The development of the FineTune app

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Abstract. This paper introduces *FineTune*, a mobile application currently in development that features a gamified version of High Variability Phonetic Training (HVPT). The aims of this paper are twofold: (1) to outline the theoretical motivation for the app's features, which includes a discussion of HVPT, gamification, and Self-Determination Theory (SDT), and (2) to describe how *FineTune* functions as a mobile application, considering the theories that informed its design.

Keywords: gamification, mobile-assisted language learning, high variability phonetic training, pronunciation.
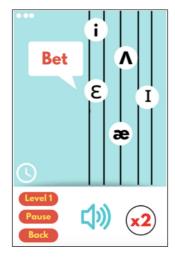
1. Introduction

HVPT, as stated in Black-Rotchin's (2022, p. iii), is an established method of improving the learner's perception and potential production of second/foreign language (L2) segments, which has received considerable attention by the research community (Barriuso & Hayes-Harb, 2018). However, this technique is unknown to most teachers and is rarely translated into usable pedagogical tools (Thomson, 2018), despite the known issue that many teachers feel uncertain about how to effectively teach pronunciation (Foote, Holtby, & Derwing, 2012). Thomson (2018) notes that one reason for this disconnect may be that in its current lab-based form, HVPT is neither accessible nor engaging to L2 learners. In order to mitigate both issues, he suggests implementing this training into a mobile application and adding game elements to the existing HVPT paradigm. He posits that such changes may help in bridging the gap between pronunciation research and pedagogical practices.

In response to these suggestions, this paper introduces the blueprint for *FineTune*, a mobile application that features a gamified version of HVPT to help learners hone their perception of L2 English sound systems. The perceptual training in *FineTune* involves learners progressing through three levels of gamified forced-choice identification tasks whereby learners select the correct target sounds according to the stimuli heard (Figure 1 illustrates the training of /ɛ/, the vowel in 'bet'). They also have the options of testing their production skills through a speech recognition feature and joining a learning team to connect with other learners.

Figure 1.   The interface of *FineTune*

The design of *FineTune* is informed by selected variables of past HVPT studies, as well as Stockwell and Hubbard's (2013) ten principles for developing MALL tools. The game elements of the app were chosen based on van Roy and Zaman's (2017) nine gamification heuristics for educational contexts, which itself is informed by Deci and Ryan's (2000) SDT. These constructs will be explored in the following section.

2.   *FineTune*: theoretical motivation

2.1.   HVPT

HVPT is a form of pronunciation training that constitutes the basis for *FineTune*. HVPT is a method of improving learners' perception (and consequently production)

of speech sounds by exposing learners to multiple voices producing the same target sound/s. HVPT has been shown to produce perception gains of consonants (Cebrian & Carlet, 2014), vowels (Lambacher et al., 2005), and tones (Perrachione, Lee, Ha, & Wong, 2018) with learners of varying L1s. Within *FineTune*, HVPT tenets appear in the variability of speakers (e.g. different ages, gender) and phonetic environments of the target sounds (e.g. in word-initial and word-final positions), as well as in the forced-choice identification tasks that are accompanied by immediate feedback.

2.2. Gamification

Gamification is the process of adding game elements to non-game contexts, with the aim of fostering gameful and playful emotions that increase engagement (Hernandez-Gonzalez, 2021). SDT explains why certain game elements succeed in cultivating this engagement: they satisfy the basic human need to feel autonomous, competent, and connected to others (Deci & Ryan, 2000). In *FineTune*, game elements are selected based on their empirically-demonstrated ability to satisfy at least one of these three needs. Game design is also informed by van Roy and Zaman's (2017) gamification heuristics, which outlines how game design (not just the selection of game elements) can be harmonious with SDT.

2.3. Mobile-Assisted Language Learning (MALL)

MALL allows for student-centered learning that offers an unprecedented degree of customization in terms of where and how the learning takes place. The limitations and affordances of the medium are taken into account in the design of *FineTune* by following Stockwell and Hubbard's (2013) principles for developing MALL tools. For instance, multi-tasking is limited, tasks are kept short and manageable, and users' autonomy and individual differences are considered in the design of activities.

3. *FineTune* description

In *FineTune*, learners practice perceiving and producing sounds using a set of gamified forced-choice identification tasks that are broken down into three scaffolded levels. Before a learner begins training, they are prompted to create a profile that suggests sounds to target based on their linguistic repertoire. They are also prompted to create a specific and measurable goal to guide their training (e.g. to learn English interdentals by a given date). Learners are also given the choice

of joining a learning team of others who are practicing the same sounds. After creating a profile, they can start progressing through the levels. Level 1 involves identifying the target sound(s) in non-words, Level 2 in real words, and Level 3 in carrier sentences. In the training, users collect points toward badges that represent mastery of a sound. Once they have completed all levels with a perfect score, they are awarded the badge, which is added to their profile.

FineTune attempts to accommodate the three needs recommended by SDT: user autonomy, competence, and connectedness. User autonomy is present in *FineTune* in many ways: users can choose which sounds to practice, they can decide to join a team, and they can opt out of certain game elements, such as time limits. They set learning objectives for themselves and have the ability to share and gain knowledge from other users. In addition, many of the game elements in *FineTune* instill feelings of increasing competence. Levels are scaffolded based on difficulty, points and badges act as signifiers of skill, forums allow for the exchange of information, and progress bars on users' profiles indicate their proximity to achieving their goals. Relatedness is accounted for in *FineTune* through the learning team, whereby users can feel that they are not alone in their endeavor; should they wish, they can solicit the help of another learner, or offer assistance themselves.

Finally, *FineTune* incorporates other game elements such as the use of musical motifs and aesthetic design, time limits, and the tactile nature of the perceptual training.

4. Concluding remarks

The main goals of this study were to motivate and map out the blueprint for the mobile application *FineTune*, a mobile application developed by the authors that features a gamified version of HVPT. This conceptual study represents Stage 1 of 4 in Cardoso's (2022) chronological description of how computer assisted language learning research is conducted, whereby the motivation and creation for the app is described prior to investigating its pedagogical affordances, user attitudes, and its pedagogical efficacy in the learning of L2 pronunciation. Hopefully, by chronicling the development of a MALL tool from inception to creation, more such studies will explore the tangible bridging of research findings and pedagogical tools for educators and learners to use.

The next step in development is to build a prototype of the application, which will likely involve modifications to the current design. These changes will be

documented as part of the process. Once a prototype has been completed, the pedagogical efficacy of the tool will be assessed, as well as user attitudes. One possible way of carrying out this assessment is by using the technology acceptance model (Davis, 1989) which examines users' perceptions of the usefulness and useability of a tool.

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Intelligent CALL, granular systems and learner data: short papers from EUROCALL 2022
Edited by Birna Arnbjörnsdóttir, Branislav Bédi, Linda Bradley, Kolbrún Friðriksdóttir, Hólmfríður Garðarsdóttir, Sylvie Thouësny, and Matthew James Whelpton

Publication date: 2022/12/12

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British Library Cataloguing-in-Publication Data.
A cataloguing record for this book is available from the British Library.

Legal deposit, France: Bibliothèque Nationale de France - Dépôt légal: décembre 2022.