

ABSTRAK

Self-Regulated Learning (SRL) skill can be improved by improving students' cognitive and metacognitive abilities. To improve metacognitive abilities, metacognitive support in learning process using e-learning needs to be included. One of the example is assisting students by giving feedbacks once students had finished doing specific activities. The purpose of this study was to develop a sistem with the abilities to give students feedbacks, particularly recommendations of lesson sub-materials order. Recommendations were given by considering students *pretest* scores (students' prior knowledge). The computations for recommendations used Collaborative Filtering and Bayesian Ranking methods. Results obtained after the calculation are, the *Item*-based method has a sequence of Dasar – Sequential – Binary – Hash – Binary Tree, while the *User*-based, Hybrid, Bayesian Ranking have the same order of submaterial namely Dasar – Sequential – Binary – Binary Tree – Hash. Testing is done using MAP (Mean Average Precision) with results, *Item*-based method got the highest MAP score, which was 1. Computation time for each method was calculated to find runtime process of each method. The average results of computation time for ten times computation show that Bayesian Ranking had the shortest computation time with 0.002 seconds, followed by *Item*-based with 0.006 seconds, Hybrid with 0.212 seconds, while *User*-based has the longest computation time with 0.217 seconds.

Keyword- self-regulated learning, metakognitif, metakognitive support, feedback, *pretest* (prior knowledge), Collaborative Filtering, Bayesian Ranking, Mean Average Precision, runtime process.

INTISARI

Kemampuan *Self-Regulated Learning* (SRL) dapat ditingkatkan dengan meningkatkan kemampuan kognitif dan metakognitif yang dimiliki oleh siswa. Peningkatan kemampuan metakognitif perlu menyertakan adanya *metakognitive support* dalam pembelajaran menggunakan *e-learning*. Salah satunya yakni dalam bentuk pendampingan dengan memberikan *feedback* kepada siswa setelah siswa melakukan aktifitas tertentu. Penelitian bertujuan untuk mengembangkan suatu sistem yang mampu memberikan *feedback* berupa rekomendasi urutan submateri kepada siswa. Pemberian rekomendasi dilakukan dengan mempertimbangkan nilai *pretest* (*prior knowledge*) siswa. Perhitungan dilakukan dengan metode *Collaborative Filtering* dan *Bayesian Ranking*. Hasil yang didapatkan setelah dilakukan perhitungan yakni, metode *Item-based* memiliki urutan submateri Dasar – *Sequential* – *Binary* – *Hash* – *Binary Tree*, sedangkan metode *User-based*, *Hybrid*, *Bayesian Ranking* memiliki urutan submateri yang sama yakni *Dasar - Sequential* – *Binary* – *Binary Tree* – *Hash*. Pengujian dilakukan menggunakan MAP (*Mean Average Precision*) dengan hasil metode *Item-based* memiliki nilai MAP tertinggi yakni 1. Waktu perhitungan yang dibutuhkan masing-masing metode dihitung untuk mengetahui *runtime process* dari metode yang digunakan. Hasil waktu rata-rata yang didapat setelah dilakukan sepuluh kali perhitungan adalah metode *Bayesian Ranking* memiliki waktu paling sedikit yakni 0,002 detik, diikuti oleh *Item-based* 0,006 detik, *Hybrid* 0,212 detik, dan waktu terlama adalah *User-based* yakni 0,217 detik.

Kata Kunci- *self-regulated learning, metakognitif, metakognitive support, feedback, pretest (prior knowledge), Collaborative Filtering, Bayesian Ranking, Mean Average Precision, runtime process.*