

The Process of Adapting SafeMedicate© (Medication Dosage Calculation Skills Software) for Use in Brazil

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Introduction

- Failures in the medication-use processes significantly contribute to the reduction of patient safety.
- A Drug Information Centre in Brazil reports that most errors are related to prescribing, preparing, and administering medications (Dos Santos, Winkler, Dos Santos, & Martinbiancho, 2015).
- Most academic educators in nursing, clinical educators in nursing and clinical nurses agree that dosage calculation skills are important for safe medication administration (Crawford, 2016).
- Why safeMedicate?
- Students using safeMedicate achieve significant improvements in the construction of conceptual and calculation competence in medication dosage calculation problem-solving (MDC-PS) in both UK and USA programmes.
- The safeMedicate experimental research highlights how authentic environments are more able to support all cognitive learning styles in mathematics (Weeks, Clochesy, Hutton, & Moseley, 2013) than traditional didactic methods of education.

Objective

The dissertation aims to adapt and evaluate Authentic World Medication Dosage Calculation software for use in Brazil.

Methods

- Formative research approach which is a kind of developmental research or action research which improves instructional-design theory (model), practices, and processes, guided by the adapted model of the Participatory and Iterative Process Framework for Language Adaptation (PIPFLA) (Maríñez-Lora et al., 2016).
- The dissertation will be carried out in two phases: (1) adaptation and (2) preliminary evaluation.

Theoretical framework

SafeMedicate:

- Rooted in Piagetian psychology as it is useful to look closely at the ways in which the individual builds particular mathematical ideas or concepts (Kolb, 2014).
- Provide authentic environments that are more able to support all cognitive learning styles in mathematics (Weeks, Clochesy, Hutton, & Moseley, 2013) by offering opportunities to tailor and expand mathematical skills through mental computation, arithmetic, geometry/visual, and algebra (Weeks et al., 2013).

Theoretical framework

Language adaptation:

- More than a simple word-for-word translation, it is an interpretation of meaning.
- Use a combined emic (within-culture/insider's perspective) and etic (similarities across cultures/outsider's perspective) (Maríñez-Lora, Boustani, del Busto, & Leone, 2016) for interpretation informed by socio-cultural and contextual factors.

Back translation contradiction:

- A common step in adaptation processes whose benefit is to provide information about semantic and conceptual equivalence. However, this benefit has been questioned in the translation science. Moreover, the International Medical Interpreters Association does not recommend back-translation.
- The argument is that comparison provide only limited and potentially misleading insight into the quality of the target language text. This happens because many adaptations made by the translator which perfectly convey the meaning of the original are lost in the back translation giving the appearance of an inaccurate rendition (Harkness, 2013).
- Recommendation: instead of looking at two source language texts, it is much better in practical and theoretical terms to focus attention on first producing the best possible translation and then directly evaluate the translation produced in the target language, rather than indirectly through back translation (Harkness, 2013).

Adaptation methodology

- Studies incorporate systematic approaches of language adaptation process, but the source is not often cited (Maríñez-Lora et al., 2016). As such, a strength is the transparency of the process.
- Triangulation of three methods (focus groups, interview, and face validity surveys) and considers the evaluation methods used to prepare language adaptations which are Informativeness, Source Language Discrepancy, Security, and Practicality (Maríñez-Lora et al., 2016). In addition, it will be used journaling.
- Journaling: helps to gain a more in-depth perspective by identifying and documenting motivations, interests, and perspectives initially and throughout the process, the principal investigator consciously compare the final interpretation with what first expected to find, building trustworthiness of the data.
- Focus groups are a language adaptation team and panel of experts whose group meetings will occur through synchronous communications (skype conference calls) according to members' availability, which will be recorded.
- Face validity survey will be presented to the target group (nursing students and professionals seeking an update) as an opportunity to reflect and evaluate implementation of the instructional-design as a whole. The recruitment strategy will occur through snowballing sampling method.

Data Analysis

- transcripts from the group conference calls will be subjected to content analysis.
- Coders: The second coder is a doctoral nursing professor trained in qualitative research. Both will independently code the transcript and identify and sort the statements referred to the research question (which are the adaptations necessary in safeMedicate for use in Brazil?).
- Further corroboration of the themes and domains will be done using ATLAS/6 ti software. Inter-rater reliability will be calculated through ATLAS/6 ti software.
- Descriptive statistics will be used to analyze and report the face validity survey data, calculating frequencies, measures of central tendency, and standard deviations.

Research implications

The results provide evidence to support future language adaptations. The transparent nature in which safeMedicate will be adapted allows future researchers to follow a detailed systematic language adaptation process, using the strength of qualitative and quantitative approaches.

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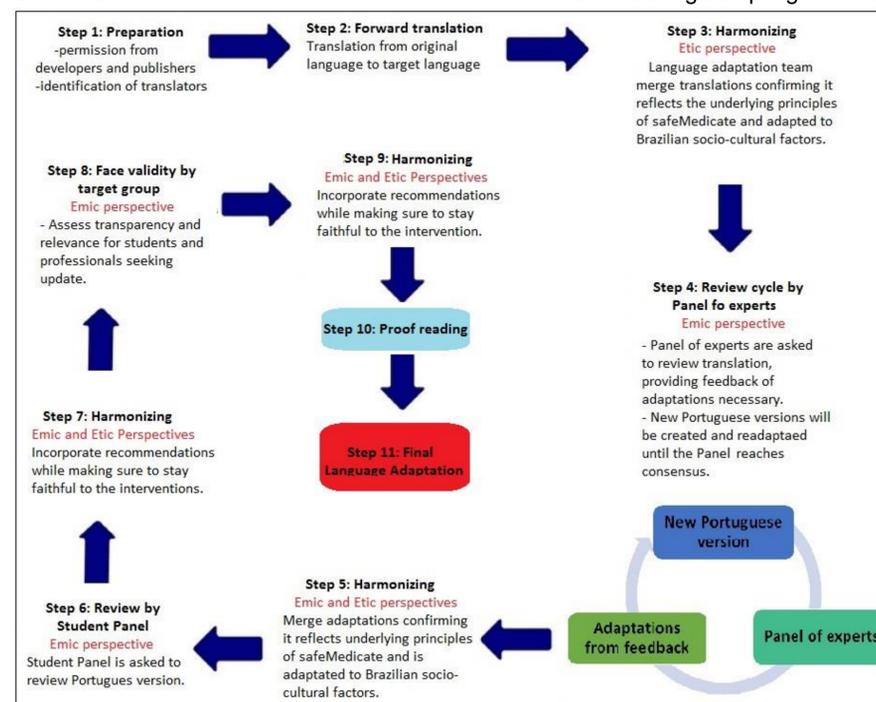


Figure 1. Process to adapt safeMedicate from English to Portuguese