EDUG's recommendations for best practice in mapping involving Dewey Decimal Classification (DDC)

(Version 20151009)

1 Introduction

1.1 Background and rationale

For some years mapping has been one of the main tasks in the EDUG member countries. While ISO 25964-2 (Information and documentation: Thesauri and interoperability with other vocabularies. Part 2: Interoperability with other vocabularies, 2013) gives some advice on creating mappings between a thesaurus and a classification system, it does not deal with Dewey Decimal Classification specifically. The EDUG members have felt a growing need to discuss and record the knowledge acquired in mapping projects where either the source or the target vocabulary is DDC.

The ultimate objective of a vocabulary mapping project is, for a given concept in one source vocabulary, to find a concept in another (target) vocabulary that is as close in meaning as possible to the original concept of interest. Ideally, what is sought is an exact conceptual equivalent. Because the goal of an exact match with the source concept cannot always be found in the target vocabulary, it is often necessary to accept something that is not perfectly equivalent. In some cases, the best match will be with a concept that is nearly, partially, or somewhat equivalent, or a concept that is related to the source concept in another way. Hence, it is always important to capture and characterize the nature of the relationship between source and target concepts. Thus, there are two primary aspects to vocabulary mapping: Selecting the concept that forms the "best match", and describing the relationship between the concepts.

The recommendations below are the result of a seminar on mapping in connection with the EDUG annual meeting in April 2015. The recommendations are not exhaustive and will be subject to change as EDUG members gain more experience in this field of work. We still hope that institutions planning to embark on a mapping project to/from DDC, may find the guidelines helpful. EDUG would appreciate receiving any comments, suggested revisions, etc. from institutions applying these recommendations. Please leave comments in the working space forum at the EDUG website (edug.pansoft.de).

2 Initiating a Mapping Project: Before You Start

2.1 Preliminary Assumptions

a. ISO 25964-2
The criteria of mapping should comply with ISO 25964-2. Get familiar with this ISO standard before embarking on a mapping project.

b. MAPPING OF ANY KIND OF VOCABULARY
Although ISO 25964-2 focuses on mapping activities where at least one vocabulary is a thesaurus, the recommendations in the ISO standard may be applied irrespective of the kind of vocabulary, which is mapped to/from DDC. These EDUG recommendations cover the handling of mapping of any kind of vocabulary (including pre-coordinated systems) to/from DDC.

c. THE HUB MODEL
The ISO standard suggests different overall models or combination of models for mapping between vocabularies. The hub model is the most appropriate model when mapping to/from DDC, as it makes up a language-neutral "hinging" system for indexing and retrieval. The hub model with unidirectional mapping to DDC is presumed to be the most commonly used in mapping involving DDC; if not specified otherwise, the following recommendations concern unidirectional mapping with DDC as the target vocabulary.

2.2 Preliminary Activities: Project planning and elaboration of a policy statement

Statement of objectives and reasons for mapping: At the start of a mapping project, state your objectives clearly in a policy statement. Base your statement on the questions raised in ISO 25964-2 (12.4 p. 31). State clearly your reasons/purpose for mapping. E.g., mapping for the purpose of improved access to the WebDewey tool for indexers or improved end user access to collections, via mapped subject vocabularies. It is often helpful to develop one or more use cases for the mapping project.

Planning: Consider your resources and think ahead. Involve management and other necessary personnel (e.g., the responsible technical department) as early as possible in the process.

Options and guidance: Collect specific decisions about approaches and document these in the policy statement and written guidance for participants.

a. MAPPING TYPES AND RELATIONSHIPS
Decide which mapping types and relationships to use. In mapping for improved end user access, it is recommended to use the three ISO mapping types *equivalence*,

hierarchical and *associative*. These mapping types give rise to five possible relationship types; *exact equivalence*, *inexact equivalence*, *broader mapping*, *narrower mapping*, and *related mapping*, of which narrower mapping never applies when mapping to DDC (cf. section 5). Differentiation of relationship types will allow for the ranking of results and navigation in subject data. For a full overview of potential associative mappings candidates, consult ISO 25964-1 (Information and documentation: Thesauri and interoperability with other vocabularies. Part 1: Thesauri for information retrieval, 2011), 10.3.3 p. 63-67.

b. COMPOUND MAPPINGS
   Decide whether or not to use compound mappings.

c. SCOPE OF TARGET MAPPINGS (UNIVERSAL OR DISCIPLINARY)
   Decide whether mappings are to be universal (i.e. to/from the entire DDC schedules (000-999)), or to (a) predetermined area(s) of DDC (e.g., only class 610). In both cases, you should consider beforehand whether to map to/from all disciplinary contexts (i.e. all the scattered instances of a concept in DDC) which match a concept in the subject vocabulary, or to/from a particular disciplinary treatment of the concept in DDC (e.g., mapping only interdisciplinary or comprehensive treatments). For advice on the identification of interdisciplinary and comprehensive class numbers, see subsection 4.6.

d. NUMBER BUILDING TOOL
   Decide whether or not to make use of the number building tool in WebDewey to express DDC concepts.

e. SOURCE VOCABULARY CONTEXT AND PERSPECTIVE
   If the subject vocabulary that is to be mapped to/from DDC has a disciplinary approach (cf. ISO 25964-1, 12.2.5.1 p. 76), determine to what extent the context will have influence on the mapping. Be aware of the different principles governing hierarchies in various subject vocabularies (cf. ISO 25964-2, 17.2.3 p. 54).

f. COVERAGE IN SOURCE VOCABULARY
   Consider whether all concepts in the source vocabulary need to be mapped to the target vocabulary.

g. DIRECTION OF THE MAPPINGS
   Decide whether one- or two-way mapping is required. Bear in mind implications for retrieval.

h. USE OF BIBLIOGRAPHIC DATA
   Consider whether and how bibliographic data may support the mapping process (cf. statistical mapping).

i. MAINTENANCE AND VERSIONING
Determine how to deal with and track changes in the source and target vocabularies.

3 Concepts, terms, and DDC classes: Understanding DDC objects as "concepts" for mapping

In order to map to or from DDC, it is important to have a common understanding of a DDC class. DDC classes are found in the schedules and in the auxiliary and add tables. Each class can be viewed as a grouping of similar concepts represented by a notation.

The degree to which a concept represents the entire class depends on where it is represented. In its most basic form, the concepts in a standard class are represented by terms in captions (class headings) and variant caption names (synonyms and quasi-synonyms of the terms in the caption, designated by variant-name notes), in class-here notes, in including notes, and in Relative Index headings. The concepts in built numbers that appear only in the Relative Index are represented only by Relative Index headings. One of these is given status as caption for the purpose of display in the hierarchy. When there is more than one Relative Index heading connected to a built number, the caption is followed by a comma and an ellipsis [, . . .].

4 Mapping to DDC: Concept Identification and Selection

4.1 General principles

a. EXAMINE THE CONTEXT
When mapping to DDC, it is necessary to examine all the super- and subordinate classes in the hierarchy in addition to the caption, notes and Relative Index headings connected to each class.

b. AIM FOR EXACT MATCHES
In order to support a use case in which a user searches using terms from one vocabulary against a set of documents indexed with terms from another vocabulary, it is recommended to aim for exact matches. This caters for bi-directional mappings, as exact equivalence mappings are by definition reversible (cf. ISO 25964-2, 11.2 p. 26).

c. PRECISION
For the sake of precision, map to the most specific DDC number possible.

d. NUMBER BUILDING
To retain data on number components and for the sake of sharing, we recommend using the number building tool in WebDewey.

e. AUXILIARY TABLES
Mapping to auxiliary tables in DDC is recommended. (Exception: Table 3. Subdivisions for Individual Literatures, for Specific Literary Forms). Apply the same rules as with the schedules.

f. CAPTIONS WITH A GENERAL WORDING
Special attention should be paid to captions that have a rather general wording. They occur in the auxiliary tables, but can also be found in the schedules. Nevertheless, these numbers may represent very specific concepts; in this case, the focus for mapping should be more in the class notes and Relative Index than in the caption.

4.2 DDC Captions

Concepts represented by terms in captions can be said to represent the entire class. When a single concept is represented in the caption, it alone represents the entire class. When several concepts are represented in the caption, each concept may represent the entire class, assuming it is not given individual treatment in a subclass. This can be deduced from notes stating whether subdivisions can be added to the concept or not. Conversely, captions may be composed of terms or a phrase that do not sufficiently describe the concept(s) the class represents.

One should read up the hierarchy and involve the captions of the parent classes to get all pieces together that would actually form the present caption in the disciplinary context.

a. SINGLE CONCEPT
Example:
641.38 Honey
"Honey" represents the entire class.

b. MULTIPLE CONCEPTS IN WHICH EACH REPRESENTS THE ENTIRE CLASS
Example:
738.3 Earthenware and stoneware
Standard subdivisions are added for either or both concepts in the caption.
"Earthenware" represents the entire class; "Stoneware" represents the entire class; and "Earthenware and stoneware" represents the entire class.

c. MULTIPLE CONCEPTS IN WHICH ONLY ONE REPRESENTS THE ENTIRE CLASS
Example:
320.53 Collectivism and fascism

Standard subdivisions are added for collectivism and fascism together, [or] for collectivism alone.
"Collectivism" represents the entire class, and "collectivism and fascism" together represent the entire class. "Fascism" alone is given individual treatment in 320.533.

d. CONCEPTS WHICH ARE ONLY PARTLY REPRESENTED BY TERMS IN THE CAPTION
Example:
220.601 Philosophy and theory
The concept represented in this class would be more accurately represented with the following terms from the captions in the upward hierarchy at 220.6 and 220:
"Philosophy and theory (related to) interpretation and criticism (of) the Bible"

If the caption in DDC includes only one concept and it matches (is equivalent to) the concept in the source vocabulary, choose that. However, if the caption in DDC contains several concepts, choose the one which best matches the concept in the source vocabulary. Please note that DDC captions with more than one concept often only serve as a listing of concepts that are treated in subclasses. The best matches may therefore be found in the subclasses and not in the generic caption.

Example:
331.8 Labor unions, labor-management bargaining and disputes
331.87 Labor union organization
331.88 Labor unions (Trade unions)
331.89 Labor-management bargaining and disputes

4.3 DDC Class-here notes

Concepts in class-here notes are said to approximate the whole of the class. This means that each concept covers at least more than half the content of the class, and as much as almost all of it.

Example:
599.5 Cetacea and Sirenia
Class here marine mammals; whales, great whales; Mysticeti (baleen whales), Odontoceti (toothed whales)
Each of these concepts approximates the whole of the class.

In some cases, the concepts expressed in class-here notes may be exact and direct equivalents of the source vocabulary term. However, please note that the scope of meaning in your vocabulary may not always be equal—not even in the "inexact equivalence" sense—to the concept in a class-here note in the DDC. Thus, it is important always to compare the contexts of the concepts when mapping.

Example:
172 Political ethics
172.2 Duties of the state
Class here justice
Consider whether the concept “Justice” covers this aspect to a degree that justifies a mapping.

Similarly, if there are comprehensive work notes with combined concepts, these should not be mapped without consideration of their context, as the concepts treated independently may be treated elsewhere.

Example:
006.42 *Optical pattern recognition
Class here comprehensive works on optical pattern recognition and computer graphics
Computer graphics has its own treatment in 006.6. In 006.42, it is treated with optical pattern recognition.

4.4 DDC Including notes

Concepts in including notes are said to have standing room in the class. These concepts are significantly narrower than the content of the entire class, and by extension, the concept representing the class.

Example:
439.9 East Germanic languages
Including Burgundian, Gothic, Vandalic
Each of these concepts is narrower than the entire class.

4.5 DDC Relative Index headings

Concepts represented as Relative Index headings are connected to the concepts in the class, but the relationship is not explicitly defined. They may be the same terms as found in the caption and in including and class-here notes, synonyms and quasi-synonyms to these terms, as well as terms representing additional concepts belonging to the class.

Example (standard class):
599.5 Cetacea and Sirenia
Relative Index headings: Baleen whales, Cetacea, Great whales, Marine mammals, Mysticeti, Odonteceti, Toothed whales, Whales, Whales—zoology
It is impossible to deduce from the Relative Index alone the degree to which each of these terms represents the class.

Example (built class):
813.54 American fiction—1945-1999,…
Relative Index headings: American fiction—1945-1999, Novelists—American literature—1945-1999
The degree to which each of these terms represents the class has not (yet) been determined.

4.6 Interdisciplinary and comprehensive class numbers

Interdisciplinary numbers are for the treatment of a given topic X from the perspective of more than one discipline, whereas *comprehensive* numbers are for the treatment of X from various points of view within a single discipline. Class numbers for the interdisciplinary or comprehensive treatment of a given topic might be explicit as note instructions (in class-here or including notes), or implicit in the schedules or tables.

It is not necessary to identify whether a mapping candidate is an interdisciplinary and/or comprehensive class number, unless a mapping project has decided to assign a special status to these numbers. One reason might be a decision to map only interdisciplinary or comprehensive treatments (cf. subsection 2.2.c on "Scope of target mappings"). Another reason might be to ascribe a special status for interdisciplinary numbers with respect to relationship types; this could apply in connection with one-to-many mappings to all disciplinary contexts in DDC (cf. subsection 5.1.b). Be aware of the following general rule for the selection of mapping relationship types for interdisciplinary or comprehensive concepts: Interdisciplinary and comprehensive concepts should be treated the same as any other topic; for example, they should be mapped as inexact equivalence when listed in class-here notes (cf. subsection 5.2.c), or as broader mapping when listed in including notes (cf. subsection 5.3.c).

Interdisciplinary and comprehensive numbers might—but need not—be indicated by a class-here or including note instruction. Thus, many concepts listed in class-here or including notes could be appropriately interpreted as interdisciplinary or comprehensive works on X, without being specifically designated as such in note instructions.

If, indeed, a mapping project has decided to assign a special treatment for interdisciplinary or comprehensive class numbers, the following guidelines can be used to identify interdisciplinarity and disciplinary comprehensiveness:

Whether a class number is for *interdisciplinary works on X* can be determined through the corresponding Relative Index headings, by the fact that unsubdivided Relative Index headings refer to interdisciplinary class numbers. This is also true for concepts with only one Relative Index heading. Be aware that this status might change if a given concept in later revisions of DDC is scattered on several disciplinary contexts.

Whether a class number is for *comprehensive works on X* in a discipline can often be determined—if in fact a number for comprehensive works on X has been designated for the discipline—through the corresponding Relative Index headings, by the fact that a Relative Index heading has as its only subheading a subheading for the discipline. Discipline subheadings can be recognized, in turn, by their recurrence throughout a discipline. For example, the subheading "law" occurs as the sole subheading for many Relative Index headings throughout the 340s, whereas the subheading "criminal law" occurs only in 345. The comprehensive number for citizenship in law is 342.083 (indexed by "Citizenship—law"), while the interdisciplinary number for citizenship is 323.6 (indexed by "Citizenship"); other comprehensive numbers for citizenship include 172.1 (indexed by "Citizenship—ethics") and 353.48 (indexed by "Citizenship—public administration"). The interdisciplinary number for a topic is also the comprehensive number for the topic in the corresponding discipline. Thus, 323.6 is not only the interdisciplinary number for citizenship, but also the comprehensive political science number for citizenship (which is reinforced by the fact that 323.6 is also indexed by "Citizenship—political science").

4.7 Number Spans in DDC

Mapping to number spans, per se should be avoided. Instead, concepts in number spans in DDC that match concepts from the source vocabulary should be mapped to a single comprehensive number. Number span entries in DDC will typically contain a note providing a single class number for comprehensive works.

> *Example:*
> 520 Astronomy and allied sciences
> 521-525 Astronomy
> Map the concept "Astronomy" to 520 Astronomy, which also is the number for comprehensive works on the subject. This is indicated by the following note at the number span: "Class comprehensive works in 520". Relative Index entry: Astronomy 520. The number span 521-525 has no entry in the Relative Index.

Avoid several independent mappings to concepts covered by a span of numbers not specified in the schedules ("hidden number spans"). Instead, find the number for the comprehensive treatment of the concept.

> *Example:*
> The concept "Art music", covered by 781.68-781.69
> 781.68 Western art music
> 781.69 Nonwestern art music
> Map the concept "Art music" to 781.68, according to the following note at 781.68: Class here comprehensive works on traditions of art music.

The Relative Index usually contains number spans only when referring to the Manual. Concepts in this kind of entries should be mapped to a single comprehensive number, according to note

instructions.

Example:
The concept “Civil law” with the Relative Index heading 340, 342-347 vs. 340.56
Map the concept “Civil law” to 340 if the source concept covers “Civil law” as opposed to criminal law, in accordance with the comprehensive-works note in the Manual instruction. One might also consider a mapping to 340.56, covering “civil law as a system of law derived from Roman law”.

Cf. subsections 5.2.d and 5.3.d for the selection of relationship types when mapping to comprehensive numbers in handling number spans in DDC.

5 Mapping to DDC: Relationship Types and Selection

After the “best” concept match is identified from within the DDC based on the principles above (i.e. one or several Source:Target concept pairs established for a given source concept), one may determine the relationship between the concept in the source vocabulary and the target concept(s) in context of DDC's characteristics and structure. The most specific type of relationship should be chosen to characterize the nature of the relationship. Four types of relationships are possible when mapping to DDC and its concepts in context:

- Exact equivalence (=EQ)
- Inexact equivalence (~EQ)
- Broader (BM)
- Related (RM)

Note: Narrower (NM) will never occur when mapping to DDC. DDC covers the entire universe of knowledge (i.e. width wise). Accordingly, it will never be necessary to make a mapping from a source concept to a narrower concept in DDC. It will always be possible to map a source concept to a class number at the same conceptual level, or to a more general concept.

Most frequently in a mapping exercise, equivalence relationships between source and target concepts are sought. When determining if equivalence is exact or inexact: If it has been determined that the context of the source vocabulary is to be used (cf. subsection 2.2.c), keep in mind that it must be considered as much as the context in the target vocabulary. For example, if the term is “Apples” and the context in the source vocabulary is agriculture, then the following relationships would be appropriate:

Example:
Apples =EQ 634.11 Apples (the comprehensive agriculture number)
Apples BM 641.3411 Apples, . . . (the interdisciplinary number, built)
Apples RM 583.73 Rosales (the comprehensive botany number)

The rule prescribing mapping to the most specific DDC number possible for the sake of precision (cf. subsection 4.1.c), entails a principle of not making multiple mappings of a concept to hierarchically-related DDC classes (cf. the example on "Labor unions" in subsection 4.2.d). This principle does not apply to cases where two or more senses of a polysemous concept are not differentiated in the source vocabulary, but are differentiated hierarchically in the target vocabulary (i.e. DDC). Such cases can be found with (but are not resctricted only to) some of the DDC classes made according to the faceted schedules in 780 Music. For example, it would be appropriate to establish mappings to both the class number for the music written for an instrument, as well as the class number for the instrument itself:

> *Example* (with =EQ for the interdisciplinary number, assuming a special status for interdisciplinary numbers in connection with one-to-many mappings, cf. subsection 5.1.b):
> Prepared pianos =EQ 786.28 *Prepared pianos (the interdisciplinary number, music)
> Prepared pianos ~EQ 786.2819 Prepared pianos—instrument

Regarding the selection of mapping relationship types for Source:Target concept pairs, the recommendations in subsections 5.1-5.4 may be followed.

5.1 Exact equivalence (=EQ)

a. SINGLE CONCEPTS
If the DDC ***caption*** represents a ***single concept*** matching the concept from the source vocabulary, this should be mapped as exact equivalence (=EQ), in SKOS skos:exactMatch. For single concepts listed both in the schedules and in an auxiliary table, both instances should be mapped as exact equivalence.

Examples:
The concept "Trigonometry" =EQ to DDC 516.24 with caption Trigonometry

The concept "Medication" =EQ to DDC 615.1 with caption Drugs (Materia medica)

The concept "Siblings" =EQ to DDC T1—0855 with caption Siblings

The concept "Verbs" =EQ to DDC 415.6 with caption Verbs, and =EQ to DDC T4—56 with caption Verbs

The concept "Swedish language" =EQ to DDC 439.7 with caption Swedish [language], and =EQ to DDC T6—397 with caption Swedish [language]

The concept "Portugal" =EQ to DDC 946.9 with caption Portugal, and =EQ to DDC T2—469 with caption Portugal

b. INTERDISCIPLINARY NUMBERS IN ONE-TO-MANY MAPPINGS

If a decision has been made to map to all disciplinary contexts (cf. subsection 2.2.c), one might decide to ascribe a special status for interdisciplinary numbers in connection with one-to-many mappings (cf. subsection 4.6), by mapping them as exact equivalence.

Example:
Industry =EQ 338 Production (class-here note on interdisciplinary works on industry)
Industry ~EQ 322.3 Business and industry (caption represents multiple concepts, cf. the rule provided in subsection 5.2.a)
Industry ~EQ 343.07 *Regulation of economic activity (class-here note, cf. 5.2.b)
Industry RM 333.7965 *Energy for industrial use (with Relative Index heading Industry—energy economics)
Industry RM 354 *Public administration of economy and environment (with Relative Index heading Industry—public administration)

In connection with one-to-many mappings, one should make a decision as to whether mappings should be omitted for class numbers which are subordinate to a class number which has already been mapped with =EQ.

Example (assuming that the concept "Industry" has been mapped with =EQ 338, the following mapping candidates might be excluded):
338.6042 with Relative Index heading Industry—location—economic rationale
338.09 with Relative Index heading Industry—location—production

One might also choose to omit mappings to built numbers when dealing with one-to-many mappings for concepts with several Relative Index headings.

Example (extending the example on "Industry"):
791.436553 with Relative Index heading Industry—motion pictures

When dealing with one-to-many mappings and there is some doubt whether a candidate Source:Target match should be mapped, the recommended default rule is to omit mapping this candidate. If there is doubt about the mapping relationship type, associative mapping should be chosen as default (cf. subsection 5.4.b).

5.2 Inexact equivalence (~EQ)

a. MULTIPLE CONCEPTS
If the DDC ***caption*** contains ***multiple concepts***, one of which matches the concept from the source vocabulary, this should be mapped as inexact equivalence (~EQ), in SKOS skos:closeMatch.

Example:
The concept "Home improvement" ~EQ to DDC 643.7 with caption Renovation, improvement, remodeling

b. CLASS-HERE NOTES
Concepts in ***class-here notes*** in DDC, which match concepts from the source vocabulary, should be mapped as inexact equivalence (~EQ), in SKOS skos:closeMatch.

Example:
The concept "Archival science" ~EQ to DDC 020 with caption Library and information sciences, where archival science is listed in a class-here note.

c. INTERDISCIPLINARY OR COMPREHENSIVE CLASS-HERE NOTES
Concepts designated as interdisciplinary or comprehensive in class-here notes do not warrant special treatment. Accordingly, all topics in class-here notes are recommended to be treated the same (i.e. as inexact equivalence); this applies also for notes on interdisciplinary or comprehensive works. Neither interdisciplinarity nor disciplinary comprehensiveness contributes to making an equivalence relationship exact in and of itself. This applies whether such status is specified in note instructions, or not. The point of matter with respect to the selection of relationship type, is what kind of a note a concept is listed in; class-here notes cater for inexact equivalence (cf. example below), whereas including notes cater for broader mapping (cf. subsection 5.3.c).

Examples:
The concept "Philosophy of language" ~EQ to DDC 121.68 with caption Meaning, interpretation, hermeneutics
Class here interdisciplinary works on philosophy of language

The concept "Bioethics" ~EQ to DDC 174.2 with caption Medical and health professions
Class here comprehensive works on bioethics

d. NUMBER SPANS THAT CAN BE MAPPED TO A SINGLE COMPREHENSIVE NUMBER
Concepts in number spans in DDC that match concepts from the source vocabulary should be mapped as inexact equivalence (~EQ) in SKOS skos:closeMatch, if there is a match to a single comprehensive number.

Examples (extending examples treated in section 4.7):
The concept "Astronomy" ~EQ to DDC 520 with caption Astronomy and allied sciences, due to the following note at the number span 521-525: "Class comprehensive works in 520"

The concept "Art music" ~EQ to DDC 781.68 with caption Western art music, and the note instruction "Class here comprehensive works on traditions of art music"

The concept "Civil law" ~EQ to DDC 340 with caption Law, and the Manual instruction for 340, 342-347 vs. 340.56 stating: "Use 340 for comprehensive works that treat civil law as all law that is not law of nations or criminal law".

Cf. subsection 5.3.d on broader mapping for number spans that cannot be mapped comprehensively.

5.3 Broader Mapping (BM)

a. BROADER CONCEPT
If the DDC ***caption*** represents a ***broader concept*** relative to the concept from the source vocabulary, this should be mapped as broader mapping (BM), in SKOS skos:broadMatch.

Example:
The concept "Bank runs" BM to DDC 332.1 with caption Banks

The concept "Scandals" BM to DDC 302.24 with caption Content [i.e. within the disciplinary context of communication in social interaction]

The concept "Early Renaissance art" BM to DDC 709.024 with caption 15th century, 1400-1499

The concept "Present tense" BM to DDC 415.62 with caption Tense, and BM to T4—562 with caption Tense

The concept "Kabylia" BM to DDC 965 with caption Algeria, and BM to T2—65 with caption Algeria

b. INCLUDING NOTES
Concepts in ***including notes*** in DDC which match concepts from the source vocabulary, should be mapped as broader mapping (BM), in SKOS skos:broadMatch.

Example:
The concept "fortune-telling by dice" BM to DDC 133.3 with caption Divinatory arts
Including fortune-telling by bones, dice, pendulum

c. INTERDISCIPLINARY OR COMPREHENSIVE INCLUDING NOTES
All topics in including notes are recommended to be treated the same (i.e. as broader mapping); this applies also for notes on interdisciplinary or comprehensive works.

Examples:
The concept "Economic rights" BM to DDC 330 with caption Economics
Including interdisciplinary works on economic rights

The concept "Aggression" BM to DDC 155.232 with caption Traits
Including altruism, bashfulness, dependence, extroversion, introversion, moral judgment, perfectionism, workaholism; comprehensive works on the psychology of aggression

d. NUMBER SPANS THAT CANNOT BE MAPPED COMPREHENSIVELY
Mappings to ***number spans*** that cannot be mapped comprehensively should be mapped as broader mapping (BM) in SKOS skos:broadMatch.

Example:
The concept "Library collections", covered by 026-027
026 Libraries, archives, information centers devoted to specific subjects
027 General libraries, archives, information centers
Map the concept "Library collections" with BM to 027 according to the following note at 026-027: "Class comprehensive works in 027". Note that the concept "Library collections" is a subpart of each of the concepts covered in classes 026 and 027. Thus, the comprehensive-works note advises us as to which class number to match (i.e. 027), but does not cater for an inexact match.

5.4 Associative Mapping (RM)

a. PREDETERMINED ASSOCIATIVE RELATIONSHIPS
Concepts in captions, class-here notes, including notes or Relative Index headings which are related by a predetermined associative relationship (i.e. according to a decision in the policy statement) to the source concept, should be mapped as related mapping (RM), in SKOS skos:relatedMatch.

Example (assuming a policy decision to create associative mappings between persons practicing a discipline/field of study as their occupation, and the discipline):
The concept “Physicians” =EQ to DDC 610.92 with caption Biography, and Relative Index heading Physicians. The concept “Physicians” RM to DDC 610 with caption Medicine and health.

b. WHEN IN DOUBT, DO NOT BE SPECIFIC
Alternatively, when choosing from among the four relationship types =EQ, ~EQ, BM and RM for a specific Source:Target concept pair; if the nature of the relationship cannot be determined in a reasonable amount of time, associative mapping (“related”) should be considered/chosen as the default relationship type.

6 Considerations for Exchange and Sharing

Do not confuse data storage and data exchange.

Use standardized mapping properties for exchange if possible, but ensure that they transport your intended semantics correctly (e.g., all SKOS mapping properties are symmetric). Create extensions if necessary.

When mapping to a DDC class, supply a timestamp and language information in addition to the class number, so that the mapping system can create a correct time stamped and localized URI when exporting the data; use dewey.info for DDC identifiers. Corollary: We need to supply this data and to ensure that localized/translated classes are linked back to their English counterparts.

Publish in RDF for the benefit of non-libraries.

For the benefit of libraries, publish in MARC as well. Use MARC 21 Authorities to transport mappings between thesauri and classifications.

7 References

ISO 25964-1, i.e.: International Organization for Standardization. (2011). *Information and documentation: Thesauri and interoperability with other vocabularies. Part 1: Thesauri for information retrieval*. Genève: International Organization for Standardization.

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8 Next steps

Exact equivalence between source vocabulary terms and DDC concepts can be established most frequently (and perhaps most easily) when the DDC concepts are taken from the Relative Index. The mapping process should proceed as outlined in the current document. The mapping process should continue once the most specific DDC number has been identified and the nature of the relationship between source vocabulary term and DDC class has been established. This should be done by examining the Relative Index headings that index the class to identify which of those headings is closest in meaning to the source vocabulary term. The nature of the relationship between source vocabulary term and the Relative Index heading should also be established.

Examples (extending examples treated in section 5 on "Mapping to DDC: Relationship Types and Selection"):

Source vocabulary term	**Relationship**	**Class mapping**	**Relation-ship**	**Relative Index heading mapping**
Swedish language	=EQ	439.7 Swedish	=EQ	Swedish language
Home improvement [Do-it-yourself assumed]	~EQ (class-here note)	643.7 Renovation, improvement, remodeling	=EQ	Home improvement—home economics
Philosophy of language	~EQ (class-here note on interdisciplinary works)	121.68 Meaning, interpretation, hermeneutics	=EQ	Philosophy of language
Bioethics	~EQ (class-here note on comprehensive works)	174.2 Medical and health professions	=EQ	Bioethics

Archival science	~EQ (approximates the whole)	020 Library and information sciences	=EQ	Archival science
Fortune-telling by dice	BM	133.3 Divinatory arts	=EQ	Dice—divination
Library collections	BM	027 General libraries, archives, information centers	RM	Libraries (Library collections could be added as a Relative Index heading here)
Physicians	=EQ	610.92 [Medicine and health] Biography	=EQ	Physicians (@610.92)
Physicians	RM	610 Medicine and health	=EQ	Physicians (@610.92)