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Federal Department of Economic Affairs FDEA
Federal Office for Professional Education and Technology OPET



Vocational Education and Training Research in Switzerland

An OPET programme to promote VET research



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Science: the driving force behind innovation



Vocational education and training is in a constant state of change. Ever new demands mean that traditional job descriptions are also continually being redefined. Structural economic developments generate demand for new qualifications, while changes in the workplace require new pathways for the transfer of knowledge.

To ensure the ongoing development of vocational education and training in such a dynamic context, the Confederation, the cantons and professional organisations must have scientifically grounded steering principles at their disposal. However, these have been lacking until now.

During the drafting of the new Federal Law on Vocational Education (BBG), the Federal Office for Professional Education and Technology (OPET) seized the opportunity to develop an entirely new approach to the promotion of VET research. VET-related issues are now grouped into research priorities, which are then attributed to one or several universities, referred to as “leading houses”, for closer scientific study. A central concern here is to move away from research topics dictated by the state towards a coordinated bottom-up approach.

With this new promotion programme the Confederation has laid the groundwork for the sustainable and systematic development of VET research. Universities now contribute to a more in-depth understanding of this field, generating improved data and ensuring the long-term consolidation of knowledge.

The present brochure seeks to outline the implementation of the VET research promotion programme. The praise bestowed on our programme in the OECD National Review of Educational R&D proves that we are on the right path.

Dr. Ursula Renold
Director of the Federal Office for Professional Education and Technology

¹ OECD (2007), National Review of Educational R&D, Switzerland, p. 29.

Exploring a new research field



Unlike other educational fields, vocational education and training has been largely overlooked by universities. Institutes that dealt with vocational education issues were few and far between, and funds for research projects were scarce. There are two main reasons: the interdisciplinary nature of vocational education and training, as well as a poor understanding of the needs of practice-oriented VET.

Discussions on the redesign of VET research promotion provided new impetus. Academics recognised its untapped potential: many questions remain unanswered, while new ones arise due to the constant adaptation of vocational education and training to changes in the labour market. Moreover, upon closer inspection, it became apparent that the interdisciplinary nature of VET could in fact provide researchers with demanding and stimulating challenges.

The leading house concept has launched well, with some already up and running. In addition, systematic studies of a range of VET research priorities are under way, and some have even produced their initial findings. Last but not least, it is also very encouraging to see how many young researchers are taking an interest in this field of research.

Professor Fritz Oser
University of Fribourg, Head of the VET Research Steering Committee

Vocational education and training in Switzerland

Vocational education and training offers young people access to the labour market and ensures an adequate supply of highly qualified young professionals at all levels. It is the part of the Swiss education system with direct links to the labour market.

Vocational education and training: the chosen path

Every year, around two-thirds of young people in Switzerland enter the job market via the VET pathway. Approximately 200,000 enrol in basic vocational education and training courses (secondary level II) and around 60,000 federal certificates are awarded each year. At the higher vocational education and training level (tertiary B), around 30,000 advanced certificates and diplomas are awarded annually.

Dual system

Close links with the labour market is the distinguishing feature and strength of the Swiss VET system. The most common pathway is a combination of on-the-job training and attendance at a vocational school or college. Students have a choice of 200 specialist occupations. Higher vocational

education and training offers a wide range of practice-oriented study programmes that provide students with the necessary skills to undertake specialist or managerial roles.

Many pathways

The Swiss vocational education and training system is divided into two parts: basic (secondary level II) and higher (tertiary B). It is underpinned by clearly defined educational programmes and offers a high degree of mobility between levels, such as the possibility of direct entry to advanced study programmes, including those provided at university level, or an immediate career change midway through one's professional life. VET offers a wide range of educational opportunities, all of which take account of many different skills and the needs of each individual age group.

A joint task

Responsibility for VET is shared by the Confederation, the cantons, and professional organisations. The Confederation is in charge of the general development and strategic management of VET, while cantons take care of implementation. Professional organisations define VET content and provide apprenticeship positions.

Developing sustainable VET research

The development and steering of sustainable vocational education and training require scientific bases, as these serve as the foundation for the design of a demand-oriented and modern VET system.

In Switzerland, VET research, with a few exceptions in certain disciplines, is still relatively underdeveloped. As a result, the relevant authorities often lack the information needed to steer the system effectively.

Weak foundations

A project group set up by the OPET which published its findings in May 2000 concluded that until now VET research has contributed little to related policies, and has tended to focus on implementation and development. The reason for this situation was that VET-related issues had not been subject to systematic and comprehensive study at university level, while studies which had been undertaken failed to take account of the importance of the practical aspects of VET. Moreover, the project group found that funding instruments such as the research programmes of the Swiss National Science Foundation and of scientific education research associations did not generate coherent and sustainable VET research projects. The fostering of young researchers was also overlooked. Furthermore, the Swiss Institute for Vocational Teacher Training (Schweizerisches Institut für Berufspädagogik SIBP), now the Federal VET Institute (Eidgenössisches Hochschulinstitut für Berufsbildung EHB), was unable to conduct research owing to its absence of links with the university system.

Progressive repositioning of VET research

To fill these gaps, the project group suggested the definition of twelve research priorities. The overriding aim would be to provide answers to research queries and to examine the content of VET from the point of view of various disciplines. The goal was to establish a broader scientific foundation for VET policies in the medium term. In the long term the objective was to consolidate and expand personal and structural research capabilities.

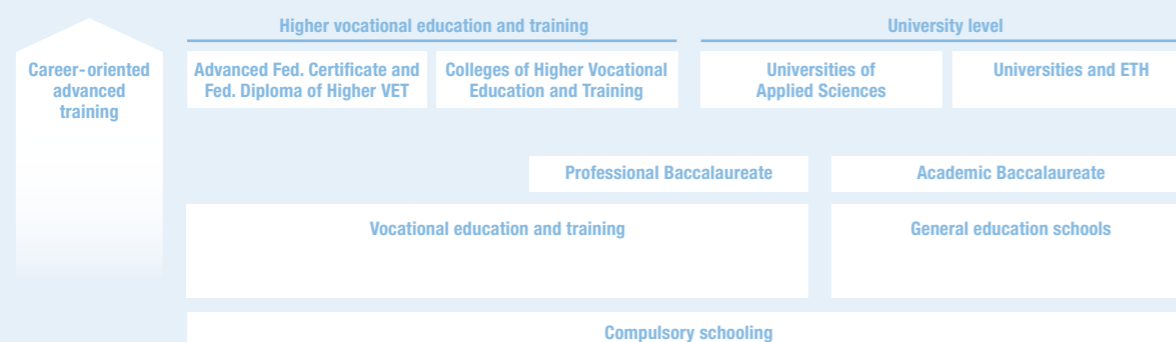
In 2000, as a first step towards the implementation of the newly defined research strategy, the OPET established a team of scientific experts. Between 2000 and 2003 it was answerable to the Commission for Technology and Innovation CTI, according to a traditional bottom-up approach.

The leading house concept

It soon became apparent that the goal of identifying twelve research priorities was too ambitious, owing to a lack of institutional, financial and human resources. On the one hand the number of project proposals was disappointing. On the other hand, several proposals were refused on quality grounds. The Steering Committee thus undertook a new assessment, in which it established six major research priorities, based on the findings of the project team. These priorities were then validated by expert appraisals. It also called on professors with specialist knowledge in these fields and the potential to promote young researchers to take part.

In 2003, following the entry into force of the new VET legislation which gives the Confederation an active role in the development of the VET system, VET research became the responsibility of the vocational education division within the OPET. The creation of the first leading houses also began that year (see pages 13-23).

The Swiss VET system



The OPET programme to promote VET research

Leading houses are in charge of the new OPET programme to promote the sustainable development of VET research. The aim of the programme is to examine the major issues in relation to VET. These are grouped into research priorities which are then subject to scientific investigation carried out by one or several academic chairs. Special attention is given to the promotion of young researchers.

Participants

→ *Federal Office for Professional Education and Technology (OPET)* The OPET together with its VET Research Steering Committee defines the research priorities. However, the detailed formulation of research areas as well as project management is the responsibility of the individual leading houses.

→ *VET Research Steering Committee* The OPET's VET Research Steering Committee is an advisory body made up of experts from Switzerland and abroad, and representatives of the administration. Its task is to ensure that the research adheres to the defined research strategy and takes due account of vocational education and training. It also evaluates and monitors leading houses and other strategically relevant projects (for list of Steering Committee members see page 25).

→ *Leading houses* Leading houses develop a thematic area of relevance for vocational education and training. Aside from conducting research, their main tasks are the promotion of young researchers, keeping abreast of the state-of-the-art, and networking with other national or international institutions or researchers active in the same area.

Every VET research priority is linked to one or several chairs at Swiss third-level institutions, and defined by a temporary service agreement with the OPET. The holder of the chair is responsible for the content and scientific quality of his or her research priority. The aim is to fill conceptual gaps and meet the needs of VET policy and practice.

The research projects also serve to promote young researchers. For this reason, only third-level institutions which confer doctorates can be given leading house status. Conferences and doctoral student programmes provide young researchers with valuable opportunities to discuss questions and findings with experts.

The long-term aim of leading houses is to develop sustainable VET research and thus boost existing research capabilities. By achieving a critical mass, a research tradition should firmly take root. Leading houses should also provide incentives for the creation of lectureships as well as serve as a stepping stone in the creation of research posts within the Federal VET Institute (Eidgenössisches Hochschulinstitut für Berufsbildung EHB) and other VET institutions.

→ *Scientific Advisory Board* In order to ensure the relevance and scientific quality of the research, an international advisory board is appointed to each leading house. Its members are selected by the VET Research Steering Committee based on proposals from the leading houses.

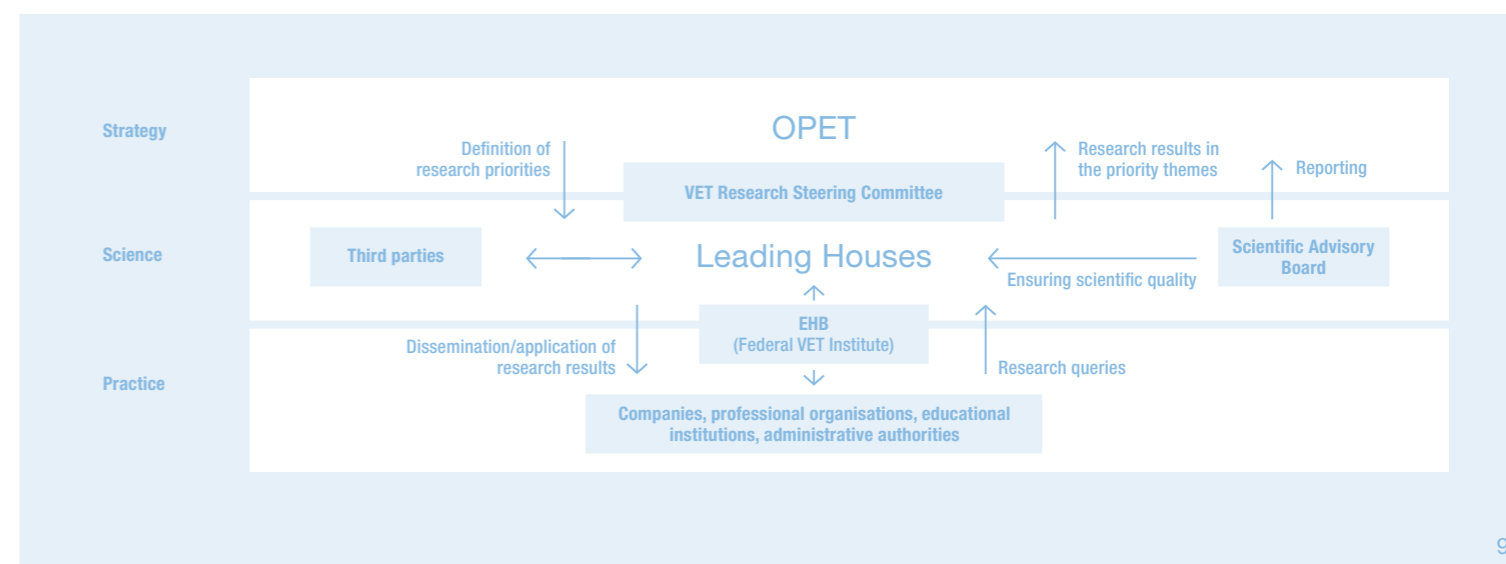
→ *The Federal VET Institute (Eidgenössisches Hochschulinstitut für Berufsbildung EHB)* As an institution devoted to training VET instructors and teaching staff, the EHB focuses on the implementation and dissemination of research findings. Thanks to its close contacts with VET specialists, the EHB is also a source of new research areas (for further information see page 24).

→ *Third parties* Third party participation in leading house projects is obligatory. They ensure that the leading house applies a wide range of research methodologies, enters into exchanges with other research centres, and creates networks.

Duration

The establishment of lasting structures and a VET research tradition is likely to take 10 to 15 years.

Individual leading houses must pass through three stages: Introduction – Consolidation – Independence. Each stage lasts three to four years. Before passing on to the next stage, an evaluation of the research activities to date and in the future must be undertaken. Also at this point, thought is given to whether a shift in focus within the given research priority is required as the result of possible recent developments or trends.



Funding

A budget of CHF 20 million has been set for VET research during the 2008–2011 period. Around three quarters is earmarked for the research priorities covered by the leading houses. The remaining quarter will go to individual projects and studies which are loosely linked to the leading house or independent of it.

Creation of a leading house

The creation of a leading house means breaking new ground and systematically exploring new research territory in a multi-stage process. The supervision by the VET Research Steering Committee and the scientific monitoring carried out by the advisory boards ensure that the leading houses pursue the right paths at the right time for the entire duration of this multiannual process and that a sustainable research tradition is created.



Status of leading houses (Summer 2007)

Leading house	Status
Systems and processes	Expert survey
Economics of education: - Transitions, skills and labour - Firm behaviour and training policies	Stage 1 This research priority is dealt with by two leading houses, which coordinate their activities.
Technologies for VET	Stage 1
Learning strategies	Stage 1 Owing to the retirement of the chair, the leading house will be put out to tender in 2008.
Social competences	Stage 1 completed The leading house will not be continued in its present form. The research priority will be repositioned.
Quality of vocational education	Stage 2

Additional research funding

In addition to the research priorities of the leading houses, the Federal Office for Professional Education and Technology also funds individual projects which address specific issues related to VET. Project applications are evaluated by the Steering Committee and by external international researchers, thereby ensuring the coherence and quality of the research.



Learning strategies

Only those who have the ability to independently adapt their knowledge and skills to new demands will keep pace with change.

Chair

Psychology Department, University of Basel, Prof. Gerhard Steiner

Advisory Board

Prof. Andreas Krapp, Bundeswehr University, Munich ; Prof. Detlef Sembill, University of Bamberg ; Prof. Jan Vermunt, University of Utrecht ; Prof. Simone Volet, Murdoch University, Perth ; Prof. Barry Zimmerman, City University New York (CUNY).

Research priority

Educational psychology, cognition and cognitive learning theories in vocational education.

Background

Knowledge cycles are becoming ever shorter. Only those who continue to further their professional knowledge can survive in a changing job market and react flexibly to new demands.

Objective

The acquisition of learning strategies and self-regulated learning are already a major focus of basic VET. Learners are expected to link theory with practice, which in turn will allow them to bridge knowledge gaps and apply what they have learned to new situations.

Procedure

The aim of the projects carried out in the "Learning Strategies" leading house is to identify concrete procedures which can optimise independent learning in the workplace. The fact that VET is delivered in a number of different learning sites presents an additional challenge.

Practical and theoretical learning hand in hand – a characteristic of the dual vocational education system.



Example

Application of cognitive learning theories to VET

This project seeks to analyse thirty learning incidents drawn from the practices of vocational college teaching staff and other VET instructors. It examines e.g. how text-based learning works or how the practical on-the-job experience of

students can be integrated in the learning process. This case study will then provide the basis for the formulation of an introduction to the psychology of learning which is targeted specifically at VET teaching staff.

Social competences

Although the subject of much discussion, little is known about how organised teaching-learning processes impart social competences.

Chair

Institute of Business Education and Educational Management, University of St. Gallen, Prof. Dieter Euler.

Advisory Board

Prof. Margarete Boos, University of Göttingen ; Prof. Hermann Ebner, University of Mannheim ; Prof. Gabriel Mugny, University of Geneva ; Prof. Christiane Spiel, University of Vienna ; Prof. Keith Topping, University of Dundee.

Research priority

Didactic promotion and evaluation of social competences.

Background

Social competences are a set component in basic VET curricula, and are an important part of a comprehensive VET system.

Objective

Little is known about how social competences are imparted. Procedures to monitor and evaluate them are also lacking.

Procedure

The “Social Competences” leading house aims to develop instruments to assess and diagnose a number of social competences. It is also concerned with creating empirically tested concepts to promote these competences in the three VET learning sites.



Social skills may be acquired in various learning environments.



Example

Development of instruments to assess social competences

The project developed two instruments to assess social competences in the following situations: “conflict resolution dialogue” and “working as part of a school group”. Both instruments were tested on approximately 700 students and are currently ready for use (with instructions) in practice.



Persons in charge of vocational education support and foster learners in their efforts.

Quality of vocational education and training

The quality of VET depends on the competences of the instructors or teaching staff at the three learning sites.

Chair

University of Fribourg, Prof. Fritz Oser

Advisory Board

Prof. Jürgen Baumert, Max Planck Institute for Educational Research ; Prof. James G. Greeno, University of Pittsburgh ; Prof. Kurt Reusser, University of Zurich ; Prof. Richard Shavelson, Stanford University ; Prof. Robert-Jan Simons, University of Utrecht.

Research priority

Improving quality in teaching-learning situations and defining the core competences of VET instructors and teaching staff.

Background

VET instructors and teaching staff play a major part in the success and quality of educational results. Teaching requirements differ according to the given learning site – in-firm, school or inter-firm courses

Objective

The “Quality of Vocational Education and Training” leading house aims to define the special competences and skills required from VET instructors and teaching staff.

Procedure

The research projects examine how to boost the competences and skills of VET instructors and teaching staff, as well as identify any shortfalls.



Example

Professional minds

The project focuses on improving VET-related teaching competences and activities. Standards for teaching staff, such as “putting learning experiences into action”, are defined and filmed.

These films serve as a quality assessment instrument aimed at enhancing the competences of instructors and vocational college teaching staff.

Learning technologies for vocational education and training

Information technologies bringing learning sites closer together.

Chair

ETH Lausanne, Prof. Pierre Dillenbourg
University of Geneva, Prof. Mireille Beترancourt
University of Fribourg, Prof. Jean-Luc Gurtner

Advisory Board

Prof. Christian Depover, University of Mons-Hainaut ; Prof. Friedrich Hesse, University of Tübingen ; Prof. Ulrich Hoppe, University of Duisburg ; Prof. Sabine Seufert, University of St. Gallen ; Prof. Michael Sharples, University of Nottingham ; Dr. Etienne Wenger, scientific advisor.

Research priority

Development of a new approach to the use of (learning) technologies which is adapted to the Swiss dual VET system.

Background

In recent years, IT has become an integral part of the entire education system. This new approach to learning offers a host of possibilities for VET too.

Objective

The research focuses on how to apply learning technologies to complex workplace and learning situations. The use of these technologies should boost cooperation between the different learning sites.

Procedure

Researchers adopt a design-based approach, with the aim of organising learning environments within a practical context, and generating findings to develop theories. All three participating universities apply this approach in their examination of the use of technologies to span the divide, whether spatial, temporal or conceptual, between the different learning sites.

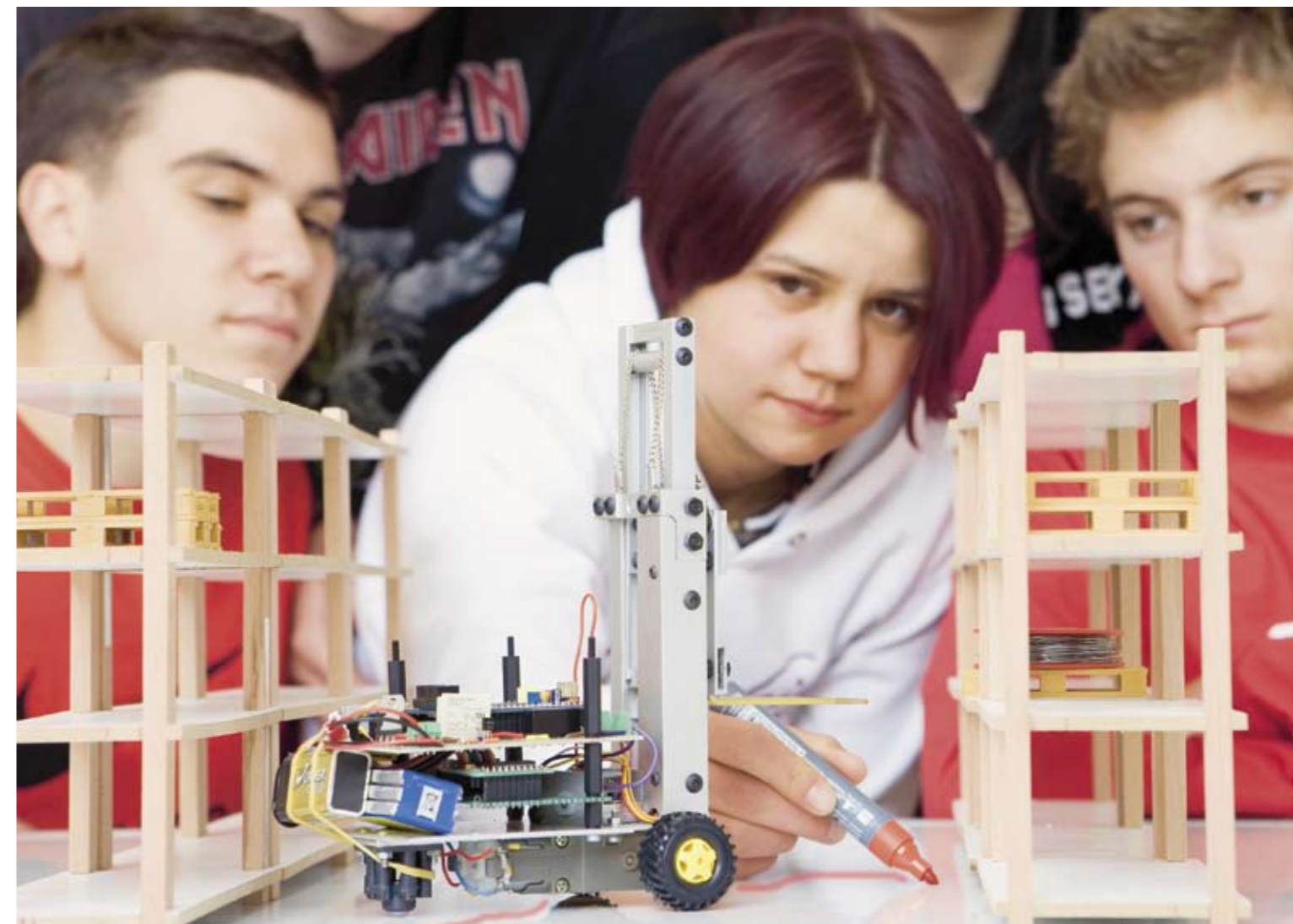
Example

Integrating technologies in heterogeneous learning environments

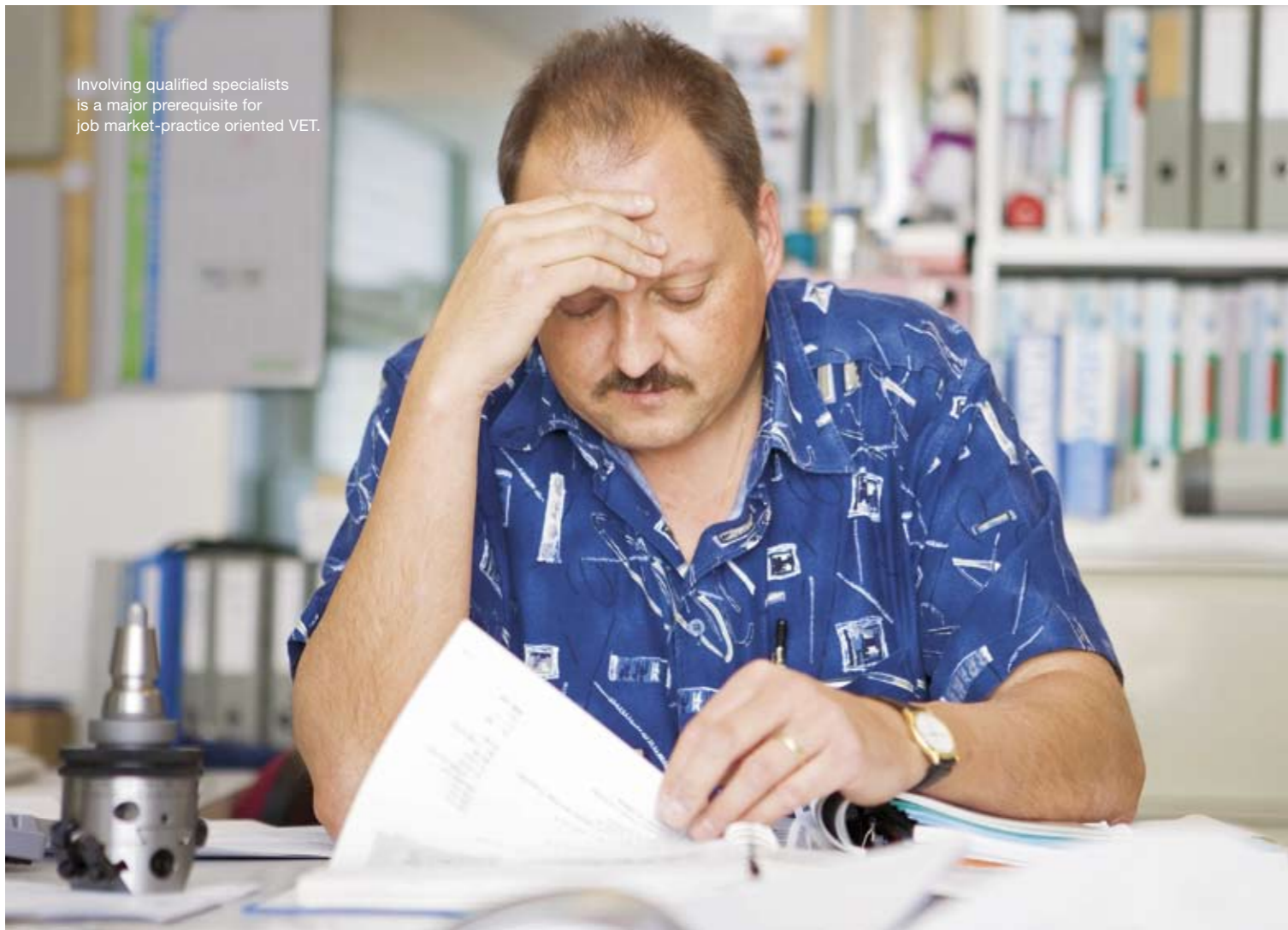
In some professions, technological advances have led the flow of goods and information to drift apart. If vocational education and training is to be effective, a way must be found to reunite these two areas. For students training to be logistics managers, the project has created a physical model depicting their actual working situation, which will act as a guide to-wards figurative learning and ultimately to abstract thought.



Simulations enable cost-effective and realistic practice of situations.



Involving qualified specialists is a major prerequisite for job market-practice oriented VET.



Economics of education: transitions, skills and labour

The efficiency of the VET system is reflected in the job market.

Chair

University of Geneva, Prof. Yves Flückiger

Advisory Board

Prof. Ulrich Blum, University of Halle; Prof. Martin Carnoy, Stanford University; Prof. Jennifer Hunt, McGill University; Dr. Philippe Méhaut, CNRS; Dr. Eric Verdier, CNRS.

Research priority

Transitions, competences and the labour market.

Background

VET enjoys close links with the job market. However, there is relatively little knowledge of the functioning and mutual influence of their individual mechanisms.

Objective

The leading house investigates the efficiency of the VET system in terms of the qualifications required by the job market. The aim is to ensure that vocational education and training satisfies these requirements and to produce a potential workforce with the necessary training to fill current job vacancies.

Procedure

The various projects carry out an in-depth examination of the mechanisms at play in both the VET system and the job market. They also look at corporate and individual attitudes to basic and advanced VET programmes.



Example

Analysis of the transition from VET to the job market

Based on data from the national TREE (transition from education to employment) survey, this project identifies the correlations between transition data and job market indicators. The complementary nature of these perspectives not only highlights the efficiency of individual educational systems, but also how far they provide the qualifications required by the labour market. The project also aims to

Economics of education: firm behaviour and training policies

An effective VET policy serves corporate interests.

Leading house

University of Zurich, Prof. Dr. Uschi Backes-Gellner
University of Berne, Prof. Dr. Stefan Wolter

Advisory board

Prof. Stephen Machin, Centre for the Economics of Education, London;
Prof. Paul Ryan, King's College, London; Prof. Dr. Catherine Sofer, University of Paris I;
Prof. Ludger Wössmann, ifo Institute for Economic Research, Munich.

Research priority

Corporate decisions and educational policy

Background

Vocational education and training serves corporate interests, ensuring a supply of highly trained young professionals.

Objective

Not all companies are willing to become involved in VET. Many factors influence their decision. Too little is known about these factors and their interaction.

Procedure

The first phase focuses upon empirical investigations of corporate VET approaches and how these relate to official educational policies. Currently nine research projects are ongoing, three of which involve external research groups. In 2006, the leading house launched an international doctoral student programme to guarantee the quality of young researchers and to consolidate its research priority.

Example

Productivity effects

The “vocational education and corporate success” project examines the impact of basic VET on the productivity of firms. It produces findings on the conditions needed to ensure an adequate supply of apprenticeship positions that satisfy economic needs as well as the qualitative demands of students.

Companies that consider opening up training positions, take into account their own economic prospects, as well as those of the sector and the occupation.



Implementation of research findings

To ensure the development of vocational education and training, pragmatic and scientifically based concepts are required at both the practical and policy level. An important component of the VET research promotion programme is the dissemination of research findings.

The individual websites of each leading house provide an overview of their research findings (see p. 26 for addresses). In addition, some findings have already appeared in journals and have been presented to VET specialists.

Publications on practice and policy

The series „Swiss research on vocational education and training“, published by h.e.p. Verlag, is aimed at a broad readership. Its objective is to provide researchers and practitioners in associations, companies and schools as well as politicians with scientific findings which will assist them with their day-to-day work and encourage them to give greater thought to vocational education and training. Not only do the publications include fundamental considerations and practical suggestions, they also provide incentives for the further development of the Swiss VET system.

Scientific journal

The launch of an international scientific journal dedicated to VET is at the planning stage.

EHB role

The Federal VET Institute (Eidgenössisches Hochschulinstitut für Berufsbildung EHB), with sites in Lausanne, Lugano and Zollikofen, helps forge links between research and practice. As an institution in charge of training VET professionals, the



EHB is primarily concerned with the dissemination of research findings and ensuring their practical application.

In 2007, the EHB was awarded university status. This means that it can enter into research partnerships with other third-level institutions. Thanks to its close contacts with VET specialists, the EHB is able to propose new areas of research. However, since it does not have the right to grant doctorates, it is not a leading house.

The Master of Science in VET offers students with an undergraduate degree in economics, psychology and sociology an opportunity to participate in interdisciplinary VET research projects. Research undertaken as part of this Masters programme can be integrated in the work carried out by the leading houses.

Steering Committee

Steering Committee 2004 – 2007

- Prof. Fritz Oser, President, Professor of Education and Educational Psychology, University of Fribourg, Switzerland
- Prof. Frank Achtenhagen, Georg-August University, Göttingen, Course Director of the Institute for Business and Human Resource Education
- Jacques Amos, Education Research Service, Geneva
- Heinz Gilomen, former deputy director of the Swiss Federal Statistical Office
- Dr. Gregor Haefliger, State Secretariat for Education and Research
- Serge Imboden, Head of the VET Division, OPET
- Prof. Stefan Wolter, Director of the Swiss Coordination Centre for Research in Education

Experts to the Steering Committee 2004 – 2007

- Klaus Beck, Professor emeritus of Business Education, Johannes-Gutenberg University, Mainz
- Helmut Heid, Professor emeritus of Education, University of Regensburg

Further information

Federal Office for Professional Education and Technology OPET

→ www.bbt.admin.ch

(→ topics → vocational education and training
→ VET research)

Leading Houses

The individual websites of each leading house provide information on books, articles, other publications, doctoral theses, scientific papers and implementing projects.

Website links:

→ www.bbt.admin.ch

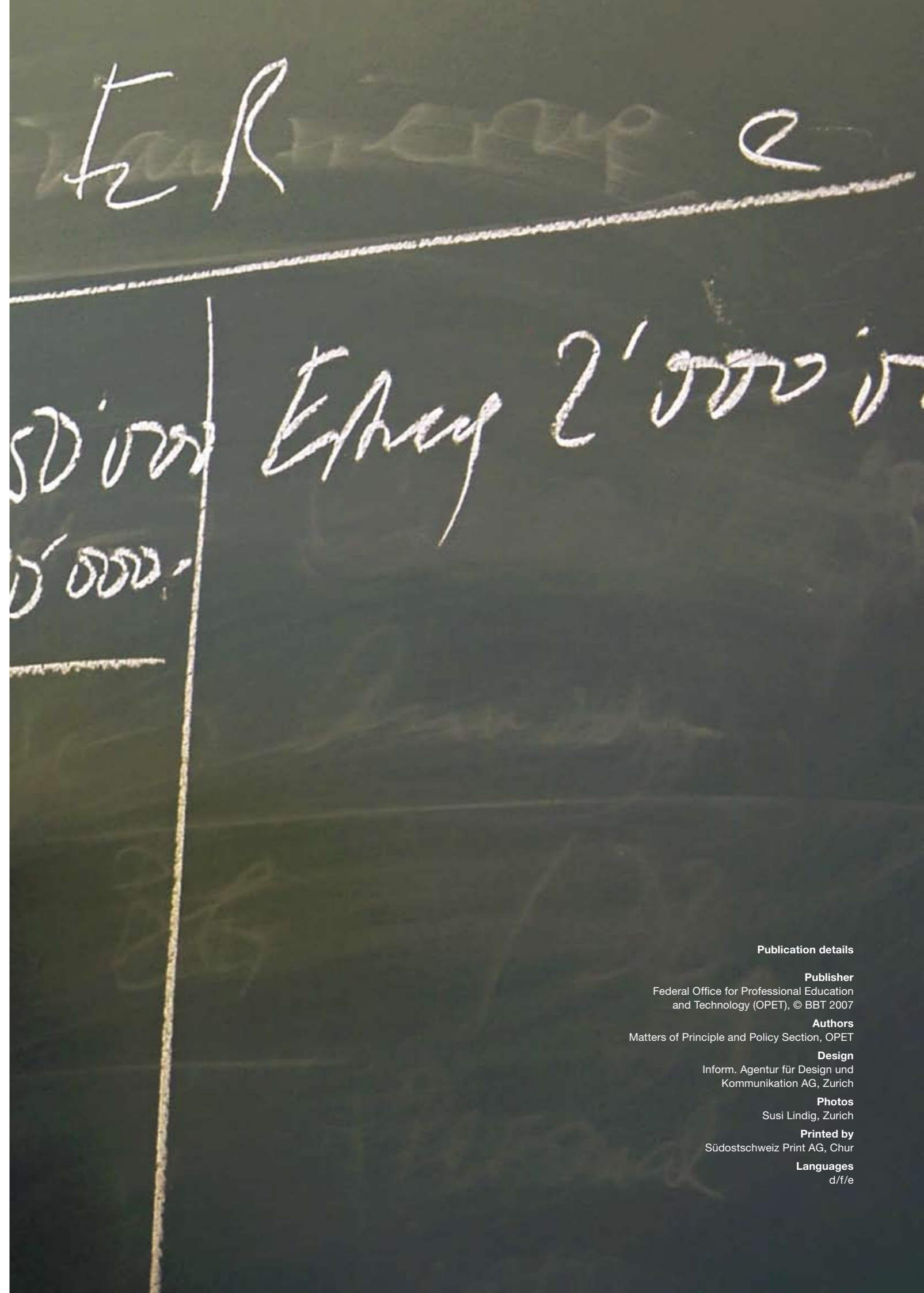
(→ topics → vocational education and training
→ VET research)

VET research series

→ www.hep-verlag.ch h.e.p. Verlag, Berne

Published works:

- Rolf Dubs,
An Appraisal of the Swiss Vocational Education and Training System (d, f, e)
- Andres Frick, Aniela Wirz (eds.),
Berufsbildungsökonomie:
Stand und offene Fragen (d, f)
- Fritz Oser, Maya Kern (eds.),
Qualität der beruflichen Bildung
– Eine Forschungsbaustelle
- Dieter Euler (eds.),
Facetten des beruflichen Lernens
- Gerhard Steiner,
Der Kick zum erfolgreichen Lernen



Publication details

Publisher

Federal Office for Professional Education and Technology (OPET), © BBT 2007

Authors

Matters of Principle and Policy Section, OPET

Design

Inform. Agentur für Design und Kommunikation AG, Zurich

Photos

Susi Lindig, Zurich

Printed by

Südostschweiz Print AG, Chur

Languages

d/f/e

