Dynamic Score as a Mean for Motivation of Students in an Educational System

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There are many ways on how to motivate student during the use of web-based learning system. It is score and pointing systems which belong in most frequent and used ways to support motivation. Most educational systems use various methods of score computation – from the simplest which just count amount of performed activity to the advanced which take many factors into account.

We propose dynamic score computation method based on users activity, so system can modify „weights“ of particular activities and induce students to perform all of them more or less equally. We are also making an effort to implement this method into learning system ALEF [1]. By this method we aim at increasing students‘ motivation thanks to smarter score computation.

This method relies on several factors important for score regulation. While some of them are constant and do not change over time, others are not and they can vary depending on the actions being performed.

- activity weight, which is value estimating effort necessary to perform this activity,
- activity preference set by the teacher, defining how important is the activity in the certain time period and
- activity priority, computed by the system itself, it is based on current status of activity of all students that is amount of activities performed and their relative ratio.

Proposed method calculates and regulates score for the student s at time t following expression below:

$$score(s,t) = score(s,t-1) + \sum_i partial\_score(C_i,s,t) \quad (1)$$

where *score(s,t)* is score regulation function returning score for the student *s* at time *t*. We can see it sums up student's previous score and score additions for all activities performed at time *t*.

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To give the student feedback from the system to know when and how factors affecting score regulation change, part of our method is also a feature called activity stream, which is similar to news streams popular on many social networks. In the stream student can see messages about preference or priority changes.

To bring messages from the stream right to the student, there is an option to connect his ALEF account with account on Facebook, so he/she can see what's new in the notifications bar. Thanks to rising popularity of various social networks it is likely that many students have their own accounts too. Bringing ALEF stream messages into Facebook notifications bar should motivate student to use ALEF more frequently. Notifications visualization is shown in Figure 1.

Figure 1. Visualization of ALEF message in Facebook notifications bar.

We plan an experiment consisting of two phases. In the first phase we will observe the behaviour of students when there will be no explicit feedback from the system about activity priority nor activity preference changes. The second phase will continue with new score regulation method, however, this time students will be explicitly informed about changes in preference or priority. We will compare results obtained from the both phases of experiment with each other and will determine how decisive was providing feedback by activity stream for students decisions on which activity to perform as next.

Our evaluation will also be integrated with some more experiments based on ALEF which are aiming on external source adding and question-answer learning objects [2].

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