Teacher Assistant

Overview

In a **Smart Classroom**, typical classroom activities are enhanced with the use of pervasive and mobile computing, artificial intelligence, multimedia content and agent-based software. Traditional artifacts like the desks and whiteboards are replaced by technologically enhanced equivalents, aiming to support the educational process.

The "Teacher Assistant" is a tool that aims to **support the teacher** in the context of a learner-centric Smart Classroom. To this end, it introduces an intelligent infrastructure that **monitors** unobtrusively the **students' activities** and notifies the teacher, in real-time, about potential learning weaknesses and pitfalls that need to be addressed.

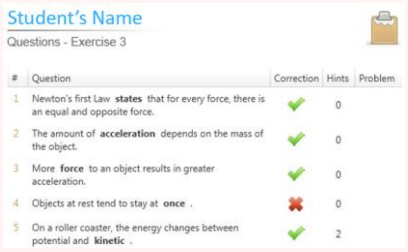
The teacher can therefore concentrate on the lecture and rely on the system to monitor the classroom and prompt for an intervention only when necessary (e.g., a student is out of task or has performed poorly in an exercise).

In addition to real-time monitoring, this system offers a performance analysis tool that provides extensive metrics of **students' progress** (based on previously collected data) that the teacher can use to identify topics requiring further studying or even adaptation of the teaching methodology.

Finally, the "Teacher Assistant" integrates tools that automate common procedures like **keeping the attendance record, assessing exercises** and **preparing the lesson's curriculum**.

Tablet Installation

Students engaged with various activities



Monitoring the exercise progress of a student

Target Domains

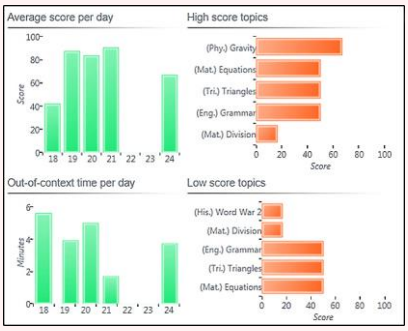
The Teacher Assistant aims to facilitate monitoring of formal educational environments (e.g., classrooms) with a significant number of learners, where a single educator is not able to monitor every learner individually at all times. As a result, a common case is that weak learners do not get the attention they require thus failing to perform according to their potentials. However, when Teacher Assistant is employed the educator is able to monitor numerous aspects of the learning process, both as an overview and at a fine-grain level, in order to personalize and adapt learning strategies to the level and skills of each learner (e.g., deliver additional material to help weak students or to motivate strong learners to further enhance their skills).

Description

The Teacher Assistant relies on the ClassMATE framework to get notified about the various events that occur within the classroom. Based on such data, it employs various algorithms to identify common pitfalls and inform the educator appropriately.

1. **Off-task:** To identify off-task students, the system checks the material displayed on a student's desk (e.g., the currently opened book, the opened pages, etc.) to determine if it is relevant to the topic discussed in the classroom based on the activity at hand.
2. **Inactivity:** During classroom activities, it is common for students to start working on an exercise and after a while give up, because they get bored or distracted. To identify inactivity, the system consults the typical learning times of a task, in order to specify if a student's interaction is taking too long to be executed.
3. **Problems during an Exercise:** The amount of help asked (i.e., hints) about an exercise is used to calculate a student's performance. In case a student uses the maximum amount of help, but still does not answer correctly, the system infers that the student has difficulties regarding the concept of the exercise.
4. **Problems on Exercise Completion:** A single pass/fail indicator does not always reveal the actual progress of a learner on a specific topic. To this end, instead of generalizing conclusions based merely on the score of the exercise at hand, the student's previous performance on relevant topics/similar exercises is taken into consideration.

Classroom statistics



Individual student statistics

Additional Information

Related video: *http://youtu.be/q5lty5ddLlw*

Distinctions: Best Paper Award at the eLmL 2013 International Conference

Teacher Assistant web page
www.ics.forth.gr/ami/project/teacher-assistant/

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