

## **PROGRESS TRACKING IN A LARGE SCHOLASTIC CHESS SYSTEM**

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With the appearance of large scholastic chess systems, managing the learning process, measuring efficiency and tracking the progress of teachers and students has become an increasingly difficult task. Based on blended learning methods, LearningChess has developed a solution that strives to answer these challenges. A centrally managed system was implemented in 600 schools and chess clubs in the Czech Republic. The teachers' administrative burden has been reduced, since constant reporting towards the CiS Organization is no longer necessary. Using the built in teacher training module, they can also improve their knowledge in a controlled way. Combining the traditional methods with the online curriculum has made it possible for the Czech Chess Federation to receive real time data about the students' education. Based on the information extracted from this data, processes can be quickly evaluated, challenges can be detected, and talent spotting can be easily managed, greatly improving the effectiveness of education.

### **Information Flow in the Scholastic Chess Systems**

Using chess as a learning tool in primary schools is becoming increasingly popular in the world, with the main focus shifting from individual school projects to extensive programs including up to tens of thousands of students. [1] Scaling a chess program up to a school district or state is a more complicated and challenging endeavor that requires project management skills as well as a sound multi-site CIS program design. [2]

Let's go through the evolution of scholastic chess education solutions, with a focus on the flow of information between the parties. Information in its classic sense is usually exchanged between the CiS Organization and the teachers, and the teachers and the students, but as I will also explain later on the flow of information can be set up in a way that CiS Organizations are able to collect group or student related data directly.

#### **• Traditional Projects**

When chess was introduced as a compulsory part of the curriculum in the previous years, school district, state-wide and country-wide projects have been launched. However due to the lack of adequate technical background these projects usually consisted of the following:

- quick teacher crash course (for non professional players)
- distributing books & educational material on chess to the schools
- distributing chess boards and demonstration boards to the schools
- introducing chess to students on physical demonstration boards
- reports from the teacher to CiS Organization
- yearly evaluation of the students' development
- talent spotting by the teachers, annual scholastic chess competitions

The problem with this system is that it relies too much on how prepared and motivated the teachers are without providing the appropriate tools for their advancement and development. It also comes with a lot of administration and without physically visiting the hours the quality of education is very hard to measure. It is also difficult to effectively follow each individual student's progress and very limited data is available to create statistics and verify the effectiveness of the courses.

However projects like the Dansk Skoleskak [3], or the new Polish country wide project [4] and other important initiatives had and continue to have a great impact on scholastic chess education.

### • **Learning Management**

Introducing computer based systems to chess education was a big milestone. Some of them even had rudimentary Learning Management features. These systems enabled teachers to follow their students' progress and it also improved the quality of education. The most important advantages of these systems are:

- controlled materials and examples
- improved overall motivation
- chess can be practiced on a personal computers and tablets
- more efficient classes
- homework assignments (in case of on-line tools)

This solution works very well within a school or a smaller network, but it still lacks the features that enable the traceability in case we would like to apply it to a larger system with 10.000 students or more. The same problems arise that we have experienced when dealing with Traditional Projects, such as difficult communication and as mentioned before the lack of traceability. With a system like the above the CiS Organization is still unable to extract information quickly, to intervene if needed and to improve the efficiency of the classes.

However we have to mention that these systems such as the project initiated by the Alabama Chess Federation with 2500 students [5] are a lot more effective than the traditional method described earlier and add great value to the world of scholastic chess education and on-line learning.

### • **Central Management**

Fortunately online solutions become more and more popular in all segments of education. These solutions enable us to develop centrally managed systems where the CiS Organization can add teachers to the platform, provide on-line teacher training, and grant them the appropriate number of student licenses. Teachers can then add students to the Learning Management system and students can start the courses. The biggest advantage is that both the teachers' and the students' progress can be monitored in real-time.

Following 2 years of intensive development the Central Management system was first launched in the Czech Republic.

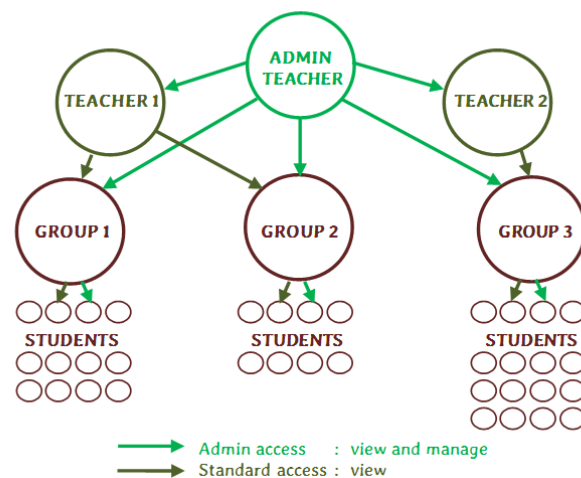
## Central Management with progress tracking in the Czech Republic

The Czech Chess Federation (CCF) and LearningChess entered into a cooperation in the summer of 2016 to introduce a comprehensive learning and educational system serving more than 600 schools and chess clubs. The aim of the cooperation was to ensure a centrally managed countrywide access to online chess education material and tools for Czech primary school teachers and students. The LearningChess method will also be used in the training of chess circles for children registered under the CCF. The system was launched on September 2016 following a 3 months preparatory phase.

After this brief summary, let's see the ideas behind our method, and how it works. The Central Management has two successive progress tracking levels. The Learning Management System is on the lower level, which already works successfully in 230 schools worldwide. The upper level is the newly built Central Module.

To understand the Central Management we should first get to know the operation of the Learning Management. The current version was launched on 1 August 2015.

In Learning Management, students can be divided into groups, even if they do not share the same school. The teacher can not only view the progresses but can manage the system with adding own groups and students by using the available licenses. An additional advantage of the system is that students do not have to use emails or other personal information when logging in to LearningChess.



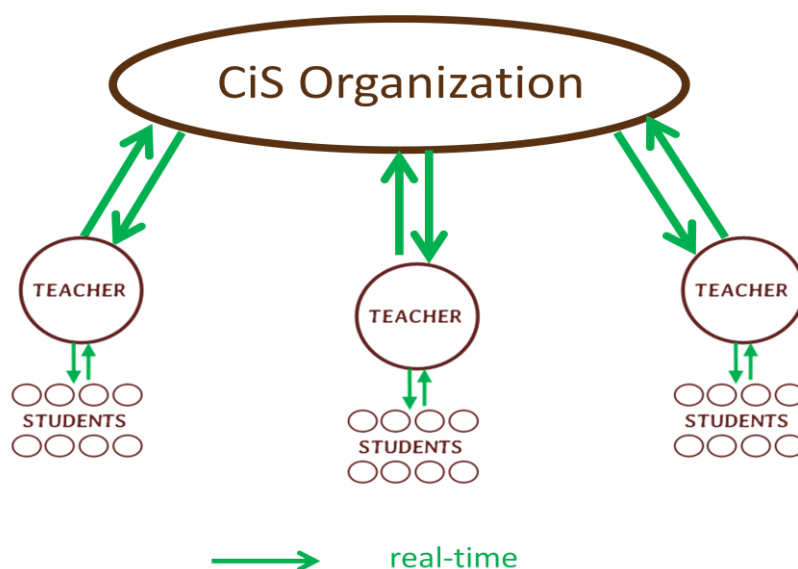
By using Learning Management teachers can access detailed information about the student's development:

- Progress
- Strengths and weaknesses
- Time spent on the exercises,
- Date when they last logged in,
- Learning habit (learning speed, asking for hints and solutions)
- Games played

While Learning Management enables teachers to access the information above, the Central Management system collects all data from each school and provides access to it for the CiS Organization, in our case the Czech Chess Federation.

Central Management has also includes new features, such as the ones listed below:

- Teacher management
- Teacher access management
- Teacher Training module
- Quick search on the clear-cut overview screen
- Up-to-date statistics:
  - a) Teacher performance
  - b) Teacher effectiveness
  - c) Detailed student progresses (the same info is available as in the LMS)
  - d) Talent spotting



The Teacher Training module is a separate part of the Central Management. The CiS Organization can follow the progress of the teachers similarly to the Learning Management, and there is an additional possibility to give the teachers additional practice tests and a final test as exam. Combining the online teacher training with educational videos and a few days of traditional face-to-face group training ensures a widely accessible, time and cost effective training for school teachers, who are not professional chess players.

### Online Usage Statistics

To show the extent of what you can monitor with a centrally managed online system we have collected the usage data of our Learning Management system in the 2015/2016 school year. (The data below does not contain the progress of LearningChess home users.)

#### LearningChess Scholastic Chess Projects

Country, City	Students	Partner
Maldives, Male	600+	Ghiyasuddin International School, Maldivian Chess Federation
USA, Miami, Florida	300+	Dade Schools school district
UK, Cambridge	200+	Zeno School umbrella schools
Other countries	3.000+	2-200 students in different schools worldwide
<b>Czech Republic (new)</b>	<b>10.000+</b>	<b>Czech Chess Federation (* expected)</b>

## General Progress in scholastic chess

Students	4 328	
Lessons Solved	147 873	34 / student
Tasks Solved in Lessons	3 121 892	721 / student
Test questions solved	1 137 451	263 / student
Time learnt (hours)	75 863	17.5 / student
Puzzles in Tactics Trainer	53 671	12 / student

These numbers were achieved by using an active (or more precisely: interactive) learning progress.

## Progress in the lessons

Course completed	Student %	Avg. Lessons
Level 1 (1-12) - Basics	78 %	11.3 (/12)
Level 1 (13-36)	35 %	16.9 (/24)
Level 2 (37-72)	12 %	14.0 (/36)
Level 3 (73-108)	2 %	12.5 (/36)

One lesson takes 25-40 minutes, depending on the learning speed. Most of the students completed Lessons 1-12, which cover the basics of chess. A large percentage continued with the strategy and tactics lessons, and got acquainted with the important basic level endgames as well. The percentage of students moving forward with more difficult courses matches the average percentage of students achieving extraordinary results in any other sport.

## Learning Habit Statistics

Good answer w/o Hint	31.4 %
Good answer after Hint	9.2 %
Wrong answer w/o Hint	43.1 %
Wrong answer after Hint	16.3 %
Asking for the Solution (only after Hint, qualified as wrong)	6.5 %

Regarding the system's usability and efficiency the statistics speak for themselves, but more interesting data can be accessed regarding the students' progress. By accessing student data one can create a complete learning profile enabling the teacher to assess the students' learning abilities and learning habits. Not only can they create a complete learning profile, but they can do this very quickly and easily, allowing them to intervene at just the right time, if needed.

Teachers can also check answers given by the students, which enables the constant improvement of the curriculum.

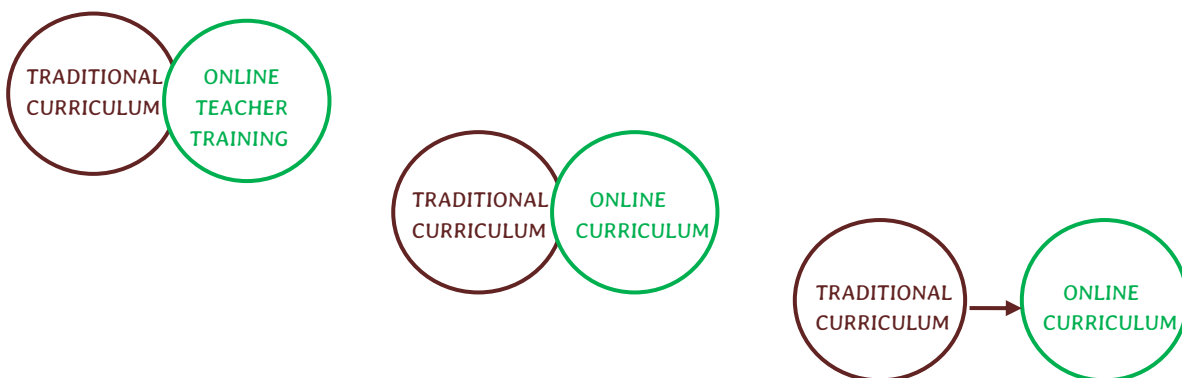
**Merging Traditional and Online Systems**

The evolution of chess education shows that teaching methods are shifting from the more conventional methods to the implementation of modern tools & technologies. However the transition is a long and time consuming process, such as the training of teachers and setting up

the needed IT infrastructure. The question is what is the next step for chess education and where is scholastic chess heading? Do we have to replace the well-established curriculums?

Based on our feedback, scholastic chess education in elementary schools is shifting towards 'blended learning', which combines Internet and digital media with traditional classroom education that require the physical co-presence of the teacher and students. The role of the teachers however is changing, their main goal is not only to convey knowledge to the students, but to motivate, attract and keep their interest, while monitoring their progress. [6]

The next step in this transition can be to combine traditional and online materials such as LogiqChess & LearningChess, or to integrate the well-established traditional materials as part of the online curriculum (Madrid Chess Academy ADHD project with LearningChess), both of these can be done in system, such as ours. The online curriculum can also be used as part of the teacher training, to lay the foundation of the blended learning model.



Of course we know that a short presentation cannot cover all aspects of this very important field and important questions must be answered during the transition, such as how can we introduce and localize a large system and ensure that it functions properly. I hope that I can answer all these questions at the next conference with many successful projects – similar to the Czech implementation - behind our back.

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