THE INTERNATIONAL STANDARD CLASSIFICATION OF EDUCATION 2011

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ABSTRACT

The International Standard Classification of Education (ISCED) is a tool for harmonising education-related information. It covers almost all countries in the world and is centrally maintained and documented by UNESCO Institute for Statistics. ISCED is commonly used in official statistics and surveys (e.g. by OECD and Eurostat), but it is also increasingly used for the measurement of educational attainment in academic cross-national surveys. ISCED has been revised between 2008 and 2011, and the new version was adopted by the UNESCO General Conference in November 2011. This research note describes ISCED 2011 and the most important changes as compared to the previous version, ISCED 1997, with a special focus on educational attainment. A brief discussion of strengths and weaknesses of the classification as well as future challenges conclude the note.

Keywords: Education; measurement; comparative research; classification

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INTRODUCTION

An individual's educational attainment, or often simply 'education', is one of the most used concepts and variables in sociological survey research (Smith, 1995). Education is meant to draw distinctions between people and thus implies inequality in education (Lucas & Beresford, 2010). In social stratification research, educational attainment is typically a substantive variable, whereas in other research areas, it functions often as a control variable. Of course, both substantive and control variables should be measured with a high degree of quality (i.e. reliability and validity).

A continuing challenge of comparative social research is the measurement of educational attainment in cross-national surveys and studies. In this context, measurement quality in addition to validity and reliability also entails cross-national *comparability*. A number of solutions to this problem have been proposed in the past, usually involving the harmonisation of country-specific educational attainment variables into cross-nationally comparable variables (Brauns, Scherer, & Steinmann, 2003; Hoffmeyer-Zlotnik & Warner, 2007; Treiman & Yip, 1989; Schneider, 2010).[1]

A classification to serve this purpose that is commonly used in official surveys and also increasingly so in academic surveys is the International Standard Classification of Education, ISCED. All official cross-national data already use ISCED for education-related variables. Academic surveys like the European Social Survey (ESS), the Survey of Health, Aging and Retirement in Europe (SHARE) and, more recently, the International Social Survey Programme (ISSP) also use educational attainment measures closely related to ISCED.

This research note describes ISCED 2011 and the most important changes as compared to the previous version, ISCED 1997. In the last part, strengths and weaknesses of the classification are discussed from a conceptual point of view.[2]

THE INTERNATIONAL STANDARD CLASSIFICATION OF EDUCATION

ISCED is an internationally agreed classification designed for the cross-nationally comparable coding, analysis and reporting of data related to educational programmes and qualifications. It was initially developed for policy planning and the promotion of education worldwide. Its first version

was adopted in 1975 and then revised in 1997 (UNESCO, 2006[1997]). This revision was motivated by the OECD to improve economically relevant education indicators in order to promote the performance of educational systems and thereby economies. Its most recent version, ISCED 2011, was adopted in November 2011 (UNESCO, 2011). This revision was promoted by Eurostat because of the Bologna reforms and the importance of ISCED for the production of education-related indicators, e.g., in the Europe 2020 strategy.

ISCED has, since the 1970s, been used as the standard for international education statistics and indicators as published e.g. by UNESCO, the OECD or Eurostat (e.g. OECD, 2011). In line with its initial purpose, the technical means and data available, ISCED made use of administrative rather than survey data in the early phase. ISCED 1997 was still highly focused on concepts to be derived from administrative data. But slowly, the focus changed from enrolment, finance and personnel statistics (education inputs) to indicators related to educational attainment as well as knowledge, skills and competences (education outputs).[3] Sample surveys organised by official bodies such as OECD and Eurostat (e.g. PISA, PIAAC, EU-LFS or EU-SILC) have therefore started to use ISCED in the late 1990s for the coding of micro-data related to educational attainment. Given ISCED 1997 was not designed to be used for survey data and lacked the relevant concepts for this purpose, especially the concept of educational attainment, this development was another driver of the 2011 revision. Finally, ISCED 97 did not yet provide a standard coding system.

CENTRAL CONCEPTS AND COVERAGE OF ISCED

The units of classification of ISCED are educational programmes and qualifications.[4] The term 'educational qualification' was introduced to ISCED for the first time with ISCED 2011. Educational attainment is defined as the highest level of education successfully completed, as typically indicated by the highest educational qualification obtained. Statistical indicators related to entrants, enrolments, drop out and graduations are based on data referring to educational programmes, whereas indicators related to educational attainment are thus (mostly) based on data referring to formal educational qualifications.

ISCED classifies educational programmes and qualifications by level and field of education. In the terms of Sørensen (1970), the former reflects vertical and the latter horizontal distinctions. The sub-classification for field

of education has not been reviewed for ISCED 2011. Fields of study are not covered in this research note.

Generally, only formal education is taken into account when measuring educational attainment. Formal and non-formal education are distinguished by the recognition (or not) of an educational programme as part of the country's educational system by the relevant authorities. Formal education is ultimately institutionalised by the state, whereas non-formal education is designed by its providers in order to complement the formal education system.

LEVELS OF EDUCATION IN ISCED 2011 AND COMPARISON WITH ISCED 1997

Levels of education group educational programmes and qualifications into an ordered series of categories, which represent gradations from foundational to complex and specialised educational content and learning outcomes. ISCED 2011 has nine levels of education, compared to seven levels in ISCED 1997.[5] This is due to the differentiation of tertiary education in accordance with the Bologna process. Table 1 shows the correspondence between ISCED levels in ISCED 2011 and ISCED 1997.

ISCED level 0 or early childhood education provides learning and educational activities with a holistic approach to support children's early cognitive, physical, social and emotional development. In contrast to ISCED 1997, ISCED 2011 also covers (and distinguishes, on the second digit) early childhood educational development, which refers to educational programmes targeting children under the age of 3. For educational attainment, ISCED level 0 is defined as not having completed primary education. For countries where this is common, the second digit can then be used to distinguish 'no education (at all)' from 'some primary education' also a new feature of ISCED 2011.

ISCED level 1 or primary education provides learning and educational activities typically designed to provide students with fundamental skills in reading, writing and mathematics (i.e. literacy and numeracy). The content of this level was not changed in ISCED 2011.

Secondary education is differentiated into ISCED levels 2 and 3. Broadly speaking, secondary education aims at learning at an intermediate level of complexity. It provides learning and educational activities building on primary education and preparing for both labour market entry as well as

Table 1. Correspondence of ISCED Levels for 1997 and 2011 Versions.

ISCED 2011		ISCED 1997	
Level	Label	Level	Label
0	Early childhood education (attainment: less than primary education)	0	Pre-primary education
1	Primary education	1	Primary education
2	Lower secondary education	2	Lower secondary education
3	Upper secondary education	3	Upper secondary education
4	Post-secondary non-tertiary education	4	Post-secondary non-tertiary education
5	Short cycle tertiary education	5	First stage of tertiary education
6	Bachelor level education and equivalent		
7	Master level education and equivalent		
8	Doctoral level education	6	Second stage of tertiary education

post-secondary and tertiary education. Whereas ISCED level 2 or lower secondary education usually covers a broad range of fields of education and does not yet give access to tertiary education, ISCED level 3 or upper secondary education offers more specialisation and access to tertiary education.

ISCED level 4 or post-secondary non-tertiary education provides learning and educational activities building on secondary education preparing for both labour market entry as well as tertiary education. It aims at learning below the high level of complexity characteristic of tertiary education, e.g. in the form of vocational training after the completion of secondary education. Although there were intentions to abolish this level, it has in the end been kept to satisfy needs in a number of countries.

ISCED levels 5 to 8 or tertiary education builds on upper secondary education, providing learning opportunities in specialised fields of education at a high level of complexity. ISCED levels 5 to 7 are where most changes happened between ISCED 1997 and 2011. Tertiary education includes what is commonly understood as higher education, but is broader than that because it also includes advanced vocational or professional education below the level of a first university degree (ISCED level 5, which largely corresponds to the former ISCED 5B) that is not considered as part of higher education in all countries. ISCED level 6 or bachelor level education corresponds to the level of first university degrees to be obtained after 3 to 4 years of study. ISCED level 7 or master level education corresponds to the level of first university degrees to be obtained after more than 4 years of

study, or second university degrees and post-graduate qualifications below the doctoral level. ISCED level 8 finally comprises only doctoral programmes and thus corresponds to ISCED level 6 in ISCED 1997.

COMPLEMENTARY DIMENSIONS IN ISCED

Given the differentiation of educational systems, ISCED offers further distinctions within levels relating to several complementary dimensions: programme orientation, level completion, and access to higher ISCED levels.[6]

The *orientation* of an educational programme refers to its specialisation and what kinds of tasks it prepares participants to perform upon successful completion. *Vocational education* is defined as 'Education that is designed for learners to acquire the knowledge, skills and competencies specific to a particular occupation or trade or class of occupations or trades' (UNESCO, 2011, p. 81). This definition largely corresponds to the respective concept in ISCED 97. *General education* in contrast is defined as 'Education that is designed to develop learners' general knowledge, skills and competencies and literacy and numeracy skills, often to prepare students for more advanced educational programmes at the same or higher ISCED levels and to lay the foundation for lifelong learning' (UNESCO, 2011, p. 80). ISCED 1997 had a third orientation category called 'pre-vocational education' comprising programmes preparing for vocational education. These are typically general programmes with introductory vocational elements and lower academic standards than other general programmes at the same level of education that do not yet provide a full vocational qualification. This category was dropped with ISCED 2011 in order to simplify the complementary dimensions.

Access to a higher ISCED level distinguishes educational programmes and qualifications that give access to the next higher ISCED level from those that don't. The latter are also referred to as *terminal* programmes, although some of them may lead to another programme at the same ISCED level. For ISCED level 3, the 'next higher' ISCED level is tertiary education, thus ISCED levels 5, 6 and 7, rather than level 4. In ISCED 1997, there were three *destination* categories, which were however inconsistent across levels. ISCED 2011 drops the 'access' dimension from tertiary education (5A vs. 5B) and for secondary education summarises the former destination categories A and B in 'access' and C in 'no access'.

Completion of an ISCED level is an important characteristic of an educational programme and qualification for determining an individuals' level of educational attainment. Some qualifications result from educational programmes that are too short to be considered as completing the level at which the programme is classified. They are thus regarded as attainment of the next lower ISCED level only. In ISCED 1997, the concept of level completion was only provided for in ISCED category 3C by distinguishing between short and long terminal programmes in ISCED 3C.

Access to a higher ISCED level and level completion partly overlap: Programmes that do not (fully) complete an ISCED level generally do not give access to the next higher ISCED level. Within programmes that *do* complete an ISCED level, a distinction is made between those that give access to the next higher ISCED level and those that don't. Orientation is in turn conceptually independent from both 'access' and 'completion', although empirically there will also be more and less common combinations (e.g. there are only very few general education qualifications completing a level but not providing access to a higher ISCED level).

THE ISCED 2011 CODING SCHEME

ISCED 1997 did not have a numeric coding scheme. Whenever data were presented with more detail than just the (numbered) ISCED levels, different users and organisations developed their own way of coding ISCED, substantially limiting the comparative potential of ISCED. ISCED 2011 offers two standard coding schemes with three digits, one for educational programmes (ISCED-P), and one for educational attainment (ISCED-A). This distinction is necessary because the completion of 'short' programmes at an ISCED level is not considered as leading to attainment of that level (see above) so that the programme and the corresponding qualification cannot be classified in the same way. Furthermore, some distinctions are only important for programme-based statistics, but not for attainment, like a programme's position in the national qualification structure. Beyond these points, both coding schemes are however fairly consistent.

The first digit of the classification refers to the ISCED level of the programme or qualification. The second and third digits of the classification refer to specific values on the complementary dimensions. Most of them only apply to specific levels and have only few different values, so that different complementary dimensions were combined in one digit. This may look strange at first, but was necessary because of stakeholders' reluctance

Table 2. ISCED Coding Scheme for Educational Attainment ('ISCED-A').

First digit: level of education attained		
0	Less than primary	
1	Primary	
2	Lower secondary	
3	Upper secondary	
4	Post-secondary non-tertiary	
5	Short cycle tertiary	
6	Bachelor or equivalent	
7	Master or equivalent	
8	Doctoral or equivalent	
9	Not elsewhere classified	
Second digit		
0	Not further defined/not applicable	
9	Not elsewhere classified	
Sub-category within ISCED level 0		
1	Never attended an educational programme	These codes do not apply to ISCED levels 1–8
2	Some early childhood education	
3	Some primary education (without level completion)	
Orientation of the qualification		
4	General/Academic	These codes do not apply to ISCED levels 0–1. Code 6 is only foreseen for ISCED levels 5–8.
5	Vocational/Professional	
6	Orientation unspecified	
Third digit		
0	Not further defined/not applicable	
9	Not elsewhere classified	
Level completion and access to a higher ISCED level		
2	Partial level completion, no access to higher ISCED level (levels 5/6/7 for ISCED level 3)	These codes do not apply to ISCED levels 0–1 and 5–8.
3	Level completion, no access to higher ISCED level (levels 5/6/7 for ISCED level 3)	
4	Level completion, access to higher ISCED level (levels 5/6/7 for ISCED level 3)[a]	

[a]Including successful completion of a programme or stage of a programme at a higher ISCED level insufficient for (full or partial) level completion.

to use further digits. Since this paper focuses on educational attainment, Table 2 shows the coding structure for educational attainment only. Given not all differentiations apply at all ISCED levels, the total number of ISCED categories is much lower than a three-digit coding scheme may suggest. Table A.1 listing all combinations foreseen by ISCED-A is provided in the appendix.

As an example, an individual with completed general lower secondary education with access to upper secondary but without any higher qualification would be coded 244 (e.g. Hauptschulabschluss in Germany or Brevet de college in France). A respondent with a bachelor's degree would be coded 660, and one with a PhD 800.

DISCUSSION

There are three core strengths of ISCED 2011 for social science research. First, it permits increasing standardisation in the measurement of education by providing standard three-digit coding schemes for both educational programmes (ISCED-P) and educational attainment (ISCED-A). It could thus become much easier in the future to provide and apply coding routines for education-related information (comparable to what ISCO already provides for occupation). Second, ISCED covers almost all countries in the world and is thus widely applicable. Since 1997, mappings linking national educational programmes with detailed ISCED categories have been developed for a large number of countries,[7] and these will be extended in the future. Third, the concept of educational attainment that was added to ISCED 2011 closely corresponds to the typical proxy measures for human and cultural capital in the social sciences.

Although a lot of progress has been made between ISCED 1997 and ISCED 2011, ISCED 2011 is still unsatisfactory from the point of view of social science and especially social stratification research.

The most important dimension of educational systems that ISCED does not grasp is external differentiation, also referred to as 'tracking' (e.g. LeTendre et al., 2003). It means that pupils or students are sorted into different types of educational programmes (often even different types of schools) depending on their level of ability and achievement. If these different programmes do not differ on any of the other dimensions relevant to ISCED (e.g. orientation), this distinction disappears in data coded using ISCED. This, for example, happens with the different types of lower secondary schools in the Netherlands and German speaking countries. Why

does ISCED omit this prominent feature of educational systems? First, it is only relevant to a rather small number of European countries. Second, the governments of those countries do not have any interest in this feature being traceable in ISCED.[8]

Furthermore, ISCED 2011 is supposed to clarify the boundary between ISCED levels 2 and 3, which is disputed in Britain and in countries inspired by the British educational system (see Schneider, 2008 and Steedman, 1996). I have strong doubts whether the introduction of the concept of 'partial level completion' achieves this clarification – on the contrary it legitimises the classification of GCSEs as 'not quite complete upper secondary education' as completed ISCED level 3 (even if only 'partially completed'). This is like saying that somebody who ran 80 instead of 100 m has 'successfully completed' a 100 m race, just because it was substantially more than what would have been necessary for a 50 m race.

A third weak point of ISCED is the boundary between post-secondary non-tertiary and tertiary education. This is important because the dimension 'access to a higher level' of an ISCED level 3 programme depends on where the 'accessible' programmes are classified – at level 4 (then: no access) or level 5 (then: access, even if there is no access to level 6). In consequence, quite incomparable national programmes and qualifications end up in the same ISCED categories. For example, an apprenticeship in Germany, giving access to master craft programmes at ISCED level 5, is classified as 354 despite the fact that these programmes do not give access to studies at the bachelor level. In most other countries, educational programmes in ISCED category 354 would give access to the bachelor level also, e.g. vocational matura in Eastern European countries.

Finally, the main weakness of ISCED is one that is implied by its origins: the classification is maintained by official bodies and needs to be adopted by the UNESCO general conference with every major revision. This makes the concepts building ISCED vulnerable to political interests, and the weaknesses described previously to a large degree arise from the agenda-setting of the political rather than research communities. Education remains a politically highly charged field, and governments do not like to see the effects of tracking exposed, and they want to look good in the 'league tables' produced by the OECD and in the Europe 2020 indicators. Basically, there is a lack of legitimacy in a statistical tool that is developed by the same community who has the strongest interests in avoiding certain aspects of the concept in question to be measured: it's like putting the fox in charge of the henhouse. The influence of scientific evidence or otherwise more disinterested expertise on the review and implementation process continues

to be minimal. UNESCO Institute for Statistics, OECD and Eurostat seem to have only little leverage and enthusiasm to engage in conflict with individual countries as regards to recommending (or enforcing) a correct mapping of ISCED to national education systems.

The latest ISCED revision process was however more open and structured than the previous one, leading to a substantially higher input from around the world, including statisticians, (a few) researchers and practitioners, compared to the small panel of seven designing ISCED 1997. Over the last 10 years and with the current revision, documentation of ISCED has also improved considerably. These days, a fair number of governments and national statistical offices are also seriously committed to the goal of high-quality cross-nationally comparable data rather than just their own country's position on international education indicators, and the ISCED mappings can broadly be regarded as adequate for most (but certainly not all) countries.

Research using large-scale surveys will be increasingly *bound* to using ISCED because many large surveys are conducted by official bodies relying on ISCED. Given the weaknesses of ISCED continue to be substantial, the social science research community should better try to influence it in the future. The community should engage in a lasting debate with official statistics, and official bodies should invite researchers to do so. A stronger engagement of the scientific community with concepts from official statistics could improve the way ISCED will be implemented in official surveys like the EU-LFS, which will be determined in the next couple of years. In the long run, further improvements of ISCED itself could be aimed at: the next revision will be on its way 10 or 15 years down the road.

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NOTES

1. Educationalists and psychometricians have in addition developed complex tests to measure individuals' competences and skills in a range of areas (e.g. literacy or

numeracy). These are not the subject of this paper because actual skills and educational attainment in terms of qualifications obtained are, although related, different concepts. Educational attainment reflects those elements of knowledge and skills that were officially recognised at some point in an individual's life.

2. For empirical evaluations of different harmonised educational attainment measures, see Braun and Müller (1997), Kerckhoff, Dylan, Ezell and Brown (1999, 2002) and Schneider (2010).

3. For detailed accounts of the historical development of ISCED, see Sauvageot (2008), Smyth (2008) and Tréhin-Lalanne (2011).

4. Definitions of those terms can be found in the main text as well as in the glossary which is annexed to the official ISCED document (UNESCO, 2011, pp. 77–85).

5. For a detailed description of ISCED 1997, see UNESCO (2006[1997]), Schneider and Kogan (2008) and Sauvageot (2008).

6. For ISCED levels 6 and 7, there is also a distinction by a qualification's *position in the national degree and qualification structure*. This is irrelevant for educational attainment and thus not further presented here.

7. See http://www.uis.unesco.org/Education/ISCEDMappings/ and http://circa.europa.eu/Public/irc/dsis/edtcs/library?l=/public/unesco_collection/programmes_isced97/

8. While tracking is most visible in secondary education, it also exists in tertiary education. Conceptually, this distinction is more difficult to make, but broadly speaking an upper and a lower tier of higher education can often be distinguished by referring to different entry requirements or qualifications and fields of study offered as well as focus on teaching for application or research. The external differentiation of the higher education sector continues to be regarded as an important social stratifier (Shavit et al., 2007).

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APPENDIX

Table A.1. List of Codes of the Classification of Educational Attainment ('ISCED-A') in ISCED 2011 (UNESCO Institute for Statistics, 2011).

0 Less than primary
- 01 Never attended an educational programme
  - 010 Not further defined
- 02 Some early childhood education
  - 020 Not further defined
- 03 Some primary education (without level completion)
  - 030 Not further defined

1 Primary
- 10 Not further defined
  - 100 Not further defined

2 Lower secondary
- 24 General
  - 242 Partial level completion and without access to upper secondary
  - 243 Level completion but without direct access to upper secondary
  - 244 Level completion with direct access to upper secondary[a]
- 25 Vocational
  - 252 Partial level completion and without access to upper secondary
  - 253 Level completion but without direct access to upper secondary
  - 254 Level completion with direct access to upper secondary[a]

3 Upper secondary
- 34 General
  - 342 Ppartial level completion and without access to tertiary
  - 343 Level completion but without direct access to tertiary
  - 344 Level completion with direct access to tertiary[a]
- 35 Vocational
  - 352 Partial level completion and without access to tertiary
  - 353 Level completion but without direct access to tertiary
  - 354 Level completion with direct access to tertiary[a]

4 Post-secondary non-tertiary
- 44 General
  - 443 Level completion but without direct access to tertiary education at ISCED 5, 6 or 7
  - 444 Level completion with direct access to tertiary education at ISCED 5, 6 or 7[a]
- 45 Vocational
  - 453 Level completion but without direct access to tertiary education at ISCED 5, 6 or 7
  - 454 Level completion with direct access to tertiary education at ISCED 5, 6 or 7[a]

5 Short cycle tertiary
- 54 General
  - 540 Not further defined
- 55 Professional
  - 550 Not further defined

Table A.1. (*Continued*)

56 Orientation unspecified[a]
560 Not further defined
6 Bachelor or equivalent
64 Academic
640 Not further defined
65 Professional
650 Not further defined
66 Orientation unspecified[b]
660 Not further defined
7 Master or equivalent
74 Academic
740 Not further defined
75 Professional
750 Not further defined
76 Orientation unspecified[b]
760 Not further defined
8 Doctoral or equivalent
84 Academic
840 Not further defined
85 Professional
850 Not further defined
86 Orientation unspecified[b]
860 Not further defined
9 Not elsewhere classified

[a]Including successful completion of a programme or stage of a programme at a higher ISCED level insufficient for level completion or partial completion.
[b]To be used in the absence of internationally agreed definitions of academic and professional orientations of qualifications (or intermediate qualifications) from the successful completion of programmes (or stages of programmes) at ISCED levels 6–8.

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