Chapter 14

Improving the Identification of Medication Names by Increasing Phonological Awareness via a Language–Teaching Computer Game (Medicina)

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ABSTRACT

This study tests the effectiveness of a language-teaching computer game called Medicina that seeks to improve the ability of English as a Second Language (ESL) nursing students to hear and identify medication names in class and clinical placement. This aim is achieved through a hypothesised improvement in phonological awareness and an increase in listening skills. The study uses a triangulation of quantitative and qualitative methods to ascertain the degree to which the aims of Medicina is achieved and the validity of the theoretical assumptions. It will be shown that significant improvements in listening skills were gained, with very large effect sizes. Some influence from memorisation and exposure to word form was also found. Finally, qualitative comments reveal the personal impact the game has on listening ability and the wider educational experience. Throughout the chapter, qualitative and quantitative data are used to evaluate the contribution of a computer game in a health education context.

INTRODUCTION

Every language has its own phonemic inventory, a basic set of meaningfully distinct sounds that combine to form the words used in that language. English has 44 basic phonemes (Mannell & Cox, 2009). The phonemic inventories of two different languages may closely match each other, thus producing few problems with second language (L2) listening and speaking. However, if the phonemic inventories of two languages are quite different, then a greater amount of effort is required to listen and speak in L2. An example of this occurs in Asian languages, where 8 vowels and 7 conso-

nants have been identified as causing problems for perception and pronunciation (Shackle, 2001, pp. 229-230). Serious difficulties can occur at a cognitive level, when the mind is not accustomed to distinguishing unfamiliar phonemes. The most common strategy used by language learners is to relate as many L2 phonemes as possible to those they already recognise in their first language (L1) inventory. However, if there are disparities between the phonemes of the L1 and L2, this strategy can result in imprecise phonological awareness and less efficient communication skills. For example, learners may erroneously interpret an L2 sound as being an L1 phoneme, as seen among Chinese ESL students who interpret 'n' for 'l'. Another example is when learners utilise a 'best fit' option where two L2 phonemes are categorised as a single L1 equivalent, which is seen among Japanese ESL students who initially perceive 'r' and 'l' as equivalents (Cutler, Weber & Otake, 2006, p. 280). In these situations, phonological awareness must be improved.

The term 'phonological awareness' refers to knowledge of the entire phonological system – knowing not only the range of sounds and phonemes used in a language, but also their articulation, permissible sequences and variations, assimilation rules, and more. In approximately the first year (perhaps even less) of a learner's immersion in a L2 environment, significant changes occur in their phonological awareness (Best & Tyler, 2007, p. 20; Bundgaard-Nielsen, Best, & Tyler, 2011b, p. 64; Tsukada et al., 2005). This is the period when the learner is theorised to be assimilating new sound forms and expanding their overall phonological repertoire to include L2 input. However, after the first year of immersion in an L2 environment, the process of rephonologization eventually settles (Bundgaard-Nielsen, Best, & Tyler, 2011a, p. 457). Partly, this is thought to be a function of an expanding vocabulary, since the contrasting sounds of new words is the means by which phonological awareness is honed (Best & Tyler, 2007, p. 32). Also, by this time, if the

student's English is already "good enough" for most general purposes, the impetus for further improvement is weak (Bundgaard-Nielsen et al., 2011a, p. 457). This sense of competence deactivates the perceived need for phonological growth. It is theorised that once phonological fossilization occurs, the L2 learner often settles on a non-standard accent that will probably stay with them for the remainder of their life (Bundgaard-Nielsen et al., 2011a, p. 436; Piske, 2008, p. 162).

Solid English language skills are related to good academic performance among nursing students (Choi, 2005, p. 265; Salamonson, 2008, p. 92). However, for those undertaking a nursing degree, a significant number of international students show insufficient improvement in their English language skills to become competent professionals (Benzie, 2010, p. 454; Birrell, 2006, pp. 61-2; Bretag, 2007, p. 16; Choi, 2005, p. 263; Müller, 2011). There are many reasons for this, but in terms of listening skills, the problem is that many students are rapidly passing, or have passed, the intense period of perceptual change for phonological awareness. This issue becomes more urgent when a profession demands comprehensive phonological awareness, partly so that a wide variety of patient speech can be understood.

One area of concern that students report as being most difficult is listening to medication orders (Blackman & Hall, 2009, p. 179). This is echoed in the literature: "nursing is highly dependent on accurate verbal communication and much of the information and many orders are passed on verbally" (Guhde, 2003, p. 113). Anecdotal evidence from local clinical facilitators specifically point to student confusion over medication names. For instance, it is not uncommon for a student to confuse pethidine with betadine, which are two medicines which, if confused, would have serious medical consequences. Other examples of confusable names are fluoxetine/paroxetine, Differin/Difflam, and Capoten/Gopten (Australian Council for Safety and Quality in Health Care, 2002, pp. 75-6). This is a cause for concern,

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