Math @ School no 2 Lugoj

Adriana Mariş
Colegiul Naţional "Coriolan Brediceanu", Lugoj
Florin Mariş
Şcoala Gimnazială Nr. 2, Lugoj

ABSTRACT: M(athematics) = T(heory) + E(xercices) + E(xercices) + . . . is the motto of the webpage that generates infinite number of core mathematics exercises, for middle schools students
KEYWORDS: Practice, Mathematics, Connect with students

1 Technology is our ally

As teachers, we don't only provide knowledge, but also try to reach children's heart and mind, either we do that by traditional means or by using technology and modern means. I choose to use technology, besides traditional teaching, due to the fact that children use it from early ages – computers, smart phones, tablets, cameras, etc.

Almost all of my students have facebook accounts, emails and numberless accounts for unnamed apps on the net. Why wouldn't I use this to serve my purpose – connect with student even outside the classroom?

My first attempt on this matter was to create a web-google-page like a forum where students and I would post notices, questions, answers, extra work, stuff except teaching materials - the time for that is in the classroom, same for every student. The URL of the site is https://sites.google.com/site/marisscoala2lugoj/ . It worked well for a while, but it was not as much permitting as I would have liked it to be.

Eventually, my second attempt was a facebook site https://www.facebook.com/pages/MateScoala-2-Lugoj/210646388959918 .
This was based on the fact that each time I was checking my facebook account, my students were there, online and alive! If I ever wanted to tell them something, once classes were over, facebook was the solution. I used this space to disseminate interesting news about math, science or anything else related to school. But this one has limited resources, too.
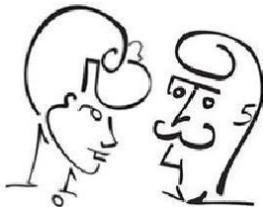
Being a math teacher, I always dreamed about differentiated learning environment, where every student would learn and practice at his own pace. I had a good idea of how I could improve students' capabilities in math. I was planning to build a web site that would provide infinite number of basics exercises for students, to train their basic math capabilities. Of course in order to do that I needed a web space that would allow me to program / to code the content.

2 $M = T + E + E + E + . . .$

During the summer of 2014 I succeeded to find a website provider where coding was permitted and the created website was delivered on computers and mobile devices (tablets or smart phones). From my point of view, that was perfect – students could access it from various places.
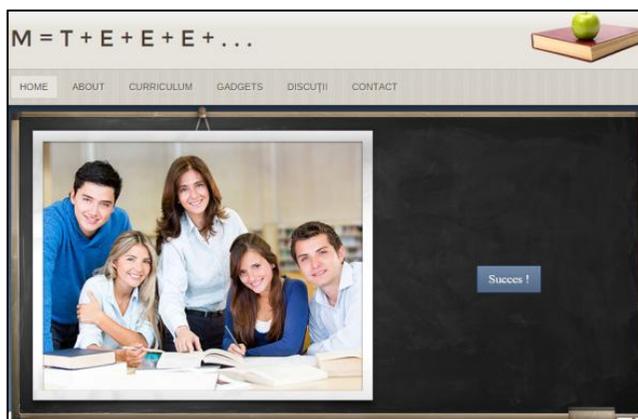
I documented myself about building and coding webpages and I started to work on the website named " $M = T + E + E + E + . . .$ " which has the URL at http://proflorin.weebly.com/ .

Even if the main page is "Curriculum", the site has several other pages: "Home", "About", "Gadgets", "Forum", "Contact".

"About" delivers a few voice messages built with Voki - a web application. One of the Voki is a welcome message. Another Voki is explaining how to use the site and, of course, one of the Voki is explaining that the site is still in construction, so not all lessons are active.

"Gadget" shows a list with with other sites that provide Math instruction, either built by teachers, schools or specialized developers.

"Contact" gives two ways to contact me, either by email or it provides a map with the position of the school in Lugoj.

Back to "Curriculum", wich is the most used page of the site and will take more time until it will be fully operational. It is structured in 24 chapters, 12 for Algebra and 12 for Geometry. The chapters cover the entire middle school curriculum, but are not structured by grades, due to the fact that the same chapter is often treated in two grades. Each chapter is represented by a button, that once pressed will guide the user to a next web page where the choosed chapter is detailed in subchapters, lessons and types of exercises.

From all the treated chapters in the webpage, I would like to get into details for some of the lessons / types of exercises.

Into chapter **A1–Natural numbers**, one of the most chalenging pages to code was to recognize the name of each digit of a number, to make correct connection between a digit and the name of it, and to ask correct questions at this regard.

Comunicati cate cifre doriti sa aiba numarul cu care sa lucrati.

Numarul este : 137289

Care este cifra sutelor ?

At chapter **A5-Decimal numbers**, some hard to code pages were the operations with decimal numbers, especially multiplication and division, where I had to control the number of decimals of a number.

Intersectia dreptelor JU si PW este . . . ?
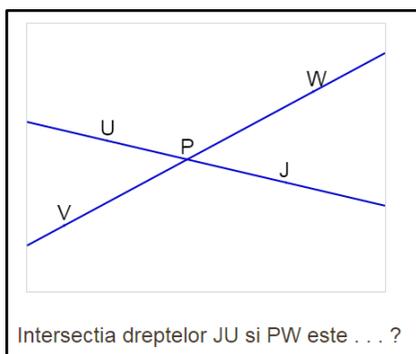
Rezultatul înmulțirii
$0.7 \cdot 45.8 = . . .$

Răspunsul corect este : 32.06
Răspunsul tău este .... : 32.06

Felicitari!

Ai răspuns corect la 1 din 1 întrebări.

Many and each of algebra lessons and exercises were a challenge for me - to decipher the right and optimal way of solving the problem.

Nevertheless, Geometry lessons were even more challenging, because a figure had to be drawn, and graphic programming is even harder. But this was not a reason to stop, but to persevere and to succeed.

After days of work and search I managed to code my first geometry page: **G1-Relations between points, lines and planes**. It combines graphic display and JavaScript code to generate points, line equations and provides the dialogue with the user.

3   Levels of programming

The basic concept of the site is to provide countless number of math exercises or problems for each curriculum standard.

As the site builder allowes using JavaScript code, I started to learn JavaScript using various dedicated websites, as www.w3schools.com. JavaScript is part of browser programming, and relatively easy to use. Best part of it is that it makes webpages interactive, providing to the user various answers, based on previous input.

What I liked the most out of it is that, as all programming languages, JavaScript has a function that randomly generates numbers, allowing me to generate almost infinite number of same type of exercises, and providing pupils the opportunity to practice until they master the concept.

One of the first codes I wrote is number addition. Only, before learning to write code in JavaScript, I had to learn basics about HTML. I learnt the basic content of a html text, that has to be used each time I write a JavaScript code

```
<html>
<head>
. . . title to display in title bar . . .
</head>
<body>
. . . content to display in web page . . .
</body>
<script>
. . . JavaScript code (not displayable, but ensures the interactivity computer - user) . . .
</script>
</html>
```


JavaScript code is part of the HTML code, written between <script> and </script>.

Being at my beginnings as a JavaScript coder, my first attempts were using JavaScript alerts = opened windows that stops/pauses the computer running and wait for user response.

Later, I documented and learnt to use text input boxes and combining HTML and JavaScript. This makes the web page usable even better from smart phones or tablets.
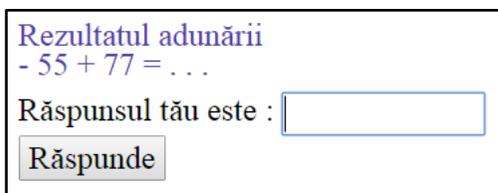
Each day, or week, I add new lessons to the site. My first goal is to provide any student in my school, city or country the necessary amount of practice until he masters the mathematical concept that he's struggling with.

References

http://www.w3schools.com/js/default.
http://www.weebly.com/weebly/main.php
http://www.tutorialspoint.com/codingground.htm