawing data from ESCO's API¹⁷ (see Illustrations 4 and 5).

Employer trust remains conditional on three key factors: robust quality assurance, transparent information, and credible certification labels.

Despite the importance of this information for employers, the number of agencies providing this information remains low. One of the reasons could be due to the novelty, but another could be due to the lack of systematic collection of information on the learning outcomes in agencies' databases. In addition, should the national or institutional learning outcomes' frameworks are not referenced or mapped to ESCO, implementing this exercise by quality assurance agencies alone can be challenging task.

13 The process was aided by the IMINQA project, and involved series of consultations with stakeholders, including other higher education providers, and testing with 4 EQAR registered agencies in 2022 and 2023

14 DEQAR updates records from OrgReg every 24 hours via API connection

15 See more: <https://www.risiz.eu/registers-orgreg/>

16 Learn more here: <https://esco.ec.europa.eu/en>

17 Open access to the ESCO API is available at: <https://esco.ec.europa.eu/en/use-esco/use-esco-services-api>

Sparkassenakademie Baden-Württemberg

Basic information

Identifiers	DEQARINST8803 EU-VAT: DE-147794299 ?
Provider type	other provider
Type of organisation	other
Legal seat(s)	Stuttgart, Germany
Website	https://www.spk-akademie.de/
QF-EHEA levels	other, first cycle, short cycle
Data source	FIBAA
Permalink	https://data.deqar.eu/institution/8803

Coursera

Basic information

Identifiers	DEQARINST8785 US-EIN: 45-3560292 ?
Provider type	education platform
Type of organisation	private company
Legal seat(s)	Mountain View, United States
Website	https://www.coursera.org/
Collaborations	■ hosts courses of Google ■ hosts courses of IBM
Data source	FIBAA
Permalink	https://data.deqar.eu/institution/8785

Illustration 3: Example of information on educational platform of micro-credentials in DEQAR

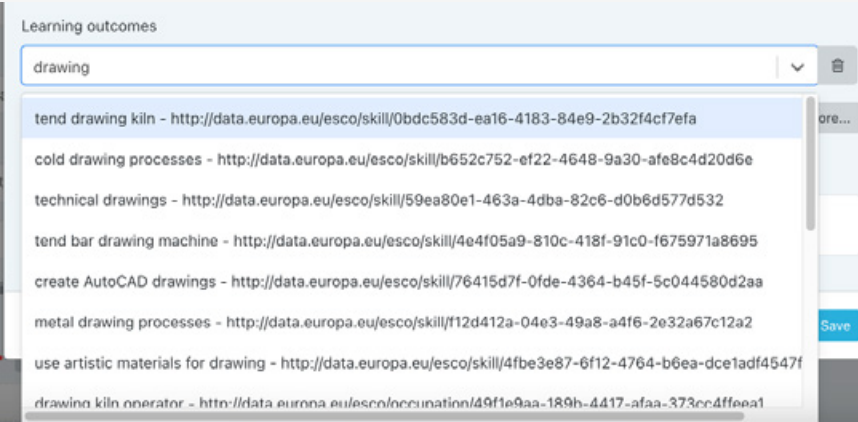


Illustration 4: Learning outcomes drop down menu in DEQAR backend

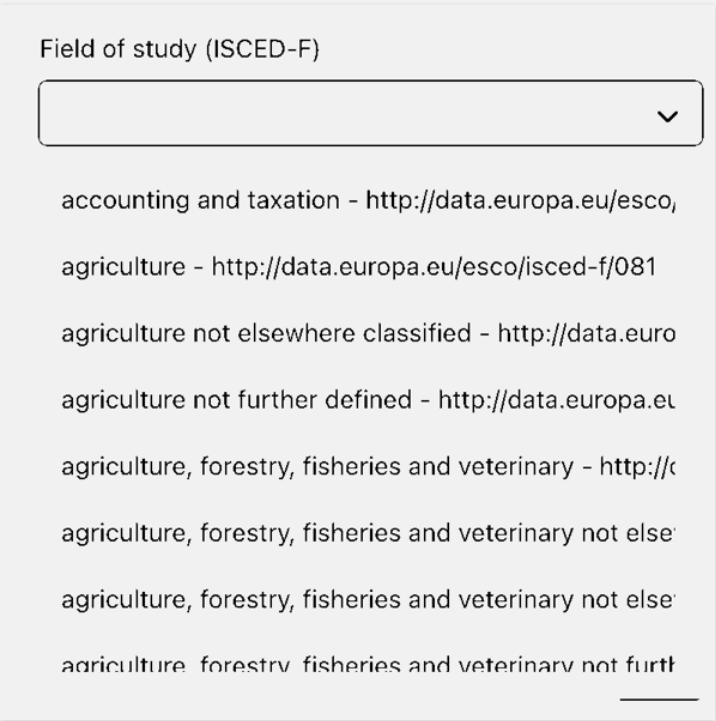


Illustration 5: Field of study drop down menu in DEQAR backend

Information on workload (expressed in ECTS)

While ECTS is primarily an academic tool, with limited labour market visibility, these standardized workload measurements remain critical for learners - facilitating credential recognition by ENIC-NARICs and enabling seamless credit transfer between higher education institutions. To support quality assurance agencies that are aware of the hourly workload but not the ECTS credits (for e.g. the micro-credential is not ECTS bearing), DEQAR includes an ECTS calculator in its documentation as an assisting tool.

Unlike the information on learning outcomes, the number of ECTS credits is widely populated field in DEQAR. Statistics show that the number of ECTS is usually up to 30 ECTS, even though, few of the evaluated programmes bear up to 59 ECTS.

Summary of reports

An opportunity to provide short textual summary of the key findings of the report and decision that allows users to understand the outcomes without reading the full report was introduced before the DEQAR expansion with information on micro-credentials was enabled. This information could be of particular interest for employers and recruiters that seek for swift and trustworthy information. By providing report summaries in text format, this field facilitates large-scale AI analysis, making it possible to process and derive insights from vast quantities of quality assurance data.

Use of DEQAR data

While DEQAR holds a significant volume of information, a key opportunity for enhancing the trust in micro-credentials is integrating DEQAR's data into broader ecosystems for digital and micro-credentials, such as digital wallets. Consequently, in the past years, further steps have been taken to enable data flow with two leading initiatives for issuing digital credentials in Europe - the European Digital Credentials (EDC) and the European Blockchain System Initiative (EBSI). In both initiatives, DEQAR data can be used for verifying the accreditation status of the provider.

The full potential of DEQAR, however, is yet to be explored by employers. Linking DEQAR to national employment services, digital diplomas repositories, credential wallets and national student registries are some of the forms to make further use of the quality assurance information available in the EHEA. In addition, expanding on the use of the DEQAR data (beyond accreditation status) should be further exploited by stakeholders. This is of particular importance for micro-credentials as they are designed to be more flexible and varied than traditional degrees - they come in different formats, durations, and from different types of providers. This heterogeneity demands exploration beyond binary accreditation statuses.

Conclusion

The evolution of micro-credentials in Europe faces a fundamental challenge: establishing trust between higher

education systems and labour markets in an era of rapid skills transformation. This paper has argued that trust is not monolithic but rather a multifaceted construct shaped by institutional reputation and verifiable learning outcomes, among others. While the Bologna Process tools, such as the European Standards and Guidelines for Quality Assurance, provide a foundation for standardization, their effectiveness depends on how well they translate into actionable information for employers navigating an increasingly complex credentialing landscape.

The emergence of digital platforms providing common ground for EHEA and/or EU countries like DEQAR, EDCI, and EBSI represents a significant step forward, offering technical solutions for credential verification and data interoperability. However, these systems alone cannot overcome deeper structural barriers. The persistent gaps in the mapping of institutional and national data models and frameworks with wider European frameworks (such as ESCO), coupled with the fragmented use of common European data standards, the lack of interoperability of national databases tracking non-traditional providers and their offerings, and the limited availability of data on the links between the micro-credential provisions and the labour market aspects, are some of the obstacles for better information provision on micro-credentials for addressing the labour market needs. In addition, the utilisation of the European platforms is yet to be explored and exploited by the employers in most of the EHEA countries.

Micro-credentials are designed to be more flexible and varied than traditional degrees.

To address some of the challenges outlined in the paper, several forward-looking measures are proposed. First, EQAR could further explore the use of AI-powered text analysis to automatically extract and classify learning outcomes from the evaluation reports, as well enable mapping of the text with ESCO terminology (via tools such as the Skill Framework Builder¹⁸). Similarly, AI could be used to generate the short summaries of the evaluation reports, enabling more efficient processing of data. At the European level, further investment should support the adoption of European Digital Credentials (EDC) in national initiatives (e.g. digital wallets) for storing higher education documents securely and in interoperable manner. Simultaneously, EHEA policymakers must advocate for open data standards in higher education which will further enable swifter data flow and exchange. Finally, access to EU digital credentialing tools (EDCI/EBSI) should be expanded to non-EU EHEA countries,

¹⁸ See more: <https://skilldata.info/#frameworkBuilder>

with targeted technical support to bridge implementation gaps. Together, these steps would create a more transparent, employer-friendly credentialing landscape.

To conclude, trust cannot be legislated into existence through policy alone, but must be cultivated through demonstrated relevance, concrete actions and robust verification systems. Here, the Bologna tools for harmonisation – such as the European Standards and Guidelines for Quality Assurance, the ECTS and the Diploma Supplement, should be seen and used not as bureaucratic constraints but as foundational enablers. When embedded innovatively into digital credentialing systems and coupled with user-friendly formats for presenting information, these tools can transform from academic compliance measures into powerful aids for skills recognition.

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Students at the center: Stabilizing QA in the European landscape

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— The European Students Union (ESU)



Across EHEA, student involvement in QA is widely endorsed in principle, but only rarely institutionalized in practice. Despite commitments in the ESGs, students are too often treated as end users rather than co-designers of quality processes. To align QA with the changing realities of learning, student involvement must be more than symbolic. It must be structured, resourced and enforceable. Drawing on our Policy Paper on Quality of Higher Education, we are proposing five actionable recommendations to include students into the architecture of quality assurance at institutional, national and cross-border levels.

1. Student membership in all QA decision-making bodies

While many QA agencies include students in reviews or consultations, this is not consistently mandated in all governance structures, accreditation panels or evaluation teams. In some national systems, student involvement remains optional or informal. We recommend making student representation a legal requirement in all national QA agencies and internal QA bodies at higher education institutions (HEIs). At a minimum:

- At least one full voting student member on each institutional QA board;
- At least one trained student evaluator on every external review panel;
- Mandatory student participation in defining learning outcomes and program re-accreditation.

2. Dedicated funding for national student QA training programs

The required involvement from students without capacity is tokenism. Many students are asked to join QA panels or boards with little training on the ESG, national frameworks or evaluation methods. We recommend funded, structured and recurring national training programs for student QA participants. These should include:

- ESG and Bologna tools overview - focusing on QA frameworks, recognition, mobility and transparency tools;
- Training in qualitative evaluation techniques - interviewing, observation, peer feedback and site visit preparation;
- Role-playing peer review scenarios - simulated panels to practice communication, negotiation or independent judgement;
- Instruction on data interpretation and workload analysis - assessing if the workload matches the ECTS guidelines;
- Ethics in QA reviews - understanding concepts such as, but not limited to confidentiality, conflicts of interest or representing diverse student perspectives fairly and professionally.

3. Standardized student-led course evaluation across higher education institutions

Course evaluations remain inconsistent in design, execution and use. In many institutions, students fill in surveys that are never discussed or followed up, with no transparent measures taken and then shown to the students. We recommend

drafting templates for student-led course evaluation, with minimum standards, including:

- Questions co-designed with student unions;
- Public sharing of aggregated results and follow-up measures (“You said, we did”);
- External QA agencies to audit whether institutions act on student feedback.

4. Embedding student voices in digital learning quality criteria

As we have presented in Bologna with Students Eyes 2024, less than 20% of the national unions of students are satisfied with the current use of digital tools in learning and teaching at the national level, showing that digitalization is gradually outpacing quality assurance. Students often face poorly designed online platforms and inequitable access, issues that are largely invisible in plenty of QA reviews. We recommend updating the national and agency-level QA frameworks to include student-defined criteria for digital learning quality, such as:

- Accessibility of platforms across devices (ensuring usability for learners with disabilities, neurodiverse students or those with financial disadvantages);
- Transparency of learning analytics use;
- Cost-free student access to tech support and digital libraries.

5. Involving students in the quality assurance of microcredentials and flexible learning paths

As microcredentials, short courses and modular degrees gain traction across the EHEA, there is a growing risk that these offerings will fragment the learning experience, introduce inequities and lower quality. Students are rarely consulted in the design, delivery or validation of these new formats, despite being their primary users. Embedding student participation in the quality assurance of microcredentials and flexible learning pathways should be the reality, by:

- Consulting students at the design stage to identify which skills, competences, or knowledge areas they feel are missing from their main study programmes and could be complemented by micro-credentials;
- Requiring student representation in the bodies that develop microcredential frameworks;
- Mandating that new short courses undergo student-involved internal evaluation before external recognition;

To conclude, student involvement in quality assurance must evolve from goodwill to governance. Binding frameworks that treat students as full QA partners, not just recipients of education, but co-architects of its quality should become a normality in all European countries. This shift will require policy reforms, dedicated funding and a culture and mindset change in many institutions and agencies. But the return is clear - a more relevant, responsive and trustworthy QA system, built with the very people it is meant to serve.

Panel on higher education and its connection with the labour market

CEENQA's Annual General Assembly and Workshop took place in Tallinn on 13–14 June 2025. The Workshop, focusing on “Higher Education’s Connection with the Labour Market,” was held on the first day and began with keynote presentations. It continued with a panel on the same theme, reflecting the views of various stakeholders.

The first speaker, Prof. Dr. Olgun Çiçek, Board Member of INQAAHE, approached the topic from a global perspective and presented his views on different parts of the world, supported by relevant statistics. The second speaker, Andrej Krček from the Slovenian Quality Assurance Agency for Higher Education (NAKVIS), Senior Advisor at the Department of Analytics and Information Technology, discussed a recent study carried out in Slovenia on student integration into the labour market. He also shared his views from a QAA perspective on how to monitor and guide universities in improving the employability of graduates in their respective fields.

Kristi Raudmäe, Head of the Higher Education Policy Unit at the Estonian Ministry of Education and Research, analysed the topic from a governmental perspective, supported by cases and examples from Estonia. The fourth speaker, Yuliia Bleshmudt, Deputy Manager of International Accreditation Procedures at Foundation for International Business Administration Accreditation (FIBAA), shared her experiences on how the issue of employability is addressed by various universities in different countries and how FIBAA manages it. The final speaker of the panel, Marcus Ehasoo, Chairperson of the Board at the Estonian Student Unions, shared his experience from a student perspective and offered recommendations for improvement.

The panel was chaired by Prof. Dr. Hasan Ali Bicak, Head of Internationalisation at STAR (QAA in Turkey) and Advisor to the Board of Trustees at Final International University in North Cyprus. A summary of the presentations delivered at the panel is provided below.

Andrej Krček

It is very important to distinguish clearly the notions of unemployment and employability. While unemployment refers to a concrete status (e.g., being registered with the employment office), employability refers to the broader concept of a graduate’s readiness and capacity to enter the labor market — which is often influenced by contextual and systemic factors.

The presentation will reflect on the situation in Europe, where countries differ significantly in how they collect and use graduate tracking data. Northern and Western countries tend to integrate this information into multiple levels: institutional quality assurance, national QA agency evaluations, and even governmental policy-making. Others either do not collect such data systematically or do not use them. A good overview of these differences is presented in the report “Mapping the state of graduate tracking policies and practices in the EU Member States and EEA countries,” Final Report, March 2020

Slovenia has been collecting national-level graduate unemployment data for several years, coordinated by the Ministry of Higher Education, Science and Innovation (MVZI). The system is based on the unique personal identification number (EMŠO), allowing to monitor whether a graduate is registered at the Employment Office 6, 9, 12, or 24 months after graduation. For each study program, the number of graduates and the number of unemployed graduates is recorded. Because each program has a unique code, this data is combined with other characteristics (region, level of study, field of study, etc.).

However, interpretation must be done with caution. It is observed that Slovenia generally performs well in comparison to other European countries, especially in the lower unemployment rate of tertiary graduates compared to the general population. Differences are present across regions (higher unemployment in the eastern region), levels of study (lowest in doctoral and university programs), and fields. Moreover, within the same institution, some programs have excellent employment outcomes, while others do not — which confirms that analysis should be conducted at the program level, not at institutional level.

NAKVIS calculated five-year averages for all programs and grouped them into 72 unique clusters based on region, type, and field. Each program is then evaluated relative to its group average and categorized (A = below average, B = near average, C = more than twice the average). This visual tool provides a clear signal of performance and can support institutional self-evaluation. These results are sent to institutions for comment and are publicly published along with explanations. During evaluations, institutions will be asked how they consider these data in their internal quality systems, and – if results are poor – how they interpret them (which may be entirely justifiable depending on the context, e.g., medical studies or niche disciplines).

Kristi Raudmäe

From a government/ national perspective, the connection between higher education and the labour market is crucial, and efforts to strengthen this link are addressed from various aspects. Alongside other indicators, it’s a significant component of the quality assessment system and it is also stipulated at the legislative level when opening new curricula. Collaboration with employers and considering labour market needs is also a topic addressed in administrative / performance contracts signed with higher education institutions, both in regard to curricula development and establishing study places. The application of knowledge and skills is also highlighted in the learning outcomes.

Additionally, the Government has specific activities/ measures funded by the European Social Fund to strengthen certain fields. IT and Engineering Academy will be discussed here, which in addition to popularizing these fields, primarily supports activities related to improving the quality of education. This includes supporting students in their progress and aligning curricula with labour market needs. Relevant professional associations are very actively involved in managing this program. Also, the development of the vocational and higher education practical training system and work-based learning needs to mention, where, from a higher education perspective, support is provided for new industrial master’s curricula.

Yuliia Bleshmudt

FIBAA was established by leading business associations from Switzerland, Austria, and Germany. Consequently, a strong focus on employability is a key element of our assessment procedures. Ensuring that students receive a high-quality education that aligns with labour market requirements is essential for their future career success.

Thus, the Assessment Guide—particularly for Bachelor’s and Master’s degree programs—includes specific benchmarks related to employability. One of the core criteria is “Subject-specific qualifications and employability of graduates”. This means that study programs must demonstrate that the graduate profile is aligned with the requirements of the targeted professional fields. The emphasis lies in equipping students with the necessary competencies and practical skills for their intended careers.

During the review process, FIBAA experts evaluate not only the curriculum, but also the graduate employment tracking data (e.g., employment rates within six months after graduation, types of positions obtained, sectors entered, etc.). Panels expect quantitative evidence (percentage employed, waiting time, relevance to field). At the international level—particularly in countries such as Kazakhstan, Vietnam, and Indonesia—tracer studies are well established and widely implemented. This is largely due to the expectations set by government authorities and national statistical bodies. For example, in Kazakhstan, the Atameken publishes an annual national ranking of study programs, which includes programme-specific employability rates.

Similarly, in Indonesia, tracer studies are an important

tool for both institutional quality assurance and government reporting. These studies often reveal regional differences in employment outcomes. For ex-ample, graduates from universities located in major cities such as Jakarta and Surabaya tend to have higher employment rates, often exceeding 80% within the first year after graduation. In contrast, HEIs situated in more remote areas, such as Madura or Sulawesi, may show slightly lower employment figures, due to limited local job markets and regional economic differences.

- In addition, FIBAA places particular importance on:
- Integration of theory and practice, for example through internships, case studies, and project-based learning. Often the panel recommends enlarging international collaborations and possibilities for exchanges and internships. In addition, the experts review, whether the professional experiences of faculty staff are sufficient. This is important because faculty members with relevant professional experience can better connect academic content with real-world practice, thereby enhancing students' employability.
 - Development of future skills and soft skills, such as digital literacy, intercultural communication, teamwork, critical thinking, and problem-solving. Sometimes, we can see the recommendations as implementing more practical case studies that deal with contemporary problems or providing more opportunities for students to present a topic in courses, like a portfolio presentation.
 - Cooperation with industry and employers and extracurricular initiatives. We observe a recommendation as encouraging the invitation of more international guest lecturers, including online. Fostering cooperation with industry and employers—particularly with global and international companies—is often a key recommendation for study programmes accredited by FIBAA.
 - Alumni activities and career counselling. A vital part of the quality assurance process is gathering feedback from alumni and employers. This feedback helps identify which skills were particularly valuable in the workplace, and which competencies may have been underdeveloped during the study programme. Often, we can observe such recommendations as compiling more detailed feedback from external stakeholders or making the process more systematic and/or better documented.

Marcus Ehasso

It is significant to focus on the complex balancing act that higher education faces in responding to labour market expectations. It is argued that dealing with a trilemma: higher education must simultaneously respond to the demands of employers, address the strategic priorities of the state, and uphold academic freedom. Prioritising one of these dimensions- especially short-term employer needs- can undermine the broader public mission of universities, including their role in fostering critical thinking, research, and cultural development.

Drawing from the Estonian context, it is highlighted that the recurring concerns voiced by tech companies that univer-

sities are not producing sufficiently specialized graduates. However, many of these same companies recruit students already during their second year of undergraduate studies. This early employment disrupts the learning process and raises the question: is the problem really a skills mismatch or are labour market practices themselves interfering with students' ability to complete their education effectively?

Attention is drawn to the opportunities and gaps presented by the rise of artificial intelligence in education. On the one hand, AI has the potential to free up time and cognitive space in higher education, enabling both students and lecturers to focus more on complex, value-driven questions rather than purely technical content - some of which AI tools can now support. On the other hand, there are notable systemic gaps. In Estonia, many high school students already use advanced AI-based learning tools, while universities are still debating how to teach AI, and what regulations should apply. This creates a paradox: secondary school teachers are expected to guide AI use without having received pedagogical preparation for it during their university studies. In this light, higher education must not only respond to labour market needs but also take the lead in shaping the pedagogical and ethical frameworks for emerging technologies.

In conclusion, the importance of maintaining a broad, future-oriented view of higher education's role needs to be emphasised. Rather than seeing universities solely as workforce training centres, they must be positioned as critical institutions for societal resilience, ethical leadership, and long-term innovation - especially in a rapidly changing technological and labour environment.

Olgun Çiçek

The relationship between higher education and the labour market has become a central concern for policymakers, educators, and employers worldwide. As economies evolve under the pressures of globalization, digital transformation, and demographic shifts, higher education institutions (HEIs) are expected to prepare graduates not only with disciplinary knowledge but also with adaptable, future-oriented skills that align with changing labour market demands.

In developed economies such as those in the European Union, the United States, and Japan, there is a strong emphasis on employability, lifelong learning, and skills forecasting. Initiatives like the European Qualifications Framework (EQF) and micro-credentials aim to bridge the gap between formal education and professional requirements by validating short, flexible learning experiences aligned with industry needs. Similarly, the U.S. higher education system emphasizes internships, cooperative education, and partnerships between universities and employers to enhance work readiness.

In emerging economies, including countries in Asia, Africa, and Latin America, the challenge is twofold: expanding access to higher education while ensuring its relevance to local and global labour markets. For instance, China and India have increasingly focused on STEM education, entrepreneurship, and digital skills to support their growing

innovation-driven economies. Meanwhile, African nations, through initiatives like the African Continental Qualifications Framework, are working to harmonize education and training systems to improve mobility and employability across borders.

Nordic countries and Singapore are often cited as models for integrating education with labour market needs through strong cooperation between governments, universities, and industries. Their systems emphasize work-based learning, continuous upskilling, and social dialogue, ensuring smoother school-to-work transitions.

Globally, the trend is moving toward competency-based education, industry-academia partnerships, and data-informed workforce planning. However, significant disparities remain between regions in terms of resources, institutional autonomy, and labour market maturity. Ultimately, the success of aligning higher education with the labour market depends on building flexible, inclusive, and forward-looking systems that can anticipate — not just react to — the rapidly changing world of work.

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