UNA INGENIERÍA COOPERATIVA SOBRE LENGUA Y CULTURA. ALGUNOS EJEMPLOS DE TRADUCCIONES COLECTIVAS, CANCIONES Y GESTOS, PARA INDAGAR SOBRE LAS PRÁCTICAS.

A COOPERATIVE ENGINEERING ABOUT LANGUAGE AND CULTURE. SOME EXAMPLES OF COLLECTIVE TRANSLATIONS, SONGS AND GESTURES, TO INQUIRE ON PRACTICES.

Carole Le Hénaff
University of Western Brittany
Julie Alno
Rennes sud constituency
Severine Bouvet
Jean Rostand School, Rennes
Tony Fournier
Jacques Prévert school, Laval
Morgan Droual
School Aurélie Nemours, Treffendel
Julie Moreau
School Jacques Prévert, Rennes
Guylène Motais-Louvel

Resumen

(*) Autor para correspondencia:
Carole Le Hénaff
University of Western Brittany
 INSPE de Bretagne, 153 rue de Saint Malo,
35043 RENNES, France
Correo de contacto: carole.le-henaff1@inspe-bretagne.fr

Este artículo presenta un proyecto de ingeniería cooperativa (Collectif Didactique Pour Enseigner [CDpE], 2024; Morales et al., 2017; Sensevy, 2011; Sensevy & Bloor, 2020; Sensevy et al., 2013) en lengua y cultura en escuelas infantiles de Francia. El objetivo de la ingeniería cooperativa es conseguir que investigadores y profesores trabajen juntos, con el fin de producir una «obra común», dispositivos para el aula, ponerlos en práctica, analizarlos y volver a ponerlos en práctica. Intentamos mostrar cómo se estableció la cooperación entre los miembros de esta ingeniería (profesores, formadores, estudiantes, investigadores), y entre los alumnos de las clases implicadas en el proyecto, con el objetivo de aprender a comprender prácticas lingüísticas específicas, adscritas a un contexto cultural. La ingeniería que presentamos y analizamos está en marcha desde 2017. El grupo está formado por una veintena de personas (12 profesores de escuela, 2 profesores-investigadores, 2 asesores pedagógicos, 1 formador, 2 doctores en didáctica, 2 estudiantes, 1 inspector). El objetivo de este proyecto de ingeniería es crear situaciones culturalmente pertinentes para la comprensión de la lengua y los idiomas, para lo cual se considera que los padres de los alumnos son los «conocedores prácticos». En efecto, son los padres, que hablan una lengua, los que proponen canciones infantiles y recetas de cocina, que vienen a presentar en el aula. La cuestión de la traducción colectiva, en las reuniones de ingeniería y en el aula por parte de los alumnos, está en el centro de los análisis presentados en este artículo. En efecto, la investigación conjunta de obras durante un largo periodo de tiempo es esencial en ingeniería. Este trabajo puede adoptar varias formas y veremos, por ejemplo, que cantar juntos la traducción de una canción permite también analizar juntos, durante la investigación colectiva, si la traducción propuesta se adapta suficientemente a la melodía inicial. El trabajo de traducción también está vinculado a la comprensión del modelo cultural asociado a la canción: ¿qué significa la práctica del balanceo, o el gesto, al cantar? ¿Cómo podemos entender y representar la práctica, dentro de una cultura, que va unida a esta obra? Más concretamente, daremos tres ejemplos de cómo se llevó a cabo nuestra secuencia de ingeniería en las clases implicadas en nuestro proyecto. Por lo tanto, describiremos, en términos generales, cómo el trabajo colectivo de construcción de la secuencia didáctica, analizando las prácticas implementadas a lo largo de los años y en diferentes clases en paralelo, conduce a un «trabajo común», basado en la «acción colectiva y cooperativa», en particular la traducción y el canto colectivos, con la idea de que «transformar, describir, producir formas de pensar y actuar es hacer un trabajo común» (CDpE, 2024).

Palabras clave: Ingeniería cooperativa; cultura; lengua; traducción; prácticas.

Abstract

This article presents a cooperative engineering project (Collectif Didactique Pour Enseigner [CDpE], 2024; Morales et al., 2017; Sensevy, 2011; Sensevy & Bloor, 2020; Sensevy et al., 2013) in language and culture at kindergarten schools in France. We attempt to show how cooperation between the members of this engineering (teachers, trainers, students, researchers), and between the students in the classes involved in the project, has been established, with the aim of learning to understand specific language practices, attached to a cultural context. We describe how the collective work of constructing the teaching sequence, of analyzing the practices implemented over the years and in different classes in parallel, leads to a "common work", based on "collective and cooperative action", especially collective translation and singing, with the idea that "to transform, to describe, to produce means of thinking and acting, is to make a common work" (CDpE, 2024).

Keywords: Cooperative engineering; culture; language; translation; practices.

1. Introduction

The "Cultures and Languages at School" (CLE) cooperative engineering we are presenting and analyzing in this article has been in place since 2017. Developed within the framework of the Joint Action Theory in Didactics (Sensevy, 2011), the CLE engineering is part of what could be called in English an "Associated Educational Place", in French a "Lieu d'Éducation Associé" (LEA) in partnership with the French Institute of Education (Institut Français de l'Éducation, IFE), the LéA RING[1] ("Réseau d'Ingénieries", for "Engineering Network").

Fifteen persons participate in this cooperative engineering. There are three researchers in education (two associate professors, one doctoral student) and twelve teachers: nine kindergarten teachers, two Grade 1 teachers, one Grade 4 teacher. The project focuses mainly on nursery schools, and is extended to grade 1 and 2 for three classes. The objective is to create situations for understanding languages and culture a school. The students' parents are considered to be the "practical connoisseurs" (Collectif Didactique Pour Enseigner [CDpE], 2019) of these situations: it means that they come up with nursery rhymes and recipes, with which they have been familiar over a long period of time, to present in the classroom, both in foreign languages and in French. They are the practical connoisseurs of a work in a certain situation because they have long experience of the art of doing things "in situation" (singing a specific song, cooking a specific recipe). These singing and culinary practices are then studied by the students, in order to understand how to experience them, how to *speak them*, in a specific language, in a specific culture. Translation activities are often carried out, in the course of the process.

The teaching-learning sequence is implemented in successive stages, over a period of 3 months including regular sessions each week, in classes. The figures below show an illustration of those stages, taking the example of a recipe.

---

[1] https://ife.ens-lyon.fr/lea/le-reseau/les-differents-lea/reseau-langues-bretagne

Stage 1: a practical connoisseur comes in a class, or passes on a rhyme, a recipe, showing how he uses it in situation (here a Colombian recipe of arepas).

Figure 1

Stage 1

Stage 2: the students comment on the practice on the basis of films and sound recordings. They analyze it, criticize it and paraphrase it in their own language.

Figure 2

Stage 2

Stage 3: students try to imitate the practice. They refer to the sound recordings/films if necessary, and are filmed/recorded themselves to improve their imitation.

Figure 3

Stage 3

Stage 4: the students agree on what is essential, what is understood and what needs to be retained so that it can be passed on to other groups of students. These summarized elements are sent to the practical connoisseur, who says them in his own language (here, Spanish) and sends back an associated recording[2]. Students then listen to the recording to practice translating and learning a few phrases.

Figure 4

Stage 4

---
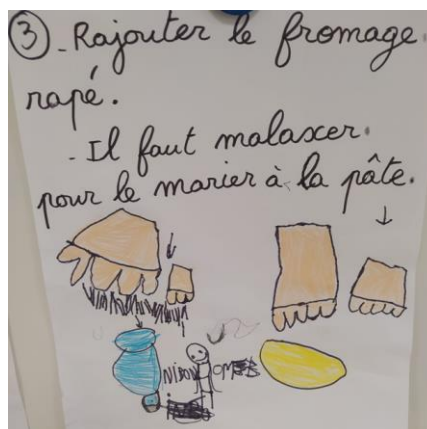
[2] Here is an example of a recording of the "arepas" recipe (registered by the connoisseur's mother):
https://nakala.fr/10.34847/nkl.bb03593t

Stage 5: in turn, the students transmit the nursery rhyme or recipe to another class. They use representations (language, physical, or symbolic representations, on posters for example) that they have created for this purpose.

Figure 5

Stage 5

At the end of the teaching sequence, the recipe had been sent to another class of the project. The students in this class had listened to the recipe in Spanish, and discussed their understanding of it, in order to correspond by e-mail with the students who had sent the soundtrack. The recognition of similar words in Spanish and French (mozzarella, bol, maiz) was the starting point for inter-class exchanges. In a way, some elements of this engineering echo the "Treasure's Game" cooperative engineering[3] (Sensevy et al., 2013) because it aims to make students use, but also create, signs and representations in order to remember lists of objects and actions.

To sum up, in the CLE cooperative engineering, teachers and researchers are reflecting on the following research question: how can we create didactic conditions for better understanding cultures and foreign languages, but also our own language, particularly through translation activities? And, following the principles of cooperative engineerings (CDpE, 2024; Sensevy, 2011; Sensevy et al., 2013), how can a collective inquiry into works in different languages be effectively and concretely constructed, using activities such as translation, but also music and gesture?

---

[3] This "didactic engineering", developed by Brousseau in the 1970s, focused on the production of lists of objects to be remembered by kindergarten students (Brousseau, 2004). Further developments of this engineering have followed in didactics (see Morales, 2014; Sensevy et al., 2013).

In this article, we'll take the example of nursery rhymes in a foreign language, Tahitian (example 1) and Breton (example 2), studied at kindergarten (examples 1-2) and with a grade1 / grade 4 class (example 2). First of all, we provide some elements of the theoretical context. Next, we outline a description of our working method. We then examine the two examples, and discuss the whole at the end of the article.

2. Practices, language and culture in JATD

The Joint Action Theory in Didactics, or JATD (Sensevy, 2011) is a pragmatist, anthropological theory, which is part of the joint action paradigm:

> The JATD unfolds within a pragmatist epistemology (Dewey, 2008), which gives a prominent place to praxis, to the "contingent ongoing accomplishments of organized artful practices of everyday [didactic] life" (Garfinkel, 1984), enacting in this way what one could term "an actional turn" in didactics. (Sensevy, 2019, p. 1)

In the JATD, the actions of others are the source of everyone's actions with a view to constructing, transmitting and appropriating knowledge practices (CDpE, 2024). Particular importance is given to the description of the practices (what we do, in concrete terms) associated with a culture[4], and to the way in which they are "represented" (Hacking, 1983; Sensevy, 2002), *i.e.* the way in which we publicly express our understanding of them. Let's take an example, related to the study presented here. In anthropology, Benedict developed the notion of "pattern of culture" (1934/2005), taken up in JATD as "modèle de culture" in French (Sensevy, 2019; Le Hénaff, 2024). According to Lamphere, who comments on Benedict's work, a pattern of culture results from a selection of segments of an "arc of possibilities, choosing to emphasize one or several, giving that culture its particular pattern" (Lamphere, 2005, p. viii). The pattern of culture is a "seeing-as" (Sensevy, 2019): it makes us see and describe a given practice in a particular way, even if done differently each time, from one person to another, from one situation to another. In the JATD, culture is a system of "arts of doing" (CDpE, 2019; de Certeau, 1984), for instance arts of singing, arts of cooking, arts of taking care of a baby, arts of gardening. As we said in the introduction, in our engineering, the students' parents are considered to be the "practical connoisseurs" (CDpE, 2019; Sensevy, 2011) of a language or a culture, for which they present, in schools, "practical pieces", for example songs, lullabies or cooking recipes. To put it another way, the bread they make, the rocking that they accompany with a song, is a pattern of culture, an art of doing. Putting a baby to sleep with a specific nursery rhyme is a pattern of culture, in which practice and specific statements of language are

---

[4] This is why Sensevy recently spoke of the "cultural turn" in the Joint Action Theory in Didactics (Sensevy & Le Hénaff, 2024).

interwoven. People, when they talk about given practices, use given words and phrases: a jargon[5]. In the JATD, "jargon" has been defined as a linguistic system which can be considered as a network of terms, expressions or questions-answers within, for example, a specific dialogue (Sensevy et al., 2019; Le Hénaff, 2024). It requires an appreciation of the cultural context, a fluency in the practice, and it means a language *in use*, intertwined with an in-depth comprehension of a practice[6]. We will now base our analyses on these fundamental concepts that are crucial to us.

3. Theoretical and methodological principles of work

Each lesson was filmed and transcribed verbatim. It should be noted that, or the purposes of our articles, we have added a column on the right (entitled "Our translation"), with our own translation of the statements into English. For the analysis, we focused on the data coming from several extracts. These extracts have been selected, within larger teaching sequences. In a short amount of time, they gather various responses regarding the strategies students employ to convey their understanding of unique statements, typically regarded as "untranslatables" (Cassin et al., 2014). But quite the opposite, these statements are not "impossible to translate", they are statements that "what we never stop (not) translating" (Cassin et al., 2014), they are statements that pose a problem, a "good" problem, *i.e.* a situation offering concrete aspects to study, to try to understand.

These episodes were identified by both the researchers and the teachers. All of them are considered as the "connoisseurs" of the teaching sequences, that is to say that they have developed an ability to identify some "behavioral indicators of effectiveness", in the gestures and strategies of teachers and students (Sensevy, 2022). In his analysis of how engineering works, Sensevy (2022) calls this "cultural evidence of effectiveness": it is an understanding of behavior based on the ordinary evaluation of practices. From the transcripts of the teaching sequence sessions, the members of the LEA identified, for each lesson, one or two "emblematic" extracts, to be discussed during the engineering meetings. This identification arises from a consensus among the "practical connoisseurs" of the engineering, the way its devices work and its research questions. The most frequently discussed extracts, including

---

[5] Defined in the Cambridge dictionary as follows: "special words and phrases, which are used by particular groups of people, especially in their work" (Walter, 2008, p. 770).

[6] The importance of networks of terms and phrases, put into practice, for the learning of languages, has been highlighted in other fields, converging with this view. For instance, in psycholinguistics, Christiansen and Arnon (2017) call "multiword sequences" a combination of words in use, that represent important basic building blocks for language acquisition. These sequences are "a continuous or discontinuous string of meaningful elements commonly interpreted together as a single unit, in some cases allowing modifications of specific elements" (Christiansen & Arnon, 2017, p. 3).

those presented in this article, are then retained from one year to the next to improve the teaching sequences, as they represent key moments of practice for making progress on our problem.

4. Analysis of two examples: learning rhymes

4.1. Principles of work

As we previously put it, in our cooperative engineering, the school parents come up with nursery rhymes and recipes to present in the classroom. These rhymes and recipes are collectively translated, studied, discussed, by the members of the engineering, through a process of "savantisation", and "essentialisation", as Lefeuvre (2018) put it.

We could define "savantisation" as follows[7]: members of the engineering study, by themselves and for themselves, the rhyme. They read it, sing it, translate it, discuss its meaning, read and listen to different versions, read analyses about rhymes (in general), and about the rhyme provided by the parents. They watch videos about the way it can be gestured, danced. They represent "musically" their translations, they try to make them fit with the melody. They explore the potential knowledge issued from the rhyme (process of potentialisation). This personal inquiry about the knowledge at stake in the rhyme conducts them to communicate together, to actualize their inquiry by sending to other members an analysis of the rhyme, for instance, or a proposal of translation. By the way, the members of the engineering extract the essential aspects of the rhyme, what seems to matter most in its meaning, according to them: this is "essentialisation" (Lefeuvre, 2018). And, all together, they build a teaching sequence.

Here are the main characteristics organizing this teaching unit, in the CLE cooperative engineering. The teaching method itself involves helping students to develop an understanding of "what the rhymes and recipes mean" and "what they are used for". Before studying these works, a background is gradually built up in the classroom, based on similar situations. They investigate "different ways of doing the same thing" (Bazin, 2008). For example, in French, the students first work on recipes with a structure similar to the one that will be studied for the recipe proposed by a parent in a foreign language. Or different versions of a nursery rhyme, or other works linked to the same pattern of culture. Singing to celebrate the course of the sun, for example, is a model of the culture of song. It is also a pattern of the culture of celebrating the sun.

---

[7] It's a kind of "scholarlizing" process, of making oneself "knowledgeable".

The students then study the work, using videos described in French. The aim of this work is not to get them to express word for word what they understand, but to get them to create their own language, their own jargon. For example, when studying a phrase from a Tahitian rhyme, in which the sentence "Ua hiti te mahana" (literally meaning 'the sun rises') is spoken, the students called it "le soleil s'étire" (in English, "the sun stretches") because it referred to stretching in the morning when the sun rises.

Finally, the students pass on their use of the rhyme/recipe to other classes. To do this, they create collective representations of what they have understood, which symbolize the works they have studied. These representations are also filmed, commented on and improved through critical analysis. These methods are associated with the idea developed by Sensevy (2021) according to which public representations, when they are shared, presuppose and construct an equality and a creation of common intelligence: equality of intelligence and creation of intelligence grow together[8]. We believe that the study and collective creation of different representations of a nursery rhyme, put in relation to each other (comparing/improving translations, singing translations to test their appropriateness to the melody, their musicality) are likely to enable students to understand and create together a language in which the concrete and the abstract are both effectively specified. In other words, this study, this investigation that they carry out into a specific language, in a particular culture and in particular practices that they experience, will enable them to draw out more general meanings about life, to talk about human practices. This work is linked to the identification of the culturally most fundamental elements, in an echo of Dewey's words below:

> The things which are socially most fundamental, that is, which have to do with the experiences in which the widest groups share, are the essentials [...] A curriculum which acknowledges the social responsibilities of education must present situations where problems are relevant to the problems of living together, and where observation and information are calculated to develop social insight and interest. (Dewey, 2016, pp. 199-200).

For instance, telling, drawing, singing, dancing, the rituals of sun salutation, or the love of a mother cradling her baby, from different languages, are fundamental problems of living together.

Let's now look at two examples. First, a Tahitian rhyme (*Mahana*), then a lullaby in Breton, a

---

[8] Sensevy (2021) has put this formula into the following form (also worked on by Quilio, 2022): the "equality of intelligence"/"creation of intelligence" equivalence is conjunct to the joint production and common use of representations.

language of the Brittany region of France (*Toutouig*).

4.2. A Polynesian rhyme, Mahana

The meaning of the nursery rhyme "Mahana'" has been the subject of several discussions between the members of the cooperative engineering. If we consider some of the elements that emerged from this collective study, what it expresses about Tahitian culture and the importance of the sun's path in the organization of daily life in Polynesia we could highlight the following points: the rhyme describes the observation of the sun's path across the sky, a reminder of the importance of this star in Polynesian culture, and can be linked to the legend of the warrior Maui. The members of the collective did not seek to translate it precisely, but rather to understand its overall meaning, by translating not term by term, but rather "jargon to jargon" (*i.e.* a specific way of *speaking a practice*). Several members of the engineering worked on their own translations, which were then discussed at the meeting. For example, the word "Mahana" was translated as "the sun", "it's daytime" or "a round shape", depending on the members of the engineering collective. The nursery rhyme is shown below, with a French translation that was agreed at a meeting of the group. We have added an English translation in the table below.

Table 1

Mahana in Tahitian, French, English

Tahitian	French	English
Mahana	Il fait jour	It's daylight
Mahana, Mahana	Il fait jour, il fait jour	It's daylight, it's daylight
Ua hiti te mahana	Le soleil se lève	The sun rises
Ua taha te mahan	Le soleil décline	The sun goes down
Uap ô.	Le soleil se couche, il fait nuit.	The sun goes down, it's night.

The song consists of five verses, which are sung five times. It is relatively short and easy to memorize. There is musical accompaniment throughout, except for the last line, "ua pô". This makes it easier to identify the words. The interpretation of this traditional nursery rhyme is accompanied by gestures that evoke the sun's path across the sky and the arrival of night. This led to an engineering dialogue on how to introduce the rhyme using gestural representations. The members of the CLE group considered how to make the gestures accompanying the rhyme as unambiguous as possible and agreed on certain 'gestural principles' to be used in class (the round shape evoking the sun, the raising/lowering of the arms to evoke dawn and dusk, etc.). A

system was devised to try and take into account both the course of the sun and the sound and textual characteristics of the nursery rhyme in order to study the meaning of the words, and to get the students to say, in their own language (French), what they understood by *Mahana*. Artifacts symbolizing the sun were made to help with this, as can be seen in the image below.

Figure 6

Symbolizing the sun

Two-face sun-stick	Yellow ball
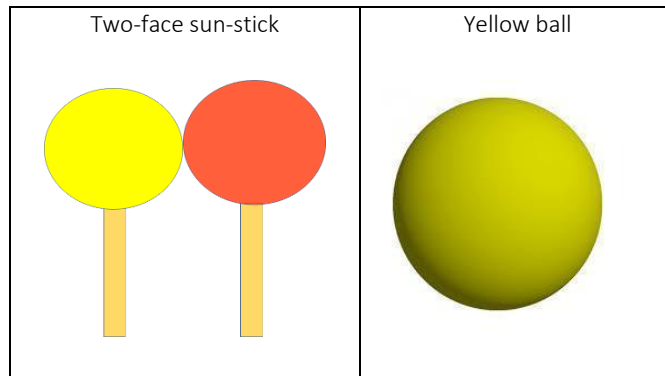
Subsequently, in the situations designed, the aim was to focus the students' attention on another form of sign, the words spoken in the foreign language. The members of the CLE engineering agreed that the sung and instrumental version would make it difficult to locate the words. It was collectively decided to create new audio documents, a slow sung version of the nursery rhyme as well as recordings of the three verses in spoken form. This slow version can be considered as a "representation-form" (CDpE, 2019, 2024). It produces a stretching of time (through slow motion), the aim of which is to build attention to certain sound signs (the repetition of the word *Mahana*, for instance, or the sound of musical instruments).

In the first extract below (table 2), we can see how the 5-year-old students (students from class 1, called SC1) tell the 4-year-old students (students from class 1, called SC2) what is meant by the movements in the choreography they have created to represent the rhyme, following choices made collectively in class.

Table 2

Choreography

SC1	En fait quand on fait ça, ça veut dire qu'il se	Et quand on fait ça, on veut dire qu'il	Et puis ça, ça veut dire qu'il descend	Et là ça veut dire il fait nuit

	lève, le soleil	monte		
Gestures				
English version	Actually, when we do that, it means that the sun is rising	And we do that, it means it is going up	And that, it means that it goes down	And that, it means that it's night

The students agreed on movements to imitate the sun's path across the sky, to represent it with their own bodies. Below (table 3) is a second extract from the transmission session. The 5-year-old students are lined up opposite the 4-year-old students in the sports hall.

Table 3

Transmission of the choreography

5	SC1	Mahana… Mahana (*round shape with hands, then hands in the air*) Ua hiti te Mahana (*lower then raise their hands*) Ua topa te Mahana (*hands on hips, on their knees*) Ua pô (*hands on eyes*)
6	SC2	(*Imitating SC1, singing and dancing*) Mahana… Mahana, Ua hiti te Mahana, Ua topa te Mahana, Ua pô
7	Teacher	So what do you recognize?
8	Anna (SC2)	I know it's a sun!
9	Teacher	OK so can you start again? First movement?
10	SC1	(*rising arms*) The sun is stretching
11	Anna (SC2)	It is stretching!

12	SC2	(*Rising arms*)
13	Teacher	It is stretching… to what?
14	SC2	High up in the sky!
15	Glenn (SC2)	After that, when it's night, it's going down, down… (*lower arms gently to the ground, legs bent*)
16	Teacher	So the sun is stretching and then?
17	SC1	It's setting! (*singing and dancing all together again*)

In TDP10, the student who describes him as "stretching" is referring to a practice associated with getting up (and going to bed). This piece of jargon was created by the 5-year-old students when they were studying the nursery rhyme in class, in order to produce a choreography. It is a kind of "analogical jargon" between the sun's behavior and human behavior. What we have here is a practical and contextualized statement of *Mahana*, which consists in seeing this rhyme as a representation of the rising of the day, of the rising of people, a "practice-jargon" (CDpE, 2024). The 4-year-old students who learn the choreography imitate (TDP12) this stretching movement, and we can also assume that this practical application of the notion of stretching, in a context aimed at imitating the rising of the sun in the sky, plays a part in thickening the learning of French.

To say "le soleil s'étire" ("the sun stretches") is also a form of translation of "Ua hiti te mahana" (the sun rises, literally), a way for the students to express their understanding. Translating here does not involve working from term to term, but rather from "jargon to jargon" (Le Hénaff, 2022, 2024), from the jargon of *Mahana* to the jargon of the students in the class, who have studied practices related to rising, falling asleep… and of which stretching is a part. Using the analogy between sunrise and the rising of the body, this stretching is a form of representation (CDpE, 2019) that serves to imitate the course of the sun, to "see it as" a succession of stretches. The 5-year-old students repeated this gesture during the class, formulating it in French while singing in Tahitian.

Below follows our second example, mostly made up of the study of the work carried out by the engineering collective on the nursery rhyme called "*Toutouig*".

4.3. Breton rhyme, Toutouig

This Breton rhyme[9] describes a mother's song ("vamm", for "mother") to her little child
("mabig", the word "mab" means "boy", "son", or "kid", "child"). The document to follow has
12 verses (the full song has 42, but the collective has chosen to work on only the first part, at
the time of writing this article). The chorus "Toutouig, la la, va mabig, Toutouig la la", that we
can translate by "Sleep, la la, my little child, Sleep, la la", sets the rhythm for the whole song.
The rest could be translated as: "Your mom is here, my little squirrel, near your cradle, my little
love [chorus x2] Your mom is here, my little lamb, to sing you her little song [chorus]". This first
part of the lullaby is sung *a cappella*. After personal study (translation, research into different
versions) of the lullaby in the cooperative engineering, the translations were made "public", *i.e.*
communicated in writing (e-mails) and discussed and sung at meetings. The following table
(table 4) provides an initial overview of the evolution of the translations (from translation 1 to
translation 2).

Table 4

First translations of Toutouig, by the members of the cooperative engineering

Breton rhyme	Translation 1 – Nov. 2023	Translation 2 – Dec. 2024
Toutouig la la, va mabig Toutouig la la Da vamm a zo amañ, koantig Ouzh da luskellat, mignonig Toutouig la la…	Fais dodo, la la, mon petit enfant, Fais dodo la la, Ta maman est là, mon petit écureuil, Près de ton berceau, mon petit mignon	Toutouig Lala mon petit Toutouig Lala Ta mère est ici mon chéri Au berceau mon ami
Da vamm a zo amañ, oanig Dit-te o kanañ he sonig Toutouig la la	Fais dodo, la la, mon petit enfant, Fais dodo la la.	Toutouig Lala mon petit Toutouig Lala
En deiz all e ouele kalzik Hag hiziv e c'hoarzh da vammig Toutouig la la, va mabig Toutouig la la	Fais dodo, la la, mon petit, Fais dodo la la, Ta maman est là, mon petit agneau, Qui te chante sa petite chanson, Fais dodo, la la, mon petit, Fais dodo la la.	Toutouig Lala mon petit Toutouig Lala Ta mère est ici A toi de chanter sa chanson Toutouig Lala mon petit Toutouig Lala

---

[9] It can be heard here: https://www.youtube.com/watch?v=Ettapurz_2E.

There was particular discussion at a meeting about the attachment between mother and child. In a later verse of the song, the mother cries and insists that the child closes his eyes ("En deiz all e ouele kalzik", "autrefois elle a beaucoup pleuré", "in the past she cried a lot"). In the words of a teacher of the group, this part is a "guilt-inducing" aspect of the song, suggesting the exhaustion of the mother who is trying to make the child understand what sleep deprivation is causing her. Later on, however, this passage is counterbalanced by the mother's returning laughter ("Hag hiziv e c'hoarzh", "aujourd'hui elle rit", "today she's laughing"). Generally speaking, the question of love for a baby (already studied the previous year with another song), and what a lullaby says about it, in different languages, is one of the regular discussions in our cooperative engineering. A new version of the translation was then produced, and sung, by the members of the CLE engineering, as can be read and listened to (with the link) in the table below (table 5).

Table 5

The singing translation

Breton rhyme	Musical translation by the CLE members (Jan. 2024): https://nakala.fr/10.34847/nkl.71bd97ct
Toutouig la la, va mabig	Fais dodo, la la, mon petit
Toutouig la la	Fais dodo, la la
Da vamm a zo amañ, koantig	ta maman est là mon tout petit chéri, à te bercer,
Ouzh da luskellat, mignonig	te cajoler mon petit
Toutouig la la…	Fais dodo, la la, mon petit
Da vamm a zo amañ, oanig	Fais dodo, la la
Dit-te o kanañ he sonig	Fais dodo, la la, mon petit
En deiz all e ouele kalzik	Fais dodo, la la
Hag hiziv e c'hoarzh da vammig	ta maman est là mon tout petit chéri, à te consoler, à te réconforter
Toutouig la la, va mabig	Fais dodo, la la, mon petit
Toutouig la la	Fais dodo, la la

This new version shows "manifestations of tenderness", as if the child had been crying: "ta maman est là, mon tout petit chéri" ("your mom is here, my darling little one"), "à te bercer, te cajoler" ("rocking you, cuddling you"), "à te consoler, à te réconforter" ("to comfort you, to cheer you up"). It has been further developed to fit the melody of the lullaby. That's why the members of the engineering reshaped their text according to the number of syllables. The idea was to obtain a "musically functional" translation, but also a song whose lyrics remained

sufficiently appropriate to the meaning of the lullaby, particularly as regards the affectionate relationship with the child. The members of the cooperative engineering work from a similarly musical perspective to that of the translators who set their translated versions to music, as the translator Arthur Waley would point out:

> It is not, after all, as though a translator has to be or even had better be a creative genius. His role is rather like that of the executant in music, as contrasted with the composer. He must start with a certain degree of sensibility to words and rhythm. (Waley, 1948, p. 109)
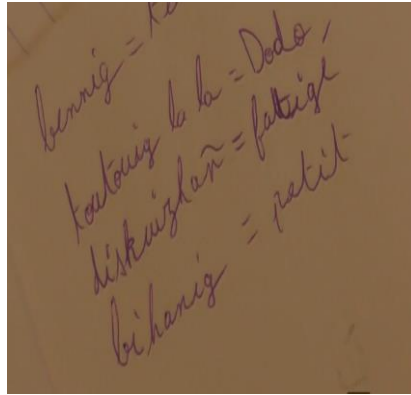
In the translation sung by the collective, it seems that music and lyrics adjust to each other over time. In a way, singing helps to experience and *feel the problem,* the situation that occurs when putting a baby to sleep. To quote Billeter, who is a practical connoisseur of translation in Chinese and French, "une traduction réussie semble simple et directe parce que les moyens utilisés ont été si bien ajustés les uns aux autres qu'ils ne paraissent plus[10]" (Billeter, 2018, p. 116). The means used are the words and the melody, and the aim of the adjustment is to leave as much of the meaning of the song as possible (in this case, the expression of love, in a form of consolation of tears, of comfort).

In the classes, the lullaby was first listened to and learned in Breton. Two classes worked on it: one class that didn't know Breton, and a "bilingual" class (grade 1 and grade 4), learning Breton every day (Breton is spoken in class half the time). The students therefore already know some of the words in the lullaby, but not all of them. A translation project was then set up, which led to a dialogue between the two classes, who sent each other their proposed translations and their songs, with a view to discussing possible improvements. We'll give an example of what happened in the bilingual class. As shown in the image below (fig. 7), an extract from a pupil's "translation notebook" contains a few first notes:

---

[10]   Our translation: "a successful translation appears simple and straightforward because the means used have been so well adjusted to each other that they no longer seem". Billeter is a renowned sinologist and translator.
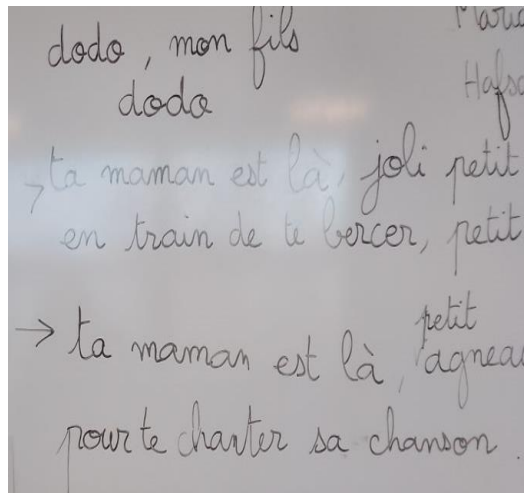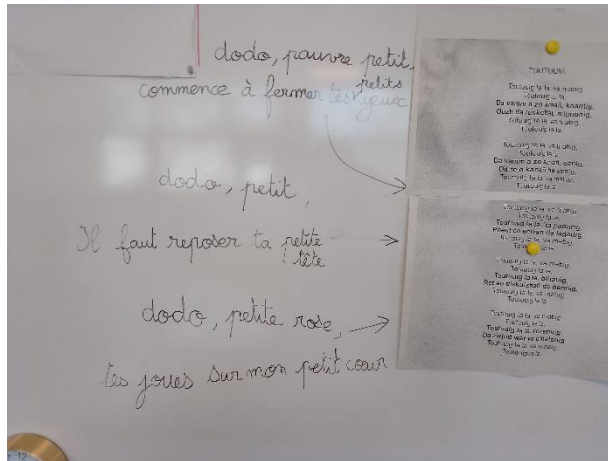
Figure 7

Students' notes

The first part of the collective translation is written on the blackboard by the teacher (the rhyme is in the middle, fig. 8).

Figure 8

Notes during class

Left part of the board	Right part of the board

This is a process of *altering* concepts (CDpE, 2024; Lefeuvre, 2018; Sensevy, 2011), and at the core of this alteration is the jargon, the "practical", specific, concrete language of the lullaby. During the discussions accompanying the writing of these notes on the blackboard, the students (grade 1 and grade 4) translated "Da zivjod war va c'halonig" ("your cheeks against my little heart"), raising the following points:

- "'the baby actually puts its cheeks on its mom's chest, like a pillow" ("en fait le bébé il met ses joues sur la poitrine de sa maman, comme un oreiller"),

- "'it's as if they were in their mom's womb" ("c'est comme s'ils étaient dans le ventre de leur maman"),

- "we're getting warmed up" ("on est réchauffé"),

- "when you're in the womb, you can hear your mum's heartbeat" ("quand on est dans le ventre, on entend le coeur de la maman"),

- "when you put your head on your mother's chest you can hear her heartbeat" ("quand on pose sa tête sur la poitrine de la maman on entend son coeur").

The students will eventually agree on "your cheeks on my little heart" ("tes joues sur mon petit coeur"). Below is the translation sent by email to another class, that has been both written and sung (table 6).

Table 6

Translation sent to another class

Collective translation	Song – May 2024
Dodo, mon fils	https://nakala.fr/10.34847/nkl.5cab74y6
dodo, mon fils	
dodo	
ta maman est là, joli petit	
en train de te bercer, petit ami	
dodo, mon fils	
dodo	
dodo, mon fils	
dodo	
maman est là, petit agneau,	
pour te chanter ta berceuse	
dodo, mon fils	
dodo	

In the translation, "petit" is used several times, due to the fact that it represents the suffix "ig" in Breton, which was particularly studied during these sessions (hence, also, "fils"/"son", for "mabig", "little boy"). As part of this work, students identified the frequency of "ig" in the lullaby, and looked it up in the dictionary. Why does "ig" appear so often in the lullaby? What was needed was to get the students familiar with the use of "ig" as part of an affectionate address to the little ones, to what we consider to be little. The word "mignonig" has become "little friend". It's an affectionate word in Breton, used to address people you care about. Adding "ig" to words to sweeten the speech is an important part of the jargon of affect, which has been prominent in the collective translation. In this way, the suffix, which becomes "petit" in French, could be seen as a concrete expression of the (abstract) concept of tenderness for a little one. Here, the students are gradually familiarized with a pattern of culture of tenderness, of which they manifest knowledge through this first step in the translation.

The song has been sent to the other class, and to the members of the cooperative engineering, and is currently being discussed in order to be improved.

5. Discussion

In the course of this article, we've tried to discuss how cooperation can be organized within an engineering collective, with the aim of producing effective knowledge, devices and teaching gestures for learning languages and cultures. The activity of translation is important in this engineering work, both because it involves understanding other languages, but also because we believe that this way of "saying almost the same thing" (Eco, 2001), collectively, can constitute a relevant common representational work to develop together a better intelligence of works in practice. The hypothesis is that engineers (teachers, researchers) become better "knowledge workers" by relating these different representations: translations (individual, then publicly shared, then common to the group), different versions, sung versions.

In the examples analyzed, the translations produced seem to display an understanding of the nursery rhymes' meaning that goes beyond "word for word", and introduces students to more general discussions of everyday practices and cultural patterns (day-night rituals, examples of how to induce a baby to sleep), with a language in which the abstract and the concrete are co-specified. For example: how do I show tenderness to little ones? With what words, what gestures? Or what material and symbolic representations-forms (slow-motion versions of *Mahana*) and artifacts (the sun-stick) are needed to express a given meaning? The creation of meanings (the analogy between the sun stretching, and the stretching of the human body) points to the role of these representations in understanding the meaning of the nursery rhyme.

In the engineering collective, work on the feeling of guilt conveyed in part of the *Toutouig* song shows that cooperation is organized around a conception of translation viewed as an inquiry into human practices, or "anthropological inquiry" (Le Hénaff, 2024). This inquiry into culture gives sense to knowledge (Sensevy, 2011) because it puts it in situation, because it allows us to talk concretely about abstract notions (tenderness for little ones, for example). As Sensevy (2011) puts it, "knowledge enables us to apprehend reality, to produce true assertions about that reality, and to act with relevance on that reality" (p. 725).

A few points can be made here. Firstly, the way in which the representations-forms of the translations worked on within the engineering collective, and also within the classes, from one class to another, are organized in space and time, needs to be improved. These translations currently follow the following timeline: the members of the engineering collective each try to produce a first version, which is then discussed in a plenary meeting, then taken up again and adapted for each class. The students then work on them during the sessions, improving them as they go along, and sometimes passing them on from one class to another, as we have said. Some parents, in the course of a sequence, come to produce sound recordings of "pieces of

practice" (for example, specific moments in a recipe, or instrumental versions of certain songs) that have been spotted and worked on by the pupils. These elements travel from one class to the next, from one member of the engineering team to the next. This organization needs to be improved, with a view to studying more precisely "who benefits and who doesn't?" (Sensevy, 2011, p. 577[11]) and moving towards an arrangement that works for everyone.

One way forward could be the "teaching sequence table", which is a general document describing the working principles and the organization of the work, and which includes a "comments and improvements" section. In a way, it is a representation-form of cooperative work, and we could imagine a sort of "unfolding" to "make at disposal" (Blocher & Lefeuvre, 2017) certain elements of work in progress, in the spirit of Picture-Text-Audio Hybrid Systems (Sensevy & Bloor, 2020; Sensevy et al., 2018), with video also often being used in the group to analyze situations.

The question has sometimes been raised of how to guide students in their translations: how to organize the representations-forms in such a way as to guide a translation correctly enough, without giving a "right answer", for example? What Sensevy (2011) says about the "mythology of invention by the student" (p. 486), and the need for lucidity and responsibility to act, are elements to be worked on in engineering. A student, for example, may come up with an unexpected proposal ("student-origin", Sensevy, 2011), from which new ideas are formed, the inquiry is renewed and new knowledge is produced.

Finally, the other point we raise concerns evaluation, in the sense of the value that can be attributed to what the students learn during these situations. The evaluation of the effectiveness of the practices, and of the students' progress results, within the cooperative engineering project, could be finely assessed through a specific device. We are currently considering the creation of such a protocol, which could be quasi-experimental. Future research will help to determine more precisely how these perspectives could be deepened and broadened.

6. Conclusion

In the engineering we have presented here, understanding a song in a foreign language (Tahitian) or a regional language (Breton) is at the heart of the problem worked on collectively. Translation, as well as the "musically fitting" of the works, represent a crucial element of the cooperation. An "epistemic solidarity" (Sensevy, 2011) is gradually built up around these processes, both within the engineering members and the students. In JATD, and particularly in

---

[11] In French: "qui profite, qui pâtit des dispositifs mis en place?" (Sensevy, 2011, p. 577).

engineering, we see cooperation as a fundamental problem to be worked on at all levels: the level of the teacher-researcher group and the level of the group-class. And we are also currently thinking about how cooperation could be strengthened with practical connoisseurs (in this case parents), taking our inspiration from the questions posed by Sensevy (2021), such as: "What do you say about these teaching practices that you are given to see and understand? What do you think about them? In what way do they seem close to or distant from your own practices?". Again following Sensevy's idea, the aim would be to ask the practical connoisseurs to analyze a concrete teaching practice, for example by coming into the classroom, looking at what the students are doing, analyzing the situation and suggesting ways of improving it, or by working with the engineering members on the basis of films. These points represent questions that remain to be explored.

7. References

Bazin, J. (2008). *Des clous dans la Joconde. L'anthropologie autrement*. Anarchsis.

Benedict, R. (1934/2005). *Patterns of Culture*. Mariner Books / Houghton Mifflin Company.

Billeter, J.-F. (2018). *Trois essais sur la traduction.* Allia.

Blocher, J.-N., & Lefeuvre, L. (2017). Le système hybride textes-images-sons: une exploration. *Recherches en didactiques, 23*, 99-132. https://doi.org/10.3917/rdid.023.0099

Brousseau, G. (2004). Les représentations. Etude en théorie des situations didactiques. *Revue des Sciences de l'Education, 30*(2), 241-277. https://doi.org/10.7202/012669ar

Cassin, B., Apter, E. S., Lezra, J., & Wood, M. (Eds.). (2014). *Dictionary of Untranslatables: A Philosophical Lexicon*. Princeton University Press. https://doi.org/-10.1515/9781400849918

Certeau (de), M. (1984). *The Practice of Everyday Life*. University of California Press.

Christiansen, M. H., & Arnon, I. (2017). More Than Words: The Role of Multiword Sequences in Language Learning and Use. *Topics in Cognitive Science*, 1-10. https://doi.org/10.1111/tops.12274

Collectif Didactique pour Enseigner. (2019). *Didactique pour Enseigner*. Presses Universitaires de Rennes.

Collectif Didactique pour Enseigner. (2024). *Un art de faire ensemble. Les ingénieries coopératives.* Presses Universitaires de Rennes.

Dewey, J. (2008). *Logic, the theory of inquiry.* Read Books.

Dewey, J. (2016). *Democracy and Education: An Introduction to the Philosophy of Education*. Macmillan.

Eco, U. (2001). *Experiences in Translation*. University of Toronto Press.

Garfinkel, H. (1984). *Studies in ethnomethodology*. Polity Press.

Hacking, I. (1983). *Representing and Intervening*. Cambridge University Press. https://doi.org/10.1017/CBO9780511814563

Joffredo-Le Brun, S., Morellato, M., Sensevy, G., & Quilio, S. (2018). Cooperative engineering as a joint action. *European Educational Research Journal, 17*(1), 187-208. https://doi.org/10.1177/1474904117690006

Lamphere, L. (2005). *Foreword*. In R. Benedict (Ed.), *Patterns of Culture* (pp. vii-xii). Mariner Books/Houghton Mifflin Company.

Le Hénaff, C. (2022). Appendre à traduire à l'école primaire : apprendre à représenter sa compréhension des langues et des cultures. *Revue Française de Pédagogie, 216*, 71-83. https://doi.org/10.4000/rfp.12086

Le Hénaff, C. (2024). *Pratiques, langage, culture. Une approche didactique*. Presses Universitaires de Rennes.

Lefeuvre, L. (2018). *Didactique de l'enquête pour une lecture interprétative d'une fable de Jean de La Fontaine, selon une épistémologie de l'élévation de l'abstrait au concret. Étude de cas au sein d'une ingénierie coopérative* [Doctoral Thesis, University of Western Brittany, Rennes]. Portail HAL theses. https://theses.hal.science/tel-02866991

Morales, G. (2014). *L'enseignement et l'apprentissage de la représentation. Une étude de cas en maternelle: le «jeu des trésors»* [Doctoral Thesis, University of Western Brittany, Rennes]. Portail HAL theses. https://theses.hal.science/tel-01366889

Morales, G., Sensevy, G., & Forest, D. (2017). About cooperative engineering: Theory and emblematic examples. *Educational Action Research, 25*(1), 128-139. https://doi.org/10.1080/09650792.2016.1154885

Quilio, S. (2022). *La coopération professeurs-chercheurs pour l'accroissement des puissances d'agir Représenter la pratique pour la comprendre et pour l'améliorer*. [Habilitation to Direct Research]. University of Western Brittany, Rennes.

Sensevy, G. (2002). Représentations et action didactique. *L'année des Sciences de l'Éducation 2002*, 67-90.

Sensevy, G. (2011). *Le sens du savoir. Éléments pour une théorie de l'action conjointe en didactique.* De Boeck. https://doi.org/10.3917/dbu.sense.2011.01

Sensevy, G. (2019). Forme scolaire et temps didactique. *Le Télémaque, 55*(1), 93-112.
https://doi.org/10.3917/tele.055.0093

Sensevy, G. (2021). Des coopérations épistémiques pour densifier la TACD. Un essai
exploratoire de pense-bête. In M.-J. Gremmo (Ed.), *JATD 2021: 2nd International
Congress on the Joint Action Theory in Didactics. Advocating the Reconstruction of
the School Form of Education. Conference Processings* (pp. 271-282). LISEC Lorraine.

Sensevy, G. (2022). Vers une épistémologie des preuves culturelles. *Éducation & Didactique,
16*(2), 145-164. https://doi.org/10.4000/educationdidactique.10415

Sensevy, G., & Bloor, T. (2020). *Cooperative Didactic Engineering*. In S. Lerman (Ed.),
Encyclopedia of Mathematics Education (pp. 141-145). Springer International
Publishing. https://doi.org/10.1007/978-3-030-15789-0_100037

Sensevy, G., Forest, D., Quilio, S., & Morales, G. (2013). Cooperative engineering as a specific
design-based research. *ZDM The International journal on Mathematics education*,
45(7), 1031-1043. https://doi.org/10.1007/s11858-013-0532-4

Sensevy, G., & Le Hénaff, C. (2024, May 15). *From The Joint Action Theory in Didactics to
Cooperative Engineering as a Cooperative Design [Keynote]*. From The Joint Action
Theory in Didactics to Cooperative Engineering as a Cooperative Design, Trier,
Germany.

Sensevy, G., Quilio, S., Blocher, J.-N., Joffredo-Le Brun, S., Morellato, M., & Lerbour, O. (2018).
How teachers and researchers can cooperate to (re)design a curriculum? In Y.
Shimizu, & R. Vithal (Eds.), *School Mathematics Curriculum Reforms: Challenges,
Changes and Opportunities* (pp. 563-570). ICMI Study 24 (Japan University of
Tsukuba). Conference Processings.

Waley, A. (1948). *Notes on Translation.* https://www.theatlantic.com/magazine/archive/-
1958/11/notes-on-translation/640297/

Walter, E. (2008). *Cambridge Advanced Learner's Dictionary*. Harvard University Press.