

The dual system of VET in Denmark a 'blind alley' on the road to Higher Education?

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The paper is based on two reports on hybrid qualifications in Denmark available on <http://hq-III.eu/> produced in the EU research project hybrid qualifications 2009-11.

A revised and comprehensive summary of the results for Denmark will appear in the book published late in 2011:

Thomas Deissinger & Josef Aff & Alison Fuller & Christian H. Jørgensen (Eds.) 2011:
Hybrid Qualifications – structural and political issues in the context of European VET policy
Bern, Zürich, New York, London. Peter Lang Publ..

Christian Helms Jørgensen, Roskilde University 2011

The dual system of VET in Denmark

– a ‘blind alley’ on the road to Higher Education

Separation of students and qualifications

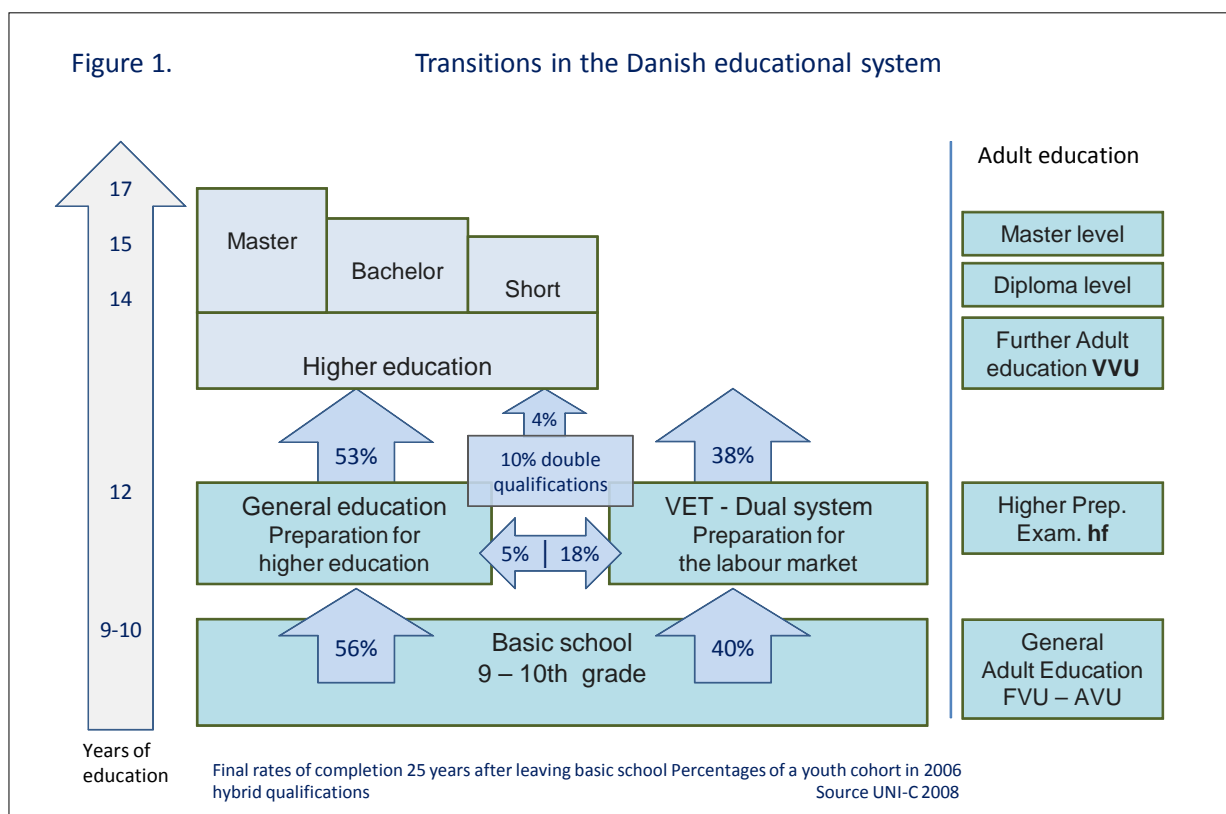
In Denmark the Basic School up to grade 9 or 10 is a compulsory comprehensive education primarily in public schools. When young people at the age of 16 or 17 complete the Basic School, they have to decide which way to go. All except a few percent continue into post compulsory education at higher secondary level – at grade 10 to 12 called ‘youth education’ in Denmark. The pathways at this level are divided in two tracks: general education and vocational education and training (VET). The aims and purposes of the two tracks are different. Vocational education has a purpose of developing relevant qualifications that are recognised on the labour market and give access to employment. The main purpose of general education is to develop qualifications that are recognised by the institutions of higher education and prepare for studies at the tertiary level. In addition some of the general objectives of the two tracks of education are similar: they should support the student’s personal development and their democratic engagement in society and prepare for lifelong learning.

The division between the two tracks is quite profound and concerns the social recruitment, the learning culture, the legal framework and the form of governance of education. The two types of education also have separate institutions locally: on the one hand the Gymnasiums and on the other hand the vocational colleges that are often located separately in Technical, Business & Commercial, Agricultural and Health Care & Social Work colleges. An exception here is the Vocational Gymnasiums that are located in the legal and administrative framework of the vocational colleges and often also physically in this context.

In this paper ‘hybrid qualifications’ is a term used to describe qualifications that integrate vocational and general qualification and give access to higher education as well as to the occupational labour markets of skilled workers. Hybrid qualifications are interesting since they provide an opportunity to go across the vocational- general divide that characterises the Danish educational system. The name

Vocational Gymnasium could indicate that the Vocational Gymnasium is an institution that provides *hybrid qualifications*. This though, is not the case, as the vocational Gymnasium is purely school based, and it does not award the certified qualifications that give access to the skilled labour market. The Vocational Gymnasium is according to the latest reform of 2005 part of the unified system of 'gymnasium programs', whose main purpose is to prepare for higher education. More correctly this program could be termed 'vocationally oriented Gymnasium' as its aim is the vocation programs of higher education like engineering and business economics.

The Danish educational system does not fit clearly in the common ideal types as defined by Greinert (1999) or Ashton (2004). Some comparative studies, like Andreas Walther (2006) and Beatrix Niemeyer (2007), include the Danish system in a common Nordic model. This model is characterized as being school based and non selective and linked to the egalitarian, social-democratic type of universal welfare regime (Esping-Andersen 1990). This categorisation is relevant with respect to compulsory education and higher education, but much less so for higher secondary education, where Norway and Sweden have more unified systems than Denmark. The Danish system on this level is different by being selective, because of the separation between the vocational and general tracks. While the Danish educational system generally has been more decentralised than the other Scandinavian countries (Telhaug a.o. 2004), the dual system of vocational education has been more centralised with little involvement of local or regional authorities (Olofson 2008). In comparison with the other Nordic countries Denmark has the most 'classic' form of dual system of vocational education that is separate from general education and similar in many ways to the German model. However, the VET system in Denmark is more school based than in Germany as the programs typically start with one half or one year learning in vocational college before entering a work based training agreement.



Transition in two separate tracks

The dual system in Denmark has a strong position, although not as strong as the similar German or Swiss systems where 60 – 70 % of the 16 – 19 year olds enter the vocational pathway. In Denmark around half of an age group take up a vocational education, but less than 40% of an age group complete an apprenticeship in the dual system. Still the dual system in Denmark has a prominent role as a recognised and valuable alternative to the academic track. The dual system in Denmark has a strong historical continuity like its German counterpart (Thelen 2004; Hillmert 2001), and it has resisted political attempts at unification with the academic track, as will be described further on.

The Danish transition system comprises two main thresholds and a number of secondary thresholds where individual decision making and institutional selection processes take place. Young people meet the first decisive threshold when they complete compulsory education after grade 9 or 10 at the age of 16 or 17, where the comprehensive and non-selective schooling ends. Half of an age group chooses to take the additional year in grade 10 in Basic school. When completing the Basic School young people have to choose between the vocational and the general track. As shown in figure 1 an almost equal share of a youth cohort enters the Gymnasium and the vocational track, when the students shifting track are included. Due to lower retention rates in VET a smaller share completes a vocational program (38%) than an general program (53%). Around 10% complete a program in both tracks; they take a double education. Most of them shift from the vocational gymnasium to VET. Some do their second education after a number of years on the labour market or after dropping out of a higher education. The two tracks and the qualifications they provide will be described in the following.

Pathways from the dual system to Higher Education

Limited data exist on the transition from higher secondary VET to higher education in Denmark. From a dataset that includes all VET students completing in 2004 the author has calculated the number of students who progress to the tertiary level within the three years following graduation from a vocational college. In most of the 7 occupational areas the figures are too small to be shown (due to statistical discretion). Figure 3 shows the average share for all graduates and for the three occupational areas where most students take up higher education. This figure from the age group completing in 2004 is higher than the figures referred to earlier (4-5%). This is partly due to variations in the progression rate depending on the situation in the labour market.

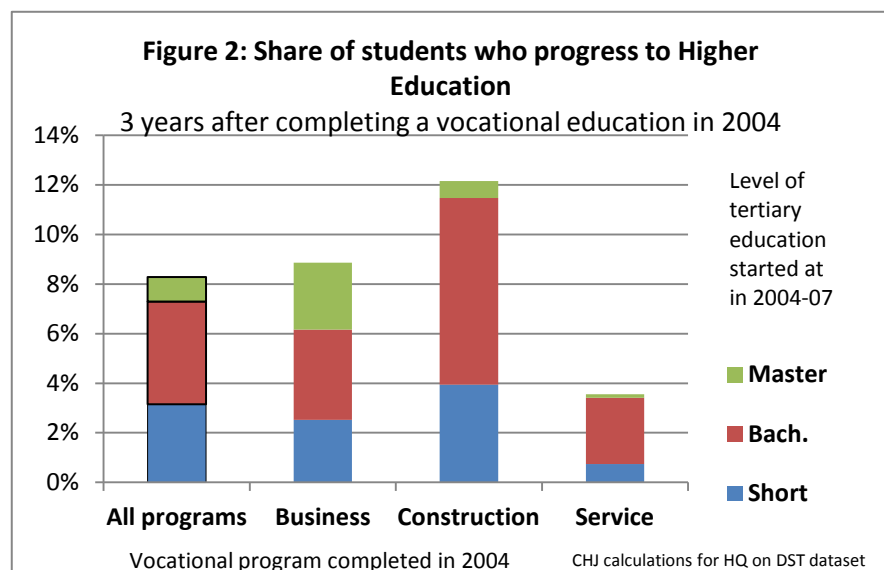
The figure2 show that only in areas where specific educational pathways have been established historically, does a visible share of the former VET-students progress to higher education. The main groups are carpenters who continue and take up studying as Building Technician (Bach. 3½ years duration) and electricians who take up studying Installation Contractor – a short cycle tertiary education (2 years duration). The business program has the largest share of students who actually have qualified to enter the tertiary level, and the pathways from VET to HE is more diverse. Some go into a related education primarily as accountants (5 years master level), and some shift into other areas like teachers and nurses. Generally the number of persons with a vocational education who progress to higher education is limited as mentioned earlier.

Access to higher education through adult education

Since the 1960s a comprehensive system of adult education has been established in Denmark parallel to the ordinary educational system. This included first a wide range of shorter vocational courses (Labour Market Training, AMU) financed and governed through a corporatist form of collaboration between the state and the labour market partners. A National Council for Adult Vocational Education and Training (REVE) has an advisory role to the Minister of Education, and in addition 11 continuing training and education committees have responsibility for specific sectors of the labour market. The system of Labour Market Training (AMU) was from the start clearly separate from the basic dual System of VET and belonged under the Ministry of Employment, but moved in 1995 to the Ministry of Education. This separation had to do with the division and rivalry between the unions of the skilled and the unskilled workers who are organised in separate unions. For the last 15 years the two systems of CVET and IVET have increasingly become integrated legally and institutionally. New opportunities have been established for unskilled and semiskilled workers with relevant work experience to get supplementary school based education to become skilled.

Another measure in this direction has been an expansion of the opportunities for adult apprenticeships. This initiative has been driven by a combined effort of the government and the General Workers Union ('3F') ambitions to lift their members from the status of unskilled to skilled. This policy has developed in response to numerous forecasts of a strong decline in the future requirement for unskilled labour. This has resulted in a strong interest in giving un- and semiskilled workers better access to education and training to become skilled. It is remarkable that no similar initiatives have taken to give skilled workers access to higher education. In line with this there has been little interest in providing programs for hybrid qualifications. This is in contrast to the political interest at the European level in the provision of pathways for progression from initial VET to higher education (CEDEFOP 2008; Dunkel 2009). It is remarkable that this has been no significant issue in Denmark, since the country has a strong tradition for adult and further education and the educational system provides very good opportunities for people to return to education later on in life (Dieckhoff 2008). One reason for the lack of interest in hybrid qualifications and progression routes from VET to higher education lies in the governance of VET. The corporatist form of governance of the dual System means that the unions have a strong professional orientation that includes interest in the upgrading of occupational skills

and improvement of the opportunities for further education and training of their members (Hyman 2001). Due to the occupational basis of these organizations this professional orientation has not included interests in general qualifications and access to higher education. Yet the educational programs for



adult in Denmark offers opportunities for achieving higher education entrance qualifications, especially the hf program.

Pathways from VET to the polytechnics

Skilled workers have historically had some links to the polytechnic universities. During the early years of the industrial revolution in the late 1800th century Danish skilled workers went to the German '*Technische Hochschulen*' (Institutes of Technology) for further study, since this was not yet possible in Denmark. Later, as the engineering institutions expanded, these were also accessed by skilled workers. With the post-war expansion of higher education the increasing requirements of general and theoretical knowledge made the direct access difficult for skilled workers. In 1961 a one-year preparation courses was established as an opportunity for skilled workers who wanted to progress to study engineering at a higher level, typically in the 3½ year 'practical' type of education for engineers ('*Diplom-ingeniør*') with specialization in chemistry, machinery, construction, etc. This has for decades been a well-known pathway for a small but stable number of people with a vocational education to continue to higher education. There are signs that this pattern of progression from VET to higher education has weakened due to the increasing share of young people who go to a Gymnasium. Especially the number of students in the '*Diplom-ingeniør*' program (Bachelor level) has been reduced to half size it had in 1990 (VTU 2005). In the Technical Universities the share of engineering students who have a vocational education before starting has declined (A4 2009). The share of student who has a 'craft' background at the '*Diplom-ingeniør*' study has decreased from over 30% in 1980 to 7% in 2004 (VTU 2005). At the same time the share of students from the Vocational Gymnasium (htx) has increased.

Policies for Hybrid Qualifications

European countries have pursued different strategies to improve the esteem of vocational education compared to general education (Raffe a.o. 1998). A common categorisation proposed by Lasonen & Young (1998) defines four strategies for parity of esteem. These are: (1) vocational enhancement; (2) mutual enrichment; (3) linkages; and (4) unification. The dominant strategy of the Danish context is the first, vocational enhancement, which attempts to maintain the separation of the two tracks, but upgrade the quality of the curriculum, teachers' qualifications or relations with the labour market. Most of the political parties in Denmark and the dominant labour market organizations are in favour of maintaining vocational education as a separate system. The reasons are the efficiency of this system concerning successful transition from school to work, high employment rates and high flexibility on the labour market (Jørgensen 2008). But maintaining the division in two separate tracks and a division of students based on their attainment in primary and lower secondary education also has negative sides. Tracking entails a social selection of students according to the socio-economic status of their parents. Tracking thus tends to reduce equality of educational opportunities in the transition from school to work (Hanushek and Wößmann 2006; Müller & Gangl 2003). Children from families with poor educational background more often are sorted into vocational education, even when their educational attainments equals the attainment of children from families with more educational resources (Andersen 2005; Hansen 1997). This negative effect of tracking has historically been a reason for the labour movement and the Social Democratic Party to oppose tracking and favour reforms in the direction of a comprehensive school.

Table 1: Separate qualifications in Danish higher secondary education

Track ►	General education	Vocational education
Types of qualifications	Academic qualifications that give access to higher education: - Universities - University colleges	Vocational qualifications that give access to the skilled labour market : - Union membership - Unemployment benefits
Structure	4 programs: • Traditional academic Gymnasium, stx • Business oriented Gymnasium, hhx • Technically oriented Gymnasium, htx • Higher Preparatory Exam, hf	• 12 basic courses (½ - 2 year) • 125 main programs with additional specializations
Institutions	Gymnasium (stx) Vocational colleges (hhx and htx) Adult Education Centre (hf)	Vocational colleges: - Technical, business, agricultural and care & service work.
School-/work-based	Only school-based (plus opportunities for a few weeks of work placement in Vocational Gymnasium)	Alternating (dual) programs: 1/3 school-based, 2/3 work-based Full time school-based programs available as a 'special measure'.
Length	3 years generally (stx/hhx/htx) 2 years for Higher Prep. Exam (hf)	3 – 4 years generally - A few longer: 5 years - A few shorter: 1½ - 2 years
Governance	State governed combined with institutional autonomy. Gymnasiums are becoming independent ('state freehold')	Corporatist self-governance Vocational colleges are independent institutions ('state freehold')
Funding	State funding of schools and students grants (for students over 18 years). Free tuition.	State funding of colleges. Companies pay wages to apprentices when trained in companies. Companies share expenses to wages during school-based learning.
Access /recruitment	Restricted admission: Specific subjects in Basic School Grade point average required	Generally free admission. In some programs a training agreement with a company is required. In some numerous clauses.
Learning culture	Valuing the <i>correctness</i> of codified knowledge. Structured by school /academic subjects and disciplines, but increasingly also interdisciplinary project work.	Valuing the <i>usefulness</i> of vocational knowledge and skills. Structured by the work tasks and the collaboration of journeymen and apprentices.
Teachers	Teachers with academic education (master degree plus further pedagogic training)	Mainly teachers with vocational /professional background and labour market experience. Professional teachers teach in some school subject.
Share of a age group completing	Academic track: 53%	With double qualifications: 10% Vocational track: 38%

The termination of tracking was accomplished in Denmark with respect to primary and lower secondary education in the early 1970es. At that time a major reform was under way in vocational education as the traditional apprenticeship had run into crisis due to falling numbers of applicants. So it was natural also to question tracking at the higher secondary level of education. This was a high time of democratic reforms of the educational system following the student unrest of the late 1960es. Apprentices played a central role in the early waves of the student movements with sizeable demonstrations around the country against the traditional apprenticeship ('Master apprenticeship'). Consequently demands were raised for a unified and untracked system of higher secondary education especially in part of the labour movement and on the Left Wing in Parliament. It is relevant to take a look back at these historical encounters, since this period in theories of path dependency can be considered as a 'critical juncture' (Thelen 2004; Mahoney 2000). The outcome of the struggles, negotiations and the coalitions formed in this period has set the direction for the institutional trajectory in the following decades till today.

2. Methods and data of study

The study conducted has an exploratory character and has the aim of mapping the perceptions, attitudes and values of the stakeholders (teachers, learners, employers, policy-makers) in relation to hybrid qualifications. In addition the intention is to examine to what extent there are best practice approaches and what policy implications can be formulated as a consequence.

The selection of persons for the 23 interviews in this study has been made with an intention to cover the key stakeholders in the field. This includes two civil servants in the ministry of education with good knowledge of the political process leading to the introduction of the new hybrid qualifications programme – one from each department involved. It also includes five representatives from the labour market partners who have a key role in the governance structures of VET: two from employers associations and two from trade union federations and one from a vocational teacher union. At the level of educational institutions we have selected six persons from higher education institutions, all from the polytechnic and business institution that are destinations for students from the dual VET system. From the vocational colleges we have selected four persons from technical as well as business programs and from institutions with experiences of hybrid qualification programs. We selected persons with hand on experience of the experimental hybrid programme EUD-HTX rather than managers who would have more general opinions the hybrid program. Lastly we have selected four students, three for a group interview and one for a single person interview. They have all completed a vocational education 3-5 years ago and two have later progressed to higher education. In sum the interviews included the following persons:

- 2 persons in the Ministry of Education
- 5 persons from the labour market partners
- 6 persons from higher education institutions
- 4 persons from vocational colleges
- 2 persons from training companies involved in the hybrid programme (EUD-HTX)
- 4 former vocational students – of these 2 have continued to higher education

We have promised the interviewpersons to preserve their anonymity in order to make them speak more freely on issues that are politically sensitive. In the list of interview persons at the back of this

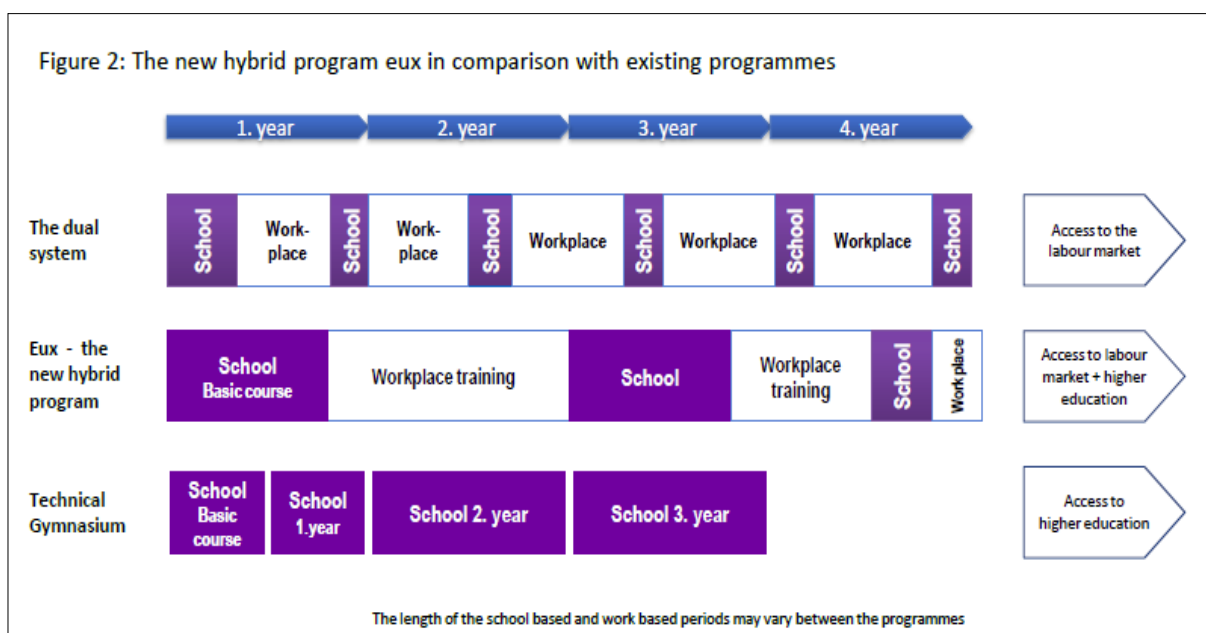
report only the position or title of the interview person and the name of the institutions and organisations appear. Separate interview guides were prepared for each group of interview persons and the interviews were mainly conducted in a structured form, though with some open questions to explore opinions and attitudes of the interview persons. The open questions led us to new themes, which we have explored in some of the subsequent interviews. The interviews were recorded, transcribed and analysed thematically guided by the research interests of this project.

Eux: a new programme for hybrid qualifications

Following a major reform of vocational education in 2000 new opportunities for acquiring hybrid qualifications in the dual system were introduced. Students were offered additional academic subjects to be completed during the ordinary vocational programs. But very few students have taken advantage of this opportunity. One reason is that it is not very economically attractive for the colleges to offer these subjects, since it is difficult to get together a sufficient number of students in each subject to organise a class. Another reason is that students often don't want take additional subjects, because then they will be separated from their ordinary classmates.

A new initiative for hybrid qualifications was launched in two vocational colleges in 2005 with a developmental programme that combined vocational and general education. It was the so called 5 year 'EUD-HTX program' that made it possible to become a skilled carpenter, automation-technician or industrial technician and at the same time get access to higher education. The first students from this programme completed in the summer of 2010. The evaluation of the developmental programme has shown that the duration of five years was too long to attract any substantial number of students. It was not clear for students what the advantages were of the programme when comparing it to taking double education. The students would only save ½ - 1 year study time when choosing the developmental programme compared to completing the programs consecutively, one after the other.

A revised initiative thus was launched in 2010 by the passing of a law on the so called 'EUX program'. The EUX represent a programme for full hybrid qualifications in the strong sense, which means that the two types of qualifications are transmitted in an integrated form in a single program. The experi-



ence from the developmental programme ('EUD-HTX') showed that to succeed the programme had to cope with some serious challenges. These challenges relate to the institutional separation of the two types of qualifications that we have described exist in the Danish educational system. The EUX programme has only started in a limited number of occupational areas in the building trades such as carpenters and bricklayers, but is under preparation in many other areas, such as electricians, data-technicians and industrial technicians. Our interviews have investigated the motives and interests behind the new programme and tried to get an assessment of its viability from the perspective of the key stakeholders at all levels from the ministry of education to the students.

Key issues in relation to the hybrid programme

Our interviews have indicated that at a structural level the educational pathways from the dual system of VET to higher education have become more difficult over time. One interviewperson from the Ministry of Education expressed it in this way, that *'the hole through has become narrowed'*. This narrowing of the progression routes from the dual VET to higher education is explained by a number of reasons. One reason is that the entrance requirements have been raised at the most frequently used destination programs at tertiary level for vocational students. Only a few (like the sub-bachelor programme for electric installation contractor) is still accessible directly from a programme in the dual system. Other tertiary programs have been reformed and aligned with the general entrance requirements to higher education, which is an exam at the level of the Gymnasium. Another reason is that there is an increasing share of students with low level of general qualifications in the vocational programs. This is due to the fact that practically all young people today do progress from basic school into post-compulsory education. But some of these students are not driven by positive motivation and ambitions, but are forced to enrol by the active labour market policy that especially aims at young people. Since their level of qualifications hardly even is enough to make them complete a vocational program, they certainly don't qualify for entrance into higher education. Furthermore the introduction and expansion of the programs of the vocational gymnasium has pulled a substantial share of the academically strong students out of the dual system into these programs. In addition the technical gymnasium has gradually been separated from the dual system and become more integrated into the other programs of general education. In sum the division of the dual system of VET and higher education has been fortified over time, and the strong increase in the share of young people who progress into higher education has passed round the dual system. As a consequence the dual system increasingly emerges as a 'blind alley' in the educational system.

Our interviews have confirmed that very few students in the dual system have taken advantage of the opportunities for choosing additional general subjects that were introduced by a major reform of VET in year 2000. The reform failed in this respect the intentions of widening the progression routes from VET to higher education. On the contrary some years later there have been adjustments in the vocational programs with the purpose of limiting the amount of general content of the programs in order to reduce dropout rates. This is because dropout is assumed to be related to many 'at-risk' students' aversions to learning abstract and bookish knowledge in academic forms of education. This means that the dual system of vocational education has moved further apart from the gymnasiums.

In order to attract more determined and academically strong students to the vocational programs some colleges in 2005 launched as an experiment the hybrid programme EUD-HTX in collaboration with the Ministry of Education. The first students completed in the summer of 2010, and the as-

assessments of the experiences were generally positive. The students who enrolled in the hybrid programme were assessed by the vocational colleges to be more ambitious and motivated than students in the ordinary vocational programs. The employers of the training companies had positive judgements of the students, as they could perform more advanced tasks and work more independently. But the colleges found that it was difficult to recruit a sufficient number of students and that the length of five years was a barrier to reaching a greater number of students.

The experiences from this developmental programme (EUD-HTX) inspired the passing of a legal framework for the introduction of the new hybrid program, the EUX in 2010. The intentions of the programme were similar to the developmental program, but the length was shorter and the level was to be lower in some subjects. Our interviews have revealed a number of political and pedagogical dilemmas to be handled in the planning and organisation of this hybrid program. We will analyse go further into these dilemmas in the following, but first we will take a look at the reasons the stakeholders gave for supporting the introduction of a new hybrid program.

Reasons for introducing a new hybrid programme

Among the stakeholders we found some variation in the reasons given for supporting the new hybrid program. The following reasons were given by the interview persons or were expressed in documents relating to the stakeholders:

- To provide better opportunities for students in the vocational programs to progress to higher education.
- To increase the recruitment of more academically strong students to the vocational colleges and the dual system of VET
- To increase the esteem of vocational education by including more advanced programs
- To reduce 'blind alleys' in the educational system and to provide more educational choices for students in VET.
- To reduce the costs of double education and to improve the overall efficiency of the system by increasing the permeability in the educational system from higher secondary vocational education to higher education.
- To establish a shorter, recognised and integrated hybrid programme for the students who otherwise would take more irregular pathways to achieve double education.
- To counteract and diversify the 'academic drift' in the direction of the gymnasiums by offering a new hybrid programme in the vocational colleges.
- To widen the recruitment to the tertiary level of education and reduce the social inequality in access to higher education by establishing a new pathway that goes across the divide between the two tracks in higher secondary education.
- Educate highly valued employees with hybrid qualifications to work on the boundaries between the development and production departments. Hybrid qualifications are expected to link the communities of the craftsmen and skilled workers with research and development and the planning, sales, customer and marketing departments. Building engineers with experiences of the practice of the craft were mentioned as highly valued on the labour market.

Target groups for the hybrid programme

Since the early 1990s educational reforms with neoliberal inspiration have sought to reduce direct state regulation and replace it with an educational market. To achieve this education institutions have been granted higher degrees of autonomy and have been encouraged to develop new programs and compete for students. The increased competition for students has put vocational colleges under pressure, given the academic drift of young people and the persistent increase in the intake of students in the Gymnasiums. Since the 1980s there has been a doubling of the share of a youth cohort that enters higher education. This massive increase has passed round the vocational colleges and increasingly positioned these as 'blind alleys' of the educational system.

The interviewees emphasized especially the consequences of the expansion of the vocational gymnasiums which have attracted many of the ambitious students, who would earlier have gone to vocational education. In addition they underscore the importance of attracting to the new EUX programme ambitious students from the other higher secondary programs and not just to provide a new pathway for students, who would go to vocational education anyway.

The vocational colleges don't expect it will be easy to attract a greater number of students to the hybrid program. At the same time they agree that it is very important not admit students, who don't have the necessary qualifications to complete the program. The colleges describe the hybrid programme as very hard and demanding. The colleges thus face a dilemma of attracting a greater number of students, but at the same time to restrict the entrance to only those who have good qualifications and a high motivation. Our interviews and study of documents have pointed to a number of target groups for the hybrid program:

- **Ambitious students** who would normally choose the vocational gymnasium (htx or hhx), but who prefer teaching that is more diversified and vocationally oriented than the full time school based htx and hhx program.
- **Ambitious students from non-academic social backgrounds** who will not have the Gymnasiums as a natural choice, and who would find the social environment more comfortable in a hybrid programme that provides higher education entrance qualifications in
- **Students from academic backgrounds** who would find a hybrid programme more challenging as it provides vocational skills as well as higher education entrance qualifications.
- **Academically 'stronger' and more ambitious students** already in the vocational program.

It is generally seen as crucial that the hybrid programme succeeds in recruiting students who would otherwise have gone to the gymnasiums and not the ordinary students in the dual system, since this could drain the dual system of the most ambitious students and further reduce the esteem of this system.

Dilemmas of duration and time

A major challenge for the hybrid programme has been how to organise a four year programme with a content that it otherwise takes seven years to learn in the two separate programs that the EUX programme integrates. The interviews have mentioned two key issues of the planning, negotiations and struggles over the EUX program. One is the duration of the work based training periods and the other is the credit awarded in each part of the programme (general/vocational) for qualifications

acquired in the other. The challenge in the planning of the hybrid programme has been to cut the overall duration of the program. The largest reductions of time has been made in the work based training periods, which in an ordinary vocational programme make up two thirds of the total duration of the program. This considerable reduction has not passed without criticism.

The concern has been that too radical a reduction of the training periods would threaten the recognition of the programme on the labour market, since the value of the dual system relies on the specific qualifications acquired through the participation in an authentic work practice. In addition, for the employers the length of the programme has implications for the financial costs of apprentice training. The value of the labour afforded by the apprentice goes into financing the training costs of the company. Shorter training periods means lower revenue.

Since the conditions of the companies vary between the industries, different models for the hybrid programme have emerged. Some industries have one-year school periods and one-year internship periods; others have half year school and training periods. Experiences from the developmental programme showed that some repetition was required for the students, when they returned to college after one year training period in a company.

The problem of putting the content of seven years programs into four years has been aggravated by differences in the way the organisation of the teaching is handled in the two programs: a time-based versus a competency based organisation. In the vocational gymnasiums time is organised in hours and the duration of the teaching at each level is binding for all education institutions. In vocational education the programs are organised in weeks and according to the competency based model of education, which means that the duration of teaching is adjusted to the learning of the individual student. For example in the ordinary program, the duration of the basic course can vary from 20 weeks to 60 weeks.

As a conclusion the development of the hybrid programme has revealed some hard to solve dilemmas concerning the length of the program: the length of the hybrid programme should be long enough to attain a high quality, but short enough to make a difference in comparison with taking a double education. The dilemma to be solved is that the length should not be much longer than the ordinary dual programs in order to attract more students, but that the length should be sufficiently long to avoid a compressed programme that only a few elite students can complete. In addition the length should be made reasonably short in order to attract students, but long enough to make employers provide training placements. Employers might refrain from offering training placements if the training periods are cut too much, and this has represented a dilemma of training placements.

Dilemmas of training placements

The new hybrid programme has broad support from the major stakeholders, including the employers' organisations. In some occupations, like electrical supply, the employers have been very eager to start up the hybrid program. But in other industries employers are no uniform group, but quite diversified or even divided between small companies and larger corporations, between the crafts and industry. They often have a different approach to apprentices and training placements. The larger firms often take on apprentices with a long-term investment and recruitment perspective. The small and medium sized companies more often rely on the labour power of the apprentices to maintain day-to-day production. Historically the length of apprenticeship and the training periods in the companies has been decided on the basis of an assessment of the financial costs and benefits of the companies. Companies normally invest in the beginning of the training period and benefit the last year or two of an apprenticeship contract. Cutting too much down on the work based training peri-

ods could cause the companies to withdraw from providing training placements for the new hybrid program. Furthermore, during the prolonged school based off-the-job periods the smaller companies might be missing the apprentices in the production. In smaller firms apprentices often count as part of the necessary workforce to maintain the running of daily business. When the companies have to do without the apprentice for one year, while the apprentice attends the school based teaching, then the companies might chose not to take on apprentices.

The question of training placements is considered a serious challenge to the success of the program. At the time of the introduction of the hybrid programme there is a deficit of 8.000 placements for students, who have finished their basic course and need a placement to progress in the main course. The situation in relation to training placements varies quite a lot between industries. In the building industry the situation is very strained, whereas it is quite good in some manufacturing industries. Generally the students from the hybrid programme have to go into a hard competition to succeed in acquiring a training placement. As a consequence the training committees in some industries have organised information campaigns among employers to make the hybrid programme recognised. Furthermore the training committees encourage the vocational colleges to pay specific attention to make available placements for the hybrid students. One of the interviewpersons described the situation as 'cannibalism' as the number of training placements is limited and the students of the hybrid programme would compete for the same placement as the students of the ordinary programs. One vocational college had invited a meeting to inform the local businesses about the hybrid program, but very few attended. In contrast a large number of youths and their parents attended another meeting to inform this group. This was seen as an indication that the question of training placements should be taken very serious in order to make the hybrid programme a success.

The struggle over the subjects – credit and level

In the process of planning and organising the hybrid programme the importance and length of the various subjects have been contended. What content could be left out or reduced in order to achieve the required reduction in the duration of the length of the program? One method to reach the time reduction has been to give credit for general qualifications acquired through the vocational teaching. When electricians learn the technical content of the vocational program, they also learn some math. The key question to be settled has been how much credit should be given for this learning. Teachers from the academic track have been more restrictive in giving credit, than teachers from the vocational side. This planning process has involved difficult negotiations between colleges, training committees and the Ministry of Education. Another method to achieve the reduction in teaching time has been the introduction of new interdisciplinary or hybrid subjects, like 'technology', that involves multiple subjects such as social science, physics, math and language skills. In these subjects the students can at the same time learn general and technical subjects and thus save some teaching time. In addition the teaching of hybrid subjects is experienced as being more inspiring and motivating by the students. The design of these new hybrid subjects have made the teachers from the two tracks work together and supported the development of a common hybrid learning culture across the vocational- academic divide.

A third method to reduce time and integrate the two types of subjects has been through project-based teaching, where content from different subjects are integrated by working on a common project. In developing these projects, the teachers have drawn on experiences from the vocational gymnasium, that earlier have a good practice in project-based work. An example of project-based teaching in one vocational college is '*Bridges in Europe*' that integrates chemistry, physics, math and

technical knowledge and skills. An issue of potential conflict is the role of the various subjects in an integrated teaching. Some subjects fear they are reduced to a minor and supporting role for other subjects that are assigned a more central role. This issue can be aggravated when the pressure on the time is strong, since time spent on a common project work can place strain on the discrete subjects.

There have been tensions between the individual subjects and the integrated projects. For example in one vocational college a teacher from the vocational gymnasium took over the teaching of math from the beginning of the basic course in order to achieve the curricular requirements of the subject. But this was criticised by other teachers since a single-subject focus would make integration of subjects more difficult. One vocational college reported that the two first years had involved many conflicts between the two diverging cultures, the academic and the vocational, but that the relations had improved a lot in the direction of an emerging hybrid learning culture.

In an evaluation of the hybrid developmental programme one of the vocational colleges summarised the experiences. It concluded that the successful integration of the two programs requires a strong organisational framework that encourages the two groups of teachers and students to work together. In addition one key person should be assigned the role of responsible for coordination and new administrative procedures should be developed to fit the special requirements of the hybrid program. For example the two programs had quite different ways of reporting and handling students' absence from lessons.

A contended issue in the planning of the hybrid programme has been the *level* to be acquired in the academic subjects. On the one hand the Ministry of Education has paid attention not to set the level too high and make the programme too elitist and exclusive. On the other hand some training committees have argued that the level should be high enough to meet the entrance requirements of the most likely programs in higher education, e.g. the Diploma in Engineering for electricians. This requires an A-level in math, which is higher than the level accepted by the Ministry of Education. The act on EUX stipulates a level of 'general entrance requirement' to higher education (which means a B-level) and not the specific entrance requirements of certain programs. The training committee argues that the advantages of going through a hybrid programme would be lost, if the students only gain access to the vocational academies, that have a position in the educational system similar to that of the German vocational academies (Dessinger 2000). The training committee argues that if the students have to take supplementary courses in order to gain access to their favourite higher education programme after completing the hybrid program. This is an issue that still has to be settled in negotiations between the Ministry of Education and some training committees.

Litteratur

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