Careers of University Graduates Views and Experiences in Comparative Perspectives

Ulrich Teichler (editor)

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Content

PAUL KELLERMANN

ACQUIRED COMPETENCIES AND JOB REQUIREMENTS

1. INTRODUCTION

1.1. The Growing Role of Useful Competencies

No clear distinction was made between study in general and preparation for a professional activity at the universities of the Middle Ages. Theology and philosophy provided the basis for law and medicine. A clearer distinction was made by Friedrich Schiller and his idealistic colleagues between the "philosophical head", i.e. the thinker for enlightenment, and the "bread scholar", i.e. the striver for money. Nonetheless, studying, learning, researching and teaching at a university continued to be considered ends in themselves. Even the symposium "The Development of a Taxonomy of Educational Objectives" in Chicago/Illinois in 1951 had an idealistic basis. The turning point of perspectives towards higher education as preparation for employment might have been the OECD conference on "Economic Growth and Investment in Education" in 1961. In the "Sector Working Paper 'Education'" published by the World Bank in 1974, Robert S. McNamarra wrote in the foreword: "While millions of people from among the educated are unemployed, millions of jobs are waiting to be done because people with the right education, training and skills cannot be found." (World Bank, 1974: I) The Sorbonne declaration of May 25, 1998, stressed the universities' role for promoting the mobility and employability of graduates. The joint declaration of the European Ministers of Education convened in Bologna on the 19th of June 1999 emphasised the "achievement of greater compatibility and comparability of the systems of higher education" in order to increase "the international competitiveness of the European system of higher education". Whether or not these political purposes are met depends crucially on how graduates manage to acquire competencies.

1.2. The Understanding of Competency

"Competency" is first of all the term for the ability to act specificely. While in the legal field "competency" means the legitimate right to act on the basis of formal authorisation, in the social domain – and in this analysis – competency, as opposed to incompetency, means the ability, acquired through learning and socialization, of

acting successfully. Influenced by variations in dealing with the social and natural environment, personalities differ with regard to knowledge, skills and emotions. With regard to competency acquisition of graduates, the particular world of the universities is of interest: to what extent do studies in higher education contribute to the provision and acquisition of competencies for successful acting in the world of work? The findings presented here, however, are not based on the observation of actions competencies are made use of, but rather on the basis of responses to questionnaires asking graduates to rate their acquired competencies and to compare them with the competencies required by the job.

1.3. Themes and Procedures of Analysis

The following analysis is interested in the practical value of studies and competencies which graduates have acquired for professional use as well as for everyday life. This is, on the one hand, because the enrolment quota in higher education has increased substantially over the last few decades and the quality of university education is often criticised. We ask specifically: How satisfied are the graduates with their studies? What do they consider as their strongest acquired competencies? What do they view as the most demanding competencies required by their jobs? In which areas do their competencies acquired at the time of graduation exceed the requirements about four years after graduation ("surpluses"), and where do the job requirements substantially surpass the acquired competencies ("deficits")?

2. BENEFITS OF STUDY

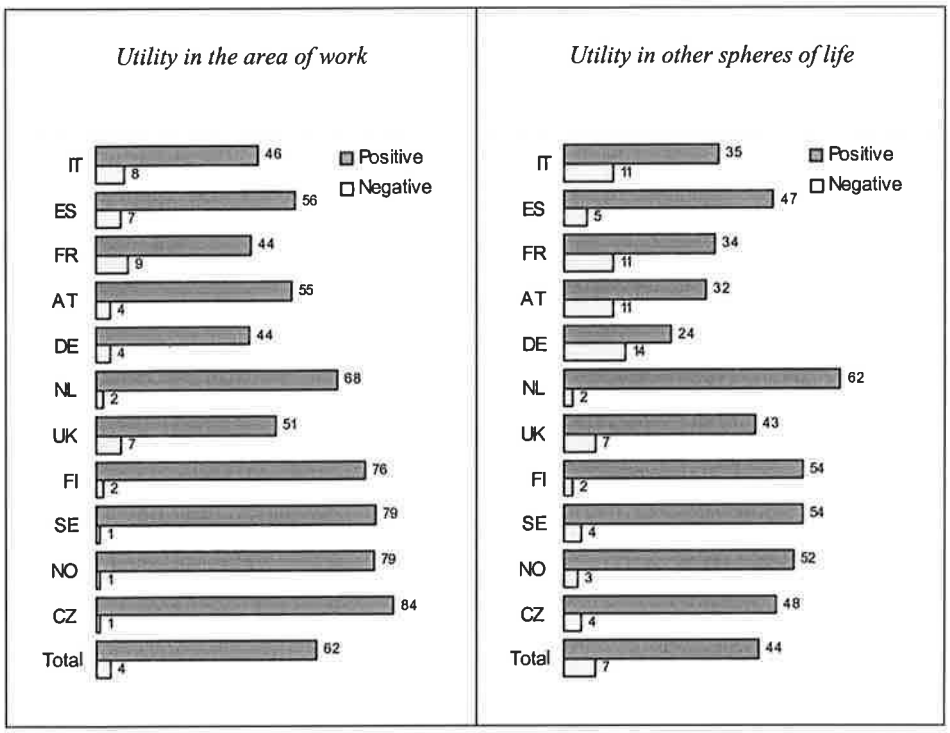
2.1. Utility of Study for the Profession and Other Spheres of Live

According to the analysis of the data (see Figure 1), 6 out of 10 of graduates perceive their studies as quite useful for coping with professional tasks. This compares with only 4 out of 10 recognising benefits of their studies for other spheres of life. This does not mean that the others did not see any benefits: only 4 percent of the respondents saw "not at all" a benefit for their profession and 7 percent not any benefits for other spheres than for their professional activities.

By a significant margin, the Czech graduates (84%) awarded the greatest professional benefit to their studies, followed by graduates from the three Nordic countries (76-79%). German, French and Italian respondents (44-46%) were far more sceptical in their judgement. The utility of studies for other life spheres was rated highest by Dutch and lowest by French graduates.

The graduates from medicine saw most frequently (76%) substantial benefits of their studies for their professional activities, whereas the graduates of humanities least. The views vary a lesser extent by field of study with respect of the utility of study for other spheres of life than for their professional activities (see Figure 2).

Figure 1. Utility of Study, by Country (percent of employed graduates)

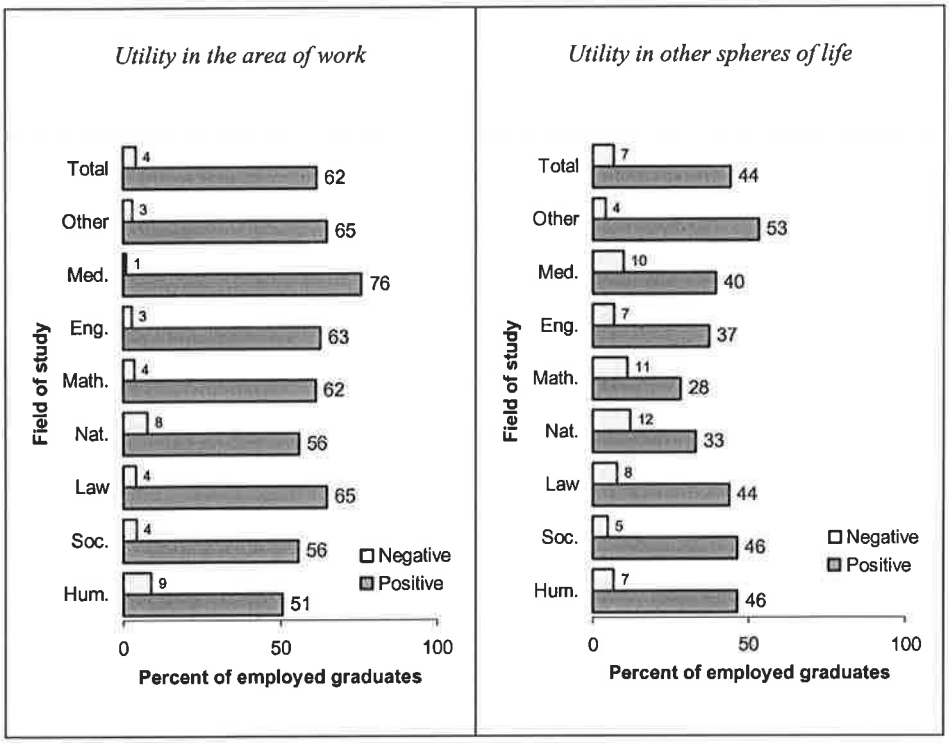


Question E2: To what extent has your study (you graduated from 1994 or 1995) been useful for ...? Scale of answers from 1 = "To a very high extent" to 5 = "Not at all". Positive = scale points 1 and 2; negative = scale point 5.

Compared to graduates from other fields of study in the respective country, notably Finnish and Czech medical graduates were highly convinced of the professional benefits of their studies. Czech (with an amazing rate of 93%), Swedish, Norwegian and German law graduates followed them in a positive appraisal. In contrast, Italian, French, Spanish, Austrian and British graduates from the humanities appeared most dissatisfied. These findings seem to reflect the clarity or vagueness of visible linkages between field of study and occupational area.

As regards benefits for other spheres of life, graduates from medicine notably in Germany, but also in Austria, Italy and the Czech Republic had the most negative views. In contrast, graduates from the humanities in Spain, Italy, Austria and Germany as well as from the social sciences in Sweden, Finland, Great Britain and Germany seemed to be most satisfied with the benefits of their studies outside the profession.

Figure 2. Utility of Study, by Field of Study (percent of employed graduates)

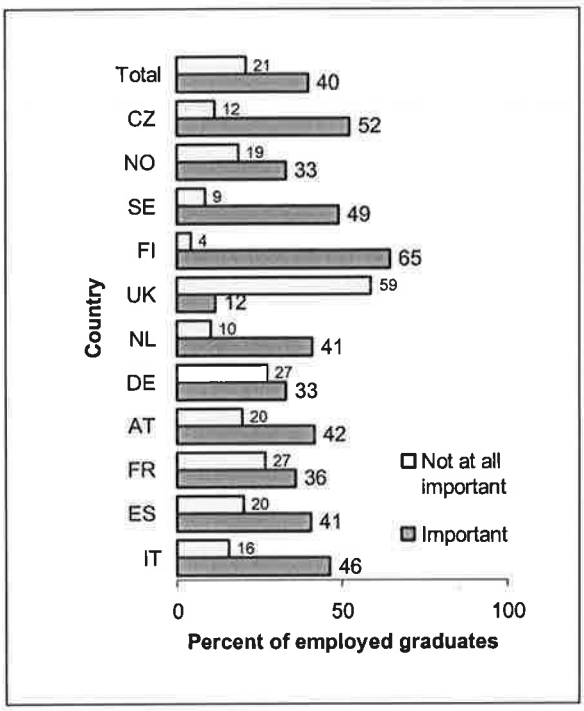


Question E2: To what extent has your study (you graduated from 1994 or 1995) been useful for ...? Scale of answers from 1 = "To a very high extent" to 5 = "Not at all". Positive = scale points 1 and 2; negative = scale point 5.

2.2. *Professional Relevance of Foreign Language Proficiency*

The professional importance of foreign language communication seems to be very different in the various countries (see Figure 3). Altogether, about 40 percent of the European graduates survey consider foreign language proficiency as important. The Finnish graduates view it most important (65%), while the British graduates least important (12%). Obviously, the larger the language area and the more the home language is internationally known, the less foreign language proficiency is considered as professionally relevant.

Figure 3. Importance of Communicating in Foreign Languages, by Country (percent of employed graduates)



Question E3: How important do you consider the following competencies for doing your current work? d) Communicating in a foreign language. Scale of answers from 1 = "Very important" to 5 = "Not at all important". Important = scale points 1 and 2; "Not at all important = scale point 5.

Across countries, communicating in a foreign language is viewed as most relevant by graduates from engineering, natural sciences and humanities – a finding which reflects the need for global communication in the former fields and the language expertise in the humanities. Foreign language proficiency is considered least important by graduates from law, medicine and social sciences – an indication of the predominantly local or national roles of the respective professions. These findings are almost consistent across all countries surveyed.

The responses to the question about the importance of the competency of foreign language communication are very similar to the responses to the question addressed below regarding the job requirement of foreign language proficiency. Thus it does not come as a surprise to note that the proportion of those considering foreign language communication as not at all important is almost identical to the percentages of those stating no requirement of foreign language proficiency at all (21% as compared to 23%, see Table 1).

Table 1. Competencies and Requirements Regarding Communicating in Foreign Languages, by Country and Field of Study (percent of employed graduates from11 European countries)

	Foreign langage proficiency				
	Not at all important	Not at all required	Difference 1 requirement and importance (2 – 1)	Not at all acquired	Difference 2 competence and requirement (5-2)
	1	2	3	4	5
Country					
Italy	16	15	-1	4	- 11
Spain	20	30	+10	8	- 22
France	27	29	+2	6	- 23
Austria	20	18	-2	6	- 12
Germany	27	24	-3	9	- 15
Netherlands	10	19	+9	4	- 15
United Kingdom	59	61	+2	49	- 12
Finland	4	4	0	0	- 4
Sweden	9	10	+1	2	- 8
Norway	19	19	0	19	0
Czech Republic	12	12	0	4	- 8
Field of study					
Humanities	21	21	0	10	- 11
Social sciences	25	26	+1	9	- 17
Law	27	28	+1	11	- 17
Natural sciences	20	19	-1	10	- 9
Mathematics, computing	24	24	0	10	- 14
Medicine	20	24	+4	17	- 7
Engineering	16	15	-1	7	- 8
Other	20	25	+5	13	- 12
Total	21	23	+2	11	- 12

Question E3: How important do you consider the competency "Communicating in foreign languages" for doing your current work?
Question E1: Please, state the extent to which you had the competency "foreign language proficiency" at the time of graduation in 1994 or 1995 and to what extent it is required in your current work.

The proportion of respondents not having acquired any foreign language proficiency at all upon graduation is only 11 percent. Thus, 12 percent of the graduates have some foreign language proficiency but do not use foreign languages at all on the job. The proportion of those not having any foreign language proficiency at all, as one might expect, is by far the highest among British graduates (49%); Norway turns out to have the second highest quota (19%). The respective quota is between 2 and 9 percent in the remaining European countries surveyed.

3. COMPARISON BETWEEN ACQUIRED COMPETENCIES AND JOB REQUIREMENTS

3.1. Overview

Table 2 provides an overview on the competencies the graduates had acquired upon graduation and on the competencies required by the job about four years after graduation, i.e. at the time the survey was conducted. The graduates were presented a list of 36 items and they were asked to rate both competencies (retrospectively) and job requirements. Table 2 shows the affirmative responses (scale points 1 and 2 on a five-point-scale from 1 = "To a very high extent" to 5 = "Not at all acquired/ required") and the most negative response (scale point 5).

Broad general knowledge, which might be considered as typical for all graduates, actually was viewed as highly required and also as highly acquired by only about 60 percent of the respondents each. Other competencies turned out be both more frequently required and acquired: for example learning abilities (87%/74%), working independently (72%/86%) and power of concentration (72%/77%). Also planning, co-ordinating and organising (38%/78%), problem-solving ability (58%/86%), working under pressure (55%/83%) as well as taking responsibility, decisions (48%/83%) were named by more than three quarters as highly required.

Table 2. Acquired Competencies at the Time of Graduation and Job Requirements Four Years After Graduation (percent of employed graduates from11 European countries)

	Competencies			
	acquired		required	
Competencies	Positive (1+2)	Negative (5)	Positive (1+2)	Negative (5)
Broad general knowledge	60	1	58	3
Cross-disciplinary thinking/knowledge	46	1	60	3
Field-specific theoretical knowledge	68	2	62	5
Field-specific knowledge of methods	49	3	62	5
Foreign language proficiency	33	11	34	23
Computer skills	31	13	65	6
Understanding complex ... systems	24	11	48	9
Planning, co-ordinating and organising	38	6	78	2
Applying rules and regulations	33	9	58	5
Economic reasoning	27	15	54	8
Documenting ideas and information	45	5	67	4
Problem-solving ability	58	1	86	1
Analytical competencies	59	1	71	2
Learning abilities	83	0	74	1
Reflective thinking, assessing one's own work	55	2	73	1
Creativity	47	4	62	4

Working under pressure	55	4	83	1
Accuracy, attention to detail	61	1	79	1
Time management	45	4	80	1
Negotiating	21	14	61	6
Fitness for work	58	4	70	3
Manual skills	36	14	35	20
Working independently	72	1	86	2
Working in a team	61	3	81	2
Initiative	53	2	79	1
Adaptability	64	1	79	1
Assertiveness, decisiveness, persistence	51	2	80	1
Power of concentration	72	1	77	1
Getting personally involved	65	1	77	1
Loyalty, integrity	68	2	76	1
Critical thinking	64	1	70	2
Oral communication skills	57	2	85	1
Written communication skills	68	1	76	2
Tolerance, appreciating of different points of view	63	1	73	1
Leadership	28	11	57	6
Taking responsibility, decisions	48	3	83	1

European sample, n = 29,010 minimum and 32,157 maximum (acquired) resp. 25,456 minimum and 28,035 maximum (required)
Question E1: Please, state the extent to which you had the following competencies at the time of graduation in 1994 or 1995 and to what extent they are required in your current work.
Sscale from 1 = "To a very high extent" to 5 = "Not at all".

In two of the 36 areas addressed, one fifth or more of the graduates did not perceive any requirements at all: foreign language proficiency (23%), as already discussed above, and manual skills (20%). Reversely, there are a few areas in which more than 10 percent of the graduates had no competency at all: economic reasoning (15%), negotiating, manual skills (14% each), computer skills (13%), foreign-language proficiency and leadership (11% each).

3.2. Deficits and Surpluses of Competencies

Figure 4 indicates major differences between the level of job requirements and the competencies acquired upon graduation. A "deficit" is assumed if the scale point of the respective job requirement stated by an individual respondent surpasses that of the perceived competency by 2 or more, and a "surplus", if the scale point for the acquired competency is at least 2 higher than for the respective job requirement. If the scale points do not vary or at most by 1, the relationship is called "similar".

According to these definitions, the proportion of those considering the job requirements and the competencies acquired as "similar" varies according the 36 items from 89 percent to 62 percent. The highest proportions of similarity are stated for learning abilities and power of concentration (89% each). The lowest similarities are also those where deficits are most often perceived: negotiating as well as planning, co-ordinating and organising (deficits of 36% and 31%). On the other hand,

a surplus of competency was most often perceived for foreign language proficiency (16%), field-specific theoretical knowledge (15%), manual skills (12%) and broad general knowledge (10%).

We suggest to define those competencies as "core competencies" which are rated at most by 2 percent each of the respondents as not at all required and as not at all acquired. This holds true to 23, i.e. the majority of items addressed in the questionnaire. The ratings of competencies acquired and job requirements are similar in a very high proportion of cases, i.e. for 16 of these 23 items, notably learning abilities, power of concentration and analytical competencies. Surpluses of competencies are relatively frequent for three of these items, i.e. field-specific theoretical knowledge, broad general knowledge and cross-disciplinary thinking/knowledge and deficits for five of these items: notably planning, co-ordinating and organising, taking responsibilities, decisions as well as time management.

4. AGGREGATION OF COMPETENCIES

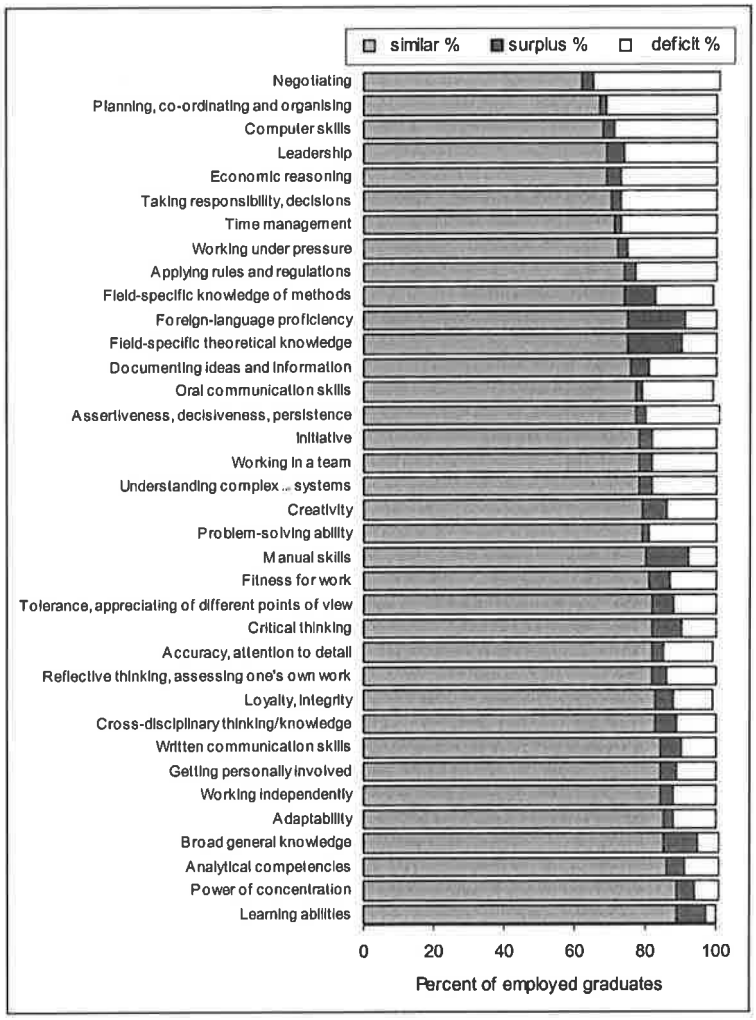
With the help of factor analyses both of the competencies acquired upon graduation and required by the job about four years after graduation, and employing further theoretical considerations we came to the conclusion that graduate jobs can be characterized by five dimensions of competencies:

- general-cognitive,
- systematic-operative,
- professionally knowledgeable,
- social-reflexive, and
- physiologically/manually skilled.

We selected one item each which loaded highly in the factor analyses both of competencies acquired and required by the job with the respective factors. These items are employed in the subsequent analysis as representing the respective dimensions: "broad general knowledge" representing the general-cognitive dimension, "accuracy, attention to detail" representing the systematic-operative dimension, "field-specific knowledge of methods" representing the professionally knowledgeable dimension, "leadership" representing the social-reflexive dimension and finally "manual skills" representing the physiologically/manually skilled dimension. Table 3 and Table 4 show the distribution of these dimensions of acquired and required competencies both by country and by groups of field of study.

The acquired and required competencies vary more strongly in general according to country than to field of study. The most striking findings are the consistently very high ratings of acquired competencies on the part of Swedish graduates and the often relatively low ratings on the part of French graduates.

Figure 4. Differences in the Rating of Competencies Acquired upon Graduation and Job Requirements about Four Years After Graduation (percent of employed graduates from 11 Euopean countries)



Question E1: Please, state the extent to which you had the following competencies at the time of graduation in 1994 or 1995 and to what extent they are required in your current work. Scale of answers from 1 = "To a very high extent" to 5 = "Not at all".
Similar: difference of at most 1 scale point;
Deficit: requirement at least 2 scale points higher than competency
Surplus: competency at least 2 scale points higher than requirement.

Table 3. Major Dimensions of Competencies Acquired Upon Graduation and Job Requirements about Four Years After Graduation. by Country (percent of employed graduates from12 European countries)

	General-cognitive dimension: Broad general knowledge				Systematic-operative dimension: Accuracy, attention to detail				Professionally knowledgeable dimension: Field-specific knowledge of methods				Social-reflexive dimension: Leadership				Physiologically/manually skilled dimension: Manual skills			
	acquired		required		acquired		required		acquired		required		acquired		required		acquired		required	
Unit	pos.	neg.	pos.	neg.	pos.	neg.	pos.	neg.	pos.	neg.	pos.	neg.	pos.	neg.	pos.	neg.	pos.	neg.	pos.	neg.
IT	63	0	54	3	57	2	76	1	37	6	62	6	35	7	57	5	32	15	29	25
ES	58	1	43	5	54	2	69	2	40	3	65	5	30	6	42	10	37	11	29	24
FR	47	0	42	5	58	2	67	2	42	3	61	4	22	11	46	8	27	22	17	39
AT	66	1	52	3	64	2	81	1	56	2	53	9	21	24	55	9	29	23	23	31
DE	55	1	48	3	59	1	80	0	54	2	62	5	15	25	56	7	32	15	29	21
NL	63	0	64	1	64	1	86	0	58	2	62	5	29	8	54	6	34	9	27	21
UK	63	0	62	3	69	1	90	0	49	6	60	10	37	6	68	4	26	21	31	25
FI	59	0	69	1	60	1	78	0	52	2	72	5	23	10	54	5	40	10	33	20
SE	70	0	65	1	74	0	85	0	61	1	65	3	40	5	70	2	58	2	57	5
NO	68	1	78	1	67	1	81	0	63	1	65	3	29	9	57	4	45	6	63	3
CZ	53	1	51	2	51	2	72	1	28	6	50	5	27	11	62	4	43	11	45	13

Question E1: Please, state the extent to which you had the following competencies at the time of graduation in 1994 or 1995 and to what extent they are required in your current work. Scale of answers from 1 = "To a very high extent" to 5 = "Not at all".

Table 4. Major Dimensions of Competencies Acquired Upon Graduation and Job Requirements about Four Years After Graduation, by Field of Study (percent of employed graduates from12 European countries)

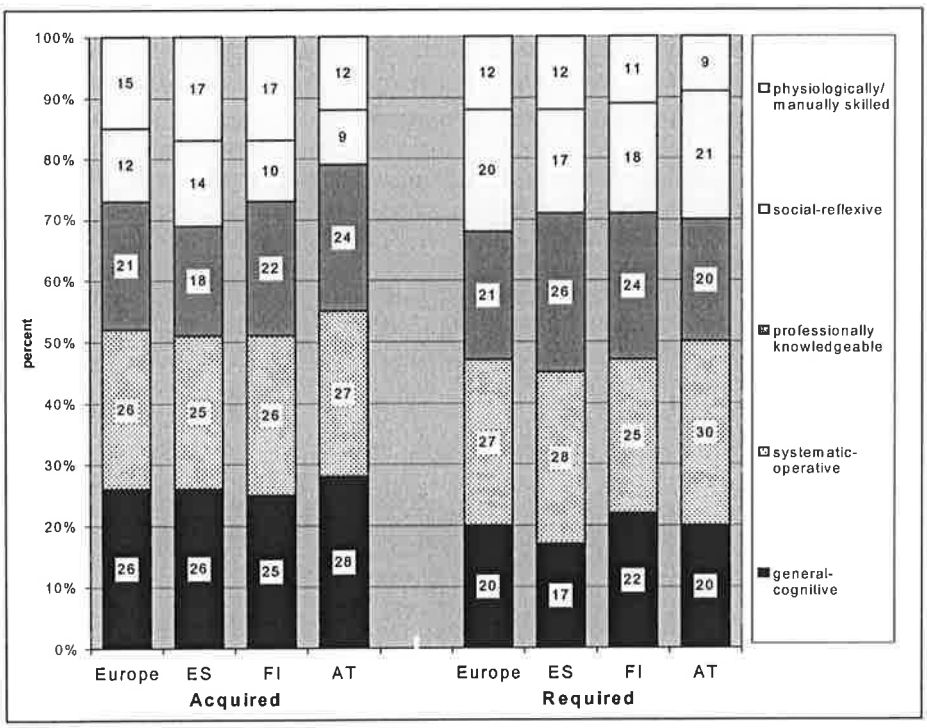
	General-cognitive dimension: Broad general knowledge				Systematic-operative dimension: Accuracy, attention to detail				Professionally knowledgeable dimension: Field-specific knowledge of methods				Social-reflexive dimension: Leadership				Physiologically/manually skilled dimension: Manual skills			
	acquired		required		acquired		required		acquired		required		acquired		required		acquired		Required	
Field of study	pos.	neg.	pos.	neg.	pos.	neg.	pos.	neg.	pos.	neg.	pos.	neg.	pos.	neg.	pos.	neg.	pos.	neg.	pos.	neg.
Hum.	67	0	67	3	68	1	80	1	50	6	57	12	29	13	57	9	32	20	31	25
Soc.	63	0	56	2	57	2	78	1	45	3	53	7	28	10	55	6	27	20	22	28
Law	64	0	58	2	61	1	83	1	39	7	58	7	30	12	51	7	24	25	19	38
Nat.	54	1	49	4	64	1	77	1	51	3	64	6	23	13	51	6	44	8	42	15
Math.	50	1	42	5	61	1	77	1	56	2	71	3	21	14	52	5	25	22	15	34
Eng	57	0	51	3	59	1	77	1	43	3	58	3	23	12	59	4	41	8	35	16
Med	56	1	56	3	66	1	85	1	50	3	76	2	27	11	58	5	50	5	74	4
Other	61	0	65	1	60	1	79	1	56	2	66	5	33	8	60	5	40	9	38	16
Total	60	1	58	3	61	1	79	1	49	3	62	5	28	11	57	6	36	14	35	20

Question E1: Please, state the extent to which you had the following competencies at the time of graduation in 1994 or 1995 and to what extent they are required in your current work. Scale of answers from 1 = "To a very high extent" to 5 = "Not at all".

In order to establish the relative weight of the five dimensions, all positive ratings of the five items representing the ratings were added up and the sum was calculated as 100 percent. We call this the "competency profile of the graduates of the mid-1990s". Figure 5 demonstrates the profiles of acquired and required competencies for selected countries.

The profile of the acquired competencies of all European graduates is more strongly shaped by general-cognitive and systematic-operative competencies than by other dimensions of competencies. This holds true as well for the three countries represented in Figure 5, though Austrian graduates state a relatively high weight of professional knowledge as well. As compared to the competencies acquired, the European graduates perceive a substantially higher weight of social-communicative job requirements and a lower weight of general-cognitive job requirements. Among the three countries addressed in Figure 5, the profile of job requirements differs from that of the competencies acquired most strongly in the case of Austria. In the profile of job requirements in Austria, the social-reflexive dimension plays a much stronger role and the general-cognitive a much weaker role than it plays in the profile of the competencies acquired by the Austrian graduates upon graduation.

Figure 5. Profile of Competencies Acquired Upon Graduation and of Job Requirements Four Years After Graduation by Selected Countries (percent of employed graduates from11 European countries)



**) percent of all competencies rated as 1 and 2 on a scale from 1 = "To a very high extent" to 5 = "Not at all" over the five dimensions addressed in the chart*

5. SUMMARY

This chapter started off with an analysis of the graduates' view on the utility of their studies and their perception of the importance of foreign language proficiency. Subsequently, it addressed the relationships between competencies acquired upon graduation and competencies required by the job four years after graduation.

About 60 percent of the graduates view their studies as having been quite useful for professional work and about 40 percent for other spheres of life. Differences are more striking by country than by field of study, whereby graduates of the Czech Republic and the Nordic countries are most convinced of the usefulness of studies for the world of work and those of Germany, Italy and France least convinced.

The ability of communicating in foreign languages was viewed as important by about 40 percent of the European graduates survey. The smaller the language area and the less the language is known internationally, the more a need is felt for foreign language proficiency. For example, 65 percent of Finish graduates as compared to 10 percent of British graduates considered the ability of communicating in a foreign language as important. Altogether, foreign language proficiency is among the few dimensions where the competencies acquired do not seem to be lower on average than required on the job.

Altogether the job requirements four years after graduation, i.e. at the time the survey was conducted, are perceived as more demanding in most dimensions than the competencies acquired. The discrepancy looks most striking, if percentages are presented of those stating a high level of requirements and of competencies acquired. The analysis presented here, in contrast, counts differences between job requirements and competencies acquired on the magnitude of one scale-point on a five-point scale as "similar" and those of 2 scale points or more, depending on direction, as "deficits" and "surpluses". On the basis of these definitions, more than three quarters on average of the individual statements of job requirements and competencies acquired are similar, ranging among the 36 items of the questionnaire from 89 percent to 62 percent.

Remarkably, a visible surplus of acquired competencies to job requirements could be found only for four aspects addressed: foreign language proficiency, field-specific theoretical knowledge, manual skills and broad general knowledge, whereby the surplus is quite small. In contrast, some deficits show up for the majority of aspects analyzed, among the most striking ones as regards negotiating, planning, co-ordinating and organising as well as computer skills.

The list of 36 aspects can be grouped to five major dimensions of acquired competencies as well as job requirements: the general-cognitive, systematic-operative, the professionally knowledgeable, social-reflexive and physiologically/ manually skilled dimensions of competency. The ratings by graduates of items representing these dimensions best vary more substantially by country than by field of study, whereby the Swedish graduates rate their acquired competencies as very

high across all the dimensions, while French graduates rate their competencies low across the majority of dimensions.

Finally, a "competency profile of the graduates of the mid-1990s" was established which shows the relative weight of the various dimensions. Accordingly, the European graduates on average consider their general-cognitive and systematic competencies as strongest, while the job requirements suggest a higher weight of socio-communicative competencies and a lower weight of general-cognitive competency. Differences by country are by no means negligible, but by and large confirm the general picture.