



# Documentational approach to didactics

## The multilingual project

*Translating Issues Report, concerning both the translator and the reviewer*

**Second version (June 2020)**

Language: Japanese

Translator: Takeshi Miyakawa

Reviewer: Yusuke Shinno

Sources: English version and French version

Date: 30/07/2020

1. In a few lines, could you describe the main issues that emerged when translating the DAD entry or when interacting with the reviewer?

After reading all through the translated text of the DAD entry, we found that the text was not really the one we usually write by ourselves in Japanese. One may find that this is the translation, not the original text. This would be due to the difficulties of translation at different levels.

First, at the level of vocabulary, there are many technical terms, which are not used in the ordinary language. We had to create an appropriate Japanese term for the English or French term. This difficulty is not only for the technical terms used in DAD, but also those used in the mathematics education, in the scientific papers in general, or in the ordinary language. For the technical term, we used sometimes the English phonetic expression, and other times the Japanese translated terms. The most difficult term we discussed a lot was the name of approach “Documentational approach to didactics”. Even the usual term “approach” was not easy for us to translate.

The use of technical terms is also related to the context of scientific research. In the research on mathematics education in Japan, the scholars often try to use the terms which are comprehensible to others and actually use much less number of technical terms than in the didactics of mathematics in France. Japanese scholars therefore may be surprised with the use of technical terms in this text and sometimes might be uncomfortable with it.

There were also many difficulties of translation at the level of sentence. In Japanese language, the order of terms in a sentence is very different from French and English: for example, the verb is given at the end of the sentence; the subject is not sometimes given; and so forth. Due to this, we had to often split a sentence into several sentences. Further, we consider that the context in which the original English text was written would be a factor that makes our translation alien from the Japanese ordinary text. Some English sentences which seem self-explanatory would not clearly explain the claim, and Japanese readers may feel the lack of sentences that complement the claim, since they are in the other context.

2. Certain concepts, or processes raised difficulties, or discussions between the translator and the reviewer. We suggest that you explain these difficulties, and the choices you have made, for the notions of *resource*, *document* and for about three other notions, which seemed more particularly complex (e.g., scheme, operational invariant, instrumentation / instrumentalisation, documentational genesis, resource system, reflective investigation...)

	The word designing the concept of <i>Resource</i>
Possible translations, and associated definitions (in English)	<p>リソース : This is a phonetic expression of the English term “resource”, not a Japanese original term. This term may be sometimes used in the oral communication, but rarely used in the written form or in the formal text.</p> <p>資料 : This is a Japanese term that denotes “the source material, in particular the material which is used for the research or judgement” (Kojien 7<sup>th</sup> edition). This Japanese term is often translated into the English term</p>

	“data”.
Final choice, and motivation	“リソース: The reason is that in DAD, “resource” is considered in a wider meaning, and the Japanese term 資料 implies a narrower meaning. We use it as a technical term of DAD.
Scientific references using this word in the targeted language	Shinmura, I. (Ed.) (2018). <i>Kojien 7th edition</i> . Tokyo: Iwanami Shoten.

	The word designing the concept of <i>Document</i>
Possible translations, and associated definitions (in English)	<p>文書 : “文” refers to the text or sentence, and “書” refers to something written. Therefore, “文書” means something written with the text or sentence. In the dictionary, this term is explained as “the object expressing the human’s intention in a written form by using the letters and symbols” (<i>Kojien 7th edition</i>).</p> <p>書類 : “類” refers to the kind, type, or class. So, 書類 denotes any kind of something written. The dictionary explains it as “a generic term of something written or document, in particular the administrative document or the document for the records”.</p> <p>ドキュメント : It is possible to use the phonetic expression of the English term “document”. But it is slightly not common in the ordinary Japanese language.</p>
Final choice, and motivation	文書 : We chose this term, because “書類” implies too much the paper document.
Scientific references using this word in the targeted language	

	The word designing the concept of <i>Documentation</i>
Possible translations, and associated definitions (in English)	<p>It is difficult to make the distinction between document and documentation in Japanese.</p> <p>文書化 : the suffix “化” means the act of changing to the object given in front of this suffix. So, “文書化” means the act or process of changing something, which is not written, to the document.</p> <p>文書活動 : “文書” refers to “document” and “活動” means “activity”. So “文書活動” can be translated into English “the activity related to the document”.</p>
Final choice, and motivation	<p>文書活動 : We chose this expression, because “文書化” implies too much the sense of changing, and is rarely used in ordinary Japanese language. The expression “文書活動” is also rarely used, but seems to be understood as a technical terms. The meaning of “文書活動” is clearer than “文書化”. A shortcoming is that we cannot clearly distinguish it from documentational work, which may be also translated into “文書活動”. Regarding the term “documentational”, we did not allocate a specific term, but just “文書” as document. This is the case for “documentational genesis”, which was translated into “文書創成”.</p>
Scientific references using this word in the targeted language	

	The word designing the concept of <i>Instrument</i>
Possible translations, and associated definitions (in English)	<p>The distinction of the following three terms is not evident at all. We provide here the definitions found in the dictionary (<i>Kojien 7th edition</i>).</p> <p>道具 : “The generic term of the instrument for creating something, for</p>

	making progress on the work, or for the use of ordinary life". 用具 : "The instrument to do something specific". This term is especially used for some specific activities: cleaning, writing (pencil, pen, etc.), 器具 : "Instrument". This is, as "用具", a specific term which is often used for the cooking instruments, the domestic electric instruments, etc.
Final choice, and motivation	道具 : We chose this, because this is most generic term.
Scientific references using this word in the targeted language	

	The word designing the concepts of <i>Instrumentation</i> and <i>Instrumentalisation</i>
Possible translations, and associated definitions (in English)	The distinction between instrumentation and instrumentalization is difficult. It is not possible to use the phonetic expressions, because those are long terms and never used in the ordinary language. As those terms refer to the process, "化" can be used as a suffix. As the three possibilities for the term "instrument" (道具, 用具, and 器具), one may consider three possibilities: 道具化, 用具化, and 器具化. The last two terms are rarely used in the ordinary language.
Final choice, and motivation	用具化 for instrumentation: as 用具 denotes a more specific instrument, we consider that this is a process of learning the intrinsic usage of a given instrument. 道具化 for instrumentalisation: as 道具 is a more generic term, we considered that this process denotes the learning of the wider usage of a given instrument including the usage invented by the user.
Scientific references using this word in the targeted language	

	The word designing the concept of <i>scheme</i>
Possible translations, and associated definitions (in English)	There is (or was) a confusion in Japan with the English terms "scheme" and "schema" and the French terms "schème" and "schéma". For all of them, the English or French phonetic terms can be used as technical terms. スキーム (scheme): This term is widely used today in some area such as economy, business, public administration, and politics. In the dictionary, we can find the meaning which is "plan, proposal, diagram" (Kojien 7 <sup>th</sup> edition). スキーマ (schema): This phonetic term has been used in the mathematics education as well as in other area. In Japanese Wikipedia, it is explained that "scheme and schema have almost the same meaning". シェーム (schème): This phonetic term has been almost never used in Japan. シェマ (schéma): This phonetic term has been often used, probably more than スキーマ, in the Piaget's sense, in the mathematics education and in the educational psychology.
Final choice, and motivation	スキーム : We chose this term, because it is from times to time used in other domains in Japan today.
Scientific references using this word in the targeted language	<a href="https://ja.wikipedia.org/wiki/%E3%82%B9%E3%82%AD%E3%83%BC%E3%83%9E">https://ja.wikipedia.org/wiki/%E3%82%B9%E3%82%AD%E3%83%BC%E3%83%9E</a>

### 3. Other issues that you would like to share

There are also many issues of translation for the terms related to the mathematics education in general. For example:

- “算数” is used to denote primary/elementary school mathematics, but “数学” is used to denote secondary school mathematics (and mathematics as a scientific discipline)
- “Didaktik (didactics)” can be translated into “教授学” in Japanese, but “教授学” in Japan often means general didactics or pedagogy. Therefore, we added some comments with reference to Blum et al. (2019) in the footnote