3D-Printing Proposal K-12

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Dr. Bolgan

Superintendant

Parkview Public School District

Parkview, New Jersey 00000

Dear Dr Bolgan:

I, October Hudley on behalf of the RedTec 3D Printing Technologies would like to introduce you to one of the latest technologies which will benefit your entire student’s population in the Parkview School District. Attached to the letter is a proposal with a list of topics. The topic are as listed: What is 3d printing, examples of research powerful ideas and research based information why and how 3d printing stimulates students creativity using technology, 4-6 student projects/activities for grades k-12, ecology of classroom, systematic views, and well as implementation. Finally, I will submit a demonstration video on how to use 3Tin Program to print three dimensional objects.

Thank you very much. We hope to work with you on what we are certain will be a successful partnership.

Sincerely,

October Hudley
Representative

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What is 3D printing?

 3D printing is a process for making three-dimensional objects from a 3D modeling software and lasers to melt photopolymers to create layers to form three-dimensional objects. The process can also provide opening for movable parts to be installed.

Powerful ideas and research based information

 The Common Core State Standards are goals and expectations for the knowledge and skills students need to prepare them for college and life skills. STEM is the acronym for science, technology, engineering, and mathematics. Students learn by designing project that are meaningful to them and can be applied to real life situations. According to (Bers, 2008), children benefit using programing because it teaches the math. When children work together and discuss the process of designing objects, children develop a metacognitive approach towards problem-solving and learning.

How and why 3D printing stimulates student’s creativity and technology

Students learn about program design using math to create objects. 3-D printing offers computer programs where students can take geometric shapes in order to build objects. The students with speech difficulty are able to collaborate with their peers to discuss plans in creating game pieces. High school students can also collaborate with their partners to design not only the game pieces, but also the board game too.

Projects/Activities Grades K-12

Project 1 Game piece objects

Grades: K-12

Subjects: science, technology, math, geography, history

Students work in small groups to design game pieces. The students will discuss the purpose the game pieces serve in relation to the board game. The students will construct a design the game piece and discuss what shapes to use from the 3-D Tin program template. The students in grade 4-8 can discuss history and events that took place. For example, the game pieces for the Monopoly board game represents people in a particular era. For example the race car was resembles a 1960’s roadster.

The game pieces can enhance their cognitive and physical abilities. The students can use their fine motor skills to create objects small enough to fit on the game board.

Project 2 The Planets

Subjects: Science

Grades K-5

 The students can discuss the planets of the solar system in small groups. They can describe size, shape, and color. The students can re-create the planets using the shapes from the 3-D Tin template.

Project 3 Geometric Shapes

Grade K-2

Subjects: Math

The student in Kindergarten to third grade can learn math skills such as Geometry. The students can learn about geometric shapes and create objects using the 3-D Tin program.

Project 4 Invention

Grades K-12

Subjects: Science

 The student will work in small groups to create inventions that will change the ways people live and have an impact on their lives. The 3-D Tin program will allow the students to create shapes with openings. The openings are designed to install moveable parts. Students in grades 9-12 may use other programs to create motorize gadgets to install into their 3-D object in order for the object to move. Example: Robots

Project 5 Dinosaurs Land

Grades 9-12

Science

 Students attend trip to museum to take snapshot of dinosaur’s fossils. The students work in groups to recreate image of dinosaur model. Use 3D Printing program to print three dimensional image of dinosaur bone. Students construct model of dinosaur using material to connect the bones to create a replica of a dinosaur.

Ecology of classroom, systematic views, implementations

 Classroom center provides students with opportunities to work in small groups. Science Centers quipped with resources can stimulate the minds of children to learn about living things. There are advantages when special needs students and regular education students work together in centers. The students can share their experiences and prior knowledge to use logic to solve problems. Students are able to ask each other questions and working together also promote social skills. The students will developmental disorder will once reach teen and adult hood learn to make friends and work with other.

 The price of the 3-D printer along with supplies could be costly. Teachers will need professional development courses in order to learn how to operate the 3-D printer. Lack of funding may be a factor why 3-D printers are not purchased in many schools. There also must be administrators and teacher who understand how the 3D- Printer enhancing and motivate children to learn. Time may also play a role why who children learn. The time it take for an object may take days.

 The way teacher structure the lessons will have an impact on how the students learn. The students should dialog with one another when discussing how to complete a task. The teacher’s role is to act as a facilitator. To make sure the student stay on task to complete a project. In other words if the students need assistance with navigation of the 3D-Tin program.

Demonstration Video (How to use program to print 3D Objects)

https://www.youtube.com/watch?v=d8ywSMtpDcs&feature=youtu.be

REFERENCES

Bers, M. (2008). Blocks to robots: *Learning with technology in the early childhood classroom.*

New York, NY: Teachers College Press.

NMC Horizon Report. (2014). K-12 ed. Retrieved from <http://www.nmc.org/publications/2014>

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