

This is a Reviewed Article**Learning at work in Higher Vocational Education.**

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Abstract

Higher vocational training (HVE) is a new form of post-secondary education that was introduced in 2009 in Sweden. The aim for HVE is to address the demands of a highly skilled Swedish workforce. Compared to other forms of adult and higher education it is less institutionalized and, based on Swedish standards, gives great opportunities for the provider to decide regarding the contents and design. The purpose of this study was to analyze a) the quality of the course, Learning at Work (LIA), and (b) to develop instruments and indicators to explore the quality of the student learning in working life as part of HVE.

The design of research instruments was based on hypotheses to uncover the background, the learning process and effect parameters in LIA offered at 12 different HVE sites in Sweden within the areas of health care, computer science, technology and business administration. The survey data of forty-two students and thirty-six workplace supervisors were analyzed. The results of the study show that the quality of the learning at work (LIA) varies considerably between different programs and different students. In most programs, it has a significant development potential. A well-functioning LIA is characterized by adequate learning content, an open work climate between colleagues, accuracy and dedication, frequent supervisor feedback, and regular communication between the Program Director and the supervisors. It is important that the educational provider requires workplaces with capacity to offer the students relevant and qualified work content. LIA should offer qualified work content providing knowledge of breadth and depth. Knowledge gained from school-based training should be challenged and must achieve curriculum goals.

An important finding is the lack of definitions and criteria for quality, and the risk of quality differences between educational providers. Another significant problem identified in the study is the unclear division of responsibilities between the educational provider and the partner from the world of work. Most of the supervisors, who were skilled workers or professionals, had a fragmentary understanding of HVE. They gave instructions, but did not stimulate their students to reflect theoretically on what they learned during LIA. Integration between school-based learning and experience of work life was limited. There was a shortage of instruments for assessing the quality of what was taught in the workplace. A large proportion (75 %) of the students was employed soon after graduation. For those who did not, their skills run the risk of rapidly becoming obsolete.

Keywords: vocational education, higher vocational education, learning in work life, post-secondary education and quality assessment.

1. Introduction

*"Personally I am always ready to learn,
Although I do not always like being taught"*
Sir Winston Churchill, 1874-1965

Post-secondary education in Sweden has grown dramatically during the last few decades. This is one consequence of an expanding educational system, the development of industrial and service-sector productivity, globalization and policy decisions made by Swedish local municipalities and the Government.

The gap between school-based education and work is problematic for a numbers of reasons. For example the new economy and "the new work order" (Gee, Hull and Lankshear, 1996) place more emphasis on students conceptualized knowledge and understanding than on the skills and competencies that were deemed important a few decades ago. Judging from the policy debate, "new work order" demands a competent, flexible and committed workforce, more stimulating working conditions, and at the same time there is a call for an increase in productivity. Workers are expected to be highly skilled, able to solve problems and create ways of improving their performance in flexible, adaptive, innovative self-directed and self-motivated ways. Today's workers are expected to take responsibility for their decisions and actions (OECD 2008).

The new work order influences higher education (HE) as well as HVE to move in the direction of work-integrated learning (Thång, 2004), that is combining science-based knowledge with proven vocational and professional experiences. A significant difference between HE and HVE is that the former is based on scientific knowledge *and* proven experiences, while HVE is closely linked to work life and should primarily be based on expert knowledge *and* proven knowledge. There are different cognitive approaches in HVE compared to HE. This change is in accordance with some professional educations today that is, scientific knowledge (knowing that) is toned down in favor of practical skills (knowing how). Learning at work is a large part of vocational development and the development of specific vocational knowledge and skills, which is the practical capacity to carry out different tasks. HVE stresses the importance of learning through participating in daily work but the arrangements; the supervision and material resources differ very much.

In order to become an expert the student must develop personal ability to transform and implement school-based theoretical knowledge into domain-specific work life fields (Boud and Garrick, 1999). It has become increasingly necessary to be able to implement science-based knowledge in real-world contexts, and to bring work experiences to the world of science. An expert should have the ability to effectively apply knowledge to novel problems, and to consider new problems as learning opportunities.

The quality assessment of learning at work is the main focus of this study. However, we are also greatly interested in the quality of integration of school-based education and

authentic learning at work¹. Integration and co-operation between school and work life is an important aspect of quality assessment in HVE. The main task for this study is to shed light on the role of one of the main courses Learning at work (LIA) as part of HVE. LIA should be about one third of the education and training in HVE. It is an important part in giving the student the opportunity to provide experiential learning and develop skills to become employable.

2. Higher Vocational Education in Sweden

HVE² is a new form (2009) of post-secondary education in Sweden (Prop. 2008/09), and part of the Swedish adult vocational education.³ HVE is a unique form of education in that it involves collaboration between an educational provider and a private, public or non-profit work organisation. The period of training is one or two years. The providers are operating under the control of the Agency of Higher Vocational Education.

The demand for and interest in HVE is on the rise quickly in 2010. The national agency for HVE received 851 applications. Three years later the number of applications was 1,078 and where 29 percent were accepted by The National Agency for Higher Vocational Education (Littke, Faurshou and Thång, 2013).

HVE is meant to be a flexible post-secondary vocational education. It addresses the needs of a highly skilled workforce and meets the requirements of modern work life that is partly a result of globalization, and that has created a demand for skilled labor. The main criteria for the decision to grant public funding to establish an HVE are distinct market orientation, identified skills needs within the labour market and close collaboration between an educational provider and work life. At least one fourth of a two-year HVE should be placed within a workplace. This curriculum-based course is called Learning in Working Life (Swedish: LIA – Lärande I Arbetslivet). The permission to establish an HVE applies for two periods, i.e. a two-year HVE education could be implemented twice. The National Agency for Higher Education revises all grant decisions regularly.

Authentic learning in real work-life settings is an HVE cornerstone, and constitutes a single course governed by its own syllabus. Therefore, the demands on every HVE workplace must be very high concerning work content, mentorship etc. Work-based learning is an important part of HVE. The organizations providing LIA should play an active role in education and training, and ideally have staff recruitment needs. HVE provider decides whether workplace offers advanced tasks that meet course objectives and thus is suitable for LIA. Representatives of the workplace should be actively involved in the planning, organization and implementation of the LIA, which should be an integral part of education.

The provider is also expected to have a management board with labor market membership majority. Syllabuses will be discussed in and approved by the management team.

3. ¹ An historical overview is given by Åsa Broberg in her thesis, 2014.

4. ² Late 1990s Advanced vocational education was introduced as an experiment, which was evaluated and became the foundation for the decision about HVE 2009.

5. ³ There are also adult vocational education organized by Municipal Adult Education, and a considerably number of Folk-High School courses is vocationally oriented. All those courses are on upper-secondary level.

The syllabus should state the objectives that students are expected to achieve and how the provider rates the knowledge, skills and competencies.

The objectives of an LIA course should be formulated so that they contribute to the educational objectives of the whole program, and the qualifications that the future professional role requires.

Providers choose their own teachers, and there is no teaching education or training obligation.⁴ The primary demand on teachers is for qualified and relevant work experience and expert knowledge in the area. Most of the teachers are educating part-time. The provider and the workplace share the responsibility that the LIA course is at postsecondary level and provide experiential learning. The education provider is responsible for informing and if necessary to educate supervisors about their responsibilities and duties. The supervisor should be familiar with the syllabus and the objectives of the LIA course. It is the supervisor who will ensure that the student receives information corresponding course objectives requirements.

The student will participate in the work and be with, for example, in a team, project, or another part of the business. It is important that the tutor gives the student support and advice in relation to their needs and the goals to be achieved.

There is no formal requirement that the responsible teacher or other representative of the school need to visit the workplace. Nor is there a requirement that representatives from the company need to visit the school. A common arrangement is that the employees of the company holding lectures at the school and the teachers from the school or the training officer visits the company before and a few times during the LIA period. During the LIA course it is recommended that students reflect on their learning and their tasks, and that they document this using for example a logbook.

The education provider is responsible for assessment of the LIA course, and shall ensure that supervisors provide sufficient documentation on how the students performed their duties. The degree of freedom to organize and design the curriculum is extensive. For this reason, a quality system is necessary. Assessing the quality of work-based learning and the integration of school-based and work-based learning is crucial to all professional and vocational educations. 12 educational providers representing four educational areas were recruited for this thematic quality assessment of HVE.

6. ⁴ In the project: Becoming Adult Educator in the European Area (Andersson and Köpsén, 2010) there is a discussion about the lack of European policies for education and training for teachers in adult education; the general field, vocationally oriented and liberal education. “Adult educators play a focal role in ensuring quality of teaching-learning processes that take place in variety of educational settings (p. 5).

Table 1. Sample of providers and the number of supervisors and students interviewed.

Education	Students mean age	Supervisors mean age	Number of male	Number of female	Total
Health	41	45	2	8	10
Computer Science	25	48	7	3	10
Technology	27	42	7	4	11
Business and administration	32	41	5	6	11
Interviews in total					42

The four types of workplaces represent various specific fields of knowledge. Different professions use different working methods and procedures based on its behalf and represent different specific fields of knowledge. Different vocations comprise a set of different practices. Health is an occupation based on interaction with clients. Technology, or engineering, on the other hand is based on algorithms. The context and traditions of learning knowledge and skills are to a high extent entwined with the applied field and the single workplace, organization and management, and the content of work. The world of objects and things are to a large extent shaping the supervision process and the architecture of practice (Kemmis and Grootenboer, 2008), and will influence the students' learning process. The different types of workplaces represent different traditions and cultural knowledge, which is not codified and acquired through participation in social activities. "Most teaching within an applied field is also strongly influenced by an often quite recently constructed body of knowledge about that field, which thus becomes either a quasi-discipline like Education or Nursing or a constellation of quasi-disciplines like Business Studies or Engineering" (Eraut, 2004, p. 204).

A frequently referred theory of learning is Lave and Wenger (1991). Despite the limitations of the theory Unwin, Felstead and Fuller (2007) argue that this theory could be helpful to draw attention on how learning at work takes place, and is shaped by the social relations on the workplace. "Workplaces have always been sites of learning, and every workplace creates its own unique version of a learning environment" (Unwin, Felstead and Fuller, 2007). Mostly, the knowledge and skills we acquire on the job, are to a very high degree entwined with the workplace and the work tasks. In this sense, what we know in relation to our jobs can be considered as tacit. What we learn on the job is a combination of accidental learning, a byproduct of everything else we are doing, and learning from more or less structured information, instructions etc. from our colleagues.

3. Work-based and work-integrated learning

International interest in learning at work and authentic learning at work is on the rise (Luff, Hindmarsh and Heath, 2000). There is an emerging research about workplace learning and the nature of learning of students who are participating in both school based and work based learning context (Endedijk and Bronhorst, 2014). In the research community there

is a debate concerning a “third space” to integrate formal school-based learning and non-formal learning at work. Work-integrated learning should develop and promote expert knowledge and skills (Theliander et al., 2004).

Integration between school-based learning and learning at work is also meant to enable expansive learning (Engeström, 1987). Other central concepts illustrating these phenomena, and understood in an interaction and integration between formal learning in educational institutions and learning at work, is boundary crossing and boundary zone (Akkerman and Bakker, 2011). The growing interest in the ways students acquire cognitive skills by shifting from one context to another reflects a fresh view on vocational knowledge and skills, and what competencies the ever-changing work life demands (Jarvis, Hartford and Griffin, 1998; Raelin, 2008). One argument put forward is that certain skills cannot be learned in a formal school context, but only in an authentic work setting

In formal school-based education where learning at work is essential, the work process is rarely challenged. This could be the case in HE (Gustafsson and Thång, 2015, work in progress), as well as upper secondary school. The Swedish Schools Inspectorate pointed out these characteristics in their evaluation of Swedish apprenticeship training (Report K-2013:01).

Students often experience their studies as two separate parts with unclear confluence, but need to cross the borders from one educational practice to the other if they are to achieve expansive learning (Toumi-Gröhn and Engeström, 2008).

One conclusion from Gustafsson and Thång (Works in progress, 2015) is that the HE process will dominate the learning process, as long as the individual is an HE student. This does not necessarily imply that the HE has a significant impact on the student’s learning, but that the workplace does not function well enough for the students to acquire new knowledge and skills. The examination process is a factor that strongly influences the study process and learning. As long as the individual is an HE student, the educational process will dominate. When the students leave HE, the interaction between the ‘theoretical’ university learning and the ‘practical’ work-based learning disappears (Gustafsson and Thång, in progress 2015). Learning in formal educational contexts and learning at work are two processes characterized by different structures (Billet, 2006; 2011). The knowledge is organized differently, and it is self-evident that different learning processes and learning outcomes can be expected. Learning at work can be problematic at times, because the knowledge is an integrated part of routines and complex technologies and so not always visible. Brodie and Irving (2007) argue that learning at work has its own curriculum, quite separate from the educational system, and so do Billet (2011).

So far, we have no functioning theory on the integration of school-based learning and authentic learning at work. A contemporary pedagogical challenge is how learning at work can become valid and proven (Thång, 2006). One conclusion might be that the educational system, the school or university must clarify more visibly the aims for learning at work. There is a need for meta-cognitive instructions in learning at work (Munby et al., 2007).

The need for integration of school-based learning and work-based learning to achieve experiential learning and deepened knowledge is often neglected at an organizational level. Whether integration between the two contexts of learning will take place is often dependent on the individual student's capacity. As a consequence for the thematic quality assessment of learning within HVE, the attention must be aimed at what the members of the school and workplace do to support the integration of students' learning. Many workplaces underperform in providing support of learning and skills development.

The transition from school-based education to work is often inefficient due to the lack of coordination of learning at school and learning in the workplace. In research literature, this phenomenon is commonly referred to as the transfer problem (Achtenhagen & Thång, 2002; Wahlgren and Aarkrog, 2012; Kilbrink, 2013). The strength of the institutional relation between the educational system and work life is the key factor for progressive transition from education to work (Raffe, 2008). When this relation is strong and intensive, the education and learning will follow the logic of work, whereas the learning process follows the logic of education when the relation is weak. Mezirow's (1997) theory of transformative learning is another theory of relevance concerning higher vocational education and LIA.

There is a need for a study to analyse students' learning in and between those two contexts. Learning in the context of schools and educational institutions are characterized as intentional, predictable not contextualized, and fostering explicit knowledge and generically skills. Learning in daily work, on the other side, is to a high degree most often contextualized, non-formal and more or less implicit and tacit (Thång, 2004). The obvious learning differences between school and a workplace context respectively is a research challenge. Formal education is more oriented to knowledge distribution. Learning at work promotes skills to a higher degree compared to knowledge formation. A main function of school-based education is to facilitate learning at work. The 'theoretical' school-based knowledge is constructed either a discipline or an applied field.

4. Methodology

When designing instruments for gathering data, the ambition and intention was to uncover three dimensions: firstly, the personal background of students and supervisors, secondly, the educational as well as the work process, and thirdly the effects of learning at work (LIA). Each dimension was based on a number of items, some of which could be linked to more than one of the three dimensions. Motivation, for example, could be seen both as a process variable and an effect of the learning process. Motivation could explain why someone applies for an HVE, but could also provide an explanation for the experiences and learning progress. The items in the questionnaire were chosen from previous experiences from analogous studies and from research literature.

Interviews with students and supervisors were carried out after the students had completed their education, which could have implications. Those employed might be unreservedly positive, and those who failed to find employment might be overly and explicitly negative to HVE. However, we were unable to find evidence to suggest that the interviews provided unambiguous interpretation in the foreseen direction.

Students and supervisors were interviewed over the phone. Three colleagues from HVE carried out the interviews, all of who were experienced officers from the National Agency for Higher Vocational Education and familiar with different types of vocational and professional education. The time allocated per interview by the National Agency for Higher Vocational Education was 15-20 minutes but would turn out to exceed that time frame. Therefore, adjusting the interviews to the time frames given by HVE was a considerable difficulty. Two questionnaires were designed (one for students and another for supervisors). The students constituted the starting point and main focus for the construction of the questionnaire. The time schedule allowed for designing the instruments, gathering and analysing data, and writing the final report was less than six months, and there was no time to sufficiently try out the questionnaire during the data gathering process.

The student questionnaire⁵ was divided into 12 parameters with different numbers of items aimed at “measuring” each of those parameters:

- Background (7)⁶.
- Conception of quality (1).
- Learning process at school and at work (15).
- Incentives and motivation (7).
- Feedback and formative evaluation (10).
- Assessment and examination (5).
- Relations and co-operation: student-student and student-supervisor (6).
- Learning strategies (Lander 1996) (3).
- Self-efficacy (Bandura, 1997) at work (4).
- Questions aimed at summarizing the education as a unit (8).
- Closing questions (5).

A Likert scale was created for each item, in order to facilitate answers from students and supervisors, followed by oral questions and an opportunity for giving comments. These comments were crucial since they gave substantial information. The items constituting each of the concepts were elaborated in cooperation with the interviewers from the National Agency for Vocational Higher Education. Two circumstances influenced the decision behind the final version: (a) the frame factors and (b) the assessment of the contribution of information from each item. Interviews started and ended with a question about the student’s and the supervisor’s conception of quality in learning at work.

Table 2. An example of a parameter and items from the student questionnaire.

Parameter/concept: Learning process

	Agree completely				Don’t agree at all
1. <i>I had very good use for the theoretical studies while at LIA. Theory and practice were well matched.</i>	()	()	()	()	()
2. <i>It had been difficult to manage the data on LIA, without teaching in HVT</i>	()	()	()	()	()
3. <i>LIA supplemented really theoretical instruction.</i>	()	()	()	()	()

7. ⁵ The supervisor questionnaire had an equivalent design and mainly the same or analogous items.

8. ⁶ Number of items for each parameter.

4.1 Analysis of data

The analysis was initiated by a return to the initial concepts and questionnaire design, and the items were re-grouped under new headings: Background; Quality in LIA; Motivation; Cooperation/collaboration; Supervisor; School-based learning and its integration with LIA; Quality processes and strategies; Quality assurance; Student's role in quality assurance. One conclusion from the interviews was that some item content was quite similar. Likert-scale answers, including comments, were compiled for each item and for each educational provider as an indicator of each parameter.

Concerning the parameter *Cooperation* we made an important distinction between autonomous cooperation and critical cooperation (Lander, 1996; 2002). Autonomous cooperation implies a context where people work together in overall agreement and feel comfortable in their work relations, but without challenging each other when it comes to job content. Typical of critical cooperation is reflection *in* work as well as on work (Schön, 1983; Wahlgren et al. 2002). People challenge each other to do a better job, get a deeper understanding, be more creative etc. The underlying hypothesis is that cooperation, with an open, unbroken dialogue about content and work conditions is a central dimension of quality in LIA learning.

The concept of *relation* refers to the psychological and social interaction between student and supervisor and their degree of readiness to give each other rich and valid information. We had to catch the students' experience of the relation between and integration of the school-based education and the learning at work. LIA is primarily education, not work.

Assessment and feedback are fundamental requisites for developing and consolidating knowledge. In LIA there are no knowledge tests or formal examinations. The primary role of the supervisor is to give feedback to promote student reflection on knowledge and skills formation during every day work. A further role is to give information about student learning outcomes for the final grade to the Program Director, who is also responsible for day-to-day governance and guidance. Assessment, feedback and examination have some content similarities. However, there is both a formal and a non-formal aspect of the concepts. During the past decade in Swedish educational research, there has been growing interest in assessment, feedback and formative evaluation (Forsberg and Lindberg, 2010).

5. Some main results

Although the quality review has been conducted on a limited number of courses and with tight deadlines, it is our opinion that we have captured essential aspects and dimensions of quality within learning at work (LIA).

We do not, however, believe that this medium-scale study allows for expressing opinions on the picture of HVE as a whole. The aim of this study was not to perform a systematic investigation of similarities and differences of students' learning between the formal school based education and the workplace learning in the four different branches.

Significant differences exist between individual courses in a number of respects, which is to be expected. Results of the survey are reported on the nine areas; background variables,

the quality of the LIA, motives and motivation, cooperation and collaboration, the LIA supervisors, the provider's teaching quality, quality assurance strategy and processes, quality measurement and the role of students in quality work.

A total of 11 students were unemployed at the time of the interviews. The largest percentage was found in the computer/IT field, where half of the group was unemployed. In contrast, all health care students had adequate and relevant work. Among students in the technical area the corresponding proportion was 7 out of 10, and among economists 8 of 11. More than one quarter of the students lacked employment at the time of the survey. A close relation between the educational provider and the work place will strengthen the bridge between education and work (OECD 2008). But on the other hand, the closer the link is between education and work, the greater is the risk that the learning process is too close to the work content on a single work place. The knowledge growth can be very obvious as the new knowledge can be used immediately in the context at hand, but the integration of theory and practice will be weak.

Quite a great number, if not all, of those employed got their jobs during their LIA placement. Most of these had a permanent appointment, but some had temporary positions or employments. There are at least two explanations to this situation. One is that the LIA-organisation was not prepared to recruit a new colleague. The other explanation takes note to the single student's capacity and situational understanding. Kelly (1955) coined the concept personal construct to explain and understand the individual's interpretation of the world around them. Personal constructs are mental representations we use to interpret the world around us. Personal constructs are based on experiences and observations.

The correspondence is high between students' and supervisors' conceptions of LIA-quality. The combination and alternation of school-based teaching and the LIA provides the quality. The majority of students and supervisors emphasize the importance of school-based education *and* workplace-based learning, and that the school-based part must be integrated with practical work. All parties' involved need to be familiar with the expectations on LIA, but this is not the case. When codified knowledge (Adler, 2013) moves between the formal teaching process and work it enters into a new set of social relations and what is more or less important may change. Doing something is not just the same as simple application of learnt propositional knowledge (Garraway 2010).

Students argue that education providers should be more active in recruiting and selecting high-quality workplaces for LIA. A well-functioning LIA is characterized by adequate learning content, an open work climate between colleagues, accuracy and dedication, frequent supervisor feedback, and regular communication between the Program Director and the supervisors. It is important that the educational provider requires workplaces with capacity to offer the students relevant and qualified work content.

LIA should offer qualified work content providing knowledge of breadth and depth. Knowledge gained from school-based training should be challenged and must achieve curriculum goals.

Students and supervisors agree on the importance of the student's responsibility for developing vocational knowledge and skills, as well as being able to cooperate with staff and customers, all the while taking an independent position. Learning from other people was even more important in some work settings. In this study we did not get any deeper insight about the supervisors' strategies for supervision, and no further information about the material or economic preconditions for the practice of supervisions. Köpsén and Nyström (2012) demonstrate the influence of those circumstances on the supervision process. "If the supervisors do not have sufficient time and resources to implement and conduct supervision, there is a risk that trainee's will be left on their own. Köpsén (2014) formulated four different strategies the supervisors in her study practiced: (a) explicit supervision and learning in a centred relationship; (b) implicit supervision and learning in a centred relationship; (c) explicit supervision and learning in a decentred relationship and (d) implicit supervision and learning in a decentred relationship. In our study we could find some evidence of those four strategies.

It is noteworthy that the majority of supervisors do not emphasize their own efforts as particularly important for the quality of LIA. A few supervisors draw attention to the workplace, and stress that good quality in LIA requires preparation, planning, and transparent learning outcomes. Every workplace involved in LIA must be able to challenge and stimulate the students to develop professional attitudes and responsiveness and also to reflect on their vocational learning. From the provider's point of view, quality means recruiting students with the right sets of skills and attitudes for the job market. The point is that the learning process involved should promote transfer, which is to facilitate for the student to use previously acquired knowledge, skills or experiences in a new situation. It's astonishing that a majority of the supervisors reduce their own role in the education process. The rather stress the recruitment of talent students. Eraut (2004) presents five interrelated stages involved in the transfer process. We agree with Köpsén and Nyström (2012) in their conclusion that supervision is an area of expertise that needs to be cultivated and learned to maintain in current time of change an uncertainty.

Questions about *cooperation and collaboration* indicate the absence of regular communication between education providers and supervisors. There is, to some extent, feedback between training providers and supervisors, but apparently little or no regular contact. Regular meetings between the Program Director and the supervisors could be a boundary-crossing between disciplines and work within HVE. It could also be a forum for joint production of the curriculum knowledge and skills, to facilitate integrated learning (Garraway, 2004). In the workplace, the student has regular contact with their supervisor, but other staff may also be involved in the tutorial. The teachers recruited in HVE should be experts with highly relevant and current knowledge in the subject area and the applied field. In fact, teachers and supervisor could be recruited from the same community.

One aspect of interaction and communication refers to students' experiences of school-based teaching and its integration with workplace learning, and perceived benefits of LIA. This constitutes the core issue of how work-integrated learning should be portrayed.

The students' alternation between different pedagogical environments is not solely a property of HVE, but more or less prevalent in all professional and vocational education. One reliable conclusion is that theory and practice go reasonably well together, but also that there are flaws that need to be addressed and improvements to be made. Clearly, there is

interaction between LIA tasks and the content of school-based courses, but one implication of the limited communication and exchange between education providers and supervisors is that the work-integrated model for education and training is not put to optimal use. The ideal situation occurs when the supervisor is a member of the management board of the educational provider. In that ideal case, the supervisor will be intensively informed about higher vocational education, curriculum and learning outcomes. When this comes to pass, the Program Director and the supervisor develop a strong commitment. However, there is great potential in further developing collaboration between the partners involved in higher vocational education.

Motifs of learning, motivation and the will for competence (White, 1959) are strong indicators for predicting success in studies (Billet and Sommerville, 2004), as well as in many other fields of life. The students who participated in this thematic quality assessment were highly motivated. They had made a personal decision to go back to school after a period in the labour market, aiming for a more highly qualified education and training, and looked forward to getting an interesting job within a vocational field of personal interest. Most of them were satisfied with HVE in general, and with LIA in particular. A major point of criticism from some students was that the subject content of the school-based education and learning was not advanced enough. Those students expected more in-depth studies. Teachers' qualifications varied a great deal.

One effect of the students' motivation was their demand for challenging work tasks. Students were highly motivated for advanced and demanding knowledge content in the work tasks they were given. This is important because they could not choose their work tasks. Almost without exception, the learning content was determined by the ordinary duties and tasks at the workplace. Most students saw their work tasks as relevant for their vocational education and training. However, few of them experienced enough progression in the work tasks performed during LIA. Progression is associated with increasing fluency, responsibility and complexity (Eraut 2004). When situations are complex, judgement becomes a critical aspect of making decisions. One downside of learning at work is that the learning content is determined by the daily work content. The variation between different educations and different students is huge. While some students, for example in technology and computer science, were challenged by advanced intellectual problems that needed solving, others, for example in business and administration, were mainly given routine tasks.

A widespread notion of the Swedish Government is that economic rewards have an external motivational impact. The students who contributed to this survey disproved this notion. The supervisor, on the other hand, had a strong impact on motivation.

The information from the education provider before LIA was perceived to be of good quality and supervisors felt confident in their role. Management supported them for the mission. There is disagreement among supervisors whether or not formal training is necessary to be a supervisor. Only a small number of these had a more comprehensive education or training. The role of the supervisor is not always clear to students but they perceive their supervisor to be a knowledgeable professional, although not always a true expert. The supervisors' interpretation of their role is crucial to quality within LIA, but this interpretation differs a lot. Most of the supervisors lack deeper insights into vocational education as an

entity. The entire education and training content is rarely known. During LIA, mainly job-specific skills are assessed but assessment criteria are not reported. Experienced supervisors may have their own criteria, although little articulated.

Generally there are a number of instruments to measure and document teaching and learning process and outcomes, but these are little known, and linked to individuals. Education providers use various evaluation questionnaires, but overall these tend to be surveys, without detailed evaluation of the teaching process or the students' learning. Supervisors assess student performance on a regular basis, and the assessment templates received from the education provider are quite clear to them. The majority also have access to an assessment template. The quality measurement that takes place at work is generally not systematic. It relies on the individual supervisor's personal observations and experiences. The supervisors do not have enough knowledge of how to measure the quality of learning at work. Ironically, students reported few instances in which they learnt through reflection at neither the workplace nor the school based learning.

Supervisors are consistently very supportive to students. Students' work tasks are controlled almost exclusively in relation to what should be done in daily work and in various customer-oriented projects. The students have, in this context, very limited freedom. Visits from the education provider during LIA is seen as very positive, and there is a significant need for instruments for measurement, examples of teaching and supervising processes, documentation, protocols etc. to be used for the purpose of quality improvement.

6. Conclusions and discussion

Nowadays we have a belief about the value to combine and integrate school based education and workplace learning in professional and vocational education and training (Akkerman and Bakker, 2012). One aim is to integrate theory and practice, and to support the students' reflection on professional and vocational identity. The modern society needs to increase knowledge about the nature of learning in context of workplaces (Raelin, 2008). Akkerman and Bakker (2011) discuss how crossing the boundaries between educational institutions and workplaces can provide essential knowledge and skills.

The integration between school based learning and learning at work does not come without investment in conscious work and efforts. When a teacher teaches and gives support to learning in a school context he or she has to clarify the intensions in action in another place at another time. On the other hand, when the student is making experiences with relevance for the actual profession or vocation and developing knowledge, he or she must be able to associate to the knowledge production in the school context. Work knowledge is to a large extent not codified and most of the time there is no opportunity for critical reflection and analysis (Garraway, 2010).

New curriculum frameworks are needed to allow work in all its forms to be used as a basis for the development of knowledge, skills and identity. Griffiths and Guile (2001) present a typology of work experience, which identifies models of work experience, including a model,

which embodies the concept of connectivity. They suggest that this may provide the basis for a productive and useful relationship between formal and informal learning.

Market orientation and cooperation between an education provider and the labor market are core values of HVE. This is the first thematic quality assessment within HVE, and one conclusion is that quality differs greatly, depending on the motivation and commitment of all the parties involved: the education provider, the workplace, the supervisor – and of course the student. Motivation (Fransson, 1978) is one of the most significant factors when predicting success. Talent is not enough. Most formal and state-regulated education is bureaucratic and institutionalized. HVE is an exception to this rule. If higher vocational education is to be flexible in the future, and capable of responding to new demands from the labor market, it needs to be guided by a set of quality criteria, rather than a set of more or less fixed rules.

Authentic learning at work is an essential part of higher vocational education, but must be integrated with school-based education. The integration of knowledge in HVE could be much deeper, and the cooperation between school (the Program Director) and workplace, (the supervisor) could be more intense and close when compared to the situation today.

However, Endedijk and Bronhorst (2014) allocate a research instrument designed for dual context, and the research question for their study is about the nature of students' learning activities within and between the different contexts of education and work. They analyze the relationship between the students various learning activities and the context of learning experiences. Data consisted of seven different learning activities registered in a log called SLR (Structured Learning Report). The authors argue that students learning in different contexts are rather similar, and that results are mainly from participation in different practices. The authors argue further that learning context is not exclusive to particular types of learning. However, we need much more research to test this 'hypothesis'. Endedijk and Bronhorst (2014) also found qualitative differences between learning in the two contexts. They found that learning experiences at the educational institute appeared to be rather isolated experiences, which mainly resulted in new knowledge by getting information "with hardly any plans for new learning experiences besides what has been learned in the workplace". The potential of workplace learning is far from being used.

For those students who immediately get jobs after the HVE examination, the (transfer to the labor market is uncomplicated. However, for those who were unable to find adequate and relevant work, for one reason or another, the job situation might rapidly become problematic if they do not succeed within a certain period after the examination. The Program Director plays a crucial role in recruiting competent and qualified workplaces, and in matching students and work places.

With HVE as a new form of vocational education, there are extensive possibilities to establish qualified and up-to-date vocational education at post-secondary level for an ever-changing labor market. But there are traps to be avoided. HVE needs a content-oriented quality assessment system based on research and proven experience. Cooperation between school and work needs to be genuinely integrated. The content knowledge and skills acquired in school and at work ought to be integrated to a great extent. However, in this study, LIA curriculum was not a main focus. One important task for HVE is to find ways in which teachers,

educators and supervisors can support boundary-crossing experiences. How students learn and develop through work experience in HVE must be further analyzed upon contemporary learning theory. Recent developments in the adult education and curriculum theory develop a critique of current thinking and explore how far this provides the basis for a new pedagogic model for supporting learning through work experience (Griffiths and Guile, 2001). The authors discuss the concept of context and the learning, which occurs within and between the different contexts of education and work, and argue that most models of work experience have ignored the influence of context upon learning.

A final conclusion is that there is a lack of systematic knowledge about Higher Vocational education and Learning at Work (LIA). There are more expectations and believes compared to prove experiences and knowledge about the teaching, supervising and learning process.

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