

UAE'S FIRST 3D PRINTING & DESIGN THINKING INITIATIVE

THIS IS JUST THE BEGINNING OF YOUNG INNOVATORS

Full Report





WHAT IF, WE TURN THE UAE INTO A NATION OF YOUNG INNOVATORS?

AN INITIATIVE BY MOHAMMED BIN RASHID SMART LEARNING PROGRAM

ABOUT
UAE INNOVATION
DESIGN CHALLENGE

OVERVIEW OF
THE
EXPERIENCE

EVALUATION
AND
SURVEY RESULTS

PHOTO GALLERY
AND
VIDEO

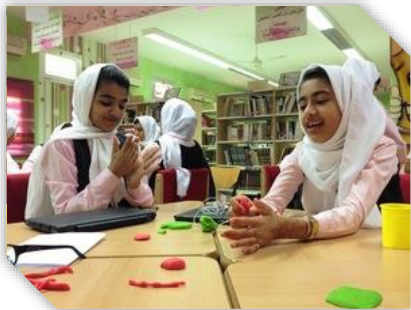
PARTNERS

THE FUTURE



تحدي الإمارات للابتكار والتصاميم الإبداعية
UAE INNOVATION DESIGN CHALLENGE

The UAE Innovation Design Challenge will teach students about design thinking as a process for problem solving and will introduce 3D printing as a means for prototyping and communicating ideas. The Challenge will be facilitated using an approach called Inventive Learning.



AN INITIATIVE BY MOHAMMED BIN RASHID SMART LEARNING PROGRAM

ABOUT
UAE INNOVATION
DESIGN CHALLENGE

OVERVIEW OF
THE
EXPERIENCE

EVALUATION
AND
SURVEY RESULTS

PHOTO GALLERY
AND
VIDEO

PARTNERS

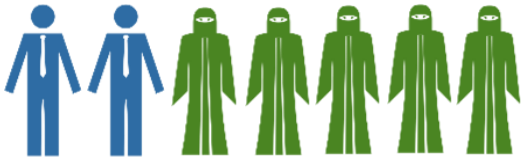
THE FUTURE



1 City - Sharjah

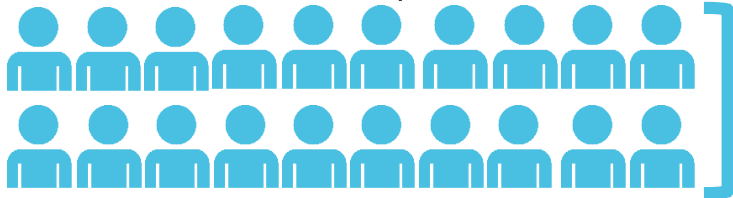


2 Schools

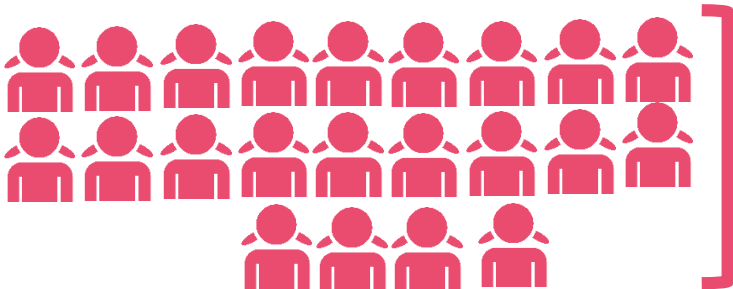


7 School
Teachers

20 boys



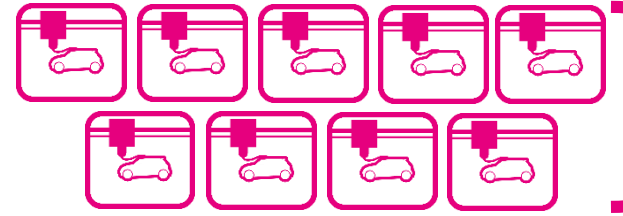
23 Girls



12 Days
3 Weeks



78+ Total
Hours



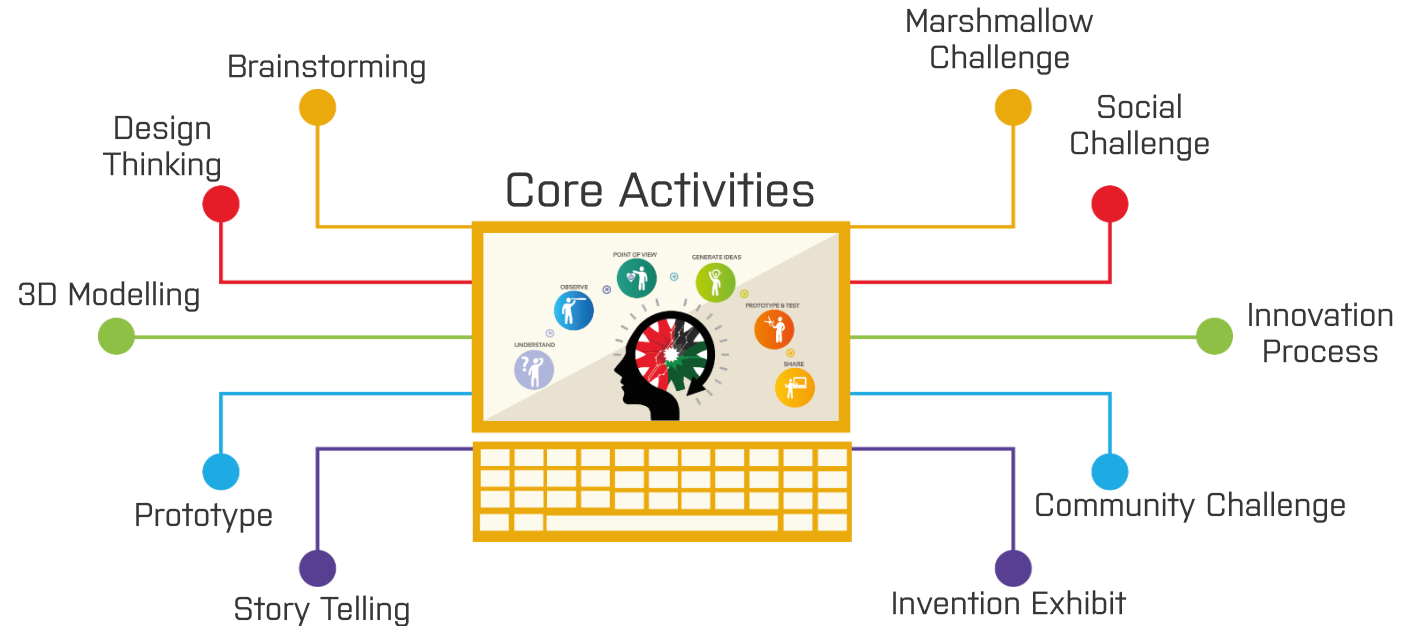
9 3D Printers



3 Expert Facilitators



43 Inventions
by Students



AN INITIATIVE BY MOHAMMED BIN RASHID SMART LEARNING PROGRAM

ABOUT
UAE INNOVATION
DESIGN CHALLENGE

OVERVIEW OF
THE
EXPERIENCE

EVALUATION
AND
SURVEY RESULTS

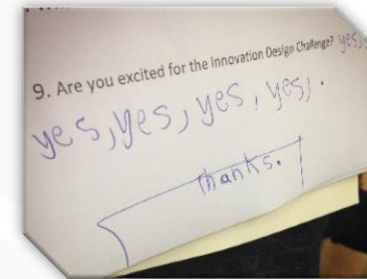
PHOTO GALLERY
AND
VIDEO

PARTNERS

THE FUTURE

The **UAE Innovation Design Challenge** took the form of a 12 day curriculum totaling approximately 78 hours of content taught in each of two schools in Sharjah. The program was a highly successful pilot teaching challenging design and technology content to selective 11-15 year old students in male and female schools.

The schedule and content was changed daily to adapt to student and school needs, and ultimately the students themselves played a large role in defining what the experience became. Every student successfully completed the curriculum and presented their innovation ideas in a final event.



Activities

Marshmallow Challenge

Always a favorite, the Marshmallow Challenge was consistently rated as the best part of the workshop by students. It's a fun activity that gets everyone involved in a rapid-fire innovation exercise, and the teamwork it requires sets a great stage for the project. This activity should certainly remain as a part of the curriculum, but it should be better tied into the overall curriculum goals for both educators and students.



Sticky Notes

Using sticky notes and sticky easel pads to visualize and organize ideas helps make the innovation process more real. They can convert any space into an interactive innovation studio, and can be referenced throughout the curriculum. Students reacted very well to using sticky notes, and quickly used them to fill the walls with ideas for innovation.

Activities


TinkerCAD

After testing several 3D modeling platforms with technology available in the classroom, we settled on using Tinkercad. It's an easy-to-learn and highly intuitive platform and the students picked it up very easily. The boys excelled at detailed Tinkercad modeling, spending several hours outside of the classroom perfecting and crafting complex creations. The girls were less excited about modeling, but did a great job all the same.



Educators Training

The first day of the program was dedicated to training a group of four female educators and two male educators. The training was extremely challenging, as we quickly learned the depth of the language and cultural barriers between the facilitators and educators.

A grayscale photograph of students in a laboratory setting. In the foreground, a student wearing a white lab coat and a white headband is looking down at a piece of equipment. To their right, another student is partially visible, also looking at the equipment. The background shows other students and lab equipment. Overlaid on the image are white circuit board patterns and dots, giving it a technological feel.

The curriculum in overall was a great success. Every student successfully completed the experience and the schools were pleased with the outcomes. Certain activities seemed to work extremely well and got great feedback from the students and educators.

Technology Availability

Access to technology in the classroom was limited, and resulted in several delays in the curriculum. Specifically:

- Wi-Fi was limited and speeds were not capable of running modeling software for all students simultaneously.
- Computer labs did not have enough internet connected computers for each student to have their own during class
- Cameras and access to internet were blocked or highly restricted, resulting in the elimination of the storytelling piece of the curriculum.

Student Adaptation

- Better student management can be achieved in the classrooms, which would help make the entire curriculum run more smoothly and ensure the students get the best possible experience.

Culture Adaptation

- Cultural differences were apparent in the student and educator workshops. Differences regarding modest behavior and interpersonal interaction, particularly between different genders, were challenging for the facilitators to overcome. As an example, it is common in teaching innovation to use dance, music, physical touch, and probing conversation to elicit entirely new ways of thinking and doing.

3D Printers

- The printers used were relatively quick and the materials for them were cheap, but Schools need simple-to-use printers that are easy to set up, operate, and maintain, with a robust online community for support and curriculum ideas. For this reason, a more mainstream brand of printer would be recommended.

Educators Training

- Though the flow of the workshop was new with educators still teachers enjoyed it and found it valuable. The only feedback is that educators wanted significantly more of both the educational and technical underpinnings of the curriculum. Especially if teachers will be conducting these workshops on their own in the future, this is critical.

Depth of Educational Training

- Several comments were made by educators and principals about the educational value of the curriculum outside of the technology and 3D printing piece. The curriculum is designed to include critical thinking, problem solving, collaboration, and key literacy skills. The feedback indicates of stressing the side of the curriculum more in the future and looking at ways to integrate the overall experience into core curriculum requirements for the Ministry of Education.

Recommendation

In the future, the schools should be given a complete schedule and structure for the program in advance to help them prepare students and staff. Schools should not only focus on investing into technology but with the proper training. This is truly what's needed to help spread innovation in schools. Buying tools won't do it unless people really understand how to use them and why they're important as part of a much larger picture.

AN INITIATIVE BY MOHAMMED BIN RASHID SMART LEARNING PROGRAM

ABOUT
UAE INNOVATION
DESIGN CHALLENGE

OVERVIEW OF
THE
EXPERIENCE

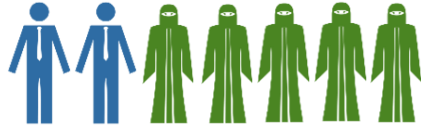
EVALUATION
AND
SURVEY RESULTS

PHOTO GALLERY
AND
VIDEO

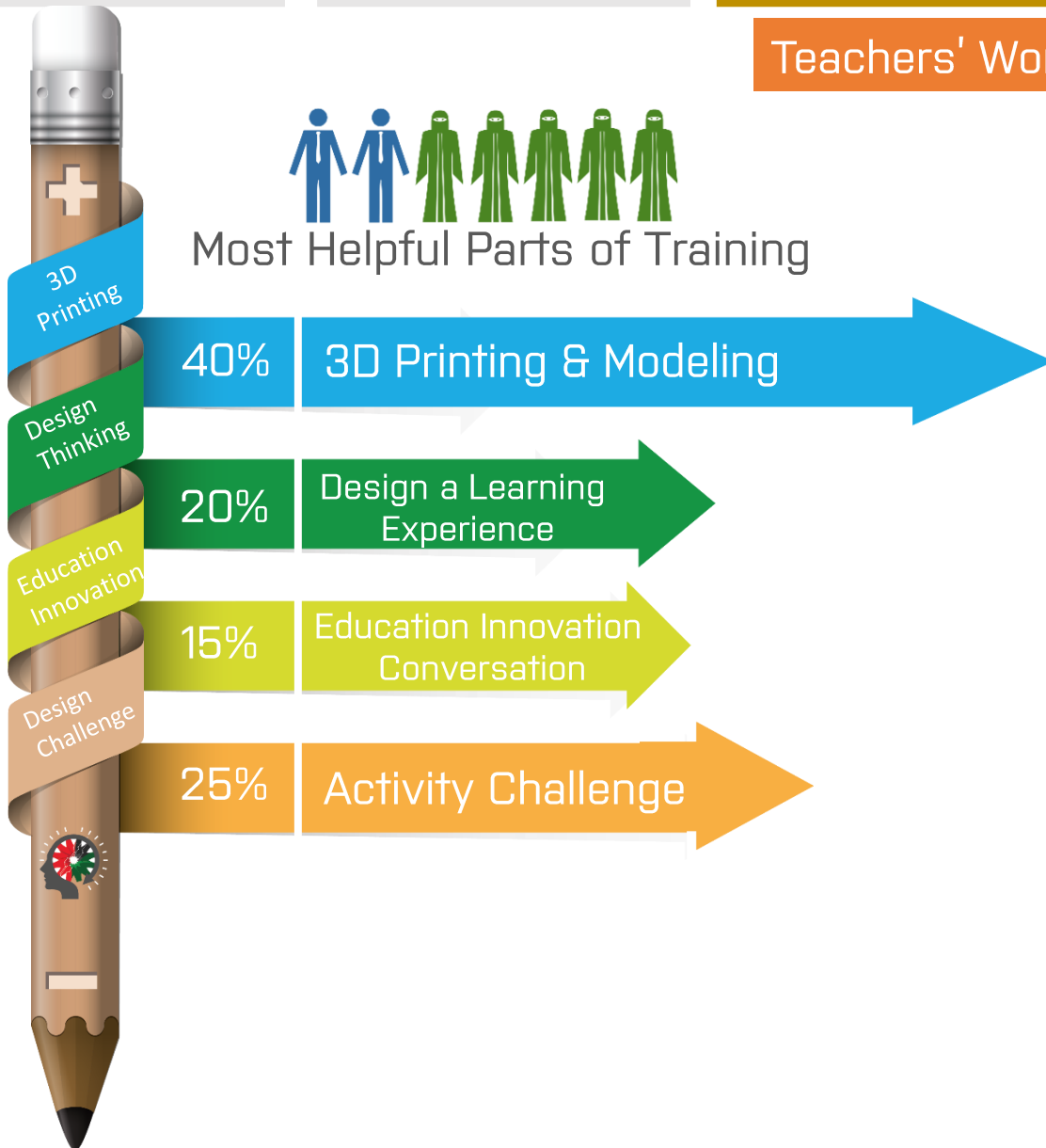
PARTNERS

THE FUTURE

Teachers' Workshop Feedback



Most Helpful Parts of Training

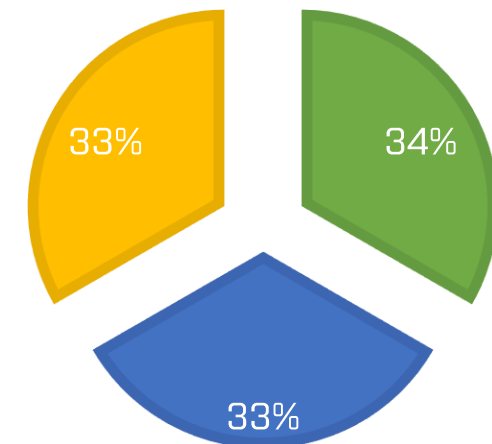


"I look forward to using the 3D printer and designing a product which will then engage my students to do the same and put my school in 3D printing map."

- School Teacher

WOULD LIKE TO KNOW MORE ABOUT..

■ 3D Printing ■ Design Thinking ■ Innovation



AN INITIATIVE BY MOHAMMED BIN RASHID SMART LEARNING PROGRAM

ABOUT
UAE INNOVATION
DESIGN CHALLENGE

OVERVIEW OF
THE
EXPERIENCE

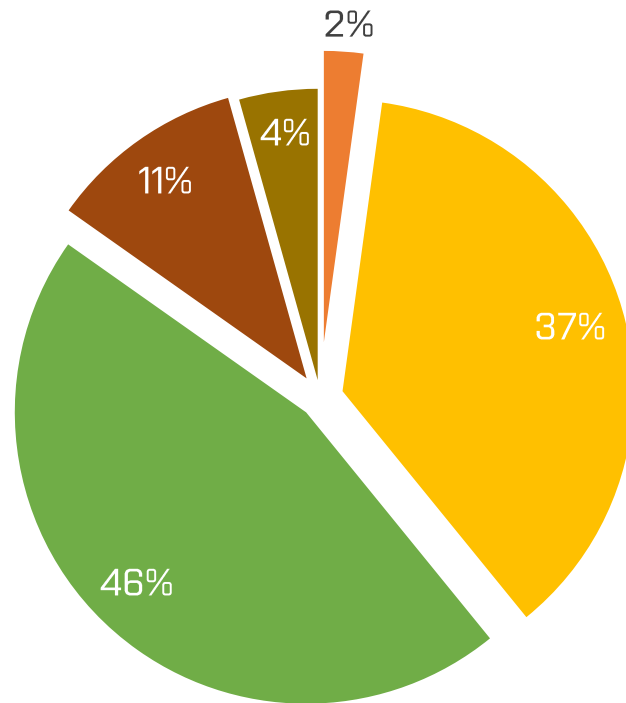
EVALUATION
AND
SURVEY RESULTS

PHOTO GALLERY
AND
VIDEO

PARTNERS

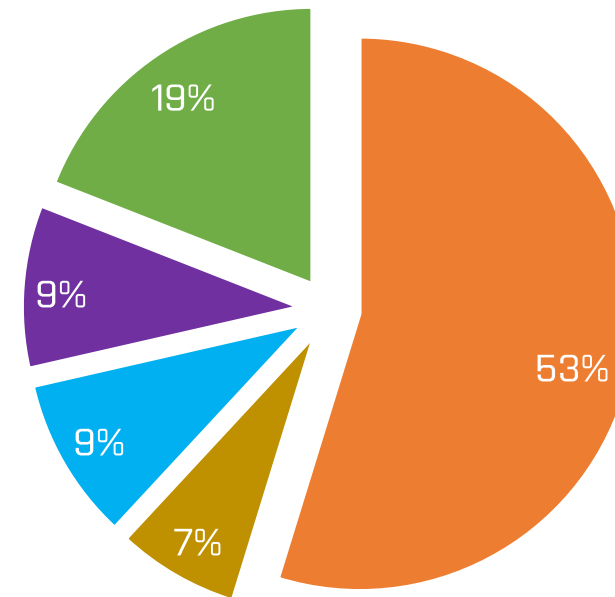
THE FUTURE

Age Distribution



11 years 12 years 13 years 14 years 15 years

Student's Favorite Things



3D printing Design/Programming Inventions Teamwork Like it all



AN INITIATIVE BY MOHAMMED BIN RASHID SMART LEARNING PROGRAM

ABOUT
UAE INNOVATION
DESIGN CHALLENGE

OVERVIEW OF
THE
EXPERIENCE

EVALUATION
AND
SURVEY RESULTS

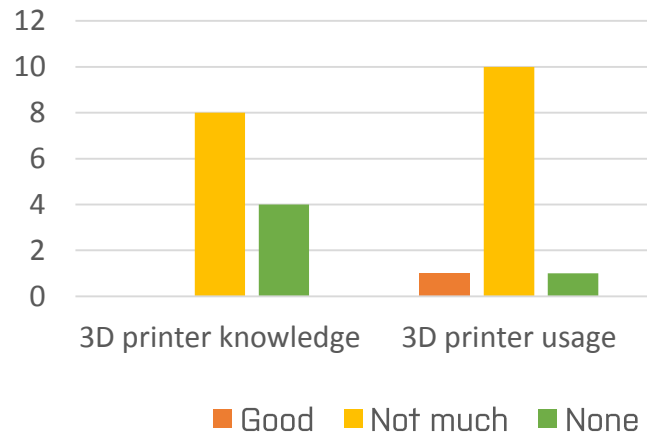
PHOTO GALLERY
AND
VIDEO

PARTNERS

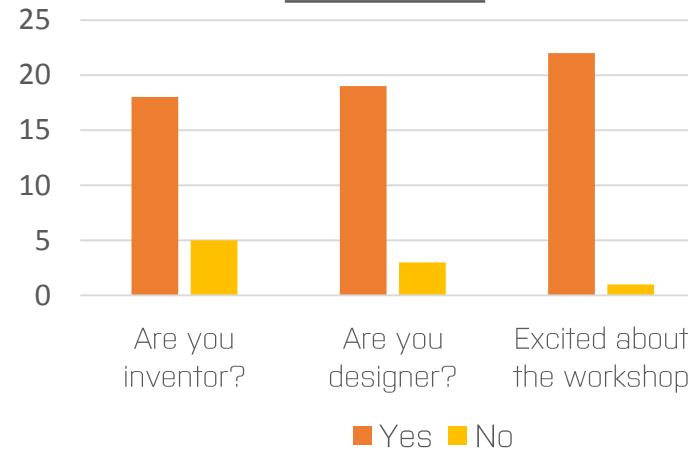
THE FUTURE

Boys' School Workshop Feedback

Baseline Knowledge Assessment

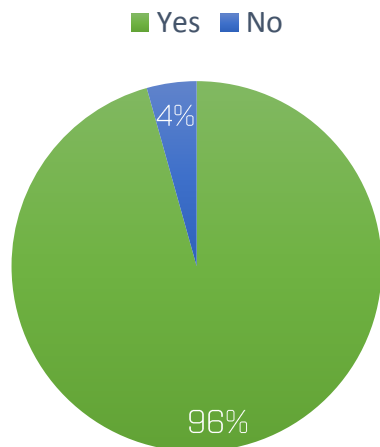


Attitudes

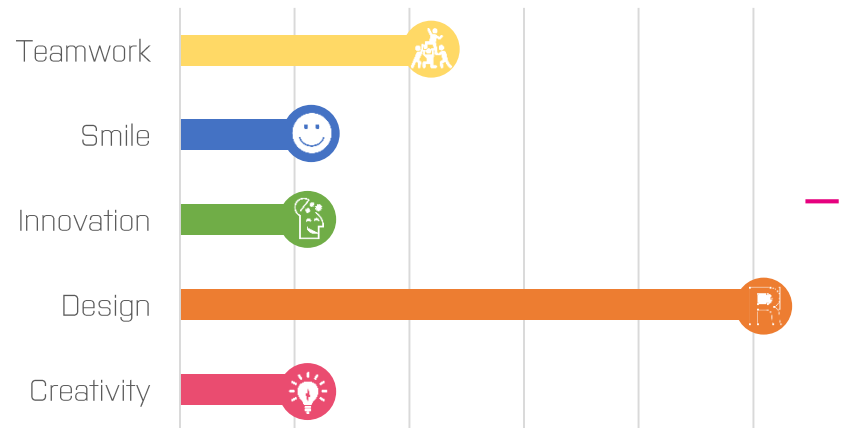


- Majority of boys believe that they are inventors and a designers
- Only 1 kid had experienced 3D printing before
- 99% of kids are excited to try

Workshop Satisfaction



New Things Learned



- 96% of boys were satisfied with the workshop
- Boys claim that they learned how to design things and create prototypes

AN INITIATIVE BY MOHAMMED BIN RASHID SMART LEARNING PROGRAM

ABOUT
UAE INNOVATION
DESIGN CHALLENGE

OVERVIEW OF
THE
EXPERIENCE

EVALUATION
AND
SURVEY RESULTS

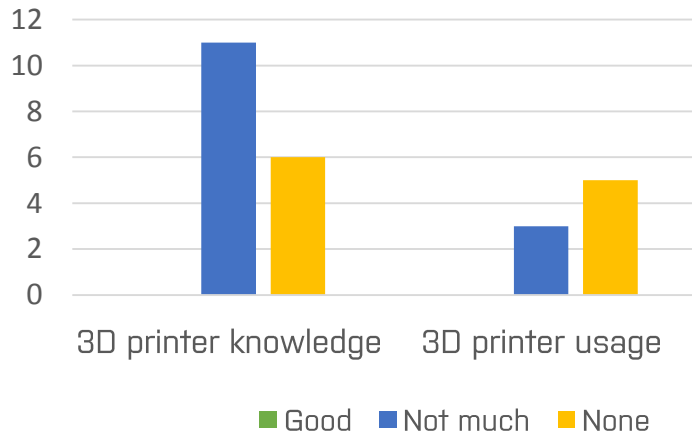
PHOTO GALLERY
AND
VIDEO

PARTNERS

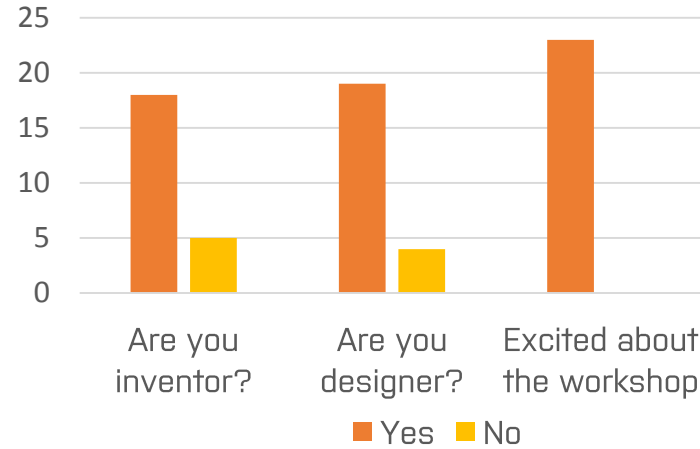
THE FUTURE

Girls' School Workshop Feedback

Baseline Knowledge Assessment



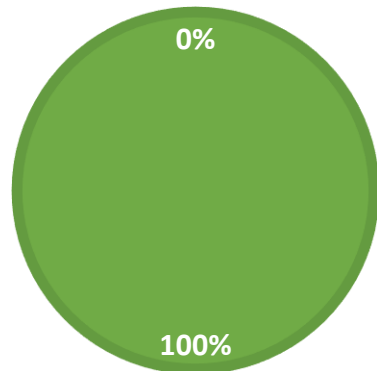
Attitudes



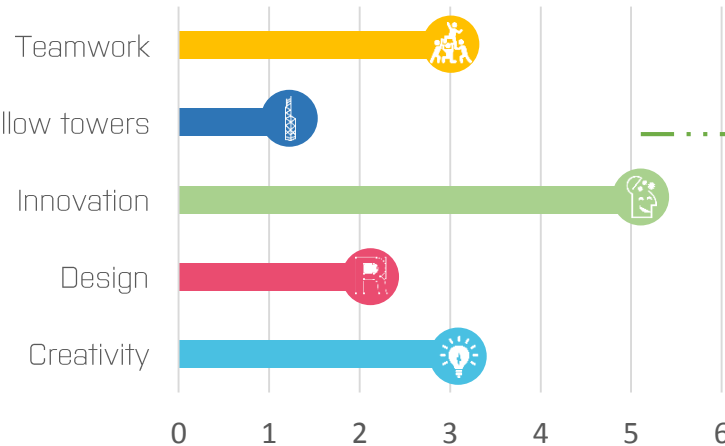
- Majority of girls believe that they are inventors and a designers
- Nobody had experienced 3D printing before
- 100% of kids are excited to try

WORKSHOP SATISFACTION

■ Yes ■ No



New Things Learned



- 100% of girls were satisfied with the workshop
- Kids learned how to create things, work as a team and innovate

AN INITIATIVE BY MOHAMMED BIN RASHID SMART LEARNING PROGRAM

ABOUT
UAE INNOVATION
DESIGN CHALLENGE

OVERVIEW OF
THE
EXPERIENCE

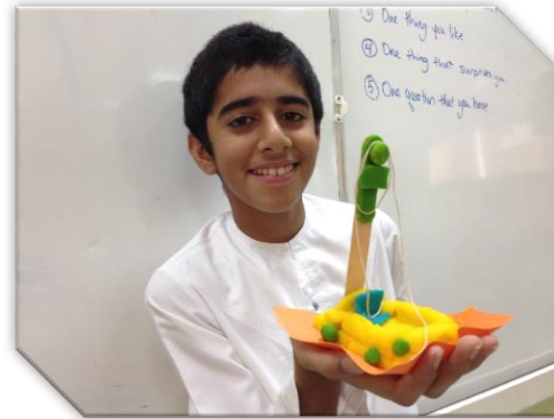
EVALUATION
AND
SURVEY RESULTS

PHOTO GALLERY
AND
VIDEO

PARTNERS

THE FUTURE

Photo and Video Gallery



AN INITIATIVE BY MOHAMMED BIN RASHID SMART LEARNING PROGRAM

ABOUT
UAE INNOVATION
DESIGN CHALLENGE

OVERVIEW OF
THE
EXPERIENCE

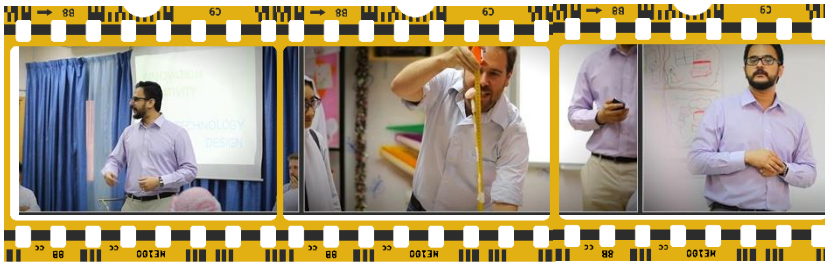
EVALUATION
AND
SURVEY RESULTS

PHOTO GALLERY
AND
VIDEO

PARTNERS

THE FUTURE

Photo and Video Gallery



Please scan the QR Code using your smart devices
Or click the QR code to redirect to the video

AN INITIATIVE BY MOHAMMED BIN RASHID SMART LEARNING PROGRAM

ABOUT
UAE INNOVATION
DESIGN CHALLENGE

OVERVIEW OF
THE
EXPERIENCE

EVALUATION
AND
SURVEY RESULTS

PHOTO GALLERY
AND
VIDEO

PARTNERS

THE FUTURE

Supported By



وزارة التربية والتعليم
Ministry of Education

Initiative By



برنامج محمد بن راشد للتعليم الذكي
Mohammed Bin Rashid's Smart Learning Program

Technical Partners



دبي للاستشارات
DUBAI CONSULTANCY

[EDUCATION
FIELD TEAM]

P.earth[®]
Bringing green down to Earth

Thank You for Joining Us



دبي للاستشارات
DUBAI CONSULTANCY