Mother Tongue ICT Instruction in Cameroonian Languages: Utopia or Reality?

Insights from Translation and Lexical Innovation in Mmɛn

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Abstract: This article presents the feasibility of conveying Information and Communication Technology (ICT) content in Mmɛn, a Bantu Grassfields language of Cameroon; a process which would imply a modernisation of the language, with a view to increasing its scientific knowledge base. It explores the processes used to create ICT terminology in this language in a bid to make such concepts relevant to the community. The focus is placed on the translation of a computer science manual used in primary schools within Cameroon's language teaching project. Issues raised relate to translation, lexical innovation and mother tongue ICT instruction. Some solutions are proposed to problems inherent to official language into mother tongue translation, and the lexification of new phenomenon where adequate terminology is currently lacking. The results obtained highlight the role of translation and terminology in developing our languages, and indicate how ICT instruction in our languages justifies the claim that an idea expressed in one language can be expressed in any other. If well harnessed, this instruction will ensure access to innovative educational resources for rural and semi-urban Cameroonians alike, and will improve literacy and standards of living within a context of globalisation.

Keywords: ICT instruction; lexical expansion; mother tongue; official language; translation.

Résumé: Cet article montre qu'il est possible d'utiliser les technologies de l'information et de la communication (TIC) en mmɛn, parlé bantou des Grassfields du Cameroun, à travers une modernisation de la langue dans l'optique d'accroître la base des connaissances scientifiques dans la langue. Il identifie les procédés employés pour créer des termes dans cette langue dans le but de rendre ces concepts pertinents pour ses locuteurs. L'accent est mis sur la traduction d'un manuel d'informatique utilisé dans les écoles primaires au sein du projet d'enseignement de langues au Cameroun. Les questions soulevées concernent la traduction, l'innovation lexicale et l'enseignement des TIC en langue maternelle. Les solutions proposées concernent les problèmes inhérents à une traduction langue officielle – langue maternelle et les procédés lexicaux pour nommer de nouveaux phénomènes en raison de l'insuffisance du vocabulaire. Les résultats obtenus mettent en exergue le rôle de la traduction et de la terminologie dans le développement de nos langues ; le fait que l'enseignement des TIC puisse s'effectuer dans celles-ci confirme qu'une idée exprimée dans une langue peut être exprimée dans d'autres langues. Un tel enseignement, s'il est bien exploité, devrait assurer l'accès à des ressources éducatives innovantes pour les Camerounais en zones rurales et semi-urbaines, et améliorer ainsi le taux d'alphabétisation et les conditions de vie dans un contexte de mondialisation.

Mots-clés : enseignement des TIC ; expansion lexicale ; langue maternelle ; langue officielle ; traduction.

1 Introduction

Our study falls within the context of the growing importance of mother tongues (MTs) in education, coupled with the fast pace at which information and communication technology (ICT) knowledge is shaping and shrinking the world into a global village. A people's cultural and intellectual heritage is preserved in its language, and language competence is enhanced when the language is used in all spheres of life. To limit a people to the use of ICTs in exoglossic languages only serves to deepen the digital divide while also impoverishing indigenous cultures. The situation in Cameroon is more challenging, especially when it comes to localising ICTs. The use of local languages in ICTs is hard to quantify (Osborn, 2006), but their presence within the field of ICT applications is certainly restricted, and this is rooted in the country's sociolinguistic landscape, language policy profile and the educational Web in which these languages are entangled. ICTs are still disseminated as a monolingual medium with exoglossic languages as the media of instruction.

As awareness of this problem increases, some of these Cameroonian languages are just starting to appear on the Web; though their use is very limited, and information about them still scanty. A concept worth mentioning here is the Résulam (résurrection des langues minoritaires) initiative. This initiative is spearheaded by a group of IT researchers who seek to mediatise the presence of our local languages within IT applications. Their aim is the production of Internet content in Cameroonian languages. They are visible on Facebook through their Facebook page and on Google Play Store. As discerned from their applications, they are actively involved in the production of visual and bilingual official language/national language dictionaries (French-Nufi, French-Bamileke), monolingual dictionaries in national languages (Duala, Nufi, Ghomala', Yemba, Ewondo, Nufi) and the production of books in national languages.

Today, the presence of our local languages on social media has improved considerably thanks to such initiatives, but there is still much work to be done, since only a small proportion of the local languages (which number more than 220) is currently represented (Binam Bikoi, 2012). What kind of fate then is reserved for 'minority' languages which find themselves at the periphery of information technology society given the rapid technological advances we experience almost on a daily basis? Though the status quo is changing for some Cameroonian languages e.g Duala, Ghomala', Yemba, Ewondo, Nufi [1], much still remains to be done for other languages, especially as regards access to ICTs. Given the need for the insertion of mother tongues within our educational system, and following recent developments from 2008 within the education sector in Cameroon, this study is to be read against the backdrop of ongoing innovation in our school curriculum – initiating learners to ICTs. This process is

1. This data is contained in our PhD thesis which awaits defence as at April 2019.

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more likely to succeed if it is conducted in the language most familiar to the learner, i.e. the mother tongue.

The language chosen for this study is Mmɛn [2] – a central ring, grassfields Bantu language spoken by the Bafmeng people of Fungom subdivision, Menchum division in the North West region of Cameroon. Tasah (2006) states that Cameroon has 286 languages including 284 national languages; 3 have an almost assured protection or are stable, 16 are unstable or eroding, 81 are definitely endangered, 86 are critically endangered, 78 are near-extinction while 20 are dead, including Gey, Nagumi, Duli and Yuli. Following this taxonomy, Mmɛn falls within the endangered group whose viability is limited to usage principally in the household, in informal communication and at places of worship. The language's impact on the community who use it as a tool for communication would be enhanced if it was introduced as a medium of instruction within the school milieu. Conveying ICT knowledge in this language will increase the language's base of scientific knowledge, thereby raising the acceptability factor of our MTs as a medium of instruction.

2 Context of study

Our study responds to a particular need formulated within the framework of the language teaching project in Cameroon. Our key area of interest is the teaching of local languages which we present from its historical evolution and institutional framework, and the challenges for mother tongue ICT (MT-ICT) instruction.

2.1 Teaching national languages: an historical overview

The teaching/learning of local languages has been ongoing for almost four decades in Cameroon. The language teaching project, better known by its French acronym PROPELCA (projet opérationnel pour l'enseignement de langues au Cameroun), has been the flag bearer of this initiative. With the launching of PROPELCA in 1978 and the adoption of the General Alphabet of Cameroon Languages in 1979, formal education in MTs became a reality. The experimental phase of this project began with the teaching of Lamnso' and Ewondo from 1981-1987, which was declared a success at the 1995 Forum on Education (Tadadjeu, Sadembouo & Mba, 2004). The pre-generalisation phase, from 1987-1995, saw the inclusion of some twenty other local languages. During the experimental and pre-generalisation phases, four models of language teaching were implemented. These models are briefly presented below (Tadadjeu *et al.*, 2004):

— The first model, labelled official bilingualism, targeted the teaching of French to English-speaking Cameroonians and vice versa in order to ensure an equal mastery of both official languages by both groups of learners;

2. The classification used here follows from Greenberg (1977) and elucidated further by Dieu & Renaud (1983). They ascribe Mmen number 821 meaning it is the *first* of languages belonging to zone *eight* (Bantu Western Grassfields) and belongs to the Central (*two*) subgroup (because we have East Ring and West Ring) of languages referred to as the Ring languages.

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— The second model advocated the use of MTs as a medium of instruction, with a gradual transition to the first official language (OLù56ù) in the first years of primary school;
— The third model, less formal than the previous two, sought to encourage the teaching of MTs at the secondary level of education, with the aim of broadening the cultural base of learners;
— The fourth model was concerned with the teaching of MTs at the nursery or pre-primary level of education.

Following the positive report of this project presented at the Forum on Education in May 1995, the project could then be rolled out to cover the whole country. Despite the numerous legislative acts and various models proposed by PROPELCA, it was not until 2006, with the advent of the ERELA (écoles rurales électroniques en langues africaines) project, that MT-ICT instruction began to see the light of day; and it was in 2010 that some Master's students of the University of Yaoundé 1 identified the need to translate an ICT manual into their indigenous languages so as to facilitate instruction in MT-ICT.

Language teaching involves work at various linguistic levels, and certain stakeholders and partner organisations, like the Cameroon government *via* the University of Yaoundé 1 (UY1), the DCLC-HTTC [3] as well as some private higher institutions of learning, the National Association of Cameroon Language Committees (NACALCO), the Summer Institute of Linguistics (SIL), the Cameroon Association for Bible Translation and Literacy (CABTAL), as well as the Cameroon Bible Society (CBS [4]), have been instrumental in this regard. These partner organisations have intervened most specifically in the domains of literacy and bible translation.

2.2 Teaching national languages and ICT use in the teaching/learning context

The formal introduction of national languages and cultures (NLCs) within the school system, through various legislative acts that have supported this enterprise, is a laudable effort from the government. In this connection we will cite the revised January 1996 constitution, the April 1998 law of orientation, and the September 2008 law creating the Department of Cameroon Languages and Cultures at the Higher Teachers' Training College of the University of Yaoundé I (Nkenlifack, Demsong & Nangue, 2011; Ndibnu-Messina, Bilounga, Bogning & Fokunang, 2014, Meh & Nkenlifack, 2017).

The use of digital aids as a pedagogic tool by teachers and/or learners is often met with challenges which hamper their integration within the school context. This is particularly problematic in Cameroon where the digital divide between learners in rural areas and their peers in urban settings is especially marked; though the situation is gradually improving. This disadvantageous scenario could be extrapolated to the whole of Africa, though steps are being taken to reduce the digital chasm.

3. Department of Cameroon Languages and Cultures of the Higher Teachers' Training College, University of Yaoundé 1.
4. Known in French as *Alliance Biblique du Cameroun – ABC.*

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In the school milieu, less than a hundred (Tchamabe, 2010) of our almost twelve thousand schools [5] are equipped to provide the bare minimum in terms of ICT instruction. It goes without saying that a cross section of our learners can complete their secondary school training without laying hands on a computer. The yearbook of the Regional Inspectorate of the Centre reveals that a cosmopolitan area such as Yaoundé has about 95,000 learners with about 1200 computers giving a ratio of one computer to eighty learners (Bilounga, 2015:38).

2.3 The need for ICT instruction in MT education

Arguments supporting the introduction of ICTs within the educational system posit that technological tools:

— Enable the child to develop and use ICT skills in attaining curriculum and learning objectives;

— Enable the child to overcome barriers of access to learning resources caused by the economic, cultural and linguistic environments;

— Support the child in the development of social skills through cooperative learning in problem-solving;

— The imperative of equipping children with the knowledge and the skill-sets they need to use these tools in the language they best understand is further justified that:

— If a language is used in other spheres of life, it should be available through ICTs. Languages change and evolve, and ICTs are implicated in these transformations;

— Even though Cameroon's indigenous languages are crucial as vehicles of expression and for the generation of knowledge, there has been very little organised educational activity apart from some small-scale literacy programmes and limited MT instruction; and

— The government's initiative is being taken up by many language committees which are keen to see their languages accorded educational status within their respective linguistic communities.

It is our conviction that the field of MT-ICT instruction could provide an important boost to literacy programmes as well as to information generation and dissemination.

3 Research questions

The introduction of MT-ICT instruction implies a threefold problematic which can be subsumed into one main research question and two sub questions: how do we make ICT knowledge available to the Bafmeng indigenous community in its own native language? The sub questions which will enable us to better answer this main question are :

5. Data obtained during our LCC 541 course (2009) with (Late) Professor Maurice Tadadjeu.

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— How do we solve the thorny issue of vocabulary inadequacy in Mmɛn?

— How should we undertake ICT instruction in Mmɛn?

Thus, our ultimate goal is to translate a manual for teaching ICTs at the primary and secondary levels for use within the ERELA Project. We will identify some mechanisms of lexical expansion to solve the issue of vocabulary inadequacy, and discuss the rationale for MT-ICT instruction adapted to the Cameroonian context in line with the current pedagogic approach applied within the school system.

4 The approach employed

MT-ICT instruction in our local languages draws on a number of theoretical considerations ranging across translation issues and MT instruction through lexical innovation. We now present perspectives involved in such an educational initiative.

4.1 Translation

Among the multitude of existing definitions of translation, we prefer to privilege the following: translation is to be understood as the art of interpreting the meaning of a text from a source language (SL) and the subsequent production of an equivalent text that communicates almost exactly the same message in a target language (TL). Delisle's (1980) concept of 'lexical exegesis' informed our thinking throughout; particularly his sense of how an exegetical dialogue facilitates our understanding of the meaning of linguistic symbols. These symbols are variable in their degree of comprehensibility since some will require little or no intellectual effort in their rendition from SL to TL whereas others will be resistant to any TL rendition. Lexical exegesis allowed us to identify the following issues during the translation process.

4.1.1 Cultural challenges

To translate a concept into another language we need to find a functional equivalent, one which will have the same meaning as the concept in the SL. Functional equivalence lends credence to intercultural translation as it provides the maximum correspondence to that of the original but the new meaning ascribed to the term has to be differentiated from any former meaning ascribed hitherto. The functional equivalents proposed seek to render ICT concepts concrete to Mmɛn speakers by situating these concepts as much as possible within their cultural universe, as the following examples illustrate:

Example 1

English	Mmɛn	Cultural referent
Mouse	fɨ̀ sɔ̀ŋə̀	"Type of rat with a pointed mouth"
Pointer (of mouse)	ì ghɔ́ŋ	"Arrow"
Central processing unit	tɨ̀ fɔ́m	"The brain"

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Recourse to substitutions of varying degrees may become necessary when functional or near functional equivalents are absent; though these may at times lack any direct meaning in the TL or receptor culture.

4.1.2 Linguistic challenges

Challenges can occur when no equivalent vocabulary is available; at such times the translator may fall back on adaptation – one of the most dynamic translation theories. This particular challenge highlights the thorny issue of vocabulary inadequacy. The thought-provoking questions below enabled us to overcome these challenges, which are essentially linguistic.

Q1: Should we use a lexical item we know whose meaning is relatively close?

This issue was solved by making use of many functional equivalents or near functional equivalents. As the following examples make clear, the equivalence is a matter of appearance or function.

Example 2

English	Mmɛn	Cultural referent
Mouse	fɨ̀ sɔ̀ŋə̀	Type of rat with a pointed mouth (description as per appearance)
Pointer (of mouse)	ì ghɔ́ŋ	Arrow (description as per appearance)
Central processing unit	tɨ̀ fɔ́m	The brain (near functional equivalent, as per function)

Functional equivalence as a strategy is seen to be very productive in MT translation.

Q2: Should we use a borrowed item even if it has no meaning in the TL?

Borrowing sometimes proved to be the only way of giving a 'feeling' in the TL of the concept conveyed by the SL. It seems to be the most widely used strategy for increasing the vocabulary stock of a language, especially in scientific and technical fields. Chumbow and Tamanji (1994) argue that a speaker is pushed either by prestige or by a lexical lacuna to borrow from another language. A lexical lacuna appears when it is certain that a locally created word does not convey the idea in question, whereas the prestige motive stems from the fact that speakers of the TL consider the SL or donor language to be of higher status. Irrespective of the motive, borrowing in Mmɛn stems from the language's inability to integrate ICT concepts, and the words are often subjected to loan adaptation strategies in the language. Consider the data below.

Q3: Should we create a neologism through a loan adaptation strategy?

Loan adaptation is the tendency to modify the shape or form of a borrowed lexical item so as to render it congruous with the linguistic system of the TL (Tamanji, 2004). ICTs and virtual environments are fast 'dissolving' geographical frontiers and thus shrinking the world into a global village. The Mmɛn language needs to accommodate new

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Example 3

English	Mmɛn equivalent
Computer	kɔ̀mpítà
Windows	wúndós
Excel	ékə̀sɛ̀l

concepts in order to cope with the pace at which the world is evolving, technologically speaking, if this knowledge is to be contained within its linguistic code. Thus, some foreign concepts are absorbed into the TL, and the latter uses its rules to adapt these borrowed items to suit its syllable structure and phonological system. With this strategy, the native speaker not only appropriates new knowledge *via* a new concept but also feels the concept to be very close to the language s/he speaks. Consider the data below.

Example 4

English	Mmɛn equivalent
Computer	kɔ̀mpítà
Windows	wúndós
Excel	ékə̀sɛ̀l

We note that the language borrows the foreign concept and adapts it to its structures *via* certain phonological processes, thereby portraying a blend of phonetic and phonological traits. Before looking in more detail at the first two items of examples 3 and 4 above, it is worth noting that a complex set of processes occurred in order to produce the Mmɛn equivalents. Such strategies included:

— Re-interpretation of foreign segments to approximate indigenous sound segments

This refers to the tendency of the language to substitute sounds that are not akin to its phonological repertoire to bring in sounds that share some phonetic features with the substituted segment. In other words, the sound segments attested in the SL are absent in the TL. These 'foreign' sounds will be approximated to some indigenous sound segments with which they have the highest degree of phonetic similarity as shown below.

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Example 5

/d/ in *data*	becomes /ǹd/	as in *ǹdátà*
/ai/ in *Microsoft*	becomes /a/	as in *màkə̀lə̀sɔ̂f*
/ju:/ in *Computer*	becomes /i/	as in *kɔ̀mpítà*

The item 'computer' reveals that Mmɛn has taken the intonation of the first syllable in the SL to produce /kɔ̀m/ in the TL giving it a low tone. The second syllable shows that Mmɛn easily collocates high vowels with the place of articulation of the preceding oral consonant. [í] is a front vowel and [p] a bilabial sound with a [+front] distinctive feature which is logically followed by a vowel with a corresponding feature. The final syllable /tà/ obtains its tonal signature from the SL intonation pattern.

— Cluster simplification

This is a situation where a consonant cluster is split by a vowel to avoid a CCV syllabic structure, so that the resultant syllabic shape is in conformity with that of the Mmɛn language. The borrowed item *Excel* is re-interpreted as *ékəsèl* yielding a V-CV-CVC chain. This is akin to the phonological structures of the Mmɛn language, and provides this borrowed item with some local colour. The same analysis applies to the term *Microsoft* which is rendered as *màkəlàsɔ̂f*.

Cluster simplification is achieved by using processes other than epenthesis or vowel insertion, such as consonant deletion and/or vowel insertion. What is important is that the result does not violate the morpheme structure constraints (MSCs) of the language. This means that the words that are brought into the TL from the SL must respect the segment and sequence structure of the TL.

— Provision of loans with grammatical properties of the TL

In this situation, the loaned word is given some grammatical features of the TL so that it serves the purpose for which it was borrowed. As such, the TL may have specific morphological and grammatical properties crucial to its viability which are absent in the SL, and consequently the loans into the TL have to be provided with these properties. When this happens, the borrowed items have to be fitted into an appropriate class and assigned class markers to ensure that they can be properly used with respect to the concord system of the language, since Mmɛn is a noun class language. This is exemplified below.

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Example 6

Singular	*Plural*	*Gender*	*Gloss*
ə̀ wúndós	*ə̀ sɨ wúndós*	*3/4*	*Windows (operating system)*
ə̀ kɔ̀mpítà	*ə̀ sɨ kɔ̀mpítà*	*5/13*	*Computer*

The example of the item *windows,* reveals that [u] which is [+back] is influenced by the velar quality of [w], and the second syllable obtains its tonal signature from the SL intonation. Note however that the phonological system does not permit the speaker to place the voiceless alveolar fricative [s] in the final position. Since, however, there is a need driven by the prestige motive to incorporate this new concept into the TL linguistic system, this final syllable structure is allowed. The language borrows concepts which in themselves will have no meaning unless they are used within the context of ICTs, outside of this context the language will have no need to borrow these concepts.

— Prosody harmonization

The Mmɛn language is a tonal language and makes use of contrastive relative pitch to distinguish between words (Pike, 1943). Loan words in the domain of ICTs imported into Mmɛn have to be made to bear tone and function under the same conditions; or they have to be governed by the same tone rules as the indigenous words of the language. We notice that, according to the mechanisms of language development employed, the TL generally tends to match stressed syllables in the donor language with high tones, and unstressed syllables with a low tone.

Example 7

Data	*Gloss*
ǹdátà	*Data*
wúndós	*Windows (operating system)*
kɔ̀mpítà	*Computer*
màkə̀lə̀sɔ̂f	*Microsoft*
wɔ̂d	*MS Word*

The analysis with regard to tone in example 6 enabled us to break up consonant clusters so as to satisfy the MSCs of the language. We were prompted to simplify the tonal pattern of loan words by, for example, eliminating mid tones and giving these 'new' words the simplest tone melodies consistent with the tonal pattern and tone rules of the Mmɛn language.

Q4) Should we propose an equivalent by resuscitation?

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Resuscitation refers to the revival of an organism from unconsciousness or apparent death. As a process of lexical expansion, it seeks to limit the use of paraphrases and borrowed words by reviving archaic indigenous lexical items in order to express new concepts for which loan words or paraphrases are considered grossly inadequate (Mutaka & Tamanji, 2000). Consider the example below:

Example 8

English	Mmɛn equivalent	Cultural referent
Document	Ì sə́	Safe for quick storage
File	ə̀ ŋgɛ̀	Safe for remote storage
USB Stick (flash)	fɨ̄ mbù'	Small storage container (a full calabash)
CD-Rom	fɨ̄ pà kîŋ ŋgá	Flat surface with circular edges

This strategy of lexical expansion is a means to palliate our linguistic difficulties because these resuscitated words give some degree of authenticity and a cultural flavour fully appropriate to the language. Having considered the difficulties we encountered due to cultural distance, let us now look briefly at the obstacles we identified due to a change of semantic category.

4.1.3 Change of semantic category

There are no two languages in the world whose vocabularies offer total functional equivalence. In this regard, consideration is often given to the characteristics of the concept, which are then then conveyed in the TL. This is because each speaker has the capacity to form new expressions. Indeed, it is this ability which constitutes the particularity of the human species, and which distinguishes speech from the mere exchange of linguistic symbols. Various languages owe their fundamental identity to their grammars and not simply to the partial similarities and/or differences which may exist from the viewpoint of morpho-phonological rules (Meh, 2010). Such structures and identities account for the fact that every discourse, irrespective of historical and geographical distance, can be translated. It is against this background that certain expressions in English have Mmɛn equivalents which, from the structural perspective, have nothing in common with the SL expression. Consider the expressions in the Example 9 below.

It is obvious that the issue of vocabulary here is not only very precise, but also highly specific to content and context. The words have great significance and we were often tempted to either maintain them as they were in the SL or include some explanation, or translate them, which was an arduous task. Whenever a term is translated, a great deal of the meaning can be lost and so experience has an invaluable role to play when we are dealing with such technical discourse. It goes without saying that some conservatives of the language feel that marrying a Mmɛn perspective with such

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Western oriented concepts is tantamount to betraying an entire people, together with its culture.

Example 9

SL	'Historical and social foundations of computer science'
TL	ì zhə́tìy zə́ ŋwà'lè ə̀ kɔ̀mpítà
Meaning	'The beginning of the book of the computer'
SL	'The system software is only there to enable the user to control and maintain the machine, to execute specific tasks, we need application software'
TL	Pə̀lóŋgə̀làm sì tsàmtə̀ à fhà' nyí kɨ sɨ́ tsàmtə̀ wù fha'ə sɨ́ tɔ'nə̌ sɨ́ kwɔ̀kì sə̂ nə̀ tɨ fhâ' tíyə̌, ə́ kíy sə̂ kíy pə̀lóŋgə̀làm sè mə tɨ́ cûytə̀ kə́ tɨ́ fhá'ə̀

4.2 Lexical expansion

In simple terms, this is considered as the process of increasing the vocabulary stock of a language for the purpose of equipping it to meet communication needs; or as a preliminary to its introduction within the education system. Languages possess adequate morphological and syntactic processes to cope with the expression of new ideas; and there is always a felt inadequacy in the absence of appropriate lexical items to express some new ideas, especially when languages come into contact with each other. This inadequacy opens up a chasm between the knowledge to be expressed and the available medium of communication. This leads to a conscious effort to bridge the chasm between the existing lexicon and the rapid socio-economic and scientific evolution. In other words, the need to express in our indigenous languages scientific and technological knowledge introduced *via* Western languages reveals the inadequacy and not the inferiority of the indigenous languages as regards their capacity to withstand the intersection of cultures and civilizations. Strategies employed by native speakers to circumvent this lack of vocabulary vis-à-vis the cultural 'revolution' of ICT include borrowing and range extension (Tamanji, 2004).

4.2.1 Range extension

Lexical items usually have registers and distributional contexts with which they are associated, in addition to belonging to specific grammatical applications. Range extension is the process by which lexical items can be made to cover more registers and contexts.

Register extension

Here, the indigenous item belonging to a particular register is made to gloss a foreign term belonging to another distinct register (Tamanji, 2004). As such, a new word is not created; rather, the language simply extends the range of usage of an existing indigenous lexical item.

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Example 10

English	*Mmɛn equivalent*	*Cultural referent*
Document	*í sə́*	*Temporary storage medium (domestic, culinary)*
File	*ə̀ ŋgɛ̀*	*Permanent storage medium (domestic, culinary)*
Arrow	*í ghɔ́ŋ*	*Arrow (Hunting)*
Folder	*fɨ́ fú'ə̀*	*Permanent storage basket (domestic, culinary)*

Semantic extension

This refers to the use of a word with one meaning in distinct contexts. Semantic extension is the process by which an additional meaning brought into the TL by a foreign concept is added to the original meaning of the indigenous term. Its distinction from register extension lies in the fact that while the former involves the use of a given word in distinct contexts, the latter involves polysemy, though both are sometimes used synonymously (Neba, Chumbow & Tamanji, 2004).

Example 11

Mmɛn	Gloss	Cultural referent
à láŋ	table	Household, computer science (MS Word, Excel)
ə̀ ŋgə'	virus	Maggot, trouble (domestic, computer science)
fɨ́ sɔ̀ŋə̀	mouse	Species of rat (Hunting, computer science)
ə̀ kyə̀	speaker	Voice (anatomy, computer science)

4.3 Mother tongue – Information and communication technology (MT-ICT) instruction

This is the method for transmitting ICT knowledge to learners in a language best known to them – assumed here to be their mother tongue. The challenge here is to complement the scientific knowledge to which learners have been introduced at primary level with knowledge of ICTs. The assumption being that this complementary knowledge will stimulate their interest in science of all kinds.

The current pedagogic approach applied in Cameroon's education sector is competency-based instruction. This approach is centred on a predetermined set of knowledge, skills, and abilities that the learner is expected to acquire. 'Competency-based education has become a hot topic in higher education circles these days and it is becoming

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increasingly popular as the country searches for ways to improve college affordability and more accurately measure student learning' (Syam 2015).

'The most important characteristic of competency-based education is that it measures learning rather than time' (Syam 2015); in other words, competency-based learning allows us to fix required attainments while allowing the time taken to reach these attainments to vary. Learners progress by demonstrating that they have acquired the knowledge and skills (called competencies) required for a particular course or module, regardless of how long it takes. In this light, then, the curriculum design for MT-ICT instruction will be learner-centred in relation to the competencies to be developed and in strict compliance with the tenets of CBA, which have not changed for over half a century now:

— Focus on outcomes,
— Greater workplace relevance,
— Outcomes as observable competencies,
— Assessment as judgements of competence,
— Improved skills recognition, and
— Improved articulation and credit transfer (Bowden, 2009)

4.3.1 The local language teaching context

The contextual factors considered in this study are the educational system, the society and/or environment and the culture. In the educational setting within which this study was undertaken learner-centred teaching is barely implemented in practice at either the primary or secondary levels. In general, a teacher-centred style is still dominant in relation to young learners; a style which does not support critical thinking. In general, learners are mandated to learn ICTs as a subject in formal school settings. Meanwhile, it is difficult to induce these learners to value the importance of ICT instruction in MTs, and to recognize its utility for their daily lives or for their careers. This makes it difficult for learners to be motivated, given the fact that NLCs as a subject are not 'used'in the society, nor written into the GCE [6] examination. This suggests a need to raise awareness of NLC learning in more motivated ways. In order to achieve this we believe it is important to consider another major constraint when conceiving an MT-ICT syllabus, namely culture; since culture influences the way learners believe, think, behave, and relate to the subject. For this MT-ICT instruction to take root, it goes without saying that there is a need for the teachers to modify their teaching methodologies – to move from traditional methods to more learner-centred approaches, in order to promote learning and to improve on some learner characteristics [7]. This is a philosophy encouraged by the CBA. In this regard we will have to take into account the additional roles to be adopted by the teacher, such as that of motivator and facilitator in guiding and helping learners how to learn, given this MT-ICT instruction framework (Meh & Nkenlifack, 2017).

6. General Certificate of Education.

7. Decree no 419/14/MINESEC/IGE of 9th December 2014 outlining syllabuses for Forms 3-5 of General Secondary Education.

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There will be the need to train teachers on how to facilitate these various activities that can help learners sustain their interest in MT instruction. This is a domain as yet unknown to most of our NLC field teachers, and they will need to consider making the transition from being mere transmitters of knowledge to becoming facilitators who help learners to become autonomous.

As such, the training of teachers for Cameroon languages and Cultures at the HTTC will have to be redesigned. We believe that these teachers should be trained not only in the teaching of their own mother tongues but also in the use of effective pedagogic methods. If they are expected to be more efficient, they will have to appropriate for themselves the use of ICTs, so as to curb the accelerating loss of our cultural and linguistic heritage – a source of invaluable wealth for our nation. We agree that by providing these teachers with the methodology for teaching NLCs, and equipping them with ICTs as indispensable teaching aids we will foster the transmission of our linguistic and cultural know-how (as well as those of other peoples), be it in a classroom situation or in an individualized learning context (Nkenlifack *et al.*, 2011)

However, for this to happen, extensive work needs to be done by linguists, translators and terminologists so as to provide our local languages with the much needed vocabulary to render ICTs more user-friendly to indigenous communities. The facilitators, monitors and teachers co-opted for this instruction will have to be well-equipped so that this enterprise can take root within our educational system and also render our curricula learner-friendly.

Researchers who focus on the issue of the intellectualisation or modernisation of our local languages agree that the translation of major scientific works from exoglossic languages is one of best ways of advancing this process (Alexander, 2005).

Venuti (1998:77) on his part, maintains that because translation makes possible "the invention of domestic literary discourses, it has inevitably been enlisted in ambitious cultural projects, notably the development of a domestic language and literature." It is for this reason that languages are said to have a dynamic capacity to evolve when exposed to a daunting challenge; and it is also for this reason that we must explore and employ innovative ways of initiating and sustaining the rapid intellectualisation of local Cameroonian languages.

4.4 Findings

Our indigenous languages are endowed with mechanisms of availing terminology even for domains hitherto considered far removed from the cultural universe of these communities. The domain of ICTs is shown to have been incorporated and equipped within the linguistic system so as to express the Mmɛn worldview. Such an enterprise requires an elaborate prior linguistic analysis of the language. The translation exercise that ensued presented a number of hurdles which were dealt with from an understanding of Delisle's (1980) concept of lexical exegesis.

Pertaining to cultural challenges, the criterion of 'functional equivalence' guided us throughout. Words which belonged to certain registers in the language were 'capacitated'to become terms in the domain of ICTs so as to fulfil this criterion. This cultural

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reference provided a way out to make the rather technical domain of ICTs friendly to the Mmɛn native speaker. In some instances, substitutions of varying degrees were necessary when functional or near functional equivalents were absent.

Challenges of a linguistic order arose where no direct vocabulary equivalent was available and we had recourse to adaptation. This specific difficulty brought to the fore the thorny issue of vocabulary inadequacy. This was resolved through the provision of some cultural equivalent but most importantly, a number of processes and/or techniques assisted us. Such techniques included; the creation of neologisms, borrowing and resuscitation. Still under neologisms and borrowing, there was the need-filling motive which we identified as predominant in giving the 'feel'of this technical domain to the language but for the language to have this 'feel'of the domain, it was necessary to give it some local colour. This local colour provided by the language enabled the neologisms and/or borrowed terms to respect the MSCs of the local language through loan adaptation processes such as; cluster simplification, prosody harmonisation and in other cases provision of TL grammatical features to the borrowed terms or loans. Some situations in our translation indicated a change of semantic category of an expression when moving from English to Mmɛn.

Some ICT terminology in Mmɛn

	English Word	Mmɛn[8] proposal		English Word	Mmɛn proposal
01	Alphabet	ŋgòlê	33	Maximise button	kɨ̀'l ɨ̀ ì ghá'sɔ́
02	Antivirus	mcâ' mə ŋgə̀'əm	34	Menu	Ménù
03	Art	ghɛ̀ mə́ zá'lə̂	35	Minimise button	kɨ̀'l ɨ̀ ì fàptə
04	CD, DVD ROM	fɨ̀ pàà fɨ́ kîŋŋgâ	36	Monitor / screen	ì kyâ'
05	Central processing unit	tɨ̀ fɔ́m	37	Mouse	fɨ sɔ̀ŋə̀
06	Colour	ì kyâ'	38	Mouse pad	fɨ ghám
07	Computer	kɔ̀mpítà	39	Option	ì ndúm
08	Contaminate / infect	sɨ́ lə̀'	40	Paper	í fú əŋwà'lɛ̀
09	Creation	í phô	41	Pointer	ì ghɔ́ŋ
10	Cursor	ì líŋə̀	42	Print	sɨ̀ kwə̀
11	Cut	sɨ́ khaà	43	Printer	a kwə̀
12	Data	ǹdátà	44	Retrieve	Kíŋɔ́ njì
13	Desktop	dɛ́stɔp	45	Restore button	kɨ̀'l ɨ̀ ì késô
14	Dialogue box	a pɨŋ/ ŋgus	46	Save	Písô ndə̀m
15	Difference	ì kwíŋŋnî	47	Search	pɔ'lə̂ kìŋ
16	Diskette	fɨ̀ pàà fɨ́ kí ŋgúskɨ	48	Session	à zùŋtɛ̀
17	Display	sɨ́ páyn	49	Spacing	á zhɔ́m
18	Document	ì sɔ́	50	Speaker	ə̀ kyə̀
19	Draw	sɨ́ twɛ̀yn	51	Spread / propagate	wàŋə

8. The mid tone is underspecified in this writing system.

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20	Drawing tool bar	mbàŋì twènə́	52	Standard tool bar	mbàŋì ghɛ́ sə́ fú
21	File	ə ŋgɛ̀	53	Status bar	mbàŋì ghɛ́ ŋwà'lɛ̀
22	Flash / USB device	fɨ̀ mbù'	54	Sub menu	fɨ̀ ménù
23	Folder	f ̀ì fú'lˆə	55	Symbolise	a cùyə
24	Hard disk	a ghɔ́f á tswa	56	Text	ŋwà'lè / gh ´ɛ́ zɔ́'le
25	Hardware	m̀tɔ́m / sì kɔ́	57	Title bar	mbàŋə m̀twə̀m
26	Horizontal ruler	líŋə ì twènə tɛ́sə̂	58	Typing / keying in	Nyà'ə/ zɔ́'le ndzɨ́sí
27	Horizontal slide bar	mbàŋə tɛ́sə̂	59	Vertical ruler	líŋə ì twènə tsúsə̂
28	Icon	a fhá'sɛ̀	60	Vertical slide bar	mbàŋə tsúsə̂
29	Ink	m̀káyn	61	Virus	ŋgə'
30	Key	a cɔ́'	62	Window	wúndù
31	Keyboard	láŋ á cɔ́' ke	63	Word - processing	ì sáynə̂ ŋwà'lɛ̀
32	List	Ká'a tɨ̀ ghɨ́m			

From a lexical expansion standpoint, the vocabulary was enriched by range extension which could be in terms of range or register. Here, resuscitation was the major technique used and rather than overload the learner with too many borrowed terms, we resorted to 'bringing back to life' some terms used in other domains in the language and extend their meaning to express some ICT realities. Sometimes, the resuscitation technique functioned as a description in appearance or by description. We now present an extract of some terminological items in Mmɛn in the domain of ICTs.

4.5 Our outlook on the translation enterprise

Translation has a non-negligible role in maintaining our linguistic and cultural diversity. From this perspective, translation and terminology development programmes can be proposed with regard to the promotion of literacy and of a reading culture in our indigenous languages. This may turn out to be a significant strategy since it will enlarge the potential readership of the texts concerned and provide added incentives for local publishers to print more extensive editions of texts in these languages. Given the mystifications that abound in this domain, however, we can expect that the move will be resisted, sometimes even vigorously (Alexander, 2005).

We agree with Alexander (2005) that for the translation profession, it will entail a serious challenge, not only of a technical nature, but also as regards language policy and its political implications. Regardless of the direction eventually agreed upon through intellectual debate, conference discussions, workshops, university seminars and other relevant fora, it is clear that such a reflection should serve as motive enough for the

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creation of some form of language industry; and that it should foster partnerships among our local language associations.

Concurring with Dlodlo (1999), we reiterate that the success of the indigenisation of Christianity in Africa as opposed to the failure of education, especially as regards mathematics, technology and science, is probably to be explained by the fact that the Bible and other texts of the Christian faith were made available through translation in the languages of the people of Africa, whereas, with rare exceptions, most educational materials were available only in the European languages. The obvious response to this challenge, then, will be the provision of technical and scientific manuals in our local languages which will be incorporated into our current school curricula.

5 Conclusion

This study sought to present the feasibility of MT-ICT instruction in Mmɛn, a Cameroonian central ring grassfields Bantu language, *via* an intellectualisation and/or modernisation of the language that implements a CBA methodology. It is axiomatic that knowledge contained in one language can be expressed in another. This study demonstrated this and presented strategies to solve vocabulary inadequacies. We affirm that a society with access to multilingual and multicultural resources is advantaged in its ability to play an important socio-economic role on the world stage. The identities of societies and ethnic groups have never been static, and it would be a naive illusion to think that they can become so, like fixed monocultural museum exhibits, when the pace of global change is so rapid. Cameroonian linguists and language communities are exhorted to respond to this clarion call and to ensure that these languages can convey and project our cultural values and identities onto the world stage.

Bibliography

Alexander, N. (ed.). (2005). *The intellectualisation of African Languages.* Cape Town: PRAESA/University of Cape Town.

Bilounga, M.G.-Y. (2015). *Intégration des TIC dans l'enseignement/apprentissage des langues nationales: le cas du bəti-faŋ* dans les classes d'orientation du Lycée Général Leclerc de Yaoundé. MA dissertation, Department of African Languages and Linguistics: University of Yaoundé I.

Binam Bikoi, Ch. (éd.) (2012). *Cartographie administrative des langues du Cameroun.* Yaoundé: éditions CERDOTOLA (Centre international de recherche et de documentation sur les traditions et les langues africaines).

Bowden, J.A. (1997). 'Competency-Based Education—Neither a Panacea nor a Pariah'. *TEND 97 Conference,* Abu Dhabi. Retrieved from https://drjj.uitm.edu.my/DRJJ/CONFERENCE/UPSI/Competency-Based%20
Education-bowden.pdf.

Chomnou, J. (2005). *Manuel de formation des superviseurs des instituteurs. Projet ERELA.* Yaoundé: Centre Linguistique Appliqué (CLA).

Chumbow, B.S. & Tamanji, N.P. (1994). 'Development of Terminology in African Languages: Mechanisms of Lexical Expansion'. Paper presented at the *First Mozambican Workshop on Educational use of African Languages and the Role of LWCS.* Maputo, Mozambique, 21-23 November 1994.

Decree no 18/12/MINESEC/SG/DRH of 27th January 2012 posting the first batch of graduates for the teaching of National Languages and Cultures.

Delisle, J. (1980). *L'Analyse du discours comme méthode de traduction.* Presses de l'Université d'Ottawa.

Published in : Ndongo-Keller, Justine ; Ntakirutimana, Évariste ; Thierno Cisse, Mame ; Van Campenhoudt, Marc (dir.), *La traduction et l'interprétation en Afrique subsaharienne : les nouveaux défis d'un espace multilingue. Translation and Interpretation in Sub-Saharan Africa: New Challenges in a Multilingual Space*, Editions des archives contemporaines, ISBN: 9782813003898, doi: 10.17184/eac.9782813003898

Dlodlo, S.T. (1999). 'Science nomenclature in Africa: Physics in Nguni'. *Journal of Research in Science Teaching.* 36(3), 321-331.

Dieu, M. & Renaud, P. (dir.). (1983). *Situation linguistique en Afrique Centrale. Inventaire préliminaire: Le Cameroun.* Yaoundé et Paris : ACCT/CERDOTOLA/DGRST.

Law N° 08/223/MINESUP/DDES of 3rd September 2008 creating the Department of Cameroon Languages and Cultures at the Higher Teachers' Training College of the University of Yaoundé I.

Law N° 1996/06 of 18th January 1996 revising the June 2, 1972 constitution of Cameroon.

Meh, D. Nge. (2010). *Towards an exploration of the didactics of teaching ICTs using Cameroonian languages: An issue of translation and lexical expansion, the Case of Mmɛn.* MA Dissertation, Department of African Languages and Linguistics: University of Yaoundé 1.

Meh, D. Nge. & Nkenlifack, M. (2017). 'A computer-assisted language learning (CALL) based perspective for learner autonomy: Insights from activity theory'. *International Journal of Education, Learning and Development.* 5(9), 77-88.

Ndibnu-Messina, E.J. Bilounga, Y.G. & Ndibnu, F.E. (2014). 'Usage des tics pendant la formation des instituteurs dans les ENIEG privées et impact sur la transmission des connaissances aux élèves du primaire dans les écoles privées camerounaises'. *Adjectif: analyses et recherches sur les TICE Revue d'interface entre recherches et pratiques en éducation et formation.* Mis en ligne mercredi 21 mai 2014. http://www.adjectif.net/spip/spip. php?article289&var*mode=calcul.

Neba, N.A. Chumbow, B.S. & Tamanji, N.P. (2004). 'Towards the universals of loan adaptation: The case of Cameroonian languages'. in E. N. Chia (éd.), *The Proceedings of the 23rd Congress of WALS.* Yaoundé: Editions SHERPA, p. 200-219.

Nkenlifack, M., Demsong, B., & Nangue, R. (2011). « Identité numérique et éducation : enseignement des langues camerounaises grâce aux tics ». *International Journal of Information Sciences for Decision Making – ISDM,* 41, 1-11.

Osborn, Z.D. (2006). African languages and Information and Communication Technologies: Literacy, access and the future. In J. Mugane *et al.* (éds.), *Selected Proceedings of the 35th Annual Conference on African Linguistics, Somerville, MA: Cascadilla Proceedings Project,* p. 86-93.

Pike, L.K. (1943). *Phonetics.* Ann Arbor: University of Michigan Press.

Syam, S. (2015). 'To the New World of Education'. *Higher Education Review.* April 2015. https://www.thehighereducationreview.com/magazine/to-the-new-world-of-education---DDRU139511000.html.

Tadadjeu, M. & Sadembouo, É. (1984). *Alphabet général de langues Camerounaises. Version bilingue.* Collection PROPELCA 1. Yaoundé : Université de Yaoundé I.

Tadadjeu, M. Sadembouo, É. & Mba, G. (2004). *Pédagogie des langues maternelles africaines.* Collection PROPELCA 144, Yaoundé : Éditions CLA.

Tamanji, N.P. (2004). 'Indirect borrowing: A source of lexical expansion'. In G. Echu & S. G. Obeng (éds.), *Africa meets Europe: Language contact in West Africa.* New York: Nova Science Publishers Inc. p. 75-88.

Tasah, N.J. (2006). *An assessment of the degree of language endangerment for documentation: The case of Weh in Fungom sub-division.* Pre-doctoral dissertation, Department of African Languages and Linguistics: University of Yaoundé I.

Tchamabe, D.M. (2011). 'Les ressources numériques et la formation didactique des enseignants francophones. Le cas du projet Panaf'. In G-L. Baron, E. Bruillard, & V. Komis (éds.). *Didapro 4 – Dida&STIC. Sciences et technologies de l'information et de la communication (STIC) en milieu éducatif Analyse de pratiques et enjeux didactiques.* Athènes : New technologies editions.

Venuti, L. (1998). *The scandals of translation. Towards an ethics of difference.* London and New York: Routledge.

Published in : Ndongo-Keller, Justine ; Ntakirutimana, Évariste ; Thierno Cisse, Mame ; Van Campenhoudt, Marc (dir.), *La traduction et l'interprétation en Afrique subsaharienne : les nouveaux défis d'un espace multilingue. Translation and Interpretation in Sub-Saharan Africa : New Challenges in a Multilingual Space*, Editions des archives contemporaines, ISBN : 9782813003898, doi : 10.17184/eac.9782813003898