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Higher Level Dual Education at John Von Neumann University: Model Studies for the Corporate Sector at Central Automotive Region of Hungary

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ABSTRACT

Purpose: To make an attempt to explain the model of Higher-Level Dual Education at John Von Neumann University.

Design/methodology/approach: The present study offers a descriptive research design by highlighting a Dual Studies program John Von Neumann University Model

Findings: In this model studies, our most important long-term goal is to become an attractive intellectual center, to provide marketable qualifications, above all for those living in the region, and to equip our students with knowledge and skills that help them in career-planning and entering in the labor market

Research Limitations/Implications: The current study is not based on empirical testing

Originality/Value: This research is supported by EFOP-3.6.1-16-2016-00006. The development and enhancement of the research potential at John von Neumann University" project. The Project is supported by the Hungarian Government and co-financed by the European Social Fund.

Introduction

The intellectual capital of the John von Neumann University is present at both municipal and regional level. Active partnership with prominent companies (such as Mercedes-Benz, Knorr-Bremse, Hilti, Phoenix Mechano, SMR etc.) is keeping us, as educational and research institution, connected to the economic activities of our region, while allows our students to benefit from getting acquainted with the most progressive technological solutions.

Our dual studies program targets labor market requirements; first, by reinforcing a dual (practice oriented), university-level system that relies equally on theory and practice; and second, by introducing the pertaining curriculum and methodology. This allows us to create highly-qualified specialists, and to provide a supply of sustainable workforce to various industries. With the automotive industry entering Kecskemét and its region, Hungarian technical colleges and universities took over the long-term duty of supplying the newly emerging demand for highly-skilled specialists. Traditional engineering studies provide neither the up-to-date know-how of the industry, nor the rudimentary experience needed to maneuver flexibility between industrial-corporate structures. Therefore it became unavoidable to harmonize academic and industrial spheres under the auspices of dual engineering studies, and to revisit the educational program. This initiative is also responding to the accentuated governmental endeavor that, attaining to the demands of our economy, society, and higher education system, aims to enhance the number of graduates of technical colleges. In September, 2012, the John von Neumann University launched its dual automotive engineering program, partnering with Mercedes Benz Manufacturing Hungary Ltd. and Knorr-Bremse Brake Systems Ltd. The dual structure was extended to other B.Sc. programs, such as mechanical engineering and technical management, with the involvement of additional companies.

Hungary's geopolitical location, its strong scientific education, and its history of engineering have been attracting various industrial sectors in the past years, most prominently the automotive industry (and the related electronic and automotive assembly manufacturing). The requirements for maintaining competitiveness include government initiatives, beneficial conditions for investment, and high-quality, practice-oriented higher-level dual education. The dual studies program requires tight, result-oriented cooperation from both parties

(the corporate and the institutional participant). As the market demands continuous improvement of competitiveness, professional contribution to the partnership is in the corporate partner's natural interest. On the other hand, John von Neumann University have already started to compete against each other for corporate partners and students - this brings in a demand for development, and such organizational and process-based changes that affect the whole educational timeline from student registration to alumni tracking.

Defining Dual Studies and John Von Neumann University Model

Researchers stated that it is "a form of practice-oriented scientific Bachelor's or Master's studies (e.g. in Technology, Information Studies, Agricultural Studies, Natural Sciences, Business Studies), with a curriculum involving an apprenticeship-training that takes place at a classified organization, within the framework provided by the Council for Dual Studies. The full-time curriculum should be defined by educational requirements, as well as by specific rules regarding classes, methodology, and evaluation" (EU, 2016).

The dual studies program takes place at bachelor's level, and includes an apprenticeship at a professionally classified company. The curriculum and the structure of the program, along with the experience gained during the intensive apprenticeship, enhance students' scientific and business competence. The formal education provided by the participating company is pre-determined by and harmonized with the curriculum of the student's major. This structure guarantees that students can enter the labor market directly after graduation, without being pressured to invest in additional trainings (Marina Ranga et al., 2015). Overall, our dual studies program provides an efficient, high-quality, and quick solution for resolving labor shortage.

Dual studies model created by the John von Neumann University can be summarized as:

1. The dual studies system is based on the cooperation between the University and its corporate partners, and aims to equip young engineers with both theoretical and practical knowledge.
2. The duration and the areas of education are divided between the University and its corporate partner:
 - a. the University provides mostly (but not exclusively) theoretical education,

- while the corporate partner provides practice-based education
- b. Slightly more than half of the program's duration is spent at the University, while the remaining time is spent at the corporate partner.
3. Apart from the regular process of University-level admittance, participating students are selected by corporate partners. Students have to submit their applications in advance, and are selected by the corporate partners' own methods (tests, interviews, group tasks, language competencies, etc.).
 4. The corporate partner makes a contract with the selected students, which is valid for the entire duration of their studies (7 semesters at Bachelor's level), in which the student guarantees to fulfill the academic progress required by the curriculum, while the corporate partner agrees to provide financial compensation in exchange.
 5. After entering their course of studies, students cannot transfer from a traditional to a dual program, as there is only one point of entry.
 6. The contract entails no obligations on behalf of the parties after the program is completed.
 7. All participants are bound by contractual relationship:
 - a). a contractual relationship (regulated at state-level) between the student and the University, based on student status
 - b). a contractual relationship based on strategic partnership between the corporate partner and the University (the University outsources certain parts of the accreditation process to the corporate partner; corporate partners are "accredited" by the University; the University makes the course material available to them; the corporate partner provides continuous feedback to the University)
 - c). a contract of employment between the student and the corporate partner guarantees the employee status of the student (which is also financially beneficial to the partner, as expenditures can be deducted): the student gets salary, the student guarantees to fulfill the academic progress required by the curriculum (EC, 2016).
 8. The time spent at the University is nearly equal to the time spent at the partner

(during the entire course of studies). "Enrollment marketing: the University coordinates the recruitment process jointly with the corporate partner, the University and the corporate partner liaise with each other, the program is supported by the organizational units for dual studies, both at institutional and corporate level." (Hungary, 2016)

Corporations can only enter the dual partnership if they declare an objective for educational cooperation, if they actively want to join the dual studies process, and if they are found eligible during pre-selection.

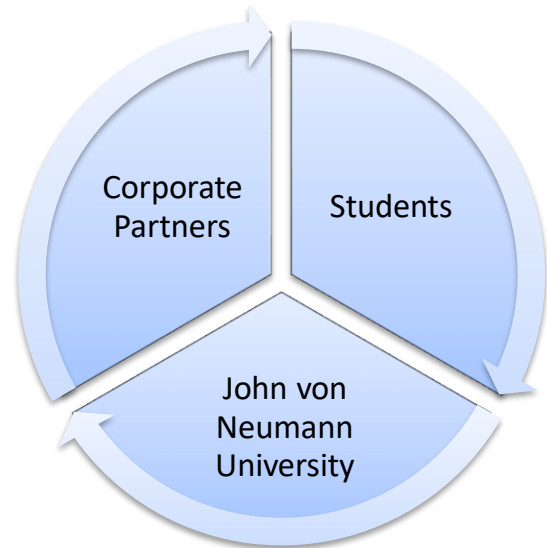


Fig. 1. Participants of the dual studies program

Corporate internship is made of the following four elements:

1. specific practical training at the company
2. the student's involvement with specific business/industry-related tasks
3. working on a project in order to acquire the skills needed for independent work
4. teaching soft skills and work culture

Dual Objectives of the John Von Neumann University

The John von Neumann University aims to develop the already successful and functioning Kecskemét dual model further in the Kecskemét Central Automotive Region, thereby creating a wide range of complex educational options, which serves as a pillar for the region's labor market, and also sets example for the nation's other educational and business parties. The John von Neumann University and its corporate partners believe that the sustainable training of competitive, practice-oriented workforce creates valid

regional competitive advantage; this objective demands the integrated development of the technical faculty's majors, as well as the reinforcement of the already well-functioning dual operation, interoperability, and sets of conditions. Further goals are the mitigation of the student dropout ratio, and the horizontal realization of the equal opportunities policy.

By introducing the dual system, the John von Neumann University aims to strengthen its economic role, as the program facilitates adjusting to regional labor market demands, and also provides students with competitive skills. The John von Neumann University and its partners are developing the Kecskemét model further, creating the necessary conditions for sustainable growth (operative, methodological, informational tools, resources, skills).

Hungarian Government Reform in Dual Higher Education

Dual tertiary degree programmes: This form of education complements university or college programmes. Students do 22-24 weeks of practical training a year at a company over the whole study programme. The concerted schedule of theoretical and practical training is decided by the higher education institution (in consultation with the employer); *theory and practice are building on each other*. This is a fixed-term employment contract, where students receive a salary. Their net salary is equal to the minimum wage for the whole duration of their studies.

The *Dual Training Council* (DTC) involving representatives of ministries and chambers concerned was established with the task of developing the personal and infrastructural preconditions necessary for the students' effective and quality practical work at the company. DTC serves as a decision-making body on implementation issues (Ministry of Human Capacity, 2017).

In 2020, 30 different kinds of dual programmes were possible to launch in the fields of engineering, economics, informatics and agriculture. 19 HEIs launched 79 B.Sc. programmes in dual form, involving 231 partner organizations (i.e. employers) and 450 students (Hungarian Government, 2014)

Expectations and Commitments

The industry's expectations:

- The strong theoretical knowledge acquired in academic semesters should be immediately put into practical use at the partner companies.

- The training period should not exceed 3 years (6 semesters) but the amount of work should be equal to the work necessary to obtain a BA/B.Sc. degree (210 credits).
- In addition to the normal curriculum of the given discipline, students should also acquire theoretical knowledge on the abilities and skills to be deepened at the company.
- Students should gain up-to-date knowledge in the given field. The outstanding professionals of the field should take part in the training process.

The industry's commitments:

- Clear, long-term commitment to the dual training system
- Industrial partners support professionally the theoretical part of the training at the university / college
- The selection process of students takes place at the company partner (before graduation, from age 17). Only the students chosen can apply to a dual programme (double filter)
- During the practical semesters the industrial partner ensures excellent conditions for the training
- The company fulfills the requirements of the educational institution and Hungarian Accreditation Committee (company is accredited by the institution and by the Accreditation Committee)

The society's expectations:

- The knowledge of students participating in the study programmes shall meet the requirements of the companies while the students are employed, so the social return to education is significantly faster (OECD, 2016).
- Dual education should respond significantly faster to labour market requirements than traditional studies
- Dual education is significantly cheaper for the society because of corporate participation
- The institutions should fulfill the demands of companies not participating in the dual system as well

Launching dual study programmes under the *Act on National Higher Education*: The modification of July 2014 of the Act on National Higher Education created an opportunity for introducing the "dual" form of education. The Act provided for the

establishment of a Council for Dual Education, which:

- accredits partner companies
- identifies fields where dual training makes sense and preconditions can be met, and authorizes the start of training

Delegation of the members of the Council for Dual Education:

- two members by the Minister responsible for education
- two members by the Minister responsible for employment policy
- one member by the Minister responsible for agricultural policy
- one member by the Minister responsible for the supervision of state-owned assets
- three members by the Hungarian Rectors' Conference
- two members by the Hungarian Chamber of Commerce and Industry
- one member by the Hungarian Chamber of Agriculture
- one member by the Hungarian Chamber of Engineers

Reasons for establishing dual education
International experiences (primarily from Germany)

- The initiator companies: Daimler-Benz, Bosch (1970)
- Alternative form of education which is attractive to both the students and the companies
- Reducing time spent in higher education (in addition to increasing workload)
- Development of flexible forms of work in accordance to the demands of employers, which can respond to the requirements of the labor market within a short period of time
- Merging the knowledge of the companies and the higher education institutions in order to achieve a more efficient education at a higher level
- Sharing the constantly increasing costs of higher education between the state and the companies

The history of dual (co-operative) education in Baden-Württemberg

- **1974:** The establishment of the "Berufsakademie Baden-Württemberg

(BA)" University

- **1982:** Structuring of the training is complete, the university operates eight institutions
- **1989:** 15 years after its establishment, the institution has more than 10,000 students and more than 4000 partner companies
- **2006:** The "Berufsakademie" form of education is transformed into the Bologna system
- **2009:** The institution is officially renamed to "Duale Hochschule Baden-Württemberg (DHBW)"; the number of students exceeds 25,000, and the number of accredited corporate partners exceeds 10,000 (Döry, 2014).

Conclusion:

To supply the job market with fresh graduates who can enter the workforce after graduation, without being pressured to invest in additional trainings. Overall, our program provides an efficient, high-quality, and quick solution for resolving labor shortage. The entire Bachelor's program consists of 48 weeks/year, which are built on the alternation of institutional and corporate phases. The duration and the areas of education are divided between the University and its corporate partner: at least 40% of the coursework needs to take place at the corporate partner – this applies to all 7 academic terms, with the condition that each academic phase needs to be followed by a corporate phase. 40% of the coursework needs to take place at the corporate partner – this applies to all 7 academic terms, with the condition that each academic phase needs to be followed by a corporate phase.

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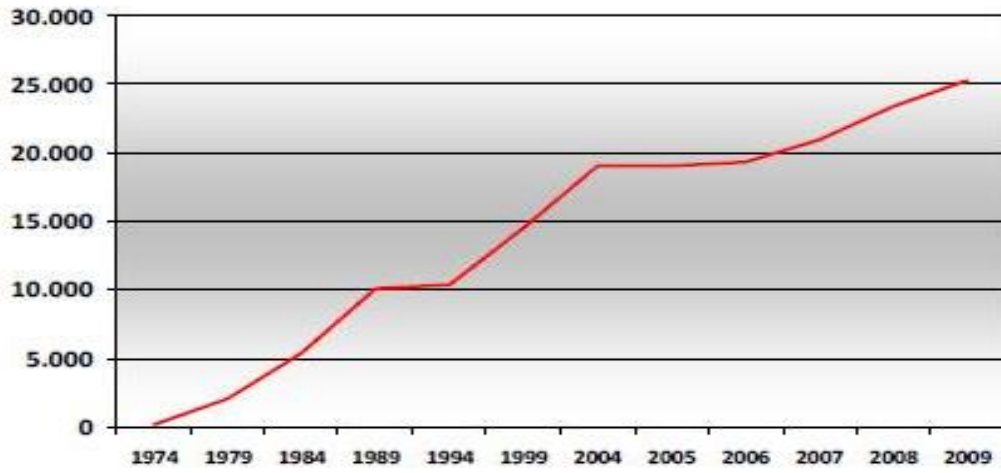


Fig 2: Number of students

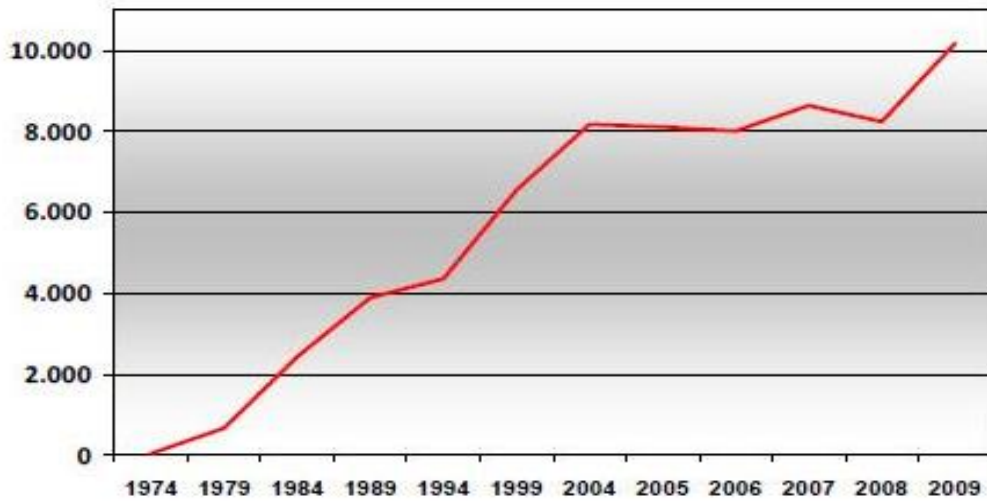


Fig 3: The number of corporate

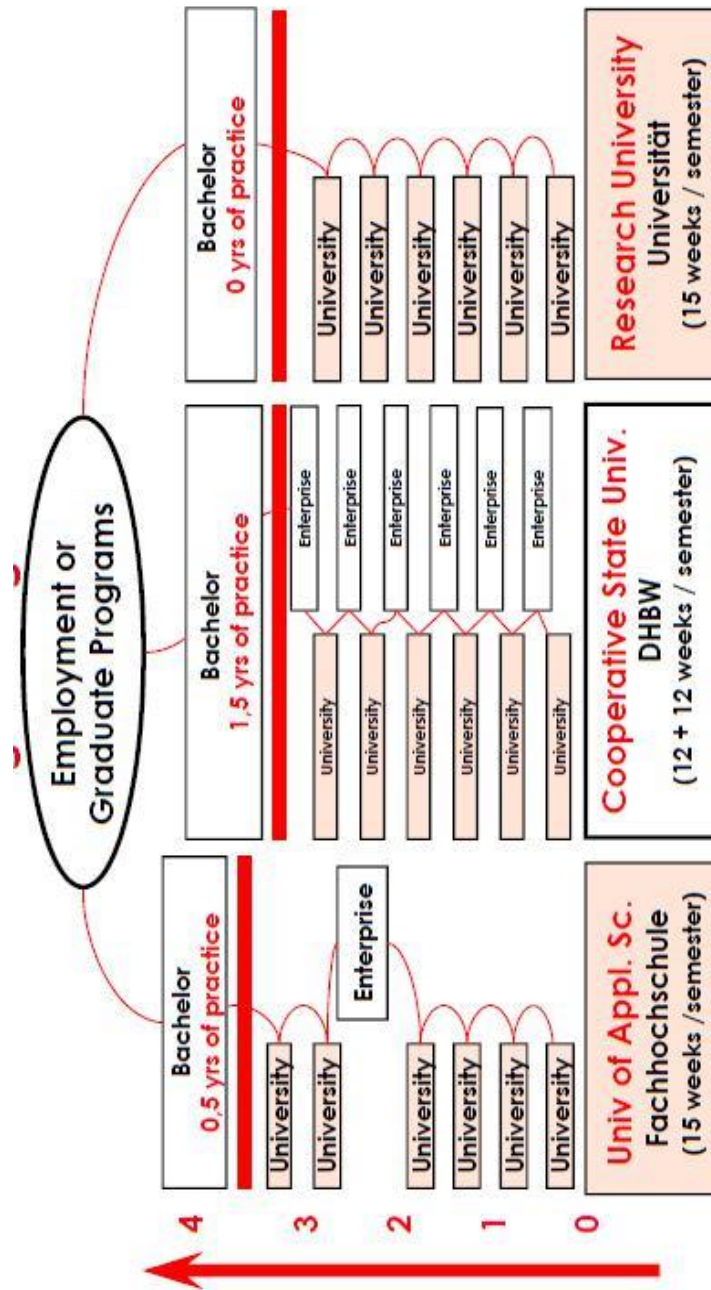


Fig 4 : The structure and amount of education / work (Oktatas, 2017, Start-up.hu, 2017)

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