VOCATIONAL EDUCATION AND TRAINING IN SWEDEN: FROM WORK-BASED-LEARNING TO SCHOOL-BASED-LEARNING – AND BACK AGAIN?

EDUCACIÓN TÉCNICO PROFESIONAL EN SUECIA: DESDE UN APRENDIZAJE EN EL LUGAR DE TRABAJO HACIA UN APRENDIZAJE EN EL COLEGIO – ¿Y VICE VERSA?

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Abstract

Vocational Education and Training (VET) in Sweden has evolved through cycles related to political views about the role it should play in the development of society, particularly concerning employability and social cohesion. From the 1950s onwards, public authorities have mostly carried out VET, and up to the late 1980s responsibility lay with the central government. In the early 1990s decentralisation started, and the responsibility and financing shifted to the municipalities. This article analyses these transitions in VET by focusing particularly on four models of organisation. The main intention of the article is to provide a springboard for discussion regarding the consequences of specific lines of development in VET. At a time when VET models in countries like Germany and Switzerland have become a reference of expected development; it is of paramount importance to examine the context specific aspects before attempting any further use of international experience.

Keywords: School-based vocational education and training, work-based vocational education and training, policy development.

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Resumen

La Educación y Formación Profesional (FP) en Suecia ha evolucionado a través de ciclos relacionados con puntos de vista políticos sobre el papel que debe desempeñar en el desarrollo de la sociedad, en particular en relación con la empleabilidad y la cohesión social. Desde la década de 1950, las autoridades públicas han llevado a cabo sobre todo la FP, y hasta finales de 1980 la responsabilidad recaía en el gobierno central. A principios de 1990 se inició un proceso de descentralización, y la responsabilidad y la financiación se desplazó a los municipios. Este artículo analiza estas transiciones en la FP, centrándose sobre todo en cuatro modelos de organización. La principal intención de este artículo es proporcionar una plataforma para el debate sobre las consecuencias de líneas específicas de desarrollo en la FP. En un momento en que los modelos de formación profesional en países como Alemania y Suiza se han convertido en una referencia de desarrollo esperado es de suma importancia examinar aspectos específicos del contexto antes de realizar cualquier otro uso de la experiencia internacional.

Palabras clave: Educación escolar y la formación profesional, formación profesional basada en el trabajo y la formación, el desarrollo de políticas.

Introduction

There is a substantial volume of research in the Swedish context, which coincides in different ways to argue that Vocational Education and Training in Sweden has evolved through cycles related to political views about the role it should play in the development of society, particularly concerning employability and social cohesion (Cedefop, 2009; Håkansson, Nilsson et al., 2013; Panican, 2014). Equally relevant has been the influence of the associations of employers and the industrial sector (Axelsson, 1996; Olofsson, 1997, 2007; Olofsson & Wadensjö, 2009; Panican, 2014). In *The Emergence of New Models of Organisation of Vocational Education in Sweden*, Anders Nilsson (1994, pp. 25-36) conducts a valuable analysis for understanding the past and present development of VET in Sweden. The presentation that follows draws heavily on this study[1] .

[1] The author wishes to thank to Professor Anders Nilsson, at Lund University, Sweden, for supporting this article.

According to Nilsson (1994, p. 25), programmes aimed at increasing the volume of vocational education and training of a higher quality has been very much in vogue. Moreover, there is a similar drive today (Panican, 2014). This is true of practically all industrialised countries, with the USA as a notable exception and the Japanese on-the-job training system as a special case (Shackleton, 1995). It is particularly the case in the European Union, where several programmes to enhance the volume and quality in vocational training have been launched. Sweden is considered an exception to this tendency. One interesting feature of Swedish policy is that several new organisational forms have emerged. From the 1940s onwards, a large part of vocational education has been carried out by public authorities, and since the early 1970s, this is true of almost all-vocational education in Sweden. Up to the late 1980s, the responsibility lay, either directly or indirectly, with the central government. Recently, however, responsibility and the financing have been shifted over to the municipalities. This decentralisation has also implied that the previously very uniform system is becoming more diversified. Furthermore, the possibilities for companies to participate in vocational education have increased. Companies, in particular in the manufacturing industry, have seized upon this opportunity and invested quite substantially in vocational education in different forms. The purpose of this article is to investigate the evolution of VET in Sweden in specific transitions related to what we can term work-base learning and school-based learning. With these intentions Nilsson´s (1994) analysis of vocational education preparing people for work in the manufacturing industry is used as example.

VET in Sweden as an arena of tensions

Vocational education can be seen as an arena where several interested groups struggle to exert their influence over the contents of the education and training. Theoretically, markets, e.g. the labour market, as well as political forces, are regarded as "arenas", where interests groups compete for influence and power (Olsen, 1984). Nilsson (1994, p. 25)

refers to a study by Meyersson, Sthål & Wickman (1990), which was also consulted for this research, to argue that in Sweden the markets for housing, agricultural products, and labour, have been particularly influenced by tensions between interest groups. According to Nilsson (1994, pp. 25-26), this is essential to consider when analysing the turns in Swedish vocational education. Its volume as well as its content is in a sense determined in a "market", where a number of interest groups are asserting their influence, both from the demand and the supply side. It seems plausible that the possibilities for interest groups to act are particularly significant in the shorter periods when drastic changes occur almost simultaneously in different areas. The early 1990s constitutes such a "formative phase". In these years, the Swedish economy in general, and the manufacturing industry in particular, underwent its deepest crisis since the 1930s. This implied, among other things, that the economic conditions for the schooling system worsened. In addition, the municipalisation in 1991 brought about new conditions and opened up for possibilities to change existing forms of vocational education. The changes have been much more far- reaching in those education and training programmes aimed at the manufacturing industry than in other programmes. The main reason is the fact that there has been a widespread dissatisfaction among companies with the quality of the industrial programme. The inability of the authorities to "deliver" is an important background to the present development. With the decentralised system, possibilities have emerged for different groups, more or less well organised, to change the contents as well as the organisational forms of vocational education to suit their own particular interests. Examples of such groups are politicians with a particular interest in education, as well as teachers, trade unions, and local companies. These groups have, in collaboration or in conflict with each other, potentially gained better opportunities to increase their influence at the expense of the school authorities in the municipalities.

Four models - organisational forms - of vocational education in Sweden

Reviewing the development of VET in Sweden, Nilsson (1994, pp. 26-27) argues that for a long time, vocational education for the manufacturing industry has been organised in a uniform, school-based manner. This is obviously a phase that followed from what we can call the work-based period in the old apprenticeship system of the 19th century and earlier. In the 1970s, and during most of the 1980s, it was organised in the line of study called "workshop techniques", a two-year programme where emphasis was laid on the acquisition of practical skills, but the programme also contained a limited number of theoretical components. Nilsson (1994) claims that an allegation that the programme recruited boys who were tired of school and were only waiting until they became 18 years old (and, in practice, gained access to the labour market) is perhaps exaggerated, but it is not entirely false. The programme provided training, which was useful in the prevailing industrial organisation of the 1970s. During the 1980s, this situation changed. Technical and organisational change implied that companies demanded a better theoretical basis among their employees (c.f. Nilsson, 1994). Vocational education was re-organised into three-year programmes. The successor of the "workshop techniques" line of study is called the "industrial programme" (*industriprogrammet*). This is still a rather uniform programme, but it includes possibilities for adaptation to local conditions. With the municipalisation of the upper secondary school in 1991 (including vocational education), the opportunities to create local varieties of the industrial programmes have increased. Simultaneously, however, dissatisfaction with the programme increased. The students have had great difficulties with the increased amount of theoretical education. Moreover, at the same time, companies' demand for workers with a better theoretical knowledge has increased. In this problematic situation, alternate models for vocational education have emerged during the past few years. Nilsson (1994) discusses four different models of vocational education in the manufacturing sector presented in the following as a showcase of the transformations.

The industrial programme

In this programme, about one-fourth of the time was formerly devoted to theoretical subjects. Slightly more than 50 percent consists of vocational subjects, and in the remaining 20 per cent the student can choose between several optional courses. A characteristic treat is the "education in workshops", which implies that at least 15 weeks should be spent in workshops. This part of the education has often turned out to be problematic. It implies that the time spent in a workshop shall contain education as well as practice. This poses new demands on the companies, and a large number of them declined to take part in the new system. They claimed that they do not have the personnel, or time, available to give the students proper instruction. Thus a paradoxical situation arose. Although the industrial programme allows for more time in, and a closer collaboration with, workshops, there are ways in which the situation is worse now than it was with the two-year programme. The study conducted by Nilsson (1994, p. 27) points to this as one major problem in the industrial programme. Another problem is, according to the same study, related to the fact that the programme enjoys a very low status among students. Few students apply for the programme, and those that do tend to have low motivation and very low grades from comprehensive school; they often have great difficulties with the theoretical subjects in the industrial programme. The low quality characteristic of the programme reinforces the companies' reluctance to provide the students with "education in workshops". Many representatives of the companies a) do not believe that the students will be able to profit by the "education in workshops" and b) do not intend to hire them after school, anyway. From the mentioned limitations, Nilsson (1994, p. 27) gives an account of the emergence of alternatives including a consideration of renewing the "old" apprenticeship system.

The apprenticeship system

In Sweden, the apprenticeship system came to be regarded as an obso-

lete system from the late the 1950s. The Employers' Federation (*SAF*) and the Swedish Trade Union Confederation (*LO*) argued, within the framework of their joint organisation the "Vocational Council of the Labour Market", that workers needed a better theoretical understanding of the work processes and a more general vocational training. The importance of the apprenticeship system diminished, and with the advent of an integrated secondary school system in 1971, apprenticeships became a rare exception. It did not fit into the new organisation and, furthermore, wage negotiators were not happy with a specific pay system for apprentices. With the establishment of the new system of secondary education in 1991, local models were encouraged. In some municipalities, the possibility to reinstitute an apprenticeship system was discussed (Nilsson, 1994, p. 27).

The main motive to engage in an apprenticeship system was, according to the study by Nilsson (1994, p. 28), to secure a long term, high quality labour supply. The apprenticeship programme has been more demanding than the ordinary industrial programme. The students read theoretical subjects and in addition they spend the remainder of a normal working week (40 hrs) in training. In order to cope with these requirements, a student has to be highly motivated and, generally, quite able. The problem for the company was then how to recruit such students. The answer was to offer the students benefits. In addition to the apprentice wage, the students were implicitly guaranteed employment after a successful completion of the programme. Similar arrangements existed in places where a "pseudo apprenticeship" system prevails. There are, obviously, no apprentice wage incentives, but promising students are given opportunities to earn some extra money by working during weekends, and they are also first in line for the much sought after summer jobs. Implicitly, employment after successful studies is also guaranteed.

These incentives proved successful (Nilsson, 1994, p. 28). The apprenticeship programme, and, to a somewhat less degree, the "pseudo-apprenticeship" programmes, became more attractive to prospective students than the industrial programmes. Nevertheless, in most municipalities apprenticeship programmes were rejected. The school authorities have been very doubtful, and this required some companies'

representatives to pursue the matter. According to Nilsson, the main reason for this concern was doubts that the benefits to the company would compensate its costs. In many companies, no new labour is being hired, which naturally implies that recruitment benefits are zero. Other companies anticipate a future recruitment but are still hesitant to undertake the costs. They fear that successful students would be too attractive in the labour market and seek employment elsewhere. The obvious countermove on behalf of a company would have been to make the education and training during the apprenticeship period sufficiently company specific. However, at this stage, according to Nilsson´s study (Nilsson, 1994), two obstacles arose. One is the school system: an apprenticeship programme needs approval by the National Board of Education, and they did not look kindly upon company specific programmes. In addition, it is doubtful if a three-year education can be very company specific. Even if the theoretical components of the studies are disregarded, the education and training at a modern company mainly contain elements of a general nature. The basic principles of, e.g., welding can be applied anywhere, and given this competence the specific requirements of a company are quite easily obtained. This applies to an even larger extent to modern industrial methods such as CAD/CAM. These obstacles have been powerful enough to prevent full-scale apprenticeship systems. Nilsson´s reports, however, that on the other hand, the system is sufficiently appealing to permit the existence of a "pseudo-apprenticeship" system in some municipalities.

Companies' schools

The apprenticeship system is one model of companies taking the full responsibility for vocational education. The other is what Nilsson (1994, p. 28) calls the company's secondary school, i. e. an educational institution run entirely by a company, but where much more emphasis is laid on the theoretical contents of the schooling than in the apprenticeship system. In principle, there is little difference between the two forms. They are both run by a company with the explicit pur-

pose to furnish that company with its specific need of competence. The difference in theoretical instruction between the two is mainly a consequence of different competence needs. However, the practical consequences of running a school rather than an apprenticeship programme are, in the Swedish context, substantial. An apprenticeship is a form of employment, which implies that the company's rules for admission, possible dismissal, length of "school-day," etc., take precedence over school regulations. A company's school must, however, adhere to the same regulations that municipal schools do.

Company's schools are, throughout Sweden, mainly run by large export-oriented companies such as Volvo, Scania or ABB. According to Nilsson´s analysis (1994, pp. 28-29) the hard international competition these companies are subject to demands a well-educated and trained work-force. Nilsson argues that the opinion of some of these companies is that today's Swedish vocational school system is not able to meet such standards. A company's school run by Perstorp AB, which is a modern, process-based company with a world-wide organisation for the production and sale of chemical products, can be seen as an example. The reason for starting an own school was to secure a long- term supply of qualified labour. The extensive theoretical component in the education they offered was based on considerations that traditional forms of vocational education, including apprenticeships, were too narrow: That they contain little theory and workers with such a background have great difficulty profiting from the internal training programmes of the company. Perstorp AB assigned substantial resources to the company's school. This includes well-equipped school premises with, for instance, one computer for each student. These premises are being leased to the school on very favourable terms. The company also defrays all costs in connection with the annual practice period in one the company's subsidiaries abroad, as well as the supervision of students during practice at the company. Normal running costs, however, are borne by the municipalities. The school is recognised by the school authorities and, consequently, each municipality is compelled to pay the standard cost for each student accepted into the programme.

Taking this school as study case, Nilsson (1994, p. 29) describes

that the school has excellent resources, but the programme is very demanding. It includes about 50 percent more hours taught than an average programme at the upper secondary level. In addition to a substantial number of practical moments, the students must study theoretical subjects equivalent to the natural sciences programme, the most demanding in the upper secondary school. One could assume that the recruitment of students to such a demanding vocational programme would necessitate substantial incentives. From the company's school, however, the reasoning has been the opposite, argues Nilsson. The education must be of such a high standard that prospective students apply for it on its own merits, and no explicit benefits, such as guaranteed employment, are offered. The recruitment pattern to the company's school is completely different from that of the industrial programme. A large number of students have applied to the programme, and only those with top marks from comprehensive school have been admitted. A considerable group of them is likely to continue their studies at the university level after secondary school, which could pose a threat to the company's recruitment targets. However, the company is confident that the students will become impregnated with "company culture" during their studies to the extent that most of them will return even after university studies.

The "technical" programmes

The fourth and final model analysed by Nilsson (1994, pp. 29-30) concerns the so-called "technical" programmes. This is to some extent similar to the company schools as it combines extensive theoretical studies with vocational studies, and includes a substantial involvement by companies but is an integral part of the municipal system. The programmes exist, above all, in medium-sized towns with long lasting industrial traditions. The structure, as well as the name of each programme, differs, but the core consists of theoretical studies corresponding to the main parts of the social science or natural science programme. The contents of the practical component differ according to the needs of the co-operating companies. This model meets several

demands both from the companies and from the municipalities. It is built around a group of 5-10 companies (not one company as is the case with the company school), which implies that there is an element of cost-sharing among the companies (Nilsson, 1994, p. 28). A negative consequence, from the companies' point of view, is that each company's possibility to observe and assess prospective workers during the training periods in a company diminishes, since several companies are involved. The observation possibilities are, however, still considerable. The students spend most of their company-based education in at most two or three companies, and there is also a potential cost sharing between the companies and the municipality.

According to the analysis made by Nilsson (1994, p. 28), the most important motive to start a co-operation programme, both from the municipality's and from the companies' point of view, was to improve the recruitment to programmes that prepare individuals for industrial work. To achieve this, it was important to emphasise that the new programme is characterised by high quality instruction, and that the students will have access to modern equipment. It has also been considered advantageous to give the programme a new name (technical programme, T 2000) in order to distance it from what Nilsson (1994) calls "the low status of the industrial programme". In order to recruit students who would normally choose a purely theoretical programme, incentives are also given. In most cases, students of this programme are first in line for summer jobs and, in addition, guaranteed at least one year of employment after successful studies. Nilsson describes positive recruitment effects in two municipalities where "technical" programmes have been in operation for a year. It is often difficult to get a sufficient number of applicants to the industrial programme, but to the "technical" programmes only about one out of three applicants has been accepted. The "quality" of the students has increased considerably. The school administrators do not foresee any difficulties for these students to pursue their theoretical studies in a successful manner, nor have there been any drop-outs when the practical moments have started. An interesting side effect is that students' interest in the industrial programme has increased as well. When the new programme was launched, a considerable volume of information

about the conditions of work in the modern manufacturing industry was given to prospective students. It seems, according to Nilsson, that this, for the first time, has contributed to a shift in the negative approach that youngsters have generally had about industrial work. As a consequence, the traditional industrial programme has also been revitalised, with students better and more motivated than previously.

Control of the models in vocational education

Based on the study by Nilsson (1994), and more recent research (Håkansson, Nilsson, Lundh Nilsson & Peterssen, 2013; Panican, 2014), vocational education in Sweden can be pictured as an arena where interest groups struggle for power or influence in order to promote their own objectives. The empirical work conducted by Nilsson (1994) provides elements to support this notion, but as he acknowledges, "it is far from conclusive".

Two actors that seem to be of minor interest are the trade unions and the local politicians. There is little evidence according to Nilsson (1994) that trade union representatives have been important in the re-modelling of vocational education. A similar conclusion can be drawn by looking into more recent research (Håkansson, Nilsson, et al., 2013; Panican, 2014). It is worth noticing that, as reported by Nilsson (1994) this should not be understood as their having been entirely passive; in some municipalities trade union representatives take a vivid interest in the organisation of education and training. There are, however, no indications that trade unions pursue a particular policy. The evidence rather points to a collaboration between companies and local trade unions; school authorities often describe them jointly as "the industry." With the possible exception of a couple of municipalities where the traditional industrial programme prevails, however, the trade unions are unquestionably the junior partner in that collaboration. Nilsson (1994, p. 30) asked representatives of both school authorities and companies about the role of politicians. Invariably, all concerned claimed that vocational education is not an issue in local politics. Furthermore, in most municipalities the politicians are

seen dispassionate in these matters. There are exceptions, but the main impression from Nilsson´s study (1994) is that when the new forms of vocational education have been discussed and decided, the municipal politicians have not played important roles. Admittedly, these are not final verdicts, since the assessment of the trade unions' and the local politicians' importance relies mainly on other actors´ evidence. Nilsson concludes that the main influence over vocational education has resulted from discussion and agendas settled by companies and school authorities[2].

The organisational models - A structural economic perspective

The development of the models for vocational education and training by the middle of the 1990s had the decentralisation of upper secondary school in 1991 as a prerequisite (Nilsson, 1994, p. 33). The new models developed mainly in the programmes and were aimed at the manufacturing industry. This was taken as starting point by Nilsson to argue that forces outside the education system are influencing these programmes more than other parts of the vocational education system. It seems reasonable to look at the manufacturing industry for possible explanations of this characteristic, in particular how the demand for competence in the labour force has changed. Two tendencies are considered helpful in explaining why vocational programmes for the manufacturing industry changed so noticeably.

The first is, according to Nilsson (1994, p. 33), the long-term tendency to demand increasing amounts of formal education among the newly employed. This is not a tendency specific to manufacturing industry. The educational level of youngsters has increased since the early 1950s. At the same time, there has been a strong interest from employers and trade unions alike to recruit individuals with considerable vocational qualifications. Since the educational system

[2] For detailed information about the points of view from both sides see analysis in Nilsson, 1994, pp. 30-33.

has expanded in other areas it has become natural to demand an upper secondary education, even for access to comparatively unqualified positions. This tendency is evident since at least the 1970s. With this general development, Nilsson's study concludes that changing competence demands were expressed in terms of changes in upper secondary education. This forms a background to the second tendency: demand for qualified labour has been particularly important during certain, structurally delimited periods.

Analysing Swedish economic development since the middle of the 19th century, Nilsson (1994, p. 33) identifies periods characterised by rapid and thorough transformation of the economy with an interval of approximately 40 years. The transformation has always started in the home market, but it has also, at a later stage, become important in the export sector as well (Schön, 1998). The introduction of new products and new methods has also placed new demands on the competence of the labour force. Nilsson acknowledges, as do other researchers, (e.g. Panican, 2014) that it is difficult to clarify empirically in detail what the changes in demand for different types of competence have been, but changes in relative wages provide a certain glimpse into a complicated process. Changes in relative wages among technicians and engineers clearly indicate that the demand for young, well-educated labour increases more during periods of transformation (Pettersson, 1997). According to Nilsson, the introduction of new technologies implies a certain experimentation in companies, which in turn indicates that it has been difficult to determine precisely what the "new" competence should comprise. As a consequence, the demand has been directed towards high and general levels of knowledge during periods of transformation.

According to the studies by Nilsson (1994), the periods of transformation have lasted 20-25 years and have been composed of two phases separated by a short crisis or recession. Once the new technologies have become well known and dispersed, the economy has entered into a period of rationalisation, characterised by sharpening competition, and this with the implication that the possibilities for companies to pay relatively high wages to well-educated personnel has diminished. At the same time, the technological development has

become more familiar and to some extent predictable. According to Nilsson (1993), the competence demands have also changed. It has become possible to handle machinery and other equipment with less competent personnel. It has also become possible to specify these demands more clearly, which has led to demands for more or less tailor-made educational programmes.

When examining the models of VET presented above it is relevant to place them within a structural economic frame of reference that has implications for even the trends we can see today. According to Nilsson (1994) and other sources (c.f. Håkansson, Nilsson, et al., 2013), the 1980s constituted the beginning of a new period of transformation, and the crisis of the early 1990s marked the transition to the second phase when competence demands have been broader and have therefore influenced vocational education.

The extension of the vocational programmes to three years at the upper secondary level was mainly intended to provide the students with a better theoretical foundation. In the first phase of transformation, i. e. during the 1980s, uncertainty regarding future demands was large. This led to rather diffuse demands for change in the upper secondary school system, with an extensive experimental activity in vocational education as an effect. About 1990, the re-orientation was to a large extent completed. The Swedish Parliament established the three-year vocational programmes, which were only partially connected with the previous lines of study (Nilsson, 1994, p. 34). Lately, the reform in 2011 indicated a return to a less theoretical and more skills oriented VET that has been equally supported and criticised (Panican, 2014).

Historically, analysing the changes until the late 1990s, there are arguments that they did not entirely comply with the demands from the manufacturing industry (Nilsson, 1994, p. 34). Had the uncertainty continued to be as large as it was during the 1980s, it is very doubtful that companies had been prepared to invest in vocational education. Nevertheless, when the transformation entered its second phase, predictability increased somewhat. From a structural economic point of view, it is not surprising that several different models should emerge in such a situation. According the study by Nilsson, compa-

nies started to state their demands for competence more precisely and decentralisation implied that several companies had an opportunity to find other forms to satisfy their educational demands.

From Work-Based-Learning to School-Based-Learning and back again? - Concluding remarks

More is to be said concerning the development of VET in Sweden and the transitions of foci. Based on the earlier researcher used in this presentation, it is possible to make some concluding remarks (Nilsson, 1994; Olofsson, 1997, 2007; Olofsson & Wadensjö, 2009; Panican, 2014). The relative failure of the municipalities to provide companies with the desired competence is an important element to consider for explaining why local models of vocational education emerged. Most recently, various organisational forms have been used in contrast to the previous, very uniform, system of Swedish vocational education. An overall pattern of adaptation to rapidly changing economic conditions seems visible; these changes imply that municipal schools find it difficult to keep up with the technological pace. There is a claim that only competitive companies possess the human and financial capability to be at the technological front line. Different studies suggest that if the schools want companies as partners in vocational education, they have to be open for different local forms of co-operation. This dependency is, it seems, transferring some authority over vocational education to companies. As a hypothesis, such a transfer is more extensive in municipalities where one large company has a strong position.

Technological and organisational changes have altered demand patterns in the labour market to the extent that modern companies require competence, which the traditional industrial vocational programmes cannot provide. The organisational structure of the different programmes reflects, to a very large extent, local demand patterns in terms of industrial competence. The emergence of several models of vocational education is, from a strictly economic standpoint, a promising development according to the conclusions of earlier mentioned studies (Nilsson, 1994, p.35; Olofsson, 2007). The degree of flexibility

in the educational system increases, and students have a choice between different forms of vocational education. According to the study by Nilsson (1994) and more recent arguments (Panican, 2014), it also raises fears of an increasingly dual vocational education system. On the other hand, such a duality has existed for a long time, but *between programmes* rather than within one. The bigger companies have long recruited personnel from theoretical programmes, above all from the natural science programme. These newly employed have often turned out to be excellent workers, but it has been necessary to initially train them in industrial routines. Thus, although fears of a new educational segmentation are presumably exaggerated, the different recruitment patterns reflect that the segmentation of the labour market in the manufacturing industry is changing character. The previous, and in many places still existing, differentiation between blue- and white-collar workers *within the company* seems to be replaced by a differentiation *between companies*. In companies with "flat organisations" and "continuous flow", all workers must be able to do administrative as well as operational work.

Based on earlier studies and current socio-economic realities is possible to foresee that companies will increase their influence over vocational education. Current trends in the labour market demand it and economic structural change points in that direction. This will presumably contribute to increasing quality in vocational education, but the development also raises the question of whether or not inequality in vocational education will increase. The resource differences between programmes are likely to increase in a system of company-based vocational education, since the possibility and propensity to supply resources differs markedly between companies. Increasing quality differences in a more diversified system are perhaps unavoidable and a necessary price to pay. There is another problematic issue, however: eligibility rules. As the experience of the apprenticeship programme shows, companies are prone to use more than just grades from the comprehensive school as selection criteria to a programme. Nilsson (1994, p. 35) claims that increasing quality differences will certainly imply increasing selectivity. A not too distant future can be envisaged, where promising students with desirable personal characteristics will

enjoy an education of a higher quality and a training environment with ample resources. However, there is also a distinct risk that the less fortunate students will be directed to municipal programmes of a lower quality.

History and international experiences indicates that success in vocational training is largely based on an open dialogue and cooperation between key partners such as industry and service sector, educational authorities and trade union. This secures both employability and social cohesion.

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