

Nord-VET – The future of VET in the Nordic Countries

Recent innovations in VET in Denmark – responses to key challenges for VET

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Nord-VET – The future of Vocational Education in the Nordic countries

The purpose of the Nordic research project, Nord-VET, is to generate new knowledge on the strengths and weaknesses of the different models of vocational education and training (VET) at upper secondary level in the four Nordic countries. This research is expected to strengthen the knowledge base required for developing VET for the future.

The main purpose of this project is to shed light on the different Nordic ways of handling the key dilemma of providing double access to the labour market and to higher education in vocational education. More specifically it seeks to determine how the different ways of handling this dilemma have an impact on social equality, inclusion and the esteem of vocational education.

The project is publishing three sets of country studies on Finland, Denmark, Norway and Sweden. The first set of reports is on the historical emergence of vocational education (VET) in the four countries. The second set of reports is on the current challenges for VET in the four Nordic countries. This is the Danish report. The third report to be published February 2015 is on innovations in VET.

For more information visit the homepage: www.nord-vet.dk

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1. Innovations to improve the access to higher education and raise the esteem of VET

The eux programme: an innovation in VET

The most important innovation in the Danish VET-system during the last decade is the introduction of the eux-programme that cuts across the divide between general and vocational tracks in upper secondary education. For the last three decades all reforms of vocational education have included aims and measures to build stronger linkages from the VET system to higher education. The latest initiative that has gradually been introduced since 2010, *the new eux-programme*, does represent a real innovation in the Danish VET-system. The eux-programme integrates eligibility for higher education (*'studiekompetence'*) with a certificate for employment as a skilled worker (skilled worker's certificate). The programme aims at two of the key challenges for the VET-system: by providing better access to higher education it seeks to improve the esteem of vocational education. In the comprehensive reform of the Danish VET-system that is being implemented from 2015, the eux is assigned an import role. In the words of the political agreement on the reform: "*This initiative [eux] is considered a strategic measure to attract more resourceful young people to vocational education and will be extended*" (Undervisningsministeriet 2014:61). To understand how this initiative came about and its innovative nature in a Danish context, we have to take a look at the specific challenges of the Danish VET-system. In addition we have to look back at previous attempt of innovation with the same general intentions as the eux-programme.

Innovation to improve access to higher education and raise the esteem of VET

Challenge: the dual system of VET normally does not give eligibility for higher education.

Innovation: the introduction of a new hybrid programme, the *eux*.

Background for the new eux programme

The reason, why policymakers persistently have pursued the aim of strengthening the connection between the VET-system and the tertiary level, is that this connection is quite weak in Denmark (Jørgensen 2013; 2014). The Danish VET-system is organised according to an 'employment logic' (Ianelli & Raffe 2007) and its main purpose is to provide qualifications that are recognised in the labour market and to give access to skilled employment.

The backbone of Danish VET-system is constituted by work based learning of vocational skills in a training placement in a private company or a public institution. School based learning has over the decades been added on to the apprenticeship model, but work based training still makes up around two thirds of the duration of the vocational programmes. And the workplace is by most apprentices and by the labour market organisations considered the most important learning venue. A major strength of this system is that it quite effectively supports the transition of the apprentices

from the educational system into the labour market. Almost half of all apprentices continue as regular employees in the training companies after completion of an apprenticeship, and from the beginning their earnings are close to earnings of experienced colleagues. Their transition to ordinary employment already is achieved successfully, when they complete their apprenticeship in the dual system. This quality of the dual system of VET has been demonstrated by extensive international research (Dieckhoff 2008; Gangl & Müller 2003; Andersen & Werfhorst 2010; Wolbers 2007).

This strength of the Danish VET-system has increasingly also shown to imply some weaknesses. As the VET-system is based on strong occupational profiles and long periods of training placement, it is difficult to achieve entrance qualifications for higher education in the VET programmes. And this weakness has moved higher up on the agenda of the stakeholders of the VET-system as the enrolment in the vocational programmes from compulsory school have decreased strongly.

Enrolment in the Gymnasiums in Denmark has doubled more than five times since the early 1960es. Already In the middle of the 1970s the number of young people entering the Gymnasium exceeded the number of new apprentices. A growing share of every youth group have voted with their feet and chosen the Gymnasium after completing compulsory school. Participation in higher education had grown concurrently with the growth in students in the Gymnasiums, but enrolment in vocational education has stagnated and during the last decade it has even decreased.

The explanation for this decline, from the perspective of policymakers, is that vocational education appears as a 'blind alley' in the educational system. It gives favourable opportunities for employment and good earnings, but gives access only to a specific occupation. So when young people have to choose between the two tracks at the age of 17, many chose the Gymnasium to keep open their opportunities for higher education - or just to postpone their specific choice of career and employment (ref). This tends to reduce the status of the dual system among young people. In addition, the choice of educational pathway is strongly dependent on social background. Three times as many students in the Gymnasiums have parents with completed higher education compared with the students in vocational education.

At the political level this is increasingly considered a serious problem, because forecasts for the labour market predict a significant shortage of skilled labour. In addition it is considered a problem that one in seven of the young people who complete general upper secondary education (Gymnasium) do not progress in the education system. With only general upper secondary qualifications they often have a weak position in the labour market. So from 2013 the Government has demanded that more young people should chose vocational education and less should go to the Gymnasiums. To achieve this, the challenge of low esteem and 'blind alley' of the VET-system had to be addressed. As an innovative answer to this challenge, the eux-programme was launched in 2010 and gradually implemented in most vocational programmes. To understand why this particular initiative came about, we have to look back at earlier attempts to innovate VET that were introduced earlier, but without success: introducing additional qualifications and vocational Gymnasiums.

Unsuccessful attempts to innovate

Since the defeat of the strategy for uniting the two tracks of upper secondary education in the Par-

liament in the late 1970es, policymakers have sought for other ways of improving the connections between general and vocational education. A first measure to achieve this was to offer students additional general subjects in the vocational programmes. In connection with major reforms of the dual system in 1991, 1995, 2000 (Betænkning 1112 and 1283) and 2006 (Undervisningsministeriet 2006) it was emphasised in the white papers preparing the reforms and explicitly written into the legislation that the students should be given opportunities to attain higher education entrance qualifications in the ordinary dual system. The students should be given choices to improve their academic level by taking supplementary general subjects or to take them at a higher level. One of the reasons for emphasising this was that this initiative was considered as a mean to increase the esteem of VET and attract also high performing students to vocational education, and to avoid 'dead ends' in the educational system. Even though the VET-system continued as a separate track, permeability should be secured and opportunities made available for progression to further studies from all vocational programmes.

In spite of these often repeated political aims, the actual development of the VET-system shows that these intentions have not been fulfilled. The last two decades have seen a decrease in students' progression to the tertiary level of education after completing a vocational programme (Frederiksen et.al. 2012). And a decreasing share of young people achieves double qualifications that combine vocational qualifications and entrance qualifications for the tertiary level education. This incongruity between the persistent political aim of increasing permeability and the actual widening of the gap between VET and higher education can be explained by a combination of different causes.

Explaining policy failures

A first explanation for the failure of policy to increase progression to higher education is that the political reforms of the period mentioned had multiple aims. The reforms not only had the aim of increasing the permeability to higher education, but other competing aims. From the early 1990es social inclusion in VET came high on the political agenda, supported by an ambitious goal of making 95 % of all young people complete an upper secondary programme. This diverted the attention from the academically ambitious students to students at risk of dropping out. The measures to include and retain the low performing students counteracted the aims of connecting VET to higher education.

In addition, the labour market organisations are strongly involved in the governance of vocational educational in Denmark, in the so called 'occupational self-governance' (Juul & Jørgensen 2011). This is generally considered an advantage, because it is a warrant for the value in the labour market of the qualifications acquired in vocational education. The involvement of the labour market organisations gives the programmes a strong focus on specific vocational qualifications. Many of the programmes, especially the traditional craft and technical programmes, match closely specific occupations in the labour market. This is a quality of the Danish VET-system where the articulation between education and work is based on the *occupational principle* in contrast to school based VET-systems based on the meritocratic or organisational principles (Deissinger 1998; Marsden 1999; Verdier 2013). This close linkage results in at smooth transition from edu-

cation to work and low youth unemployment. In times of increasing difficulties for non-academic young people trying to enter the labour market, this quality is highly valued by policy makers.

This is one of the explanations why numerous political initiatives to strengthen the links from vocational education to higher education have failed during the last decades as shown in the earlier Nord-VET report (Jørgensen 2014). All the major stakeholders have given highest priority to the achievement of vocational qualifications and to the employability of the apprentices. The tradition position of the employers organisations is to emphasise the importance of maintaining the practical use value of vocational education and have opposed the expansion of general subjects in the programmes at the expense of the vocational skills. As the identity of the Danish craft type of unions is strongly occupational, they have been in line with the employers on the primacy of vocational skills. Due to the craft and occupational basis of these organizations they have taken little interests in providing access to higher education for the apprentices, as this would make them lose potential members. To give an example: When the new Initial Vocational Education (EFG) was introduced the labour market organisations in the metal industries succeeded in getting the general subjects reduced to only to 25 % instead of 40 % that was required in the reform (Christensen 1978).

In addition, there has been no significant demand for additional general subjects from the vocational students/apprentices. The social background of a majority of the vocational students does not lead them in the direction of higher academic studies. Many vocational students have chosen a vocational programme because they were tired of 'bookish' and school based learning. This is especially the case for young people who start in a vocational programme forced by the activation policies that makes it an obligation to be in education, training or employment.

Lastly, the organisation of the vocational programmes does not support individual choice of additional qualifications. The vocational programmes have not been modularised or individualised to any great extent. The curriculum is standardised on the national level and most students follow the same type of courses. This is the case even after a reform in 2007 that introduced streaming and grouping of students according to their prior learning and attainment. The students were separated into different courses, but the courses mainly differed regarding their duration. Low performing students were given more time to achieve the same level as the high performing students. This means that there is only a weak tradition of individual choice of subjects and modules in the vocational schools. Furthermore, it is not economically attractive for the colleges to offer these subjects, since it is difficult to gather a sufficient number of students in each subject to organise a whole class. Another reason is that these qualifications are offered not in an integrated curriculum, but as individual courses taught separate from the vocational teaching that often takes place in workshops in the colleges. The majority of students in the vocational colleges are oriented towards vocational skills and occupational employment. Choosing additional general qualifications would separate them from their class mates and prolong their course, and this doesn't appear encouraging to many of them. So in spite of continuous political intentions to build bridges to higher education by offering additional general qualifications, this did not happen. The vocational schools failed to attract more academically oriented young people and the Gymnasiums contained to expand. As a consequence, the growth of higher education went around the VET-system, not through the VET-system that increasingly appears as a 'blind alley'

(Juul 2006; Jørgensen 2014). This was to some degree the result of another innovation in VET, the introduction of the Vocational Gymnasiums.

The *Vocational Gymnasiums* were promoted as another innovation in the 1980es to reduce social inequality and increase permeability on the road to higher education. As examined in Jørgensen (2014) they also succeeded recruiting from wider social groups that are not familiar with academic education. But the Vocational Gymnasiums haven't succeeded in offering double or hybrid qualifications that give access to higher education as well as to skilled employment. The Vocational Gymnasiums are full time school based that are mainly preparing for studies in higher education, and they include no or very little work based learning. They do not offer the skilled workers certificate, which in Denmark is required to enter the skilled labour market. They have succeeded to grow and now recruit 16% of a youth group. They partly recruit among youth that would otherwise have enrolled in a vocational programme. They draw some of the most academically strong students out of the VET-system and reduce the progression rate from VET to higher education. Consequently, this innovation succeeded in widening the recruitment to higher education, but failed to widen the recruitment from VET.

This analysis of earlier attempts to innovate the VET-system in order to create links and pathways between vocational and general education and between VET and higher education has revealed some of the dynamics of the system. This knowledge can be valuable to understand the potentials of the new hybrid eux-programme that offer 'double access'.

The new eux-programme

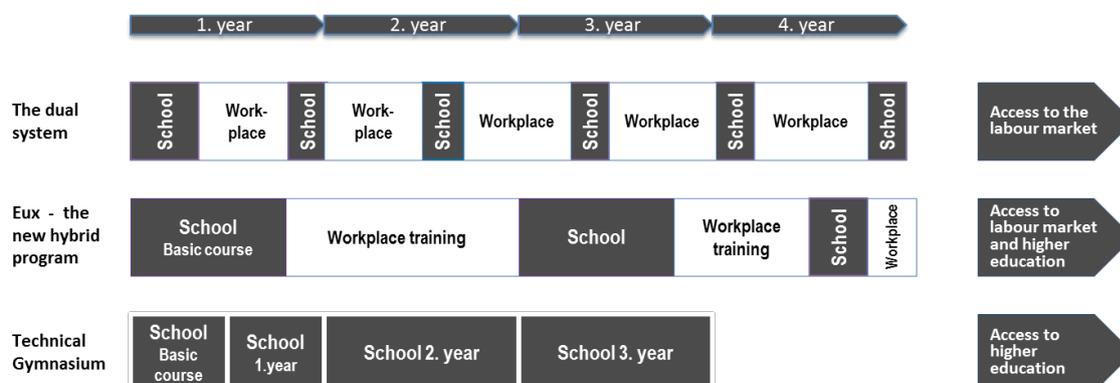
A five year developmental programme was launched in 2005 to test a programme that offered double qualifications. This so called 'EUD-HTX program made it possible to achieve a skilled workers certificate for carpenter, automation-technician or industrial technician and at the same time complete an examination corresponding to the Higher Preparatory Examination (HF) that give access to higher education. The first students from the pilot programme completed in the summer of 2010. The evaluation of the pilot programme found that the programme's duration of five years was too long to attract any wider number of students. The benefit of taking the hybrid programme was not obvious for the students compared to taking two consecutive educations. The students would only save ½ - 1 year study time when choosing the developmental programme compared to completing the one programme after the other.

A revised initiative was enacted in 2010 by with the act on the eux-programme. The eux represent a programme for integrated delivery of the general and vocational qualifications as hybrid qualifications, which means that the two types of qualifications are transmitted in a single program. The eux programme started in a limited number of occupational areas in the building trades such as carpenters and bricklayers, and is expanding in new areas, so that it covers 24 occupations by the beginning of 2015. The official evaluation of the programme will not appear before 2016 when a substantial number of students have completed it. The following analysis of the programme is based on a study made in 2011 with key stakeholders at all levels from the ministry of education over the vocational schools to the students (Jørgensen 2011; 2013) with supplementary interviews made in 2014.

The eux programme is positioned in between the two existing educational pathways: the dual system and the vocational gymnasium. As mentioned before, the normal VET-programmes do not give access to higher education. And the Vocational Gymnasium does not give access to the occupational labour markets for skilled workers. The innovative ambition of the new eux programme is to do both by integrating academic subjects into the vocational programmes. In the initial period of implementing the eux 2010 – 2015 the organisation of the programmes has differed between occupational areas regarding lengths of work based training periods and school based courses (figure 1). With a reform in 2015 all periods will be standardised six month in order to solve some of the challenges that the eux has raised for training companies and schools.

The innovative character of the programme can be understood by comparing it to similar programmes that combine general and vocational qualifications. The vocational Gymnasiums in Denmark and the vocational programmes in the Swedish ‘Gymnasiaskola’ are school based programmes that do not give direct access to skilled employment (Hallqvist & Persson Thunqvist 2014). The experience from the Danish and Swedish full time school based vocational programmes (‘Skolepraktik’ and ‘Gymnasieskolans yrkesprogram’) show that the access to skilled employment is more difficult for students from these programmes than from programmes based on apprenticeship (Jørgensen & Juul 2010; Olofsson & Wadensjö 2006). Employers in Denmark, like employers in Germany, have been very reluctant to recognize the value of qualifications acquired in full time school based VET. The successful Swiss hybrid programme, the ‘Berufsmatura’, offers (in one version, BM2) eligibility for higher education by taking an additional year after completion of the vocational programme (Smid & Gonon 2011; Nikolai & Ebner 2011). This version has become the most popular over the last years. In contrast to the Danish eux the Berufsmatura in this form does not offer integrated teaching of the two types of qualifications. And this indeed is one of the challenges for succeeding with a hybrid programme that involves two separate learning venues, school and workplace. The experience from the developmental programme (‘EUD-HTX’) demonstrated that in order to succeed the programme had to cope with some serious challenges. Most of these challenges relate to the strong institutional separation of

Figure 1: The new hybrid program eux in comparison with existing programmes



From August 2015 the periods of school based and work based training in eux will be 6 months duration

the two types of qualifications that has traditionally characterised Danish upper secondary education.

Challenges for the eux programme

The eux is basically a combination of two programmes: a three year Gymnasium and a four years apprenticeship. The length of the eux differs a bit between the programmes, but is normally four years and one or two month - and not seven years as the total length of the two programmes that it combines. This is one of the major challenges that had to be addressed in the development process until 2015. The eux is an apprenticeship programme onto which has been added a general upper secondary education. This means that the students receive a wage during the entire programme except for the first 6 months in the school based basic course. The eux programmes are covered by the occupational self-governance of the VET-system where the labour market organisations have a decisive voice.

Challenge of integration of two systems

Planning the hybrid programme has called for new forms of cooperation between stakeholders from vocational and general education at all levels. According to the law the eux is defined as a vocational programme in the dual system that has included the academic subjects that give eligibility for higher education. It is not a general programme from the vocational Gymnasium that has added work based training to get a skilled workers certificate. This organisation has been necessary to gain the support for the programme of the labour market partners, who would not cede control of the vocational part of the programme. Accordingly, the eux is not categorised as a third option between the general and the vocational track by the Ministry of Education, but as dual programme with enlarged competence. As a consequence, the Ministry of Education has left much of the planning of the courses to the training committees for each occupation, but it has nonetheless from the outset set up a narrow framework for designing the new programmes. In addition there has been some uncertainty among the many actors as to how free they are to change the academic level of the subjects, the course-work and the course duration. This has sometimes made the planning process lengthy and arduous.

The labour market partners have welcomed the new hybrid programme, though there has been some disagreements concerning the level and structure of the programme. Earlier the employers' confederation and the skilled workers unions have opposed the integration of the two tracks, because they feared to lose influence in a unified model of upper secondary education. Introducing hybrid qualifications cuts across some of the established divisions on the labour market and thus poses a challenge to the organised interests. Occupational forms of qualifications and craft types of unions dominate in the Danish labour market. The skilled workers' unions have until now pursued a strategy of introducing high quality and high level programmes inside the dual system, some lasting 5½ year, in order to attract and keep the more ambitious students. Yet, these unions have taken a positive stand to the EUX, mainly because they see this as a way to improve the esteem of vocational education. The employers' organisations generally approve of the hybrid programme, but in some industries they have been divided between smaller and larger companies. The larger

companies more often require new kind of hybrid qualifications to work on the boundaries between the development and production departments. Hybrid qualifications are expected to link the communities of the skilled workers with employees in development, planning, sales and marketing departments. Accordingly, the entrance of students from the eux might promote innovation in the workplaces by connecting professions and occupations that have earlier worked separately.

Hybridity of subjects

A contested area in the planning of the new eux was the importance and the length of the various subjects. The reduction of the duration of the programme from 5 year in the pilot scheme to 4 years and one month has made this difficult to solve. What content could be left out or reduced in order to achieve the required reduction in the duration of the length of the programme? According to the Ministry teaching in the eux must create synergies between the two dimensions of the programme by connecting the teaching in the academic subjects to the vocational content of the specific occupation (Undervisningsministeriet 2015). This has required an accreditation of some general qualifications that are acquired in the vocational subjects and a shortening of the length of some of the vocational subjects.

One way to achieve a reduction of the duration of the programme was to give credit for the general qualifications acquired in the vocational subjects. When electricians learn the technical subjects, they also learn some math. It has been a difficult question to settle, how much credit should be given for this learning. A solution to this question was to introduce new interdisciplinary or hybrid subjects, like ‘technology’, which 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.

Another way to save time by integrating the two types of subjects is through project-based teaching, where content from different subjects are integrated by having the students to work in groups on a common project. For example a vocational college made project-based teaching on ‘Bridges in Europe’ that integrated chemistry, physics, math and technical knowledge and skills. An issue of tension was the role of the various subjects involved in the integrated or hybrid subjects: Teachers in some subjects have feared that they become reduced to a minor, 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 reduce the time assigned to the individual subjects.

In the new reform of VET that is implemented in 2015 the integration of the vocational and general subject is emphasised (Undervisningsministeriet 2014:13). It is argued that this integration will make it possible to acquire the qualifications faster and better combine theory and practice in the programme. But at the same time the Ministry recommend that the vocational schools teach the general subjects in classes for students from different vocational programmes to make them financial sustainable. But obvious this will make it difficult to integrate the general subject with one specific vocational subject.

Challenge of duration of the hybrid programme.

A key question was how to organise in a four year programme the content that it otherwise takes

seven years to learn in the two separate programmes? The organisation of the programme had to balance different interests. On the one hand the length of the hybrid eux-programme should be long enough to attain the level of qualifications required for eligibility for higher education, and on the other hand it should be short enough to make a difference in comparison with taking the two educational programmes consecutively. The length should not be much longer than the ordinary dual programmes in order to attract students, but that the length should be sufficiently long to avoid a compressed programme that only elite students can complete. And it should be long enough to make employers provide training placements, which implies another challenge.

If the hybrid programme is too long it will be difficult to attract students, as five years proved to be too long in the pilot project. If the programme is made shorter, reductions would have to be made in work based periods. Reducing the time spent in a training placement can jeopardize the commitment of the smaller companies to provide placements. Reducing the school based part can jeopardize the direct progression to higher education, and only access to specific polytechnic programmes will be attained. Aiming at high levels of general qualifications in a short programme can provide more universal access to higher education, but will make the hybrid programme manageable only for a small elite. The attractiveness of the hybrid eux-programme to the students depends on the programme's qualities in comparison with on the one hand the vocational Gymnasium and on the other hand taking double education consecutively, which for some students appear more manageable: one programme at a time. As the first students only complete in 2015 it is not possible now to determine if the current organisation has proved successful.

Challenge of training placements

Another challenge to be taken care of in relation to the length of the programme is training placements. The Danish dual system is organised with block release, typically ten weeks away from the training company in a school based course each year. Employers are used to the students leaving for school based courses, but they mostly consider them a bother. There is a risk that employers will stop offering training placements if the school based courses are extended and the training periods in the company are shortened. 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 programme. This significant reduction has not passed without debate. The concern has been that too great a reduction of length 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 and the socialisation that is acquired during the training placements.

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. Apprentices are employed and paid by the training companies, and shorter training periods means lower revenue. The length of the placement is to some extent determined by financial considerations in addition to the educational considerations. The hybrid programme is based on the dual system in order to obtain support from the employers' organisations. But employers are no uniform group. Smaller and larger companies often have different approaches to apprentices and training placements. Larger companies often take on apprentices with a long-term perspective of investment and recruitment. The small and medium sized companies

provide the majority of training placements and 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 (Christensen 1978). 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 periods could cause the companies to reduce the supply of training placements for the new hybrid programme. In smaller firms apprentices often count as part of the necessary workforce to maintain the running of daily business. During the prolonged school based off-the-job periods the smaller companies might miss the apprentices to maintain the production. During the first period of implementation of the eux in 2010 – 15 the lengths of the school based courses were in some programmes up to one year and this was considered to be a problem for some companies that might chose not to take on apprentices. The question of training placements is considered a serious challenge to the success of the programme. In the period of introduction of the hybrid programme there is a serious shortage of placements for students, who have finished their basic course and need a placement to continue their programme. The challenge facing the hybrid programme is that if it cuts too much down on the length of the training placements the lack of placements could be aggravated. At the same time longer periods of work based training can make it very hard to attain a high level of general qualifications – or the length of the total programme will be too long to attract students. Accordingly, the present length of just over four year is a compromise between different interests.

Integration of different learning cultures

Experiences from the pilot programme show that it is a big challenge to integrate the learning cultures and tradition of the two different tracks. It was also a challenge to make the two departments in the Ministry of Education to cooperate on the new programme. Some in the upper secondary school department believe that placing the programme under the auspices of the Gymnasiums would have been beneficial, partly because this would make it easier to attract young people to the hybrid program.

On the whole, the eux has been welcomed by the labour market partners and teachers' organisations, but in practice many difficult question arose. In particular, the designing of the courses and the planning in the training committees took time. It was difficult to decide how the practical part and the school-based parts should fit together in such a way that the programme offers a viable alternative to existing education paths.

The different institutions of education also have to cooperate with regard to timetables, teaching staff planning and syllabuses. The vocational schools had to draw in teachers from the vocational Gymnasiums to teach in some of the general subjects. Not just the teaching staffs, but also the students in the two tracks, have to be socially and culturally integrated. The two areas of education have different ways of organising and structuring the teaching. It has also been a challenge for the vocational schools to take the training committees' instructions into consideration while also following the framework established by the Ministry of Education.

The schools have been quite positive about the hybrid programme. But they also point to the

risk that the programme will recruit the strong students from the ordinary dual programmes and thus their esteem even further. There is thus a risk that the effect of the hybrid programme will be the opposite of the intended, to increase the esteem of vocational education.

A last challenge concerns the level to be acquired in the academic subjects – and what type of hybrid qualifications should be offered. Should it be high enough to gain access to all institutions of higher education (full hybrid qualifications) or just to the lower levels, the Bachelor degrees at the University Colleges and short cycle programmes at the Vocational Academies? On the one hand the Ministry of Education has paid attention not to set the level too high and not 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 programmes in higher education, e.g. the Diploma in Engineering for electricians.

The training committee argues that the advantages of going through a hybrid programme would disappear, if the students only gain access to short cycle programmes of the vocational academies. If the students have to take supplementary courses in order to gain access to their favourite higher education programme after completing the hybrid programme, the idea of the hybrid programme will be lost. The Ministry of Education has decided that the level corresponds to the higher preparatory exam (hf) which is not enough to get admission to some of the more popular and demanding programmes in higher education.

Conclusion: eux as innovation in VET

The eux is innovative because it sets out to create a truly hybrid programme by combining two types of education that in Denmark has been strongly separated until now. This is no small endeavour as the gymnasiums and the vocational schools have different origin and tradition, recruit from different social strata and have different forms of governance and learning culture. What is unique about eux in a Nordic context is that it goes beyond the school based Swedish and Finnish upper secondary vocational programmes that combine vocational qualifications with eligibility for higher education. The Danish eux is different by building on the apprenticeship model that gives the students direct access to skilled employment (a skilled workers certificate). This raises some new challenges that the VET-system at all levels have tried to handle as has been analysed here. In relation to the length, academic level, weight of subjects, training placement, etc. some difficult trade-offs had to be balanced. One of the innovative dimensions of the eux is that it to some degree integrates vocational and general subjects in new combined subject and in problem-based work, where new forms of genuine hybridity are developed (Dibbern & Østergaard 2013).

No students have before summer 2015 completed the new eux programme, and it has only been introduced gradually in new vocational areas in addition to the two programmes in the pilot project. Consequently, no conclusive assessment of the success of the eux is available at the present time. Concurrently, it is not possible to determine whether the eux has mainly attracted young people who would otherwise have chosen the vocational Gymnasium, or if eux has attracted the most ambitious students from the ordinary VET programmes. This question is important to decide if the programme has succeeded in attracting more academically strong students and in raising the

esteem of the vocational schools. The eux programme has been strongly marketized and no doubt this has contributed to make it clear that a VET programme now can give admission to higher education.

It is clear that the new eux programme is considerably more demanding than the ordinary VET programmes, which implies the risk that it will become a kind of elite education for a very small group of students. Enrolment in eux has exceeded the expectations, but still comprises only 2% in 2013-14 of all students in VET (Undervisningsministeriet 2014). It is likely that the introduction of the eux contributes to the existing hierarchisation of upper secondary education where the technical vocational programmes rank lowest. But it might at the same time raise the esteem of the VET-system by demonstrating that it is not necessarily a 'dead end'.

2. Innovations to improve linkages with the labour market and social inclusion in VET

Even though the Danish VET-system provides a quite seamless transition to the labour market for students who complete an apprenticeship, the system is burdened by two serious weaknesses that seem to be inherent to dual systems (Ryan 2012). The first problem is the recurrent – and almost permanent - shortage of training placements, which is caused among other things by the fluctuating supply of placements depending on the economic conditions in the labour market. The second problem is the weak connections between the two learning environments, vocational school and training company, in a learning perspective. The world of work and the world of education appear very often to be very weakly connected in the perspective of the learners (apprentices).

Both of these weaknesses have for decades been recognised by the stakeholders of the VET-system, not only as weaknesses of the quality of training, but also as problems of inclusion. Both weaknesses are known to increase the propensity of students to dropout of education because they cannot find a training placement or they cannot find meaning in the training. Over the years a range of measures have been taken to solve the problems, but the problems seem to persist.

Innovations to improve inclusion and linkages with the labour market

Challenge: the recurrent shortage of training placement in companies.

Innovation: the establishment of 49 new *training centres* in vocational schools

Challenge: the weak connections between vocational schools and training companies in a learning perspective.

Innovation: the introduction of a *Practicum*, a third learning space, to connect education and work.

The deficit of training placements has increased during all downturns in the economic cycle since the 1970es and has recently grown strongly in the years following the financial crisis in 2008. This problem has been addressed in all the reforms of VET for the last two decades (see report 1b: Jørgensen 2014) first of all by expanding the opportunities for school based training to compensate for the lack of training placements in companies. Although this has to some degree alleviated the problematic situation for students looking for training placements, it is not by the majority of the students seen as a valuable alternative to work based training. Consequently, by a reform an innovative new institution was introduced in 2013 to meet the challenge: *the training centres*. This innovation is not only meant to handle the challenge of shortage of training placements, but also to increase inclusion in VET, as one the main reasons for students' dropout from the vocational programmes is that they cannot get access to a training placement.

As to the weak connections between the two learning environments this problem is recognised in the latest reform, which is implemented from August 2015 (Undervisningsministeriet 2014). In

this reform three measures are introduced to improve the linkages between school and workplace for the students. These measures might be helpful to increase the linkages between the two learning environments, but they can hardly be described as innovative. They include the opportunity for vocational school teachers to do short internships in training companies. This opportunity has existed for decades, but now some financial support is allotted for this. The other initiatives include relating teaching more to work practice and defining learning goals for using theory during the training placement and more systematic recapitulation in school of learning during training placements. A more innovative measure is not included in the reform, but taken up by a few trade committees. This innovation is called a *Practicum* and involves defining a common project work that connects school and workplace. It commits school teachers, workplace trainers and the apprentice to work together to define and solve a work related problem (Koch & Lundsgaard 2000).

2.1. Innovation: the new *training centres*

From school based training to the new training centres

In other countries with dual systems of VET, like Germany and Switzerland, students must have a training placement in order to get access to a vocational programme. In Denmark the majority of young people, who start in the basic course of a VET programme, do not have a training contract beforehand. During the full-time school based basic course (6-12 months) they have to find a training placement to be able to continue in the main course of typically 3 years duration. But the supply of training placements in companies depends on the situation in the labour market and in times of economic downturn a large group of students who have completed the basic course cannot get access to a training placement.

The gap between demand and supply on the training market has been an almost permanent malfunction of the dual system, since the reform in 1976 that allowed students to start in the first school based part of a vocational programme without having a training contract with a company in advance. In 2014 one third of the students who completed their basic course, were registered as seeking an apprenticeship contract in vain. This shortage of placements contributes to two serious problems. One is the exclusion and dropout of students from the VET programmes. The other is a predicted shortage of skilled labour.

As to the first problem of *inclusion*, the students are competing in the training market for placements and this leads to a process of selection and disengagement of some students in the basic courses. This affects especially ethnic minorities who do not have access to social networks that can help them to acquire a training place. This is generally recognised as a major cause for the high drop-out rates in the VET-system, where only half of the students who start a programme, actually completes the programme. Dropout is oftentimes not in itself problematic, as many of the students, who drop out, shift to another basic course, in some instances after they have spent some time in the labour market. Almost every fourth student who starts basic course has previously attended another course and this has helped some of them to become more determined on their choice of program. But others drop out several times, and analysis of register data has shown

that shifts by themselves do increase the risk of never completing any post-16 programme (Jensen & Larsen 2010). For this reason, a variety of measures have been taken over the last decades to compensate for the lack of ordinary training placements.

The other problem is a predicted future *shortage* of skilled labour, which according to forecasts will take on a serious magnitude. For example in the mechanic and metal occupations 4.500 skilled workers will retire yearly from the labour market during the next six years, but only 2.400 apprentices will complete a programme in these occupations (AE 2013). Such forecasts have made policymakers to shift from promoting a further expansion of higher education to supporting expansion of enrolment in upper secondary VET. But the lack of training placements is a critical constraining factor for achieving this goal.

As work based learning in training placements is by all the stakeholders considered to be a core quality of the Danish dual VET-system, none of the stakeholders have been in favour of replacing this system with a full-time school based system, like the Swedish Gymnasiums. Voices in the Social Democratic Party has from time to time advocated in favour of an integrated school based upper secondary school for all, with the argument that this could contribute to increased parity of esteem between the academic and the vocational educational programmes. But this has not been the position of any parties since the 1970es. Even though there has been little support for a permanent full-time school-based vocational programme, the growth of the number of young people not in education, employment or training (the NEET group) has required some kind of an answer. This took the form of the 'School-based Training' (in Danish '*skolepraktik*' or 'SKP') that was introduced in 1990 as a response to the critical lack of training placements in the 1980es. It was only meant as a compensatory measure that would not alter the ordinary dual system of VET.

The existence of the SKP, the school-based training scheme, illustrates a dilemma inherent in the dual system (Juul & Jørgensen 2011). The dual system is vulnerable to cyclical economic fluctuations that strongly influence the supply of training places. This results in recurrent mismatches between the social demand for training placements and the placements offered by companies. The intention of the Ministry is to provide an alternative for young people who are not opting for the academic pathway, and who are unable to obtain a apprenticeship contract with a company. The full time school based training scheme, the SKP, is meant to ensure that young people, who choose a vocational programme, have the same opportunity to complete their education as young people who choose an academic programme. The SKP is assigned a key role to promote inclusion of ethnic and gender minorities and to promote parity of esteem between vocational and general upper secondary education. But at the same time On the other hand there is a strong reluctance on the part of the Ministry of Education and the employers, to promote the SKP scheme, because it is expensive for the state, and because there is fear that it could undermine the dual system and reduce the influence of the employers.

As a result, the SKP scheme on the one hand is meant to offer a safety net for students without a training contract, but on the other hand it is not meant to be a competitor to placements in the dual system. Policymakers do not want the SKP to become an alternative of equal value to the ordinary placements in a company. The SKP is defined as a provisional scheme that is reduced or closed down as an option as soon as the situation on the training market is improving. As a result the SKP scheme has been given priority by the vocational schools and is considered as a scheme

of less value than ordinary placements. The SKP also has a bad reputation among most of the vocational students, and it is seen as an unattractive alternative. Around half of the students, who qualify for enrolment in the SKP, do not accept this option. Accordingly the SKP did not fulfil the intended function as a measure to improve retention and raise the share of students who completes the programme they enrol on. This challenge has to be addressed with the sharp drop in the supply of training placements in 2008.

Introducing the training centres

Following the sharp increase in the shortage of training placement after the financial crisis in 2008, the SKP was gradually expanded, but did not solve the problem due to the tarnished image of the SKP. With a reform in 2013 the SKP was changed into a new and permanent institution, the *training centre* (Danish: '*praktikcentre*'), that offer work based training and take responsibility for realising the *educational guarantee* declared by the Ministry of Education. This guarantee implies that students, who start in a basic course in a vocational school, are guaranteed the right to complete a programme in the VET-system, though not necessarily the specific programme they want.

The training centres have basically the same responsibilities as the SKP, but they also have an extended mission. The training centres are not only meant to compensate for the shortage of placement resulting from fluctuations in the business cycles. They are also meant to meet a range of structural changes in the role of training placement and work based learning in VET. One of these changes is that the production process is becoming increasingly *specialized*, which means that the individual company can offer only a part of the broad collection of vocational qualifications required to learn an occupation.

Another limitation of training placements results from technological, economic and organizational changes. Many companies have introduced new organizational principles with short delivery times (Just-in-Time production), quality assurance and 'zero-error production', which means there are fewer opportunities for young people to directly engage in production and learn by experimenting, testing their skills and learning from their mistakes. Yet another structural change is a shift from a 'stakeholder' to a 'shareholder' economy (Green 2006). The companies are increasingly forced to adopt a short-term, "bottom-line" approach because they are assessed on the basis of their financial returns for investors, rather than their long-term contribution to society. This means that the companies have less ability to make long-term investments to secure a skilled workforce for the future by training apprentices. In addition the opportunities for long term planning for especially smaller firms are reduced due to more volatile markets.

All these changes indicate that the role of companies in the dual system is changing. This implies a reduction in the capacity of the individual company to offer the whole set of vocational qualification requires and to offer a three year contract. These changes can be addressed by the new training centres. The purpose of the training centres is not just to offer students a temporary training until they can obtain a permanent training placement in a company. The purpose is also to coordinate the students' multiple, shorter placements in different companies and to supplement this with school based training to ensure that the students acquire all the qualifications required to complete the programme.

The position of the fifty Danish training centres in the institutional architecture resembles that of the Norwegian local training agencies (in Norwegian: *'opplæringskontorer'* Olsen & Hagen & Høst 2015). A significant difference, though, is that the Danish training centres are established at the initiative of the state and under the auspices of the vocational schools, in contrast to the situation on Norway, where the employers took the initiative and owns the local training agencies.

The Danish training centres is an innovation that also has parallels to the Swiss *training networks* that consist of training companies that collaborate to offer training placement. The apprentices typically rotate between the training companies with a period of one year in each company. This initiative increases the supply of training placements and gives apprentices access to the diverse learning environments in multiple firms (Imdorf & Leemann 2011). When the individual training firms become more specialised, the networks of training firms can offer the broader range of skills required to be trained in an occupation.

As the training centres were introduced in September 2013 they are still in a process of implementation, and it is too early to assess definitely the merits of this innovation on the Danish VET system. Basically the training centres are built as a renewal of the SKP and thus have to cope with the weaknesses that gave the SKP a bad reputation (Jørgensen & Juul 2010). These weaknesses are, first, that the SKP are not allowed to engage in real production of goods and services for customers or citizens, and thus lack the authenticity of the ordinary workplace. Secondly, the SKP was run as part of a vocational school and the students retained the identity of being students, not apprentices or craftsmen/-women 'in the becoming'. Thirdly, not all the vocational schools gave priority to the quality of teaching, facilities and equipment in the SKP and this gave the scheme a low esteem among the students.

A preliminary assessment of the centres has indicated some results (EVA 2014). The training centres have similarities to the earlier SKP, but are seen as solving their tasks in a more systematic and well-structured way with a higher standard (EVA 2014). They vary significantly in size as some have only 10 students in one programme and others up to 500 students in 18 different programmes. Around 20 % of the students in the training centres obtained an ordinary training placement with the assistance of the training centres during the first six months and that the centres use a broad range of placements. The assessment recommends that the contacts of the centres to companies should be organised more systematically. The centres are working to find niches to organise production that can be sold to customer in order to give the students the experience that their work has value for other. The assessment recommends that the collaboration with the stakeholders in the local labour market should be improved to find more opportunities to organise production without competing with local firms. Statistical figures one year after the start of the training centres show that half of the students eligible for the training centres do not accept this option (DA 2014). One reason is that the students' grant while in the training centres is significantly lower than the apprentices wages.

The training centres no doubt have to struggle hard to overcome the negative image of the SKP, the centres have the opportunity to develop a new kind of 'third learning space' that combines the qualities of the world of work and the world of education. If they succeed, will be clear during the next years when they become established as distinct institutions independent of the vocational schools.

2.2. The *Practicum* – an innovation to connect work and education

The concept of *Practicum* is based on Donald Schön's studies of professionals learning in practice across different learning environments (Schön 1983). In the Danish VET-system the concept was used to describe a model development project that was designed to develop new types for partnerships between schools and companies (Koch & Lundsgaard 2000). The aim of the model project was to improve the connection between students' learning processes in the two learning environments of schools and training companies. The *Practicum* is a kind of 'third learning environment' situated between the vocational school and the training company (Goetze et al. 2002). For the students it has the qualities of the workplace learning by working on authentic production tasks to be used by colleagues, customers or others, "it is real". For the companies it has the quality of contributing to the improvement of the production by solving a special work task, by developing a new tool, a new product variety or an innovation of the production process. This task is defined in collaboration between the apprentice, the training company and the vocational school teacher in a way that applies and develops some of the qualifications required of the apprentice.

The need for the innovation of the *Practicum* was based on recognition of the key problem that students in VET often experience a lack of interaction between schools and training company (Jørgensen 2004; Tanggaard 2007; Nielsen 2009). The teachers find that students have difficulty seeing the purpose of parts of the school education, if it is not linked to what the student is involved with in their apprenticeship. The students feel that in the vocational school the teachers often speak a different language than they are used to from their workplace, and they encounter theoretical subjects that they had not anticipated and cannot link to practice in the workplace.

The first model project to demonstrate the usefulness of the *Practicum* was developed in Copenhagen technical School in the late 1990s on the initiative of two teachers (Koch & Lundsgaard 2004). This innovation was slow to spread even though it was supported by the Ministry. The reason is most likely that it is quite demanding for the schools as well as for the companies. One of the main reasons for the lack of communication and cooperation between schools and companies is lack of time and resources (Nielsen 2009). The teachers don't have time to visit all the different training companies in a class of 20-25 apprentices. And workplace trainers don't have time to visit the vocational school to become acquainted with the apprentices' learning in school. The evaluation of a later developmental project on *Practicum* shows that lack of resources remains a barrier to the implementation of the idea of a *Practicum* (Jørgensen 2010). From this evaluation experiences from the gradual implementation of the *Practicum* in two vocational programmes, painters and industrial operators, will be described shortly in the following.

Practicum in the painter education

The partnership project had most success in the building painter occupation, because in 2008 the trade committee introduced the concept of 'Practicum' in the education by incorporating it into the education's training ordinance. The idea behind the *Practicum* model is that the student, the company and the school jointly define a developmental project or a work task which involves

both the company and the school. The Practicum thereby functions as a specific form of partnership that binds the vocational school and the company together through the student's learning by working with a task that is solved through involvement of the two learning environments.

For the painters, the Practicum involves the inclusion of two project assignments in their education. Here, a project assignment is defined in collaboration between the school, the company and the student, which the student then works with during their training placement and subsequently develops and presents at the school accompanied by a representative from the training company.

To give an example, a Practicum project was developed with a smaller painting company in Thy, which was already active in creating a good working relationship with the school. A Practicum project was agreed upon, and a project was planned during the placement period. The apprentice brought the project back to the school while on block release of ten weeks from the training company. The project was a decorating job at a public school, where many of the things to be learned during the education could be integrated. The student brought the task into the school and planned it and after the school period the student took it to the training company and implemented it.

The decoration project in question represented quite a demanding student project. There are also opportunities to carry out Practicum projects in the more routine work. These could be more ordinary outdoor tasks, where the Practicum project consists of documenting the profession's workflow, for example using a digital camera. Practicums can thus be a manageable undertaking for some of the smaller companies who are unsure of what it entails. The aim of the project is to link the work based learning with the school based school learning, and to provide the students with a greater understanding of the relevance of the theoretical part of their training, such as the theory of colour and the working environment. Positive feedback has been provided by companies, who experience it as an advantage that the student, through the project work, becomes more independent and takes more responsibility.

The positive experience gained from project work in the painting occupation has led to the trade committee incorporating the Practicum into the curriculum. The trade committee has also prepared information material to inform the companies about the Practicum scheme. A major effort is also required from the schools to inform the companies of this new element in the education. This requires that schools prioritize their outreach work, where teachers have the opportunity to seek out companies and advise them about the new initiative.

Practicums in the industrial operator education

There are large differences between the conditions prevailing at the various industries that have participated in the partnership project, in particular between painters and industrial operators. For industrial operators, the Practicum has been included as part of their education for several years. At the end of each school period, the teacher gives the students an assignment to bring with them to the company and which they will work on until the next school term. Practicum projects can vary from very large projects dealing with the reorganization of the entire production process, to small methodology improvements for a single task. The school places great importance on

the teacher visiting the company to explain exactly what takes place in the school, and what is expected of the company. When a new company takes on an apprentice, it is vital to make clear that the company is also required to contribute to the student's education, including in relation to the student's work assignments during school periods. The industrial operator education is also special in the sense that many of the students are adults and are already employed by the company. This has a very positive impact on the companies' commitment.

Each time the student is in their training placement, they receive a visit from a teacher. This usually occurs in the middle of the placement period to provide guidance for the student and for the company about the task that the student must solve. Generally, the Practicum project is designed in collaboration between the company and the student. The student documents the completion of the project in the form of a report, which they bring with them to the school. The teacher then evaluates and comments on the project, with special emphasis on ensuring that the student receives detailed feedback on their project. The projects are not graded, partly because the teachers do not always have an insight into the specific issue that the student has worked with at the company. It can therefore be almost impossible for the teacher to assess whether the student has done good work. The teachers also try to incorporate the Practicum projects into the teaching at the school. However, this can be difficult, since both the companies and the tasks can vary greatly, and it can therefore be difficult for the other students to understand the context. The school also invites the training companies to the school at the end of each training period, and about four out of five companies attend.

The relation between the vocational school and the training companies is often very dependent on the personal networks developed by the teachers over many years. The industrial operator education is organized with an adult version, which has no basic course, where the school automatically gets to know the students. Therefore, the school is proactive in relation to the companies in order to get contracts for students for each cohort. At the industrial operator education, the teachers have also started to visit the students at the companies during the students' placements. This takes place in connection with the students working on their Practicum project during their placement. Furthermore, the school has started to follow up on the projects as part of the subsequent school period, so that the students can feel that they are performing relevant tasks that others find interesting. The teachers have discovered that it is very important to cultivate the collaboration and to 'network' widely when they visit a company.

Partnerships pose new challenges for teachers

Practicums requires that teachers engage more with the companies and, for example, that they follow-up on the Practicum projects that the students perform at the company. This closer contact can be established in a variety of ways. One obvious way is to exploit the fact that the students are good at using mobile phones to take pictures and upload them to the internet. Another Danish innovative development project have very positive experience with this, where the electrician apprentices used their mobile phones to communicate with their teachers at the vocational school by sending videos and pictures of their work during their training placement (Gleerup et al. 2014).

Partnerships in form of Practicums means that both the schools and the companies undertake

to cooperate with respect to the students' project work. This presents new challenges for both parties. In the painting trade, a local interview survey was conducted with a number of companies about their perception of the Practicum scheme. Generally the response was positive, and only one company had a negative impression. It is also a challenge for teachers to manage Practicums during the school period. The teaching must now be organized based on the tasks that the students bring with them into the school, and these can vary enormously. This can make it difficult to incorporate the Practicum process into a common period of, for example, two weeks. An alternative is to arrange the Practicum as a flexible activity alongside other teaching, so that each student can use the time they need. There is a risk that this will be an additional burden on teachers, when they have to deal with the many different projects that the students are working with. It can also be more difficult for students to learn from each other by working in groups, because it can be impractical for the students to work together if their tasks are very different.

Practicums require that the schools must be responsive to the specific circumstances and needs of the individual companies. Teachers need to be better at handling the wide range of project tasks that students engaged in Practicums bring with them from the different companies. This means that the teaching during the school periods cannot simply follow a predetermined curriculum for the entire cohort, but must be open to accommodating the students' various projects. The teaching must be adapted to the various companies that the students come from, because the companies are specialized in different areas. However, the schools must also ensure the technical range of the teaching, so that the breadth of the education is maintained. The teaching should not be so specialized that the students cannot use what they have learned in other companies. There is thus a need to make the standard curriculums more flexible and to develop new pedagogical approaches and administrative systems for communication between vocational schools and companies. Practicums can provide new opportunities, because cooperation can be based on a specific project assignment that is tailored to the individual student and the needs of the individual company.

Experiences from the Practicum project

Practicum – a good basis for partnerships

The central issue raised by the project on partnerships is how companies can be encouraged to participate in improved cooperation with the schools. The most successful part of the project was the Practicum, which has been shown to engage the companies. Practicums show how tangible cooperation can be established between schools and companies with regard to projects and assignment which the companies perceive as useful. One reason for this is that the Practicum process is based on the companies' own production and work, which are the company's principal interests. Practicums promote interaction and collaboration between the teachers and masters in connection with defining, implementing and evaluating the assignments. It provides both parties with a greater understanding of each other's world. The Practicum can establish a new '*third learning space*' in between the world of work and the work of education. It can combine the authenticity and relevance of the workplace with the room reflection and for linking practical problem-solving with theoretical knowledge offered by the school.

Binding frameworks promote partnerships

An important experience gained from the project is that it is crucial that the Ministry of Education and the trade committees establish a binding framework and rules governing the Practicum process. The provision in the training schemes regarding Practicums has had a major impact on encouraging companies to welcome the idea. A binding regulation can help to solve a classic problem in vocational training, namely the ‘free rider’ problem. This problem occurs because some companies can recruit the professional skills that they require, without having to train the apprentices themselves. One company manager explained that some companies are unwilling to take on apprentices, because they have experienced that the neighbouring company hires them as soon as they are qualified. In order to incentivise the companies to invest resources on good training, there must be some level of assurance that other companies will do the same. After all, it is the same local labour force that all the companies depend on. There is therefore a need for a common, binding regulation that can ensure that all companies maintain the same standard of training with regard to establishing a good level of coherence in the students’ education process through collaboration between the school and the company.

The active outreach approach should be prioritized.

One of the most important results of the project is that it has encouraged the schools to focus on the proactive, outreach approach to companies throughout the students’ education. The project has shown that Practicums require a systematic outreach effort by the schools in order to ensure that the interaction succeeds. The schools cannot expect the companies to take the initiative. A good example from the project is that one school, in connection with the Practicum process, has engaged a master from a company as a consultant in the teaching. This has functioned very well, especially in terms of disseminating information about the Practicum to the masters. During a Practicum, the parties can collaborate to design a project assignment to be carried out in the workplace and from which the company can benefit. This requires that the teachers shall visit the companies and act as consultants to support the work of formulating such project assignments.

Qualification of the teacher as a consultant.

The project has demonstrated a need to qualify the teachers in the role of professional consultant in relation to the companies. In vocational educations, it is often the teachers who are in charge of the task of developing networks and contacts with the companies. It is an advantage to maintain continuity with respect to the contact with the companies, and that it is the same person from the school that they meet over a longer period. Teachers need to be made more aware of when they are stepping out of the role of teacher and into the role of consultant and they need training in how to carry out their consultancy tasks.

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