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A Comparative Study of Cooperative Education Programs in Germany, the United Kingdom, Italy, and Finland

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Abstract

For the past few years, the European Union (EU) has urged higher education institutions to improve the overall quality of cooperative education (co-op) programs with businesses for growth and jobs in the knowledge and skill-intensive business environment. Improvement of co-ops has been one of the strategic priorities of the Europe 2020 strategies, which aim to continuously improve the competitive advantages of industries. Many EU members have tried to improve their co-ops. In this paper, we describe co-ops in Germany, the UK, Italy, and Finland to find the characteristics of the co-ops. Then, we will compare the co-ops to see the differences among them.

Keywords: Cooperative education, Work-integrated learning, EU, The Europe 2020 Strategies

1. Introduction

For the past few years, the European Union (EU) has urged higher education institutions to improve the overall quality of cooperative education (co-op) programs with businesses for growth and jobs in the knowledge and skill-intensive business environment. Companies have especially expected higher educational institutions to offer effective programs to improve participants' learning, cross-cultural communication, entrepreneurial, and technical skills in the green and digital economy (Devins, 2013; Cwihe, 2017; Maier et al., 2019).

Improvement of co-ops has been one of the strategic priorities of the Europe 2020 strategies, which aim to continuously improve the competitive advantages of industries. Many EU members have tried to improve their co-ops. In this paper, we describe co-ops in Germany, the UK, Italy, and Finland to find the characteristics of the co-ops. Then, we will compare the co-ops to see the differences among them.

2. Cooperative Education in the Europe 2020 Strategies

In 2013, the EU made the Europe 2020 strategies to strengthen industrial competitiveness for sustainable economic growth through improved vocational education and training. According to the strategies, employees will co-invest and participate in the development and operations of effective work-integrated learning (WIL), especially co-op programs. Also, the strategies encourage universities and their partner companies to introduce online learning and distance learning modalities by utilizing modern information technology (Devins, 2013; Cwihe, 2017; Maier et al., 2019).

Students welcome the improvement of co-op programs which allow them to increase their employability, acquire up-to-date soft and technical skills, understand the business world, and be leaders for innovation and sustainable growth. They are especially willing to join the improved programs as they have seen that traditional education has yet to increase their employability (Devins, 2013; Cwihe, 2017; Maier et al., 2019).

3. Cooperative Education in the European Union

Co-op offers academic credit for structured job experience. Its pedagogy is a combination of classroom-based education and practical work experience. Students are usually selected and hired by partner companies to enter the programs. Therefore, students will learn modern and practical knowledge and skills with monthly salary and insurance benefits. The students have very high employability. Usually, they will get jobs immediately after graduation (viwil, 2022).

Three co-op models in the EU are systematic training, structured work experience, and institutional partnerships (Devins, 2013; Bleakney, 2019). Systematic training is offered at workplaces and includes apprenticeship and work placement. The structured work experience allows students to learn within the postsecondary education setting and includes field experience, comprehensive case studies, internships, and professional practice. The institutional partnership is service learning, which includes various educational activities to achieve industry and community goals. Companies have supported these models as they

believe that participants' generic and transferable skills will benefit society and increase flexibility in the EU labor market (Devins, 2013; Bleakney, 2019).

In practice, schools and partner companies will take participants through the three training phases. First, they acquire basic-level generic and transferable skills for higher employability. Second, they develop firm-specific skills and technical theories. Third, they continue learning to advance generic and transferable skills and seek advanced professional degrees (Devins, 2013; Cwihe, 2017; Bleakney, 2019; Maier et al., 2019).

There are three ways to consider corporate, competitive, and participants' needs in training programs. First, educational institutions and companies will jointly develop, maintain, and improve co-op programs. These include co-investment and employee participation, joint development and update skills, multidisciplinary curricula, and "industrial PhDs." Second, they will organize "the innovation union" to develop new curricula and courses to narrow skill gaps in inter-disciplinary innovation and business-specific innovation. Third, they will host special events called "Youth on the move" to find young participants' needs in the programs for better learning and employability (Devins, 2013; Cwihe, 2017; Bleakney, 2019; Maier et al., 2019).

4. Cooperative Education in Germany

In Germany, vocational academies and universities of applied science offer approximately 900 relatively broad arrays of dual study courses. These courses consist of several weeks of theoretical studies and practical training. Students can be either full-time or part-time students. Full-time students will learn practical skills through full-time work at sponsoring companies and theoretical knowledge through full-time study at universities. They can also choose internship options instead of full-time working experience. Part-time students will work part-time at sponsoring companies and complete their studies through full-time practical periods at the end of the study program (Nicolaides, 2015; Reinhard & Pogrezeb, 2016).

Baden-Wuerttemberg Cooperative State University (Duale Hochschule Baden-Württemberg or DHBW) has tried to improve curricula and training programs to satisfy the Europe 2020 strategy. With its core value, "The learning will be practical, useful, and experiential," DHBW developed equal partnerships with companies to develop and maintain curricula that match skills and knowledge in the current labor market (Reinhard et al., 2016; Gerloff & Reinhard, 2019; Maier et al., 2019).

DHBW's programs have satisfied companies' needs in unique ways. For example, DHBW requires all students to meet admission requirements and partner companies' recruitment criteria to enroll in programs. Satisfying both sides' criteria will make employers more confident about students' potential and learning in the programs. Almost 90% of the students have received permanent employment contracts upon graduation. Also, DHBW created executive master programs to improve employees' generic and transferable skills continuously (Reinhard et al., 2016; Maier et al., 2019).

At DHBW, with over 33,000 students and 9,000 partner organizations, all programs will improve students' employability and innovation skills by offering practical and useful skills

and experience in WIL environments at the School of Engineering, Business School, and School of Social Work Studies. Students will learn theoretical studies at university campuses while learning practical skills and knowledge at partner companies or social institutions (Gerloff & Reinhard, 2019). Therefore, they can acquire cutting-edge skills, advanced knowledge, innovative mindset, generic skills, and transferable skills from full-time professors with outstanding practical research backgrounds, business professionals, and industry specialists (Reinhard et al., 2016; Maier et al., 2019).

The University of Cooperative Education in Germany (UCE) has over 19,000 students. At UCE, students will enjoy a combination of semesters of academic study at the campuses and on-site practical training programs such as on-the-job training (OJT) and WIL at more than 8,000 partner companies (Reinhard, 2006). The partner companies will pay for the education of the students they hire. Also, the companies will be responsible for continuously improving the WIL curriculum.

A student must be employed by one of the partner companies to join UCE. Then, a student will sign a contract with standardized classes. Once a student joins UCE, the student will go through two phases of education. The first phase is basic education and training in business administration, engineering, or social work. Once the student completes the phase, the student will earn a first-degree diploma.

Then, the student moves to the second phase to earn a bachelor's degree. The student will learn specialized knowledge and skills in banking, business information systems, electrical engineering, digital media, fair and conference management, insurance, real estate management, social management, or tourism through various learning modes of WIL (Reinhard, 2006).

UCE promises students to offer a supportive personal experience for students, small classes, a short study duration, and practical approaches to education. Students can achieve the necessary qualifications for successful careers in chosen fields with the promises. More than 80% of graduates are employed immediately upon graduation. They tend to enjoy faster career advancement, higher positions, and better compensation than students with traditional education.

5. Cooperative Education in the United Kingdom

The UK government has overhauled its co-op programs since 2015 to deal with shortages of science, technology, engineering, and math (STEM) skills and generic skills such as resilience, innovative mindset, creative thinking, problem-solving, and career planning (Erasmus, 2017). Partner companies actively participate in curriculum development and program operations in the UK. Especially companies from the health, engineering, business, and management sectors have been major players (Lester et al., 2016).

Co-ops in the UK have two types: undergraduate-level education and post-graduate-level education. Students will learn special business and technical skills required in the workplace at the undergraduate level. Partner companies will collaborate with educational institutions to develop and operate programs. The foundation degree programs generally use a mixture of

in-class, internet, and distance learning modes (Jackson, 2006). At the post-graduate level of education, students will equally learn the theory they can apply at the workplace and the practical training they will learn on-site. This is a completely integrated training curriculum in which partner companies are actively involved in training (Jackson, 2006).

The London Design and Engineering University Technical College (UTC) has improved students' STEM skills, digital literacy, and creative problem-solving skills through practical and innovative projects with partner companies such as Fujitsu, Google, and Thomas Water. Students and partner companies work directly to develop practical and relevant projects to solve various companies' issues. They can interact directly with industry leaders and specialists to assess the relevancy of the projects. They can also discuss the projects in more detail with faculty members and industrial professionals in regular UTC classes. At the end of the school term, they will prove their learning performance at special exhibitions (Erasmus, 2017; Smith et al., 2018; Carey, 2019).

The University of the West of England (UWE Bristol) has graduate programs to let students acquire work-ready skills (Jackson, 2006; UWE, 2022). UWE Bristol designed the programs for students with ambitions, inclusive mindsets, innovative and entrepreneurial mindsets, and collaborative mindsets for their career plans. UWE Bristol will offer all students practice-oriented learning experiences. The experiences include work-based placements, team-based student consultancy projects, research with actual tasks set by industry experts, professional simulations or role-plays, networking opportunities with professionals, and collaborative working (UWE, 2022). The work-based placements have four types: traditional on-site placements, remote placements, placements in student-created organizations, and placements in virtual organizations (Jackson, 2006; UWE, 2022).

6. Cooperative Education in Italy

In 2015, the Italian government passed a new law to create La Buona Scuola (The Good Schools), where students can advance practical skills and employability. According to the law, La Buona Scuola will systematically find students' requests for learning to improve training programs continuously. Considering the needs of students and businesses in training programs will produce well-rounded students with theoretical, practical, self-regulative, and sociocultural knowledge. Such well-rounded students will acquire superior critical thinking, language, problem-solving, and innovation skills (Erasmus, 2017).

In 2016, Buonarroti Technical and Technological Institute (Instituto Tecnico Tecnologico Buonarroti or ITTB) started a new program with 20 students. The students worked on practical and innovative projects with a hosting company to improve their work-in-team ability, problem-solving competence, creativity, analytical skills, and transferrable skills and knowledge. The program has six phases: (1) acquiring essential knowledge and skills in the classroom, (2) information collection and analysis with business professionals at the company to develop project proposals, (3) conducting feasibility studies of the proposals in the classroom, (4) reviewing the proposals and feasibility assessment with company representatives to ensure high quality of the proposals, (5) development of the final proposal, and (6) working and completing the proposal (Erasmus, 2017).

7. Cooperative Education in Finland

In 2018, Finland passed new legislation on vocational education and training (VET) to ensure the continuous upgrading of STEM skills in the digitization society. The legislation introduces a training agreement model (TAM) alongside regular apprenticeship training. TAM is a more flexible form of practical training because students do not need employment contracts to participate. TAM is especially beneficial for students who have only basic knowledge of the profession and need extensive guidance and counseling (Erasmus, 2017).

VET's two major training categories are TAM and apprenticeship (MECF. 2019; Karttunenn & Seppänen, 2021). In the TAM program, students do not need to be employed. They will develop personal competence development plans (PCDP) to let teachers identify and acknowledge prior knowledge, skills, and competency. Then, they will develop learning plans with teachers based on PCDP. Business professionals and technical specialists will teach them advanced and highly practical skills and knowledge. They will learn through working life, educational institutions, virtual environments, summer apprenticeships, and summer internships (Karttunenn & Seppänen, 2021).

In the apprenticeship program, students must have fixed-term employment contracts with partner companies to work 25 hours per week. Most partners are in business administration, law, engineering and technology, service, and health and wellbeing (MECF, 2019). 80% of their learning will be through on-the-job training (OJT), while 20% will be through theoretical instructions. There will be liaisons connecting OJT and theoretical instructions for students to let them integrate their learning. Like TAM, they must develop PCDP to create learning plans with teachers (MECF, 2019; Karttunenn & Seppänen, 2021).

8. Comparative Studies of Co-ops in Germany, the UK, Italy, and Finland

Co-ops in Germany, the UK, Italy, and Finland have unique characteristics. This section will compare these co-ops in five critical elements of the EU co-op model in the Europe 2020 strategy: types, goals, admission requirements, corporate partnership, and pedagogy.

German, UK, and Finnish co-ops follow the EU co-op models, while the Italian model partially follows the models. Systematic training has been used for full-time dual study in Germany (FTDS-I), post-graduate-level co-ops in the UK, and Finnish apprenticeship training. Structured work experience has been used for German full-time dual study (FTDS-II), undergraduate-level co-ops in the UK, and Finnish TAM. The institutional partnership has been used for part-time dual study in Germany (PTDS) and post-graduate-level co-ops in the UK. Systematic training is applied when students learn practical, specific, ready-to-use skills and knowledge. When they develop competencies on prior skills and knowledge, structured work experience will be used. The institutional partners will be used when they develop competencies to apply in many businesses.

German co-ops focus on offering education and training to let students acquire practical skills and knowledge. UK undergraduate-level co-ops and Finnish apprenticeship training focus on allowing students to learn special business and technical skills required in the workplace. UK post-graduate level co-ops focus on letting students acquire skills and knowledge

(competencies) to apply in various workplaces. Also, the co-ops focus on developing appropriate mindsets of students as employees. For example, through training, students are encouraged to establish ambitions, an inclusive attitude, an innovative and entrepreneurial mindset, and a collaborative mindset. Finnish TAM and Italian co-ops focus on students' competency development rather than acquiring specialized skills and knowledge. For example, TAM integrates prior learning competencies with acquired skills and knowledge. Italian co-ops try to develop competencies in teamwork, problem-solving, creativity, and analytical skills, which are transferable from workplace to workplace.

Figure 1. Training goals

Only German co-ops and Finnish apprenticeship training programs require students to be employed by their partner companies as an admission requirement. Students must satisfy the admission requirements and partner companies' recruitment criteria to enroll in German co-ops. To enroll in Finnish apprenticeship training, students must have fixed-term contracts which require students to work twenty-five hours per week.

Co-ops in the four countries have corporate partnerships in curriculum development, instruction, student support, and program operations. However, there are different levels of involvement of partner companies. For example, German co-ops require equal partnerships with sponsor companies to develop and maintain curricula. UK and Italian co-ops have more instructional involvement from their partners. Finnish co-ops invite business professionals and technical specialists from their partners to teach their students. Also, Finnish apprenticeship programs maintain partner company liaisons who will connect OJT and classroom training.

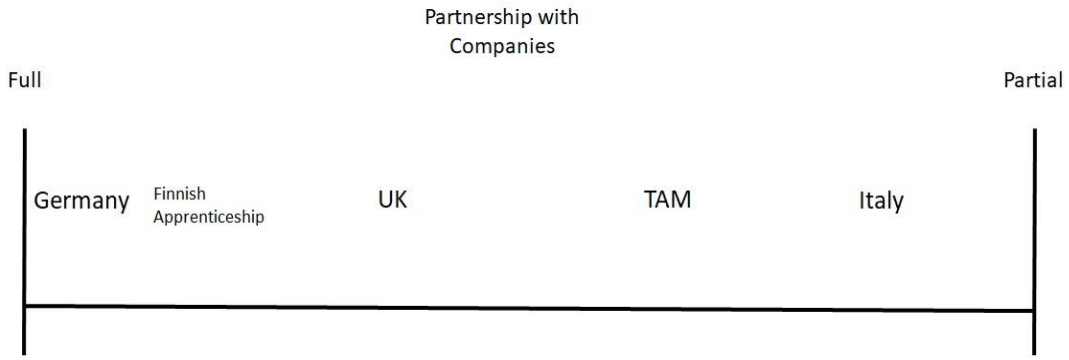

Figure 2. Partnership with companies

We can see a clear relationship between learning goals and the involvement of partner companies in co-ops in the four countries. When co-ops want to let students learn ready-to-use skills and knowledge, the direct involvement of partner companies tends to be higher. For example, German co-ops have a powerful and equal partnership with supporting companies for admissions, curriculum development, instructions, and placement. When co-ops want to strengthen students' competencies that can be applied in various businesses, direct involvement tends to be lower. For example, Italian co-ops have only corporate participation in project development and assessment.

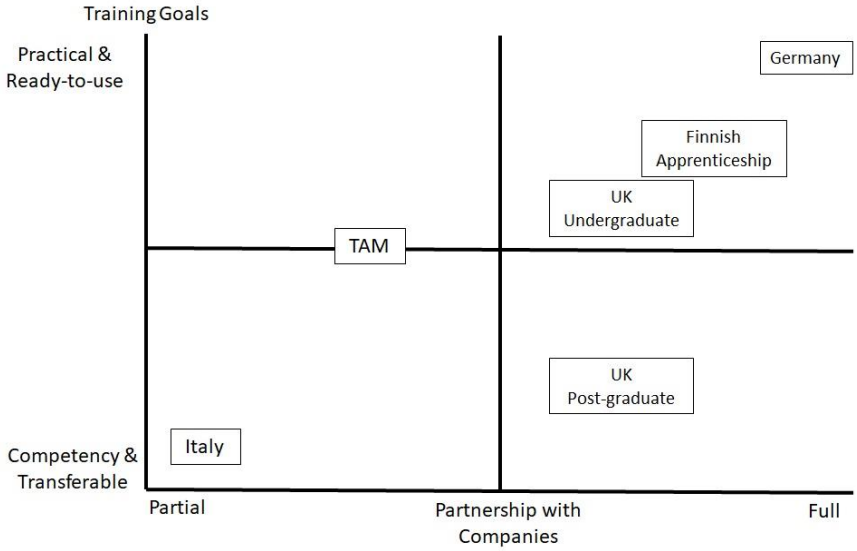

Figure 3. Relationship between training goals and partnership with companies

We can see pedagogical differences in the four countries. German co-ops and Finnish apprenticeship training programs use on-the-job training (OJT) to train practical and specialized skills and knowledge, while these use classroom training for theoretical and basic learning. UK undergraduate co-ops and Finnish TAM use a mixture of in-class, online, and distance learning with the possibility of summer apprenticeship and internship. UK's

post-graduate co-ops use project-based training and work-based placement in various locations, including student-developed and virtual organizations. Italian co-ops use project-based training.

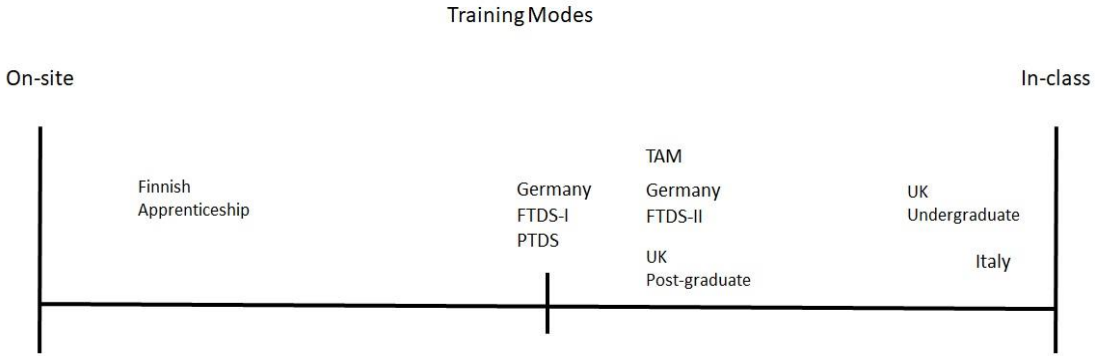

Figure 4. Training modes

We can see that most co-ops in the four countries use a balanced mixture of on-site and in-class instructions. Only Finnish apprenticeship training majorly uses on-site training. Italian co-ops majorly use in-class training to develop the competencies of students.

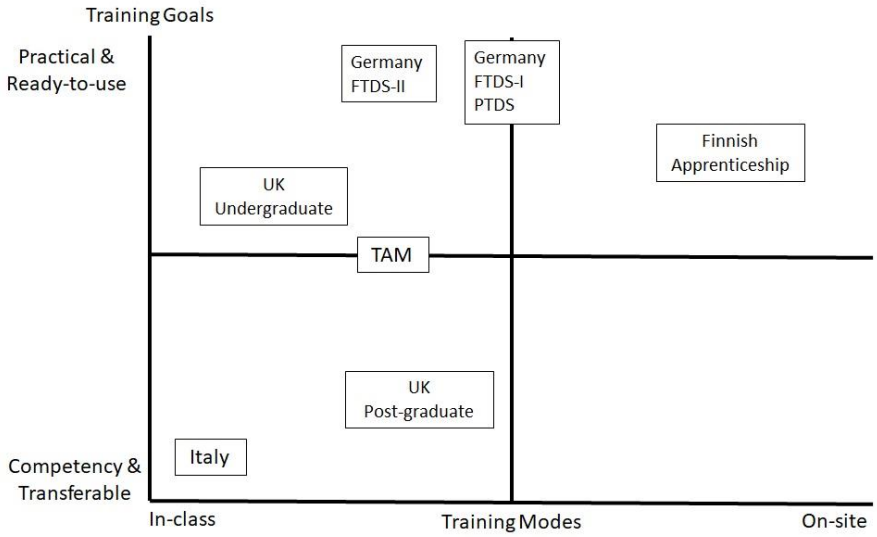

Figure 5. Relationship between training goals and training modes

9. Summary

We have studied so-ops in four European countries. Our comparative studies show differences in the co-ops. German, UK, and Finnish co-ops follow the EU co-op models, while the Italian model partially follows the models. German co-ops focus on practical skills

and knowledge, while UK undergraduate-level co-ops and Finnish apprenticeship training focus on special business and technical skills required in the workplace. UK post-graduate level co-ops focus on transferable competencies. Finnish TAM and Italian co-ops focus on students' competency development rather than acquiring specialized skills and knowledge.

We saw a clear relationship between learning goals and the involvement of partner companies. When co-ops want to let students learn ready-to-use skills and knowledge, the direct involvement of partner companies tends to be higher. Direct involvement is lower when co-ops want to strengthen students' competencies that can be applied in various businesses.

We saw pedagogical differences in the four countries' co-ops. German co-ops and Finnish apprenticeship training programs use balanced on-the-job training (OJT) and classroom learning. UK undergraduate co-ops and Finnish TAM use a mixture of in-class, online, and distance learning with the possibility of summer apprenticeship and internship. UK's post-graduate co-ops use project-based training and work-based placement in various locations, including student-developed and virtual organizations. Italian co-ops use project-based training.

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Appendix A

Summary of Co-op in Four European Countries

		Germany		UK		Italy	Finland	
Name	Dual Study I (Full time)	Dual Study II (Full time)	Dual Study (Part time)	Undergraduate level Co-op.	Post-graduate level Co-op.	Practical and innovative projects with partner companies.	TAM (Training Agreement Model)	Apprenticeship Training
Type	Systematic Training.	Structured Work Experience.	Institutional Partnership.	Structured Work Experience.	Systematic Training. Institutional Partnership.	Institutional Partnership	Structured Work Experience.	Systematic Training.
Goals	(1) To offer basic education and training. (2) To let students acquire specialized skills and knowledge. Continue to advanced degree programs (Executive master programs)			To let students learn special business & technical knowledge and skills required in the workplace. Continue to post-graduate level training.	(1) To let students learn applicable theories. (2) To offer students on-site training to let them acquire work-ready skills and knowledge. Also, focusing on developing students' ambitions, inclusive mindset, innovative and entrepreneurial mindset, and collaborative mindset.	To improve students' work-in-tam ability, problem-solving competence, creativity, analytical skills, and transferable skills and knowledge.	To let students acquire advanced and highly practical skills and knowledge. Students develop personal competence development plan (PCDP) to show their prior skills and knowledge and find out competencies (skills and knowledge) to be trained.	
Admission Requirement	Students must meet admission requirements and partner companies' recruitment criteria.						Students do not need employment contracts with supporting companies.	Students must have fixed-term employment contracts with partner companies (25hrs/week).
Corporate Partnership	Equal partnership with sponsor companies to develop and maintain curricula.			Involvement of partner companies.	Involvement of partner companies.	Companies support project development, finalization, and evaluation	Business professionals and technical specialists are actively participating in teaching.	Partner company liaisons will connect OJT and classroom training.
Pedagogy	Full time training at sponsoring companies. Full time theoretical learning at universities. 2 phases of education: (1) basic education and training and (2) specialized skills and knowledge.	Training through Internship. Full time theoretical learning at universities. 2 phases of education: (1) basic education and training and (2) specialized skills and knowledge.	Part time at sponsoring companies. Full time practical periods at the end of the program. 2 phases of education: (1) basic education and training and (2) specialized skills and knowledge.	A mixture of in-class, online, and distance learning.	Work-based placements through on-site, remote, in student-creatd organizations, or in virtual organizations [Systematic Training]. Practical and relevant projects to solve various companies' issues [Institutional Partnership].	Six learning phases: Essential skills and knowledge acquisition in classroom, development of projects with professionals at companies, Feasibility studies of the projects in classroom, Finalization process of the proposals with company representatives, Finalized project proposals, and completions of the projects.	Students learn through a mixture of training in classroom, in working life, virtual class, summer apprenticeship, and summer internship.	Students will be trained through OJT (80%) at partner companies and in classroom (20%).