Learning Collocations with FLAX Apps

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Abstract. The rise of Mobile Assisted Language Learning has brought a new dimension and dynamic into language classes. Game-like apps have become a particularly effective way to promote self-learning to young learners outside classroom. This paper describes a system called FLAX that allows teachers to automatically generate a variety of collocation games from a contemporary collocation database built from Wikipedia text. These games are fun to play and mimic traditional classroom activities such as Collocation Matching, Collocation Guessing, Collocation Dominoes, and Related Words. The apps can be downloaded onto Android devices from the Google Play store, and exercises are automatically updated whenever new materials are added by teachers through a web-based interface on the FLAX server. Teachers have used these games to provide supplementary material for several Massive Open Online courses (MOOC) in Law discipline.

Keywords: Mobile language learning, Collocation learning, Wikipedia, language learning games.

1   Introduction

With their superior portability and wide accessibility among young learners, the use of mobile devices in education is growing in popularity. Researchers and teachers have been exploring the full potential of what Mobile Assisted Language Learning (MALL) can offer to language learners (Stockwell, 2016). One of the advantage of MALL is that it serves as a primary self-learning tool due to the fact that students are able to access language materials almost anywhere and anytime (Hamada, 2013). The use of mobile devices in the design and implementation of language activities has also added significant value to what teachers can now offer to students in terms of challenging and interactive language games (Wu et al., 2012).

This paper presents a system called FLAX[1] that was initially developed to support collocation learning through web- and mobile-based games that mimic popular language activities in classroom. The games are created from a massive collocation database that is automatically built from Wikipedia text. The value of Wikipedia's data has long been obvious, with its articles being continually refreshed, but nonetheless frequent (Vrandecis, 2014). Recent years have seen many efforts to use Wikipedia not just as source of information but also as extensive and contemporary corpus for language learning (Nothman, 2013). FLAX extracts Wikipedia texts and provides language teachers with options to set particular parameters when designing games. In such a way, the games are controlled by the teacher both in terms of content, form, and level of difficulty or complexity. This paper focuses on the description of the Collocation Related Words game, including its mobile interface and teacher's design interface. It also briefly discusses three other games−Collocation Matching, Collocation Guessing, and Collocation Dominoes. We include some user cases where teachers use FLAX collocation games to create supplementary material for their students enrolled in Massive Open Online courses.

2   Collocation Learning Games

Knowing the collocations of a word is an important aspect of one's vocabulary knowledge. The term *collocation* has different definitions in the literature. We take a syntax-oriented approach in this paper that emphasises the grammatical structure of *collocation* (Benson, et al., 1997) and identifies collocations by syntactic structures (e.g. *verb + noun*, *adjective + noun*, *noun + verb*). We have designed and implemented four

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[1] The FLAX project was started in 2008 and the authors are the core designers and developers of the FLAX system.

collocation games that incorporate the common learning strategies that facilitate raising awareness (e.g., help students notice language patterns), enhancing precision (e.g., help students express ideas more precisely) and improving motivation (e.g., help students maintain high motivation).

Collocation Guessing lets learners try their hand at identifying words from the company they keep and allows the teacher to choose a target word and a number of associated collocations. The target word is removed and the associated collocations are revealed one by one; players must guess the target word as quickly as possible. For example, given this list: *plain*, *dark*, *white*, *bitter*, milk, bar of, learners guess the word that collocates with all of them. (The answer is obvious to chocolate lovers!)

Collocation Dominoes mimics the traditional game of dominoes where the last word of the previous collocation becomes the first word of the next collocation.

*family life – life cycle – cycle time – time period …*

English word classes are incredibly flexible: many verbs can be used as nouns and many nouns can be used as adjectives. This game is designed to help learners notice these language features and collocates of particular words. In this case, the starting word "family" and the ending word "period" are given; the learner proceeds by dragging a collocate listed at the top and dropping it into a empty box to form a collocation.

Related Words is a popular practice in language classrooms; the aim is to help learners distinguish words with similar meanings, or words that have the same usage (e.g. *reserve* vs. *preserve*, *effective* vs. *efficient* and *identify* vs. *recognize*) by examining their common collocates. Teachers select two or three related words that they wish to target, and FLAX retrieves a list of collocates of these target words from the collocation database. The player drags a target word and drops it into the appropriate box to form valid collocations.

Collocation Matching is similar to Related Words; the difference is that Collocation Matching is intended for use with several words with typically just one collocation for each, whereas Related Words is intended to focus on two (or three) words, with several collocations of each. Teachers selects a set of collocations with the same syntactic pattern, splits each into its left and right component, and shuffles the two sets of components. For example, *slice of toast*, *part of the progress*, *drop of water*, *piece of information* might be presented as: *slice of information*, *part of toast*, *drop of the progress*, *piece of water*. Player must rematch them.

3 Flax Collocation Apps

The four collocation games described above can be played in a web browser or on Android devices. We use Related Words as an example to illustrate how the game works on an Android mobile phone. Figure 1a shows the screen where exercises from two datasets (i.e., *Learning Collocations* and *English Common Law MOOC*) are listed. Figure 1b shows the exercise *Legal vs Lawful* from *English Common Law MOOC* that contains 15 pairs of collocations, half starting with the word *legal* and half with *lawful*. The word *Legal* and *Lawful* are displayed at the top, each associated with a number in brackets (e.g., 12), indicating the number of times that word can be drag-dropped. The player drag-drops a word to an empty box in a way that it forms the strongest partnership (e.g., *legal battle*). Clicking the *Check answer* button at the bottom makes correct answers stay (indicated by the border of boxes disappearing), while incorrectly matched words (e.g., *lawful* in *lawful battle*) are removed from the boxes and the number of that word is incremented. At anytime, clicking on a completed collocation displays a screen, shown in Figure 1c, which displays ten sample sentences from Wikipedia that use the collocation.
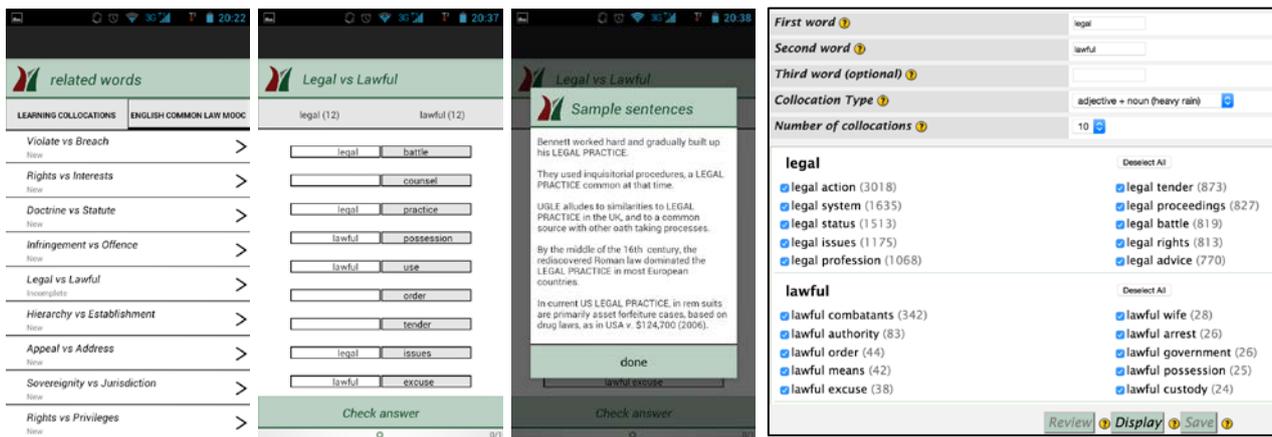
(a) **Choosing an exercise** (b) **Playing the game** (c) **Displaying sample sentences** (d) **Teacher's design interface**

Figure 1 **Collocation Related Words mobile interface and teacher's design interface**

4 Creating collocation games for FLAX Apps

Teachers use collocations retrieved from a massive collocation database to create games. The database was built from 3 million Wikipedia articles (Wu, 2012). FLAX first downloads Wikipedia text, parses it, extracts useful syntactic-based word combinations (e.g., *verb + noun*, *noun + noun*, *adjective + noun*), organizes them by syntactic pattern, sorts them by frequency, and links them to their context sentences. Teachers use an easy-to-use interface to automatically retrieve collocations based on a set of parameters and construct games by selecting and discarding collocations. All games described above are created automatically under the guidance of a designer, usually the teacher, through a web interface shown in Figure 1d. The interface varies slightly from one game to another depending on the parameters that can be manipulated. Creating a game can be simply accepting all the defaults, then clicking *Save*, or clicking *Display* to play the game if you want to see what it's like before making it available to students. Once a game is created, its web version is instantly available on the FLAX website; any Android mobile devices with the app installed is promoted to download the new game when the app is launched.

When designing the Related Word game, the teacher specifies two or three target words (e.g. *legal* and *lawful,* which have similar meanings, but are used in quite different contexts), and their desired syntactic pattern (e.g., *adjective + noun*). After clicking the *Review* button, FLAX retrieves 10 collocations (10 is the default value and is configurable) from the database and displays them in descending order of occurrence frequency for the teacher to make selections, as shown in Figure 1d. The number in brackets indicates the frequency of the collocation in the database. The teacher uses the check boxes to select a few that are appropriate for the students and can also click any of the collocations to view the sentences that contain it, which will help the teacher decide on the best ones to choose. These sentences are extracted from the Wikipedia articles where the collocation is identified when building the database. The sentences are made available to students once they correctly complete a collocation, as shown in Figure 1c.

5 CONCLUSION

We have described four FLAX collocation games that can be played in a browser or on Android devices. The games are automatically generated from a collocation database built from Wikipedia text, with many options for teacher manipulation. Teachers have used FLAX to create collocation games to provide supplementary language materials for their MOOC students in law discipline, for example, the "English Common Law MOOC" from University of London2[2] and ContractsX, from Harvard University[3]. We are currently evaluating these mobile apps with MOOC students, as well as TESL teachers and students[4] at Waikato Insti-

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[2] http://flax.nzdl.org/greenstone3/flax?a=fp&sa=collAbout&c=englishcommonlaw
[3] http://flax.nzdl.org/greenstone3/flax?a=fp&sa=collAbout&c=contractlaw
[4] Student levels range from Beginner to Upper-intermediate, according to http://www.icaltefl.com/learner-levels-in-tefl.

tute of Technology, New Zealand. At this stage, the evaluation focuses on intuitiveness of the user interface, and collecting feature suggestions.

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