

# Can We Justify Using Gamification In Education?

## Introduction to Problem

The image of a teacher instructing from a front board, and students following along through notes or worksheets is familiar to many of us. This traditional approach, also known as direct instruction, has long been the go-to mode of transmission in many educational settings. Many people feel that while this method can be effective, it can also lead to students being bored, off task, disengaged, and unmotivated. Meanwhile these methods also have nothing in common with how people learn away from the classroom setting. I wanted to explore the use of better methods of teaching that help students learn more, enjoy what they learn, and match how they learn outside of the classroom.

## What is Gamification?

Gamification means using characteristics that make games engaging in other activities to make those activities more engaging. We can use many of these game characteristics in education to take something that has traditionally been seen as boring and make it more engaging. Ideally this will help students enjoy STEM classes more and pursue higher levels of education and careers in these areas. Some examples of these characteristics are:

- Levels: Progress to unlock more challenges and rewards.
- Points: Earn value from success instead of losing points for mistakes.
- Leaderboards: Public recognition for achievement.
- Collaboration: Working with teammates to achieve a common goal. Combine the different skills of individuals.
- Epic Meaning: Work toward something greater, save the world!
- Viral: Incentives for sharing with others.
- Bonuses: Earned or unexpected rewards.
- Countdown: Complete challenges in limited time.
- Discovery: Navigating through information to find necessary knowledge.
- Synthesis: Combine multiple skills to solve a complex problem.
- Choice: Multiple pathways to find a solution.

## Investigation

For my Action Research I implemented gamification strategies over the course of three weeks to see if this method was a viable option for improving my students' engagement and achievement. For one of my class periods I used a variety of gamification strategies over 3 weeks. For another period I used my traditional direct instruction lessons. By comparing test scores, projects, surveys, and field notes from the three weeks, I was able to compare the successes and drawbacks of both instruction methods.

## Research Questions

- **Did gamification strategies result in improved students' mathematical achievement?**
- **Were students more engaged in gamification lessons?**
- **Did gamification strategies improve the quality of finished unit projects?**

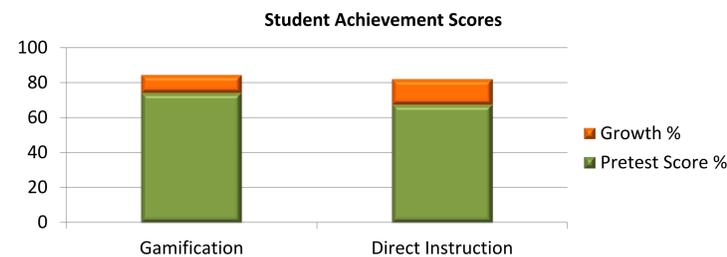
## Data Collection and Analysis

Research was conducted with 65 sixth grade math students by an experienced teacher in his 8<sup>th</sup> year of teaching. Over three weeks during the 2014-2015 school year one class participated in only lessons and activities using gamification, the other class had only direct instruction. Students completed the same benchmark and formative tests during this time, and completed the same group project though with different incentives based on the types of instructions. Data was analyzed during Summer 2015 to evaluate student achievement, quality, and engagement trends.

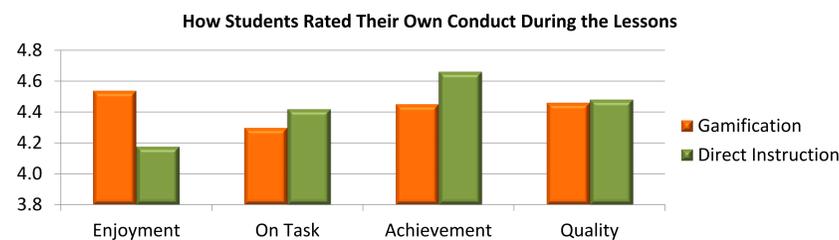
Data collection instruments included:

- 8 Benchmark Retest
- 2 Worksheets
- 1 Group Project
- Field Notes
- 2 Sets of Likert-Scale Surveys

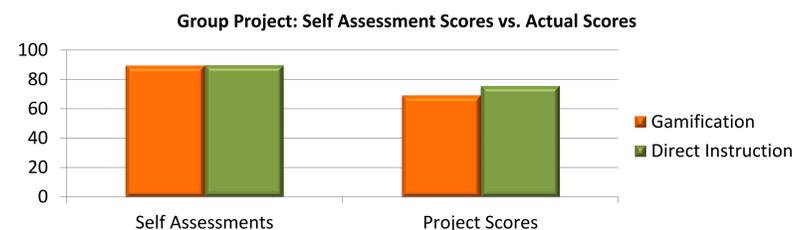
## Findings



**Both groups showed growth and achieved similar levels of mastery.**



**Students enjoyed math class more when they were gamified. Students felt like they were on task and performing at a higher level in direct instruction lessons.**



**Gamified lessons were more time intensive for students, resulting in lower quality work when not assisted with time management.**

## Connection to Industry

In my experience working in industry, I have learned that corporate training has long centered around lectures and PowerPoint slides, which are seen as efficient and cost effective ways to train workers. However these often lead to disengaged employees, while physically present, may be mentally absent. This wastes time and productivity. Games use strategies like collaboration, levels, prizes, and checkpoints to keep players of all ages engaged. If we can use these strategies in training to keep workers engaged, training becomes a better use of resources and results in a safer, more productive employee. If trainings are more enjoyable more employees will want to be there and this will improve the results of the training.

## Students' Comments on Gamification

*"I loved it. I loved the lesson can we do it again?"*  
*"I think this lesson gave me the best chance to learning this objective because it wasn't boring."*  
*"Today's lesson had the best possible chance for us to learn the objective because everyone loves technology."*  
*"It's a fun way to remember. You can also teach other people."*  
*"You are learning and also having fun with a challenge."*

## Students' Comments on Direct Instruction

*"I learned the objective really well he taught it good and there was no distractions."*  
*"Our teacher is very confident in his teaching which helps us get more work done and learn the objective."*  
*"I'm not distracted and I can see the board."*  
*"I think the lesson gave me the best possible chance to learn the objective because it was easy to understand and very detailed."*

## Conclusion

In the same content and with the same teacher, students in gamified and direct instruction lessons showed similar achievement. Thus, there was no lack of learning when students learned through games. If our goal is for students to enjoy math more, changing from traditional, independent direct instruction to more gamified lessons can help. It is important to realize that these lessons take more time and checkpoints need to be put in place to help students stay as focused and on time as in traditional classes. This form of learning is new and students may not feel they are learning as much or working as hard when gamified strategies are applied.

## Changes to Classroom Practice

I plan to change the overall setup of my courses. I have used gamification in the past to supplement my traditional classroom instruction. In my new school I will set up my courses with game characteristics and direct instruction will become a tool I use as needed. When students are struggling with time management or are widely missing a concept, direct instruction will be an excellent intervention tool. This will only be used to supplement what they are doing to meet their achievement levels and earn their points.

Along with game strategies, I plan to incorporate more technology and time management objectives into my teaching. These skills will help mitigate the reasons students struggled during the gamified lessons during my research.

## Reference

Klopfer, Eric, Scot Osterweil, and Katie Salen. "Moving learning games forward." (2009).