



A DDI resource package for The International Standard Classification of Education (ISCED)

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Outline

- Challenges in measuring education cross-nationally
- The International Standard for Classification of Education (ISCED), why and what?
- Possible DDI usage – resource packages for ISCED.

Challenges in Measuring Education Cross-nationally

- The reporting of statistics on education by large international organizations like UNESCO, OECD and EUROSTAT has developed increasingly over the last years
- Education is a widely used variable in social research as a core explanatory factor or as a control variable
- Education is a social institution that differs strongly between countries
- Qualifications differ over time
- Challenge: Cross-nationally comparable measurement of educational attainment, enrollment and other education related information

ISCED – What is it, Developments

- The International Standard for Classification of Education (ISCED) is the most advanced attempt at creating a systematic international framework for classification of educational programs and qualifications.
- UNESCO is responsible, important partners OECD, Eurostat
- First version: 1976, was developed for own use, as well as for the use of other statistical agencies, e.g. the OECD. Classifies education levels.
- Second version: 1997 – allows for measuring education and training in more detail within levels.
- Third version: 2011 – released the 10th of November this year. More differentiation at tertiary level. Simplification of allocation criteria. 3-digit numeric coding frames for coding of educational enrollment and educational attainment.

Classification of ISCED - Purpose

- System on an abstract level
- Captures the variance of national programmes
- Goal:

Comparability between countries

- Heterogeneity of programme systems and measurement systems *between countries*

Comparability within countries over time

- Heterogeneity of programme systems and measurement systems *over time*

Classification of ISCED 2011

- Two parallel coding schemes
 - Educational programmes (ISCED-P)
 - Educational attainment (ISCED-A)
 - Could be understood as variant of ISCED-P
- Numeric coding framework
- Strictly hierarchical
 - sub-levels add to the next upper level
- 3 levels of aggregation
 - Level of education (9 in ISCED-P and ISCED-A)
 - Categories (21 in ISCED-P, 23 in ISCED-A)
 - Sub-categories (60 in ISCED-P, 33 in ISCED-A)

ISCED 2011 - Complete Standard

- Three components:
 - Classification
 - Operational concepts and definitions as structured text
 - Mappings of national programs to classification
 - Required for usage in official statistics and surveys, especially to achieve comparability
 - Ongoing work, final version not expected before end of 2013

Classification of ISCED 2011 - Extract

ISCED11P Levels	Categories	Sub-categories	
Levels of education	0 Early childhood education		
	...		
	1 Primary		
	...		
	2 Lower secondary		
	...		
	3 Upper secondary		
	...		
	4 Post-secondary non-tertiary		
	...		
	5 Short cycle tertiary		
		54 general	Programme orientation 4 general 5 vocational
		541 insufficient for level completion	
		544 sufficient for level completion	
	55 vocational		
	551 insufficient for level completion		
	554 sufficient for level completion		
6 Bachelor or equivalent			
...			
7 Master or equivalent			
...			
8 Doctoral or equivalent			
...			
9 Not elsewhere classified			
		Level completion 1 no completion 4 completion	

ISCED-P complementary dimensions

Levels	Categories	Sub-categories
0 - 1	nap	nap
2	Orientation (General, Vocational)	Level completion and access to higher ISCED levels (no level completion, partial level completion without direct access, level completion without direct access, level completion with direct access)
3		
4		Access to higher ISCED levels (no level completion, level completion without direct access, level completion with direct access)
5		Level completion (no level completion, completion)
6	Orientation (Academic, Professional, Unspecified)	Duration and position in national degree /qualification structure (stage within first degree, first degree 3 – 4 years, long first degree 4 years +, second or further degree/bachelor programme)
7		Position in national degree and qualification structure (stage within first degree/master, first degree master, second or further degree/master following bachelor, second or further degree/master following master)
8		Level completion (no level completion, completion)

ISCED 2011 Conceptual Component, some Main Elements

- Unit of classification
 - Educational programmes
 - Related qualifications

- Scope of education covered by ISCED
 - Formal education
 - Non-formal education
 - Informal/incidental education

'A coherent set or sequence of educational activities or communication designed and organized to achieve pre-determined learning objectives or accomplish a specific set of educational tasks over a sustained period'

Annotations from Annex

36 C/19

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11. ISCED LEVEL 1 – PRIMARY

A. PRINCIPAL CHARACTERISTICS

120. Programmes at ISCED level 1, or “primary” education, are typically designed to provide students with fundamental skills in reading, writing and mathematics (i.e. literacy and numeracy), and to establish a sound foundation for learning and understanding of core areas of knowledge, personal and social development, preparing for lower secondary education. It focuses on learning at a basic level of complexity with little if any specialisation.
121. Educational activities at ISCED level 1 (particularly in the early grades) are often organized around units, projects or broad learning areas often with an integrated approach rather than providing instruction in specific subjects. Typically, there is one main teacher charge of a group of pupils who organizes the learning process, although a class may have more than one teacher, especially for certain subjects or units.
122. Age is typically the only entry requirement at this level. The customary or legal age of entry is usually neither younger than 5 years nor older than 7 years. Most programmes at this level last 6 years, although their duration ranges between four and seven years. Primary education typically lasts until age 10 to 12 (see Paragraphs 132 to 134). Upon completion of primary education programmes, children may continue their education at ISCED level 2 (lower secondary education).
123. Programmes classified at ISCED level 1 are referred to in many ways across the world, e.g. primary education, elementary education or basic education (stage 1/lower grades if an education system has one programme that spans ISCED levels 1 and 2). For international comparability purposes the term “primary” is used to label ISCED level 1.

B. CLASSIFICATION CRITERIA

124. For the definition of primary, the following criteria are relevant:

Main criteria

- a. Systematic instruction in fundamental knowledge, skills and competencies (see Paragraph 125);
- b. Typical entrance age and duration (see Paragraph 122); and
- c. Instruction organized typically by one main class teacher (see Paragraph 126).

Subsidiary criteria

- a. Part of compulsory education (see Paragraph 127).

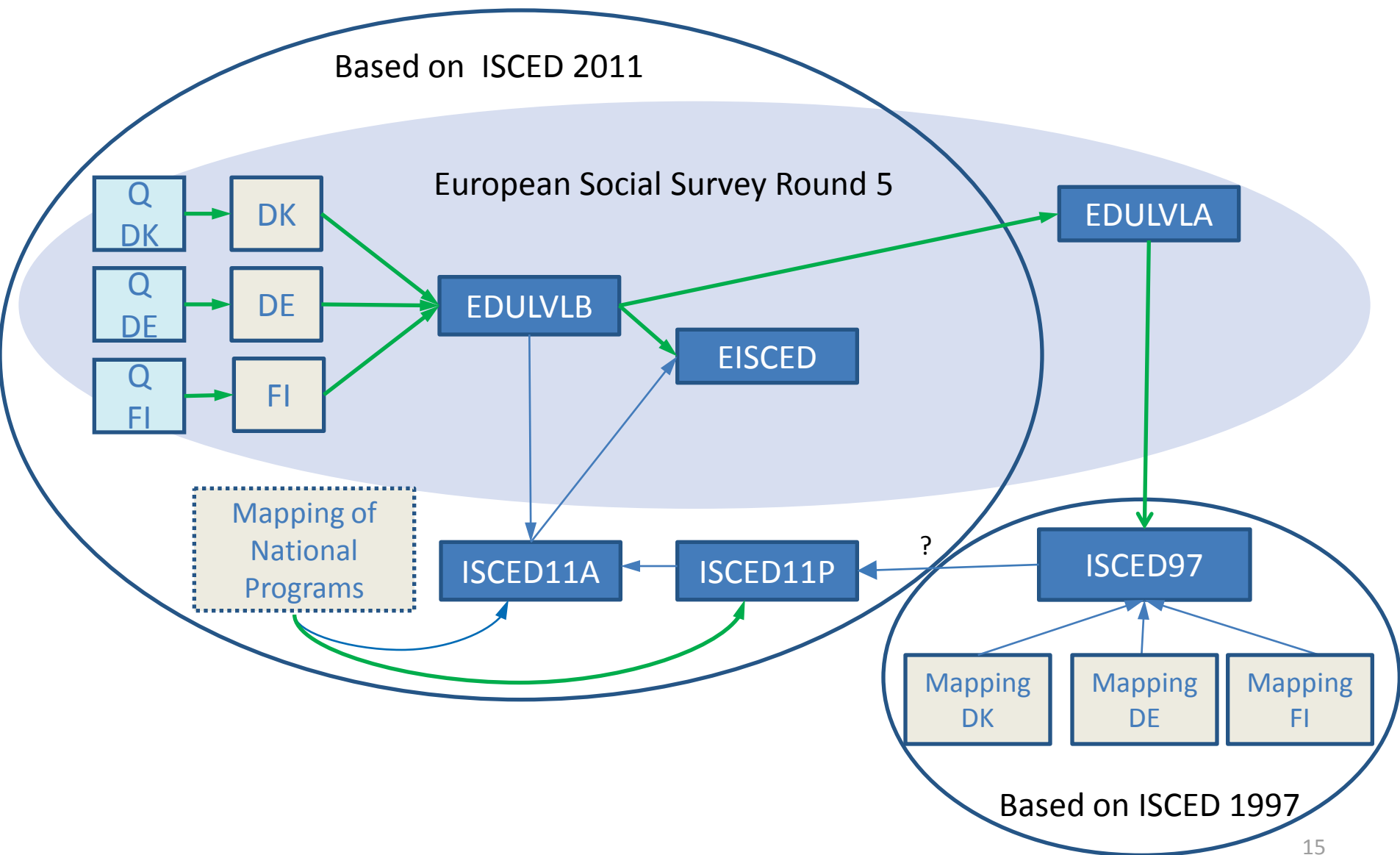
Provisional ISCED 2011 mapping Mongolia, extract

Mongolia ISCED mapping																
ID	Name of the education programme	Minimum entrance requirement	Main diplomas, qualifications or certificate awarded at end of programme	Theoretical entrance age	Theoretical duration	Is the programme part of Compulsory education?	ISCED 2011 level						Theoretical entrance age	Theoretical duration	Notes	
							ISCED 2011 level	ISCED 2011 orientation Type of education (level 0)	ISCED 2011 completion	ISCED 2011 access	ISCED 2011 position in national degree structure	ISCED 2011 code (3 ~ digit)				
1	Pre-school education	2 years old	na	2	5	N	Early childhood education	0	ECED	na	na	na	010			
							Early childhood education	0	Pre-primary	na	na	na	020	3	4	
2	Primary education	7 years old	na	7	5	Y	Primary education	1	na	F	Y	na	100	4	5	
3	Lower secondary education	Primary education	Certificate of lower secondary education	12	4	Y	Lower secondary education	2	G	F	Y	na	244	12	4	
4	Upper secondary education	Certificate of lower secondary education	Certificate of upper secondary education	16	2	N	Upper secondary education	3	G	F	Y	na	344	16	2	
5	Technical and vocational	Certificate of lower secondary education	Certificate of upper secondary education and vocational	16	1,5	N	Upper secondary education	3	V	F	N	na	354	16	2	

ISCED 2011, main changes from ISCED 1997

- Extension of ISCED 0 (Pre-primary education) to include educational programmes for very young children.
- More extensive definition of types of education (formal/non formal).
- Redefinition of education at the tertiary level
 - Short-cycle tertiary
 - Bachelor and equivalent
 - Master and equivalent
 - Doctoral and equivalent
- Classification of educational attainment (ISCED-A) is introduced, in addition to classification of programmes (ISCED-P)
- **Numeric code schemes** for both ISCED-P and ISCED-A
- Changes in cross-classification variables/complementary dimensions and their categories

Relationship between ISCED based components



DDI Usage:

Resource Package for ISCED 2011

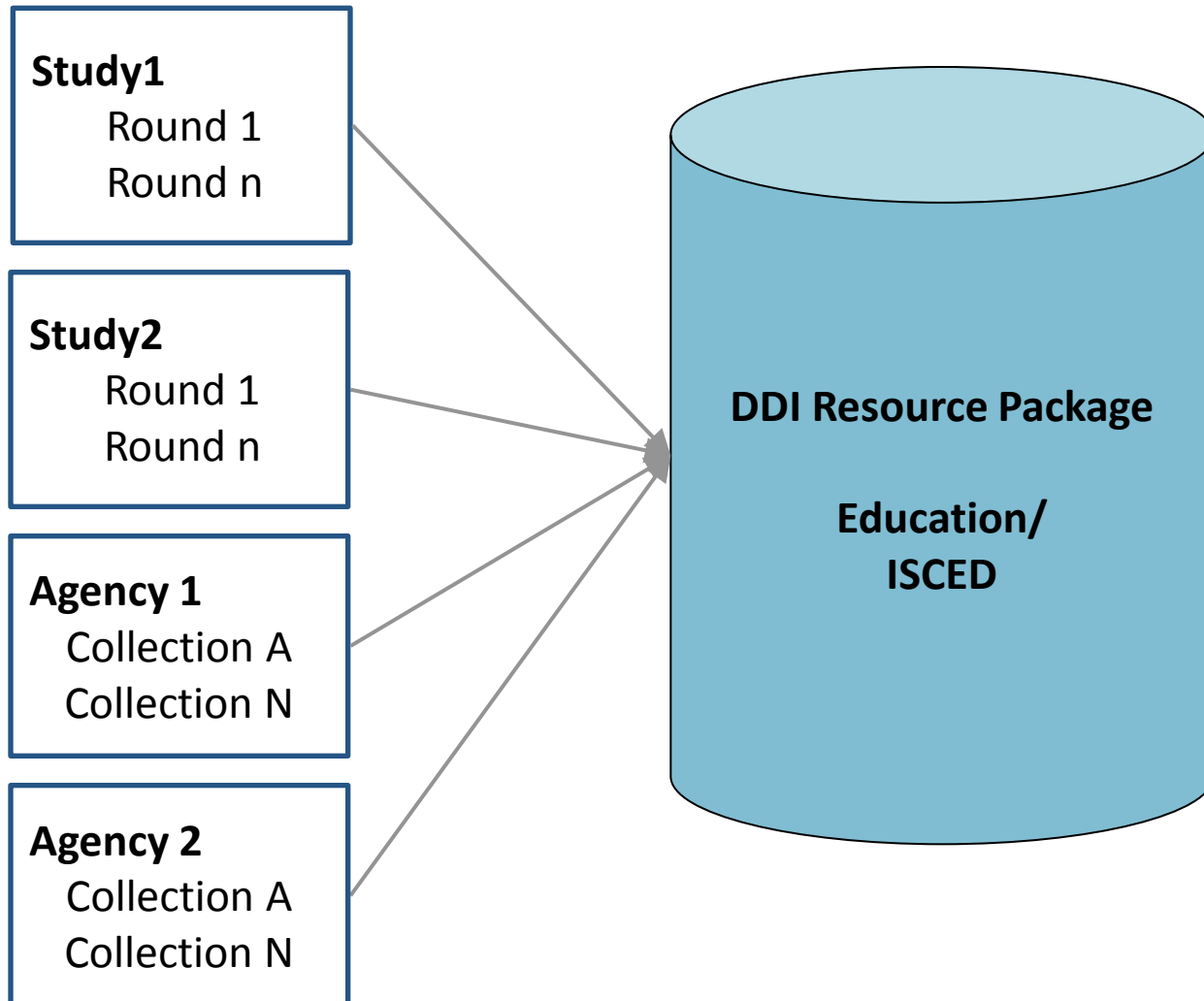
- Programme and Attainment
 - as two variables (with codes and categories)
- Relationship between programme and attainment variant
 - with comparison module
- Operational concepts and definitions
 - as external other material with identifiable sections
 - or as collection of notes
- Future mappings from national variables to ISCED11
 - comparison module and as generation instruction

RP Usage Possibilities

- Usage of RP in local metadata system
 - Importing a copy
 - Accessing the RP programmatically by web services
- Generation of commands for statistical packages for variable definitions and comparison of variables
- Enhanced publication with structured metadata and explanatory notes, fully cross-referenced

ISCED in a DDI Resource Package

Study-independent Metadata stored in a DDI Resource package can be reused by different studies, waves, or agencies



Components of Resource Package

- Concept
- (Question)
- Variable
- **Categories**
- **Codes**
- Comparison
- Notes
- Other Material

Structural Outline of Resource Package

DDIInstance

ResourcePackage

Purpose

ConceptualComponent

ConceptScheme

Concept Education

DataElementScheme

DataElement ISCED11P

ConceptReference

CategoryReference

DataElement ISCED11A

LogicalProduct

OtherMaterial

Note

CategoryScheme ISCED11P

CodeScheme ISCED11P

VariableScheme

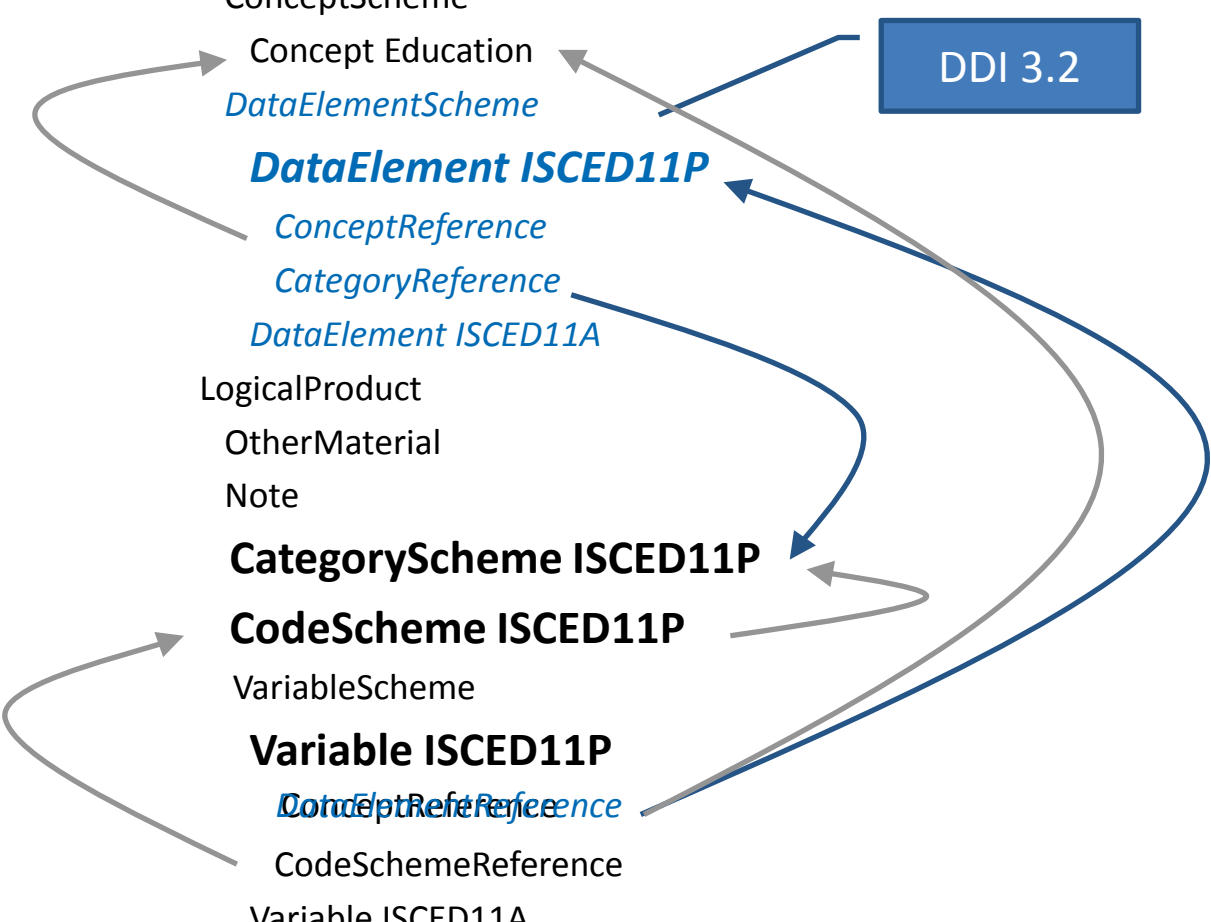
Variable ISCED11P

ConceptReference

CodeSchemeReference

Variable ISCED11A

DDI 3.2



Structural Outline of Resource Package Detail

CategoryScheme ISCED2011

Category 1

Label

Description

...

CodeScheme ISCED2011

Code

CategoryReference

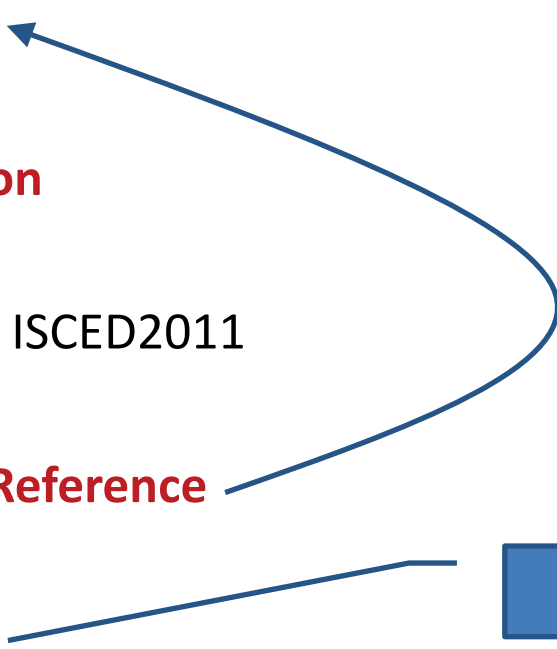
Value 1

Code

CategoryReference

Value 11

...



Nested codes / Hierachy

DDI Category Map - Example

ISCED11P vs. ISCED11A category descriptions

Code	ISCED11P	ISCED11A	Similarity
3	Upper secondary	Upper secondary	Identical
34	Upper secondary general / academic	Upper secondary general / academic	Identical
341	Upper secondary general/ academic. Recognized successful completion of programme is insufficient for completion or partial completion of ISCED level (and thus without direct access to programmes at a higher ISCED level)	Not used	None
342	Upper secondary general academic. Recognized successful completion of programme sufficient for partial completion of ISCED level but without direct access to programmes at ISCED level		

Description: The categories of ISCED11P and ISCED11A at ISCED level 3 have highly similar meanings. Codes with 1 in the third digit in ISCED11P represent programmes insufficient for level completion or partial level completion, and should be classified at ISCED level 2 in ISCED11A

DDI Code Map – Example

provisional mapping Mongolia, extract

Name	ISCED-P	
Pre-school education	010	Early childhood educational development (ECED)
Pre-school education	020	Pre-primary
Primary education	100	Primary
Lower secondary education	244	Lower secondary, general, sufficient for level completion, with direct access to upper secondary

An ISCED-P code can be generated for each programme , based on a set of CROSS-CLASSIFICATION VARIABLES:

ISCED ‘ISCED 2011 level of education’

PRGOT ‘Programme Orientation/Type of education ’

LVLCM ‘Level completion’

ACCESS ‘Access to programmes at a higher level of education’

...

DDI Code Map – Generation instruction

Illustration example, Mongolian mapping

Generation instruction NAME (source) to ISCEDP (target):

* SAS command;

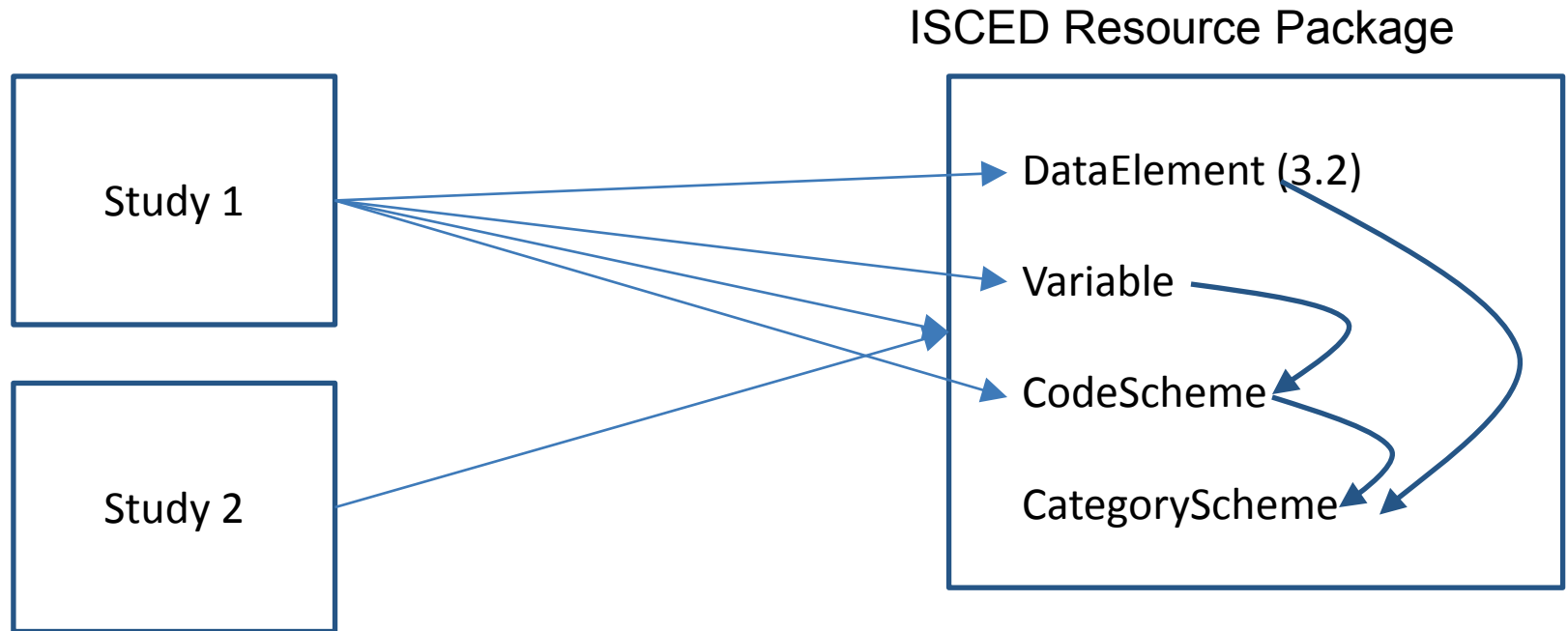
```
if CNTRY = 'Mongolia' then do;
    if ISCED = 0 then do;
        if NAME = 'Pre-school education' then do;
            if PRGOT = 'EDED' then ISCEDP = 010;
            else if PRGOT = 'EDED' then ISCEDP = 020;
        end;
    end;
else if ISCED = 1 and NAME = 'Primary education' then ISCEDP = 100;
else if ISCED = 2 and NAME = 'Lower secondary education' then do;
    if PRGOT = 'G' and LVLCM = 'F' and ACCESS = 'Y' then ISCEDP = 244;
end;
else if ISCED = 3 then do;
    if NAME = 'Upper secondary education' and PRGOT = 'G'
    and LVLCM = 'F' and ACCESS = 'Y' then ISCEDP = 344;
    else if NAME = 'Technical and vocational' and PRGOT = 'V'
    and LVLCM = 'F' and ACCESS = 'N' then ISCEDP = 354;
end;
...
end;
run;
```

Possible Issues with DDI

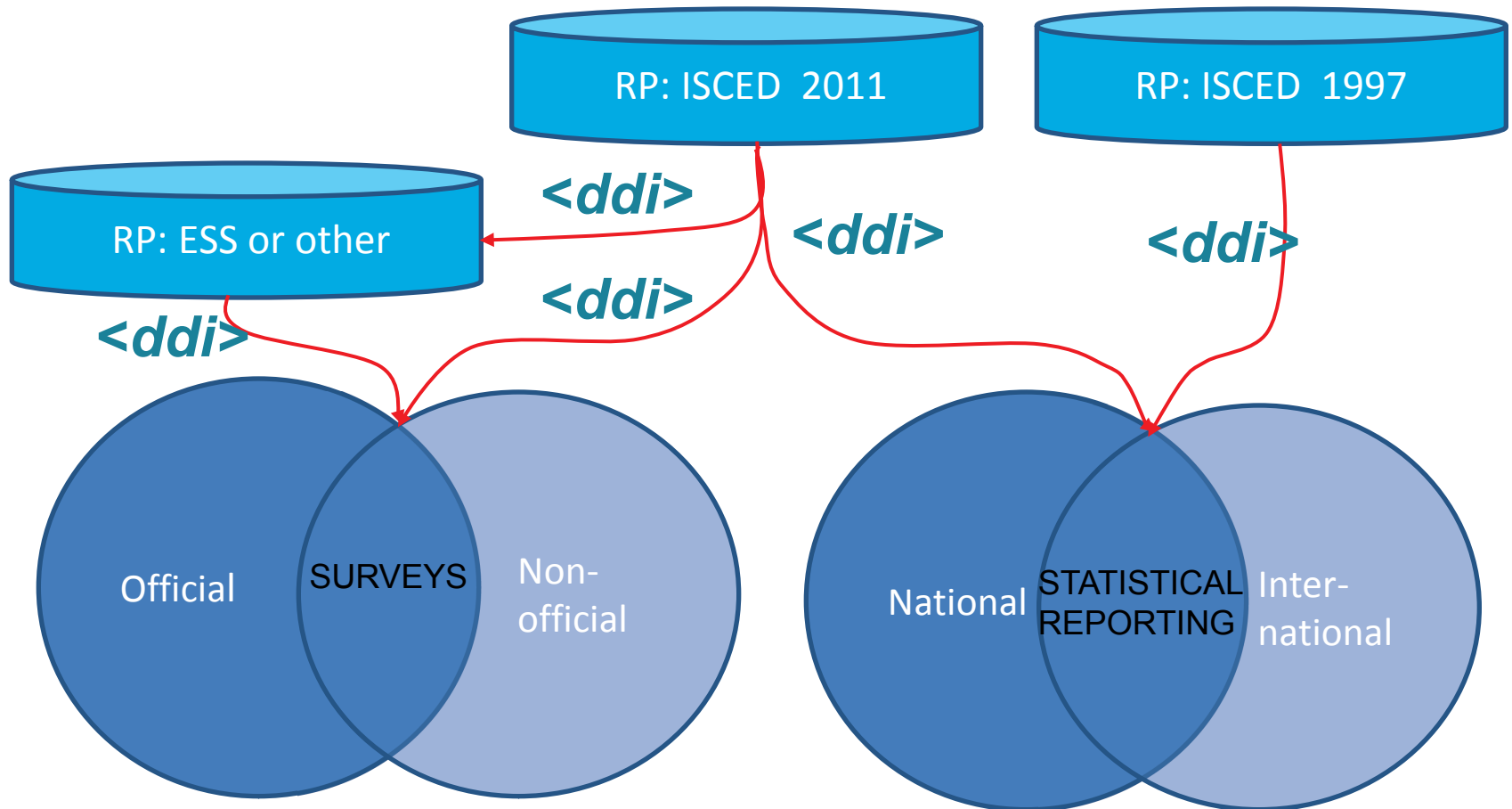
- Cross-references between DDI metadata and structured text for building an enhanced publication
 - Possible solution fragment identifiers:
 - `link#fragment`
 - Works for external material but not for DDI notes
- National mappings require extracting/adding parts of/to existing code lists
 - Is the mechanism in DDI flexible enough?
- Generation commands are system proprietary

Reuse of Resource Package

Which item should be referenced?



Possible DDI resource packages based on ISCED and potential use



Resource Package Guidelines

- RP structures material for reuse
 - by multiple studies, projects, or communities
- Reuse of common material provides implicit comparison possibilities
- RPs may be published for internal use within organizations or externally for use by the broader community
- RPs should be published and maintained by a persistent organization

Next Steps

- Resource Package for ISCED 2011
 - Motivation: latest version, most structured version
 - Challenge: ISCED 2011 is a complete package not just a classification
 - Realised in two steps:
 - 1) The classification variants ISCED-A and ISCED-P
Terminology and definitions
 - 2) Mapping of educational programmes into ISCED.
- Possible further work: Resource Package for ISCED 1997

Thank you for your attention!

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