3D PRINTING ON TEXTILES

OER: 3D PRINTING ON TEXTILES

Objective & Scope

- Introduce 3D printing on textiles technology to scholars
- Highlight the potential of 3D printing as a resource-efficient method in functional and smart textile development
- Application of 3D printing as resource-efficient method to functionalize textiles to better understand the theoretical part mentioned in OER, and implementation potential of this technology

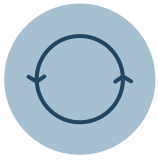
Activity Question

How could 3D printing be applied as a method for production of functional and smart textiles?

Learning Goals

- Develop practical skills
- Enhance mastery of 3D printing technology
- Improve team-work abilities among the scholars

Categories



Sustainability

Textile Technology

Textile Surfacing and Printing

References

- [1]
  Symonds, D. V. (n.d.-b). 12 Types of Classroom Activities for Adults | Examples to Engage Learners in Training Sessions. Symonds Research. Retrieved 2021, from https://symondsresearch.com/types-classroom-activities/
- [2]
  Sanatgar, R.H. (2019). FDM 3 D PRINTING OF CONDUCTIVE POLYMER NANOCOMPOSITES : A novel process for functional and smart textile.
- [3]
  Eutionnat-Diffo, P. (2020). 3D printing of polymers onto textiles : An innovative approach to develop functional textiles (PhD dissertation, Högskolan i Borås).

Support material

- OER
- Summary presentation

Equipment

3D printer, electrically conductive 3D printer filament, cotton fabric, Movesense accessory (sensor), Movesense app in iPhone

A.

Why do we need to consider 3D printing on textiles as a new method for functional and smart textiles development?

1.
Pre-session home reading of related OER and other references

2.
Buzz groups (3 max) activity comparing conventional screen printing and 3D printing technologies (pros and cons) (20 mins).

3.
Snowballing discussion (2 buzz groups) about the applications and possibilities of using 3D printing in industry (20 mins).

4.
Use post-it stickers on the board to organize the main ideas that resulted from the discussion.

5.
Questions from participants (10 mins).

6.
3-min paper at the end of the session, describing the main points that are learned from this session about 3D printing in textile industry and its contribution to sustainability.].

Less than or around an hour

Individual Small Group Discussion

Discover & Define

B.

How can we print an electrode on a piece of fabric?

1.
Quick introduction to 3D printing instrument in location and safety measures (10 mins)

2.
Design the needed electrode in a 3D software like Rhino

3.
Quick introduction to 3D printer software (Simplify 3D)

4.
Insert the electrode design to the software of the instrument

5.
Introduce the fabric into the instrument platforms

6.
Conduct the printing process

7.
Remove sample after printing

8.
Measuring ECG with the help of Movsense accessory and app on iPhone.

9.
If instrument is not available in location, use pre-recorded video from HB labs conducting this process

Less than or around an hour

Small Group Discussion

Develop