









check which words were searched during the current week. The date and time of the last query is reported in column “Last Query Date”.

#### 4 CONCLUSION AND FUTURE WORK

In this paper, we presented a dictionary system that interfaces to an e-book reading learning analytics platform. Dictionary content, user interface, and user interaction patterns are all grounded in previous research findings. Bilingual dictionary content is used because it is more suitable for the target demographic proficiency. The user interface is constructed in a way that is comparable to previous studies. The learner is prompted to perform an action of selecting the meaning as this is beneficial for vocabulary retention and also can provide insight into the strategies employed by learners.

The “smart” feature of the dictionary resides in its ability to provide ranked results to queries according to the context in which a word or expression is found. The most likely meaning is displayed first, to exploit the tendency of users to select the first meaning. On the educator side, we designed original visualization dashboard widgets to give quick and easy-to-interpret reporting. First, the dictionary search logs are presented as a text heat-map. It allows quick visualization of words that are problematic for learners. A second flavor of the map display meaning selection error rates. Words difficult to interpret by the student can thus easily be spotted by an educator.

For material that is longer or classes that spawn a long timeframe, we designed a query-based visualization. It displayed queries data in a KWIC-like fashion. Additional data are computed and displayed, most notably aggregation count, missing dictionary definition and selection success rate. This provides information to teachers that allows them to act on the missing meaning or ambiguous words.

The system presented is made of multiples components, some being already fully implemented, such as the dictionary server. Future work on short term will be done along two axes: system evaluation of meaning ranking, and system use in classroom.

System evaluation is a task targeted to evaluate if the meaning proposed on top is effectively the correct one. Results is heavily dependent of the dictionary loaded in the system. Evaluation will be done by interrogating the dictionary server with a given number of words in their context both from actual learning material targeting at our demographic, and pairs of sentences crafted specially to contains the same word form with different meaning in each pair.

The second part is deployment and usage of the system in a Japanese classroom. In this experiment, we will test the impact of the platform on learners’ vocabulary retention during a learning or reading task. Teacher interventions will be monitored as well. As the system can use different dictionaries and thus adapt to learners of different proficiency more of such studies can be done in the long term.

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