

MATHEMATICS INTERACTIVE BULLETIN BOARD: MATH LABYRINTH

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Abstract

When something attracted students' attention and even if it was fun, their eyes were very open to learn it. Interactive bulletin board was one of the best tools for this purpose. Therefore, in this article I mentioned about my mathematics interactive bulletin board which was called *Math Labyrinth*. I stated my reflection according to the 'format for write-up', and I described my interactive bulletin board. Then, I added my mentor teacher's evaluation of the product. Additionally, I also talked about how the students interacted with the interactive bulletin board and how the interactive bulletin board provided for students at different ability levels. I gave some examples of the students' reactions. Finally, I expressed my feeling of this experience.

Key Words: interactive bulletin board, mathematics, labyrinth

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Introduction

The purpose of this article was to describe parts of my mathematical Interactive Bulletin Board (IBB) which was *Math Labyrinth* and to explain for what purpose I created and what the reactions of the students were. This article also included a neat detailed drawing, clear photo, a photo of students' reactions, MONE objectives, NCTM standards, problems used in the IBB, checklist for assessment of students use, and my mentor's brief evaluation. At the end, I mentioned about my reflection on the product.

Interactive Bulletin Board

Title: Math Labyrinth

Grade level: This IBB was designed for middle school students (5-8 grades) but it can be easily extended for high school grades by changing the levels of the questions used in IBB.

Objectives (learner outcomes): Objectives for middle school students are following;

- Students will be able to develop their knowledge of fractions, decimals and percents with their operations among them
- Students will be able to enjoy from the learning mathematics
- Students will be able to develop their mathematical thinking while they are creating new strategies to win the game
- Students will be able to develop logical, critical and creative thinking
- Students will be able to calculate and the time while solving a problem

NCTM content and process standards:

- Students should work flexibly with fractions, decimals, and percents to solve problems
- Students should develop meaning for percents greater than 100 and less than 1
- Students should understand the meaning and effects of arithmetic operations with fractions, decimals, and integers

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MONE Objectives:

- Tam sayılı kesrin , bir doğal sayı ve bir basit kesrin toplamı olduğunu anlar ve tam sayılı kesri bileşik kesre, bileşik kesri tam sayılı kesre dönüştürür.
- Paydaları eşit veya birinin paydası diğerinin katı olan kesirlerle toplama ve çıkarma işlemleri gerektiren problemleri çözer.
- Ondalık gösterimlerin kesirlerin farklı bir ifadesi olduğunu fark eder ve paydası 10, 100 ve 1000 olacak şekilde genişletilebilen ve sadeleştirilebilen kesirlerin ondalık gösterimini yazar.
- Ondalık gösterimleri verilen sayılarda toplama ve çıkarma işlemi yapar.
- Paydası 100 olan kesirleri yüzde sembolü(%) ile gösterir.
- Bir çokluğun belirtilen bir yüzdesine karşılık gelen miktarı bulur.

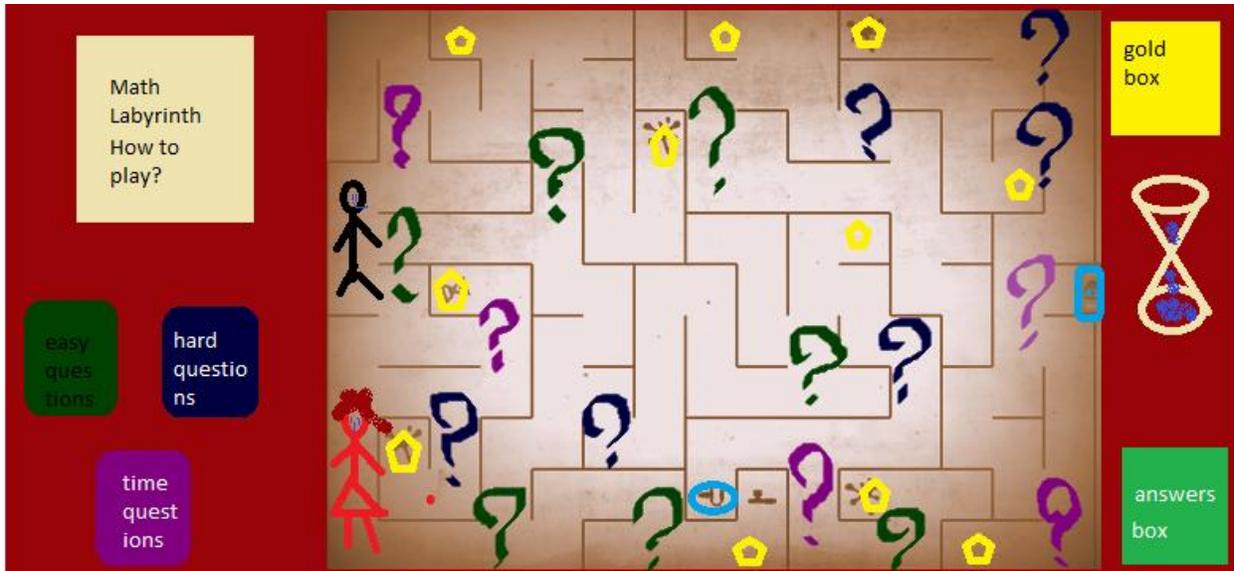
Materials I used:

- Worksheet for explanation of how to play the game
- Colourful cards for questions
- Answer sheet for checklist
- Two different coloured cardboard: red is used for the columns of the labyrinth, and melon pink for paths on the labyrinth
- Two hourglass to manage time for special questions(in purple question marks)
- Three different coloured question marks' cardboards: green question mark represent easy questions, dark blue represents difficult questions and purple represents the questions that need to manage time
- Four different coloured boxes: green for questions in green question marks, dark blue for questions in dark blue question marks, and purple for questions in purple question marks

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- Two different cartoon characters for the game played by two students at the same time

Neat Detailed Drawing



Original Photo



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Students' Reaction Photos



Description of the interactive bulletin board and activities and questions/problems included

In this game, there is a math labyrinth. The story is that two persons were held captive in the labyrinth and the students should open the lock at the end of the labyrinth to escape them from the labyrinth. However, before opening the lock, they should reach the key. And, before reaching the key, the persons should find and collect the gold in the labyrinth. Hence, to do all these, the people need to find their way through the labyrinth by answering the questions hidden in the question marks. When they meet the question marks they need to pick a question from the box which belongs to the that colored question marks. But, to pass the question mark doors, they need to give the right answer to the picked question; otherwise they cannot move and have to pick a new question from that box and again have to answer correctly. For some questions people need to answered the question in a time that sand in one part of the hourglass will run out. Hence, the person who collects three gold and then reaches the key can move through the path and open the lock in case he or she find the correct way to come near to the lock. Of course, to open the lock, the question in front of the lock need to be answered correctly. Finally, the first

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person who comes near the lock will finish the game and so that person can be escaped from the labyrinth.

In addition, all of the questions are from the subjects which are fractions, decimals and percents as well as operations among them. The questions are allocated to three different levels, namely, the easy questions, the less easy questions and time questions. For example, "*What is the decimal number of $\frac{3}{8}$?*", " *$\frac{6}{4} * \frac{3}{5} * \frac{15}{24} = ?$* ", and "*Of 32 birds in Rachel's aviary, 6 are parrots. What percentage of her birds are parrots?*" are examples of easy, difficult and time questions, respectively.

How do students interact with the IBB to meet stated objectives?

The students will be able to reach both NCTM and MONE objectives by answering the questions which are located throughout the path of the labyrinth. Furthermore, students will remember their previous algebra knowledge and then combine this with the different types of operations in questions.

How does the IBB provide for students at different ability levels?

All questions were prepared for middle school students; however, this IBB can be used for both primary school students and high school students in all grades. That is, the levels of the questions used in the board can be changed or the number of question marks can be increased or decreased. For instance, for high school students the questions can be chosen from the unit of differentiation or integration. On the other hand, an easier labyrinth can be constructed for the primary school students.

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My mentor evaluation on the product

My mentor teacher, Ms. Toker, liked the idea of IBB. She said that the product was generally appropriate to the purpose of the IBB, interactive, attractive, original, useful, and beneficial for students to learn mathematics. Moreover, she added that the product could be implemented to different subjects and different grades. Besides, she gave me some suggestions. For example, she said I would use different colored question marks so that two different people could play the game at the same time. And, the IBB would also include more challenging questions or components. Also, the instruction on the board would be written shorter but bigger font. Additionally, she wanted me to add the resources I applied for creating the board and for the questions. I also added the evaluation form below:

Mentor Evaluation of Interactive Bulletin Board

Element: _____
Intern: Tugba Ötcan
Mentor Name: Derin TOKER Date: 05.12.2013
Mentor Signature: [Signature]
Check (✓) the column that applies for each element:

Element	Appropriate	Inappropriate/needs improvement
Topic	✓	
Grade level	✓	
Implementation, instructions	✓	
Activity	✓	

Comments: Çalışma genel olarak amaca uygun, işlevsel, ilgi çetici, özgün ve yararlı görünmektedir. Bununla birlikte;
→ Yönerge daha kısa ve daha büyük font ile yapılabilir.
→ Birden fazla öğrencinin aynı anda çalışabileceği unsurlar eklenebilir. (farklı renkte soru işaretleri, soru setleri, kartonlar vb.)
→ Farklı konulara da uygulanabilir (problem çözme, vb.)
→ Sorular farklı seviyelerde, challenge için unsurlar içeren sorular olabilir. (Sorulara tek tek bakmadım, genel bir bneridir :))

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My reflection on the product:

The idea which is constituting an original thing always attracts my attention. Hence, preparing the interactive bulletin board served this purpose. That is, creating an IBB was an enjoyable experience for me. For to be honest, I thought very much for finding an idea to develop the mathematical knowledge of the students while they enjoyed to learn it. Therefore, from this experience, I learned that IBB was so useful and beneficial tool for learning mathematics interactively. It also allowed students to compete with their friends and compare their mathematical knowledge. The most important part of this product was that the students need to develop different strategies in order to escape the labyrinth like to solve a problem. I loved it.

Conclusion

The purpose of this article was to evaluate my mathematics interactive bulletin board. I described all parts of the IBB and explained how to play with it and for what purpose I designed it. I also expressed my reflection, my mentor's brief evaluation of the product and my experiences when I was doing it and interactions of the students. I learned that IBB was not only a fun game but also it served an important purpose which was a beneficial tool for getting the students learn mathematics, find strategies, think logically and manage the time. I felt very pleased from IBB since the students were encouraged to do mathematics with the help of a game and they learned while they were enjoying.

References

Labrink Maze Game Website. Retrieved from <http://www.allmazegames.com/play/labyrinth.htm>

Mcseveny, A., Conway, R., Wilkes, S., & Smith, M. (2012). *International mathematics for middle years 5*. Australia, Pearson

Ministry of National Education. (2013). Retrieved from

<http://ttkb.meb.gov.tr/www/ogretim-programlari/icerik/72>

National Council of Teachers of Mathematics.(2013). *Principles and standards for school mathematics*. Retrieved from <http://www.nctm.org/standards/content.aspx?id=7564>

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