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Higher education graduates’ self-assessment of competences attained during the course of education

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POSTER

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Research questions

Several consecutive research projects in the Finnish Institute for Educational Research have studied the transition from polytechnics to working life, competences attained in higher education and graduates' employment (Korhonen, Mäkinen, & Valkonen 1999, 2000, 2001; Virolainen & Valkonen 2002; Stenström, Laine, & Valkonen 2005; Vuorinen & Valkonen 2007). This line of research was introduced in parallel with the establishment of polytechnics (also called the Universities of Applied Sciences [UAS]) as a part of the educational structure and the higher education system in Finland in the 1990's. The research projects were financed by the Ministry of Education. While the general aim of the research projects was to explore the quality of the employment of graduates, the competences attained during the course of education have been surveyed, along with the graduates' views on their career prospects. In these projects, the research question pertaining to the competences was the following: how do graduates assess their education and competences attained during the course of their education?

Phase of research and results

The research projects have been finished. In order to discuss the strengths and weaknesses of the research approach, this poster presents the results of the self-assessments of competences by two groups: those who graduated in 2000 and those who graduated in 2002 (see Stenström, Laine, & Valkonen 2005; Vuorinen & Valkonen 2005). The graduates answered the questionnaires that were sent by post in 2003 and 2005, respectively. The study fields compared are the two professional fields with the largest student intake, these are, technology (N= 1200) and business and administration (N=1000). The surveys were conducted on nationally representative samples of the target fields.

The graduates assessed both the competences attained during education and work-demanded competences. In the analysis, the differences between fields and populations have been compared by univariate analysis of variance. The graduates assessed competences that their higher education developed in the following aspects: information technology, ability for theoretical thought, practical skills, time-management, independent initiative, ability to understand and master entities, ability to assess and develop one's work, entrepreneurship, innovativeness, international and multicultural skills, leadership and management skills. Social skills were excluded from the comparison because their formulation in the questionnaire differed slightly from year to year.

The results are illustrated in Figures 1 and 2. The comparisons of the fields of business administration and engineering show that there are more statistically significant differences between fields than between populations in 2000 and 2002 (see Tables 1 and 2). The comparison of the graduates' assessments of competences attained through polytechnic education in 2000 versus 2002 showed that there had been significant improvements with respect to most of the competences measured. This result is in line with the general aim of continuously developing education. The changes are less positive though in business administration. The business administration students felt that their attainment levels decreased in competences like time-management, ability to assess and develop one's work, independent initiative, and practical skills. In addition, the latter cohort of engineering graduates assessed their competences in independent initiative less than their predecessors' self-assessed competences.

According to the graduates' assessment of their level of attainment compared to the demands of the world of work, most of the competences of the later group were stronger than the competences of the earlier group. The 2005 evaluated competences that were assessed to be less or equal to earlier results in terms of meeting work life demands were the time management, ability to assess and develop one's work, independent initiative, and practical skills. This result can be one of the outcomes of the formalization of polytechnic education; it also posts some challenges in the development of pedagogy.

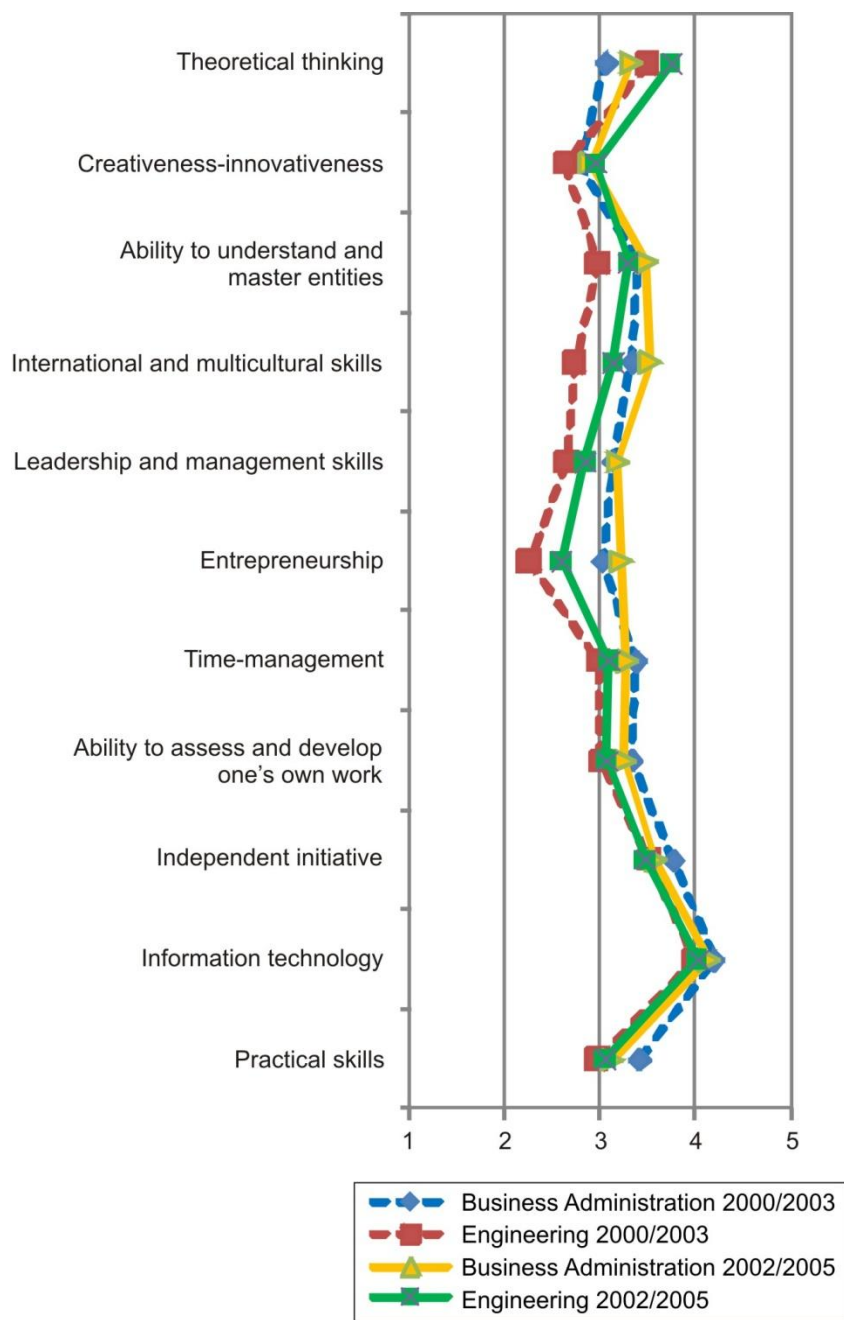


Figure 1. Competences attained through polytechnic education (assessed by polytechnic graduates 2 years after graduation)

Table 1. Competences attained through polytechnic education, BBA= Bachelors of Business Administration, BE= Bachelors of Engineering

Competences attained during education	Means				Between-Subjects Effects								
	2000/2003 N=1247		2002/2005 N=1032		Total	Population		Fields		Population x Fields		Model	
	BBA N=	BE N=	BBA N=	BE N=		F	p	F	p	F	p	F	p
	615	632	536	500									
Theoretical thinking	3,05	3,50	3,32	3,74	3,39	39,062	,000	116,662	,000	,125	,724	51,589	,000
Creativeness-innovativeness	2,79	2,63	2,90	2,95	2,81	24,519	,000	1,353	,245	5,634	,018	10,701	,000
Ability to understand and master entities	3,39	2,97	3,49	3,29	3,27	24,471	,000	52,482	,000	5,756	,017	29,327	,000
International and multicultural skills	3,33	2,73	3,52	3,13	3,16	43,065	,000	118,341	,000	5,675	,017	58,745	,000
Leadership and management skills	3,13	2,65	3,18	2,84	2,95	7,270	,007	84,845	,000	2,503	,114	33,099	,000
Entrepreneurship	3,01	2,25	3,22	2,59	2,76	36,401	,000	240,664	,000	1,979	,160	96,554	,000
Time-management	3,37	2,98	3,28	3,09	3,18	,037	,848	36,555	,000	4,342	,037	14,571	,000
Ability to assess and develop one's work	3,32	3,00	3,26	3,06	3,16	,000	,990	39,721	,000	2,324	,128	14,749	,000
Independent initiative	3,77	3,51	3,58	3,47	3,59	7,791	,005	20,602	,000	3,586	,058	11,096	,000
Information technology	4,19	3,98	4,14	4,02	4,08	,009	,924	18,519	,000	1,408	,235	7,023	,000
Practical skills	3,40	2,96	3,13	3,05	3,14	3,771	,052	30,787	,000	15,913	,000	18,240	,000

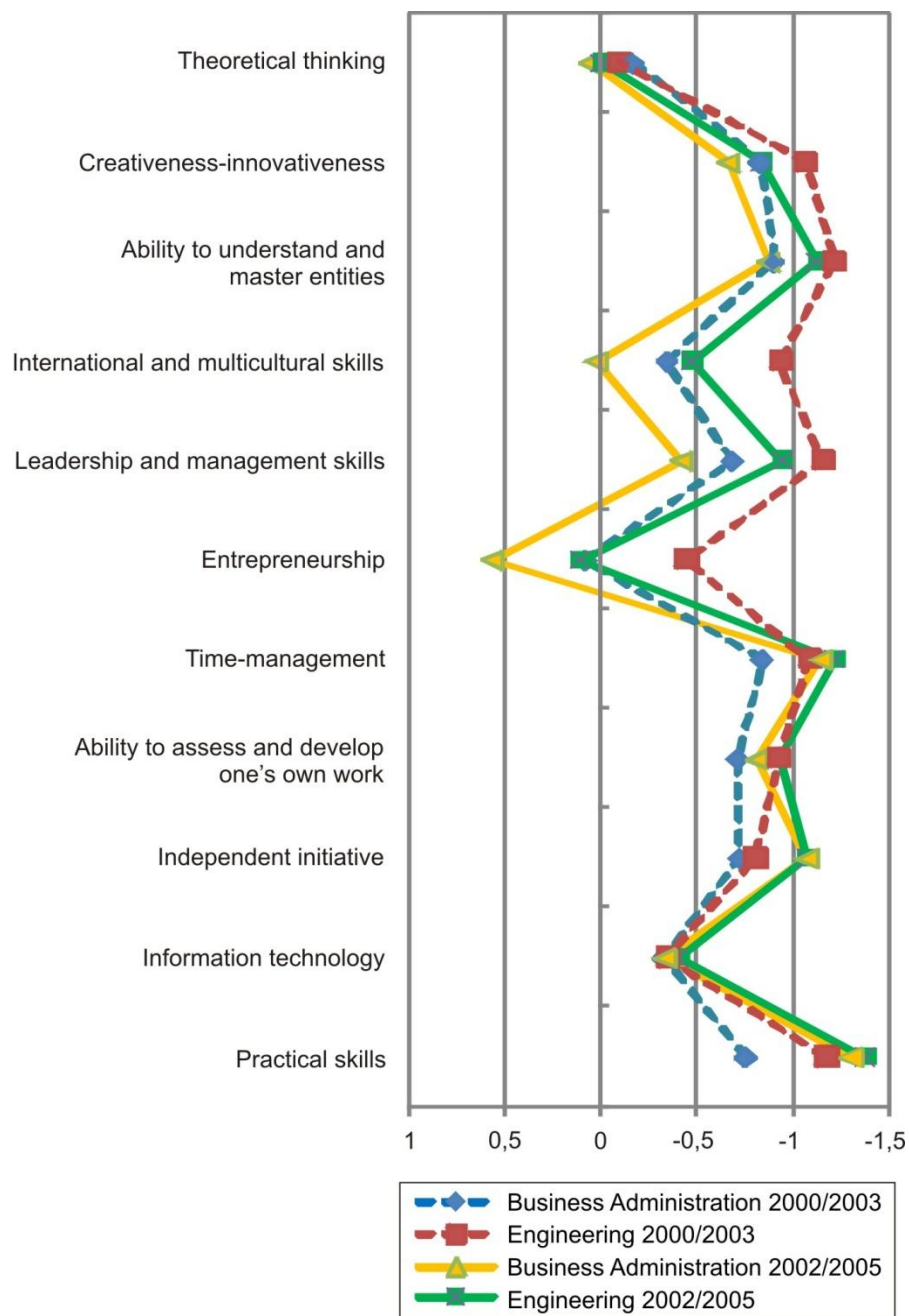


Figure 2. Competences attained in education versus work-demanded competences (assessed by polytechnic graduates 2 years after graduation)

Table 2. Competences attained in education versus work-demanded competences,

Work-demanded competences - competences attained during education	Means				Between-Subjects Effects								
	2000/2003 N=1234		2002/2005 N=1032		Total	Population		Fields		Population x Fields		Model	
	BBA N=	BE N=	BBA N=	BE N=		F	p	F	p	F	p	F	p
	609	625	533	499									
Theoretical thinking	-,17	-,10	,05	-,01	-,07	11,520	,001	,010	,919	1,942	,164	4,541	,004
Creativeness-innovativeness	-,84	-1,07	-,67	-,84	-,86	15,404	,000	14,486	,000	,432	,511	10,483	,000
Ability to understand and master entities	-,91	-1,22	-,88	-1,13	-1,03	1,482	,224	34,187	,000	,453	,501	12,475	,000
International and multicultural skills	-,35	-,94	,02	-,48	-,45	54,470	,000	94,432	,000	,612	,434	51,640	,000
Leadership and management skills	-,69	-1,16	-,43	-,95	-,82	19,237	,000	88,665	,000	,253	,615	36,638	,000
Entrepreneurship	,08	-,45	,56	,10	,05	86,074	,000	78,127	,000	,391	,532	59,593	,000
Time-management	-,85	-1,09	-1,15	-1,22	-1,07	17,210	,000	8,883	,003	2,916	,088	9,898	,000
Ability to assess and develop one's work	-,72	-,93	-,82	-,93	-,85	1,331	,249	12,244	,000	1,325	,250	5,210	,001
Independent initiative	-,73	-,81	-1,08	-1,08	-,91	48,667	,000	,888	,346	,831	,362	16,807	,000
Information technology	-,33	-,35	-,34	-,41	-,35	,777	,378	,964	,326	,336	,562	,646	,586
Practical skills	-,76	-1,18	-1,31	-1,38	-1,14	50,757	,000	22,013	,000	11,162	,001	28,761	,000

Discussion – the pros and cons of higher education graduates’ self-assessment of competences

The research approach of asking graduates for the self-assessment of their competences is well distributed and familiar in international contexts through research projects such as the REFLEX (Allen & van der Velden 2007; Lindberg 2009). Compared to formative or summative evaluations and use of standardized tests on students’ competences, the approach is more dependent on the national conjunction of educational structure and professional distribution of work in the national labour market. In Figure 3, four ideal types for emphasizing different institutions’ and citizens’ interests in assessing educational outcomes are illustrated tentatively and roughly. The typical questions that can be asked to emphasize different perspectives are presented in Boxes A-D (themes related to perspectives are suggested in the parentheses). The approach of surveying graduates’ views on their competences attained during education emphasizes ideal type B.

The assessments made by the graduates gave fruitful feedback regarding the strengths and weaknesses of the curriculum with respect to working life demands. Changes in the assessments from one year to another reflect changing societal contexts and the qualifications’ ability to meet working life demands. The strength of the approach is its holistic reflection on professional skills (rather than accurately testing skills defined and determined by educational institutions). The results are, however, dependent on educational planning. An overflow of educational provision in a field will typically result in changing patterns of employment (Teichler 1999).

In Finland, the follow-up of graduates’ employment has become the interest of trade unions such as The Finnish Association of Business School Graduates and the Union of Professional Engineers in Finland. Also, the Network of Universities for Academic Career Services has completed similar follow up surveys (Korhonen & Sainio 2006; Puhakka, Rautopuro, & Tuominen 2010; Sainio 2008a, 2008b). At the same time, the Ministry of Education has given more emphasis on international comparative researches such as the Eurostudent (Saarenmaa, Saari, & Virtanen 2010), REFLEX, and AHELO (OECD Directorate for Education 2011).

In order to serve as a reliable feedback for curriculum development, researches on graduates’ employment and competences should allow comparison of fields, of higher education institutions (universities versus universities of applied sciences), and of graduates from year to year (both nationally and internationally). In addition, analysis of the changing societal context and learning environment is needed.

	INDIVIDUAL STUDENTS		
EDUCATIONAL INSTITUTIONS	A How much command do individual students have in the scientific domain (i.e., medicine, social sciences?)	B What kinds of competences do individuals have (as a result of education) that contribute to their successful performance at work?	WORLD OF WORK
	C What kinds of competences and qualifications do educational institutions provide in order to meet the wide interests and needs of civic society (the needs of the humanities, the arts, entrepreneurship, innovation, development of society, etcetera)	D What kinds of qualifications (and other services) do educational institutions provide in order to enhance and guarantee individual competences and to meet work life demands? (general versus professionally specified qualifications, guidance counseling)	
	CIVIC SOCIETY		

Figure 3. Four approaches to assessment of competences and qualifications

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