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Boundary crossing between school and work in vocational education - resources and barriers for learning and competence development

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Abstract: This paper argues in favour of a situated approach to understanding learning at vocational school and at work in vocational education (Lave & Wenger, 1991, Hodkinson, 2005, Tanggaard, 2007). Boundary crossing is regarded as a fruitful conceptual tool to study students' learning across vocational school and the work. The purpose of the paper is to show that the relationship between *strangeness* and *legitimacy* is central to learning across and in different contexts, such as at work and at vocational schools (Bowker & Star, 1999, p. 294). The paper draws on examples from a qualitative field study of learning among students (Tanggaard, 2005, 2008) and from other research studies on learning (Wilbrandt, 2002, Nielsen, 2005) in the Danish vocational education sector.

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Introduction

One of the main characteristics of modern, vocational education in many western countries is that learning at vocational school and learning at the workplace is combined in the process of educating students. Research in a Danish context shows that many students both appreciate this possibility and complain of a lack of clear coordination and bridging from educational activities at vocational school to those at the workplace (Wilbrandt, 2002, p. 41, Nielsen, 2005, p. 108f). Students often experience vocational school and workplace practices as very dissimilar contexts with different norms and guidelines for action. FitzSimons (2008) argues with examples from mathematics education that students can find it very difficult to cross boundaries between a vertical discourse at school and a horizontal discourse at work. The horizontal discourse is typified as 'everyday' and is likely to be oral, local and context-dependent. This discourse is embedded in on-going practices and it is usually directed toward the achievement of specific, immediate and highly relevant goals for concrete persons in these practices. On the other hand, the vertical discourse takes the form of a coherent, explicit, and systematically principled structure drawing on theoretical knowledge. According to FitzSimons (2008), these discourses need to converge in educational activities because the familiarity with both discourses facilitates the boundary crossing required in the transition from education to work.

In this paper, my argument is that the transition from school to work can be conceptualised as a matter of boundary crossing between different practices – and not as relating to gaps between theory and practice in an abstract, epistemological sense (see also Creek, 2006). This understanding is based on Lave and Wenger's (1991) and

Lave's (1999) argument that learning is to be studied through an analytical departure in social practice. Therefore, in this paper, dominant models of the relationship between school and work are criticized for leading to inadequate assumptions with respect to the gaps between theory and practice. As an alternative, boundary crossing between practices forms the starting point for analysing learning in the everyday lives of students.

Context and methods

The examples drawn on in this paper are from a field-study which formed part of the author's doctoral work at Aalborg University, Denmark. The field-study involved 10 male electro-mechanical students with trainee service as part of a studentship programme in a 100% Danish-owned industrial company located in a suburb to Aarhus, Jutland. I conducted 10 qualitative interviews and more than hundred hours of participant observations in the period between February 2001 and February 2002. The focus was on students' everyday life and their experience of being part of vocational training.

The company employs a total of 1100 people with 1000 employees located in Denmark and 100 employees in other European countries. An average of three or four recently-hired electro-mechanical students and ten more experienced electro-mechanical students work at the company each year. The average vocational training in Denmark last four years (there are around 90 different educations lasting from two and up to five years) and the students are guaranteed full training through a formal contract with a company. Within the education there is a first period of elementary vocational schooling (from 20

to 60 weeks in total). As part of their main education (after the elementary vocational schooling), the students attend vocational school for five periods, each lasting between five or ten weeks.

Theoretical background - three models of transitions between vocational school and work

A cognitive-functionalistic model of application

The application approach to understanding the transition from vocational school to work practice in vocational education is the most frequently embraced model in the context of combining vocational school and work. The model is based on cognitive-functionalistic models of learning in which the concept of knowledge transfer from vocational school to practical contexts of application is central (Anderson, Greeno & Reder, 2000). The argument is essentially that abstract instruction can be very efficient:

"Learning need not be bound to the specific situation of its application. Instruction can often generalize from the classroom to 'real world situations'." (Op.cit., p. 18).

In relation to this model, vocational school teaches the student general and specific theory which is supposed to be learned and then applied in contexts beyond the vocational school.

The individual learner

The cognitive-functionalistic perspective focuses on the individual and learning is understood as resulting both in and from the processing of information in an individual brain. The suggestion is that the individual “carries” the connection between the contexts of instruction at vocational school and those of application in everyday (practical) life. Learning is primarily perceived as a mental process allowing the individual to transfer knowledge from vocational school to problem-solving in everyday life. In this respect, vocational school is a teaching context and work practice is an application context. The concept of knowledge is that it can be transferred to the individual through being instrumental, verbal and based on exact principles and explicit rules. The model has, among other things, spun off debate as to why people often fail to transfer knowledge taught at vocational school and into practical life (see Lave, 1988).

The problem with transfer between contexts

In the application model, it is seldom discussed how the appropriation of knowledge at vocational school is influenced by, changed or revised within the context of knowledge application. Knowledge is seen as uninfluenced by application. General knowledge is only made specific through transfer. As a concept, transfer implies the degree of reproduction of knowledge or behaviour across contexts or situations (Detterman, 1993, p. 4). In a review of influential experiments in the 20th century in which transfer was considered important, Detterman (1993, p. 15) concluded that the studies dealing with transfer involved a number of indications allowing the research subjects to transfer knowledge or problem solving mechanics from one situation to another. In those situations in which knowledge transfer across situations was proven, the research subjects were encouraged or asked directly to apply problem solving strategies from one

situation to another. Transfer does not appear to be unproblematic and the concept of one form of (general) knowledge being unaffected by transfer seems questionable.

The reflective practicum as the solution to problems of transitions

Reflection in and on actions has been proposed as the solution to transfer-problems across contexts of education and the workplace. Schön (1987) has been one of the prominent figures in the critique of the technical rationality underlying the application approach. He is critical of the conceptualisation of professional competence as the application of privileged, systematic and scientific knowledge taught at vocational schools and educational institutions. Schön developed the concepts of reflection-in-action and reflection-over-action in order to argue that professionals engage in reflection on action in situations of insecurity, conflict and breaks in the natural flow of professional action. Schön underlined how much professional action takes place in diffuse, unclear and “muddy” situations which require qualified judgement by the professional with respect to which actions are appropriate and relevant. It is not meaningful to apply general and uniform knowledge to situations in the workplace which differ profoundly from one another other and may require varying definitions and solutions to problems.

Improvisation, testing and reflection

The point of departure of Schön’s model is that education directed at professions should combine teaching in a vocational school context with a reflective practicum design in which the students are taught the craftsman skills of reflection during work activities. In a practicum, the student learns through close supervision of his or her own work by a

more experienced practitioner/teacher. The conception of the professional practitioner is changed by Schön from an instrumental problem-solver applying technical means to a reflected and phonetic practitioner. This idea of the reflective practitioner goes back to the Aristotelian distinction between two forms of practical rationality – *scientific* rationality, by which we consider those things in our lives which cannot be changed and *practical* rationality with which we consider aspects of life which can be changed (Aristotele, 1976). The central point is that human action can be rational, without referring back to or having to be based on explicit, theoretical principles. It is, in fact, quite rational not to apply scientific rationality outside its own domain, because it does not prepare us effectively for situations which are changing and which could be different from what we know already.

Ideally, according to Schön (1987), both the student and the supervisor should be engaged in reflection in and on action. As the solution to transition problems, a model of reflection allows for a broad conception of knowledge in which implicit, tacit, pragmatic and local forms of knowledge are brought into the forefront (Kvale, 1993). The argument is that the inexplicable or tacit aspects of knowledge can alone be appropriated by participating in communities of practice in which these forms of knowledge are shared.

An emphasis on the reflective practicum as a solution to problems of transitions between knowledge at vocational school, and knowledge in professional practice, avoids the problematic distinctions between the appropriation and application of knowledge, but two major problems still exist.

A pseudo praxis

One problem is that learning is still designed to take place in particular practices – in a kind of pseudo praxis (Schön, 1987, p. 37). Nobody really knows if the problems and possibilities of learning found in a reflective practicum will be the same problems as those found in the profession. A practicum will never prepare someone fully for the profession or rightly replace the work practice of dual education. For example, the consequences of certain actions are probably never as harsh in a reflective practicum as in the profession where customers may object to the product sold and where this might have negative consequences for the employee (Tanggaard & Elmholdt, 2006). A practicum is an ideally constructed room, which is “safe and sound” in its isolation from the many disturbing and problematic aspects of genuine practice. Schön’s critique of technical rationality is relevant when developing educational design which adheres to developing the situational knowledge and skill of the practitioner, but does not explain how the student is supposed to connect and make sense of their former vocational school activities in “real world” situations. I will argue that we need a model conceptualising vocational school and the context of work practice as being dissimilar practices, which do different kinds of work, have different values and are structured by different kinds of knowledge and power. In this respect, learning does not have to do with the transformation of theory into practice, but with gaining increasing familiarity with the objects, customs, traditions, values and people in the practices of the student. To develop this point, I argue in the following section, that boundary-crossing and the dynamic of strangeness and legitimacy are central to understanding the participation of the student across the vocational school and work contexts.

Boundary crossing between vocational school and work contexts

The analytical departure of this paper in the concept of boundary crossing is inspired by situated theories of learning (Lave & Wenger, 1991, Lave, 1999, Wenger, 1998), work in an activity-theory framework (Engeström, 2004) and the specific work on boundary objects by Bowker & Star (1999). The intention is to focus on the horizontal aspects of learning in the participation of the learner across social practices and to place “*a heavy emphasis on actions of bridging, boundary crossing, “knotworking”, negotiation, exchange and trading*” (Engeström, 2004, p. 16).

Learning as an integrated aspect of social practice

In this model, theoretical knowledge is not conceptualised as more privileged than other types of knowledge. Knowledge and learning are viewed as elements of social practices:

“... the organization of schooling as an educational form is predicated on claims that knowledge can be de-contextualized, and yet schools themselves as social institutions and as places of learning constitute very specific contexts” (Lave & Wenger, 1991, p. 40).

The knowledge taught at vocational school is seen as related to the specific context of the school and the idea of de-contextualised knowledge is therefore, in principle, impossible (see also Lave, 1988). We think of practice as mediated by the available means for thinking; tools, traditions of reasoning, artefacts, situational requirements and other people. The content and forms of thinking change, because situations and the

requirements of our actions and participation in these situations change. No abstract thinking occurs outside some form of situation:

“What is called general knowledge is not privileged with respect to other ‘kinds’ of knowledge. It too can be gained only in specific circumstances. And it too must be brought into play in specific circumstances” (Lave & Wenger, 1991, p. 34).

The basis of the argument is that reasoning and learning take place in every possible context and the objective is to describe and analyse local forms of learning and thinking as integrated aspects of social practice, rather than sticking to a possible dualism between contexts of learning and theory and contexts of not-learning and practice (Dreier, 1999).

Learning and membership

From this viewpoint on social practice, we inhabit the world before we think about it reflectively. Social ontology is the starting point for inquiries into learning and *not* the abstracted notions of epistemology embraced in the cognitive-functionalistic perspective. People learn as they become members of what Lave and Wenger (1991) refer to as communities of practice or what Strauss (1978) calls social worlds. Put simply, a community of practice is a set of relations among people doing things together, cutting across formal organizations and institutions – and therefore, also potentially vocational schools and workplaces. Newcomers to the community learn by becoming a form of member during the process of legitimate peripheral participation

(Bowker & Star, 1999, p. 294). For example, one is not born a pianist, a psychologist or a teacher but gradually becomes a member of the community of pianists, psychologists or teachers.

Boundary objects, familiarity and strangeness

The concept of boundary objects is relevant in this context, because: “*Learning the ropes and rules of practice in any given community entails a series of encounters with the objects involved in the practice: tools, furniture, texts, and symbols, among others*” (Bowker & Star, 1999, p. 294). Learning involves an increasing familiarity with the objects and other people in the community. The field of tension between, for example, vocational school and the workplace can, therefore, be seen as entailing a relation between familiarity and strangeness. Accordingly, rather than viewing learning as a product to be transferred from one context to another, as argued by Hodkinson (2005), we need to see learning as an on-going relational and reconstructive process. What characterises the transition from vocational school to the workplace is not learning, but the learner who learns one thing at vocational school and something related, but rather different at work. This learning changes continually, is revised and combined in the person’s encounters with different objects and within their participation across contexts. At stake for the learner is becoming a member of certain communities of practice which often extend across different contexts and social practices. In this sense, learning is a matter of boundary crossing, negotiating the dynamics of strangeness and legitimacy, relating to and getting access to possible positions of identity in the community.

Empirical examples of boundary crossing

Engeström (2001) has argued that much valuable learning involves horizontal development. That is, people learn because their existing practices are challenged by crossing boundaries into new situations. This is a significant stimulus for learning. Fuller and Unwin (2004) develop this concept by arguing that the opportunity to learn in a variety of locations results in a more expansive learning environment. From this perspective, crossing borders between vocational school and the workplace becomes a positive enhancement of learning as an emerging process (Hodkinson, 2005) This induces both richness and complexity into the learning process. Instead of studying learning in isolated contexts, the main theoretical and empirical concern is to study how people combine, modify and connect learning across places, and how, for example, they may replace earlier learning by something new. In everyday life, rather than transferring knowledge, people find ways to hold on to, modify and develop modes of learning. Below, a few empirical examples are given to illustrate this dynamic.

The empirical examples are selected from the interviews conducted with two students: Anders and Bjarne. I interviewed Anders in March 2001 in a meeting room at the company in which he is being trained as an electro-mechanical student. Before the interview, I had conducted participant observations of his work in the company for two weeks. Anders is presently 18 years old. He has just finished secondary school and the first vocational school period at the local vocational school in Aarhus. I interviewed Bjarne in the office of the master (while the master was on holiday!) during October 2001. I had already conducted participant observations of his work for two weeks, and attended vocational school with him as well. Bjarne is 20 years old, and has completed

high school. He has been doing vocational training for two years, and is the chairman of the local studentship club at the company. However, although the focus is on two students, the examples chosen also represent more general themes running across the interviews with the other eight students who formed part of this overall study.

From pupil to adult positions

To many students in the study on studentship learning drawn on in this paper, participation across vocational school and the workplace provides a positive case for negotiating the differences between being a student at vocational school and becoming an adult in the workplace. In relation to a broad and situated conception of learning related to identity and becoming specific persons (Lave, 1999) this is an important case for the study of learning:

Anders: In work practice, it's kind of an adult life. We talk about house prices, television programs and having children. In high school, they only talk about girls and parties. Of course we still do that ourselves at vocational school, but we earn more money and leave home, and anyway, it's not just about money, I think we are becoming more mature.

I: What makes you say that you are becoming more mature?

Anders: Responsibility and trust, I think. Trust from others that we will do our jobs properly.

To Anders, work practice gives him access to an adult life, with its discourses on television programs, house prices and children, leaving home and earning more money. He is approaching the task of taking on an adult life identity, while he sees friends around him going to high school and still living the life of a student. The essential point is that the increasing familiarity with the objects and discourses of adult life, which is accessible to Anders only in the work practice, contributes to a relevant widening of his participation in the community of electro-mechanics as an 'emerging adult'. However, he is also still a student at vocational school where he and his peers are embracing a youthful lifestyle. In this respect, it can be argued that students are in some ways marginalised individuals. Marginality refers to human memberships in more than one community of practice. Students have a dual perspective, by virtue of having more than one identity (both student and emerging adult) to deal with (Bowker & Star, 1999. p. 302). Marginal strangers are those who come and stay a while, long enough so that membership becomes a troublesome issue – they are people “who sort of belong and sort of don't”. On the one hand, as a student, Anders becomes increasingly familiar with the objects and discourses at the workplace; on the other hand, he is not a full member, because his participation also remains anchored at vocational school. He is an insider-outsider who begins to question the life of his peers at high school (and himself at vocational school) and, as yet, is only a legitimate peripheral participant in the workplace (Lave & Wenger, 1991).

Boundary crossing mediated by peer-groups

To many students, peer-groups at vocational school can function as a site for constructive dealing with crossing the boundary between vocational school and work

practice. At vocational school, peers often critically discuss and evaluate their respective experiences in the work practice. They may, for example, find the courage to go back and ask their master to be given just as challenging tasks as their peers at other companies:

Bjarne: As pupils at vocational school, we work in the same field, and we talk to one another about being employed in the respective companies. We compare what we do and find out if the others do more interesting things – then one might go back to the company surely and complain to one’s master – it’s like you find a reference, right.

The peer groups at vocational school function as a mediating meeting point in the interface between vocational school and work. These groups refer both to activities within the vocational school and beyond, and they become part of a communication infrastructure crossing from vocational school to the workplace. Related to the learning dynamic of strangeness and legitimacy, the other peers act as relatively familiar strangers in relation to each other. They challenge and inspire each other with their unlike perspectives and experiences from different work practices. According to Bowker & Star (1999, p. 304), one can argue that a peer group at vocational school becomes a “borderland” for people who co-exist in different practices. For example, the peers help each other to de-stabilize unsuitable and non-constructive places for learning that they have each come to take for granted “at home” in the work practice. At least, each of them has the potential to become aware of what they should be gaining from their work practice, when confronted with the views of their peers. As an empirical

example, peer groups point to the potential of borderlands as mediators of participation between the social practices of vocational school and the work practice.

The (de)valuation of vocational school

As argued by Cheek (2006), the notion of a theory/practice gap is often voiced as an instrumental notion of expediency and necessity in terms of the needs of specific workers and patterns of working simultaneously in different environments. Vocational school is viewed only as a contributor to workforce qualifications. In the workplace where I conducted participant observations, I often heard journeymen and students talk somewhat negatively about vocational school. For example, they told me that general school subjects taught in vocational school cannot be applied directly in the workplace. To the student, boundary crossing between vocational school and work practice can be like crossing different cultures, with different norms and values in relation to what is regarded as knowledge and good practice. In this respect, vocational school is often viewed as teaching subjects that are too abstract, while the meaning of learning at the workplace seems clearer to the student:

I: How come you identify so strongly with the work practice?

Anders: Well, it's just the way things are. You can see more clearly what things are important. I remember with many of my mates in secondary school, if we had to learn something in mathematics, lots of them refused to bother, because they could not identify with what we had to learn...why on earth do I need to learn about fractions? If the teacher did not have a clear

answer, they gave up the work. Here, in the work practice, you can always clearly see the meaning of what is going on. Sometimes at vocational school, I find it a bit harder, I must say.

To Anders, crossing the boundaries from secondary school to a studentship position has made clearer what he needs to learn and why. Many students identify with becoming journey-men and to them, this identification can easily become part of a refusal or ambivalence towards activities at vocational school. We do not know whether this is the case with Anders, nor is it wrong or a barrier to learning. Boundary crossing does not, per se, only have to do with continuity, stability and coherence in the participation of the student. It may, in fact be quite constructive to disengage discursively from vocational school if one is trying to connect oneself to the workplace and the values at stake in this other practice. However, many of the journeymen at the workplace and the masters valued those students who were doing well at vocational school. In one of the master's offices, copies of the journeymen's certificates for his best students were hanging on the wall, and those who obtained the best grades at vocational school were often employed again after their studentship. Many of them were encouraged to continue with their education at university which entailed the possibility of further boundary crossing, and, in Fuller & Unwin's (2004) terms, expansive learning across different communities of practice. Related to the central dynamic in learning of the strange and the familiar, Anders is reflecting on the seeming opaqueness of the institution of vocational schooling (strangeness) and, by contrast, the transparency in the workplace of what to learn (familiarity). To him, the familiarity and therefore transparency of the workplace provides a good case and environment for learning,

which has also made him reflect on his own participation across the different practices of vocational school and work.

Combining and modifying learning across vocational school and work

As the above analysis indicates, the relationship between vocational school and practice is not only a matter of applying theory to practice. Considerations of where to belong and with whom to identify – either seeing oneself as belonging to the workplace or as a person going into further education, seems to be important from the perspective of the students. Nonetheless, it is not only a matter of either belonging to the workplace or not belonging. Many of the students struggle to combine and modify their learning across vocational school and work:

Anders: I think it's an advantage to learn how things really work and not to stay in a theoretical world. To pretend you are doing something, like at vocational school, is okay, I think you can learn a lot from that, but I also think you can learn just as much from trying out how things actually work.

It's a combination of both.

Anders seems to value both “the pretending work” at vocational school and the “learning by doing” approach of, respectively, the vocational school and work practice. To a student, encountering how things really work is not surprisingly, the more important of the two, but he also values the approach to problems at vocational school and the potentials of combining the insights gained in the different practices of

vocational school and work. In the following, Bjarne elaborates on his own experience of the fruitful shifting between vocational school and work:

I: Can you tell me how you experienced shifting between vocational vocational school and work practice?

Bjarne: It's like a break in everyday life. You feel like, now I'm going to vocational school to learn more and when you return, you are given a breathing space from the theoretical stuff and you may find out that well, I can't really manage this task, I must remember to ask at vocational school, if I can be given some tasks in this area

I would argue that Bjarne's example is a case of expansive learning. His participation in work practice makes him aware that he needs to learn more about certain subjects at vocational school. He is aware that he is dependent on mastering tasks in both practices, so as to become a full participant in the community of electro-mechanics which cross the institutions of both vocational schooling and work. Of course, there are many more aspects to an expansive learning environment than becoming aware of the potential of vocational schooling to support the mastery of tasks. Fuller and Unwin (2004) identify a range of dimensions related to the continuum of expansive versus restrictive learning environments. Dimensions associated with an expansive learning environment include organisational recognition and support for employees as learners, the reification of "workplace curricula", teamwork, innovation, multi-dimensional views of expertise, cross-boundary communication and a company vision of workplace learning. However,

the main dimensions of expansive learning environments concern participation in multiple communities of practice within and beyond the workplace and the possibility of identity extension through boundary crossing. The examples given in this paper support these more general ideas about expansive learning environments by arguing that the possibility of combining and modifying one's participation across practices is a central dynamic in learning for the person crossing these practices. However, always being a stranger and never really belonging anywhere does not facilitate a legitimate position which enables becoming familiar with and learning about the objects and people in particular practices. Too much boundary crossing may destabilize the participation of the student, hindering the familiarisation required for learning. The following is an example of the process of becoming increasingly familiar with tools in the field as a condition for learning. Anders is telling his story of learning English:

Anders: All documentation is written in English. At vocational school, we had 20 weeks of English lessons. At first, I found it difficult. It was a totally boring way to learn English – it is when you do *not* think about it that you learn. Sitting in a classroom and learning English – it's just not my way. 20 weeks of technical English does not make me a world champignon, but now I am learning every day working with the manuals at the workplace.

Anders has found out that he needs to master English to become proficient at work. It is only through this mingling of English with his evolving identity as an electro-mechanic that he begins to master reading and understanding English. The immediate strangeness of English is beginning to make sense to him – it is becoming familiar, because he can

associate it with his changing identity as an electro-mechanic. He is, one could say, discovering the differences between something making theoretical as opposed to practical sense, in the context of vocational school and the workplace. To him, the transparency of goals and tasks in the workplace gives him access to learning English, combining what he learned at vocational school and what he is now learning every day.

Discussion and Conclusions

The aim of this paper was to argue in favour of the concept of boundary crossing as an analytical tool to understanding learning in the field of vocational school and work practice in vocational education. In order to achieve this objective, the paper elaborated on the work on situated learning by Lave and Wenger (1991) and Lave (1999) by combining it with the concept of boundary crossing (Engeström, 2001, 2004, Fuller & Unwin, 2004) and the dynamic of strangeness and legitimacy in learning inspired by the work of (Bowker & Star, 1999). Learning at vocational school versus learning at work in students' everyday lives was conceptualised as the difference between practices, and not, per se, between abstract notions of "theory" and practice". It was argued that dominant models of the relationship between vocational school and work (the cognitive-functionalistic model of learning (Anderson, Greeno & Reder, 2000) and the practicum concept developed by Schön (1987)) does not adequately conceptualise vocational school and the workplace, with each as specific places for learning. It was then argued that learning does not primarily involve the transfer of knowledge from vocational schools to practical contexts of application, but rather the process of gaining increasing familiarity with the objects and persons in and across different communities of practice. The field of tension between, for example, vocational school and the workplace was

therefore seen as entailing a relationship between familiarity and strangeness. Boundary crossing between practices relates to negotiating this dynamic of strangeness, familiarity and legitimacy, relating to and gaining access to possible positions of identity in the community.

In the paper, a few empirical examples were given to illustrate the potential of an analytical departure in boundary crossing related to the transition of the student across vocational school and practice. In relation to a broad and situated conception of learning that is associated with identity, the transformation from being a pupil at vocational school to an adult position in the workplace was taken as an initial, empirical point of departure. Peer groups were subsequently discussed as an example of how boundary crossings are mediated in everyday life. From the perspective of the student, peer groups function as a communication infrastructure between vocational school and work practice. Acting as strangers to each other in relation to experiences in work practice, the students can challenge and inspire themselves. The paper also discussed how boundary crossing between vocational school and work practice sometimes means that the student discursively disengages from vocational school, because he needs to identify primarily with the work practice.

The more general point is that boundary crossing does not, per se, only have to do with continuity, stability and coherence in participation. To be able to “connect” to something (e.g. the workplace), the student may need to disengage either discursively or practically from other places.

A potential criticism of the paper is that the term ‘boundary crossing’ is just another word for the phenomenon of ‘transfer’. However, as concepts, boundary crossing and the dynamic of strangeness and legitimacy refer to the participation of the student across contexts. This entails much more than a rationalistic process of knowledge transfer or transformation. The aim is to show that what is also at stake in the learner’s movement across practices are issues of identity formation and gaining access to widening personal and professional positions over time and in the future. Part of this involves combining and modifying learning, so as to be able to perform knowledgeable actions in the practices to which the student will belong. Secondly, the intention is to show that vocational school and other practices, such as work practice in vocational education, must be seen as different practices in their own right. Each practice cannot always be judged through the eyes of the other. From the perspective of students, learning also concerns aspects other than those which a potential employer may find suitable or effective. Instrumental notions of learning are different from the more situated and existential aspects employed in this paper. Of course, the argument is not that education will only be provider-led and inflexible in relation to “consumers” in everyday life nor that learning is only to be seen as a self-centred enterprise (see also Biesta, 2005). Rather, from the perspective of this paper, learning is about becoming a member of certain practices and gaining access to valuable learning, leading to a form of belonging to and being accepted into these practices. Much of this has to do with how the learner can deal with participation and cross boundaries and differences between practices with diverse values and traditions. That is why we need concepts other than the dominant ones provided in a-contextual, individualistic and rationalistic theories of learning across the institutions of vocational schooling and the workplace.

Drawing on Eraut (2004), FitzSimons (2008, p. 208) argues that effective boundary crossing between formal educational settings and work requires 1) understanding of new situations, 2) recognizing what knowledge and skills are relevant, 3) transforming them to fit the new situation and 4) integrating them with other knowledge and skills in order to think/act/communicate in the new situation. Accordingly, the opportunity to do so must be provided for students and FitzSimons suggests project-work as a good case where there are realistic constraints and where the outcome has real consequences. In a broader sociological perspective, researchers have argued that a school curriculum which is able to reflect continually changing requirements for competences in workplaces will tend to give students a labour marked relevant education (Taylor, 2006, Weber, 1986). Aarkrog's (2008) have pointed out, based on a case-study of practice-related teaching in vocational education, that students tend to become increasingly interested in theoretical questions as they advance through the education. In the paper, it is therefore suggested that courses in social and humanistic subjects are placed relatively late in the progression of vocational education because it might ensure that students will be more interested in these subjects. Mjelde (2008) argues that much apprentice-based education has now been replaced by formal education (for example in the case of nurses). In apprenticeship situations in the workplace there may be a lack of learning resources when there is for example no master available to teach while too much emphasis on formal education often lead to a the experience of a 'praxis-chock' by students, when they are confronted with the requirements of professional work. In summary, a lot of paradoxes and contradictions stand out when looking at the transition from school to work and back again in vocational education. We will therefore need to

critically invest both practices of learning and their possible relation within different kinds of vocational education and among the students.

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