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HOW TO MEASURE EDUCATION IN CROSS-NATIONAL COMPARISON: HOFFMEYER-ZLOTNIK / WARNER-MATRIX OF EDUCATION AS A NEW INSTRUMENT

JÜRGEN H.P. HOFFMEYER-ZLOTNIK & UWE WARNER

The comparative measurement of education is a complex task. The national systems of education and schooling are differently organized across national states and nations. In this paper we will sort the certificates from general and professional schools into one matrix that allows us to compare the "highest level of education obtained" across countries.

1 The Problems

Because of their historical development and their political tradition, national education systems are particular for each nation. In general, each school system incorporates in general education the pre school and the basic school education with a various number of degrees to obtain; in the professional education with the whole range between school based and vocational, enterprise based training and all the possible mixtures; and finally in high school education with its entire spectrum of diplomas. Common to all are four sections:

- The primary section, including the pre school and basic education for 4 or 6 years of schooling;
- the lower secondary programs cover in most European countries the general education until the end of basic education with a first school certificate after 8 to 11 years of schooling;
- the upper secondary segment includes the school institutions until the entry to high school, and the professional training until the first vocational certificate that allows to execute the learned profession, but lower then high school degrees;
- the tertiary section contains all the different types of high schools, the applied universities and the universities with the academic education until research qualifications are obtained.

So far, three common anchor points can be identified: the basic certificate which differs across countries by duration of schooling and the pupil's age, the highest possible degree of general education as the entry point to university and in general obtained after 12 or 13 years of schooling, and finally the end of university education with the PhD thesis.

The differences across the national education systems are based on various objectives about the optimal function and the aims of education. The institutionalization of schooling is driven by national ideologies and traditional developments, and education is finally codified in national law.

The definition of "basic education" varies across the countries. And the meaning of "basics" has an impact on the duration of schooling for a basic degree, the description of compulsory full-time school, the differentiation into parallel types of school and the split off point before (e.g. in Germany) or after (e.g. in Denmark) the basic degrees, and with the impact on the parent's decision for further education for their children. Characteristics influenced by the definition of basic education are the national structures of the school institutions: Are there degrees depending on each other, degrees increasing in their valid and built on upon as sequences of educational careers? Beside this vertical structure are there horizontal differentiations of educational institutions, and is it and how difficult is it to switch from one track to a parallel path upwards? How permeable are the national types of school?

The national education systems are also structured by

- the (legal) rules on entry and leaves to dedicated school types and levels,
- the duration of minimum and maximum schooling periods,
- the possibilities to repeat classes, and
- the maximum number of allowed repetitions.

An important factor is the degree of side by side existence of private and public schooling in the general and professional training sectors. Of course, the transition from general to vocational sectors is characterizing the national school system. The differentiation of professional education certificates and their following up rules are of importance. An important question concerns the political and social acceptance of schools and their diploma as well as the legal and political control of the state.

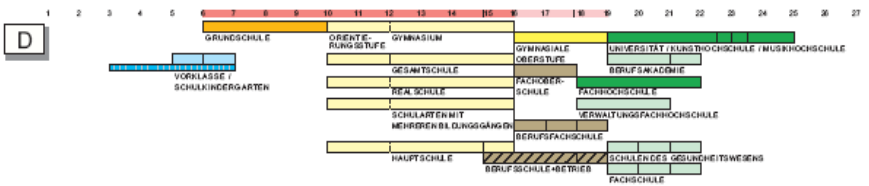
2 The National Education Systems

This chapter describes the school systems of three European countries: Germany, Denmark and Luxembourg. In main and fundamental points they differ. The following chapter introduces the usual categories of cross country comparison and in the next part we illustrate the Hoffmeyer-Zlotnik/Warner matrix that compares the national education systems.

2.1 Education in Germany

In Germany, compulsory education lasts for 9 school years. From their 6 year of age onwards children attend "Grundschule" for 4 classes. After this primary part they can choose at least between three types of secondary schools: "Hauptschule" for the next 5 school years, the 6 school years long "Realschule", or "Gymnasium" for the next 9 classes.

After leaving "Hauptschule", having finished the lower secondary education, vocational training in the dual system or in vocational school is possible and became the normal school career. After finishing "Realschule" it is possible to continue with "Fachoberschule". "Abitur", the degree obtained in "Gymnasium", is the standard entrance diploma to university and finishes upper secondary education.



Source: European Commission, 2002

Because of the paralleled general and vocational education, in German research we have to ask two interview questions about education during social surveys.

1. The *general education* with three or five types of lower secondary school (depending on method of counting) and two degrees of upper secondary school certificates.
2. The *vocational education* with answer categories for the dual system and for professional schools, for different types of schools and answer possibilities for vocational or technical full time school degrees and vocational colleges, and categories for university diploma.

Therefore, German social survey research needs a two dimensional matrix for the construction of a rank order concerning educational attainment or a hierarchical social order of educational levels.

Table 1 General Education by Vocational Education, *Germany*, ESS 1st Round

general education by degree	vocational education by degree							total
	non	dual system	vocational-school	vocational college	univ.of applied sciences	university	others	col %
non	14,3	1,4	,7	,0	,0	,3	1,4	2,2
8th/9th class	64,8	49,2	31,6	27,0	3,8	1,4	28,2	37,4
10th class	11,5	42,2	46,3	49,2	24,6	2,4	52,1	34,9
restricted Abitur	,8	2,4	8,8	11,8	27,7	7,4	5,6	6,2
Abitur*)	7,0	4,7	11,8	11,5	41,5	86,1	9,9	18,5
others	1,6	,2	,7	,5	2,3	2,4	2,8	,9
row %	10,1	48,0	5,6	15,8	5,4	12,2	2,9	100,0
total	244	1161	136	382	130	296	71	2420

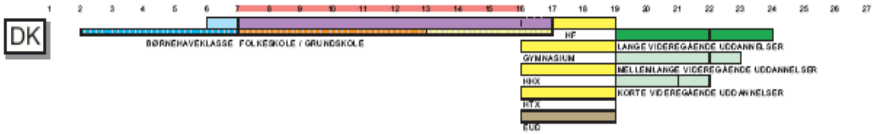
*) University-entrance diploma
Source: ESS round 1, computation by the authors

In Germany, education is a central policy issue of the 16 “Bundesländer” (federal states). Each state manages his own educational system and the “Bundesländer” agreed on the transfer between school types, the recognition of qualifications and the entrance possibilities to the further schools. Table 1 already summarizes the systems of the16 “Bundesländer” and presents their common structure.

2.2 Education in Denmark

In Denmark, compulsory education starts at the age of 6 at "Folkeskole" and lasts for all pupils for 9 years (as comprehensive school). A voluntary 10th year, or the Gymnasium (for 3 years), or vocational education follows.

The general upper secondary education is much diversified as in Germany, whereas the primary and lower secondary sectors are unified into one track of schooling and the tertiary sector offers three types of high schools.



Source: European Commission, 2002

Table 2 Highest Level of Education, *Denmark*, ESS 1st Round

Categories	total	Valid Percent
0 No school education, no vocational education	2	,1
1 1.-6. class in school, no vocational education	18	1,2
2 7.-10. class in school, no vocational education	351	23,5
3 Upper secondary school, no vocational education	103	6,9
4 Vocational education and training, apprenticeship training	594	39,8
5 Work leader education for vocational educated	32	2,1
6 Further education of 2-3 years after upper secondary school	137	9,2
7 Further education of around 4 years after upper secondary sector	149	10,0
8 Bachelors or masters degree from university	98	6,6
9 Further university education i.e. Ph.D	10	,7
Total	1494	100,0

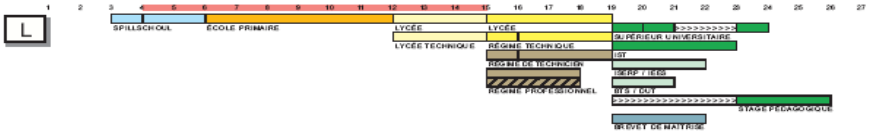
Source: ESS round 1, computation by the authors

In Denmark, the ESS surveys highest level of education by a 10 category answer scheme of school leaving qualifications. They look already being created in advance for the recodes into the International Standard Classification of Education (ISCED 1997) demanded by the coordinators of ESS.

2.3 Education in Luxembourg

In Luxembourg, the primary school starts at the age of 6 and ends at the age of 12. The secondary sector is divided into complementary, technical and general schools. The duration of "lycee" varies between 3 and 7 classes.

Several vocational schools and a university of applied sciences do also exist. The upper secondary education is very diverse and the third sector contains several professional educational institutions.



Source: European Commission, 2002

Table 3 Highest Level of Education, Luxembourg, ESS 1st Round

Categories		total	Valid Percent
0	Pas de diplôme/qualifications	20	1.3
1	Ecole primaire	254	16.7
2	Primaire supérieur	120	7.9
3	Enseignement complémentaire	98	6.4
4	Certificat d'enseignement secondaire technique inférieur	52	3.4
5	Certificat d'apprentissage	22	1.4
6	**C**ertificat de **C**apacité **M**anuelle	22	1.4
7	**C**ertificat d'**I**nitiation **T**echnique et **P**rofessionnelle :	36	2.4
8	**C**ertificat d'**A**ptitude **T**echnique et **P**rofessionnelle :	237	15.6
9	Diplôme de technicien (jusque 13e dans le régime tech.)	36	2.4
10	Bac technique (jusque 13e ou 14e du régime technique)	50	3.3
11	Enseignement secondaire général inférieur	115	7.6
12	Diplôme de fin d'études secondaires	139	9.1
13	Brevet de maîtrise artisanale	32	2.1
14	Enseignement supérieur - BAC +2	53	3.5
15	Enseignement supérieur - BAC +3	57	3.7
16	Enseignement supérieur - BAC +4	57	3.7
17	Enseignement supérieur - BAC +5 ou plus	57	3.7
18	Enseignement supérieur - Doctorat	11	.7
19	Autre: Précisez	43	2.8
Total		1523	100.0

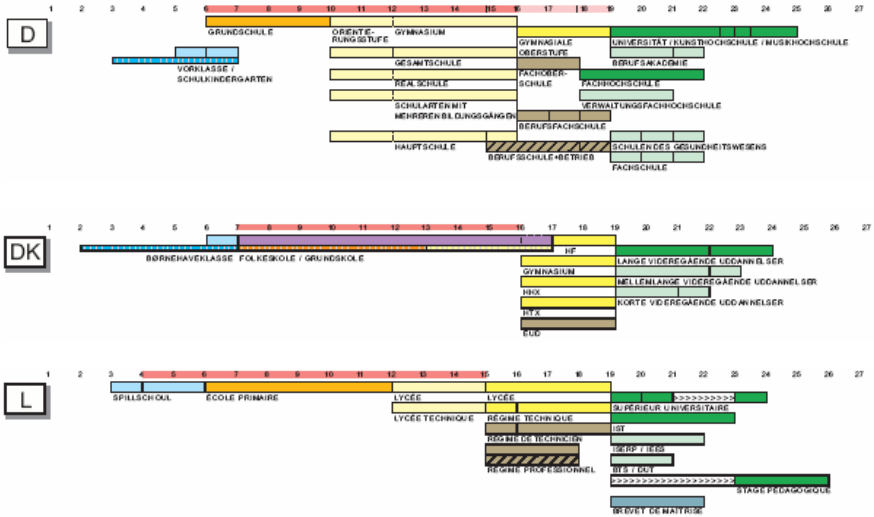
Source: ESS round 1, computation by the authors

In Luxembourg, the fieldwork for ESS used 19 different answer categories to obtain the information about the highest level of education. On a first glance, the proposed certificates are much more detailed than in Germany and Denmark and they do not summarize the national education system. The labor market in Luxembourg is characterized by a very high proportion of non-Luxembourgish employees and workers who are not educated and trained in the national education system. Therefore the response categories of the survey question on highest level of education must also cover qualifications obtained in the neighboring countries of Luxembourg.

2.4 Comparison of the educational institutions

While comparing the educational systems across the three countries we can identify

- that in Germany, the differentiation into the educational tracks starts after 4 classes in primary school. In Denmark, this separation takes place after 10 school years; in Luxembourg after 6 years of primary classes;
- that in Germany and Luxembourg the tertiary education is more differentiated than in Denmark; and
- that among the studied countries, only Germany includes the dual system combining school education and training organized at the workplace inside the enterprises. In the other two countries the vocational education takes place in (particular) professional schools.



Source: European Commission, 2002

3 Measurement Instruments for Cross-National Comparison

Today, in comparative research four instruments measuring and comparing highest level of education can be identified (Braun & Müller, 1997; Hoffmeyer-Zlotnik & Wolf, 2003):

- years of schooling;
- the "International Standard Classification of Education" (ISCED 1997)
- the "CASMIN Educational Classification"; and
- the "Hoffmeyer-Zlotnik Educational Classification".

3.1 Years of schooling

In surveys for cross-country comparison the instrument "years of schooling" is the most used one for the measurement. But various surveys use different questions and wordings and focus on the information in slightly different manners:

- the *European Social Survey (ESS)*, round 1, question F7 asks: "How many years of full-time education have you completed?";
- the *International Social Survey Programme (ISSP)* is asking about "years (of full time) schooling including university but not vocational training";
- the *General Social Survey (GSS)* of the U.S. asks about "grades" and "years of college" (NORC and Roper, 1996: 49); and
- the German *Sozialwissenschaften-Bus* 1996 (social science bus survey) question wording is: "In which age you left general school?" (GFM-GETAS/WBA, 1996: 2).

All four questions generate different answers. ESS and ISSP obtain the number of years spent in educational institutions, and the ISSP does not include years spent in vocational education. The question about years only makes sense in cases where the repetition of classes is not foreseen and allowed. In this case a question about grades like in the American GSS produces the informative measure. The German social science bus survey asks about the age when the respondent left school; but leaving school at an older age does not necessarily lead to a higher degree of education.

3.2 International Standard Classification of Education – ISCED 1997

The "International Standard Classification of Education – ISCED", (UNESCO, 1997, 2003) was developed in the seventies by UNESCO. The major aim was to unify international statistics on educational levels of the population. The actual version of this classification was revised in 1997 and offers a common set of concepts, definitions and classifications establishing a frame for collecting data and presenting indicators on outcomes of the

school systems. It covers all teaching activities organized in educational institutions for pupils and adults from pre school education to continued schooling and training as well as general and vocational education. Seven categories are offered by this classification.

Table 4 International Standard Classification of Education – ISCED 1997

Name of the Level	Code	Complementary Dimensions
Pre-primary education	0	None
Primary education, First stage of basic education	1	None
Lower secondary education, Second stage of basic education	2	Type of subsequent education or destination, Programme orientation
(Upper) secondary education	3	Type of subsequent education/destination, Programme orientation, Cumulative duration since beginning of ISCED level 3
Post-secondary non tertiary education	4	Type of subsequent education/destination, Cumulative duration since beginning of ISCED level 3, Programme orientation
First stage of tertiary education (not leading directly to an advanced research qualification)	5	Type of programmes, Cumulative theoretical duration at tertiary, National degree and qualification structure
Second stage of tertiary education (leading to an advanced research qualification)	6	None

see: UNESCO, 2003: 203

3.3 The CASMIN Educational Classification

The CASMIN Educational Classification "distinguishes educational levels according to their selectivity effects. In this respect, the schema claims *functional equivalence* of its educational categories across countries. The criterion of selectivity combines two perspectives: demarcation of typical class-barriers in the educational system on the one hand, and identification of decisive signals for utilisation on the labour market on the other. Following these considerations, the CASMIN schema is constructed as a *certificate-oriented* classification" (Brauns, Scherer & Steinmann, 2003: 222).

The CASMIN Educational Classification is a hierarchically structured measurement of certificates and is two dimensionally separated into general and vocational qualifications. This classification is also based on the institutional structure of educational sectors and divides the secondary part into three hierarchical steps and the tertiary sector into two sub categories of professional orientation and academic degrees.

Table 5 The CASMIN Educational Classification

Level		CASMIN	Description	
Tertiary	High	3b	Higher tertiary education: The completion of a traditional, academically-oriented university education	
	Low	3a	Lower tertiary education: Lower-level tertiary degrees, generally of shorter duration and with a vocational orientation	
Secondary	High	2c_voc	Vocational maturity: Full maturity certificates including vocationally-specific schooling or training	
		2c_gen	General maturity: Full maturity certificates (e.g. the Abitur, A-levels)	
	Mediate	2a voc	Intermediate vocational qualification, or secondary programmes in which general intermediate schooling is combined by vocational training	
		2b gen	Intermediate general education Academic or general tracks at the secondary intermediate level	
	Low	1c voc	Basic vocational training above and beyond compulsory schooling	
		1b gen	General elementary education	Social minimum of education. It generally corresponds to the level of compulsory education
Primary		1a	Inadequately completed general education	

voc=vocational education, gen=general education

Brauns, Scherer & Steinmann, 2003: 223

3.4 Hoffmeyer-Zlotnik Educational Classification

The classification proposed by Hoffmeyer-Zlotnik Educational Classification (Hoffmeyer-Zlotnik, 2003) is also based on school leaving qualifications. He combines certificates from general and professional education. Having in mind which average occupational prestige a respondent can obtain on the labor market by this combination of certificates, he rank orders the categories. He uses the Standard International Occupational Prestige Scale (SIOPS) developed by Treiman (1977; Ganzeboom & Treiman, 2003). SIOPS derives from the International Standard Classification of Occupations (ISCO 88) and measures the professional activity of an observed respondent. Hoffmeyer-Zlotnik's main argumentation is that for executing a profession a social recognized qualification is necessary and of central importance. This obtained qualification leads to a corresponding amount of social reputation as long as the educational institutions are controlled by the state and the

achievement of a diploma is required for exercising that profession. Combining educational outcomes and the occupational activity is (at least for modern societies) important, because the accreditation of occupational carriers depends on the finished educational background.

This classification does not distinguish between sectors of education but does cover the various combinations of general and vocational degrees. It allows an overview on the entity of certificates in a studied country. Table 6 illustrates the relation between general and vocational education and the average prestige scores of German respondents.

Table 6 Hoffmeyer-Zlotnik Educational Classification Demonstrated at the Case of *Germany*

Code	General Education	Vocational Education	average occupational Treiman prestige
1	no basic degree	none	14-20
2	basic degree	none/unfinished	15-20
3	no basic degree	operational	20-30
4	basic degree	operational	20-35
5	basic degree	vocational school	20-35
6	middle degree	none/unfinished	20-35
7	middle degree	operational	25-35
8	middle degree	vocational school	25-45
9	higher degree	operational	30-40
10	higher degree	vocational school	40-55
11	middle degree	vocational college	50-65
12	higher degree	technical college	50-70
13	higher degree	university, 1st degree, BA	65-75
14	higher degree	university, 2nd degree, MA	70-78
15	higher degree	university, doctorate, Dr./Ph D	70-78

Hoffmeyer-Zlotnik, 2003: 254

4 Problems of Misclassification

The first problems in comparing "highest level of education" are demonstrated in the chapter on "years of schooling" as comparative measurement. Different question wording in the surveys creates different information substituted under similar variable labels. The evaluation of this item across the surveys becomes impossible, because different fieldwork instruments produce diverse measures. Even if the questionnaire offers a number of answer categories like ISCED 1997, the researcher can face unsolvable problems in comparing countries or educational systems. The common standards differ from national accepted customs and habits. Sorting the national degrees and certificates, the reclassifica-

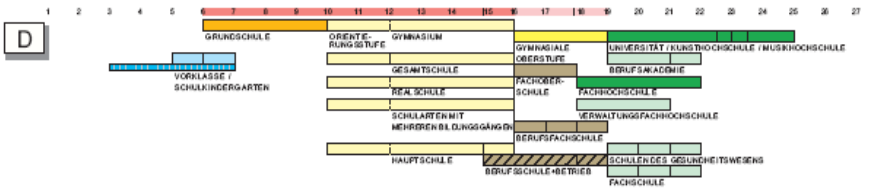
tion of the country's educational systems bears a serious degree of freedom for the researcher. Table 7 confronts how the German ESS national coordination team classified the survey outcomes into the common standards of the ESS coding and the author's exercise based on the ISCED 1997 instructions and manual. The main variation is detected for the category "primary or first stage of basic". ESS reports 1.7% of the respondents having obtained this degree. But the German educational system does not allow leaving the school institutions at that grade. Therefore only 0.1% can be found in our regrouping. The class "post secondary, non tertiary" also varies. The differences are due to the degree master craftsmen (Handwerksmeister) and due to respondents having done obligatory practical courses and internships after having reached the university entrance diploma and the start of university education.

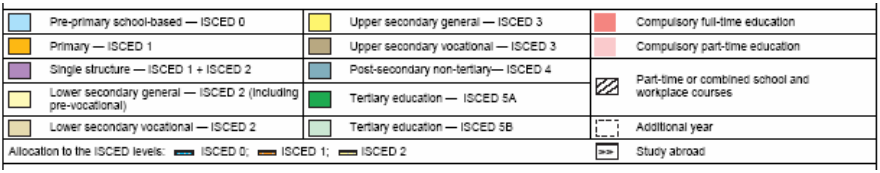
Table 7 Misclassification – The case of ISCED 1997 categories for *Germany*

	ISCED Categories for Germany	ESS classification	our reclassification of ESS
1	Primary or first stage of basic	1,7	0,1
2	Lower secondary or 2nd stage of basic	13,8	13,4
3	Upper secondary	58,2	54,4
4	Post secondary, non-tertiary	4,8	7,1
5	First stage of tertiary	20,5	23,5
6	Second stage of tertiary	1,1	1,1
N		2916	2906

Source: ESS round 1, computation by the authors

Particularly vocational degrees in the German educational system are not easy to classify by ISCED 1997. CEDEFOP, the European Center for the Development of Vocational Training categorized the German educational system by ISCED 1997 without using category 4: "post secondary, non tertiary". But for the degree master craftsmen (Handwerksmeister) there is no other possibility as to categorize these degrees in ISCED category 4.





Source: European Commission, 2002

5 A Proposal for Level of Highest Education Based on a Matrix with 10 Categories

5.1 Building the Hoffmeyer-Zlotnik/Warner Matrix of Education

The Hoffmeyer-Zlotnik/Warner Matrix of Education has the advantage to minimize the errors of misclassifications described above.

The matrix is built on the answers to the interview question on the highest general educational level obtained and the vocational education degree. One dimension presents the general education and the other axis the professional education including high school and university diploma. All national possible degrees relevant in the national education system are rank ordered from not applicable, lowest level to highest certificate.

The second step for creating the matrix is to bring the combination from general and vocational degree together with the social prestige that a person can gain on the labor market. The prestige scores are also ranked from low to high. Grouping together combinations of degrees with the similar prestige we come up with 10 valid categories and the 0 represents combinations not possible in the national system of education.

Table 8 Hoffmeyer-Zlotnik/Warner Matrix of Education – for *Germany*

vocational education	general education				
	non	basic degree	second degree	third degree	university-entrance diploma
non	1	2	3	6	7
dual system	4	4	5	5	5
vocational school	4	4	5	5	5
vocational college	0	5	5	8	8
university for applied sciences	0	0	9	9	9
university	0	0	0	10	10

Table 9 Hoffmeyer-Zlotnik/Warner Matrix of Education – for *Denmark*

vocational education	general education			
	non	basic degree	second degree	university-entrance diploma
non	1	3	3	7
school/workplace	4	5	5	5
vocational school	4	5	5	5
vocational college	0	5	5	8
university for applied sciences	0	9	9	9
university	0	0	0	10

Table 10 Hoffmeyer-Zlotnik/Warner Matrix of Education – for *Luxembourg*

vocational education	general education			
	non	basic degree	second degree	university-entrance diploma
non	1	2	3	7
school/workplace	4	4	5	5
vocational school	4	4	5	5
vocational college	0	5	5	8
university for applied sciences	0	0	9	9
university	0	0	0	10

Tables 8 to 10 show the matrix for Germany, Denmark and Luxembourg. Common to the three countries are the dimensions of the matrix ranking the school leaving certificates: general graduation by vocational education diplomas. Only not existing and not applicable categories are removed. In Denmark, pupils obtain the basic degree after the 10^{th} grade. In

Luxembourg, the distance between basics and university-entrance diploma is bigger than in Denmark. The German educational system knows two general school qualification levels between the basic degree and the university-entrance diploma.

Missing national certificates lead to missing codes on the 10 categories scale. But the not existing codes emphasize the singularity and individuality of the national education scheme. Some school systems (e.g. the German structure) offer a great number of combinations with different prestige to gain; some national arrangements offer fewer patterns in combining general and vocational certificates.

The Danish matrix still illustrates the need of a two step survey instrument: the question for general education level obtained and the question about the vocational graduation. The ESS questionnaire, fielded in Denmark, groups the answer categories closely to the ISCED 1997 classification. A more detailed survey instrument separating out the general and professional dimension of education may produce a finer defecated measurement of the attained school leaving grades.

5.2 The validity of the Hoffmeyer-Zlotnik/Warner Matrix of Education

The new measurement of education based on the 10 categories matrix is highly correlated with ISCED 1997 classification and the measurement based on "years of schooling". Table 11 also gives the correlation between the occupational prestige (SIOPS) and the household total net income (household-income). For the correlation of ISCED 1997 and SIOPS we have to consider that the skill levels of International Standard Classification of Occupation (ISCO 88) incorporates the ISCED measurement. Therefore we use the empirical prestige scores of an occupation from the survey data and not the theoretical possible value to which a school carrier may end (see Table 11).

Only in Germany, we find a relation between household income and the respondent's educational attainment. In Luxembourg and Germany we detect a strong relation between occupational prestige and our matrix measurement; in Denmark we achieve a lower correlation, but still visible. Comparing the educational measurements, in Germany and Luxembourg our matrix measurement of education is stronger correlated with prestige than the alternative scales. In Denmark, the correlation of our proposal is slightly lower than the years of schooling or ISCED 1997. This may change by using two questions: one about general education and the second about the vocational education. Having the answers on both questions, it is easy to construct the Hoffmeyer-Zlotnik/Warner Matrix of Education by ranking the answer categories. The codes inside the matrix are common across the observed countries and using the prestige score of each combination the national certificates can be reclassified. This limits the researcher's freedom of interpretation of national degrees.

Table 11 Validity of Hoffmeyer-Zlotnik/Warner Matrix of Education: Correlations

	Germany			
	HZ/W	**years**	**ISCED**	**SIOPS**
Years of education	.77			
ISCED	.83	.70		
SIOPS*)	.64	.54	.54	
Household income	.35	.35	.35	.33
	Denmark			
	HZ/W	**years**	**ISCED**	**SIOPS**
Years of education	.71			
ISCED	.93	.77		
SIOPS*)	.49	.50	.53	
Household income	.06	.08	.06	.08
	Luxembourg			
	HZ/W	**years**	**ISCED**	**SIOPS**
Years of education	.74			
ISCED	.93	.75		
SIOPS*)	.61	.56	.58	
Household income	.06	.09	.08	.05

*) SIOPS= Standard International Occupational Prestige Scale by D.J. Treiman
Source: ESS, round 1, computation by the authors

6 Conclusion

Does cross national, cross cultural comparative social research need a new measurement of highest level of education? Looking on the usually applied instruments we found:

"Years of schooling" is an adequate measure when survey researcher and interview respondent have "grades" in mind at the same time. In comparative surveys the question wording must be highly standardized and the translation must be carefully monitored to assure that in all observed countries the same fact is measured.

ISCED 1997 is in most modern and western countries a useful scheme to classify school leaving certificates. In countries with complex educational systems, like Germany, the ISCED 1997 categories cover hardly the social situation. Another disadvantage of ISCED 1997 is the risk misclassification, how national diplomas are sorted into the ISCED 1997 codes. Asking the respondent about the ISCED codes increases the interview burden for the respondent.
The CASMIN Educational Classification is based on a two dimensional measurement, like the Hoffmeyer-Zlotnik/Warner Matrix. But it does not control the freedom of interpretation of the data producer and user during the reclassification process.

The Hoffmeyer-Zlotnik Educational Classification is built consequentially on the combination of general and vocational education and uses the average occupational prestige for ranking the degrees. For the rank order of the degrees we recommend to have national experts involved with a strong knowledge about the national labor market entrance chances.

The Hoffmeyer-Zlotnik/Warner Matrix of Education requires a two step questionnaire, asking for general education followed by a question on vocational education. The table "general" by "vocational" establishes the matrix of educational codes and decreases the risk of misclassification into comparative standard codes by the interviewer and/or the data input, as long as the researcher is guided by the answers given to both questions.

Table 11 shows high correlations between the newly proposed matrix and the ISCED 1997 classification over all countries. Even for Germany, we observe this strong link. This observation confirms the easy use and the low risk of misclassification of our matrix.

A strong relationship between the Hoffmeyer-Zlotnik/Warner Matrix of Education with "years of schooling" is present in all countries. This linkage between the matrix and years of schooling" exists also in countries where "grades" are surveyed; and the relation is higher than the connection between the matrix and ISCED 1997.

Finally, total household net income is independent from all used education scales and from occupational prestige measured by SIOPS.

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