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Cooperation between Business and Academia in Germany - A Critical Analysis of New Trends in Designing Integrated Study Programs Based on E-learning

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Abstract The university system in Germany is currently undergoing profound changes. In order to strengthen their competitive position, private universities of applied sciences are increasingly offering integrated study programs which combine profound academic education with practical on-the-job training in a company. Private businesses highly appreciate these dual-systems of studies as they meet their demand for well-qualified, experienced junior staff. Some companies strive to build up close relationships with academic institutions in order to influence and shape the design of study programs at least to a certain degree. In the course of this development, opportunities are discussed to move the places where students are doing their studies away from the university campus to the students' workplace in the company. Study programs following this idea can only be implemented by making use of a broad range of e-learning tools being available. E-learning makes it possible to transfer academic education into a virtual context, e.g. by providing access to virtual seminars via Live-E-learning at the workplace. E-learning lectures are integrated into the normal working day of the student – reducing the time a student is absent from the workplace. The regular and systematic change between periods of academic education at the university and periods of practical work in the company - which has been typical for study programs following the dual-system - is giving way to a completely new form of business-integrating university studies. This article is going to discuss different issues of this development. As an example, a study program which has been designed in close cooperation between a large German corporation in the telecommunication industry and a German university of applied sciences will be described. Based on this example, advantages and disadvantages for all parties involved will be analyzed.

Keywords Electronic Learning, E-learning, Live Electronic Learning, Integrated Study Programs, Dual System Study Programs, University Degree Programs, Educational System, Cooperative Education

1. Introduction

Economic challenges in an increasingly globalized world, demographic developments, and major changes in the working environment have led to a growing and also changing demand for qualified employees in Germany [1]. Work content and working processes have become more and more complex requiring workers with high-level education and qualification [2]. At the same time, the number of young people striving for an education at university level has increased [3].

The academic system in Germany is forced to respond to these developments. Academic and educational institutions are expected not only to impart theoretical knowledge but also to foster the development of applicable competences. Companies need skilled personnel who is able to apply theoretical knowledge and cognitive abilities to complex tasks and processes at the workplace [4]. For universities, employability of their students has become an important goal especially in the fields of business administration and management sciences.

About 40 years ago, an academic system was established in Germany that combines theoretical education with job-related qualification – the so called dual-system of academic studies [5]. Traditionally, the idea of combining theory and practice has shaped the German vocational training system. This idea has now been transferred to an academic environment [6]. Most of these dual-system study programs are offered by public and private universities of applied sciences in Germany [7]. Universities of cooperative education[1] are strongly present in this sector as well. Some traditional universities have started to change their programs in this direction [8].

Dual-system study programs currently account for 6 % of all university degree programs (3.3 % of all students) [9,10]. That means they still represent a niche market. However, due

[1] Universities of cooperative education (UCE) are state-approved educational institutions in the tertiary education sector close to universities. They often have the form of an economic or administration academy.

to their role at the interface between academia and business and due to a growing number of requests from students and companies, these kinds of study programs have gained considerable importance within science politics in Germany [11].

2. Basic Concept of Dual-system Study Programs

For a long time, the meaning of dual-system study programs was not precisely defined. Following a recommendation of the science council in Germany, these study programs can be seen as a co-operation between a (potential) student, a company, and a university or university of cooperative education aiming at collectively providing an academic education [12,13]. As it was developed on the basis of the German dual-system in vocational training, it combines two different locations to learn and study. While theoretical knowledge and expertise is imparted at the university (of applied sciences) or the university of cooperative education, the practical part of the education takes place in a company. In some cases, depending on the organizational form of the study program, a vocational school will also be involved [14]. The cooperation between university and company is also regulated within a cooperation treaty.

At the moment there are about 64,000 students studying in more than 1,000 dual-system study programs in Germany (data from April 2013). Companies in Germany are offering almost 40,000 of those study programs in cooperation with universities of applied sciences and universities of cooperative education [15]. There is a growing trend: Since 2004 the number of dual-system study programs has increased by more than 50 % and the number of participants has been augmented by more than 50 %. Also the number of participating companies is growing continuously [16].

Dual-system study programs can be organized in different forms[2] [17-19]. The first model combines an academic study program with basic vocational training. According to this model, the student first completes an apprenticeship in a company leading to a certificate of the Chamber of Industry and Commerce (IHK) or the Chamber of Crafts (HWK). In a second step, the student continues the education at a university of applied sciences and receives an additional Bachelor degree. A second model directly combines theoretical education at a university of applied sciences with practical periods in a company. The student switches between periods of study at the university of applied sciences and periods of work in the company. A third model is offered to professionals who want to take part in an academic study program in parallel to their work life. The students' professional activity is an integrative part of the study program. Normally, those students already have a training qualification and / or some years of work experience.

Dual-system study programs also vary according to their length of time and the way they are organized over time. Normally those programs extend over a time of six to eight semesters. It is possible and common to organize the change between academic and practical periods within each week at least during the first four semesters. At the end of these programs, the periods of theoretical education will be extended:

[2] There are three different variations of dual-system study programs called the education-integrating model (*ausbildungsintegrierendes Modell*), the practice-integrating model (*praxisintegrierendes Modell*) and the job-integrating model (*berufsintegrierendes Modell*). In a position paper from October 28, 2013, the scientific council recommended excluding another model which is called the job-attendant model (*berufsbegleitendes Modell*) from these forms of dual-system study programs as it does not show a sufficient link between theory and practice.

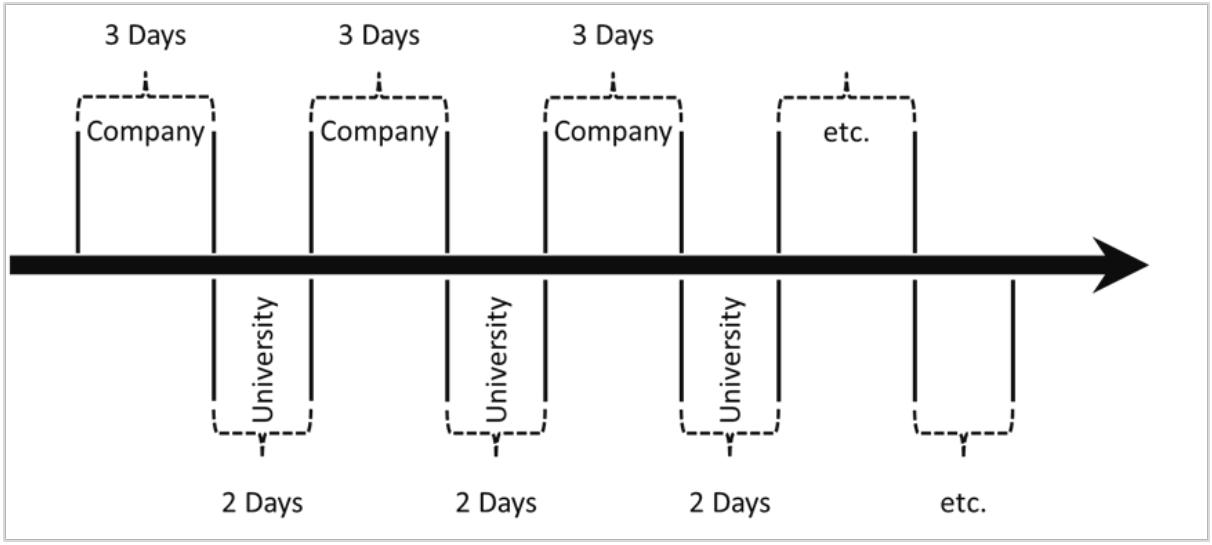

Figure 1. Weekly Model of dual degree programs in Germany

However, it is also possible to organize periods of theoretical education and periods of work in the company in blocs of several weeks. Normally those blocs cover a period of twelve weeks as is shown in the graph below.

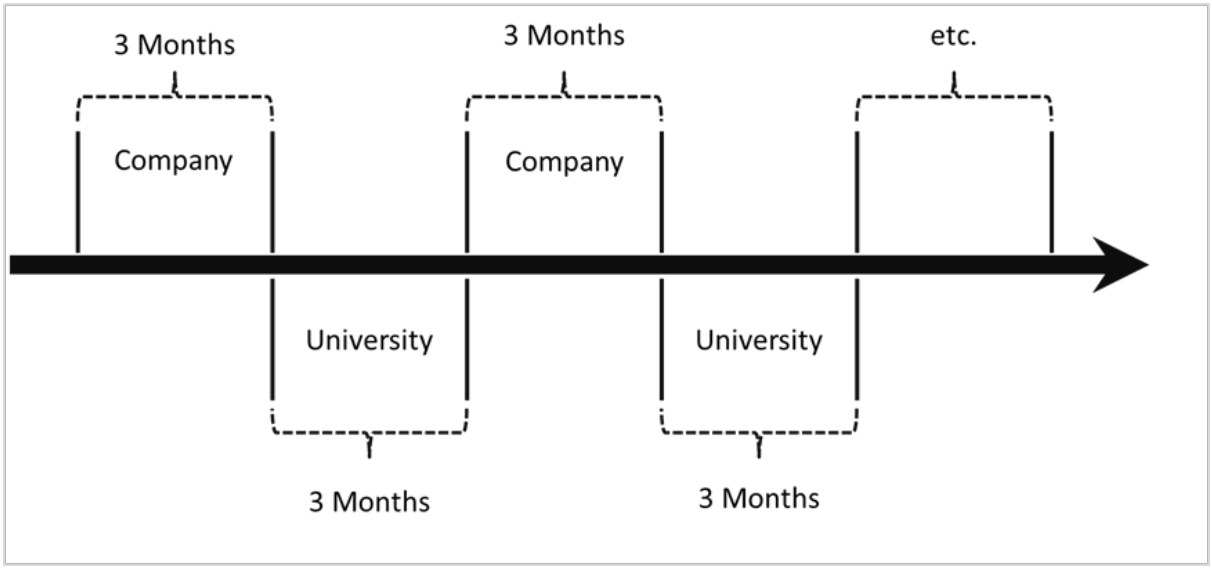

Figure 2. Bloc-Model of dual degree programs in Germany

3. Current Trends

The development of dual universities in Germany has to be seen in the context of international efforts to strengthen post-secondary vocational training and development including higher level qualification in the tertiary sector [20]. Country-specific strategies and activities to provide higher level professional, managerial and technical skills on an academic level are very diverse and difficult to compare [21]. Some countries have already developed a sophisticated educational system that combines workplace-based learning and academic education (e.g. Australia, Switzerland, Sweden) [22]. Other countries have found it more difficult to offer professional training and education in addition (and partly in competition) to traditional and well-known academic qualifications [23].

As described above, dual-system study programs in Germany have evolved in a niche market between traditional vocational training and academic education. Both areas of education stay almost unchanged in their institutional order [24]. While reforms in both separate areas are often restricted by different interest groups, study programs following the idea of a dual system offer a rather wide field for innovation.

As a consequence, general standards regarding the structure and design of those programs are almost missing. Different kinds of relationships between universities and their partner companies lead to a variety of different agreements - finally to a very individualized design of study programs [25].[3] New subjects of study, new directions for

[3] The term “individualized” in this context does not mean that participation

specialization, a stronger involvement of e-learning, and a growing number of dual-system master programs reflect this development.

Currently the following trends can be summarized for Germany:

- Subjects and content of study programs increasingly reflect the specific demand of associated companies.
- Within existing study programs, a number of new fields of specialization are developed that are also oriented towards the demand of cooperation partners.
- On an organizational level, study programs change from a traditional approach to a model that relocates the place for learning from the university campus to the company's shop-floor. This is made possible by the use of a variety of e-learning tools.

4. E-learning

E-learning is a key factor for the development of individualized dual-system study programs. This corresponds to an international trend to use distance learning in the tertiary sector in order to provide a flexible educational system in an increasingly digitalized world [26].

Scientific literature provides a variety of definitions of e-learning. They range from a simple approach of "learning at the screen" [27] to a manifold objective and organizational arrangements of electronic and digital media for learning [28]. Therefore there is a need to define the term in the context of this text. E-learning in the frame of the dual-system study program described here can be understood pragmatically as a bundle of tools a teacher can use to transfer knowledge via electronic media to a learning location where the teacher himself is not present. Distant, that means physically separate learning locations, are at the core of this understanding of e-learning. Technical and electronic learning tools that simply support teaching in the classroom – although they might be modern and innovative - are not included in this definition.

E-learning can be based on two different forms of communication: asynchronous and synchronous communication. Asynchronous e-learning takes place when messages are sent and received at different times [29]. In the case of synchronous e-learning sender and receiver communicate with each other almost at the same time and can directly refer to each other [30]. Again there are a number of definitions for the term synchronous e-learning [31]. In this paper the term live-e-learning will be used for real-time e-learning in a virtual classroom.

5. Study Programs Designed for Companies in the German Telecommunications Industry

The study program that is going to be described here was designed by the University of Applied Sciences (Fachhochschule der Wirtschaft, FHDW) in cooperation with a major German telecommunications company. It leads to a Bachelor of Arts degree in Business Administration with a focus on sales management.

The study program implements the idea of a dual-system approach to academic studies but it includes longer periods for the students to be present at their workplace. The time the students spend on the campus therefore is shorter and academic seminars are partly conducted via live-e-learning at the workplace. In the end, the proportion of theoretical academic education and practical work in the company is as balanced as in other dual-system study programs. This model is shown in the graph below.

In this course of studies, 40 % of academic teaching is done via e-learning. Therefore there is a shift of theoretical teaching from the university campus towards the workplace. The students participate in e-learning lectures twice a week from 2:45 p.m. to 5.00 p.m. and on Saturdays from 08.00 a.m. to 12.00. The time which the students spend on the campus has been reduced from twelve weeks per semester to seven weeks per semester. As two weeks at the end of the semester are used for final exams, there are only five weeks that can be used for classroom teaching on the campus. Fifteen weeks are spent by the students in the company where they regularly take part in e-learning lectures. Two more weeks are planned without any lectures so that they are at free disposal for the students and the company.

This model of dual-system studies implements both of the e-learning formats described above. Technically the learning is supported by a common e-learning platform based on a maXvis [4] server and a classroom-software developed by Saba (Centra 8). Live-e-learning is conducted in group and module-specific virtual classrooms in which professors and students hear, see and experience the same things at the same time – similar to a real classroom lecture. These virtual classrooms can also be used by the students outside their regular lecture time. Therefore they support the direct exchange of knowledge and experiences and facilitate common virtual learning.

in those study programs is limited to students being sent from one individual company.

[4] maXvis is a web-based groupware and process solution which includes modules for administering electronic documents, groupware for supporting communication, cooperation and coordination within virtual teams, a content management system, and an e-learning component to support classroom lectures.

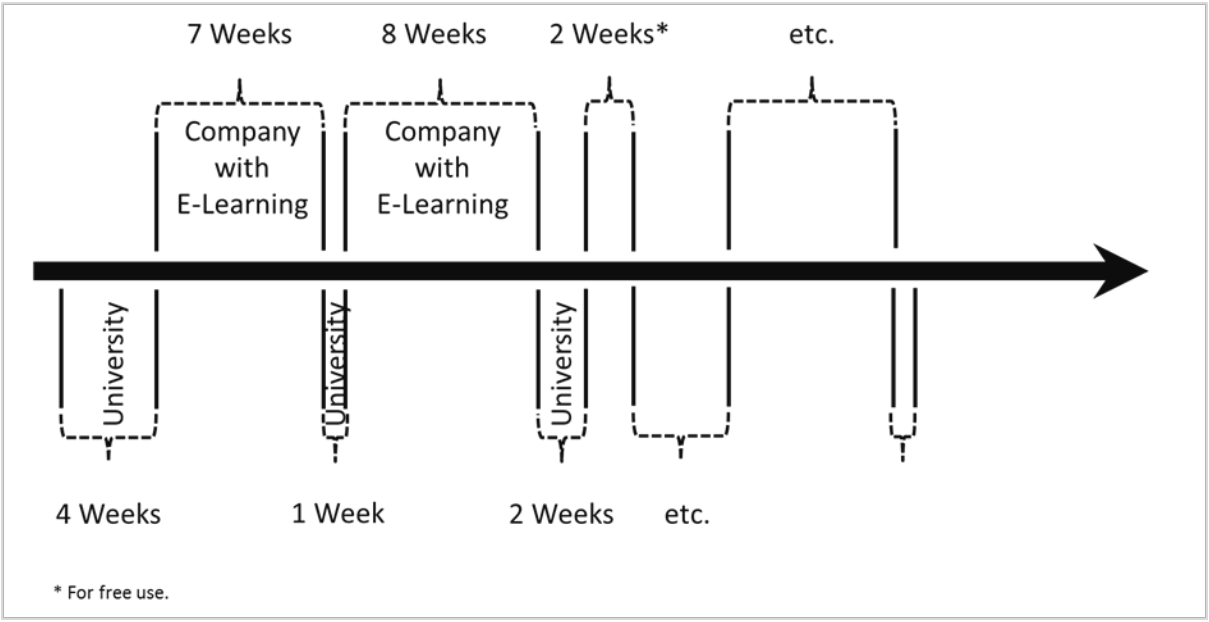

Figure 3. Bloc Model of dual degree programs modified by e-learning

Within these virtual classrooms teachers have access to a range of communications, presentation, and collaboration tools that are put together using a common user interface. They enable the teachers to lead the course and the students to actively participate in the lecture. Via Voice over Internet Protocol (VoIP) or alternatively via telephone conference and Webcam, the participants stay in audio-visual contact all the time. Questions can be asked at any time and answers can be provided directly by the teacher. Livestreaming via Webcam allows presentation to eight participants in HD-quality at the same time and up to four participants can communicate directly (only for VoIP-Connection). All documents that are necessary for the lecture can be provided either in the virtual seminar room or on an additional web-based platform (maXvis). This platform reproduces the structure of the study program for different classes and semesters.

6. Benefits of Dual-system Study Programs Designed in Cooperation with Companies

The benefits for the different parties involved – universities, companies, students and universities – are manifold. In general, these kinds of study programs can only successfully compete with other academic programs at public and private universities (of applied sciences) if they provide added value to the stakeholders. [32].

For companies, additional benefits are, for example [33]:

- Employees can directly be integrated in productive work processes.
- Induction or trainee programs to familiarize employees with the company are dispensable.
- Companies can recruit their employees at the beginning of their education.
- Cooperation between companies and universities of applied sciences fosters knowledge transfer.
- Employability of students is high.

Especially small and medium-sized enterprises (SME) appreciate that students become familiar with the company very early. No additional time is needed for orientating them and integrating them in the company's organizational and cultural environment. Coordinating activities, communicating and cooperating become more effective and efficient.

Moreover, dual-system study programs offer the opportunity to attract and bind talented young people to the company. Training and development activities strongly contribute to a company's reputation as an attractive employer. Again, especially small and medium-sized companies can profit from those study programs as they shape their profile as attractive employers in the labor market. As most students of dual-system study programs continue their career in the company, firms can ensure a skilled workforce on a long-term basis.

Direct access to the academic world enables companies to profit from current scientific insights and lets them make use of it to optimize business structures and processes. Moreover, this strong link smooths the way for further cooperation in the field of applied research, knowledge and technology transfer or expanded training activities.

Students also profit from individualized dual-system study programs. Due to a high amount of e-learning, periods of workplace learning are prolonged and intensified. This enables students get deeply involved in ongoing projects and even take responsibility for project results. Therefore, they often provide significant productive input to the company during their academic studies. In the context of their bachelor thesis, students regularly work on real-time company tasks

and often develop concepts and ideas that are of significant value for the company. At the end of their studies, students already have broad company experiences which make them become attractive within the company and also in the external labor market.

Depending on the form of study program, students receive remuneration which is well above payments offered by the state to students in public universities according to the relevant law (BAFöG). Moreover, they gain job security because many companies ensure further employment after the successful completion of the study program.

Universities also profit from close cooperation with business. Teaching staff becomes aware of current trends in business and is forced to review teaching contents for up-to-datedness. Many lecturers follow a career as manager, lawyer, or engineer and are able to integrate personal experiences into their lectures. Moreover, cooperation with companies enables private universities to calculate with a constant number of students being recruited by the firms. This provides a certain degree of security for planning and a certain income for the university.

7. Challenges of Dual-system Study Programs Designed in Cooperation with Companies

Despite strong arguments that support close cooperation between business and academia in dual-system study programs, there are also a number of challenges to be addressed.

Due to the specific structure of the program, students have to integrate a considerable part of their academic learning into their daily work life. This is mentally and physiologically demanding. A significant amount of motivation and discipline is needed to keep learning efforts on a constant level. Due to the fact that students have a fixed employment contract with the company and their employer is financing the study program, there is a strong incentive to perform. Many students in our program show a high level of commitment. However, university and companies are responsible for shaping and balancing workplace and academic requirements in a sensitive way.

E-learning is demanding for teaching staff as well. Many critics state that e-learning can never replace learning in the classroom. According to their view, it can support classroom learning at best. This argument was not supported – at least not in its extreme sense – by our experiences. Basically, synchronous and asynchronous e-learning elements enabled professors to teach the same contents in blended trainings as in pure classroom lectures. However, contents had to be reviewed and restructured according to their applicability to e-learning or classroom teaching. Didactical tools had to be adjusted. Training had to take place in order to prepare the teaching staff. All in all, much more time and effort is needed to prepare and reinforce an e-learning seminar compared to a regular classroom lecture. Therefore, these kinds of study programs demand a much higher effort and organizational flexibility from all parties involved.

There are basic concerns that close cooperation between university and employers will lead to a strong focus of study programs on short-term company interests and decrease the quality of basic academic education. This cannot be confirmed by our experience. Companies sending their students for dual-system study programs expect the university to provide profound and basic academic education which enables students to understand business processes on a higher level. In the study program designed for the telecommunications industry, company influence has been almost limited to administrative issues and some optimizing of the IT infrastructure. Direct influence on the curricular design and content of the study program could hardly be recognized.

One further aspect has to be addressed: Universities have to invest a considerable amount of resources to design and implement individualized dual-system study programs. A private university can only provide individualized study programs if a sufficient number of students is sent to the institution. Cooperation with companies enables them to build upon these clients. However, the university has to take care to stay financially and academically independent of a small number of key clients.

8. Conclusions

The specific model of a dual-system study program described in this paper has shown that innovative and individualized concepts of study can be realized. Many issues of concern seem to be less serious than expected. However, these experiences cannot yet be generalized. Further research has to be done in order to draw valid conclusions on the effects of company cooperation on academic educational systems.

But if such a discussion is directly focused and reduced to a discussion about power and power distribution between the cooperating partners, the potential for creating innovative study programs is restricted from the beginning. The discussion about further developments in the educational system will certainly continue to take place. In the long run, those concepts will succeed that best meet societal and economic demands. Standstill means regression – this is also true in the academic world.

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