

SSIC Report 3/2014

The Tertiary Level of the Swiss Education System

Report and Recommendations
of the Swiss Science and Innovation Council SSIC



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Schweizerischer Wissenschafts- und Innovationsrat
Conseil suisse de la science et de l'innovation
Consiglio svizzero della scienza e dell'innovazione
Swiss Science and Innovation Council

The Swiss Science and Innovation Council

The Swiss Science and Innovation Council SSIC is the advisory body to the Federal Council for issues related to science, higher education, research and innovation policy. The goal of the SSIC, in line with its role as an independent consultative body, is to promote a framework for the successful long term development of Swiss higher education, research and innovation policy.

Der Schweizerische Wissenschafts- und Innovationsrat

Der Schweizerische Wissenschafts- und Innovationsrat SWIR berät den Bund in allen Fragen der Wissenschafts-, Hochschul-, Forschungs- und Innovationspolitik. Ziel seiner Arbeit ist die kontinuierliche Optimierung der Rahmenbedingungen für die gedeihliche Entwicklung der Schweizer Bildungs-, Forschungs- und Innovationslandschaft. Als unabhängiges Beratungsorgan des Bundesrates nimmt der SWIR eine Langzeitperspektive auf das gesamte BFI-System ein.

Le Conseil suisse de la science et de l'innovation

Le Conseil suisse de la science et de l'innovation CSSI est l'organe consultatif du Conseil fédéral pour les questions relevant de la politique de la science, des hautes écoles, de la recherche et de l'innovation. Le but de son travail est l'amélioration constante des conditions-cadre de l'espace suisse de la formation, de la recherche et de l'innovation en vue de son développement optimal. En tant qu'organe consultatif indépendant, le CSSI prend position dans une perspective à long terme sur le système suisse de formation, de recherche et d'innovation.

Il Consiglio svizzero della scienza e dell'innovazione

Il Consiglio svizzero della scienza e dell'innovazione CSSI è l'organo consultivo del Consiglio federale per le questioni riguardanti la politica in materia di scienza, scuole universitarie, ricerca e innovazione. L'obiettivo del suo lavoro è migliorare le condizioni quadro per lo spazio svizzero della formazione, della ricerca e dell'innovazione affinché possa svilupparsi in modo armonioso. In qualità di organo consultivo indipendente del Consiglio federale il CSSI guarda al sistema svizzero della formazione, della ricerca e dell'innovazione in una prospettiva globale e a lungo termine.

SSIC Report 3/2014

The Tertiary Level of the Swiss Education System

Report and Recommendations
of the Swiss Science and Innovation Council SSIC

Adopted by the Council on the 11th of November 2014

Table of Contents

Summary/Résumé/Zusammenfassung	4
Introduction	5
1 Structure of the Tertiary Level of the Education System	6
1.1 Actors and areas of responsibility	7
1.2 Funding	9
1.3 Research and services	10
1.4 Education and training	10
1.4.1 Students in education and training; completion rates	10
1.4.2 Education costs	13
1.4.3 Admission	13
1.4.4 Permeability	14
2 Developmental Factors and Points of Friction	16
2.1 Developmental factors	17
2.2 Points of friction	17
2.3 System dynamics and effects	19
3 Recommendations	20
3.1 Preserve the differences between the elements of the system	21
3.2 Refocus the profiles	21
3.3 Promote plasticity in the system	22
Bibliography	23
Appendices	24
1 The tertiary level of the Swiss education system: A diagram	24
2 The tertiary level of the Swiss education system: A synoptic table	25
3 Funding for cantonal university and ETH expenditures by source (2012)	26
4 Funding for university of teacher education and university of applied sciences expenditures by source (2012)	27
Abbreviations	28

Summary

Résumé

Zusammenfassung

E In this report, the Swiss Science and Innovation Council (SSIC) presents its analysis and recommendations for the entire Swiss tertiary education system. In doing so, it takes both higher vocational education (“tertiary B”) and universities (“tertiary A”) into account in equal measure. In the SSIC’s view, the tertiary education system fulfils a variety of functions which both complement and differ from one another. These functions need to be carried out by the various educational institutions according to their respective profiles and target populations. The overall ability of the individual parts of this education system to perform is diminished by placing them in hierarchical relation to one another. The SSIC makes a variety of recommendations designed to strengthen the tertiary education system in Switzerland. The goal is to preserve the differentiation between the various elements of the system and to clarify their respective profiles. The goal is also to promote the model character of the system in such a manner that it preserves flexibility and adaptability. The present policy paper is based on a detailed description of the Swiss tertiary education system, the subject of a separate publication.

F Le Conseil suisse de la science et de l’innovation (CSSI) présente ses réflexions et ses recommandations sur l’ensemble du degré tertiaire du système suisse de formation. Il considère à parts égales le domaine de la formation professionnelle supérieure (tertiaire B) et celui des hautes écoles (tertiaire A). Selon le CSSI, le degré tertiaire du système de formation répond à une pluralité de missions à la fois différenciées et complémentaires. Les diverses institutions de formation doivent les réaliser en fonction de leurs profils et publics spécifiques. Toute hiérarchie entre les éléments réduit la capacité globale du fonctionnement du système. En vue de renforcer le développement du degré tertiaire du système de formation, le CSSI propose une série de recommandations destinées à maintenir la différenciation des éléments du système, à reclarifier les profils des différents éléments et à favoriser la plasticité du système garante de sa flexibilité et de sa capacité d’adaptation. Le présent *Policy Paper* s’appuie sur une présentation détaillée du degré tertiaire du système suisse de formation; celle-ci fait l’objet d’une publication séparée.

D Der Schweizerische Wissenschafts- und Innovationsrat (SWIR) stellt in diesem Bericht seine Überlegungen und Empfehlungen zur Tertiärstufe des Schweizer Bildungssystems in ihrer Gesamtheit vor. Dabei widmet er der höheren Berufsbildung (Tertiär B) dieselbe Aufmerksamkeit wie den Hochschulen (Tertiär A). Nach Ansicht des SWIR erfüllt die Tertiärstufe eine Vielfalt von Aufgaben, die sich voneinander deutlich unterscheiden und die sich gegenseitig ergänzen. Die verschiedenen Bildungseinrichtungen müssen ihre Aufgaben gemäss ihrem spezifischen Profil für ihr bestimmtes Zielpublikum erfüllen. Jede Hierarchisierung zwischen den einzelnen Elementen des Systems gefährdet die Leistungsfähigkeit des Systems als Ganzem. Um die Entwicklung der Tertiärstufe in sichere Bahnen zu lenken, legt der SWIR eine Reihe von Empfehlungen vor. Damit will er dazu beitragen, die Differenzierung zwischen den verschiedenen Elementen des Systems aufrechtzuerhalten, ihre Profile neu zu klären und die Plastizität des Systems zu fördern, die seine Flexibilität und Anpassungsfähigkeit gewährleistet. Das vorliegende Policy Paper stützt sich auf eine detaillierte Beschreibung der Tertiärstufe des Schweizer Bildungssystems, die Gegenstand einer separaten Publikation ist.

Introduction

The tertiary level of the Swiss education system has two components, tertiary-type A, which includes the higher education institutions, and tertiary-type B, encompassing advanced vocational education.¹ Until recently, these two components were treated separately in studies of the higher education system in our country, and only a few studies, notably the Swiss Education Report, addressed the tertiary level as a whole.² However, a comprehensive discussion of the system of tertiary education and its internal interactions calls for analysing and regarding tertiary-types A and B together. The present report adopts this more comprehensive view.³

The tertiary level of the education system is composed of elements and institutions which fulfil different purposes. Only as a whole can they promote the development of society, and it is for this reason that the SSIC utilizes a holistic perspective in its considerations. The diversity of institutions and facilities makes it possible to train and educate the workforce not only in light of their talents and individual potential but also in a manner that meets the need in the economy and society for different qualifications and competencies. Overall, the tertiary level as a system (tertiary-type A and B together) provides the preconditions for economic growth by making qualified human capital available; it can react to the diverse needs and challenges posed by an innovative and competitive economy.

The last two decades have seen a comprehensive restructuring of the tertiary level of the Swiss education system. It has resulted in fundamental changes to the national educational landscape. Specifically, a federal Vocational Matura (*Berufsmatura*) was introduced, universities of applied sciences and universities of teacher education were created, advanced vocational education was developed further, the study of health, social needs, and art was integrated into universities of applied sciences, and the Bologna Declaration was implemented in the universities. Legal innovations were introduced through a new Federal Act on Funding and Coordination of the Higher Education Sector (HEdA) and by measures adopted by the national government in August 2014 to valorize vocational education. In doing so, obligations were met that were incurred by introducing new education articles into the constitution in 2006. Changes in the national admin-

istration of higher education, research and innovation were also made through consolidation and the creation of a single State secretariat (SERI) that was placed under the newly defined Federal Department for Economic Affairs, Education and Research (EAER). These changes were undertaken for both national and international reasons, and have ultimately led to a convergence between individual institutions in the system, both in their profiles and missions. Universities of applied sciences are becoming more like the academic universities, and institutions in the tertiary-type B realm are seeking designations for their diplomas that will resemble the degrees awarded in tertiary-type A institutions. The SSIC sees a danger in these developments, particularly in the ability of the tertiary system as a whole to perform. To not endanger the contribution the system as a whole makes to Switzerland's international position, both economically and socially, the SSIC recommends maintaining the differences between the various elements which comprise the tertiary level. It is a key aspect of the system that it remain in harmony, not just with respect to the autonomy of its component parts but also to ensure their continuing evolution, developments explicitly desired by the Swiss legislature.

In part 1, this report first describes the most important characteristics of the tertiary level of the Swiss education system. This is followed by a sketch, in part 2, of factors affecting its development and the points of friction in the system. In part 3, the SSIC presents its recommendations.

-
- 1 See Appendix 1.
 - 2 SKBF (2014). An English version is available at: http://skbf-csre.ch/fileadmin/files/pdf/bildungsmonitoring/Swiss_Education_Report_2014.pdf.
 - 3 The present report is based on a close analysis of the structure, functions and dynamic of the tertiary level of the Swiss education system (Gyger Gaspoz, 2015).



Structure of the Tertiary Level of the Education System

The tertiary level of the Swiss education system is structured so as to primarily pursue the following goals:

- it contributes to using the full potential humans have;
- it increases the ability of the Swiss economy to compete internationally;
- it promotes access to the labour market and
- it strengthens social integration.

Thanks to the different types of educational institutions (tertiary-types A and B), the tertiary level has numerous ways of meeting the requirements of these goals. The broad spectrum of the Swiss education system makes it possible to equally satisfy the following educational and training needs:

- providing qualified training for specialists and managers which is firmly anchored in the trades and occupations, and which enhances their ability to participate in the labour market;
- providing further training for professionals in a university context so as to meet the specific needs of their industries;
- enabling the development of abstract, conceptual, and critical thinking, with the emphasis on acquiring both basic and new knowledge.

National and cantonal laws define the overarching principles for how the education system is to function (objectives, admissions criteria, diplomas, funding, etc.), while each educational institution sets its own goals and tasks. The key characteristics of the institutions and parts of the education system can be displayed schematically so as to emphasize key differences as well as complementary features.⁴

The first part of this report provides an overview of the tertiary level of the education system in terms of its actors (1.1), funding (1.2), research and service activities (1.3), and education and training (1.4).

1.1 Actors and areas of responsibility

Reforms carried out in the last few years have served to harmonize various aspects of the tertiary-type A institutions. Nearly every institute of higher education now manages itself, and is linked to the responsible political bodies which legally and financially support it through agreements on objectives (*Zielvereinbarungen*) or service provision concords (*Dienstleistungsauftrag*). In their internal organization, universities systematically separate strategic tasks (carried out by a council such as the ETH-Board) from operative management (provided by a rectorate). Table 1 displays the more important actors and areas of responsibility in the tertiary-type A realm.

The tertiary-type B institutional structures differ due to their close ties to the occupational world. Professional organizations in the world of work,⁵ in individual branches of the economy, are the preferred partners for the public authorities here. Table 2 gives an overview of the most important actors in the tertiary-type B realm.

4 See Appendix 2.

5 Trade associations, industry organizations, etc.

	ETH	Cantonal Universities	UAS	UTE
Responsible body ⁶	National govt.	—	—	—
	—	Cantons	Cantons	Cantons
Superinstitutional regulation ⁷	ETH-Board	—	—	—
	CRUS	CRUS	—	—
	—	—	KFH	—
	—	—	—	COHEP
	—	—	—	EDK

Table 1
Key actors and institutional responsibilities in tertiary-type A⁸

Source: own compilation

	Professional organizations in the world of work (trade associations, industry organizations, etc.)	Federal government	Cantons	Public and private educational institutions	Enterprises
	<i>Responsible for the federal PET examinations and the core curricula for PET degree programmes</i>	<i>Strategic management, quality assurance and approvals</i>	<i>Supervise and subsidise training courses</i>	<i>Offer courses</i>	<i>Employment</i>
Professional Education and Training (PET) federal examinations	<ul style="list-style-type: none"> Determine the required qualifications Establish the examination rules Conduct the examinations 	<ul style="list-style-type: none"> Approve the examination rules Supervise the examinations Act as first instance if examination outcome is contested Issue PET diplomas and certificates; update registry Subsidise examinations 	<ul style="list-style-type: none"> Subsidise preparation courses (optional) 	<ul style="list-style-type: none"> Offer preparation courses 	<ul style="list-style-type: none"> Create jobs Work with professional organizations Cover part of the costs incurred by candidates
PET Colleges	<ul style="list-style-type: none"> Determine the required qualifications Draft core curricula 	<ul style="list-style-type: none"> Approve core curricula Approve degree programmes Subsidise degree programmes (optional) 	<ul style="list-style-type: none"> Supervision Subsidise degree programmes (optional) 	<ul style="list-style-type: none"> Offer degree programmes 	<ul style="list-style-type: none"> Create internships and jobs Work with professional organizations Cover part of the costs incurred by candidates

Table 2
Actors and areas of responsibility in tertiary-type B

Source: Adapted from Facts and Figures. Professional Education and Training (2011). Bern: FDEA / OPET, http://edudoc.ch/record/101212/files/BBT_HBB_factsandfigures.pdf, p. 9, consulted on 22 June 2015

6 Political control over the universities.

7 Includes national coordination and planning bodies. After 2015, under HEEdA, these will be integrated into the new organs.

8 This table refers to the situation before HEEdA came into force on 1 January 2015. It foresees joining the CRUS, KFH and COHEP together into a single rectors' conference of Swiss universities under the name swissuniversities.

1.2 Funding

Funding in the tertiary-type A realm comes from four major sources:

- federal funding (made available under HEdA: basic and investment contributions; contributions tied to projects);
- cantonal funding (made available in accordance with cantonal laws and intercantonal agreements);
- competitively-awarded external funding (funding for research projects, SNSF, CTI, EU-programmes and other international programmes);
- other funding (tuition fees, federal research mandate, mandates from other bodies, private sector mandates, support from foundations, income from services and continuing education).

The relative shares of these funding sources vary by type of higher education institution (see Figure 1).⁹ Differences in the shares are due to the specific tasks of the respective institutions, their legal foundation, and the different contexts in which types of universities emerged. Thus, for example, the federal institutes of technology (ETHs) are wholly funded by the national government and have no cantonal funding while universities of teacher education are nearly entirely financed just by the cantons.

The most important funders in the tertiary-type B realm are the national and cantonal governments on the one hand, and private sector partners (employers, enterprises, professional organizations in the world of work) on the other, along with other actors (students,

candidates for examinations).¹⁰ Calculating the costs for courses of study at professional education and training colleges (PETs) is made difficult by the differing accounting principles in use, that cantons can freely decide which branches of the economy to support, and because branch-specific costs differ.

The type of funding within the tertiary-type B realm also varies by educational level. Thus, 80% of PET costs are publicly funded, while the rest is largely covered by tuition fees.¹¹ This is quite different in the case of federal PET diplomas and advanced federal PET diplomas, where the costs for preparing for the examination are largely born by the candidates themselves. Depending on the applicable legislation, employers or certain cantons may bear some of these costs.¹² The national government participates only by providing lump sum funding amounts to the cantons, though they wish to change this. In the future, national funding contributions are to go directly to individuals rather than to those providing the training and education.

9 See Appendices 3 and 4 for a more detailed breakdown by individual university type.

10 The funding structure cannot be displayed in a diagram owing to the lack of standardized statistical data on the funding of vocational education as well as the extremely complex manner in which resources are distributed (see Baumeler, Dannecker & Trede, 2014; Kuhn & Schweri, 2014).

11 See SKBF (2014), p. 258.

12 See Kuhn & Schweri (2014).

13 Data assembled based on the FSO website Finanzen der universitären Hochschulen, www.bfs.admin.ch/bfs/portal/de/index/themen/15/06/data/blank/04.html, consulted on 27 September 2014.

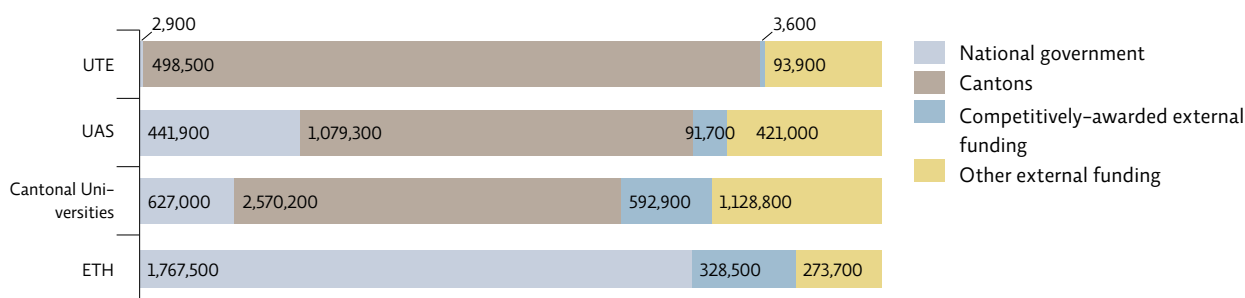


Figure 1 **Funding by university type and structure (in thousand CHF, 2012)**

Source: own calculations based on data from the FSO¹³

1.3 Research and services

National and cantonal legislatures have given research and service tasks explicitly only to tertiary-type A institutions. The importance accorded to research, as compared to tasks such as instruction or providing services, is a characteristic that distinguishes different types of higher education institutions from one another. The academic universities devote themselves more intensively to research than do universities of applied sciences or teacher education, even though applied sciences institutions have significantly increased their R&D activities in the last few years. These differences are useful and sensible, as they reflect the range of goals pursued at the tertiary level of the education system and contribute to ensuring complementarity between the various elements of the system.

By contrast, one constituting principle for all types of universities is the unity between instruction and research. This gives students an opportunity to develop their competencies in addressing complex questions as well as keep up with the generation of new knowledge.

One cannot neatly distinguish between basic and applied research. At best, one can use such terms to denote certain differences in research orientations. It is more sensible to distinguish between the initial research questions. Thus, academic universities, following their mission, usually carry out “endogenously” motivated research. The SSIC uses this term to designate research oriented to the state of knowledge in a given field, a state researchers are interested in advancing. By contrast, universities of applied sciences and of teacher education focus more on “exogenous” R&D activities, so here the initial questions are directly connected to occupational practice.¹⁴ This does not mean specific types of universities have a monopoly on a particular kind of research: an academic university can and does undertake “exogenous” research as well. An example of the close ties between the two types of research at academic universities is the search for a practical solution to a technical problem that arises while conducting basic research

(such as developing an instrument for use in research in experimental physics).

Because differing types of research are undertaken in tertiary-type A institutions, the Swiss education system shows complementarities that help meet cultural, social, and economic needs. The same is true of services (including analysis, consultation, project monitoring and support, or the development of prototypes), as well as of offers to find solutions that are grounded in the specialized knowledge available in the different types of institutions. This brings them into contact with enterprises, public authorities, and society at large.

1.4 Education and training

1.4.1 Students in education and training; completion rates

Institutions in the tertiary-type A realm have markedly increased in number since the 2000s, particularly among universities of applied sciences and of teacher education (see Figure 2). Further increases in the number of students are expected in the coming years, particularly in these two types of institutions.¹⁵ Student numbers cannot be interpreted in the same manner in the tertiary-type B realm, as there is no obligation to enrol in a given institution in order to sit for specific examinations (such as for the federal or advanced federal PET diplomas). The advanced vocational education institutions have grown less than the universities (BFS, 2013b), but the number of students has also increased, particularly in PET institutions (see Figure 3). In terms of diplomas and certificates awarded, the ratio is about two-thirds (tertiary-type A) to one-third (tertiary-type B), understood as proportional shares of the share of students (see Table 3).

¹⁴ SWTR (2013b).

¹⁵ See www.bfs.admin.ch/bfs/portal/de/index/themen/15/08/key/blank/entwicklung_insgesamt.html, consulted on 17 October 2014.

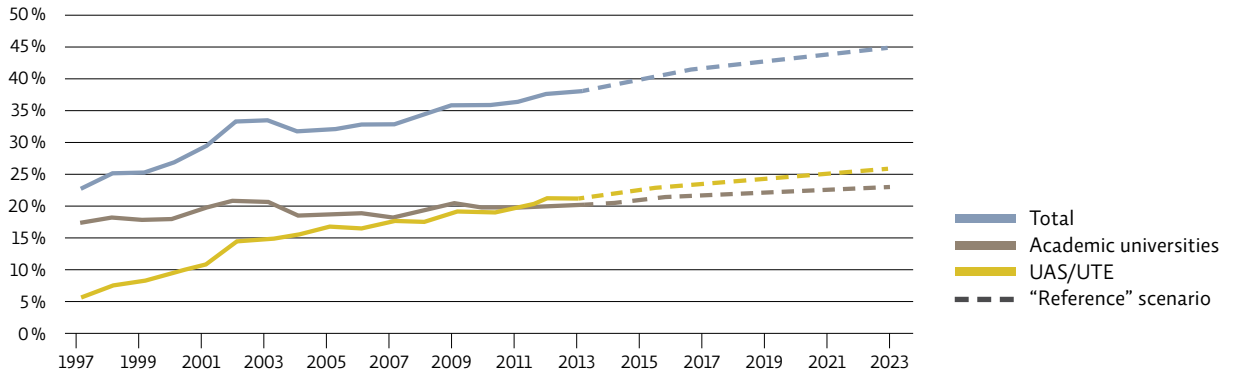


Figure 2 **Admissions rates to universities since 1997 and future projections**
 Share as a percentage of the resident population of the same age (net rate)

Source: FSO¹⁶

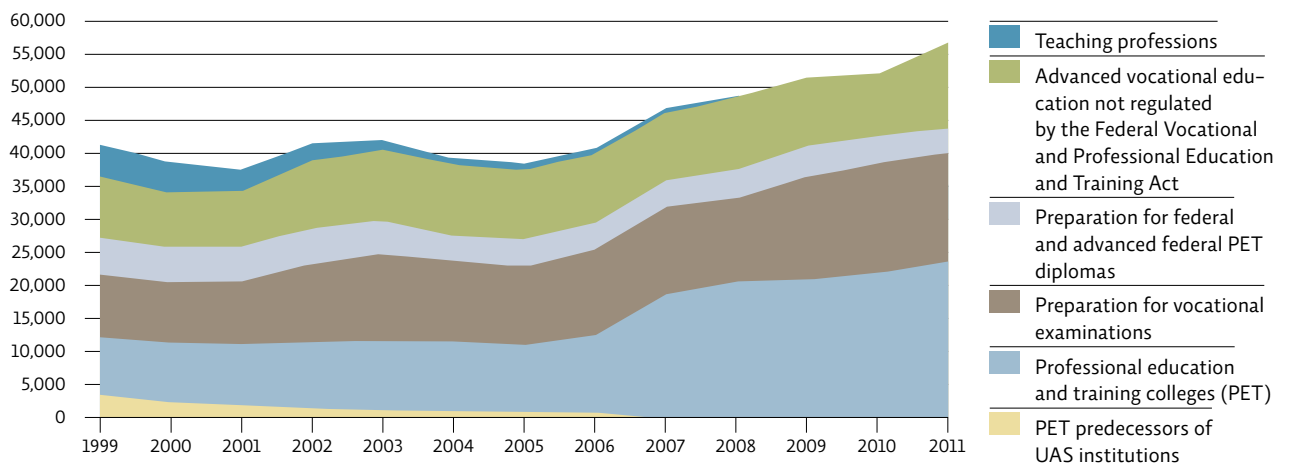


Figure 3 **Advanced vocational education: Students by educational type, trends since 1999**

Source: FSO (BFS, 2013b)

16 See www.bfs.admin.ch/bfs/portal/de/index/themen/15/17/blank/01.indicator.404103.4064.html?open=9-9, consulted on 17 October 2014.

1.4.1 Students in education and training completion rates

Universities	52,811
Academic universities	31,410
Licentiate/Diplomas	387
Bachelor's degrees	13,713
Master's degrees	11,865
Doctoral degrees	3,631
Continuing education	1,710
Postgraduate/advanced studies	104
Universities of applied sciences and Universities of teacher education	21,401
Diplomas	886
Bachelor's degrees	14,420
Master's degrees	3,334
Continuing education	2,761
Advanced vocational education	26,573
PET diplomas	7,627
Federal PET diplomas	14,042
Federal diplomas	2,786
Advanced vocational degrees from courses of study not regulated by the Federal Vocational and Professional Education and Training Act ¹⁸	2,118
Total	79,384

Table 3

University and advanced vocational education degrees 2013

Source: own calculations based on FSO data (as of June 2014)¹⁷

17 Universities, see www.bfs.admin.ch/bfs/portal/de/index/themen/15/06/tab/blank/abschluesse.html, consulted on 15 October 2014. Advanced vocational education, see www.bfs.admin.ch/bfs/portal/de/index/themen/15/05/key/blank/uebersicht.html, consulted on 15 October 2014.

18 These include completed education in areas not federally regulated, such as in the hospitality, catering or health sectors (SKBF, 2014).

1.4.2 Education costs

Education costs in tertiary-type A institutions consist of tuition fees, which vary sharply by institution,¹⁹ the cost of materials (books, materials, information and communication technologies, photocopies, etc.), registration fees for examinations, and living costs. The Federal Statistical Office (FSO) estimates monthly costs for students who live at home at about 1,500 CHF, and for those who no longer live at home at about 2,090 CHF.²⁰ Generally, about half (55 %) of a student's costs are provided by their families, followed by student employment (36 %). Fellowships and loans (6 %) cover only a very small part of the costs.²¹

The average overall costs in a standard semester (4–6 months long) for a student at the PET institutions depend on area of study, but range from 6,500 CHF (economics) to 16,000 CHF (agriculture and forestry).²² A similar range can be found in the costs for preparing for the federal and advanced federal PET examinations, though overall costs are higher here and range on average from 12,500 CHF (federal PET diploma) to 17,900 CHF (advanced federal PET diploma).²³ These costs are partly covered by employers, which makes tertiary-type B education partly dependent on the state of the economy. Only the examinations for federal and advanced federal PET diplomas are regulated, so the costs of the educational institutions which prepare candidates for these examinations cannot be quantified with any reliability.

Owing to their differing natures, it is difficult to directly compare the education costs in tertiary-type A to those in tertiary-type B. The universities developed from the idea of a public provision of services, while the funding for advanced vocational education is organized like the funding for continuing education. In addition, no overview of the tuition costs in the tertiary-type B realm exists.²⁴ Calculating the costs for courses of study in the professional education and training colleges is also difficult because different accounting principles are used, cantons can freely choose which branches to support, and branch-specific costs differ.

1.4.3 Admission

The conditions for admission into tertiary-type A institutions are regulated by law. Every first course of study is accessible through a so-called “traditional” path,²⁵ and this path is taken by the majority of entering students. In the case of academic and teacher education universities, this path leads through general primary and secondary school education. It concludes with a school-leaving diploma (*Matura*) from an academically-oriented high school (*Gymnasium* or *Kantonsschule*). The “traditional” path to a university of applied sciences leads through vocational education and training, and concludes with a vocational school-leaving certificate (*Berufsmatura*).

The Federal Vocational and Professional Education and Training Act regulates admission to tertiary-type B institutions.²⁶ Advanced vocational education is primarily meant for those who have had basic vocational training and received a vocational educational and training certificate but who do not have a *Matura*. In terms of admission, tertiary-type A thus differs from tertiary-type B primarily because the key to entry to the former is possession of the *Matura* diploma. Universities of applied sciences are closer to tertiary-type B institutions inasmuch as they require prior vocational education as a prerequisite for admission to most courses of study.

19 Minimum and maximum costs vary considerably by type of institution. The range of annual tuition fees at the cantonal universities varies from 1,000 to 4,000 CHF, from 800 to 1,600 CHF at universities of teacher education, and from 1,000 to 2,000 CHF at universities of applied sciences. The two ETH institutions have practically identical tuition fees (1,266 to 1,288 CHF).

20 www.bfs.admin.ch/bfs/portal/de/index/themen/15/17/blank/01.indicator.401205.4061.html?open=146-146, consulted on 1 October 2014.

21 www.bfs.admin.ch/bfs/portal/de/index/themen/15/17/blank/01.indicator.401205.4061.html?open=146-146, consulted on 1 October 2014.

22 Baumeler et al. (2014, p. 57).

23 *Idem*.

24 *Idem*.

25 For further details, see the overview table in Appendix 2.

26 *Idem*.

1.4.4 Permeability

Since 2006, the principle of permeability between the various institutions in tertiary-type A has been enshrined in the constitution; this is a joint responsibility shared by national and cantonal governments. It is one of the great challenges for the Swiss education system to implement this principle. Permeability encourages the development of specific competencies and skills, and makes it possible for individuals to adjust their educational path. More generally, for the education system to be flexible it must also be permeable, and flexibility also reflects the ability of the system to address changes in economy and society. Permeability is evident in four situations:

Situation 1

When starting a tertiary-level course of study that does not directly correspond to one's previous education or training. This path remains rarely taken by those with a *Berufsmatura* or a specialized *Matura* (see Figure 4).

Situation 2

When starting a Master's programme at a different type of institution (such as an academic university) than where one acquired one's Bachelor's degree (such as a university of applied sciences). The conditions for admission in such cases are laid out in agreements between the rectors' conferences of the three types of higher education institutions.²⁷ Very few students study for the Master's at a different type of higher education institution (see Table 4).

Situation 3

In moving to a first course of study in a particular type of higher education institution after having acquired a Bachelor's degree at another type (such as at a university of applied sciences). In the 2013-14 academic year, this type of permeability was utilized by less than 1% of students.²⁸

Situation 4

In moving from tertiary-type A to tertiary-type B and *vice versa*. Switching to advanced vocational education after acquiring a degree at a university occurs at different rates depending on subject. It occurs most frequently in social work and in adult education.²⁹ The conditions for admission to the universities for those who have completed advanced vocational education vary considerably. Only the universities of applied sciences give corresponding recommendations.³⁰ Generally speaking, few who complete a course of study at a tertiary-type B institution begin a course of study at a university-level institution.³¹

27 See CRUS, KFH, COHEP, 2007, 2010: Konkordanzliste der möglichen Übertritte von Bachelorstudiengängen in Masterstudiengänge anderer Hochschultypen mit entsprechender bzw. vergleichbarer Ausrichtung.

28 Information provided on request from the FSO on 18 June 2014.

29 See Baumeler et al. (2014).

30 See KFH (2006). The recommendations in this publication are not binding, but the analysis in Baumeler et al. (2014) indicates that universities of applied sciences rely on them. It is for this reason that one finds a degree of homogeneity in universities of applied sciences with respect to the admission of those with a certificate from a tertiary-type B institution.

31 In 2012, about 3% of those who completed advanced vocational education began studying at a university of applied sciences or of teacher education, and less than 1% enrolled in an academic university (Baumeler et al., 2014).

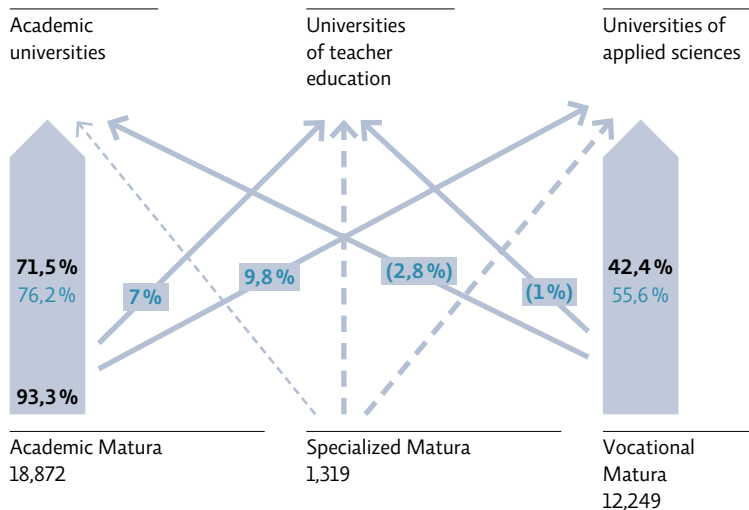


Figure 4 **Transfer rates to the universities (2010 cohort)**
 Numbers in black show the overall transfer rate for the 2010 cohort. Numbers in blue show the overall transfer rate for the 2008 cohort. Numbers in parentheses are based on earlier cohorts. Data is not yet available for the specialized Matura.

Source: SKBF (2014), p. 172

Type of Swiss university for Master's students entering in 2012	Total entering Master's students 2012	Entering Master's students 2012 by type of Swiss Bachelor's degree			Entering Master's students 2012 by type of Swiss Licentiate/Diploma			Other*	Entering Master's students 2012 with a previous degree from an institution abroad
		AU	UAS	UTE	AU	UAS	UTE		
AU	14,277	10,933	380	50	68	36	9	112	2,689
UAS	2,846	83	1,570	8	28	145	1	133	878
UTE	1,206	87	28	577	51	26	37	310	90

Table 4 **Permeability between types of Swiss universities at the Master's level, autumn 2012**

*Includes students who switched into a Master's programme before obtaining a Licentiate/Diploma from an academic university.

Note: the high number of UTE Master's students in the "other" category is attributable to a large extent to students who moved directly from special education into a Master's programme.

Source: FSO³²

32 www.bfs.admin.ch/bfs/portal/de/index/themen/15/06/dos/blank/03/02.html, consulted on 12 June 2014.



Developmental Factors and Points of Friction

2.1 Developmental factors

The Swiss education system is closely connected to international trends but is also bound to economic and societal conditions. Changes here affect the dynamics of the Swiss system.

- a) *In international terms:* Switzerland has a special education system. This is not only true of its post-compulsory education but also for the tertiary level, which is characterized by a duality (A and B). Numerous other countries favour a university-oriented model. The process used to recognize diplomas and certificates at the European level, together with political decisions, encourage the “academization” of vocational education. It strengthens the dominant position that university-level education and university degrees are accorded.
- b) *In economic terms:* Technological developments, the demand for ever more qualified workers, changes to the world of work as a consequence of de-industrialization, and reindustrialization or the locational choices of certain branches not only affect the Swiss economy but also change the education system. Among other tasks, it must make a workforce available that can meet the demands of different economic branches at various levels.
- c) *In social terms:* Academic universities convey an image of upward social mobility. While access to academic secondary education (*Gymnasium*), and thereafter to an academic university, gives elites a means to maintain their social status, the rest of the population often sees an academic education as a means to achieve higher social rank.³³ Such expectations have a negative effect from an economic point of view. For that reason, political discussions have emphasized the importance of the dual education system and the advantages vocational education brings not just for the economy and society but also for individuals.³⁴ The SSIC emphasizes the equal value of all elements at the tertiary level, including tertiary-type B facilities and institutions, and therefore disavows efforts to hierarchically order institutions.

2.2 Points of friction

Various points of friction are created both in the nexus between the developmental factors noted above and through the blurring of institutional profiles:

- The universities of applied sciences are not the only institutions which offer education and training oriented to the exercise of a profession. For historical reasons, academic universities do this as well, primarily in the faculties of medicine, theology, and law. While they do prepare students for particular professions, this is not their primary task or justification. This is also the reason, incidentally, why the right to practice medicine or law is granted by a diploma issued by the state or a professional association – but not by the academic university itself. However, political authorities do grant some importance to the employability of those who study at academic universities, and these universities are in competition with universities of applied sciences both in attracting students and in acquiring external funding. This situation can tempt academic universities to give prospective students the impression that instruction at such universities will directly qualify them for jobs in the labour market. However, this type of preparation is not a core task of an academic university, so one should not measure the effectiveness of the education an academic university offers by the employability of its graduates.
- There are also schools in the universities of applied sciences which do not directly prepare graduates for particular positions in the labour market, and some are specifically oriented to students with an academic *Matura*. Thus, in courses of study focused on the health sector, social issues, or art, one correspondingly finds more *Gymnasium* graduates than vocational education graduates.³⁵ Yet the key characteristic of the universities of applied sciences is that they are anchored in the world of the trades and professions. In addition, the call to conduct research at universities of applied

³³ Cattaneo & Wolter (2013); Strahm (2014).

³⁴ Strahm (2014).

³⁵ FSO (BFS), 2013a.

- sciences leads to recruiting more personnel from the academic world, which in turn gives such applied sciences universities an increasingly “academic” cast. Their unique profile may thereby at least partly be lost, not just in terms of instructors and researchers but also in the type of education offered—and hence in the demands students are expected to meet. An admissions process which gives priority to those with a *Matura* from a *Gymnasium* because they better match a more “academic” profile would sharply reduce the chances for access by those who “only” have vocational education certificates. A development of this kind is incompatible with a mission to reduce social inequalities.
- Universities of teacher education are increasingly equated with universities of applied sciences, though they differ in numerous respects. These include, with respect to the former, admission based on having a *Matura* from a *Gymnasium*, job experience first acquired in the course of one’s education, and financing provided by the cantons.
 - For now, advanced vocational education has not entirely established its own identity. As it developed out of continuing education programmes in the trades and professions, it remains influenced by its original structures. Candidates for the federal and advanced federal PET examinations remain employed during their education, as is usual in continuing education programmes. The special characteristics of advanced vocational education would therefore need to be more precisely articulated to distinguish it from continuing education as such.
 - The creation of universities of applied sciences was originally intended to valorize the vocational education path by giving those working in trades and professions an opportunity to continue their education at the tertiary level. However, the expansion of vocational education into its own tertiary level, accessible without a *Matura*, might lead to misunderstandings. If diplomas are awarded in tertiary-type B institutions that more closely correspond to diplomas awarded in tertiary-type A institutions which follow the Bologna standards, the impression could be awakened that advanced vocational education study was comparable to studying in academic universities. This would blur the unique profile of tertiary-type B institutions and courses of study.
- In current political and economic debates, elements that cannot be compared are mentioned in the same breath,³⁶ in particular universities and advanced vocational education. These two types reflect different conceptualizations. At the European level, universities are oriented to the Bologna Declaration, while advanced vocational education is oriented to the Copenhagen Declaration.³⁷ The two types also differ with respect to instructional objectives and contents, pedagogic methods, the status of students, the type of funding, and the role of the national government. For the Swiss education system as a whole to fulfil its mandate, both tertiary-type A and tertiary-type B need to be treated as “of equal worth” and every effort to place them in a hierarchical relationship to one another is to be rejected.
 - Even if, or when, academic universities also pursue “exogenous” research, or provide services oriented to the needs of the working world, they are in competition with what is done at the universities of applied sciences. Yet such competition is also an advantage, in the eyes of the SSIC, because it helps ensure a high quality of research at the tertiary level of the education system. In terms of instruction, however, the principles of differentiation and complementarity between the elements of the system should be consistently applied.

36 Strahm (2014).

37 http://europa.eu/legislation_summaries/education_training_youth/lifelong_learning/c11088_de.htm and http://europa.eu/legislation_summaries/education_training_youth/vocational_training/ef0018_de.htm, consulted on 23 October 2014.

2.3 System dynamics and effects

In the dynamics of the tertiary level of the Swiss education system, two aspects emerge from these points of friction:

- Against the legislative intent, there is an observable tendency for the elements in the system to converge, which leads to homogenization. The profiles of universities of applied sciences and of tertiary-type B are increasingly becoming like those of the academic universities, their alleged “model”. At the same time, the valorization of vocational education in the dual Swiss system is criticized as a “conservative” ideology. These are the result of influence from particularistic interests and a lack of knowledge about the features and advantages of the Swiss system. It gives pride of place to models from countries unfamiliar with a dual system.
- Direct competition between tertiary-type A and tertiary-type B for the allocation of cantonal and national funds may have negative effects on tertiary-type A because its advantages, measured by purely economic indicators, are more difficult to communicate.

These system dynamics have various negative consequences:

- Because monitoring, steering, and controlling processes are based on quantifiable data, one no longer speaks of values or missions but instead in the language of numbers and rates (of students, of external funding, of citations in professional journals). These kinds of indicators do not make it easier to appropriately define profiles. Fundamentally different worlds are being compared with one another without taking into account that their very differentiation is needed for the system as a whole to function well.³⁸
- Although increasing numbers of students attend universities of applied sciences and universities of teacher education, many of them see academic university training as “more valuable” or more worthwhile. In fact, tertiary education is regarded by some parents and young people as encompassing only the academic universities.
- The academic universities seem to be the dominant

element in higher education, the place where innovation and original knowledge is both generated and concentrated. This leads the other types of universities to strive for an academic identity as well. In doing so, other elements, in particular tertiary-type B, are devalued. A hierarchy—rather than complementarity—is created, with the academic universities on top. This loss of differentiation in its elements puts the Swiss education system in question, and devalues its advantages for the country and the country’s ability to compete internationally.

- Political trends seem to support developing a model of advanced vocational education that converges with that of the universities. This perspective, supported by the OECD and the EU, encourages making vocational education more “academic”. Switzerland should instead be a model of a different path, and should network with other countries that also have a dual education system.
- The universities of teacher education have difficulty in finding their place in a tertiary education system that often equates them with universities of applied sciences, even though they are fundamentally different.

Economic productivity and success at innovation in Switzerland depend to a great degree on the quality demonstrated in all existing educational paths—not just the academic path. The necessary level can only be reached in a system that rests on the complementarity and equal value or worth of all its elements. The chain of education is only as strong as its weakest link.

38 SWTR (2013a, 2013b).



Recommendations

The Swiss education system is in an excellent position, seen internationally. To maintain its ability to perform, and strengthen the position of its tertiary level (understood as a unity of tertiary-type A and tertiary-type B), the SSIC calls for those in charge of higher education institutions and of advanced vocational education to resist the international and national trends to encourage a convergence of its disparate elements. Instead, it encourages strengthening the different profiles by valorizing their key and unique characteristics. Any kind of hierarchical relation (for example, academic universities > universities of teacher education > universities of applied sciences, or tertiary-type A > tertiary-type B) impedes the various elements from fulfilling their specific tasks – which are in the interest of the economy, the society, and the individual – in the education system. Those economic, societal, and individual interests are oriented to increasing the ability to compete, to strengthen innovation, and to improve access to the labour market. Yet they are also oriented to integrating individuals into the society and enhancing their ability to participate in it. The following recommendations are directed primarily at the teaching offered at the institutions. Services, as well as R&D activities, profit from open competition in which each facility can use its particular advantages in order to develop their own endogenous and/or exogenous research profiles.

3.1 Preserve the differences between the elements of the system

The diversity in what Switzerland offers in tertiary education, together with the differences between the elements which compose it (see Appendix 2), must be preserved if the Swiss education system is to remain excellent (see Part 1).

The SSIC recommends maintaining the differences between system elements rather than going along with the international trend to align or harmonize profiles. Each element in the Swiss tertiary education system, with their differing mixes of characteristics and roles, has a positive effect on the economy, the society,

the culture, and on innovation. Through differentiation, an effort is made to impart the needed qualifications to each person, in light of their goals and abilities, so that they can partake in the country's democratic civil society. Additionally, differentiation encourages developing original, innovative solutions, and has the advantage of strengthening the ability of the education system to weather crises or fundamental changes.

3.2 Refocus the profiles

Differentiating the elements in the tertiary education system in Switzerland calls for developing profiles clearly set off from one another. The losses due to friction (see Part 2.2) result from a lack of clarity about the profiles of the respective types of educational institutions.

In honing the profiles, the SSIC recommends keeping the following points in mind:

- a) To preserve the differences, the respective profiles of the individual elements need to be rethought with respect to their basic roles within the system (see Appendix 2). In doing so, the individual elements should correspond to the following recommendations, particularly with respect to teaching:
 - **Advanced vocational education:** This is directed primarily at those who hold a federal VET diploma. Their educational path leads to obtaining a PET diploma or a federal or advanced federal PET diploma. The mission here is to educate and train specialists and managers for specific branches in accordance with labour market needs and by working closely with professional organizations in the world of work. Advanced vocational education makes it possible to acquire the qualifications needed to exercise an occupational or profession and/or to validate the high demands placed on specialists and on managers.
 - **Universities of applied sciences:** These are primarily oriented to those who hold a vocational *Matura*. Their educational path primarily leads to the completion of a Bachelor's degree, though some Master's degree programmes are also available. The universities of applied sciences allow their students to acquire specific competencies as

well as knowledge in a variety of fields and occupational areas, using their respective methods, and by linking teaching to research. They complement vocational courses of study by providing the theoretical underpinnings used in scientific and humanities approaches. They educate students and recruit instructors who typically have a background in the trades and professions.

- **Universities of teacher education:** These are oriented to those who hold a *Berufsmatura* or an academic *Matura*, and lead to a Bachelor or Master's degree. Such institutions provide the basic foundations for becoming a teacher. They also provide access to the competencies and knowledge necessary for a reflectively-oriented pedagogy, and are oriented to the manifold contexts of the Swiss education system.
- **Federal Institutes of Technology:** These two institutions are oriented particularly to those who hold a *Matura* from an academically-oriented *Gymnasium*, and the education leads to acquiring a Bachelor's or Master's degree, or a doctoral title. The ETHs impart both general and specialized knowledge, though primarily in the exact (natural) or technical sciences and engineering. This takes place with respect to current methodology and scientific method, and employs a unity of teaching and research. They encourage an in-depth study of abstract questions, contribute to the creation and expansion of new knowledge, and typically lead graduates to pursue occupations with a scientific or technical component. Both basic and applied approaches are followed and linked together.
- **Cantonal universities:** These are oriented particularly to those who hold a *Matura* from an academically-oriented *Gymnasium* and the education leads to the acquisition of a Bachelor's or Master's degree, or a doctoral title. The cantonal universities impart a wide variety of both general and specialized knowledge in all areas of academic inquiry. This takes place with respect to current methodology and scientific method, and employs a unity of teaching and research. They encourage the development of independent, critical thinking that leads students to engage more deeply with abstract questions, which lead both to the generation of new knowledge and to the pursuit of

professions which have an academic component. The emphasis placed on basic research does not exclude orientations to application or practice.

- b) It helps sharpen the profiles in tertiary-type A when additional differentiation is undertaken within individual institution types, or when fields that now are organized as sub-schools develop into independent types of higher education institutions. In particular, the SSIC recommends re-examining the status of the arts within the universities of applied sciences in order that their specific character be better recognized internationally.
- c) An upgrading of advanced vocational education is imperative, both to supplement what the system offers and to further promote the differentiation of profiles.

3.3 Promote plasticity in the system

As the differentiation at the tertiary level is what characterizes the Swiss higher education system, it is not only essential that individual elements in it fulfil complementary tasks. It is just as important that the system's plasticity be maintained, as this guarantees the adaptability of the system as a whole.

To this end, the SSIC recommends keeping the following principles in mind:

- a) Competition between the many elements of the same type, or that fulfil the same functions, needs to be encouraged. Competition ensures the overall quality of the higher education system along with its ability to innovate (particularly through R&D) as well as in services.
- b) Permeability must be maintained so that the education system as a whole can continue to adapt to new challenges. Permeability needs to be encouraged at all levels, not just within tertiary-type A but also between tertiary-types A and B. To this end, clear rules need to be formulated particularly for those who have completed advanced vocational education and wish to make the transition into the universities.
- c) Recognizing the equal value and worth of all elem-

ents in the system is an indispensable condition for making permeability a reality.

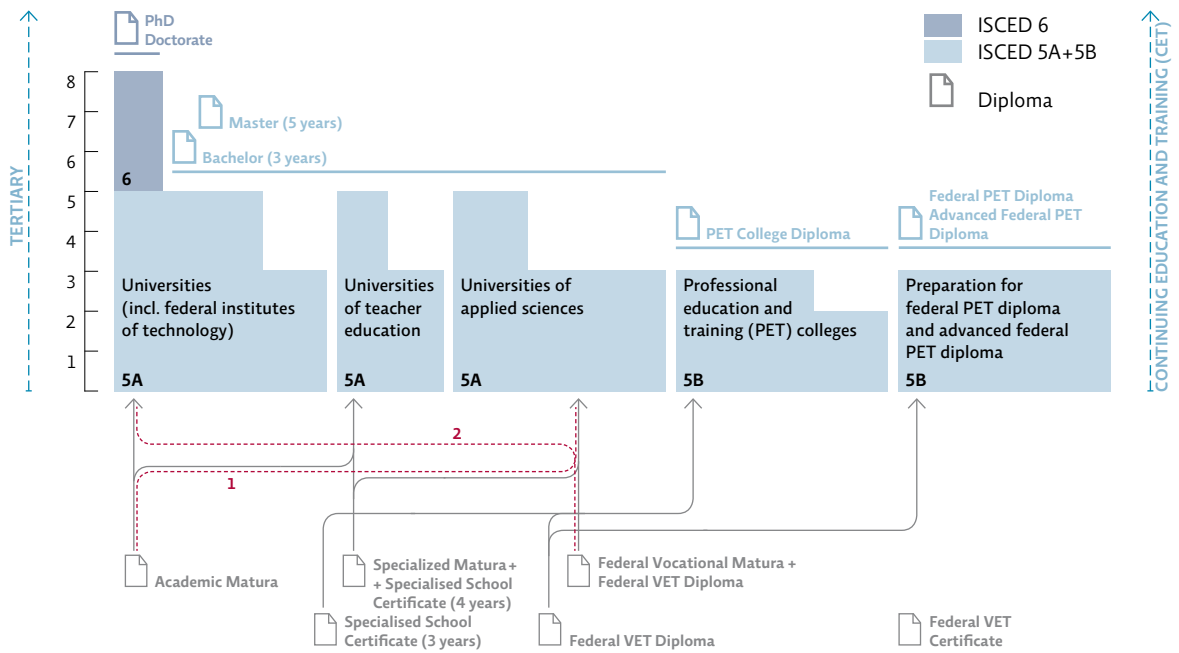
- d) Each element needs to have funding that corresponds to its respective mission in such a manner that the promotion of education corresponds to the needs of the respective elements in an appropriate and targeted manner.

- Baumeler, C., Dannecker, K. & Trede, I. (2014). Expertenbericht "Höhere Berufsbildung in der Schweiz". Arbeitsdokument Geschäftsstelle SWIR 2/2014. Bern: SWIR.
- BBT (2011). *Die höhere Berufsbildung 2011. Zahlen und Fakten*. Bern: BBT.
- BFS (2010). *Panorama der Hochschulen 2010*. Neuchâtel: FSO.
- BFS (2012). *Bologna-Barometer 2012. Auswirkungen der Bologna-Reform auf die Studierendenströme, auf die Mobilität und den Erfolg im Schweizer Hochschulsystem*. Neuchâtel: FSO.
- BFS (2013a). *Maturitäten und Übertritte an die Hochschulen 2012*. Neuchâtel: FSO.
- BFS (2013b). *Personen in Ausbildung*. Ausgabe 2013. Neuchâtel: FSO.
- Cattaneo, M. & Wolter, S. (2013). *Nationale Eigenheiten von Bildungssystemen in Zeiten der Globalisierung*. Aarau: SKBF.
- Cyger Gaspoz, D. (2015). *Le degré tertiaire du système suisse de formation: situation et tendances actuelles*. Document de travail du secrétariat CSSI 2/2015. Bern: CSSI.
- KFH (2006). *Empfehlungen der KFH: Zulassung von Absolvent/-innen der Höheren Berufsbildung zu Bachelorstudiengängen, zum internen Gebrauch der FH*. Bern: KFH.
- Kuhn, A. & Schweri, J. (2014). "Die neue Finanzierung in der höheren Berufsbildung und ihre Auswirkungen", *Die Volkswirtschaft*, 9-2014, p. 22–25.
- SBFi (2014). *Spitzentreffen der Berufsbildung 2014. 10 Jahre Berufsbildungsgesetz: Hintergrund*. Bern: SBFi.
- SBFi NEWS (2014). "Berufsbildung: erstes nationales Spitzentreffen und Verbundpartnertagung. Weichenstellung für die Berufsbildung der Zukunft". *SBFi NEWS*, April 2014.
- Schweizerische Koordinationsstelle für Bildungsforschung (SKBF) (Ed.) (2014). *Bildungsbericht 2014*. Aarau: SKBF.
- Strahm, R. (2014). *Die Akademisierungsfalle. Warum nicht alle an die Uni müssen*. Bern: HEP Verlag.
- SWTR (2013a). "Ökonomisierung" der Wissenschaft. *Empfehlungen und Sitzungsbericht des am 23. April 2013 in Bern durchgeführten SWTR Seminars*. SWTR-Schrift 4/2013. Bern: SWTR (= "Economicization" of Science. Recommendations and proceedings of the seminar held in Bern by the Swiss Science and Technology Council on April 23, 2013. SSTC Report 4/2013).
- SWTR (2013b). *Positionierung der Fachhochschulen innerhalb der schweizerischen Hochschullandschaft. Empfehlungen des SWTR*. SWTR Schrift 5/2013. Bern: SWTR.
- Weber, K., Balthasar, A., Tremel, P. & Fässler, S. (2010). *Gleichwertig, aber andersartig? Zur Entwicklung der Fachhochschulen in der Schweiz*. Basel/Bern: Gebert Rüt Stiftung.

Appendices

Appendix 1: The tertiary level of the Swiss education system: A diagram³⁹

Source: SKBF (2014)



39 For a detailed description of this Figure, consult Gyger Gaspoz (2015).

Appendix 2: The tertiary level of the Swiss higher education system: A synoptic table

Arts
 Music, Theatre and other Art Departments.

GSPL
 Health, Social Work, Applied
 Psychology and Applied
 Linguistics Departments.

TWD
 Engineering and Information Technology, Chemistry,
 Life Sciences, Economics and Services, Forestry, Design,
 Architecture, Construction and Planning Departments.

	Bologna Process / Tertiary-type A sector (ISCED 5a)						Copenhagen Process / Tertiary-type B sector (ISCED 5b)	
	Academic universities		Universities of teacher education	Universities of applied sciences			PET Colleges	Federal PET Examinations
	Cantonal universities	ETHs		Arts	GSPL	TWD		
Direct access after completing upper secondary school	Academic Matura		Academic Matura or specialized Matura in pedagogy (some UTEs excepted)	Selection process, admission based on dossier	Admission or suitability test	Vocational Matura	Admission test depending on school, federal VET diploma and job experience	Federal VET diploma and several years' job experience
Target audience	<ul style="list-style-type: none"> Persons seeking deeper understanding (acquiring and developing a general education) and who wish to grapple with ideas and content. Various career directions (including academic). Specific occupations, depending on faculty. 	Persons seeking a high-level technical and scientific education which allows access to numerous professions (including academic).	Persons who wish to become teachers or pursue another profession in conjunction with their education.	<ul style="list-style-type: none"> Aspiring artists wishing to develop their talents by interacting with and learning from established artists. Persons in art professions or art-related occupations who wish to develop their talents further (such as in cultural education or transmission). 	Persons who wish to further specialize or who aspire to management functions or positions in the social needs or health sector.	Persons in technical or trade occupations who wish to specialize further, or who aspire to management functions or positions in a corresponding area.	Professionals who, in their area of expertise, wish to acquire the necessary skills to take over responsibility in their area and/or at the administrative and/or management level.	<ul style="list-style-type: none"> Experienced professionals who seek further specialization and deeper knowledge (advanced federal PET diploma). Experienced professionals who seek qualification as specialists in their area of expertise or who wish to prepare to lead an enterprise (federal PET diploma).
Key degrees	BA, MA, PhD		BA, MA			PET Diplomas	Federal and advanced federal PET Diplomas	
Key educational mission*	<ul style="list-style-type: none"> Academic orientation aimed at developing academic reasoning and intellectual independence. Elaboration, preservation, and transmission of knowledge. 	Like the cantonal universities but focused on technical fields and the natural sciences.	Basic and continuing education of teachers and others active in the education sector.	Oriented to practice with the goal of acquiring an artistic profile; preparation for exercising artistic and allied activities.	Oriented to application and practice; preparation for exercising clearly defined occupational activities.	Development of high-level occupational qualifications focused on practical issues.	Only the examinations are regulated. They serve to recognize additional qualifications for the labour market and for the specialization of professionals.	
Key research mission*	Primarily endogenous: the renewal, expansion and broadening of knowledge through research (for both academic and cultural purposes); acquiring basic knowledge (and to a lesser extent, applied knowledge).	Both endogenous and exogenous: Innovation through research and development in natural science and technical fields; acquiring basic and applied knowledge.	Both endogenous and exogenous (depending on institution): Innovation through research and development in educational research, education science and other pedagogic areas.	Primarily endogenous: Innovation and development in art; artistic research as well as research into art and its transmission; development of artistic techniques and contents.	Primarily exogenous: Innovation and development in the respective fields; applied knowledge and problem-solving (and to a lesser extent, basic knowledge).			
Relationship between teaching and research	Immediate and direct connection between teaching and research.		<ul style="list-style-type: none"> Transmission of research results in teaching. Research and development may be separated, depending on institution. 	<ul style="list-style-type: none"> Transmission of research results in teaching. Research and development may be separated, depending on institution. 	<ul style="list-style-type: none"> Transmission of research results in teaching. Research and development may be separated, depending on institution. 			
Autonomy	Large degree of autonomy vis-à-vis the responsible political bodies (cantons, national government). The key steering instruments are: <ul style="list-style-type: none"> Basic funding and agreements on objectives (Zielvereinbarungen) and service provision concords (Dienstleistungsauftrag). Strategic steering through bodies constituted just for that purpose and/or university boards (UTE: steering may at times be at the cantonal level). Autonomy in operational management by the administrators of the institution of higher education (UTE: depends on the cantonal laws). 						Limited degree of autonomy vis-à-vis the responsible political bodies (cantons, national government): <ul style="list-style-type: none"> The national government has general oversight over the contents of the PET core curriculum and the federal PET examinations. Strategic steering takes place at the national level. Professional organizations in the world of work are responsible for the core curriculum, examination rules and procedures. The cantons are responsible for providing oversight as well as financial support for the courses of study. 	
Funding	<ul style="list-style-type: none"> Cantons (intercantonal agreement). Other external funding. National government. Competitively-awarded external funding. 	<ul style="list-style-type: none"> National government. Competitively-awarded external funding. Other external funding. 	<ul style="list-style-type: none"> Cantons (intercantonal agreement). Other external funding. 	<ul style="list-style-type: none"> Cantons (intercantonal agreement). National government. Other external funding. Competitively-awarded external funding. 		<ul style="list-style-type: none"> Cantons (intercantonal agreement). National government. 	<ul style="list-style-type: none"> Candidates. Employer contributions (only for federal diplomas). National government contributions (the law is being revised to increase public funding). Cantons: contributions to preparatory courses (optional). 	

*According to an analysis of their declared missions (see Gyger Gaspoz, 2015).

Appendix 3: Funding for cantonal university and ETH expenditures by source (2012)

Source: own calculations based on FSO data⁴⁰

Expenditure funding by source	Cantonal universities in thousand CHF	ETHs in thousand CHF
Federal government	627,029	1,767,519
Basic funding following FAAU	591,235	–
Global funding for ETHs	–	1,767,519
Current account investments following FAAU	15,310	–
Contributions in conjunction with innovation and cooperative projects following FAAU	19,666	–
Other amounts	818	–
Cantons	2,570,224	–
Home canton of institution: budget	2,064,022	–
Other cantons: intercantonal higher education agreement	498,378	–
Other cantons: other amounts	7,823	–
Competitively-awarded external funding	592,942	328,579
SNSF projects	431,105	161,009
CTI projects	17,561	32,324
EU research programmes	78,718	87,001
Other international research programmes	35,073	20,314
Overhead contribution to core costs	30,484	27,930
Other funding	1,128,870	273,705
Student fees	130,222	22,604
Foundations	6,586	–
National government research mandate	96,925	42,896
Private sector research mandate	265,840	160,400
Other public sector research mandates	58,289	17,485
Revenues from services provided	173,370	–
Revenues from continuing education	109,146	4,859
Other university resources	288,493	25,462
Total	4,919,064	2,369,802

⁴⁰ Data are from the FSO website on higher education institution funding: www.bfs.admin.ch/bfs/portal/de/index/themen/15/06/data/blank/04.html, consulted on 27 September 2014.

Appendix 4: Funding⁴¹ for university of teacher education and university of applied sciences expenditures by source (2012) Source: own calculations based on FSO data⁴³

Expenditure funding by source	UTE in thousand CHF	UAS in thousand CHF
Federal government	2,957	441,932
Flat rate for students SERI	-	387,800
SERI contributions	-	35,815
Other federal revenues	2,957	18,317
Cantons	498,518	1,079,368
UASA student payments (within region)	220,522	434,124
UASA student payments (outside region)	66,704	244,134
Other educational bodies providing funding (excluding infrastructure funding)	211,293	401,110
Competitively-awarded external funding	3,651	91,790
CTI revenues	362	63,171
SNSF revenues	2,739	13,283
Revenues from EU and other international research programmes	550	15,337
Other funding	93,985	421,081
Student monies	32,425	214,861
Revenues from external sources	45,296	167,774
Other revenues	16,263	38,446
Total	599,111	2,034,171

As accounting methods differ by type of higher education institution, it does not make sense to compare them directly. The category “student monies” in UAS institutions, for example, includes funds both from regular courses of study and from continuing education courses, while cantonal universities list their “continuing education revenues” separately.

40 Data are from the FSO website on higher education institution funding: www.bfs.admin.ch/bfs/portal/de/index/themen/15/06/data/blank/04.html, consulted on 27 September 2014.

41 Without infrastructure revenues.

42 Does not include UTEs integrated into a UAS.

43 Data are from the FSO website on higher education institution funding: www.bfs.admin.ch/bfs/portal/de/index/themen/15/06/data/blank/04.html, consulted on 27 September 2014.

Abbreviations

AU	Academic universities
BA	Bachelor's degree
BBT	Bundesamt für Berufsbildung und Technologie [Federal Office for Professional Education and Technology OPET]
BFS	Bundesamt für Statistik [Federal Statistical Office]
CHF	Swiss Francs
COHEP	Swiss Conference of Rectors of Universities of Teacher Education
CRUS	Rectors' Conference of the Swiss Universities
CTI	Commission for Technology and Innovation
EDK	Swiss Conference of Cantonal Ministers of Education
ETH	Federal Institute of Technology
FAAU	Federal Act on Aid to Universities
FDEA/OPET	Federal Department for Economic Affairs / Federal Office for Professional Education and Technology
FH	Fachhochschulen
FSO	Federal Statistical Office
Govt.	Government
GSPL	Health, Social Work, Applied Psychology, Applied Linguistics departments (UAS)
HEdA	Higher Education Funding and Coordination Act
ISCED	International Standard Classification of Education
KFH	Rectors' Conference of the Swiss Universities of Applied Sciences
MA	Master's degree
OECD	Organisation for Economic Co-operation and Development
PET	Professional Education and Training
PH	Pädagogische Hochschulen
PhD	Doctoral degree
R&D	Research and development
SBFI	Staatssekretariat für Bildung, Forschung und Innovation
SERI	State Secretariat for Education, Research and Innovation
SKBF	Schweizerische Koordinationsstelle für Bildungsforschung
SNSF	Swiss National Science Foundation
SSIC	Swiss Science and Innovation Council
SWIR	Schweizerischer Wissenschafts- und Innovationsrat
SWTR	Schweizerischer Wissenschafts- und Technologierat
TWD	Technical, Life Sciences, Economics, and Design departments (UAS)
UAS	Universities of applied sciences
UASA	Universities of Applied Sciences Agreement (intercantonal)
UTE	Universities of teacher education
VET	Vocational Education and Training

Imprint

Swiss Science and Innovation Council SSIC

Einsteinstrasse 2

CH-3003 Bern

T 0041 (0)58 463 00 48

F 0041 (0)58 463 95 47

swir@swir.admin.ch

www.swir.ch

ISBN 978-3-906113-19-7

Bern 2015

Copy-editing: Doris Tranter

Layout: VischerVettiger, Basel

Cover photograph: Mélanie Rouiller

Swiss Science and Innovation Council SSIC

Einsteinstrasse 2

CH-3003 Bern

T 0041 (0)58 463 00 48

F 0041 (0)58 463 95 47

swir@swir.admin.ch

www.swir.ch