Engaging students with technology in low-tech classrooms

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ABSTRACT

As teachers it is our experience that students are not as involved in the lessons as we would want them to. They rather spend their time enjoying the digital world. Studies have shown that if you want to get their attention you have to connect with them in a way they are most comfortable with: the technology.

While in Suriname all stakeholders are enthusiastic about using technology in education, they are also aware that the infrastructure is not in place yet. Schools often don't have internet -wired or wireless- and other tools needed to bring ICT to the classroom. This keeps a lot of teachers from even trying to integrate ICT in their lessons. Now we can wait for everything to be in place to start, or we can start with what is available.

Our objective was finding ways to engage students with technology in low-tech classrooms.

We worked together with teachers and helped them to incorporate technology in their lessons with minimal tools and accommodations. The thought behind this was that if the teachers experienced teaching with technology they too will look for ways to engage students with the possibilities they have at hand and trigger them to explore options and share with other teachers.

The result was students and teachers that have requested more use of technology.

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INTRODUCTION

The objective of this project is to improve student engagement with technology while using the limited resources we have available as teachers.
Several studies (e.g. Becker, 1994; Hadley & Sheingold, 1993; Sheingold & Hadley, 1990) used survey data to identify factors likely to be in evidence in teachers who to some extent have integrated computers into their teaching practices. Sheingold & Hadley (1990) conducted a nationwide survey of fourth to twelfth grade teachers in the USA. The three major factors involved in these 'accomplished' teachers' success were:

- Teacher motivation and commitment to their students' learning and to their own development as teachers
- The support they experienced in their schools
- Access to sufficient quantities of technology.
  (Citing Shazia Mumtaz, 2000, 324)

We collaborated with teachers to present ways to use technology we have at hand. We also looked for ways to create more possibilities.
During the ICT's in Education course we were introduced to several methods to improve student learning. One of them was technology. Since we know, by experience, that students enjoy using technology. Our goal is improving the students their learning experience by using the available tools.
A number of early studies investigated why teachers do not use computers in their teaching (Rosen & Weil, 1995; Winnans & Brown, 1992; Dupagne & Krendl, 1992; Hadley & Sheingold, 1993). Not surprisingly they found a list of inhibitors:

- Lack of teaching experience with ICT
- Lack of on-site support for teachers using technology
- Lack of help supervising children when using computers
- Lack of ICT specialist teachers to teach students computer skills
- Lack of computer availability
- Lack of time required to successfully integrate technology into the curriculum
- Lack of financial support.

(Citing Shazia Mumtaz, 2000, 320)

To this list we can add that in Suriname the infrastructure is not in place yet.
Since everything is not in place and some aspects are not in our sphere of influence, we decided to start working with what we have.
We also hope to get other teachers to join us in our efforts.

We figure that if the policymakers see the results of integrating technology in education, they might be inspired to give our cause priority.
Also, we hope to get support from NGO's when they see the outcome.

Driving question
Our driving question is: "How do we engage students with technology in a low-tech classroom?"
As mentioned earlier, all stakeholders are enthusiastic about using technology in education, but they are also aware that the infrastructure is not in place yet.
Schools often don't have internet -wired or wireless- and other tools needed to bring ICT to the classroom. This keeps a lot of teachers from even trying to integrate ICT in their lessons. Now we can wait for everything to be in place to start, or we can start with what is available.
Our objective was finding ways to engage students with technology in classrooms without basic requirements such as internet, a projector, and where not every child has a device.

Evidence

from nothing to something
with sponsors


Collaborate with students and teachers

Outline of this report

-Project planning

In this part we talk about our Big Idea, our project goals and the learning outcomes and we present assessment criteria and the educational framework we choose.
Furthermore we give a view of the tools, skills and competencies integrated in this project. We also shed a light on the scope of our project, tasks and activities as well as resource/materials we used. We end this part with presenting our milestones and a timeline

-Project design and execution

This part of the report elaborates on the process, the execution, and the product

-Conclusions and future work

In this section we share a Personal Reflection and we present an assessment plan

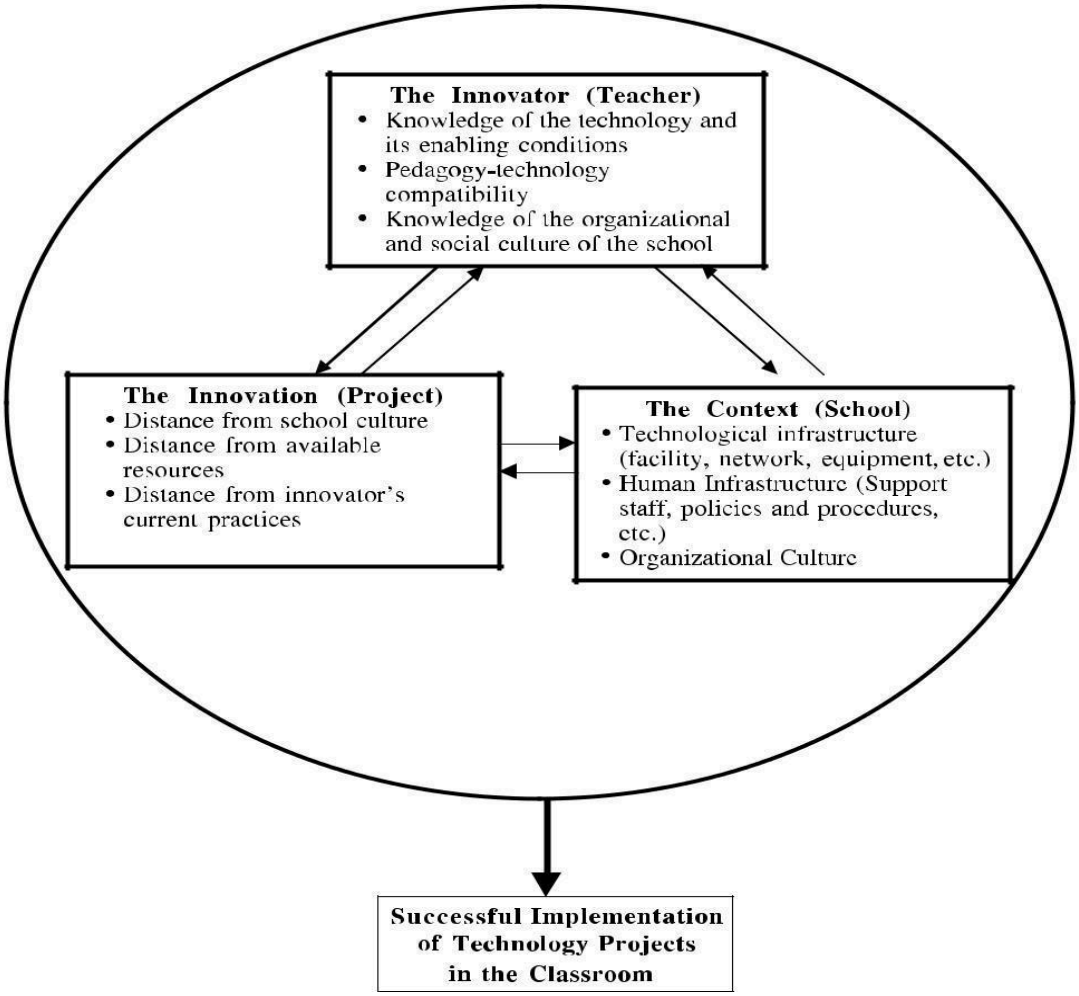
PROJECT PLANNING

In the end of our project we want to have a list of programs we can use in a low-tech classroom.
The goals of our project are:

1. Improve student learning by making the school experience more engaging with technology
2. Introduce teachers to tools they can use even with minimal facilities.

Learning outcomes
Students become more involved in their education because of technology.
Therefore the results will improve.
When teachers see the results they will be triggered to explore the possibilities themselves.
Teachers will share their results and the tools they used with other teachers.

Assessment criteria



We agree with YONG ZHAO *et al* (2002) when we look at figure **X,** in which the conditions for successful classroom technology innovations are explained. We used these conditions as our criteria.

Educational framework

We plan to use the 21st century framework..

The 21ste century framework prepares students for the future.

It combines knowledge and skills with the necessary support systems so students are more engaged in the learning process and are better prepared to contribute to today's digitally and globally interconnected world.

We believe that, while we do not have everything in place now, developing 21st century skills in our students will create a better future for Suriname.

Having the right people in the right place is a start. Our students will be the critical thinkers, collaborators and innovators we need to develop our country.

Tools, skills and competencies

Tools we used are the internet to do research and to communicate. One of the team members brought a router to school to implement a wireless out of a wired connection. We also tried to work with the Wiimote Whiteboard, but couldn't get the Wiimote to connect. Luckily the schools have at least one projector available.

During the ICT's in Ed course we learned a lot regarding pedagogy and technology. Those skills, such as lesson planning and design thinking sure came in handy.

While working in the project we need to collaborate and communicate. We also had to be creative, since we had to come up with ideas. There was also, as you can expect, a lot of problem solving.

Milestones

We started our project June 7th. We asked our colleagues to participate and help us try out a few programs. We surveyed the students and interviewed the teachers.

After that we made an inventory of what we had. In collaboration with the teachers we started planning tech integrated lessons. We tried to use tech tools that didn't require all students having a device. Also, when possible, we used tools that didn't require internet.

Our first lesson in the project was on June 19th.

After each lesson we surveyed the students and the result showed they were more engaged when technology was used.

Another highlight was one teacher went to explore on her own and created her own tech integrated math lesson.

Another teacher, she teaches Spanish, was so motivated that she immediately started sharing with her colleagues in other schools.

Scope of the project

We started in our own schools, but our intention is that the participating teachers share their experience. We plan on creating a blog where other teachers can also share their tools and tips.

Tasks and activities

- Identify the teachers willing to participate
  - Talk to the teachers
  - Demonstrate some tools to teachers

- Interview and surveys
  - Interview teachers
  - Survey students
  - Analyze surveys
- Find out which facilities, resources and tools are available in that location.
- Find out what we had do to improve the situation
  - Gather extra devices and materials
- Identify technology tools we can use with regard of the situation
  - Do internet research
  - Read reviews
  - Try out tools
- Plan meetings with participants
  - Create edtech lessons in collaboration with participants
  - Demonstrate the tool
- Try out the tool
  - Teach edtech lesson
- Measure the results
  - Survey student and teachers
- Share with other teachers
  - Create Facebook page
  - Write reviews
  - Share the page
  - Conduct a survey

Resource/materials needed

Computers
Projector
Internet

PROJECT DESIGN AND EXECUTION

The process

- Identify the teachers willing to participate

We approached the teachers and explained to them what our intentions were. Some of them got a quick demo to win them over. We asked for their participation.

- Prepare interviews and surveys
- Interviews and surveys

We interviewed teachers to learn about their observations regarding student engagement, their willingness to invest time in planning the lessons and using their own devices, if needed.
Survey students about their engagement during lessons and what they would like to change, if anything. We also checked for internet access at home and if they were willing to bring their devices to school.

- Find out which facilities, resources and tools are available in that location.

Each of the group members assessed their location to gauge the possibilities.

- Find out what we had do to improve the situation

We then checked how we could improve the situation. I.e. bring a router to school, use your own laptops and in case needed borrow your housemates' devices. Buy prepaid card to have access to internet.

- Identify technology tools we can use with regard of the situation.

We did some internet research to find out which tools could serve our purpose.

- Try out the tool

We planned edtech lessons using the tool; some we did ourselves, some were done by colleagues.

- Measure the results

After the edtech lessons we asked the teachers what their observations were. We also had students fill out surveys and analyzed the results

- Share with other teachers

We created a page with the tools we tried out and posted a short review on a facebook page created for the project. We then invited colleagues to join.

The Execution

We asked our colleagues about their observations regarding student engagement and interested them to participate in our project.
We also surveyed students about how they liked the lessons.
We then sat with the teachers to create a tech integrated lesson.
After the lesson we surveyed both the teachers and the students how the experienced the lesson.

The Product

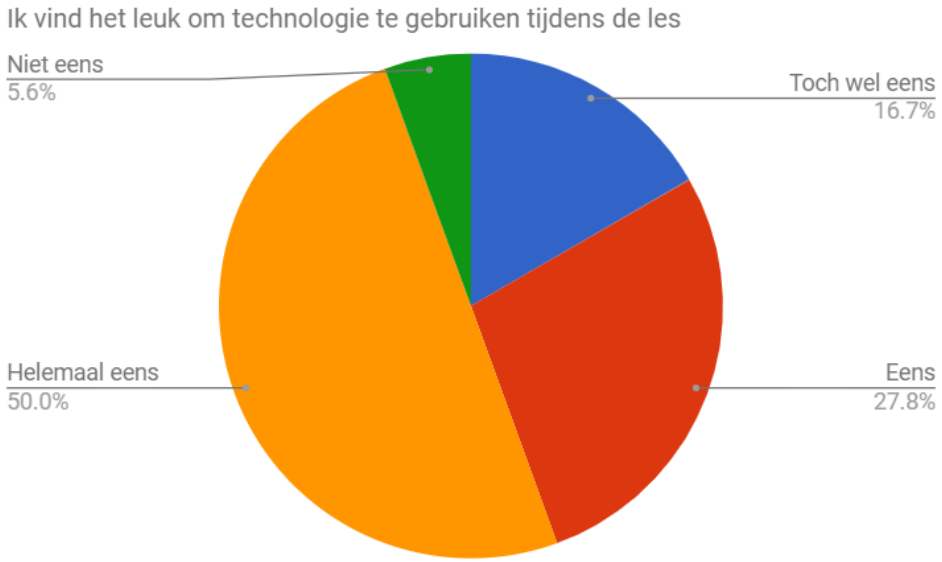
The result is a list of applications that can be used in a classroom with limited devices.

We give the name of the application, the url, a short review and examples of how to use it. In case available we do a demo and give impressions of how the tool worked for us.

Every teacher has access on Facebook, because our goal is also a growing group of teachers that know how to engage students with technology in a low-tech classroom.

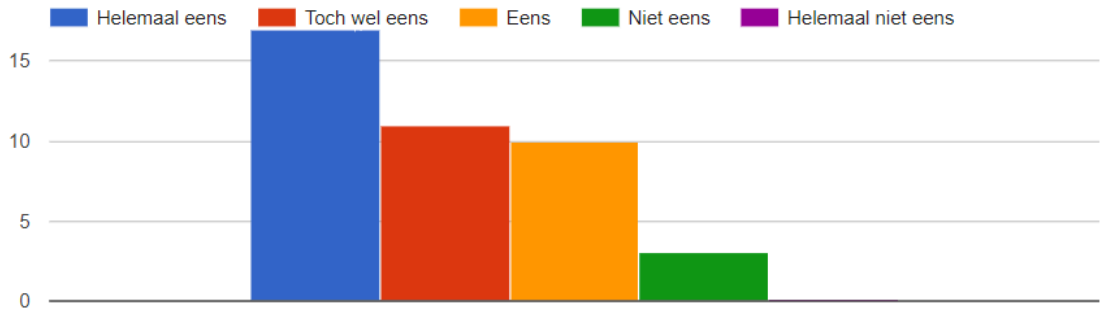
CONCLUSION AND FUTURE WORK

Our project was successful in that the participants are enthusiastic and have already started making plans for the coming school year.
We still have teachers trying out new technology tools; the schedule runs until the end of july. Then in October we will continue.
We had hoped for more participants, but time was not on our side, being that it was the last part of the school year.
Our project was effective, because both students and teachers have requested to make use of technology more often.
The question if they enjoyed using technology during the lessons, as the chart shows, 50% of the students answered they “Totally agree”, 27.8 answered they “Agree” and 16.7 % answered they “Somewhat agree”.



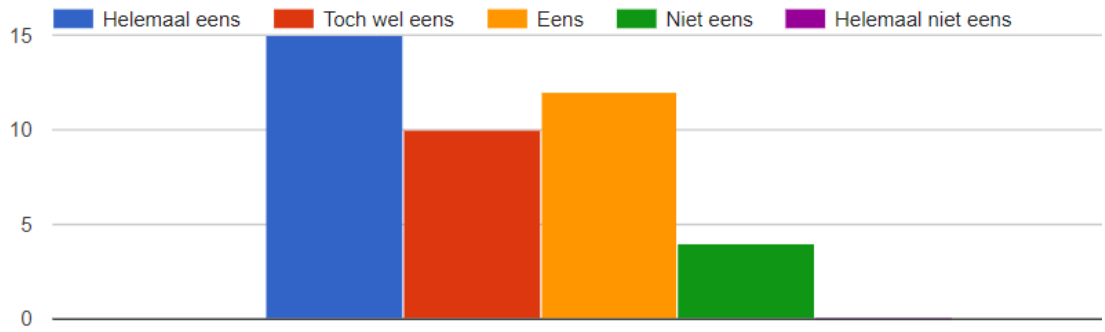
Both teachers and students also indicated that there was more involvement in the lesson, because of the tech tools. The chart below shows that 3 students disagreed.

Ik had meer aandacht voor de les, omdat er technologie is gebruikt.



Students also indicated that they had better understanding, because of the use of technology. As the chart shows 4 students disagreed.

Ik heb de leerstof beter begrepen, omdat er technologie is gebruikt.



There were a few hiccups, but as we moved forward it improved along the way. We had teachers cancelling or not showing up. We had failure of the wifi connection in one location. Luckily there was a wired connection. It was a challenge, but I found a way to get wifi from a wired connection.

Challenges and successes

Since the school year had almost ended, it was hard to find teachers to participate. We started with seven teachers and ended up with three in one of the schools. This also had to do with the teacher strike; they had to catch up, so they did not have time to invest in our project.

On the plus side, the students enjoyed the lessons, our charts show.
Also, one of the teachers, a Spanish language teacher, has already shared with her colleagues from other schools.
They also requested training so they become more tech savvy.
In one school the students were so pleased with the tech integrated lessons, that they collected money to buy prepaid cards so they could have internet access. The show must go on!

Improvement of our project

We are planning to create a platform - a website or a blog - to share with other teachers. As for now, the sharing happens through teachers telling their colleagues and showing pictures and through the Facebook page, but we think a website has more possibilities. Teachers will also have the ability to share their tools and tips on the platform.
Another thing would improve is the timing; we think it is better to start at the beginning of the school year to get more teachers on board.

Assessment plan

Assessment	**Criteria**
Standards	The 21st Century Framework requires: Learning and Innovation Skills Information, Media and Technology Skills Life and Career Skills
Student engagement	Do the teachers observe improvement in student engagement. What is the result of the student survey.
Higher-level Thinking	Did the project require finding solutions through critical thinking and creativity
Effective ICT integration	Have the use of tools and resources had the desirable impact
Impact	Did school results improve overall? Do the teachers know how to use technology with minimal facilities?

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APPENDIX

- Pre-assessment students
- Post-assessment students
- Example Kahoot quiz: Geometry
- Enquetes and interviews student and teachers
- Example lesson: The Pythagorean theorem