

DIGITAL INKJET PRINTING IN TEXTILE INDUSTRY

OER: DIGITAL INKJET PRINTING IN TEXTILE INDUSTRY

Objective & Scope

- Introduction of digital inkjet printing technology and its types to scholars
- Highlight the potential of DIJ printing as a dry and resource-efficient method in dyeing and functionalizing of textiles
- Application of digital inkjet printing as resource-efficient method to dye/functionalize textiles to better understand the theoretical part mentioned in OER, and implementation potential of this technology

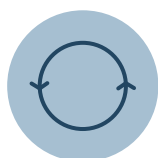
Activity Question

How can we minimize the material used and waste produced from printing onto textiles?

Learning Goals

- Developing practical skills
- Enhancing mastery of DIJ printing technology
- Improving team-work abilities among the scholars

Categories



Sustainability



Textile Surfacing and Printing



Textile Technology

References

- [1] Tawiah, B., Kofi Howard, E., & Asinyo, B. K. (2016). THE CHEMISTRY OF INKJET INKS FOR DIGITAL TEXTILE PRINTING -REVIEW. BEST Journals, 4(5), 61-78. https://www.researchgate.net/publication/332859751_THE_CHEMISTRY_OF_INKJET_INKS_FOR_DIGITAL_TEXTILE_PRINTING_-REVIEW
- [2] Yu, J., Seipel, S. & Nierstrasz, V.A. Digital inkjet functionalization of water-repellent textile for smart textile application. J Mater Sci 53, 13216–13229 (2018). <https://doi.org/10.1007/s10853-018-2521-z>
- [3] Symonds, D. V. (n.d.). 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/>

Support material

- [OER](#)
- [Summary presentation](#)

Equipment

DIJ printing machine (DOD)
Photochromic dye ink,
White fabric that is compatible with ink,
UV light

A.

How can we minimize the amount of dyes and material used to give color or function to textiles without producing waste?

1. Pre-session home reading of related OER and other references [1, 2]
2. Buzz groups (3 max) activity comparing conventional dyeing and DIJ printing technologies (pros and cons) (20 mins) [3]
3. Snowballing discussion (2 buzz groups) about the applications and possibilities of using DIJ printing in industry (20 mins) [3]
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 DIJ printing in textile industry and its contribution to sustainability



Less than or around an hour



Individual
Small group
Discussion



Develop &
Deliver

B.

How can we print a photochromic logo on a fabric using the minimum amount of materials?

1. Quick introduction to digital inkjet printing instrument in location and safety measures (10 mins)
2. Explain the photochromic property of dyes and its applications (10 mins)
3. Introduce the plain white fabric into the instrument
4. Insert the logo/pattern to the software of the instrument
5. Conduct the printing process
6. Remove sample after printing and apply any further post-treatment
7. Activate the printed logo via sun or UV-light and observe the changes
8. Explain the changes that have occurred and how we can customize treatment according to changing the ink used
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