

# Didactics in vocational education and training – Diversity and inter- cepts in the Nordic educational landscape

---

Lázaro Moreno Herrera

PhD, Professor

Department of Education,  
Stockholm University, Sweden

lazaro.moreno@edu.su.se

Michael Gessler

Dr. phil. Dr. h.c., Professor

University of Bremen, Institute Technology  
and Education (ITB), University of Bremen,  
Germany

mgessler@uni-bremen.de

## Abstract

This article pictures complexity of didactical research in vocational education and training (VET) and how international comparative research can contribute to development of VET's didactics. We have argued earlier<sup>1</sup> that depending on differences in perspectives and even on language differ-

ences, we are facing a remarkable conceptual diversity of what didactics is about. We claim that there is a need to transcend the language discussion and to focus on content related aspects to advance knowledge and research in this area within the field of VET. We start by shortly presenting research on didactics aiming at highlighting transitions and diversity in various

---

<sup>1</sup>This article is substantially based on the authors earlier publication (Gessler & Moreno Herrera, 2015)

approaches. Particular emphasis is on the challenges in designing vocational didactics. We then present selected contributions from scholars in the VET field with the intention to illustrate and propose discussion about the diversity and intercepts that are visible today. A thorough comparative study of didactics in VET in the Nordic countries remains as a necessary project ahead.

## Tiivistelmä

Tämä artikkeli tarkastelee ammatillisen koulutuksen didaktiikkaa ja sen monimuotoisuutta, lisäksi tuomme esiin sen, miten kansainvälinen vertaileva tutkimus voi edistää ammatillisen didaktiikan kehittämistä.

Olemme aiemmin esittäneet, että didaktiikan käsite ja mitä sillä tarkoitetaan, on monimerkityksinen johtuen erilaisista näkökulmista ja jopa kielellisistä eroista. Ehdotamme, että vaikka merkityseroja esiintyy, meidän tulisi ylittää kielikeskustelu ja keskittyä didaktiikan sisältöön lisätäksemme tietoa ja tutkimusta ammatillisesta koulutuksesta. Katsauksemme tarkoitus on esitellä lyhyesti didaktiikkaan liittyvää tutkimusta ja samalla tehdä näkyväksi erilaisia lähestymistapoja, siirtymiä ja eroavaisuuksia sekä erityisesti ammatillisen didaktiikan haasteita muutaman keskeisen tutkimuksen avulla. Lisää tutkimusta tarvitaan erityisesti Pohjoismaisesta näkökulmasta.

## Introduction

In an earlier study by Moreno Herrera (2015) the work by Klaus Hoffmann is used as a ground to argue that the literature on didactic models offers “a confused profusion of planning strategies, and especially the beginning teachers are faced with a considerable classroom dilemma”. Moreover, Hoffmann argues, “there is hardly any sufficiently well-founded theory of teaching on the basis of which specific and individual instructional models of practice and action could be substantiated, transferred and integrated” (Hoffman, 1996, p. 95). According to the study by Moreno Herrera this claim, with further arguments, is to be found in successive research particularly in what can be called the German and Nordic tradition of VET didactics (e.g. the works by Kansanen, 2009; Meyer, 2010; Uljens, 1997a, b). Moreno Herrera (2015) considers particularly interesting in this context the proposal of the so-

called “design for learning” by Staffan Selander (e.g., 2008), which might bridge the more traditional notion of didactics in the Germanic and Nordic context with the Anglo-Saxon curriculum theory tradition. Depending on the perspective and even language, the concept of didactics is defined in different ways. The authors of this article have no ambition to survey here the extensive volume of research on didactics available. The intention here is to suggest lines of development, encourage discussions and further the research that this theme requires.

## Challenges in designing vocational didactics<sup>2</sup>

Gessler and Moreno Herrera (2015) have argued that learning can be described as a process of four stages: input, process, output and outcome. Accordingly, the input refers to the personnel, material, conceptual and environmental resources. The process stage refers to the delivery of learn-

<sup>2</sup>This entire section substantially draws on part of the text by the authors first published in the International Journal for Research in Vocational Education and Training (IJRVET), Vol. 2, No. 3 (Special Issue).

ing opportunities. The output phase comprises the intended learning objectives and the actual learning achievements. The outcome phase connects these achievements with the perspective of the use or application of what has been learned outside the actual learning setting.

## Outcome Orientation

The first identified challenge indicates that the term “didactic”, as the theory and practice of teaching and learning, comprises the input, process and output phases. However, the significance of what has been learned manifests itself in the outcome stage, that is, putting the application into practice. Therefore,

- in vocational education and training, it is important to design learning opportunities, so that the learner can satisfy practical requirements in the workplace, on the one hand, and be able to shape his/her work as well as the work environment, on the other hand (Gessler & Moreno Herrera, 2015).

## Path Dependency

As the second challenge path dependency indicates according to Gessler & Moreno Herrera (2015) that national vocational education and training systems pursue different aims and demonstrate different regulatory systems (governance). Greinert (2004, 2005) has studied the development of vocational training systems in Europe and identified three basic systems: (1) market-led systems; (2) politically controlled systems; and (3) collective regulated systems or mixed systems.

In market-led systems (e.g. United Kingdom), each individual is responsible

for ensuring that s/he has a specific market value and is able to fulfil the expectations and requirements of the company. The problem with this model is that individuals must be able to anticipate the skills demanded by companies. Since the anticipation of future skills needs is difficult and risky, educational behaviour is geared towards current requirements in order to minimise the risk of bad investments. In order to be able to respond quickly and flexibly to market-oriented training behaviour, educational programmes are modularised and equipped with certified powers. This leads to a multiplicity of programmes, which leads to further problems (quality control of programmes, confusion).

In politically controlled systems (e.g. Sweden, Spain, France), the political system protects the person from this form of commercialisation. While in the market system, the production factors of work and capital, i.e. the individual (supply) and the business (demand), come uncontrollably into contact, in the political system, the relationship between an individual and business is created by the State. To achieve this, supply (skills) and demand (jobs) need to be balanced. In order to minimise the risk of a missing fit, a few basic vocational profiles are determined by the State, with the expectation that these be capable of responding to different types of demand. Despite this government control, there remains an individual risk at the interface to the employment system. The question of what skills a company specifically needs (and when) cannot be addressed by State control.

In mixed systems (e.g. Germany, Norway, Denmark), the State and industry cooperate with each other. In Germany, the government has delegated, for example, responsibility for the implementation of vo-

cational training to the company, while the State itself is responsible for schooling. Training plans for vocational training are developed by representatives of industry under the supervision and moderation of the State. This situation requires a high level of commitment from businesses, which, in return, are entitled to shape vocational training and, thereby, are also responsible for co-financing.

Following Busemeyer and Trampusch (2012), a fourth basic type can be identified.

This type (the authors name it the “segmentalist skill formation system”) does not exist in Europe and it is in a process of erosion in the country of origin: Japan. The fourth basic type is characterised by a strong commitment of enterprises, but without government regulation. In this approach, the companies specify their needs, securing the necessary skills through internal training, and take over the financing. In the following table, characteristics of the four basic models are set out.

Table 1. Ideal types of vocational training systems  
(Gessler & Moreno Herrera, 2015, p. 155)

Principle	School-based State System	Company-based Market System	Individual-based Market System	Mixed System
<b>Financing</b>	State	Companies	Individual	Companies & State
<b>Output</b>	Basic qualifications	Specific work skills	Partial competencies	Broad and deep competence
<b>Strengths</b>	Integrated educational system	Engagement of the companies	Individual engagement	Balanced social and economic interests
<b>Weaknesses</b>	Involvement of the companies	Engagement of the individuals	Individual risks and skill shortages	Decoupled vocational system
<b>Actual Challenge</b>	Integrate work experience	Increase individual responsibility	Increase skill levels	Reduce gap with higher education

The four ideal types characterise the teaching and learning in vocational education and represent descriptions of textbook models. In fact, the systems are moving: work-based learning is entering politically shaped systems, individual-based market systems are increasing the skill levels, company-based market systems are shifting the responsibility to the individuals, and mixed systems are attempting to close the gap with higher education.

Another example is the process of deregulation of politically controlled systems: since the 1960s, VET in Sweden has essentially been a matter of secondary schooling in State-run institutions. However, throughout the entire post-war period the major forces of the Swedish industrial relations system — the organised labour movement and the employers’ organisations — have played a decisive role in shaping VET policy. The 1970 Upper Secondary Education reform has been in-

terpreted by some researchers as a sign of the unique strength of Swedish Social Democracy and the trade union movement. After the 1990s, the Swedish educational system underwent a profound change in terms of decentralisation and deregulation. The earlier strong central regulation of school organisation, curricula and allocation of resources has been replaced by so-called goal governance, within the frames of which local actors (municipalities, schools, local industry and local unions, teachers, and so on) are to make decisions (Lundahl & Sanders, 1998, p.12; Nilsson, 1994; Panican, 2014).

Based on these different conditions and moving targets, a one-size-fits-all vocational didactic approach is not possible. Therefore,

- a vocational didactic has to reflect the specific cultural character and changes of a VET system, and the inherent objectives, values and norms.

### Horizontal Structure

The third challenge of shaping a vocational didactic is posed by the occupations. Vocational training does not focus on education in individual subjects (mathematics, etc.), but rather the ability *to act in a vocational domain*. In Sweden, 12 vocational programmes are built up<sup>3</sup>. The International Standard Classification of Occupations (ISCO-08) distinguishes 10 major groups and 43 sub-major groups. Moreover, the classifications are changing.

Taking the vocational programmes, vocational disciplines, training occupations, vocational groups or sub-major vocational groups into account several vocational didactics are required. In contrast to the largely stable and clearly structured subjects in general education (e.g. mathematics, languages), the domains in vocational education and training are diverse and subject to constant change. The field of vocational didactics has no generally accepted *horizontal structure*; furthermore, this structure is changing. Therefore,

- a vocational didactic has to reflect this normativity and has to be, nevertheless, aligned with a professional domain.

### Vertical Structure

A further challenge is in the vertical structures of the occupations. While in general education levels apply in principle to all pupils in the same year (this is the basic assumption of PISA and the idea of international comparability), occupations have a vertical structure. The occupational structure of the Federal Employment Agency in Germany, for example, distinguishes four levels of requirement: (1) unskilled or semi-skilled activities; (2) professionally oriented activities; (3) complex specialist activities; and (4) highly complex activities. Vocational didactics have to take different requirement levels into account. Therefore,

- a vocational didactic has to be aligned with the corresponding requirement levels for the respective occupation.

---

<sup>3</sup>These vocational programmes are: Child and Recreation Programme, Building and Construction Programme, Electricity and Energy Programme, Vehicle and Transport Programme, Business and Administration Programme, Handicraft Programme, Hotel and Tourism Programme, Industrial Technology Programme, Natural Resource Use Programme, Restaurant Management and Food Programme, HVAC and Property Maintenance Programme, and Health and Social Care Programme.

## Temporal Structure

Shortly said vocational education and training consists (at least) of vocational orientation, initial vocational education and training, and continuing vocational education and training. Therefore, a vocational didactic has to be aligned with the respective objectives pursued in a particular phase of (work) life: vocational orientation, vocational development and education, and vocational further training and re-orientation.

## Changing nature of work

Vocational Education and Training is related to the conditions of work. VET should therefore prepare the person for the changing conditions and nature of work. The ILO Report (2015) mentions the following trends and challenges:

- Employment relationship: “In short, the standard employment model is less and less representative of today’s world of work since fewer than one in four workers is employed in conditions corresponding to that model.” (p. 13)
- Poverty and social exclusion: “Temporary and informal workers, part-time workers and unpaid family workers, many of whom are women, are also disproportionately affected by poverty and social exclusion.” (p. 14)
- Global supply chains: “Approximately one in five workers are estimated to work in global supply chains. (...) The intense competitiveness and short product cycles in some global supply chains also feed down to workers’ contractual arrangements and working hours.” (p. 15)

Therefore,

- a vocational didactic has to be oriented not only towards the standard em-

ployment model and standard occupations and jobs, but also towards the changing nature of work, the risk and fact of poverty and social exclusion, and the reality of global supply chains.

This analysis is not a declaration of bankruptcy for VET. What is needed, is rather a discourse about solutions. Above we have pictured the multiplicity of contexts for VET didactics more generally. In the following we focus on the Nordic perspective.

## National VET systems

The Swedish VET system has had since the 1970s a strong school-based design. This, to a great extent, explains the existence of an interest in the development of a didactics able to cope with the complexities of a learning process that takes place both in what we can term “traditional classroom settings” and in the workshops. Vocational didactics is an important subject in the training of vocational teachers in Sweden, with a focus on the learning process and a particular attention towards the understanding and development of vocational knowing. Didactics is depicted as an intricate field with epistemological and ontological grounds that sometimes intersect or diverge (Moreno Herrera, 2015).

Norway’s VET system is characterised as a dual or mixed system, with two years of school-based education followed by two years of work-based training as the main model (2+2). The system, built upon the tripartite cooperation principle, has been established at both national and regional levels, involving both employers’ and workers’ unions. Vocational didactics is a central part of vocational teacher education, underpinning learning processes

connected to learning a trade, while the trainers undergo short courses while getting to know their role and responsibilities. Training offices owned by companies (employers) are a strong actor in the work-based part of VET and in the transitions between school and work (Nore, 2015).

Nore (2015) argues that in Norway strict regulation has become outdated, because learning arenas have become even more hybrid than the former 2+2 model. In addition, learners have become co-designers of their learning paths, and teachers alone cannot meet the learners' need for guidance to knowledge and skills in a broad variety of trades. E-portfolios increase in use, but point in different directions: quality control of outcomes or a cooperation tool for designing and facilitating individual learning processes, and even empowerment of the learner.

The VET system in Denmark is dual and includes practice as well as school. Basically, the admission to VET is free. Vocational college teachers in Denmark are facing complex challenges. They have to adapt their pedagogy to pupils characterised by great diversity, several are from backgrounds with no tradition for education and have social or academic problems, and schools struggle with high dropout rates. From such reasons, a new education programme, Diploma of Vocational Pedagogy, has recently been implemented in Denmark to improve didactics at VET colleges. The diploma is an important step in the realisation of a recent reform of Danish VET, which aims to upgrade vocational teachers' didactical skills and improve their ability to adapt their teaching to the very diverse groups of pupils at VET colleges. It places increased demands on vocational teachers in terms

of their ability to reflect on pedagogy and didactics (Duch & Andreassen, 2015).

## Concluding remarks

We would like to argue here that beyond transcending the language discussion there is indeed a need, particularly relevant for VET, to develop a close linkage between what some authors consider "an empirically based" side of didactics associated with empirical findings and the "non-empirical" side associated with theoretical constructs for understanding the teaching-learning process. This problem of the relationship between theory and empiricism in the specific context of research on didactics is mainly related to the argument that didactic theory does not develop in interaction with empirical data. Once again revisiting Larsson (2006, p. 145) there is a need to deal with an essential shortcoming in today's educational research that is the tendency that researchers seldom develop a theoretical justification of education and then continue developing it by examining when it is implemented 'in reality'. The academic debate becomes the key point instead, and a more collaborative work to examine important questions empirically remains missing.

In all above presented approaches the border between work and education is addressed; nevertheless, the answers are different. From an inside perspective, the solutions show a high path dependency. From an outside perspective, alternative solutions become visible. The combination of both perspectives could enable continuity as well as innovation (Gessler & Moreno Herrera, 2015). Research on didactics in relation to VET still remains



a road under construction, we hope that the scholarly work ahead will contribute to the needed developments.

## Bibliographical notes

**Lázaro Moreno Herrera** is a Professor of Education with specialization in Vocational Education & Training at the Department of Education at Stockholm University, Sweden where he leads the research group in the field. He has a PhD in Technology Education from Åbo Academy University, Finland. His research interests cover a variety of research areas within vocational education, including didactics, policy issues and comparative analysis.

**Michael Gessler** is a Professor at the Institute Technology and Education at the University Bremen, Germany. His research interests focus on transfer and innovation research in vocational education and training, vocational didactics, work-based learning, professional development and school-to-work transition.

## References

- .....
- Bussemeyer, M., & Trampusch, C. (2012). The Comparative Political Economy of Collective Skill Formation. In M. Bussemeyer, & C. Trampusch (Eds.), *The Political Economy of Collective Skill Formation* (pp. 3–38). Oxford: Oxford University Press.
- Duch, H., & Andreassen, K. (2015) Reforming Vocational Didactics by Implementing a New VET Teacher Education in Denmark: Tensions and Challenges Reflected in Interviews with Vocational College Teachers. *International Journal for Research in Vocational Education and Training*, 2(3), 195–213.
- Gessler, M., & Moreno Herrera, L. (2015). Vocational Didactics: Core Assumptions and Approaches from Denmark, Germany, Norway, Spain and Sweden. *International Journal for Research in Vocational Education and Training*, 2(3), 152–160.
- Greinert, W.-D. (2004). European vocational training 'systems' - some thoughts on the theoretical context of their historical development. *European Journal: Vocational Training*, 32, 18–25.
- Greinert, W.-D. (2005). *Mass vocational education and training in Europe. Classical models of the 19th century and training in England, France and Germany during the first half of the 20th*. Cedefop Panorama series, 118. Luxembourg: Office for Official Publications of the European Communities.
- Hoffmann, K. (1996). The dilemma of didactic paradigms and the practitioner's challenges in integrative planning. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi* (Journal of Education Hacettepe University), 12(12), 95–99.
- ILO International Labour Organization. (2015). *World Employment Social Outlook: The changing nature of work*. Geneva: International Labour Office.
- Kansanen, P. (2009). Subject-matter didactics as a central knowledge base for teachers, or should it be called pedagogical content knowledge? *Pedagogy, Culture & Society*, 17(1), 29–39.
- Larsson, S. (2006). *Didaktik för vuxna, tankelinjer i internationell litteratur*. Stockholm: Vetenskapsrådet.
- Lundahl, L., & Sander, T. (1998). *Vocational Education and Training in Germany and Sweden - Strategies of control and movements of resistance and opposition*. Umeå, Sweden: Thematic Network on Teacher Education in Europe.
- Meyer, M A. (2010). A view on didactics and instructional planning from the perspective of research on learner development and educational experience. *Éducation & Didactique*, 4(2), 75–99.
- Moreno Herrera, L. (2015). Transitions and Diversity in Didactics: An Exploration Searching for Implications for Vocational Education and Training. *International Journal for Research in Vocational Education and Training*, 2(3), 161–169.
- Nilsson, A. (1994). *Visions and Labour Demand. The Planning of Vocational Education for the Swedish Manufacturing Industry 1950-1993*, Lund Papers in Economic History, no 39.
- Nore, H. (2015). Re-Contextualizing Vocational Didactics in Norwegian Vocational Education and Training. *International Journal for Research in Vocational Education and Training*, 2(3), 182–194.
- Panican, A. (Ed.) (2014). *Yrkesutbildning för morgondagens arbetsliv*. Stockholm: Dialogos Förlag.
- Selander, S. (2008). Designs for learning – A theoretical perspective. *Designs for Learning*, 1(1), 10–22.
- Uljens, M. (1997a). *School didactics and learning*. Hove, East Sussex: Psychology Press.
- Uljens, M. (1997b). *European Identity in Change - The meeting between Russian, German and Nordic Educational Traditions* (Report no 10). Vasa: Åbo Akademi University, Department of Education.