



CoConstruct – Digital learning meets sustainability

Networking and Cooperation



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1. Introduction

At this point, an attempt is made to use national and international networking as well as different possibilities of cooperation or cooperation networks as potentials. The aim is to be able to react better to current challenges and to efficiently adapt the experiences of the project partners. A summary of the challenges is followed by conclusions drawn within the framework of the ERASMUS+ project CoConstruct for the participating project partners as suggestions for overcoming the challenges within the framework of national and international cooperation.

2. Initial Situation in the Construction Industry

The construction industry is considered one of the most stable industries in times of a global crisis. Nevertheless, the construction industry has to cope with numerous challenges. For companies in the construction industry, it is essential to be aware of the biggest challenges facing the construction industry in order to address them in the long term and minimize risks. The training companies have to adapt to this with a certain lead time. Their capacities and the training of the trainers must be adapted in a targeted manner to the digital and quantitatively and qualitatively changed conditions.

Construction companies have to deal intensively with the questions of how they can recruit new employees, position themselves more sustainably and increase their productivity through increasing competitive pressure. A digital transformation can help to counteract challenges in the construction industry such as a shortage of skilled workers or lower labor productivity.

(Source for the data: The construction industry in challenging times. How companies in the construction industry are dealing with current crises. PwC (Price Waterhouse and Cooper), 2023)

Challenge 1: Shortage of skilled workers

The shortage of skilled workers has been one of the biggest challenges facing the construction industry for years. More than 3/4 of German companies in the construction industry see this shortage as a risk to their own economic development. Just 10 years ago, this figure was only 21 percent. Even ready-made trainees who initially opted for the construction industry change industries after only a few years. On average, this currently applies to 2 out of 3 construction workers. *In addition to the salary, a lack of recognition for the service provided is also a reason for emigration. We are currently experiencing a veritable loss of skilled workers.*" – Michael Groha, District Chairwoman of IG BAU (2022, Germany)

Necessities:

The construction industry must become much more attractive for young people and professions in the construction industry must be given a better status in society. More recruiting campaigns need to be launched and employees need to be recruited.

Challenge 2: Sustainability

The topic of sustainability is now also occupying the construction industry. According to the Federal Environment Agency (2020), construction and demolition waste (including road demolition) accounts for a very large proportion of total waste production. In 2018, the industry produced around 228.1 million tonnes, the majority (54.7 percent) of gross waste generation.

Furthermore, the construction and building sector now accounts for 38 percent (9.95 Gt CO₂) of global CO₂ emissions (source: UN environment programme: 2020 Global Status Report For Buildings and Construction) One conclusion in the UN Report 2020 is: to support capacity-building to promote the transition to a resilient, efficient and zero emissions built environment and to raise awareness of the sector's transformation potential, convey a sense of urgency, develop common narratives, and formulate key messages. It aims to disseminate new approaches and solutions, share best practices through the new Global ABC website, establish an interactive knowledge database to enhance peer learning, and provide training and education through webinars and online courses.

Sustainability is not possible without the construction sector and is considered an important opportunity and challenge at the same time. In order to be able to finance sustainable production methods, the labour productivity of the entire construction industry must increase. The digitization of a wide variety of work processes is essential.

Challenge 3: Increasing competitive pressure

The number of companies in the construction sector in Europe increased by over 30 percent between 2010 and 2020 (Statista, October 2022). As a result, there is ever-increasing competition for orders and large-scale projects. But it is not only the growing density of companies that increases competition immensely. Digitization also gives competition completely new dimensions. Construction companies that position themselves digitally thus gain immense competitive advantages and can hold their own against many competitors.

Challenge 4: Lack of digital know-how

Digitalization continues to be both a challenge and an opportunity for the construction industry. A study by the management consultancy PwC from 2020 compares the potentials and capabilities of construction companies and finds some serious gaps in knowledge. Although the potential of digital tools and technologies is rated and recognized comparatively highly, there is still a lot of catching up to do in terms of the skills and know-how of contractors. Surveys confirm the well-known view that digitization has arrived as an opportunity in the minds of many players in the construction industry, but there is still a lack of knowledge about the implementation and implementation of digital software.

Challenge 5: The Pandemic

The pandemic also left its mark on the construction industry. For construction companies and planners, the major challenge posed by the pandemic is to comply with hygiene and safety regulations. Planners and construction companies also see the switch to more digital collaboration and delays in the supply chain as current hurdles. Nevertheless, the pandemic is seen as both a challenge and an opportunity. Without this exceptional global situation, some digitization impulses in the construction industry would certainly have taken place much later.

Conclusion: Trained specialists in the construction industry will not only encounter these challenges in the distant future. They need to be prepared today to cope with the new tasks. This requires constant changes and adaptations of the learning methods, the teaching content, the personality development of the specialists.

The preparation of the trainers is one of the central tasks in all institutions of the project partners. In these areas in particular, there are opportunities for efficient adaptation through the exchange of experience and the adaptation of the experiences of the partners through a stronger focus on networking and cooperation – both nationally and internationally.

3. Initial Situation in Vocational Training

The school-based vocational system and dual vocational education and training are the dominant forms of vocational education and training in a Europe-wide comparison. Nevertheless, vocational education and training is characterised by great heterogeneity internationally. Although either dual vocational education and training or full-time school-based vocational training is predominantly offered in all EU countries, the training structure and, in particular, the relevance of vocational training systems differ significantly from state to state.

In Belgium, France and Finland, for example, there is a dual and a school-based training model, analogous to Germany. However, dual vocational education and training is very low in both of these countries, while the full-time school-based vocational system is well developed. In other countries, such as Iceland and Estonia, vocational training is offered exclusively at vocational schools. Access conditions also vary between nation states. In Norway, there is a guarantee of a training place and vocational training is carried out exclusively in schools. Lithuania has a minimum age of 14, which is particularly low compared to the rest of the EU.

Some countries offer vocational training at different levels of qualification, which provide different qualifications, ranging from basic vocational education and training (lowest level) to journeyman's certificate or university entrance qualification (highest level), depending on the country.

But here, too, the systems are very heterogeneous: *In Romania, trainees must already prove that they have a high school diploma in order to be admitted to the highest qualification level.*

The vocational education and training system in Europe differ along two dimensions:

- the involvement of the public sector and
- the involvement of companies in initial vocational training.

Public involvement varies in terms of the level of public expenditure on initial vocational training (public expenditure can be incurred, for example, on the maintenance of state vocational schools, teaching staff and materials, but also on state-funded training placement), the different mechanisms of certification of vocational skills and the degree of linkage between vocational training and the degree of linkage between vocational training. Initial training with further training and active labour market policy.

The involvement of companies can be distinguished above all with regard to the willingness of companies to participate in initial vocational training. To what extent is a company willing to invest resources (especially time, money and work equipment) in vocational training, even if the skills acquired in vocational training lead to inter-company mobility of employees, i.e. they can also use their professional knowledge in companies other than the training company after successfully completing vocational training?

On the basis of these criteria, four training systems can be distinguished:

1. statist training system (high public involvement, low involvement),
2. liberal education system (low public and company involvement),
3. segmentalist training system (low public involvement, high involvement in the workplace and
4. collective training systems (high level of public involvement and high level of involvement in the workplace).

Depending on the training system, a school-based or dual training system dominates. In liberal systems, a primarily in-company training system can also be identified. France is an example of countries with a statist system. Vocational training is mainly the responsibility of the responsible state ministry and the regions. The social partners are also involved. They have created regulatory bodies and act as an advisory interlocutor for the public sector on vocational education and training issues.

The high youth unemployment rate in some European countries is the reason why the countries concerned are increasingly looking for solutions to combat and prevent youth unemployment. Due to its particularly low youth unemployment rate, Germany is seen as a role model, which is attributed nationally and internationally to the predominance of dual vocational training. Due to its high proximity to operations and cooperative principles, it represents a special feature that seems to be an important factor in Germany's economic stability, even in economic crises.

The dual system of vocational training has been a traditional system in Germany for a long time, so it is questionable whether and how it can be implemented in other countries. The training companies attach great importance to dual vocational training, which is why they not only make a significant contribution to the training costs, but also show a willingness to impart structured training content. However, this also leads to training graduates changing companies after successfully completing vocational training. The public sector is also involved, primarily the federal states, which bear the majority of the costs for theoretical training in vocational schools. The creation and recognition of this collective structure is one of the greatest challenges for the states that want to introduce or strengthen dual vocational education and training.

The international mobility of apprentices and training staff has been promoted throughout the EU for many years. During their stay abroad, those affected have a good opportunity to acquire intercultural skills and to expand their language and specialist knowledge. For this purpose, among other things, the EU program Erasmus+ has been launched. At the end of 2020, an agreement was reached on the continuation of Erasmus+ in 2021 to 2027. CoConstruct benefits from this decision.

With regard to the future of vocational education and training in Europe, CEDEFOP draws two scenarios: In a pessimistic scenario, vocational education and training will take a subordinate

position to higher education in the long term, with the vocational education and training system leading to less prestigious and skilled work.

This assumes that digitalisation and automation processes will polarise the labour market and training systems and that the core area of vocational education and training in the intermediate qualification segment will disappear.

On the other hand, according to CEDEFOP, there is an optimistic scenario that describes an extension of vocational education and training to highly qualified jobs. This scenario is guided by the assumption that vocational skills will change more rapidly in the future and that a high demand for a suitable workforce must therefore be met by the vocational education and training system. CEDEFOP distinguishes between optimistic scenarios that focus on (i) lifelong learning and (ii) professional and technical skills at the start of the career. That scenario would be a strengthening of the characteristic vocational education and training. The first option, on the other hand, would produce a pluralistic vocational education and training that would extend equally to education and training.

At European level, there are a number of networks such as:

the European Association for the Education of Adults (EAEA), the Lifelong Learning Platform, the European Centre for the Development of Vocational Training (Cedefop), the Eurydice EU Education Network, the Expert Network on Social Aspects of Education (NESET), the European Expert Network on Economics of Education (EENEE), the European Basic Skills Network (EBSN), the European Training Foundation (ETF), etc.

There are also a large number of networks and platforms at the respective national and regional levels of the project partners.

Example of networking

At this point, only a successful regional network will be discussed as an example. One of the good examples of networked work can be illustrated by the example of the Berufsförderungswerk of the Bauindustrieverband Berlin-Brandenburg (Germany). The overall concept of the Berufsförderungswerk is based on close cooperation between vocational schools with theoretical training content and practical work content in workshops and companies. It is about the business-oriented education and training of specialists and managers, through the application and development of innovative concepts and educational offers, for a constantly changing education and labor market.

Over 30 years, this has resulted in a resilient partner structure consisting of

- Contractors
- Associations
- universities and technical colleges,
- High school centres,
- Chambers (Chamber of Industry and Commerce, Chamber of Commerce and Industry,...)
- Employment agencies, job centres
- Municipalities
- general education schools, and
- regional and national networks.

The aim is to create and ensure high quality in the construction industry by providing advice and support for goal-oriented personnel development of companies as well as in all areas of education and training in order to exceed the wishes and high expectations of our customers as far as possible.

The Berufsförderungswerk not only contributes this experience to international cooperation, but also takes up suggestions and good examples for its own further development.

Practical challenges for those responsible for vocational training

There are also growing problems for the Berufsförderungswerk in securing the necessary number of young people to be trained. Construction occupations are not only among the first 10 desired occupations of young people in Germany, which is why vocational orientation and early recruitment in a joint approach between vocational schools and companies are much more important than before. Added to this is the ever-deteriorating basic knowledge of young people seeking vocational training. And the third factor is that vocational training is falling further and further behind higher education in terms of attractiveness. It remains to be seen to what extent digitization can change the situation here in the future with new offers and more interesting job profiles. The image of the tradesmen, including the building trades, is sinking in the wish list of young people. An exception is the profession of carpenter.

For some young people, the "first threshold" from school to an apprenticeship is a high hurdle, despite the much better situation on the training market compared to previous years. Especially if the school grades are poor or the language skills are insufficient, the transition from school to vocational training is only possible with great difficulty. Particular attention is paid to dropouts from school and training, young people with a migrant background, socially disadvantaged people, disabled young people, people undergoing rehabilitation and young people who have already searched in vain for a training place in previous years. If necessary, the young people can be supported with support measures.

Task: To get more young people interested in the construction profession

Questions:

- How do we reach the young people?
- Which methods and media are efficient in the professional orientation of students?
- What networks do we need?

It is becoming increasingly difficult to reach or inspire certain age segments by advertising for a construction profession. Why, then, is it aimed at young people – today in 2023/2024?

- Quality and creativity – short texts, friendly, optimistic, motivating, arousing curiosity, taking into account current branding, conveying the message in less than 2 seconds,
- No copy-paste of print media
- Provide a good landing page – deepening the content, no break in style, also use registration forms or informational videos, also convincing on mobile devices
- Experimenting with different formats and images
- Taking the current zeitgeist into account – communicating values openly
- Don't use biting humor or irony
- Use of experienced trainees – use a cross-section of employees as a phenotype, be very careful with youth language
- Use young people's up-to-date platforms

The focus of securing skilled workers is the attractiveness of the construction professions. Reserves in the labour market consist of the systematic involvement and preparation of young people with a migrant background, young people with disabilities and women. Appropriate wages and social recognition of the achievements can increase the attractiveness as well as the digitization of the learning content, the job descriptions and the methodology for conveying the content. Increasingly, however, it can also be observed that the imparting of basic practical knowledge, skills and abilities is also an essential prerequisite for using digital tools correctly and efficiently, and for being able to correctly assess material and methodology. Digital applications are not introduced into education as a pastime or toy.

4. Conclusion

Networks and Collaborations

Enhanced collaboration between school, training centre, and vocational education centre is of great importance in order to enhance the quality of education. Through this close cooperation, synergies can be utilised to create a more comprehensive and practical educational offering. Intensifying exchanges with universities, particularly regarding the practices of vocational education centres, is crucial. This enables a stronger connection between theoretical knowledge and practical application, providing learners with a solid foundation for their professional careers. Supporting international projects for participants and companies, which are centrally and sufficiently funded, represents another important step. This contributes to increasing the appeal of individual vocational fields while expanding the participants' horizons.

Developing and expanding the existing school network allows students to access a broader range of educational resources and diverse learning opportunities. Such a network also provides space for the exchange of proven practices between different educational institutions. Promoting increased collaboration, both nationally and internationally, creates a dynamic environment in which best practices can be shared and common goals achieved. This cooperative approach helps to enhance the quality of education and improve the preparation of learners for a successful professional future.

Quality Assurance, Monitoring and Evaluation, Development Strategies

Ensuring educational quality requires comprehensive quality assurance, monitoring, and evaluation. Clear development strategies play a crucial role in this process. International quality standards such as DIN ISO 9001 are important in ensuring the fulfilment of educational objectives. The introduction of the new EFQM system for Finland underscores the necessity of the highest quality standards. Monitoring and evaluation are employed to track educational progress and assess teaching methods, enabling adjustments to be made to achieve the goals.

Quality assurance and development strategies, coupled with international quality standards, form the foundation of an effective education system. Educational objectives can thus be met, and learners can be optimally prepared for the future. Overall, these measures can play a pivotal role in continually improving educational institutions and meeting the highest quality standards.

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