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EFFECTS OF USE OF TECHNOLOGY ON STUDENTS' MOTIVATION

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Instructors may have an easy task when they have students who are keen to learn. In reality many students are in need of their instructor to encourage, mentor and guide them: "Effective learning in the classroom depends on the teacher's ability ... to maintain the interest that brought students to the course in the first place" (Ericksen, 1978, p. 3)[1]. Regardless of the enthusiasm and motivation your students bring to your session it will be affected with what they will be exposed to in class. Therefore to motivate students is a main and continuous concern to a teacher. Use of technology in and out the classroom might increase students' motivation to study mathematics.

Keywords: E-learning, Math motivation, Online assessment, Interactive files.

Introduction

In this paper, the authors brainstorm ideas on how to improve students motivation since we strongly believe that their results depend greatly (exponential proportional) to their level of motivation. We deal with prepatory year program students called Foundation at Qatar University in Doha. The mission of the Foundation Program (FP) is to prepare high school graduates to meet the minimum common entrance requirements in English language, Mathematics and computing skills, as set by Qatar University, and specific entrance requirements, as set by the University colleges.

We are mainly interested in motivating these students to learn mathematics. Actually, this is an international concern since it is well known that students have seen this subject as a very difficult one. No one can disagree on the importance of this subject for students with majors: Enginnering, Science, technology and Business. Students'attitude and motivation are two important factors in delivering the course content. In this paper, we will discuss variety of issues that are the reason behind motivating/unmotivating students. Mainly, we will emphasize on the use of technology and the online learning and teaching process.

Motivation can be defined as a complicated equation that has many variables with a large number of constraints that even a super computer will be unable to solve.

Motivation is a term that refers to a process that elicits, controls, and sustains certain behaviors. Conceptually, motivation should not be confused with either volition or optimism. Motivation is related to, but distinct from, emotion.

Extensive research has been exploring this fundamental subject. Math teachers struggle to find ways, methods and new approaches to attract student attention in and out the class.

Some one can ask this question: is there a magical formula for math students' motivation?

Technology Impact in Education

Many technology-based tools have been piloted, implemented, or reevaluated in order to explore their benefits and efficacy to support teaching and learning. The initiatives that brought to light these new tools are either faculty's personal initiatives or Department implementations and the beneficiaries are ultimately students.

These tools impacted directly the way of teaching, student learning and even how we collect students' opinions. In fact, in order to improve students' interaction in class and to gather an immediate feedback, a new product called *"Clickers"* has been utilized. *"Clickers"* facilitate the instructor's task to ask students questions during a lecture and to gather their responses in real time. Several initiatives to pilot this new product which is gaining ground in many Universities around the world has been implemented. Additional use of this tool can be gathering immediate feedback during large staff meetings.

To improve student-instructor interaction outside classrooms the Department looked at *"Elluminate"*, which is a real-time online learning and collaboration tool that allow teachers and students to interact online and even access each other applications. In fact, with *Elluminate*, teachers can perform computer tasks such as solving an Excel application online even if they are thousands of miles away. According to the company this product is used by over 7 million teachers and students located in over 170 different countries. The Department is studying its benefits and weighting the possibility to pilot this product.

Video material is an efficient way to encourage independent studies and an opportunity for students to study more in-depth class material, the computer program is studying the possibility to acquire online commercial videos for MS Office courses and IC3 test preparation. Meanwhile, many faculty members are using the video design tools to prepare in-house course material.

Finally, the department acquired the last version 4.0 of the simulation tool Adobe Captivate. This software has emerged as the market-leading rapid authoring tool for creating professional eLearning content with advanced interactivity, software and scenario simulations, — all without programming knowledge or multimedia skills. This product can help our students learn complicated computer skills and help instructors to monitor and evaluate their progress.

The students we have in class now can be classified as Digital Natives, their perception and readiness is impacting our perception to education and the way to approach it.

Type of Motivation

Generally, motivation is conceptualized as either *intrinsic* or *extrinsic*. Classically, these categories are regarded as distinct. Today, these concepts are less likely to be used as distinct categories, but instead as two ideal types that define a continuum:

- Intrinsic motivation occurs when people are internally motivated to do something because it either brings them pleasure, they think it is important, or they feel that what they are learning is significant. It has been shown that intrinsic motivation for education drops from grades 3-9 though the exact cause cannot be ascertained. Also, in younger students it has been shown that contextualizing material that would otherwise be presented in an abstract manner increases the intrinsic motivation of these students.
- Extrinsic motivation comes into play when a student is compelled to do something or act a certain way because of factors external to him or her (like money or good grades). *Source: http://www.wikipedia.org*

Factors That Make Students Unmotivated

If we go through literature, we will find that there are a large number of reasons that can make a student unmotivated. A sample of this list is

- *Incomprehensible course content*: teachers must at least start the class with simple and basic concept and gradually increase the level of difficulty of the subject.
- *Difficult schedule (Late or early day schedule)*
- *Family issues & problems*
- *Boring class/teachers*
- *Teachers attitude in class*
- *Student feels ignored/marginalized by teacher*
- *A learning environment is not established*
- *Students become metacongnitive stressed in classroom: not at ease to reflect on the course content.*

Strategies

- Call students by their names
- Treat them as "adults" and "responsible"
- Avoid stressed & punitive environment
- Establish a comfortable learning environment so you can engage students and give them opportunities to ask questions.
- A positive sense of humor helps to reflect on the course content.
- Acquire a basic understanding about young and teenagers psychology[2]. We strongly believe that a math teacher should have some basic knolwdge on teenager attitude and behavior. This will help him/her in properly reacting to certains situations.

Actions That Help Motivate Students

Surely there are a large number of factors that can contribute to students's motivations. Following, are few

- Try to use different technologies in class to keep students alert (i.e. videos, software, interactive games, etc.)
- Avoid to have student 'metacognitive stressed"
- Student must be engaged in the learning process → dynamic class
- Break the class by switching the class content to other subject: History, geography…ext.
- Challenge students' knowledge, beliefs, and attitudes about the topic
- Appropriate difficulty level of the material
- Connect topic with other topic of interest
- Good teaching Practice
- Continuously get student's feedback on your course content, delivering, activities, etc.
- Keep advising/supporting your students

All the above factors could be grouped in 4 main components that revolve around students'motivation:

1. Active learning technique
2. Students' goal and objectives
3. Knowledge on teenger psychology
4. Use of technology: games, interactive PDF files, videos, …ext

E-learning

E-learning comprises all forms of electronically supported **learning** and **teaching**. The **information** and **communication systems**, whether **networked learning** or not, serve as specific media to implement the learning process. The term will still most likely be utilized to reference out-of-classroom and in-classroom educational experiences via technology, even as advances continue in regard to devices and curriculum.

Online Assessment: Impact

According to Hart and Walker [3] and Wong [4], students' attitudes toward learning a subject vary based on characteristics of classroom instruction, such as types of assessment, topics, and material delivery tools.

From the author's experience, delivering online assessment greatly motivates students. There quite few types of such homeworks:

- Interactive PDF file
- E_Homeworks: In addition to the math Pool of questions that are provided with the math books, we can always create pools with variety of questions type (True/False, Multiple choice questions/ Matching/Multiple answers questions/ Hot Spot/Fill in the blanks). that respond to students' need and motivate them to practice more till they improve their math level.

http://scimath.unl.edu/MIM/files/research/SwartzlanderD.pdf

All students have the ability to learn. The challenge becomes how we, as teachers, can provide the mechanism and the ways for that happen. In [5] (Black & Wiliam, 1998, p. 148). The authors quote "Standards can be raised only by teachers and pupils in classrooms. There is a body of firm evidence that teachers and pupils in classrooms. There is a body of firm evidence that formative assessment is an essential component of classroom work and that its development can raise standards of achievement". Formative assessment help students to learn how to learn through the feedback from teachers and the self-assessment test[6].

The following chart describes the affect of online homework and the mini exam tests scores through the learning management system Blackboard versus the overall course grade for the algebra course. Visually it is hard to get information from the raw data. To understand better the data we do data analysis

and statistics which means we convert the raw data to useful information like pie charts, column charts, lines etc…

The following line chart show the change across categories (students) or the trend. The categoriy is the students and the numbers are the overall course grade OCG and the online homework e-HW.

The following line chart chart describes the overall course grades versus the online homework e-HW taken by students on blackboard. The e-HW is a part of the student grading scheme. From first sight the chart shows how students improve when they perform e-HW.
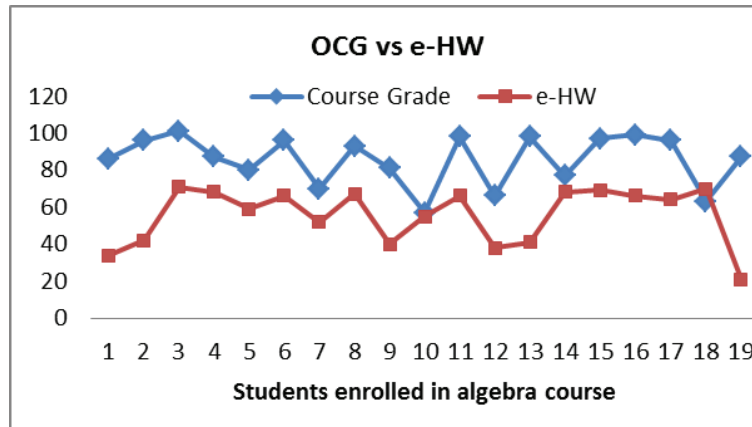
The above line chart describes the overall course grades versus the online in-class miniexam test taken by students on blackboard. The mini exam is an important compoenent for students to raise his or her standards.
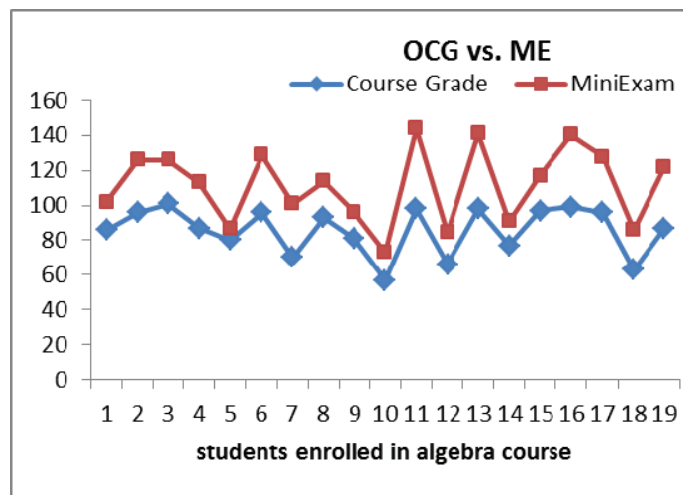
Conclusion

The authors have no doubt that technology can be a powerful tool to engage students in the learning process inside and outside class. We should emphasize that this great tool should be used with moderation. Teachers should have the control while delivering the math content to students. As educators, we strongly believe that blended learning and the mixture of tools to deliver the content is the right solution to catch students' attention and follow up on students' improvements. This equation should be balanced from one student to another.

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