

Higher Education and Graduate Employment: Changing Conditions and Challenges

by

Ulrich Teichler

Kassel 2018

doi:10.17906/INCHER.0002

INCHER Working Paper Nr. 10

International Centre for
Higher Education Research Kassel



U N I K A S S E L
V E R S I T Ä T

Content

1	Introduction	3
2	Quantitative, Structural and Organisational Relationships between Higher Education and Employment	4
2.1	“Over-Education” or “Shortage” or Graduates?	4
2.2	“Match” or “Mismatch”?	5
2.3	“Investment” and “Return”	6
2.4	Internationalisation of Higher Education and Employment	7
2.5	The Professional Impact of Diversity in Higher Education	8
2.6	Privileges, Meritocracy and Equality	11
2.7	Involvement of Higher Education in the Transition to Employment	12
3	Substantive Links between Study and Work	14
3.1	Curricula, Teaching and Learning – the Factors for Graduate Work.....	14
3.2	Implications of the Research-Teaching Nexus	14
3.3	Perceived Educational Functions and of Higher Education.....	16
3.4	Variations of Study Provisions, Study Conditions and Students’ Study Behaviour	17
3.5	Dimension of “Academic” and “Professional” Thrusts	18
3.6	Skills and Competences Others than Academic Knowledge and Reasoning	20
4	Changes of Discourses and Strategies	24
4.1	Major Changes Over Time	24
4.2	The Call for “Employability”	26
5	Graduate Surveys – Approaches and Functions.....	28
5.1	Increasing Popularity of Graduate Surveys.....	28
5.2	Collaborative Surveys of Surveys of Graduates from Individual Institutions of Higher Education	30
5.3	Utilisation of the Knowledge Provided by Graduate Surveys	32
6	Conclusion	33
7	Literature.....	36

1 Introduction^{*}

The links between higher education and the world of work as well as the public discussions about problems and desirable improvements differ substantially between the countries in the world. It does not come as a surprise that the situation and the discussions in rich countries are clearly different from those in poor countries. But we note striking differences as well between countries, which can be viewed as similar as far as the economic, social and cultural conditions are concerned.

Actually, views of the relationships between higher education and graduate employment and work differ substantially among economically advanced countries notably due to three factors. First, the magnitude of students differs strikingly between these countries. Around 2015, the according to OECD statistics graduation rates with a bachelor or similar degree ranged between about 30% and about 60% of the respective age group, that with a master or similar degree between less than 10% and about a quarter, and that with a doctoral degree between less than one per cent and more than three per cent (OECD 2017). Graduation rates from short tertiary education programmes vary even more across countries, but the respective data are not presented here, because variations of definitions come into play. Second, some economically advanced countries, e.g. in France and Germany, having a highly structured occupational system, a close link between the field of study and a respective occupation is expected, while others, e.g. Japan and the United Kingdom, have softer “market linkages” in this respect (see Müller and Shavit 1998). Consequently, views of desirable linkages between study and the world of work cannot be compared easily. Third, higher education philosophies differ between countries as regards the extent to which study programmes should be relatively “general”, “academic”, “disciplinary”, “interdisciplinary”, “critical”, “theoretical”, etc., as far as the knowledge system is concerned, and more “professional”, “applied”, “specialized”, “polyvalent”, etc., as far as the occupational thrust is concerned (see Ben-David 1997; Rothblatt 2011; Teichler 2011a).

Yet, actors, experts and scholars all over the world have similar views about key features of the relationships between higher education and the world, which have to be taken into consideration in analyses of the situation and in efforts for improvement. This article will address major features of this thematic area discussed in economically advanced countries over more than five recent decades – decades in which higher education and graduate employment certainly belonged to one of about a dozen major issues of higher education policy (see Teichler 1999). As will be pointed out, some of the key features touch upon the quantitative, structural and organizational links between higher education and employment. Others are of a substantive nature: The relationships between study pro-

^{*}The following text is based on a contribution by the author to the Conference on College Student Development and Employment: Reform and Innovation, Peking University, Beijing (China), 26-27 May 2018.

grammes, learning and competences on the one hand work tasks and actual work and on the other.

This article will not be confined to show how these features have been viewed and handled. Additionally, it will provide an overview about the development of graduate surveys (also called "alumni surveys", "tracer studies", etc.).

As the public discourse on the relationships between higher education and the world of work became more and more complex over the years, graduate surveys became more ambitious as well in showing how different elements of higher education affect the graduates' subsequent employment and work and what such information could mean for the various actors involved – students, institutions of higher education, employers, governments, etc.

This article draws from the author's involvement in international comparative research on higher education and the world over many years (Teichler et al. 1980; Teichler 2009, 2015, 2018). Among others, the author initiated the first international comparative questionnaire survey on graduate employment and work (Schomburg and Teichler 2006; Teichler 2007a) and analysed carefully the challenges as well as the opportunities of graduate surveys to contribute to a better understanding of the relationships between higher education and the world of work (Teichler 2018, chapter 5).

2 Quantitative, Structural and Organisational Relationships between Higher Education and Employment

2.1 "Over-Education" or "Shortage" of Graduates?

The popular debate in many countries on the relationship between higher education and the world of work can be characterized by a frequently posed question: Do we have too many or too few graduates? In economically advanced countries, a vivid debate about this issue started already in the 1950s, and the Organisation of Economic Co-operation and Development (OECD), founded in the late 1950s by the market-oriented economically advanced countries as a think-tank for economic and social policies, played the strongest role among international organisations in these debates (see Papadopoulos 1994).

Actually, the extent of higher education expansion tends to be measured as the entry rate, the student rate or the graduation rate among the respective typical age group (see Teichler and Bürger 2008). We note an increase of the rate of university graduates from about 5% on average of economically advanced countries in the 1950s to a rate of graduates from "tertiary education" – the most frequently employed categories changed over the years (see OECD 1998) – of more than 50% in recent years. This increase was accompanied by a controversial debate, i.e. by a coexistence of expansionist and skeptical

arguments, as regards the relationships between the supply of graduates and the demand as well as the absorption capacity of the employment system.

On the one hand, those hailing the expansion of higher education often point at the link between countries' educational expenditures and economic growth or on the relationships between the individuals' level of educational attainment and income (see Hanushek and Woessmann 2011). On the other, those believing that higher education expansion has gone too far point at employment problems faced by graduates, i.e. the proportions of graduates facing difficulties in the transition from higher education to employment, being unemployed, being "over-educated" or "under-employed" (see Büchel et al. 2003).

As regards the latter, i.e. the concern about possibly too many graduates, attention was paid initially to the whereabouts of graduates in occupational categories not considered typical for graduates from higher education. Subsequently, more surveys of employers or of graduates were undertaken in order to find out how many were not employed in tune with their educational level according to the key actors' perceptions. For example, the first international comparative survey of higher education graduates, undertaken in 1999 in twelve economically advanced countries, noted with reference to occupational statistics that 70% on average across countries had typical graduate jobs, 18% were employed as technicians and associate professionals, where views vary about the need of higher education qualifications, and 12% in general service, skilled labour and unskilled labor jobs, where generally no need for higher education is seen. 21% of the employed graduates noted little or no use on the job of the knowledge and skills acquired during the course of study, and 14% viewed their job as hardly or not all corresponding to their level of educational attainment (Schomburg and Teichler 2006). In general, statistics and surveys clearly show that traditional graduate jobs did not expand in recent decades as much as the number of graduates, but controversies persisted whether this leads to a seriously high proportion of "over-educated" graduates, or whether the gap between demand and supply could be viewed as too small to be a reason for serious concern, or whether an increasing number of graduates employed in middle-level positions even could turn out to be productive and creative in the long run.

2.2 "Match" or "Mismatch"?

In debates about the quantitative relationship between the "supply" of graduates and the "demand" of the employment system, attention was paid from the outset not only at the total numbers of graduates and vacant jobs, but also on the relationships between field of study and occupational category. A concern of a growing "mismatch" was most strongly expressed by those believing that a similar structure exists or ought to exist between the fields of study and the occupational categories, and that most occupations would be served best, if they were taken over by graduates from the corresponding field.

Actually, we note internationally that degrees in certain fields of study are exclusive entry requirements for certain occupations, such as medicine for medical professions. As al-

ready pointed out, we also observe that a close link between field of study and occupational area is often expected in countries with a strong general emphasis on professionalism, while such a link is less often expected in countries where a softer “market link” exists in this domain (see Müller and Shavit 1998; CEDEFOP 2009). Some experts argue that across countries both higher education expansion and occupational dynamics have led to more flexible relations between area of study and area of work. In the above named international graduate survey, only about 40% of employed graduates on average across economically advanced countries argued that their field of study was either the only possible or the most suitable one for their area of work. A similar proportion argued that other fields of study would be suitable as well, and only 8% stated a clear “mismatch”: Another field would have been more useful for coping with their eventual work tasks (Schomburg and Teichler 2006).

2.3 “Investment” and “Return”

Many economists have measured the relationships between education and employment by means of financial investments into education and returns for these investments. A higher level of education, accordingly, is worthwhile, if the life income turns out to be higher than the educational expenditures, the foregone income due to a longer life-span spent in education, and possible interest rates, if these investments had alternatively put as capital at a bank. Actually, various analyses suggest that individual investments into higher education on average of economic advanced countries and fields of study lead to a higher individual return (see for example Brunello and Comi 2004; see also various chapters in Carnoy 1994; Hanushek and Woessmann 2011).

There are reasons, though, for challenging such a positive picture as regards educational investment. First, substantial differences exist between countries in the extent to which the expenditures for education are covered by the individuals – the students and their family – and by the society (notably governmental funding). Actually, there are economically advanced countries on the one end of the spectrum, where students do not pay any tuition fee and the majority of students get grants covering most of their living costs during the period of study (for example in Finland and Norway). At the other end of the spectrum, most students pay enormous tuition fees and less than one tenth of them are awarded a scholarship (e.g. Japan and Republic of Korea).

Second, expansion of higher education and thus a rich supply of graduates have led in some countries to a general lowering of income differences according to level of educational attainment. Thus, a positive “return” cannot be expected anymore across countries, if the majority of the young people embark on higher education (see for example Chan and Yang 2015).

Third, returns might vary according to the financial basis of higher education institutions at which students were enrolled. Some analyses in the U.S. suggest that it pays off on average to study at private institutions of higher education, because the higher costs are

more than compensated by the fact that study at the often prestigious private institutions leads to better careers. In contrast, analyses in Japan show that higher fees at private institutions lead on average to less privileged careers than lower fees at public institutions (see for example Kariya 2011).

Fourth, finally, the graduates' income varies substantially by field of study. We note, for example, that those graduates, who eventually become school teachers, will have such a moderate life-time income that it does not pay off all the direct and indirect investments into study. We note in most countries a relatively high income of graduates from medicine. However, the above named first international comparative graduate survey showed that the employment prospects of graduates vary by fields across countries; for example, graduates from physics or chemistry might be quite privileged in one country and less so in another country (see Teichler 2007b).

Altogether, a worthwhile "social return" for educational investment, i.e. remarkable rate for both public and private investment in higher education compared to the graduates' lifetime income, has not been identified as frequently as a "individual return". On the one hand, economists argue that expansion beyond the need of the employment system could be avoided, if the students themselves had to cover all the teaching expenditures of higher education institutions. Also, the World Bank and UNESCO recommended – notably in the 1980 and 1990s - developing countries not to invest much into higher education, because they could expect only less return than for investment into other levels of education. On the other hand, other economists and recently the above named intergovernmental organisations as well argue that the income levels vary so substantial according to level of educational attainment worldwide that they outgrow both individual and social investments (see Hanushek and Woessmann 2011).

2.4 Internationalisation of Higher Education and Employment

Traditionally, discussions about the relationships between higher education and the world of work had a national focus: Attention was paid to study at home (in one's country of nationality) and also to employment at home (in the country of graduation or in one's country of nationality). This does not come as a surprise, because international statistics suggest that the proportion of students all over the world, who studied abroad in order to get a degree there has remained more or less constant at about two per cent for various decades. Certainly, the absolute number of students studying abroad has increased substantially about ten times within about five decades, but the total number of students grew at more or less the same pace (cf. the overview on student mobility in Teichler 2017b).

Public attention was paid for a long time solely to some features of "vertical" international mobility, i.e. young people moving from an academically and as a rule economically inferior country to a superior country and to a more highly reputed university in order to study there a complete study programme, to graduate there and possibly to get em-

ployed there subsequently. This upward study mobility combined with professional mobility, as a rule, implied a financial gain for the mobile individual, but often was a financial loss for the mobile person's home country, which had previously invested into his or her prior life and education. This could lead on aggregate to a substantial "brain drain" for the country of origin and to a "brain gain" for the country of destination (see Wächter 2006).

In recent years, however, "horizontal" student mobility and professional mobility of graduates – i.e. between countries of a similar academic quality and economic strength – has become a widespread phenomenon in European countries, thereby temporary international mobility – for example for one semester or one academic year – outnumbers international mobility for a whole degree programme (Wächter 2008; Teichler 2017b). According to the second international comparative graduate survey, undertaken in 2005 five years after graduation (Allen and van der Velden 2011), 4% percent of the graduates on average across 13 European countries were born abroad, more than twice as many had parents born abroad, and 2% had still lived abroad at the age of 16. 21% had spent a period of study abroad and 7% a period of internship or other work abroad. 11% worked after graduation for some period abroad, but only 3% of those employed five years after graduation actually were employed abroad at that time (Teichler 2011b). A larger proportion, though, was sent to another country by their home country employer to work abroad for some period. It might be added that - according to available statistics - less than 5% of students from these countries at that time had studied abroad for a whole degree programme (Kelo et al. 2006).

There is quite a discussion, whether international – "horizontal" - mobility during the course of study is beneficial for subsequent employment and career. On the one hand, a study undertaken in Norway found out that graduates, who had got a degree abroad, do not have any favorable career start as compared to non-mobile students (Wiers-Jenssen 2011). On the other hand, the second comparative graduate survey shows that employed graduates, who had been internationally mobile during their course of study, earned five years after graduation on average 14% more than formerly non-mobile students. Thereby, the same income advantage held true for formerly mobile students irrespective, whether they were employed some years after graduation in the country of graduation or they were employed abroad (Allen and van der Velden, 2011). In contrast, persons surveyed five years after graduation at about the same time, who had studied temporarily abroad in the framework of the so-called ERASMUS programme, did not believe on average that mobility during the course of study had led to a higher income: Less than one fifth believed that they had an higher income than non-mobile peers, but less than one fifth as well thought that they had a lower income (Janson et al. 2009).

2.5 The Professional Impact of Diversity in Higher Education

Expansion of higher education has fuelled constantly a controversial debate about proper links between higher education and the world of work. Whereas the debate in economical-

ly advanced countries initially focused on higher education as a whole and additionally on differences according to disciplines, increasing attention was paid in the 1960s and 1970s to the institutional, programmatic and functional diversity of higher education and its links to graduate employment and work. We might argue that the discussion shifted from "Does college matter?" (Solmon and Taubman 1973) to "Does institutional type matter?", "Does programme matter?" (Schomburg and Teichler 1993) or "Does institutional rank matter?".

A developmental theory of the increase of diversity, which was put forward by the U.S. American scholar Martin Trow (1974), became widely known. He argued that the traditional system of "elite higher education" would be supplemented, when the enrollment rate passed about 15%, by an additional sector of "mass higher education". This divide would emerge in order to serve well the increasing variety of students' talents, motives and job prospects. When the enrolment rate eventually reaches about 50%, a third sector of "universal higher education" would emerge.

Trow's theory was highly influential in reinforcing the worldwide belief that expansion of higher education is bound to be accompanied by an increasing diversity. But his implicit characterization of higher education systems prior to that expansion as relatively homogeneous certainly was inappropriate: Notions about homogeneity versus diversity of higher education and their links to the world of work had differed substantially between countries already before higher education reached such levels of expansion, and traditional views of diversity persisted to some extent along the process of expansion (see Trow 2010). Three well-known country cases might illustrate this (see Teichler 1988):

- The U. S. system of higher education is traditionally viewed as highly stratified at the top. Universities respected for high academic quality were usually also viewed as places to ensure best careers for their graduates. As many top universities in the U. S. were private, students willing to pay high tuition fees also could expect as a rule the respective "return" for their educational investment. However, this notion of a stratified system was more pronounced for graduate education than for education on bachelor level. Moreover, less than one third of young persons in the U.S. wishing to embark on bachelor programmes paid attention to this reputational hierarchy and strived for success in highly reputed institutions, while the majority chooses the "college" for other reasons, e.g. location.
- In Japan, the university system traditionally was viewed as highly stratified: Universities – or more specifically faculties of individual universities - were conceived to differ according to the difficulty of being admitted, and that this was closely linked to future job prospects. Young people worked hard for years to be admitted to the highest-ranking university they could reach; in contrast to the U.S., this held true not only for a minority, but for more or less all young persons in Japan wishing to study. The meritocratic setting, i.e. the combination of perceived openness of higher education to efforts for achievement prior to study and of the perceived high degree of determination of the professional career through the reputation of the university one had graduated from, had ironic consequences: Some external observers called it "diploma dis-

ease" (1976) and "degree-ocracy" (Galtung 1971), and Japanese observers called it "educational path society" (*gakureki shakai*) (Amano 1990): Admission to and graduation from the "right" university traditionally was and still seems to be nowadays in Japan so extremely important that learning in the course of study and thus building up competences by the university is secondary and practically undermined (see Takeuchi 1997).

- In Germany, all universities traditionally were viewed as more or less equal in quality. This was underscored and reinforced by the fact that students in Germany can move relatively easily from one university to another during the course of their study. Consequently, the grades conferred by the university were viewed as the single most important distinction. For example, many government agencies considered these grades as the most important criteria for recruiting high-level administrators, teachers, etc.

Most experts, however, agree that change occurred all over the world in the process of expansion: On the one hand, the national higher education systems presented themselves as increasingly diverse or were assessed as becoming more diverse. On the other hand, the view spread that other criteria than success in study assessed and certified by the institutions became increasingly important for the graduates' career success: For example the acquisition of various professionally relevant competences, which hardly were reinforced by the university, or help in the job search process provided by the institution of higher education or by other agencies.

Higher education diversified differently according to country (see Teichler 1988, 2008; Neave 2011). In some countries, diversity increased notably according to programme and degree levels. Over the years, the proportion of students grew, who moved on to advanced degree programmes: For example to master programmes in countries, where the first typical level is a bachelor programme, or even to doctoral training, which expanded in some countries far beyond the need of training future academic staff at higher education institutions. In various European countries, different types of higher education institutions were established (see Gellert 1995): In some instances, a second institutional type was created with somewhat shorter study programmes characterized by a strong "applied" emphasis (e.g. "Fachhochschulen" in Germany) in contrast to the universities' "theoretical" emphasis. This applied emphasis was highly appreciated on the labour market in some economically advanced countries: For example, according to surveys in Germany undertaken in the 1980s and 1990s graduates from "Fachhochschulen" actually reach income levels which are on average only moderately lower than those of university graduates - thus higher remuneration than one would expect on the basis of the distinction of these institutional types according to academic reputation (Schomburg and Teichler 1993). Since 1999 in the so-called "Bologna Process" various European countries, where the first university degree had been equivalent to master degree, began to introduce bachelor and master programmes both at universities and other institutions of higher education (see Taylor et al. 2008; CHEPS, INCHER and ECOTEC 2010). Surveys undertaken in France and Germany showed that bachelor graduates from such institutions with an applied emphasis had even a higher income on average than bachelor graduates from universities. Enrolment at universities only paid off on average, because more university

students than those at other institutions went on to study on master level and this facilitated access to higher positions and higher income levels. In contrast, the status gap between universities and other institutions of higher education as well as respective average income gap of graduates are fairly wide in some other economically advanced countries, for example in the Finland and the Netherlands (Schomburg and Teichler 2011).

Informal diversification occurred through efforts of the individual universities to change their image and profile irrespective of the formal – for example legally regulated – classifications of institutions and programmes. Some of these efforts were “vertical”: Increasing the informal level of quality and reputation, others were “horizontal”: to underscore a specific curricular thrust, specific concerns for certain competences, specific modes of teaching and learning, specific links with society, or similar (see Huisman 1998; Teichler 2017a).

The more higher education diversified, the more complex became the overall picture of links between higher education and the world of work. This trend towards decreasing transparency provided on the one hand room for rumors and propaganda. On the other, interest grew to get thorough and detailed information about the extent and the ways study in higher education has an impact on the subsequent career and professional life – interest reflected in more frequent and more complex graduate surveys, as will be discussed below.

2.6 Privileges, Meritocracy and Equality

Scientific analyses as well as the public discourse on the relationships between higher education and the world of work do not only refer to the magnitude and the kind of impact higher education has on graduate employment and work. They also discuss alternative factors possibly playing a role for the graduates’ employment success. One of the widely discussed themes, for example, is the role which the students’ socio-economic background (notably parental social influence and power, parental occupational status, parental educational attainment, citizenship, ethnic background, and gender) plays for professional success after graduation. In principle, three models of influence are discussed:

- Privileges: Those former students are likely to be successful in their career, whose socio-economic background is favorable. This either holds true directly through the employment system: For example employers might prefer a man to a woman with the same level of higher education achievement. Or indirectly: Favorable socio-biographic background might help to be more successful in education prior to higher education or in higher education; for example, parents with a high socio-economic status might be more successful in socializing their children for educative environment or they might be in a better position to pay for costly prestigious educational settings. Thus, even if employers recruit strictly according to educational achievement, this might lead to an advance of those privileged socio-biographically.

- Educational meritocracy: The employment and social award for those who deserve it is most clearly realized in a society, in which education is highly relevant, if two conditions are fulfilled: On the one hand, access to higher education is open for persons with the best entry qualifications irrespective of their socio-biographic background. On the other hand, the career after graduation is largely determined by the successful learning in higher education.
- Equality: Measures operate in higher education, which support specifically those students which are socio-biographically disadvantaged or have other difficulties to get along within a pure meritocratic setting. This might for instance include: Privileges in access and admission for socio-biographically disadvantaged persons (for example often called “affirmative action” in the U. S.), need-based scholarships, and compensatory programmes within higher education for “non-traditional students” and students with learning difficulties.

Available information in economically advanced countries suggests that we usually note a coexistence of varied mechanisms: Some ensuring privileges, some reinforcing meritocracy and some designed to support disadvantaged and thus contributing to equality (see Brennan and Naidoo 2008; Teichler 2014a). Altogether, socio-biographic privileges matter: In many countries, we note for example that about half of the students in the most privileged sector of higher education originate from about the top 20% highest parental status groups. Thereby, privileged socio-biographic background tends to play a stronger role for early educational steps than for differential success within higher education or in the early career. Higher education policies, however, vary between economically advanced countries gradually in the extent to which traditional privileges are accepted or even reinforced, or targeted measures are pursued to strengthen either meritocratic features, or strong support is provided for counterbalancing measures in favor of decreasing inequality.

2.7 Involvement of Higher Education in the Transition to Employment

Higher education is not automatically linked to employment. There is a complex process of transition from study to employment, in which various actors play a role. These processes differ substantially between economically advanced countries (OECD 1992, 1993). For example, the above named first international comparative graduate survey shows that graduates spent almost six months on average of the countries surveyed for seeking their first employment after graduation; thereby the average actual search period varied between the countries participating in the survey from less than three to almost twelve months on average. Also the timing of search differed substantially: In Japan, almost all students started seeking for a job already early in the final year of study, while – in contrast – more than 80% of those studying in France and Italy began the search only after graduation. The time span between graduation and first employment consequently varied

as well: In Japan, about three quarters of the graduates, who wanted to get employed, actually started to work shortly after graduation, while in France almost half more than 1 ½ years after graduation (Allen and van der Velden 2007).

The notions vary as well about the extent to which higher education institutions should be involved in the process of transition. In many countries, institutions of higher education have established service units for this transition processes – often called “careers centre”, “placement office” or similarly. As a rule, these service units help the students and former students to understand and handle the transition process, for example through training seminars how to behave in job interviews. Moreover, as a rule, they help to inform the students about employers’ job offers.

Practices, however, vary substantially whether institutions of higher education are actively involved in the search and recruitment process. In some economically advanced countries, public employment agencies traditionally were expected to take care; career offices at institutions of higher education were only established in recent years to provide information, but mostly are not involved arranging contacts between students and employers. In other countries, institutions of higher education are involved in arranging such contacts, but views about the tasks and the ethics of such support for contacts vary: In some instances, care is taken that arranging contacts is not linked to the employers’ assessment and selection process, while in other instances, career offices or professors might be actively involved in recommending candidates or in providing other information about the candidates than their certificates of achievement.

In the above named comparative graduate survey, 22% on average across countries of those graduates being employed a few years after graduation reported that for their job search they had asked the help of the career office of their higher education institution – most frequently graduates in Japan and quite frequently those in Spain and the United Kingdom in contrast to only a few in Norway, Sweden and Germany. 10% on average asked the academic staff for help in the search. In response to a question about the most important methods of getting their job, only 5% on average named the career office – ranging from 21% in Japan to none in Sweden, and 3% considered the academic staff’s help as influential – varying from 9% in Japan to 1% in various countries (Schomburg and Teichler 2006).

It is not surprising to note that there are ethical controversies as regards the active involvement of institutions of higher education in the employers’ assessment of job seeking graduates. Some believe that career offices and possibly academic staff should do their best to ensure a favorable assessment of their (former) students by potential employers and thus to enhance the students’ chance of getting the best possible employment. Others argue that the institutions of higher education should limit the information, which they provide, to their certificates, because any further assessment would call into question the credibility of the certification and also undermine the trust in an educational meritocracy.

3 Substantive Links between Study and Work

3.1 Curricula, Teaching and Learning – the Factors for Graduate Work

The quantitative, structural and organizational links between higher education and employment discussed so far touch only upon relevant frameworks. Actually, however, higher education has a real impact on the world of work through a substantive chain: The substance of study programmes, i.e. curricula combined with modes of teaching and learning, affect the students' competences, and competences are called for ("job requirements") by the world of work and are actually utilized in the graduates' work.

We observe a worldwide vivid and controversial discourse about of the substantive impact of higher education in general (see Pascarella and Terenzini 2005) and notably about the substantive relationship between study in higher education and subsequent graduate work (Brennan et al. 1995; Bennet et al. 2000): To what extent should curricula, teaching and learning be shaped with a view on possible graduates' future work, and to what extent should they serve other purposes? How do the prevailing practices in higher education actually affect graduates' employment and work? What are the demands of the world of work, and how much do they match or differ from the actual graduates' competences? What vision of desirable competences of graduates and their role for the world of work should higher education strive for? To what extent should higher education look beyond visible "demands" of the employment system, e. g. beyond employers' notions, and develop pro-active views about long-term developments, innovation and even change of the character of the world of work?

3.2 Implications of the Research-Teaching Nexus

Most historical analyses of higher education suggest that teaching and learning was the dominant task up to the 18th century. Research gradually became an equally important or even more important function since the 19th century. The "idea" of the university formulated by Wilhelm von Humboldt prior to the establishment of the University of Berlin in 1810 is named by many experts as the most influential one for the emergence of the "modern" university (see for example Perkin 1991). Notably, the "unity of research and teaching" is most often named in this respect, while the "community of teachers and learners" and "solitude and freedom" emphasized by von Humboldt tend to be named less frequently.

The Humboldtian concept underscores the benefits of a linkage between the research and the teaching tasks in academia. Academics' involvement in research contributes to the teaching of up-to-date knowledge and to high academic standards in teaching and learn-

ing, while communication between academics and students in the teaching and learning processes can be inspiring for research. In the international comparative survey of the academic profession undertaken in 2007, about three quarters of the respondents on average of the economically advanced countries stated that a link between research and teaching meets their preferences (Shin et al. 2014).

However, most surveyed academics stated that research is held by them in higher esteem than teaching. Many academics complain that they have insufficient time and resources for research, while the number of hours to be taught is often named derogatively "teaching load". The above named survey showed striking differences by country: According to the Japanese scholar Akira Arimoto (2014), the majority of academics in Germany and Japan consider research as the prime element of their identity; teaching is often viewed as secondary and almost solely as transmission of research-based knowledge. Many academics in Anglo-Saxon countries put a stronger emphasis on research as well, but take the tasks of teaching more seriously and consider them more closely intertwined with their research task. Finally, teaching seems to play a dominant role for most academics in the mid-income countries surveyed.

It might be added that "academic freedom" - held in high esteem by academics as an indispensable element of academic creativity in the modern university - tends to be emphasized with respect to the research function of the university (see Shils 1991). In Germany, for example, "academic freedom" is even safeguarded in the constitution, but interpreted as an absolute freedom of research on the part of senior academic university staff on their search for "truth" (see Peisert and Framhein 1994). Pursuit of knowledge for its own sake is not the dominant approach at universities, but tends to be viewed as protected by the principle of academic freedom.

Thus, the value of curricula, teaching and learning for graduate employment and work is not necessarily reinforced by the role research plays in higher education. Scholars might consider teaching and learning so much as secondary that they do not care much about the quality of teaching and learning and their possible impact on graduate employment. And they might set priorities for research so much in tune with the internal standards of academic quality that little attention is paid for the best ways of laying the foundations for students' work after graduation.

The above named opportunities and problems of the research-teaching nexus for the relationships between study and work after graduation notably apply for those sectors of higher education which underscore the role of research. This holds true for more or less all institutions in Europe which are officially called universities, while outside Europe distinctions are often made between "research universities" or "research-oriented universities" on the one hand and on the other hand other universities or institutions with other names (college, etc.) which are often not of any formal nature. However, the role of research is not necessarily determined by the institutions' official functions. Some scholars and some departments in research-oriented institutions might be marginally active in research. In reverse, research activities might play a substantial role as well in institutions understood to focus primarily on teaching: Individual scholars might be active in

research, or institutions as a whole might strive for an increasing research function – among others, because academic reputation tends to be strongly determined by research. In the second half of the 20th century, we observed concurrently in various countries (a) an increasing involvement in research of higher education institutions traditionally not highly active in research, (b) the deliberate widening of the national higher education system by establishing or upgrading a sector with a dominant teaching function – often called informally “non-university higher education”, and (c) efforts within the “non-university sector” to become somewhat more similar to the university sector, among others through increasing involvement in research – a trend often called “academic drift” (Neave 1979).

It should be added that little attention was paid traditionally to the teaching competences and possible activities for the training and the enhancement of teaching competences in those countries, in those sectors of the higher education system and at those institutions, where a research emphasis prevailed. Criteria of research competences prevailed in the recruitment and promotion of academic staff, while assumptions were widespread that sufficient teaching competences and other relevant competences could be developed through learning by doing. Activities called “staff development”, “higher education didactics”, etc. were already customary in some countries for a long time, started spreading in the 1970s in other countries or and in some countries even later. But even today, we note often claims that more efforts are needed to enhance the competences relevant for teaching, and even today mandatory training of teaching competences in higher education has been introduced only in a few countries.

3.3 Perceived Educational Functions and of Higher Education

In analyzing the prevailing notions of substantive educational tasks and functions of higher education, we might argue that there are common views – certainly across economically advanced countries (see Teichler 2015): Higher education is expected to

- stimulate students intellectually in the academic domain, i.e. to teach them to understand and master the respective academic theories, methods and knowledge domains,
- contribute to cultural enhancement and personality development,
- prepare students for subsequent work on the job and action in other life spheres by laying the foundation for relevant knowledge and helping them to understand and utilize the typical “rules and tools” needed in their professional life, and to
- foster the ability to challenge conventional wisdom and established practices: Students and graduates should be brought into the position to be skeptical and critical, to be able and inclined to challenge conventional wisdom all the time. This is expected to enable them to cope with indeterminate work tasks and to contribute to innovation.

In practice, however, we note diverse thrusts – varying according to countries, types of higher education institutions, individual institutions of higher education, individual departments or study programmes and even individual scholars and individual students – the latter in the way they make use of the study provisions or set learning priorities themselves otherwise. Four dimensions of different thrusts are most often discussed:

- The extent to which study programmes are “academically” or “professionally” oriented;
- the extent to which study programmes concentrate on knowledge and cognitive skills or combine knowledge and the cognitive domain with other dimensions of competences, e.g. “affective” and “sensu-motoric” competences,
- the extent to which study programmes lay the foundations for future professional work or prepare directly for future work, and
- the extent to which preparation for subsequent employment is geared to be presumed dominant “demands” of the employment system or set other priorities.

3.4 Variations of Study Provisions, Study Conditions and Students’ Study Behaviour

Before addressing the variety of substantive thrusts of institutions, fields of study, study programmes etc. aimed at shaping the students’ competences and preparing them for the world of work, we should take into consideration that such programmatic intentions might be less powerful in leading to certain results than the widespread statements of “mission”, “programme”, etc. claim. In reality, the world of learning in higher education is much less standardized across countries, within countries, within institutions of higher education or through study programme provisions than most conventional descriptions suggest. This state of affairs, as will be discussed below, is visible in surveys comprising students from various countries (e.g. Teichler and Maiworm 1997; Hausschildt et al. 2015). It also underscores the value of graduate surveys asking the respondents to report their actual experiences of the study conditions and their actual ways of study, and thus makes the politicians, managers and academics in charge of shaping higher education actually aware about the gaps between programmatic claims and the daily life of teaching and learning and its possible impact on graduate employment and work. Similarly, research on “college impact” (e.g. Pascarella and Terenzini 2005) makes us aware of the influence and the limits of the influence of institutional and programme provisions as well as the influence of the students’ way of using these provisions and making individual choices in their study behavior. Some examples of such variations might be named here without any intention of providing a comprehensive overview.

Learning in higher education aimed at serving as more or less complete preparation for subsequent employment and work tends to be organized through study programmes. Initial study programmes in economically advanced countries last as a rule between two and six years of full-time study, and they might be supplemented by advanced study pro-

grammes mostly lasting between one three years. Activities have been undertaken by international organisations to define comparable levels. Various terms are employed for short programmes: “tertiary education programmes”, “diploma programmes”, “sub degree-level programmes”, “foundation programmes”, etc. First regular degree programmes are often characterized as “bachelor” programmes in tune with the Anglo-Saxon titles, and somewhat advanced programmes as “master” programmes (cf. for Europe Jablonska-Skinder and Teichler 1992; EACEA 2015). Finally, the doctoral degree is the highest degree often named in international comparisons. The doctorate was increasingly named in recent years in analyses on the relationships between higher education and the world of work, because nowadays it leads less frequently than in the past to work in academia and more frequently to professional employment in various areas (Kehm and Teichler 2016).

But such a classification of programmes and degrees leaves ample room for variations. For example, study programmes leading to a bachelor degree require in some countries as a rule three years of full-time study, in some as a rule four years, while in other countries varied lengths are customary. Full-time study might comprise – officially stated or practically assumed or taken for granted in some countries almost 2,000 hours and in others not much more than 1,000 hours per year. Lecture periods might last between six and nine months annually. The students might be expected to attend lectures or other class arrangements between almost 30 hours and hardly more than 10 hours weekly during the lecture period. In some study programmes, the required number of lectures or courses is standardized for all students, while in other programmes students have a choice about the number of courses to take. In some programmes, all courses are mandatory, while in others students can select between different options. In some countries, full-time students are strongly expected to complete the study programme in the required study period, whereas in other countries a prolongation of study by one or two years is widely accepted. In many countries, students are expected to take the whole study programme at the same institution. There are instances, however, where temporary study somewhere else – most frequently study abroad – is encouraged. There are also countries and institutions – notably in Germany – where inter-institutional mobility during the course of study is encouraged and some students deliberately move between two, three or even more universities in order to have a more varied study experience than any single university can offer. Finally, available statistics suggest that the average drop-out rate in economically advanced countries varies from about 10% to more than 50%.

3.5 Dimensions of “Academic” and “Professional” Thrusts

Available analyses and the widespread public discourses suggest that the extent and the kinds of substantive links between study programmes and subsequent graduate work vary according to different dimensions (cf. Bennet et al. 2000; Rothblatt 2011). The following six dimensions seem to be the ones which are most frequently discussed (see Teichler 2015), but certainly this list cannot be understood as complete.

First, fields of study can vary as regards the extent to which the configuration of knowledge is academically structured, i.e. according to theories, methods and knowledge areas of scientific knowledge system, versus according to the professional use – for example in terms of occupational categories. We believe all over the world that academic perspectives are more influential in a field such as philosophy and professional perspectives more influential in a field such as mechanical engineering. But there are enormous variations within many fields across countries. For example, fields of study at U.S. higher education institutions are clearly grouped as either “academic” or “professional”; for example, chemistry is understood as “academic”, even though it is often viewed as professionally shaped in other countries, and engineering as “professional”. In Germany, traditionally three types of university degrees existed: “Magister” programmes with a dominant academic thrust, “Diplom” programmes with a varying combination of academic and professional thrusts, and “state examina” programmes with a professional thrust and predominantly leading to occupational areas with a strong public involvement (notably teacher training, law and medicine); in some disciplinary areas, two types of degrees existed with respective thrusts: for example, study of sociology could end with a “Diplom” or a “Magister”. In some European countries, an understanding of an “effectus civilis” of a degree prevailed: All fields could pursue various combinations of academic and professional thrusts, and all degrees were understood both as an academically-based achievement and as the entry qualification to respective occupational areas (see Jablonska-Skinder and Teichler 1992).

Second, study programmes vary as regards the extent to which they are delineated in tune with the knowledge areas usually understood as disciplines. For example, a field of study such as sociology is understood as corresponding to a discipline. In contrast, fields such as social work or bio-chemistry are understood as interdisciplinary. Thereby, some interdisciplinary fields might have a dominant academic thrust, for example in many cases of bio-chemistry, while others might have a dominant professional trust, i.e. social work. Moreover, some study programmes aim at covering a discipline as a whole, e.g. mechanical engineering, while others concentrated on a sub-area of a discipline, e.g. aeronautics.

The third dimension is somewhat related to the second one. Disciplinary or interdisciplinary study programmes might vary according to breadth versus a high degree of specialization on a major discipline or a major interdisciplinary area. For example, many universities in the U. S. do not expect their entry students to opt for a certain field from the outset; instead, students enroll initially in a disciplinary mix often called “general education” or “liberal education” and eventually are linked to a single field only from the third year onwards. Some specialized programmes might have a relatively broad initial phase, e.g. a first year of “propedeutic” study within many study programmes in the Netherlands. In various programmes across countries, the dominant field is understood as “major”, which has to be supplemented in the course of study by one, two or even more “minors”.

Fourth, study programmes might vary to the extent mastery of knowledge is emphasized or the acquisition and fostering of certain competences to be eventually reached. In many countries, we noted in recent years of shift towards a stronger emphasis on competences.

Fifth, study programmes vary as regards to the extent to which the possible application of knowledge and competences on the job is taken into consideration explicitly. Terms such as "orientation towards practice", "vocational" or "professional emphasis", "applied" study programmes, etc., are employed to characterize a relative strong emphasis placed in the study programmes on the future utilization on the job of what has been learned in higher education. There are different approaches how learning of application might be linked to learning in knowledge systems. For example, the higher education legislation in Austria characterizes the tasks of universities "to lay the foundation" for graduates' work, while the task of the "Fachhochschulen" (universities of applied sciences) is to "prepare" for the graduates' work.

Sixth, notions about the role of the different levels of education might vary. For example, there is a widespread distinction in the U. S. between two-year study programmes with a general function, i.e. broad and as a rule leading to subsequent bachelor study, and a "terminal" function, i.e. "vocational" in emphasis and as a rule leading to subsequent employment. Moreover, many bachelor programmes in the U. S are understood as relative broad and relatively open as regards future professional work, while programmes on master level as a rule are understood as more strongly specialized and as more divided between a clear professional or clear academic emphasis. In many European countries, in contrast, it is taken for granted that short study programmes as a rule have a strong "vocational" emphasis and focus on the presumed dominant demands on the job, while long programmes often have more general and more academic elements, and their relationship to the professional tasks might be less direct and more critical, i.e. fostering the ability to challenge conventional tasks and consider possible innovations. Moreover, it is generally assumed that higher levels of study have a stronger preparatory function for eventually work as academics in higher education and researchers in other institutions. In some countries, some disciplines and some institutions, for example, an academic approach clearly dominates in doctoral training, in others, doctoral training is divided into academic training and professional doctoral training, and in others doctoral training aims at being relevant for subsequent intellectually demanding work both in academia and research as well as other occupational domains.

3.6 Skills and Competences Others than Academic Knowledge and Reasoning

So far, the analysis presented here of the state of knowledge and of the public discussion has put emphasis on the cognitive dimensions of learning and work: knowledge, intellectual understanding and reasoning, utilization of knowledge and rational thinking on the job. Over the years, however, increased attention has been paid on dimensions of work tasks and competences, which reach beyond the cognitive domain, and also activities of higher education institutions increased over time to reinforce a broader spectrum of competences, attitudes and values. Terms employed to characterize this additional spectrum

vary, for example “key competences” or “key skills” – i.e. the terms most widely used to characterize abilities not fostered by a single discipline (see Weinert 2001).

In order to identify such competences, one might start off by analyzing job requirements. For example, the first international comparative graduate survey presented a list of more than 30 job requirements and asked the graduates some years after graduation how much these features were required on their current job and to what extent they have had the respective competences at the time of graduation. Accordingly, more than half of the employed graduates stated deficits as regards planning, coordinating and organizing, negotiating, computer skills, time management, taking responsibilities, decision, and problem-solving ability (Schomburg and Teichler 2006). In an additional analysis, the survey items were grouped into five themes with the help of a factor analysis. Accordingly, graduates felt most strongly prepared regarding “knowledge”. Some deficit was felt on average regarding “methodological skills” and “intelligence”, and notions of deficits most frequently outnumbered notions of “surplus” as regards “socio-communicative skills” and even more regarding “organizational skills” (Kivinen and Nurmi 2007).

The author of this article had summarized this discourse on respective reform needs in higher education as calling for ten key areas of competences in addition to specialized academic and professional knowledge (Teichler 2009):

- general cognitive competences (“generic skills”, broad knowledge, interdisciplinary theories and methods, “learning to learn”, etc.),
- fostering working styles (working under time constraints, perseverance, etc.),
- promoting occupationally-linked values (loyalty, achievement orientation, curiosity, etc.),
- promoting specific professionally-related values (“entrepreneurial spirit”, “service orientation”, etc.),
- transfer competences (from academic to professional work, e.g. “problem-solving ability”),
- socio-communicative skills (“leadership ability”, “team work ability”, “rhetoric”, etc.),
- supplementary knowledge (foreign language proficiency, ICT, management proficiency, etc.),
- international competences (foreign language proficiency, knowledge of other countries, understanding different styles of reasoning, comparative analysis, “intercultural understanding”, coping with unknown persons, fostering “cosmopolitan values”, etc.),
- ability to organize one’s own life, and
- ability to handle the labour market (knowledge about job search and recruitment, ability to present one’s competences, negotiation ability, etc.).

Views vary how much higher education can and should do to foster these competences or to what extent these competences can and should be enhanced through initial professional training, i.e. in the first, second or possibly third year after job start or even later as training and learning on the job (cf. Yoshimoto 2002). Views vary as well about the modes of training and learning during the course of study: Through internships or other ways of practical experience in the course of study, through special courses in higher ed-

education at fostering such competencies, e.g. "learning in projects", or through such competence enhancement within the dominant subject matter-oriented courses.

3.7 Experience of Practice Linked to the Course of Study

Having work experience during the course of study is widely viewed as a mode of learning possibly helpful both to foster knowledge and cognitive competence highly relevant for graduate work and to contribute to the type of competences named above, which stretch beyond the cognitive domain (see the overview in Jung and Lee 2016). Moreover, this early work experience is considered valuable for the students' career choice and eventually for the employers to get acquainted with possible future employees (see Weiss et al. 2014).

Many study programmes include mandatory components of work experience during the course of study - often called "internships", but also in some countries "Praktika", "cooperative education", etc.; some programmes comprise optional solutions. Practices vary as regards the cooperation between higher education institutions and enterprises to shape the character of experience and learning, and as regards the supervision and assessment of these activities. Moreover, higher education institutions often encourage or just cast a favorable eye on other modes of work experience, i.e. gainful work related to study or possible future work (e.g. engineering students earning money through work in the production sector of a car company) or even earning money for unrelated work (e.g. service work in a snack bar or carrying out newspapers).

In the above named comparative survey undertaken in the late 1990s, 55% of former students from German higher education institutions reported that they participated in an internship during the course study; 40% were employed for some time during the course of study in an area related to their field of study or possible work, and 44% were employed in unrelated areas. Former students from the United Kingdom had clearly less often participated in internships (25%) and had less often experienced job-related employment during the course of study (23%), but have more often embarked in jobs not related to their study or future work (65%). Even fewer former students from Italian institutions had participated in internships (7%), and also employment during the course of study was less frequent (22% and 38% respectively) (Schomburg and Teichler 2006).

Efforts of higher education institutions to realize stronger links between learning and practice are not limited to internships and similar arrangements. We note for example activities to strengthen experiences beyond the professional area (e.g. "experiential learning"), the introduction of practical experiences into courses (e.g. "learning in projects"), or the invitation of practitioners to teach individual courses.

In the second international comparative survey project of university graduates from various European countries a detailed multi-variate analysis was undertaken of factors beneficial for graduates' professional work. Accordingly, the links between study and direct work experience seem to be among the most influential factors in promoting professionally relevant competences and "labour market outcomes". The authors, however, noted

that the majority of higher education institutions had remained around the year 2000 relatively conventional with a strong emphasis on lectures and on knowledge acquisition; thus, learning by direct experience was more often initiated by the students themselves than by their institutions (Van der Velden and Allen 2011).

3.8 Graduates' Values and Orientations

The public discussion about actual and desirable links between higher education and the world of work has been strongly affected by economic perspectives: Economists tend to assume that a student and a graduate as a rule is a "homo oeconomicus", whose study and professional behavior is primarily driven by extrinsic motives to reach the highest possible income and status. However, student surveys and graduate surveys show that students' and graduates' motives are quite varied and that the "homo oeconomicus" does not represent the majority. Based on the data of the first international comparative study of universities, undertaken in 1999, six types of "work orientations" were identified (Schomburg 2007):

- 12% were called by the author of this analysis "traditional" or "task-oriented professionals": They appreciate a high degree of work autonomy and like to have complex tasks as well as to have the opportunity of making use on the job of the knowledge, which they had acquired in the course of study. Many of them also consider status attributes are important.
- 18% could be viewed as "new professionals": They have similar work-related motives as the "traditional professionals", but put little emphasis on status attributes, and instead appreciate a "work-life-balance" and more time for leisure activities.
- Only 14% could be named as "career oriented". They appreciate high income and status largely irrespective of the character of work.
- A substantial proportion of graduates (21%) can be characterized as "socially oriented". They want to do something useful for society, and they enjoy job security and well-ordered tasks.
- A fifth group (20%) can be termed "self-development oriented". Their employment and work orientation is similar in various respects to those of "traditional professionals", but they care least about job security, the societal relevance of their work and social communication.
- Finally, 15 percent can be called "non-professionals" They are neither strongly interested in status attributes nor in interesting and challenging work. They also are not highly interested in the societal relevance of their work and in social communication.

This variety of students' and graduates' orientations suggests that study programmes could serve the students and future graduates better, if they were not so much ideologically preoccupied with the graduates' employment success. A greater variety of curricular profiles or care about a greater student variety within a single programme could not only serve the students' orientations in a better way, but certainly would lead to a more productive relationship between higher education and the work of work, because the number of graduates would grow, who would be helped to make the best out of themselves.

4 Changes of Discourses and Strategies

4.1 Major Changes Over Time

The relationships between higher education and the world of work became a key issue of higher education policy in the economically advanced countries already more than five decades ago – already at a time when enrolment rates in most of these countries were still so small that not yet pressures existed to move towards “mass higher education” according to Trow’s widely known concept. In the early years of this debate conviction was widespread in many countries that a high academic quality as a rule will turn out to be professional valuable for graduates. A high reputation of the university was expected to help their students to get favorable employment, and emphasis placed on academic theories, methods and knowledge in many fields of study should ensure the transition to a demanding job, where professional training and self-learning might follow on the job. In reverse, the assumption prevailed that more direct professional training in higher education in select fields of study, such as medicine, was compatible with a demanding introduction into the respective academic theories, methods and knowledge area. This view, however, did not prevail in all countries. It is often pointed out that higher education in France was distinct: The most highly reputed institutions of higher education, i.e. the *Grandes écoles*”, had a very strong professional emphasis – stronger than the universities.

In the subsequent decades characterized by processes of expansion and diversification of higher education, we continue to observe across countries in the most prestigious sectors of the higher education system a strong belief that the academic quality and reputation of an institution or of a study programme are highly influential for graduate employment. Also, the above named second comparative survey of graduates from institutions of higher education shows that graduates of many fields of study from most highly reputed universities in the early years of the 21st century consider the academic thrust of their study programme and the academic reputation of their institution as more powerful factors for their employment than any measures of fostering professional competences in a more targeted way (Allen and van der Velden 2011).

But conviction spread concurrently that a stronger explicit professional emphasis was appropriate in the expanding and newly emerging sectors of higher education. Various European countries opted between the 1960s and the 1990s for a higher education system characterized by two major institutional types (occasionally called a “binary system” or a “two-type system”). The second type, e.g. “*Fachhochschulen*” in the German-speaking countries, had only a limited research function and pursued an “applied” and “vocational” educational thrust. This was for instance underscored in Germany by the provision that students already had vocational training and possibly vocational experience prior to study, that long mandatory internship periods were embedded into the study programmes, and that only those persons could be appointed as professors at these insti-

tutions who had previously worked for some years outside academia in a professional area related to the substance of the respective study programme. In other countries, the curricular philosophy was not that clearly distinct according to type of institution and study programmes, but the overall proportion of study programmes with a “vocational” emphasis often increased as well in the process of higher education expansion (see Teichler 1988).

A stronger concern about the professional relevance of curricula, teaching and learning in higher education, however, did not remain limited to select sectors of higher education. In various economic countries, a call spread that more or less all higher education institutions and programmes should take more strongly into consideration their students’ future employment as work as well as possibly other life spheres. Various considerations came into play. In the 1960s, the student protest in various economically advanced countries called upon the institutions of higher education to be less “ivory-tower oriented” and to take more strongly into consideration their responsibility for society. In the process of expansion, growing financial pressures, often underscored in the 1970s and 1980s, suggested higher education to be more efficient and effective and thus consider their outcomes, among other graduate employment and work; this was accompanied by a growth of evaluation, accreditation and other assessment mechanisms. From the 1990s onwards, policies spread to push institutions of higher education to contribute in a more targeted manner to the emerging “knowledge society” and “knowledge economy” and, as some observers point out, to become more “utilitarian” (see Teichler and Kehm 1995).

Moreover, a clear-cut divide between higher education sectors did not turn out to be fully stable. On the one hand, non-university higher education institutions aimed for a higher status by partly keeping their major thrusts and partly adapt step-wise to the thrusts of universities – a phenomenon called “academic drift” (Neave 1979). This also explains that many institutions of higher education in Europe not officially called universities liked to name themselves “universities of applied sciences” (Taylor et al. 2008). In reverse, many universities supplemented their traditional profile by components of a more direct professional emphasis – i.e. a “vocational drift” (Williams 1985).

These changing expectations or pressures as regards the character and impact of study programmes did not lead necessarily to the conviction that higher education would serve graduates employment and work in the best possible way, if they strive for a very close substantive “match” between study and subsequent work (see Teichler 1999). Various practical reasons called for caution in this respect.

- It is difficult to identify the requirements of the world of work; for example, employers’ views are by no means a perfect information base.
- Additionally, there is a planning gap, because recent information on demands of the world of work might lead to a respective change of the profile of graduates’ competences only ten or more years later.
- Moreover, the occupational system has become increasingly dynamic; as a consequence, graduates have to expect more often changes of their jobs, their employers

and work tasks in the course of their life, which might not be served well through highly specialized study programmes.

- This growing dynamic has not challenged the tradition that pre-career higher education is expected to lay the foundation for work a single or a relatively small range of occupations: Continuous education of graduates, as a rule, only serves moderate adaptations and updating of the graduates' competences.
- Finally, the view spread that higher education should not concentrate as much as in the past on the formation of knowledge and skills, but rather develop a broader scope of competences as possible contributions to "human resource development".

4.2 The Call for "Employability"

Since about the beginning of the 21st century, a call for so-called "employability" spread in higher education policy debates notably in European countries. This slogan usually is employed in calls for a closer functional link of higher education to the presumed demands of the employment system (see the discussion in Harvey 2000; Yorke 2004, 2007; Vukasovic 2007; Teichler 2009, chapter 20; Teichler 2016).

After some years of heated discussions, the European Commission (2015) presented a definition of the "employability": "A combination of knowledge, competences and personal attributes that make graduates more likely to gain employment and progress during their career".

As already pointed out, such a closer functional link has been already called for some decades earlier. For instance, the German Framework Act for Higher Education, enacted in 1976, had called for a professional emphasis for all higher education (see Peisert and Framhein 1994). Accordingly, all types of institutions and all fields of study were called to consider their de facto preparatory function for the world of work, but it was taken for granted that the consequences of these considerations for the character of the study programmes could vary widely by discipline.

This also reflects the fact that higher education can only prepare students as regards the substance of learning and the substance future work; this might be rewarded or not rewarded by employers through mechanisms of "employment", i.e. employment instead of unemployment, relatively high status and income, job security, and employment benefits such as holidays, sickness leave, pension, etc. The term "employability", in contrast, is often understood as turning attention within higher education away from areas of knowledge, competences and work, which might be viewed as demanding, interesting and valuable for the society as a whole, but rather as focusing on any features, which are likely to lead to the highest possible success of employment rewards in terms of getting a job, a high position and a high income. Additionally, proponents of "employability" often call upon higher education to be strongly active in the process of transition to employment through assistance in the process of job recruitment and job search. For example, the European Commission (2015) suggests in the above named text to consider a high

employment rate of graduates a few years after graduation as the major indicator of “employability”.

In the course of the controversial discourse on “employability” two different interpretations of the term emerged:

- On the one hand, the term is used to advocate indeed that institutions of higher education should gear their curricula, teaching and learning strongly according to the expected employment success. This is hailed by its proponents, but criticized by many representatives of higher education as a call for subordination of learning in higher education to the employers wishes, to utilitarian politics and to short-term visible job requirements at the expense of broader understanding of the societal role of higher education, of a critical-reflective function of higher education, and of preparation for unpredictable work tasks and for innovation.
- On the other hand, the term “employability” is occasionally used quite softly, i.e. for just calling the institutions of higher education to reflect their impact on the future graduate work and choose a linkage, which they consider suitable and being a responsible option.

One should take into consideration that the use of the term “employability” varies between European countries. For example, the author of this article analyzed the use of the term in journals specialized on higher education (either purely academic journal or predominantly academic journals including texts written by other experts). Accordingly, the British journal *Research into Higher Education Abstracts (RHEA)* was screened. Among the documented titles and abstracts of about 4000 journal articles on higher education published in the English language between the years 2007 and 2014, of which about 30% were written by British authors and 70% by authors from other countries, the term “employability” actually was used in the headlines and/or abstracts of only one per cent of the articles, whereas other terms - such as “career competences”, “employment selection criteria” or “career mentoring” - were employed more frequently. Altogether, the term “employability” was employed by British authors seven times as frequently as by non-British authors (see Teichler 2016). Indeed, one might argue that a call for a more utilitarian approach of higher education and a call for a stronger specialization in higher education seems to play a strong role in the United Kingdom - a country where notably the most prestigious universities in the past had called for a strong academic approach, for a breadth of knowledge and for the socialisation of “gentlemen”. In Germany, in contrast, the “employability” discourse had its most visible effect in the agreement reached in 2003 that bachelor programmes, newly introduced at that time in Germany and some other European countries in the course of the so-called “Bologna Process”, should reserve one tenth of the courses for fostering “key skills”, i.e. competences neither closely linked to academic disciplines nor to specialized professional training, for example socio-communicative competences or problem-solving abilities.

In sum, the widespread use of the term “employability” in recent years suggests that pressures have grown across countries upon higher education to pursue adaptive or even opportunistic strategies in tune with dominant economic and social trends and policies.

But higher education by no means yields consistently to these pressures. In most countries, rather a climate of compromise and plurality persists, which provides ample room for individual institutions of higher education, departments, units of teaching and research, individual scholars and the students themselves to reflect different possible linkages between higher education and the world of work and to opt for different approaches with different views of the needs of society, the responsibility of higher education and the best ways of contributing to creative solutions.

5 Graduate Surveys – Approaches and Functions

5.1 Increasing Popularity of Graduate Surveys

Efforts to make higher education more valuable for the graduates' employment and work are based on assumptions that various quantitative, structural, organizational, curricular and didactic features of higher education have potentially a substantial impact on the students' development of competences and on their employment and work subsequent to graduation. In the past, however, attention had been paid primarily on input to higher education and on processes within higher education, while systematic knowledge as regards output and outcome had remained fairly limited and had not drawn much attention. Over the years, though, impact of higher education was taken more seriously, and a broad range of different surveys of graduates from institutions of higher education developed aiming at providing a valuable feedback to higher education (see Paul et al. 2000; Weerts and Vidal 2005; Teichler 2009; Schomburg 2016).

Analyses of higher education and graduate employment in the 1950s and 1960s could draw only from limited resources. For example, most analyses of graduate income drew from labour statistics: They helped to identify income differences within the labor force in various economic sectors, occupational groups and possibly age groups according to the level of educational attainment (see for example various contributions in Carnoy 1994). These sources of information often provided general overviews on the professional value of higher education in general, but not on various features of higher education possibly relevant for employment and work.

In Japan, educational statistics already reported since the 1950s the employment status of graduates immediately after graduation. In the United Kingdom, a system of annual large-scale surveying was introduced in the 1950s of the whereabouts of university graduates six months after graduation. Short questionnaires made it possible to see what employment status was reached by all graduates within a few months and how employment vs. unemployment and occupational categories differed by fields of study and by individual universities. Thus, "objective" information was made available on the differences of employment according to some structural features of higher education, but not on the impact study conditions, curricula and modes of teaching and learning. Moreover,

these surveys did not show the transition of those, who did not start to work quickly after graduation.

More complex graduate surveys – thus a second stage of the development of graduate surveys - started to spread only since the 1970s. Every few years, representative sample surveys of graduates are undertaken in the U. S., Germany and Norway since about the 1970s and subsequently in many other countries. Interest in more detailed information grew because a need for higher education reforms was increasingly felt and national graduate surveys were appreciated as specifying problems possibly to be redressed. Over the years, interest in such studies increased further, because higher education systems and consequently graduate employment patterns became more diverse. Moreover, “output awareness” and “outcome awareness” grew along the introduction or extension of various assessment and evaluation activities in higher education. In recent years, discourses about “knowledge society”, “employability” and “evidence-based policy” additionally underscored the value of graduate surveys.

Such elaborate graduate surveys tend to address a broader range of themes (see Schomburg 2016), notably

- socio-biographic background and educational paths prior to study,
- course of study (field, timing, duration, degree, etc.),
- retrospective perception of study conditions and provisions,
- retrospectively reported students’ orientations and study behaviour,
- perceived competences at the time of graduation or later,
- transition processes to employment,
- perceived employment and work situation,
- perceived substantive links between study and work,
- job satisfaction, future prospects, etc.

Many national graduate surveys are undertaken one or two years after graduation. They provide a more complete picture of the transition and early employment and work than inquiries undertaken directly or a few months after graduation, but concurrently they can provide a feedback to higher education not too far distant from the actual events. In various instances, a second follow-up study is undertaken several years, e.g. five years after graduation, and possibly further ones even later. Thus, information can be provided of some steps of mobility, promotion and change of employment conditions and work tasks. Thereby a “longitudinal” design helps to analyze the extent to which the career start pre-determines further steps or is “corrected” subsequently.

Such surveys can provide a complex picture of employment and work of graduates. They are also suitable to assess the higher education environment as viewed by former students. Most importantly, they provide the opportunity to undertake some kind of causal analysis: Which elements of study provisions and conditions are most influential for graduate employment and work? What is the professional impact of students’ choices and orientations? Do the mechanisms and processes of transition reinforce a close link between study and subsequent employment and work, or do they unfold dynamics of their own?

Around 2000, efforts succeeded to conduct international comparative graduate surveys. This might be called the third stage of the development of graduate surveys. The first project was named CHEERS (acronym for "Careers after Higher Education – a European Research Survey"). The survey, conducted in 1999, addressed a representative sample of persons having graduated in 1995, i.e. three to four years earlier, on bachelor or master level in eleven European countries and Japan (Schomburg and Teichler 2006; Teichler 2007a). The second project was named REFLEX (acronym for "Research into Employment and Professional Flexibility"). The survey, conducted in 2005, addressed graduates five years after graduation in 13 European countries and Japan (Allen and van der Velden 2011; cf. also Kivinen and Nurmi 2014). Both surveys were supported by research grants of the European Commission and additionally by the Japan Institute of Labour and some other national agencies. Both comparative surveys were eye-opening in showing enormous differences between countries – for example according to competences fostered by higher education, modes of search and recruitment as well as problems faced in the transition to employment, early careers, factors of study conditions and provisions highly relevant for employment and work, and finally the graduates' notions of a satisfying link between higher education and the world of work.

Even though these comparative studies got widely known and were highly respected, only a few international comparative surveys on a smaller scale followed (see for example Grotkowska et al. 2012); no regular system of international comparative surveys emerged. However, the comparative surveys have stimulated a growth of national surveys and their greater thematic and methodological similarity. For example, scholars interested in analyzing the effect of the introduction of a similar degree structure in Europe in the course of the Bologna Process, could take advantage of such trends: In 2010, they invited scholars from 10 European countries to undertake a secondary analysis of national survey data according to a common framework (Schomburg and Teichler 2011). Thus, various features of graduate employment could be analyzed comparatively almost as well as if a comparative graduate survey had been undertaken.

Finally, individual institutions of higher education got interested in getting in-depth information about their own former students' employment and work. This fourth wave of graduate surveys became pronounced in various European countries since the beginning of 21st century. In the U.S., however, many institutions had undertaken or had commissioned such studies already since the 1970s; most of these studies, however, did not become widely known, because many institutions of higher education preferred to keep the results confidentially.

5.2 Collaborative Surveys of Surveys of Graduates from Individual Institutions of Higher Education

Many individual higher education institutions or individual departments all over the world embark on graduate surveys. Some have done it already for a long time, whereas many

institutions have recently started such activities. Often, such surveys are prepared and conducted individually by the respective institutions. This certainly helps to put a strong emphasis on the characteristics of the study conditions and provision at the respective institution and possibly the problems of graduate employment and work most strongly felt before embarking on such a study. But in many cases, potentials are lacking at single institutions to undertake a qualitatively demanding graduate surveys. Moreover, such individual surveys do not provide any possibility of "benchmarking", i.e. assessing the degree of success and failure in comparison with other "comparable" higher education institutions.

Collaborative surveys addressing employment and work of graduates from various individual institutions of higher education provide an opportunity to ensure targeted feedback to the individual institution, to lay the foundation for inter-institutional comparisons and to safeguard a high quality of graduate surveys. Thus, international, national and regional initiatives spread in recent years to stimulate, coordinate and conduct graduate surveys aimed at providing feedback for individual institutions, departments and study programmes (e.g. Muehleck 2012). Two of such multi-institutional survey programmes in Europe became widely known internationally: The Italian AlmaLaurea project and the German KOAB project.

The AlmaLaurea (AL) project was initiated in 1993 by the Statistical Observatory of the Bologna University and was transformed in 2000 into an Inter-University Consortium. The research team at the University of Bologna centrally undertakes two types of surveys: First, annual surveys of students in their final year of study, called "graduate profile surveys", in order to describe the performance and characteristics of the "human capital produced by the universities". Second, graduate surveys undertaken one, three and five years after graduation to monitor their career. The survey system of AlmaLaurea is combined with a job placement system: Students surveyed can provide their CV which might be handed over possibly to employers interested in graduates with certain profiles. This link between surveying and placement service helps reaching response rates of about 90% of the students asked to participate in the final-year survey. The majority of Italian universities are involved in this project, and the funding for a relatively large project team and all related activities is shared by the Ministry of Education, the participating universities and interested companies (Cammelli et al. 2011).

The KOAB project ("Kooperationsprojekt Absolventenstudien" - cooperation project graduate surveys) was initiated at a national conference in Germany in 2004 with representatives from German higher education institutions interested in establishing graduate surveys or already underway in surveying graduates from their respective institutions. A network was established of individual and institutional members, which coordinates a master survey and the data processing as well as provides seminars for training and exchange of information. This led in 2007 to a partly decentralized system of surveying: Individual institutions might fully accept the master questionnaire or modify it according to their priorities; they might manage the process of surveying themselves or leave it to the coordinating research centre, and they might undertake the data analyses themselves

or commission the coordinating centre to do it. The participating institutions receive their own data as well as anonymous benchmark data (for example employment and work of their graduates in physics as compared to physics graduates from institution A, B, C. etc., and from all institutions of higher education participating in the network) (see Schomburg 2012). - The strong involvement of individual institutions, among others, helps to raise the graduates' willingness to respond: The average response rate of about 50% is higher than in the case of nationally representative student surveys or graduate surveys undertaken in Germany.

More than 100 institutions of higher education in Germany participate in the survey of graduates one to two years after graduation, and some institutions in additional surveys, i.e. on drop-out students, bachelor and master graduates five years after graduation, and recent doctor award holders. The International Centre for Higher Education Research of the University of Kassel (INCHER-Kassel) initiated the network and the various surveys. The project is funded by moderate contributions of the participating higher education institutions and during the initial years also by the resources of the coordinating centre and by subsidies of the Federal Ministry of Education and Research. Recently, the coordination of surveys was outsourced to ISTAT ("Institut für angewandte Statistik" - institute for applied statistics) - an institute especially founded for that purpose of managing the network, the surveys and the data analyses, while INCHER-Kassel remains involved in nation-wide analyses of graduate employment and work thereby using KOAB data and other data. In addition, the coordinators of KOAB were active in advising representatives from dozens of other countries willing to embark on or improving graduate surveys in their respective countries and also to formulate respective guidelines, master questionnaires and other relevant texts (see notably Schomburg 2016).

5.3 Utilisation of the Knowledge Provided by Graduate Surveys

Complex graduate surveys can provide very useful information for actors: Employers, politicians, representatives of higher education institutions, scholars involved in research on higher education and the world of work, etc. Notably, surveys focusing on graduates from individual institutions of higher education, departments and study programmes are of interest for leaders and managerial staff of the higher education institutions, deans, professors, students and graduates themselves.

A research project undertaken in Germany on the utilisation of the results of surveys within higher education institutions (Janson 2014) shows, that the wealth of information is often under-utilized. For example, most actors within the institutions of higher education are not really prepared to "read" the results of complex graduate surveys. Institutions are often hesitant to employ one or two full-time persons to coordinate such a survey and to disseminate the results appropriately. Many academics harbour suspicion that such surveys are initiated only for the purpose of gearing study programmes closely to the demands of the employment system. Some actors look at the available data only from

the selective point of view, whether they support their own philosophy of the tasks and functions of higher education.

Altogether, a sophisticated analysis of the results of graduate surveys can make the various actors aware that a very complex system operates in shaping the students' competences. Also, evidence is provided that most elements in higher education believed to be relevant for graduate employment and work have not such a strong impact each, as conventional wisdom suggests. Finally, intensive communication about the results of graduate surveys certainly will reinforce the notion that institutions of higher education have a broad range of strategic options vis-à-vis the world of work.

As a consequence, institutions of higher education are certainly advised to undertake graduate surveys. Such surveys provide the most valuable feedback, if they collect quite a comprehensive set of information on the former students' biography, experiences of study conditions and study provisions, their study behaviour and professional orientations, graduation and perceived competences at that time, transition to employment and details of employment and work. Such surveys are likely to be qualitatively enhanced, if they are undertaken in a network, which ensures quality and a common core of questions with institutions, but also leaves room for specific accents of the individual institution of higher education. In order to analyse the findings and draw possible conclusions, it is helpful to have professional knowledge, e.g. one or more than one expert allocated to quality management, or to service for teaching and learning, to career service, who are in charge of coordinating such surveys, to analyse the findings and to contribute to the managers' and professors' reflections of the findings.

6 Conclusion

Over a period of more than five decades, we observe a growing interest in higher education across economically advanced countries in getting informed about graduate employment and increasing discussions what conclusions could be drawn from that information. A close look at this increasing gathering of information and at the reflection of its value for possible improvement of higher education leads to two overarching notions. First, the relationships between higher education and the world of work as well as the policies and strategies to shape these relationships differ substantially among economically advanced countries. Widespread claims of common features and common trends turn out to be exaggerations which neglect the findings of in-depth analyses. Second, there is a common trend toward growing insight of the complexity of the relationships between higher education and the world of work. Nowadays, we are not satisfied anymore to look only at the links between a few structural elements of higher education and a few indicators of employment success. We know, for example, that the environment of study provisions and conditions might be relevant as well as the students' orientations and their actual study behaviour. We know that there might be specific dynamics in the process of transition from higher education to employment. We are aware of the fact that competences are

required on the job, which stretch far beyond the typical areas of knowledge addressed in study programmes. And we cannot overlook anymore that the expansion of higher education was accompanied by increasing diversity not only in the conditions of study and the whereabouts of graduates, but also of the impact of higher education and graduate employment and work.

The higher education policy arena – internationally, nationally, within disciplines, within individual higher education institutions, etc. – is characterized by campaigns of discourses and reform efforts. Over the years, we noted campaigns to expand higher education in order to stimulate economic growth, to restrict expansion trends in order to avoid “over-education” and “mismatch” between demand and supply on the labour market, to diversify higher education in order to meet diversifying needs of the growing labour market for graduates. In recent years, we often heard voices using the terms “knowledge economy” or “employability” calling upon higher education to gear the fostering of the students’ competences in a more adaptive and utilitarian way for the presumed dominant demands of the world of work.

These campaigns are certainly helpful to call upon higher education institutions and academics to reflect more intensively and comprehensively the possible impact of higher education upon graduate employment and work. However, these campaigns are often simplistic. They exaggerate the possible effects of certain measures, they present an inappropriate view of the diverse functions of higher education, and they often want to “sell” certain political and economic developments as desirable or at least most likely and possibly unavoidable.

Those responsible within higher education institutions – the leaders, administrators and academics – should not yield to these political campaigns:

- They should be aware, first, of the functional complexity of higher education: Higher education prepares for the predominant developments in the world of work, but higher education often turns out to be creative for technology, economy, society and culture, if it does not want to be just useful for the presumed dominant “demands”, but if it provides room for varied academic approaches, if it trains students to be sceptical and critical to conventional wisdom, and if it prepares students to find their ways proactively for indeterminate future tasks.
- Second, the key actors should take note of the variety of links between higher education and the world of work which can be found in different sectors of higher education and different sectors of the world in a single country and of the variety across countries
- Third, those responsible in higher education have to rethink their beliefs what they actually do and what they can do as regards graduate employment and work. In-depth information is a shock for conventional wisdom. While conventional wisdom is based on the belief that certain single measures (e.g. quality improvement or research, or internships within study programmes, etc.) have an enormous impact on graduate employment and work in-depth information shows that many factors are in play, but that the success of graduates might depend only by one per cent on a single

factor. Universities have to find plausible rationales under conditions of super-complexity.

- Key actors should be aware of a trend contrasting the claims of most campaigns, i.e. a trend towards an increasing variety of the profiles of the individual institutions of higher education. This trend is reflected in the growing interest of the individual institutions of higher education in recent years of surveying the links between study and graduate employment and career of their own former students.

It remains the responsibility of the key actors in the individual institutions of higher education and in the individual departments to decide, whether they want to ignore the dominant signals of the world of work, whether they opt for clear dominance of intra-academic objectives, whether they want to subordinate study programmes to the highest possible employment success in the current political and socio-economic environment, whether they want to imitate higher education institutions with highest reputation, whether they want to prepare their students for varied options, whether they expect their institution and study programme to play a pro-active and innovative role vis-à-vis the current mainstream, etc. A solid information base on graduate employment and work helps to make strategies in higher education more rational and targeted, but this information base does not call for single philosophies of the tasks and functions of higher education, but rather makes us aware of the variety of options, among which the individual institutions and programmes can choose.

7 Literature

Allen, Jim, and Rolf van der Velden. (2007). "Transitions from Higher Education to Work." In *Careers of University Graduates*, edited by Ulrich Teichler, pp. 55-78. Dordrecht: Springer.

Allen, Jim, and Rolf van der Velden, eds. (2011). *The Flexible Professional in the Knowledge Society: New Challenges for Higher Education*. Dordrecht: Springer.

Amano, Ikuo (1990). *Examinations*. Tokyo: Tokyo University Press.

Arimoto, Akira (2014). "The Teaching and the Research Nexus in the Third Wave Age." In *Teaching and Research in Contemporary Higher Education Systems: Activities and Rewards*, edited by Jung Cheol Shin, Akira Arimoto, Willam K. Cummings, and Ulrich Teichler, pp. 15-33. Dordrecht: Springer.

Ben-David, Joseph (1997). *Centers of Learning: Britain, France, Germany, United States*. New York: Mac-Graw-Hill.

Bennet, Neville, Elisabeth Dunne, and Clive Carré (2000). *Skills Development in Higher Education and Employment*. Buckingham: Society for Research into Higher Education & Open University Press.

Brennan, John, Maurice Kogan, and Ulrich Teichler (1995). "Higher Education and Work: A Conceptual Framework." In *Higher Education and Work*, edited by John Brennan, Maurice Kogan, and Ulrich Teichler, pp. 1-24. London and Bristol, PA: Jessica Kingsley.

Brennan, John, and Rajani Naidoo (2008). "Higher Education and the Achievement of (and/or) Prevention of Equity and Social Justice." *Higher Education*, 56 (3), 287-302.

Brunello, Giorgio, and Simona Comi (2004). "Education and Earnings Growth: Evidence from 11 European Countries." *Economics of Education Review*, 23 (1), 75-83.

Büchel, Felix, Andries de Griep, and Antje Martens, eds. (2003). *Overeducation in Europe: Current Issues in Theory and Policy*. Cheltenham, MA: Edward Elgar.

Cammelli, Andrea, Gilberto Antonelli, Angelo di Francia, and Matteo Sgarzi (2011). "AlmaLaurea Inter-University Consortium: Connecting Universities Effectively with Labour Markets and Professionals." In *Employability in Higher Education*, pp. 77-96. Berlin: Raabe (Best of Bologna Handbook, Volume 10).

Carnoy, Martin, ed. (1994). *Economics of Education: Research and Studies*. Oxford: Pergamon Press.

CEDEFOP (European Centre for the Development of Vocational Training) (2009). *Future Skill Supply in Europe: Medium-Term Forecast up to 2020 – Synthesis Report*. Tesseloniki: CEDEFOP.

Center for Higher Education Policy Studies, International Centre for Higher Education Research and ECOTEC (2010). *The First Decade of Working on the European Higher Education Area: The Bologna Process Independent Assessment. Volume 1*. Enschede: Twente University, CHEPS.

Chan, Sheng-Ju, and Chi-Hua Yang (2015). "The Employment of the College Graduate: Changing Wages in Mass Higher Education." In *Mass Higher Education Development in East Asia*, edited by Jung Cheol Shin, Gerard Postiglione, and Futao Huang, pp. 289-306. Cham: Springer.

Dore, Ronald (1976). *The Diploma Disease*. London: Allen and Unwin.

EACEA (Education, Audiovisual and Culture Executive Agency) (2015). *Bologna Process Implementation Report*. Luxembourg: Publications Office of the European Union.

European Commission (2015). *Modernisation of Higher Education in Europe: Access, Retention and Employability 2014*. Brussels: EACEA (Eurydice Brief).

Galtung, Johan (1971). "Social Structure, Education Structure and Life Long Education: The Case of Japan." In *Reviews of National Policies for Education: Japan*, edited by OECD, pp. 131-152. Paris: OECD.

Gellert, Claudius, ed. (1995). *Diversification of European Systems of Higher Education*. Frankfurt a. M.: Peter Lang-Grotkowska, Gabriela, Leszek Wincenciak, and Tomasz Gajderowicz (2012). "Determinants of Graduates' Labour Market Success across Domains: A Comparative Analysis." In *Employability of Graduates and Higher Education Management Systems: Final Report of the DEHEMS Project*, edited by Mateja Melink, and Samo Pavlin, pp. 65-87. Ljubljana: University of Ljubljana, Faculty of Social Sciences.

Grotkowska, Gabriela, Leszek Wincenciak, and Tomasz Gajderowicz (2012). "Determinants of Graduates' Labour Market Success across Domains: A Comparative Analysis." In *Employability of Graduates and Higher Education Management Systems: Final Report of the DEHEMS Project*, edited by Mateja Melink, and Samo Pavlin, pp. 65-87. Ljubljana: University of Ljubljana, Faculty of Social Sciences.

Hanushek, Eric, and Ludger Woessmann, eds. (2011). *Handbook of Economics of Education*. Amsterdam: North Holland.

Haryey, Lee (2000). "New Realities: The Relationships between Higher Education and Employment." *Tertiary Education and Management*, 6 (1), 3-17.

Hauschildt, Kristina, Christoph Gwosc, Nikoiai Netz, and Shweta Mishra (2015). *Social and Economic Conditions of Student Life in Europe*. Bielefeld: W. Bertelsmann.

Hauschildt, Kristina, Christoph Gwosc, Nikoiai Netz, and Shweta Mishra (2015). *Social and Economic Conditions of Student Life in Europe*. Bielefeld: W. Bertelsmann.

Huisman, Jeroen (1998). "Differentiation and Diversity in Higher Education: A Theoretical and Empirical Analysis." In *Higher Education: Handbook of Theory and Research. Vol. XIII*, edited by John C. Smart, pp. 75-110. New York: Agathon Press.

Jablonska-Skinder, Hanna, and Ulrich Teichler (1992). *Handbook of Higher Education Diplomas in Europe*. Munich: Saur.

Janson, Kerstin (2014). *Absolventenstudien: Ihre Bedeutung für die Hochschulentwicklung (Graduate Surveys: Their Relevance for the Development of Higher Education)*. Münster: Waxmann.

Janson, Kerstin, Harald Schomburg, and Ulrich Teichler (2009). *The Professional Value of ERASMUS Mobility*. Bonn: Lemmens.

Janson, Kerstin, Harald Schomburg, and Ulrich Teichler (2009). *The Professional Value of ERASMUS Mobility*. Bonn: Lemmens.

Jung, Jisun, and Soo Jeung Lee (2016). "Impact of Internship on Job Performance among University Graduates in South Korea." *International Journal of Chinese Education*, 5 (2), 250-284.

Kariya, Takehiko (2011). „Credential Inflation and Employment in Universal Higher Education: Enrolment, Expansion and (In)equity via Privatisation in Japan." *Journal of Education and Work*, 24 (1-2), 69-94.

Kariya, Takehiko (2011). "Credential Inflation and Employment in Universal Higher Education: Enrolment, Expansion and (In)equity via Privatisation in Japan." *Journal of Education and Work*, 24 (1-2), 69-94.

Kehm, Barbara M., and Ulrich Teichler (2016). "Doctoral Education and Labor Market: Policy Questions and Data Needs." In *The Science and Technology Labor Force*, edited by Leonid Gokberg, Natalia Shmatko, and Laudeline Auriol, pp. 11-29. Cham: Springer.

Kelo, Maria, Ulrich Teichler, and Bernd Wächter, eds. (2006). *EURODATA: Student Mobility in European Higher Education*. Bonn: Lemmens.

Kivinen, Osmo, and Jouni Nurmi (2007). "Job Requirements and Competences: Do Qualifications Matter?" In *Careers of University Graduates*, edited by Ulrich Teichler, pp. 131-142. Dordrecht: Springer.

Kivinen, Osmo, and Jouni Nurmi (2014). "Labour Market Relevance of European University Education: From Enrolment to Professional Employment in 12 Countries." *European Journal of Education*, 49 (4), 558-574.

Muehleck, Kai (2012). "On the Tracks of Students and Graduates: Methods and Uses of Tracking Procedures in the European Higher Education Area." In *Higher Education at the Crossroads: Between the Bologna Process and National Reforms*, edited by Adrian Curaj, Peter Scott, Lazăr Vlasceanu, and Lesley Wilson, pp. 223-243. Dordrecht: Springer.

Müller, Walter, and Shavit, Yossi, eds. (1998). *From School to Work: A Comparative Study of Educational Qualifications and Occupational Destinations*. Oxford: Clarendon Press.

Neave, Guy (1979). "Academic Drift: Some Views from Europe." *Studies in Higher Education*, 4 (2), 143-159.

Neave, Guy (1979). "Academic Drift: Some Views from Europe." *Studies in Higher Education*, 4 (2), 143-159.

Neave, Guy (2011). "Patterns." In *A History of the University in Europe. Volume IV: Universities Since 1945*, edited by Walter Rüegg, pp. 31-69. Cambridge: Cambridge University Press.

OECD, ed. (1992). *From Higher Education to Employment*. 4 volumes. Paris: OECD.

OECD (1993). *Transition from Higher Education to Employment: Synthesis Report*. Paris: OECD.

OECD. *Redefining Tertiary Education*, Paris: OECD, 1998.

OECD (2017). *Education at a Glance 2017: OECD Indicators*. Paris: OECD.

Papadopoulos, George S. (1994). *Education 1960-1990: The OECD Perspective*. Paris: OECD.

Pascarella, Ernest T., and Patrick T. Terenzini. (2005). *How College Affects Students: A Third Decade of Research*. San Francisco, CA: Jossey-Bass.

Paul, Jean-Jacques, Ulrich Teichler, and Rolf van der Velden, eds. (2000). "2000 Higher Education and Graduate Employment." *European Journal of Education*, 35 (2), special issue.

Peisert, Hansgert, and Gerhild Framhein (1994). *The Higher Education System in the Federal Republic of Germany*. Bonn: Bundesministerium für Bildung, Wissenschaft, Forschung und Technologie.

Perkin, Harold (1991). "History of Universities." In *International Higher Education: An Encyclopedia*, edited by Philip G. Altbach, pp. 169-204. New York and London: Garland Publishing.

Rothblatt, Sheldon (2011). "Curriculum, Students, Education: Graduation and Careers." In *A History of the University in Europe. Volume IV: Universities Since 1945*, edited by Walter Rüegg, pp. 238-275. Cambridge: Cambridge University Press.

Schomburg, Harald (2007). "Work Orientation and Job Satisfaction." In *Careers of University Graduates: Views and Experiences in Comparative Perspectives*, edited by Ulrich Teichler, pp. 247-264. Dordrecht: Springer, 2007.

Schomburg, Harald (2016). *Carrying Out Tracer Studies: Guide to Anticipating and Matching Skills and Jobs, Volume 6*. Torino: ETF, CEDEFOP and ILO.

Schomburg, Harald, and Ulrich Teichler (1993). "Does the Programme Matter? Approach and Major Findings of the Kassel Graduate Survey." *Higher Education in Europe*, 18 (2), 37-58.

Schomburg, Harald, and Ulrich Teichler (2006). *Higher Education and Graduate Employment in Europe*. Dordrecht: Springer.

Schomburg, Harald, and Ulrich Teichler, eds. (2011). *Employability and Mobility of Bachelor Graduates in Europe*. Rotterdam and Taipei: Sense Publishers.

Shils, Harold (1991). "Academic Freedom." In *International Higher Education: An Encyclopedia*, edited by Philip G. Altbach, pp. 1-22. New York and London: Garland.

Shin, Jung Cheol, Akira Arimoto, Willam K. Cummings, and Ulrich Teichler, eds. (2014). *Teaching and Research in Contemporary Higher Education Systems: Activities and Rewards*. Dordrecht: Springer.

Solmon, Lewis C., and Paul J. Taubman, eds. (1973). *Does College Matter?* New York: Academic Press.

Takeuchi, Yo (1997). "The Self-Activating Entrance Examination Systems – Its Hidden Agenda and Its Correspondence with the Japanese 'Salary Man'." *Higher Education*, 34 (2), 183-198.

Taylor, James S., José Brites Ferreira, Maria de Lourdes Machado, and Rui Santiago, eds. (2008). *Non-University Higher Education in Europe*. Dordrecht: Springer.

Teichler, Ulrich (1988). *Changing Patterns of the Higher Education System: The Experiences of Three Decades*. London and Bristol, PA: Jessica Kingsley Publishers.

Teichler, Ulrich (1999). "Higher Education Policy and the World of Work: Changing Conditions and Challenges." *Higher Education Policy*, 12 (4), 285-312.

Teichler, Ulrich, ed. (2007a). *Careers of University Graduates: Views and Experiences in Comparative Perspective*. Dordrecht: Springer.

Teichler, Ulrich (2007b). "Does Higher Education Matter? Lessons from a Comparative Graduate Survey." *European Journal of Education*, 42 (1), 11-34.

Teichler, Ulrich (2008). "Diversification? Trends and Explanations of the Shape and Size of Higher Education." *Higher Education*, 56 (3), 349-379.

Teichler, Ulrich (2009). *Higher Education and the World of Work: Conceptual Frameworks, Comparative Perspectives, Empirical Findings*. Rotterdam and Taipei: Sense Publishers.

Teichler, Ulrich (2011a). "Graduation and Careers." In *A History of the University in Europe. Volume IV: Universities since 1945*, edited by Walter Rüegg, pp. 319-368. Cambridge: Cambridge University Press.

Teichler, Ulrich (2011a). "Graduation and Careers." In *A History of the University in Europe. Volume IV: Universities since 1945*, edited by Walter Rüegg, pp. 319-368. Cambridge: Cambridge University Press.

Teichler, Ulrich (2011b). "International Dimensions of Higher Education and Graduate Employment." In *The Flexible Professional in the Knowledge Society*, edited by Jim Allen, and Rolf van der Velden, pp. 177-197. Dordrecht: Springer.

Teichler, Ulrich (2014a). "Higher Education and the Future Social Order: Equality of Opportunity, Quality, Competitiveness?" In *The Future of the Post-Massified University at the Crossroads*, edited by Jung Cheol Shin, and Ulrich Teichler, pp. 183-203. Dordrecht: Springer.

Teichler, Ulrich (2014b). *Màixiàng Jiàoyù Gāodù Fādá de Shèhuì (Towards the Highly Educated Society)*. Beijing: Science Press.

Teichler, Ulrich (2015). "Higher Education and the World of Work: A Perennial Controversial Debate." In *Mass Higher Education Development in East Asia*, edited by Jung Cheol Shin, Gerard Postiglione, and Futao Huang, pp. 269-288. Cham: Springer.

Teichler, Ulrich (2016). "The Professional Relevance of Study." *International Journal of Chinese Education*, 5 (2), 135-161.

Teichler, Ulrich (2017a). "Higher Education System: Differentiation, Horizontal and Vertical." In *Encyclopedia of International Higher Education Systems and Institutions*, edited by Jung Cheol Shin, and Pedro Teixeira. Dordrecht: Springer (doi 10.1007/978-94-017-9553-1 36-1).

Teichler, Ulrich (2017b). "Internationalisation Trends in Higher Education and the Role of International Student Mobility". *Journal of International Mobility*, 5, 177-216.

Teichler, Ulrich (2018). *Gāodēngjàoyù yú Láodònglì Shìchāng* (Higher Education and the World of Work). Beijing: Science Press.

Teichler, Ulrich, and Sandra Bürger (2008). "Student Enrolments and Graduation Trends in the OECD Area: What Can We Learn from International Statistics? In *Higher Education to 2030, Volume 1: Demography*, edited by OECD, Centre for Education Research and Innovation, pp. 151-172. Paris: OECD-Teichler, Ulrich, Dirk Hartung, and Reinhard Nuthmann (1980). *Higher Education and the Needs of Society*. Windsor: NFER Publishing Company.

Teichler, Ulrich, Dirk Hartung, and Reinhard Nuthmann (1980). *Higher Education and the Needs of Society*. Windsor: NFER Publishing Company.

Teichler, Ulrich, and Barbara M. Kehm (1995). "Towards a New Understanding of the Relationships Between Higher Education and Employment." *European Journal of Education*, 30 (2), 115-132.

Teichler, Ulrich, and Friedhelm Maiworm (1997). *The ERASMUS Experience: Major Findings of the ERASMUS Evaluation Research Project*. Luxemburg: Office for Official Publications of the European Communities.

Trow, Martin (1974). "Problems in the Transition from Elite to Mass Higher Education." In *Policies for Higher Education*, edited by OECD, pp. 51-101. Paris: OECD.

Trow, Martin (2010). *Twentieth-Century Higher Education*. Baltimore, ed. by Michael Burrage, MD: Johns Hopkins University Press.

Van der Velden, Rolf, and Jim Allen. (2011) "The Flexible Professional in the Knowledge Society: Required Competences and the Role of Higher Education." In *The Flexible Professional in the Knowledge Society: New Challenges for Higher Education*, edited by Jim Allen, and Rolf van der Velden, pp. 15-53. Dordrecht: Springer.

Vukasovic, Martina (2007). "Deconstructing and Reconstructing Employability". In *EUA Bologna Handbook: Making Bologna Work*, edited by Eric Fromment, Jürgen Kohler, Lewis Purser, and Lesley Wilson, part 1.4-2. Berlin: Raabe.

Wächter, Bernd (2006). "Brain Drain: What We Know and What We Do not Know." In *The Formative Years of Scholars*, edited by Ulrich Teichler, pp. 51-66. London: Portland.

Wächter, Bernd (2008). "Mobility and Internationalisation in the European Higher Education Area." In *Beyond 2010: Priorities and Challenges for Higher Education in the Next Decade*, edited by Maria Kelo, pp. 13-42. Bonn: Lemmens.

Weerts, David J., and Javier Vidal, eds. (2005) *Enhancing Alumni Research: European and American Perspectives*. San Francisco, CA: Jossey Bass (New Directions for Institutional Research, Vol. 126).

Weinert, Franz E. (2001). "Competencies and Key Competencies: Educational Perspective." In *International Encyclopedia of the Social and Behavioral Sciences*, edited by Neil J. Smelser, and Paul B. Baltes, pp. 2433-2436. Amsterdam: Elsevier.

Weiss, Felix, Markus Klein, and Thomas Grauenhorst (2014). „The Effects of Work Experience During Higher Education on Labour Market Entry: Learning by Doing or an Entry Ticket.“ *Work, Employment and Society*, 28 (5), 788-807.

Wiers-Jenssen, Janneke, (2011). "Background and Employability of Mobile vs. Non-Mobile Students." *Tertiary Education and Management*, 17 (1), 79-100.

Williams, Gareth (1985). "Graduate Employment and Vocationalisation in Higher Education." *European Journal of Education*, 20 (2-3), 181-192.

Yorke, Mantz (2004). "Employability in the Undergraduate Curriculum." *European Journal of Education*, 39 (4), 409-427.

Yorke, Mantz (2007). "Employability in Higher Education." In *EUA Bologna Handbook: Making Bologna Work*, edited by Eric Fromment, Jürgen Kohler, Lewis Purser, and Lesley Wilson, part 1.4-1. Berlin: Raabe.

Yoshimoto, Keiichi (2002). "Higher Education and the Transition to Work in Japan Compared with Europe." In *Higher Education in a Globalising World*, edited by Jürgen Enders, and Oliver Fulton, pp. 211-240. Dordrecht: Kluwer Academic Publishers.