EXPERIENCE WORKSHOP

THE EXPERIENCE-CENTERED MATH/ART MOVEMENT

www.experienceworkshop.org

KIKS

Kids Inspiring Kids for STEAM

Experience Workshop's STEAM Learning Material

EXPERIENCE WORKSHOP'S 4DFRAME WARKA WATER TOWER

Dr. Kristóf Fenyvesi
University of Jyväskylä

Co-funded by the Erasmus+ Programme of the European Union

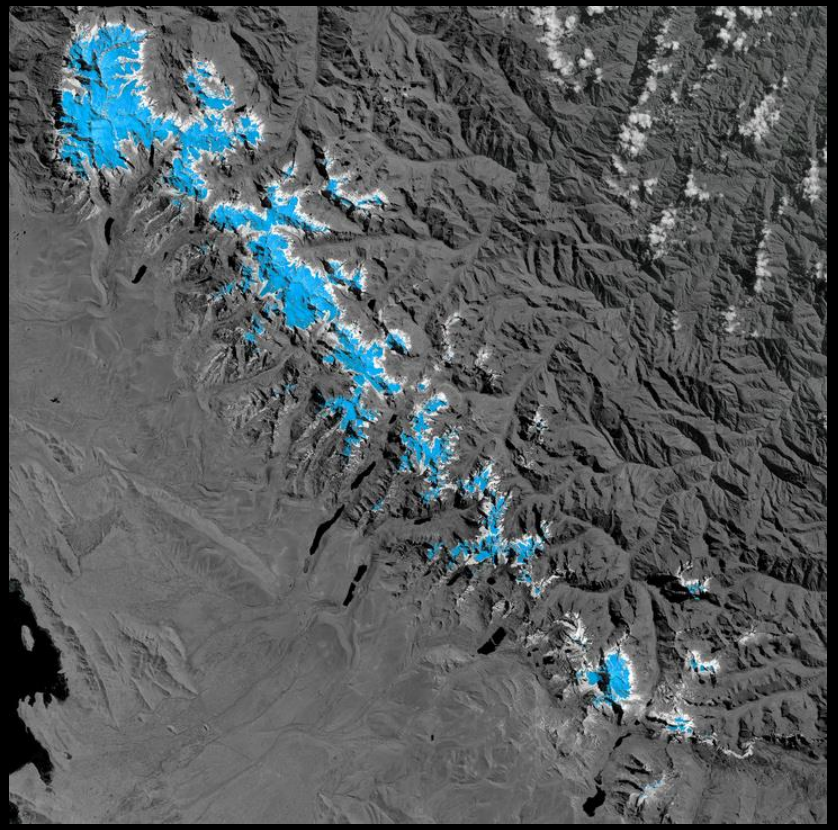
La Paz, Bolivia

La Paz, Bolivia

https://www.theguardian.com/environment/gallery/2016/nov/23/bolivian-water-rationing-in-pictures

La Paz, Bolivia

La Paz, Bolivia



Ethiopia, Africa

Ethiopia, Africa

Ethiopia, Africa

Ethiopia, Africa

적정기술

(LifeStraw)

Ethiopia, Africa

적정기술

(Pot in Pot Cooler)

Ethiopia, Africa

(P&G Water Purification Packet)

(Drinkable Book)

(Warka Water) (Inspiration)

(Biomimetics, Biomimicry)

https://www.youtube.com/watch?v=THJVuinPbc0

https://www.youtube.com/watch?v=Lyz8xuMCcOg

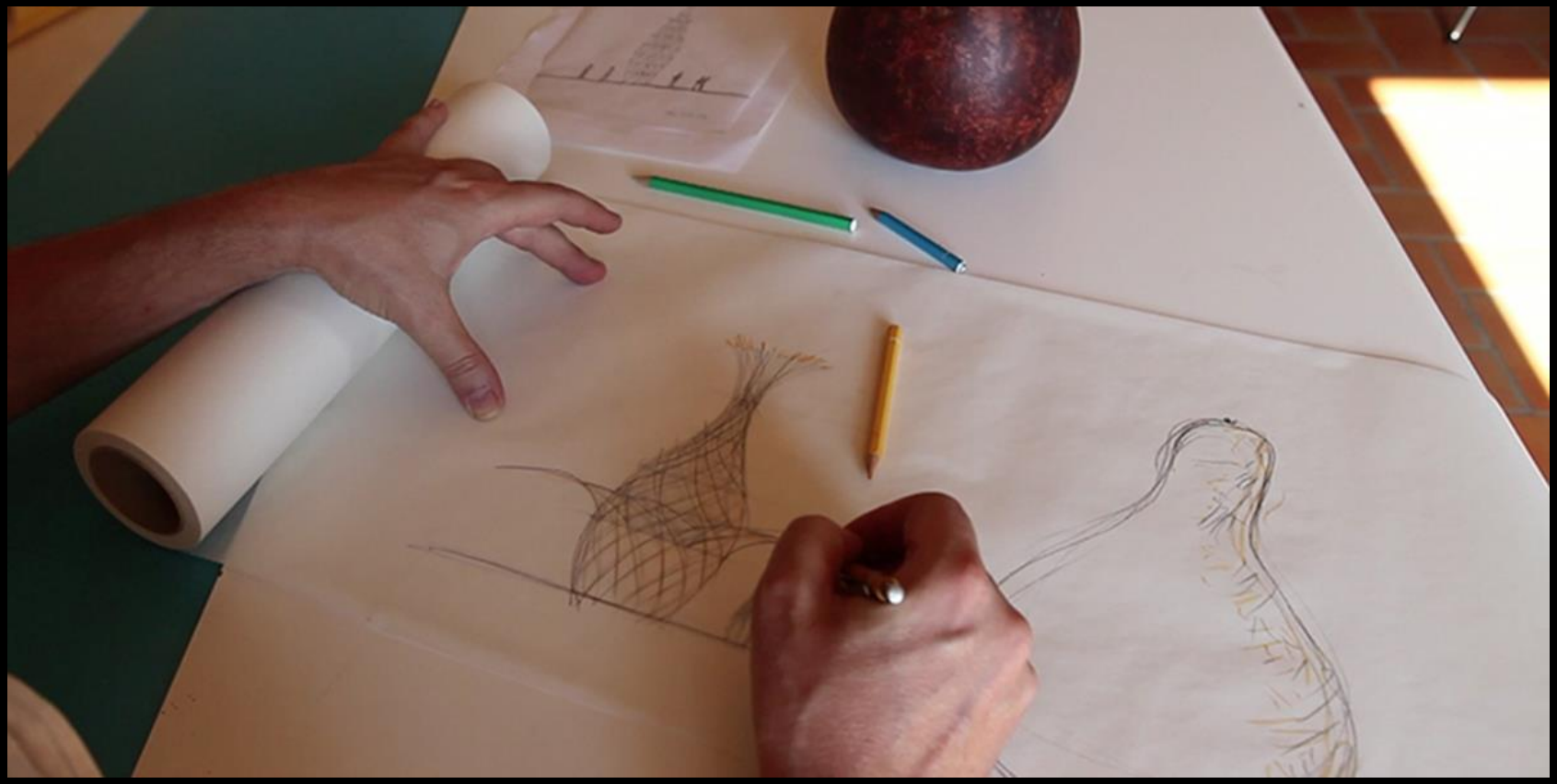
http://inhabitat.com/building-modelled-on-termites-eastgate-centre-in-zimbabwe/

(Warka Water) (Inspiration)

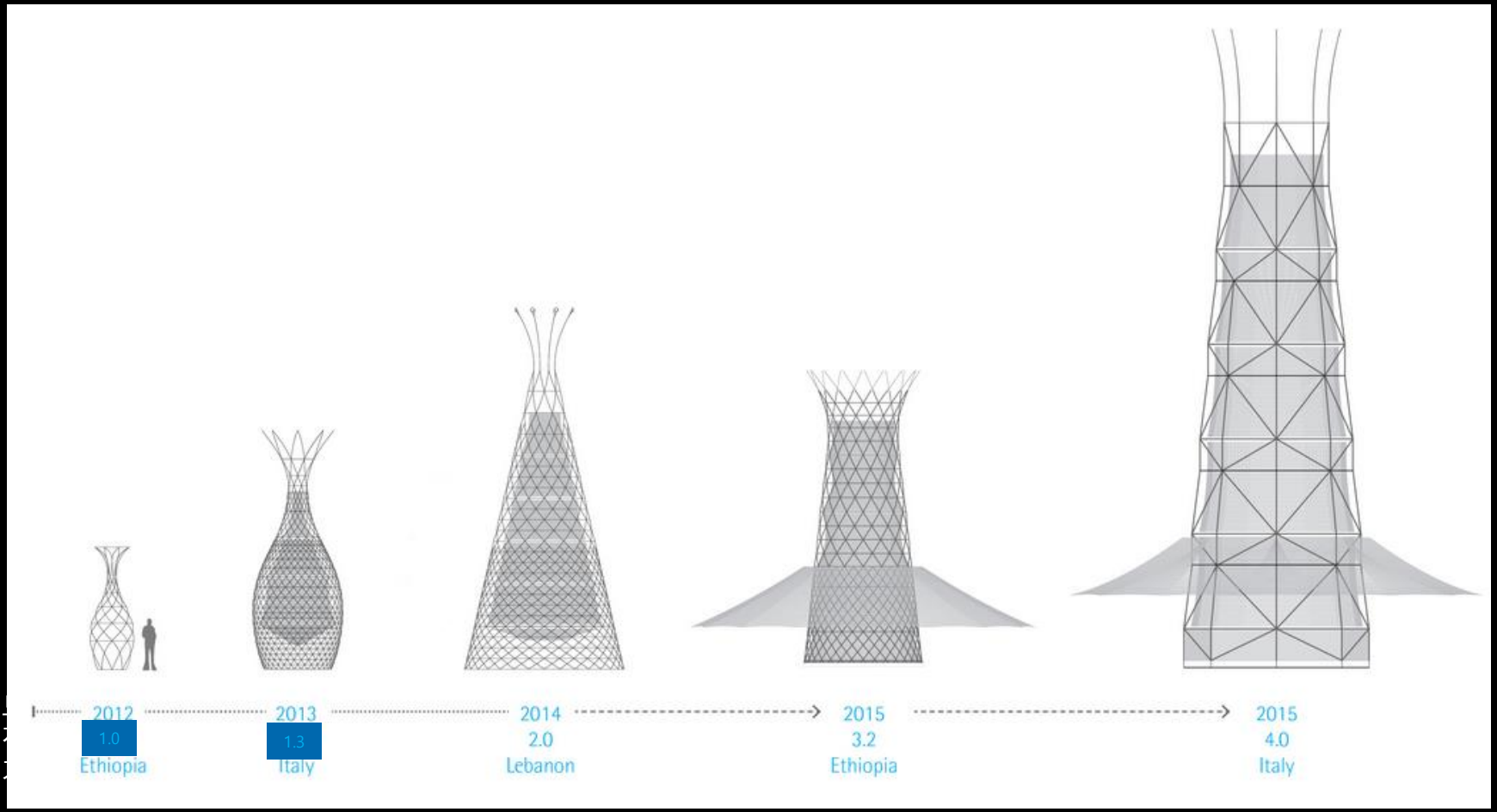
(Warka Water) (Inspiration)

ARTURO VITTORI

Founder – Bomarzo – Italy
Italian Artist, Architect, and Industrial Designer. He is the co-founder and Director of the design studio Architecture and Vision.

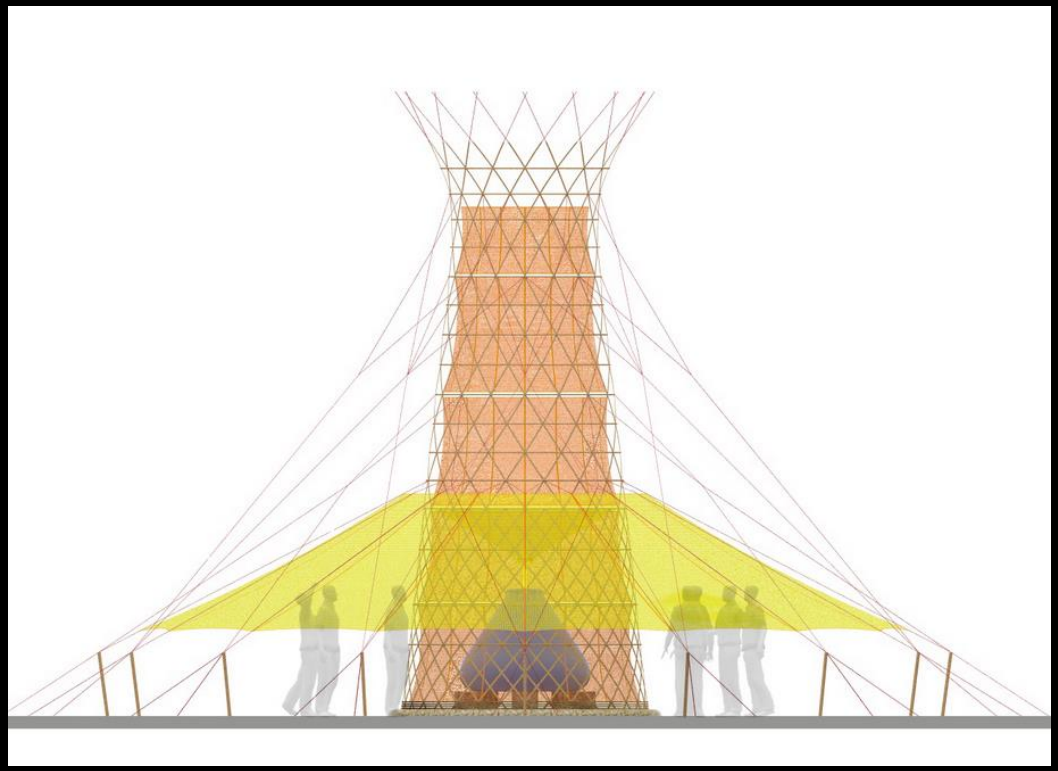


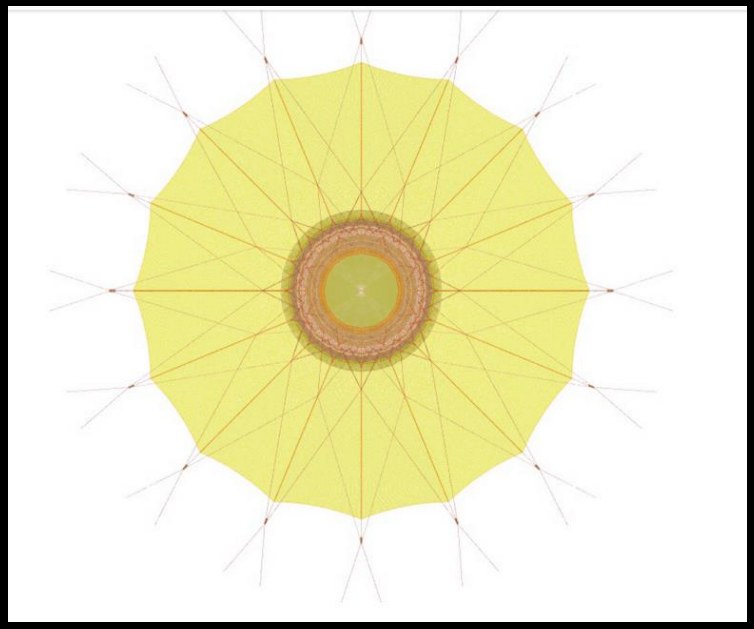
(Evolution)

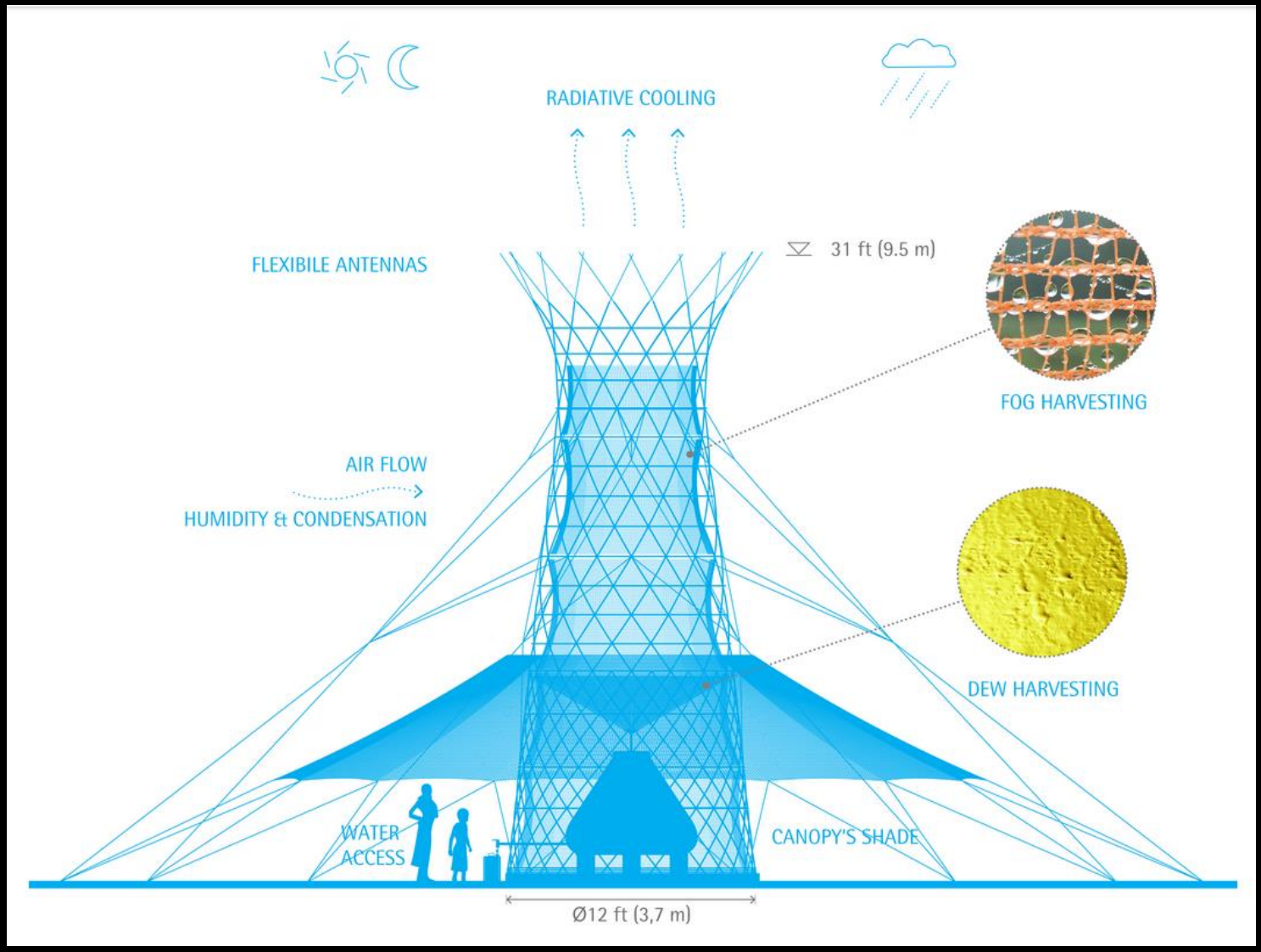


http://www.warkawater.org/evolution

View







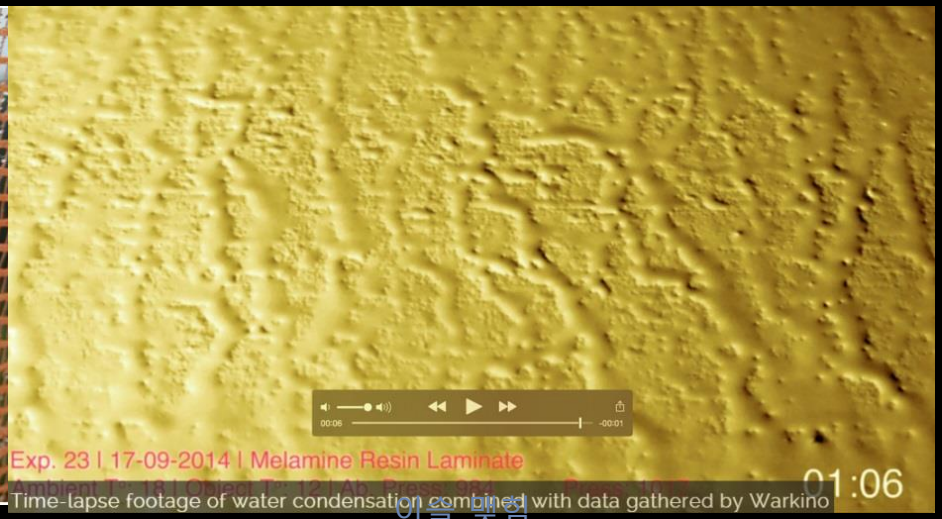

BAMBOO


MESH

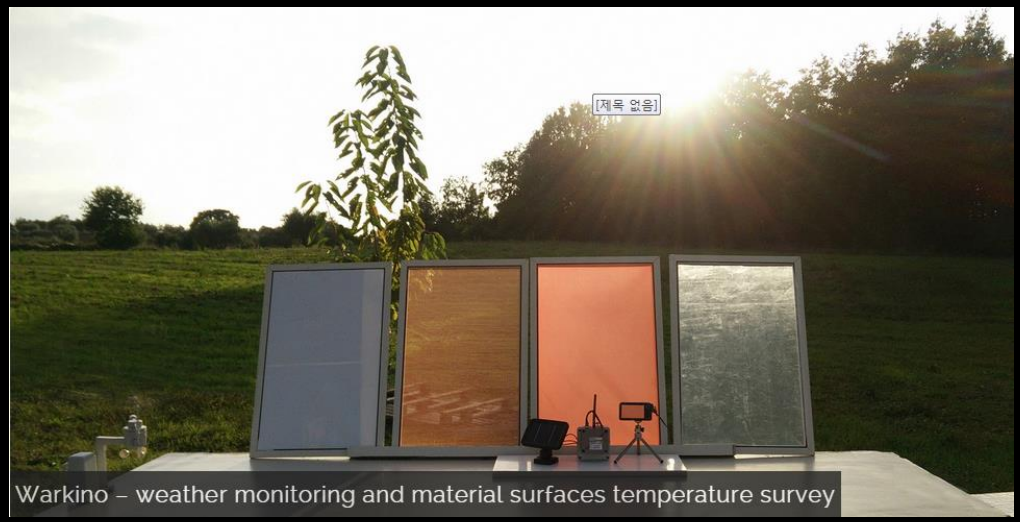

POLYESTER ROPES


NATURAL FIBER ROPES

응결 수확



이슬 맺힘



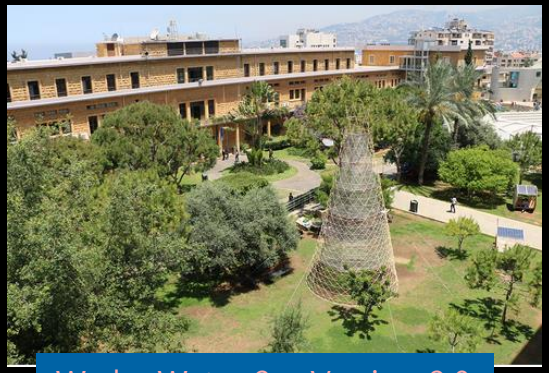
- 현지인들 스스로 제작 설계 가능, 경제적 유용성
- 재료비용은 약 100만원 이내로

(Warka Tree)

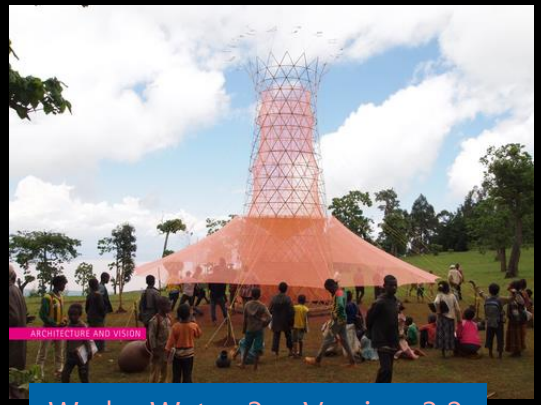
(Evolution)

Warka Water 1 – Version 1.1

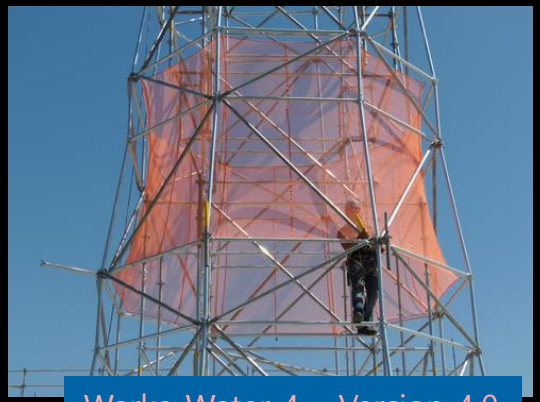
Warka Water 1 – Version 1.7



Warka Water 2 – Version 2.0



Warka Water 3 – Version 3.2

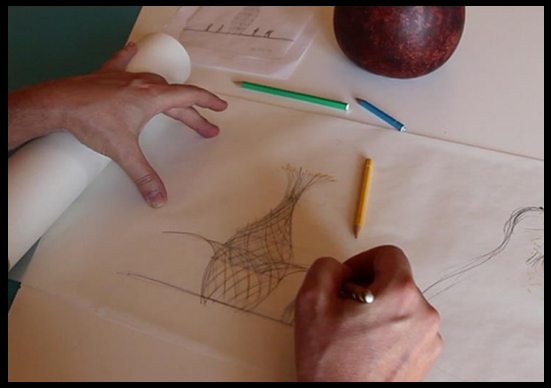


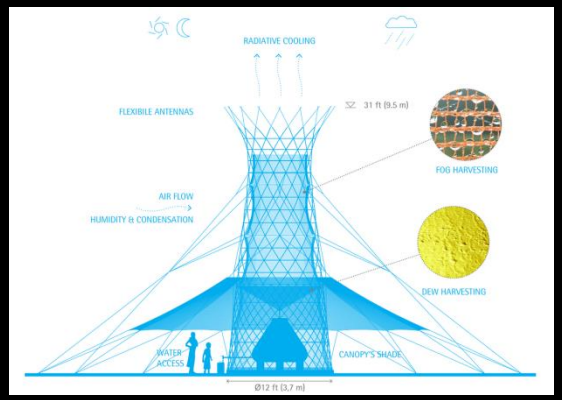
Warka Water 4 – Version 4.0

Warka Water 4 – Version 4.0

https://www.facebook.com/**WarkaWater**

https://www.youtube.com/watch?v=RjGVRuN9akM

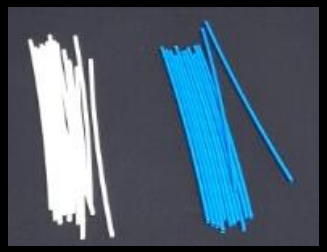




About 9.5m Height

Real World Challenge on OUTSIDE, on Adult-Level Action by Innovative Methodologies

Prototyping Vision by 4D Frame



4D Frame Materials

Mesh 

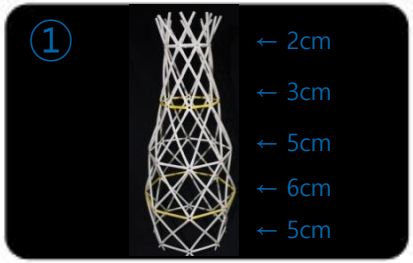
About 40cm Height / Various types

Classroom Challenge on INSIDE, on Children-Level Action by Various innovative Methodologies

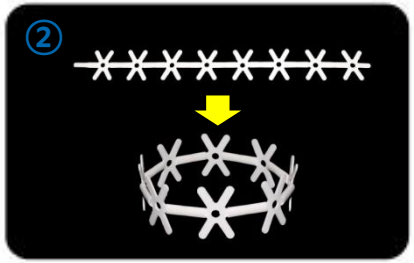
Tower for Hope

4D Warka Water – 8 decagon

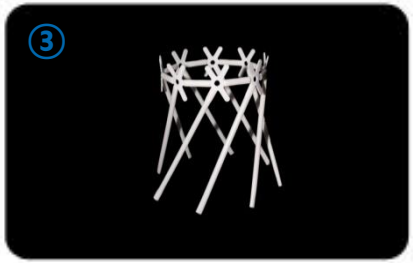
[Frame] 2cm, 3cm, 5cm, 6cm, 10cm [Pod] 6pod



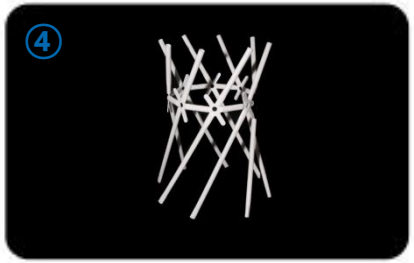
Check the length of each frame.



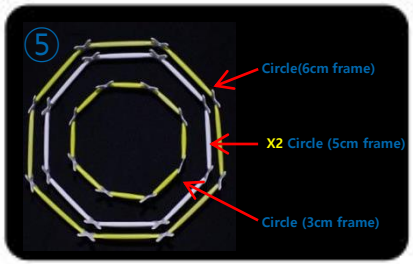
Insert 8 units of 2cm frames into each 6pod and connect both ends as shown.



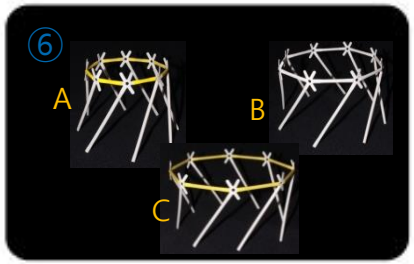
Connect (2) to 10 cm frames in a diagonal line (/).



Join 5cm frames on the upper part of (3) like (3).



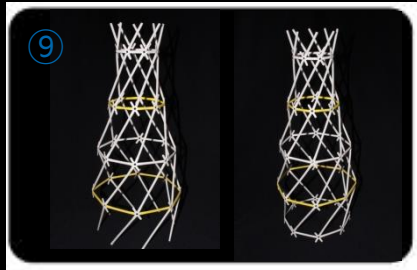
Insert 6cm, 5cm, and 3cm frames into eight of 6 pods like (3) and create one connected to 6cm frames, two connected to 5cm, and one connected to 3cm as shown.



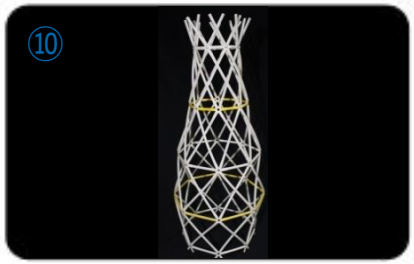
Connect 10cm frames in (/) into each circle shape in (5) downwards.

Join (4) on A of (6).

Join (7) on B of (6).



Join (8) on C of (6) and then connect it to 5cm frame connected shape on the bottom.



Join 10cm frames downwards in (\ ) and also 5cm frames upwards in (\ ).

Attach a mesh inside (10).

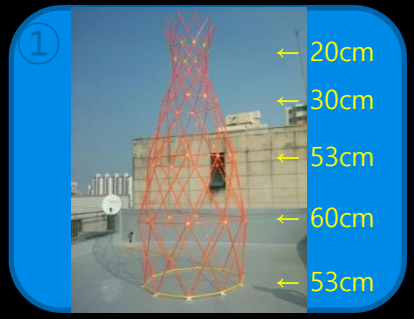
Enjoy the Warka Water Model.

Tower for Hope

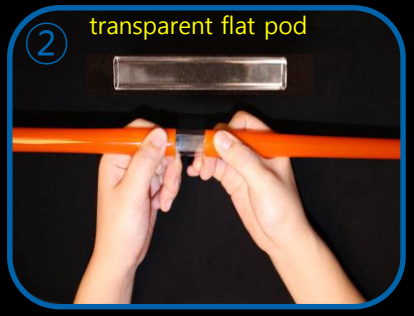
Super 4D Warka Water

대한민국 발명체험교구 4D프레임 www.4dframe.com

[Frame] 53cm, 60cm [Pod] transparent flat pod, 6pod

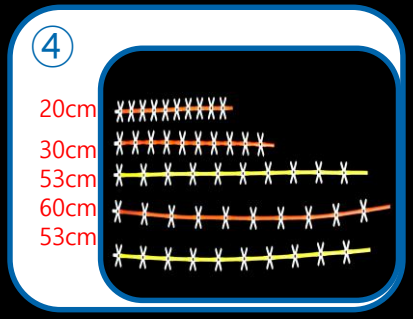


Check the length of each frame and pod.

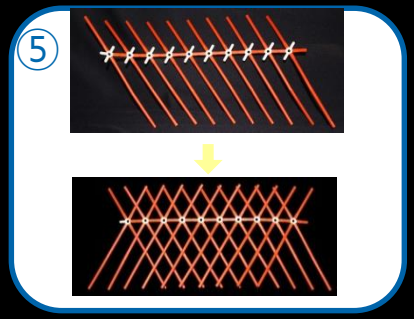


Insert two 60cm frames into a transparent flat pod frame as shown and make 80 units of this.

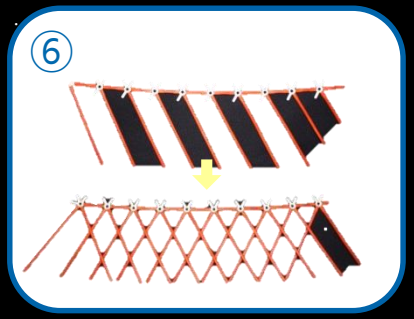
Cut 60cm frames into the length of 20cm, 30cm frame and make 10 units of 20cm frames and 30cm frames.



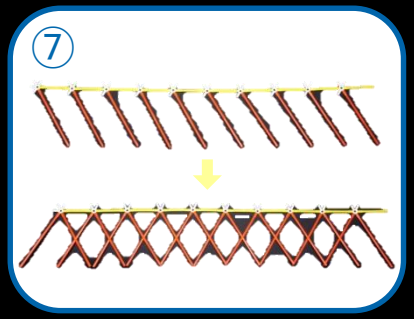
Join 10 units of 6pods into each frame by length and make them as shown.



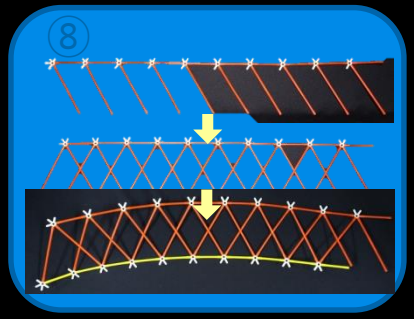
Join 60cm frames on the 20cm frame connected shape in (2) in (\ ) and then join 60cm frames in (/) as shown.



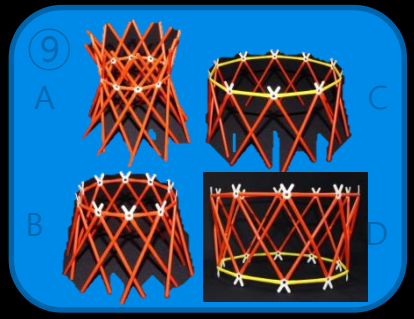
Join 60cm frames on the 30cm frame connected shape in (2) in (\ ) and then join 60cm frames in (/) as shown.



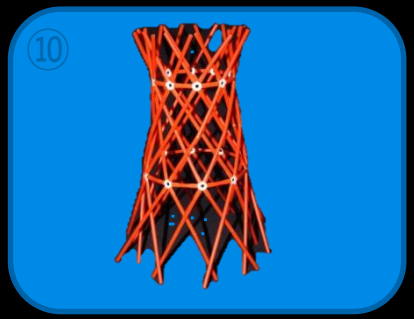
Join 60cm frames on the 53cm frame connected shape in (2) in (\ ) and then join 60cm frames in (/) as shown.



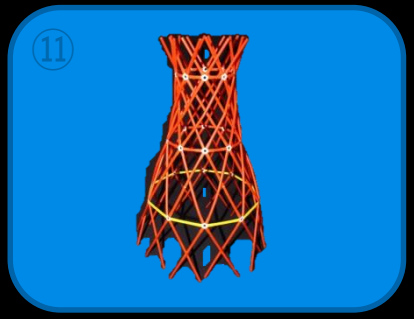
Join 60cm frames on the 53cm frame connected shape in (2) like 7 and connect it using 53cm frames and 6pods.



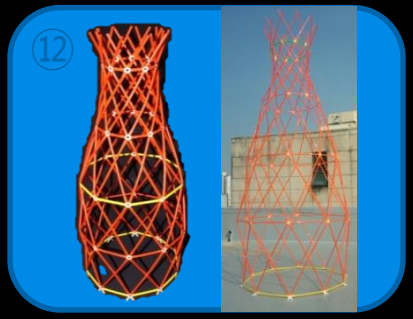
Join both ends of (5) and (6).



Join A into B of (9).



Join (10) into C of (9).



Join (11) into D.

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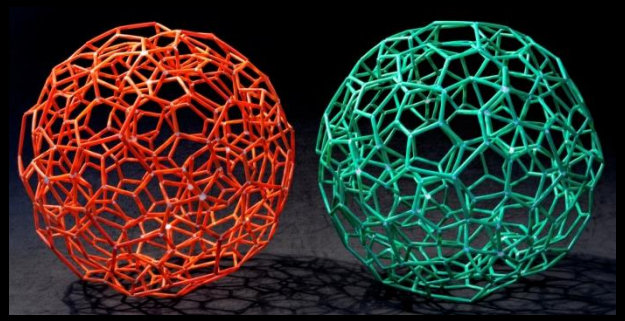
Introduction of 4D Frame

For Free Imagination and Infinite creativity



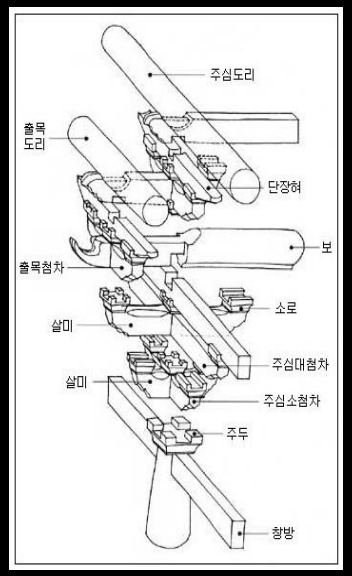



4D Land Corporation / 4D Math and Science Creativity Institute, KOREA

The 4Dframe educational modelling kit is based upon the analysis of building techniques utilized in the construction of Korea's traditional, wooden buildings, in which no any nails have been used.

❖ 4Dframe has been proved to be a very appropriate tool for developing various skills in the transdisciplinary framework of STEAM learning.

Traditional Korean Wooden Palace

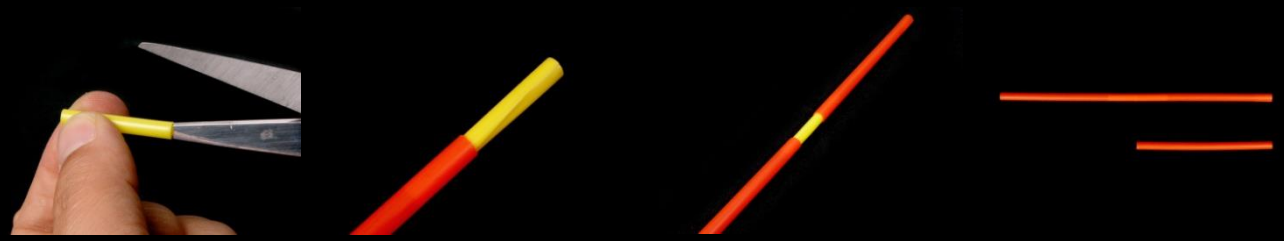


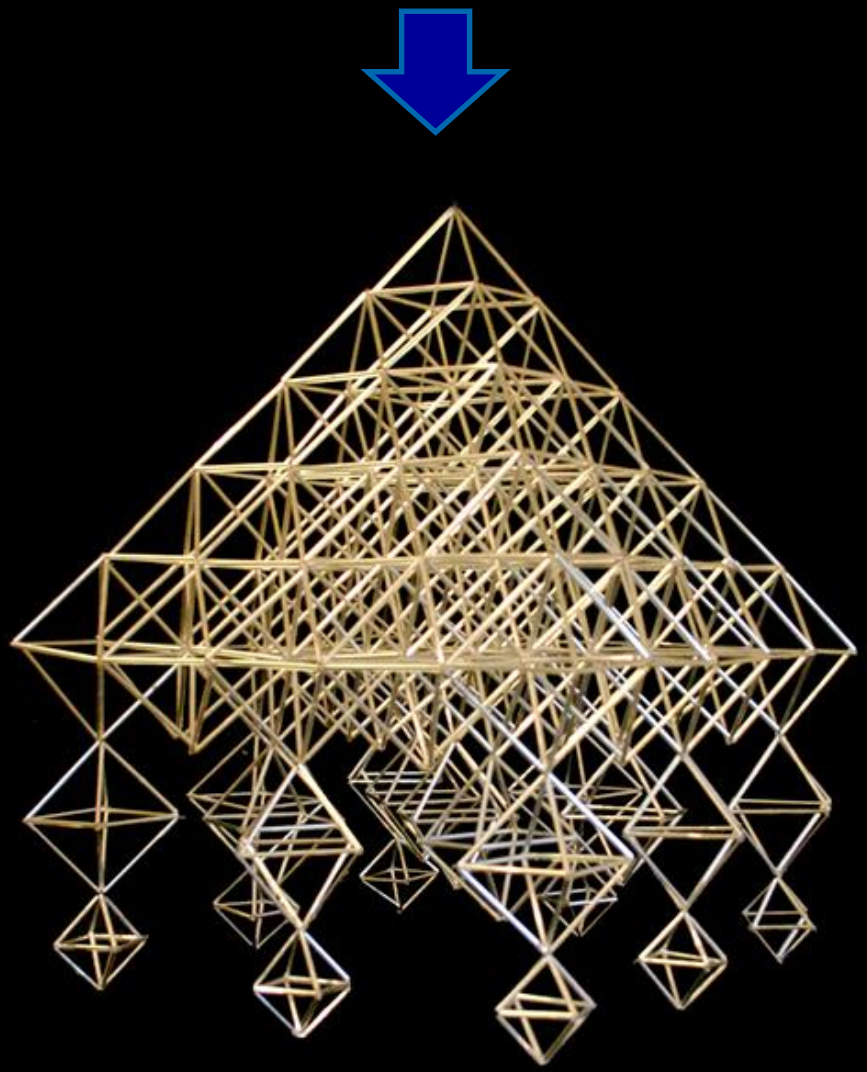
Principle of Architecture

4D Frame Tube

4D Frame Connector

Bend, Cut & Connect!

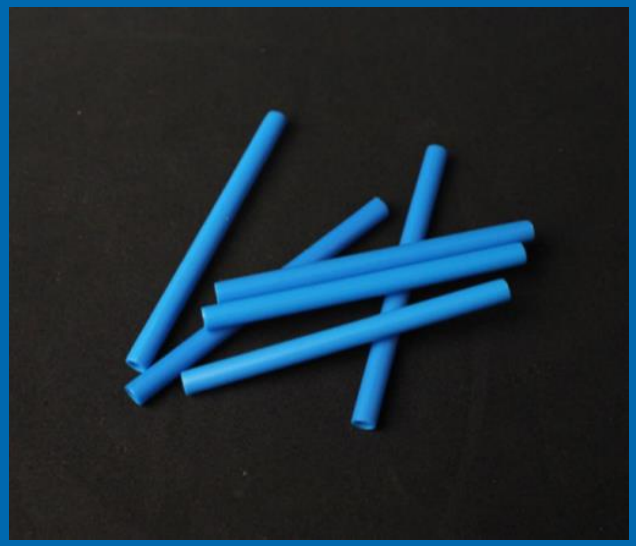




The traditional Nordic christmas decoration: the himmeli


국립중앙과학관
National Science Museum

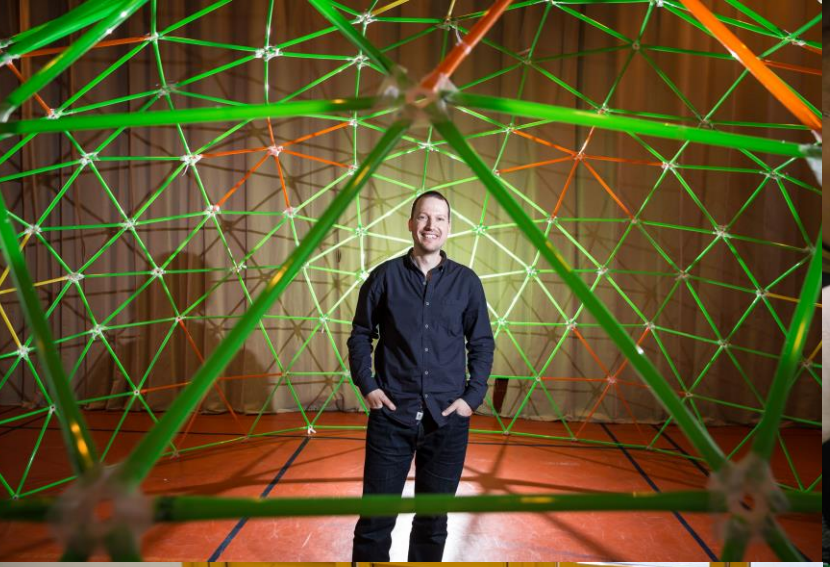

4D프레임 제3의흙 누리과학체험관
4D프레임 제3의흙 누리과학체험관



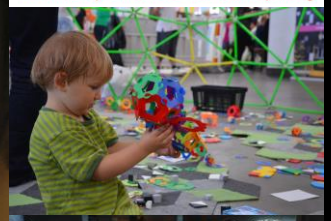
Work in pairs or in small groups! Work as a team of engineers!

You need to solve a given problem within a given amount of time, based on a given amount of resources:

- Set goals
- Make plans
- Do tests
- Record the thinking / design process
- Do more with less





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Interested in STEAM? Looking for support in connecting mathematics & art in education? Do you have a good idea?

Contact us: info@experienceworkshop.org

Website: www.experienceworkshop.org

Facebook: www.facebook.com/experienceworkshop.math.art