

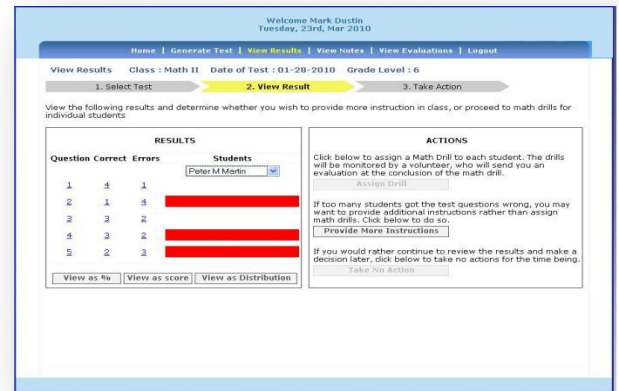


# Automated Education Evaluation System

PHP, Java OMR & Bar Code Solutions for Education and Learning Industry

## Executive Summary

When it is about improvement of quantitative skills of the students, and making a robust, secure, scalable system for the education and learning industry, Mindfire understands that the system needs to be completely foolproof. The client had a need to create a complete online, web-based system for an education package which could help students take up courses as per their weak areas, appear for tests, get measured on their performance and remedial courses suggested, automated. Expert architects at Mindfire designed the overall architecture and the system workflow from the concepts relayed by the client. The system was built in Java, PHP and MYSQL 5.x, ensuring scalability. With Open Source Java OMR utilization in the application, the EES (Education Evaluation System) removed the last piece of manual labor and made the application fully automated.



## About our Client

**Client** A Software Solutions Firm | **Location** MA, USA | **Industry** Education and Learning Industry

## Business Situation

The client firm's (a software-consulting firm) customer, a group of people in United States wanted to create an application which would improve the Mathematical skills of school students. Their idea was backed up by a survey they did which did prove that the Mathematics skills in students are indeed average. That is where they saw the market for a product which helps improve and measure the Mathematics skills of the students. The client decided to create an application where teachers, students, other staff, administrators are able to talk to each other and share information about the progress of each student. The core effort was to evaluate a student. Teacher has other responsibilities as well. This core need of an application was to

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ensure no teacher gets overloaded with these additional responsibilities. The client firm came up with the concept and architecture of a software solution/system for its customer – Option to create a test, add questions to the test and other functionalities. Option needed to be given to print the test. Every test paper had a bar code. The test paper is to be scanned and validated with the correct answers database. Mindfire designed and developed the overall system.

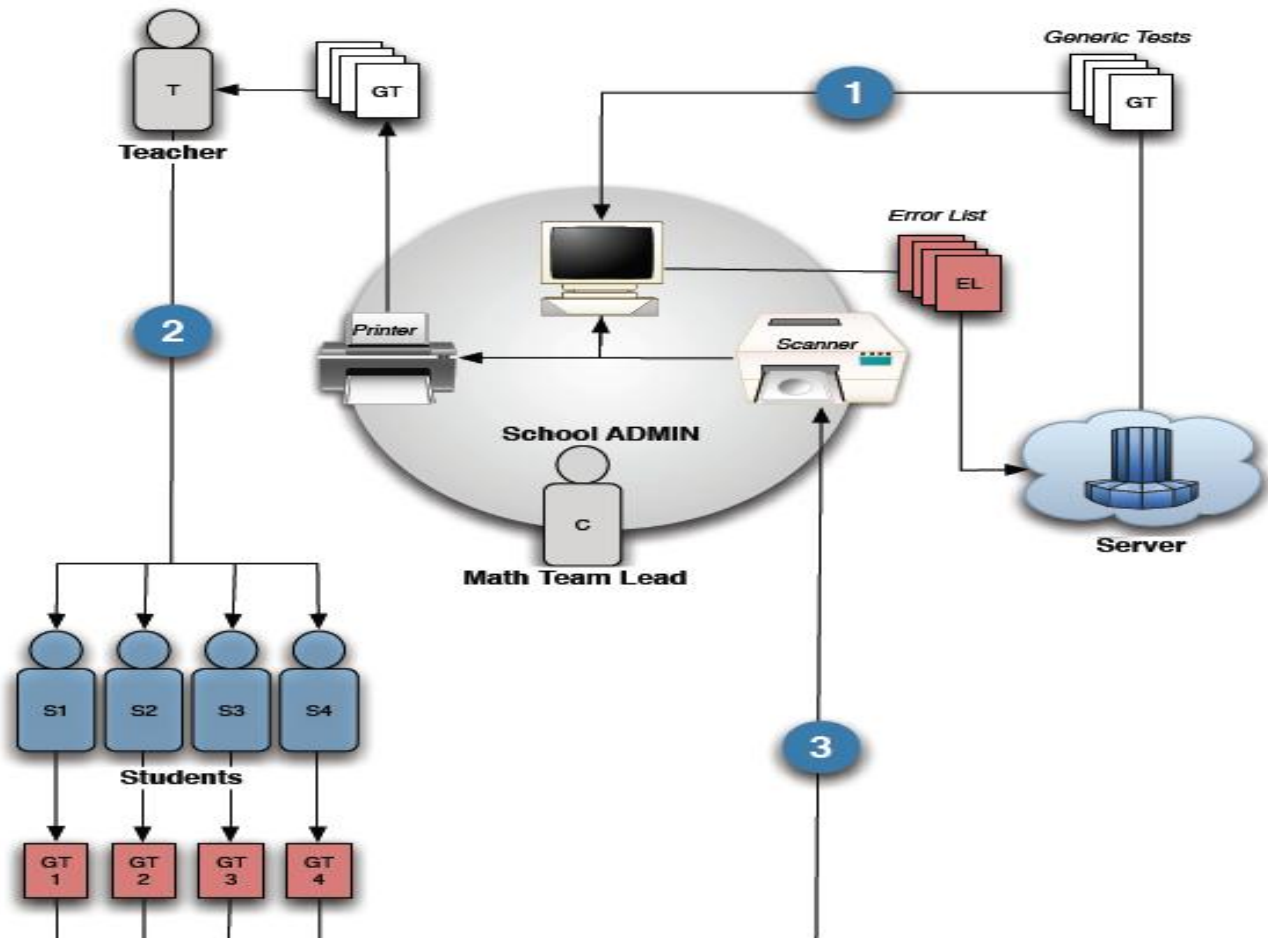
## Solution Details

### The Mindfire Solution

Mindfire proposed an application using Java OMR which is an Open-Source optical mark reader along with bar-code functionality. And because it is open source, this is not only free to use but also there is no threat of stopping of support or scalability issues with this technology.



Mindfire developed the software systems for the entire application. The major challenge was to use Java Optical Mark reader (Java OMR) which basically reads the OMR as well as reads the bar code. First of all, OMR is Printer and Scanner dependent hence coordination between the customer and Mindfire became crucial. Each update to the printer and scanner meant that Mindfire needed to be updated on the latest running configuration and then to procure the printer and the latest configuration. Second, even though Java OMR was used, it was customized in full since it was not working with certain kind of scanner and printer setup which was needed at the client end. Backup archival was of paramount importance because data had to be compatible and flowing into the latest configuration printer.



Teacher and monitors do not have a direct interaction and also monitor selection is not done by the teacher, so an auto scheduling feature has been built to schedule the drill with any monitor based on their availability. Once the drill is over, a response is sent back to the teacher.

### Achievements

- We created a greatly simplified design and workflow based mechanism.
- The system designs are extensible – it is easy to add more features, support/integrate with multiple tools.
- The system design is automated as much as possible – especially with respect to integrated systems.

### Technologies

- Technologies used: PHP 5.x, MYSQL 5.x, Java 1.1.6



## Final Results

### Software System

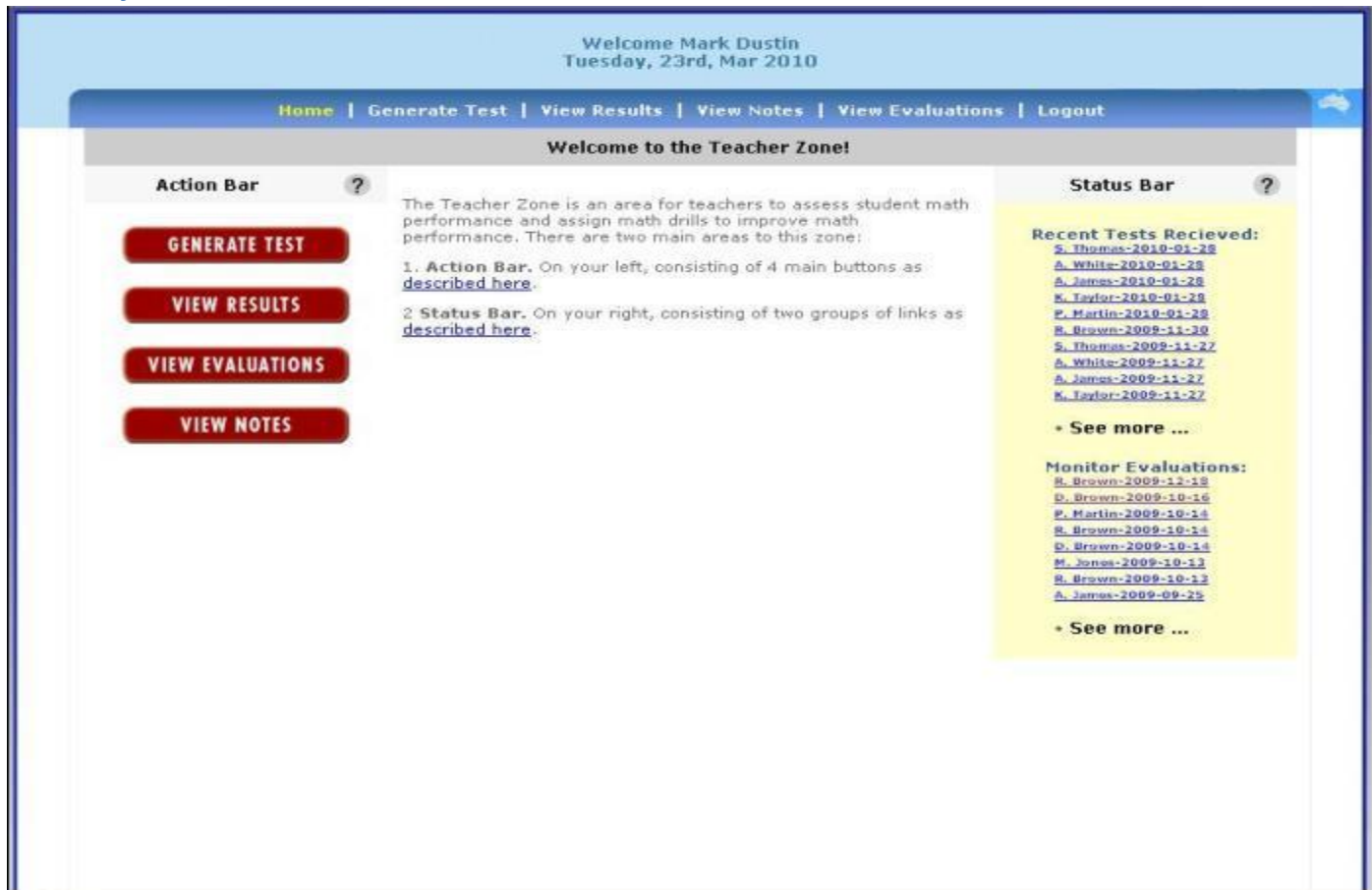


Figure 1 – Teacher Login

This is an application designed to improve the mathematics skills of students. In general, the application is used to generate test, review answers, assign/monitor drills. Application is separated into following sections:

#### Administration section:

This section helps to manage following information:

1. Manage area (district) information for which school(s) information can be added.
2. Manage school information.
3. It has the functionality to import the dependent information, such as Teacher, Class, Student, and Drills etc.
4. Manage question(s) for generating a test paper for teacher(s).
5. Manage test(s) for teacher(s) which can be used by teachers for their students.



### **General section:**

This is the section can be accessed by different types of users, such as Teacher, School Staff, Monitor etc.

1. A teacher can generate test for the students, review results, assign drills, if not satisfied with result, assign additional instruction by reviewing the result, view notes added for students, view evaluation for the drill work assigned.
2. A staff can add monitor for school, create / change calendar of monitor for their availability, assign / change monitor of a student.
3. A monitor can download the drills for session with student scheduled, evaluate the drill session with student, and rescheduled the session with student.

### **Customer Benefits**

- The specifications were more on the conceptual side. Mindfire provided product design support where basic requirements were understood and analyzed, workflow and features were brainstormed to come to the best possible design and implementation after elaborate discussions with the client. Communication and co-ordination with the client was the key to decision making on the feature details.
- Mindfire has excellent understanding of the business, architectural, operational, customer base specific considerations and requirements for various steps/versions of the complete system roadmap.
- Working with Mindfire, the client continues to benefit from excellent talent at Mindfire and reduced overall cost for the software product development along with growth in their business.

### **Future Relationship**

Mindfire established a strong relationship with the client firm, having been involved in another project in evaluation system in same technology. Mindfire is already into development of the second version of the systems, which have many new features implemented.

