

A Review of E-Textiles in Learning Environments

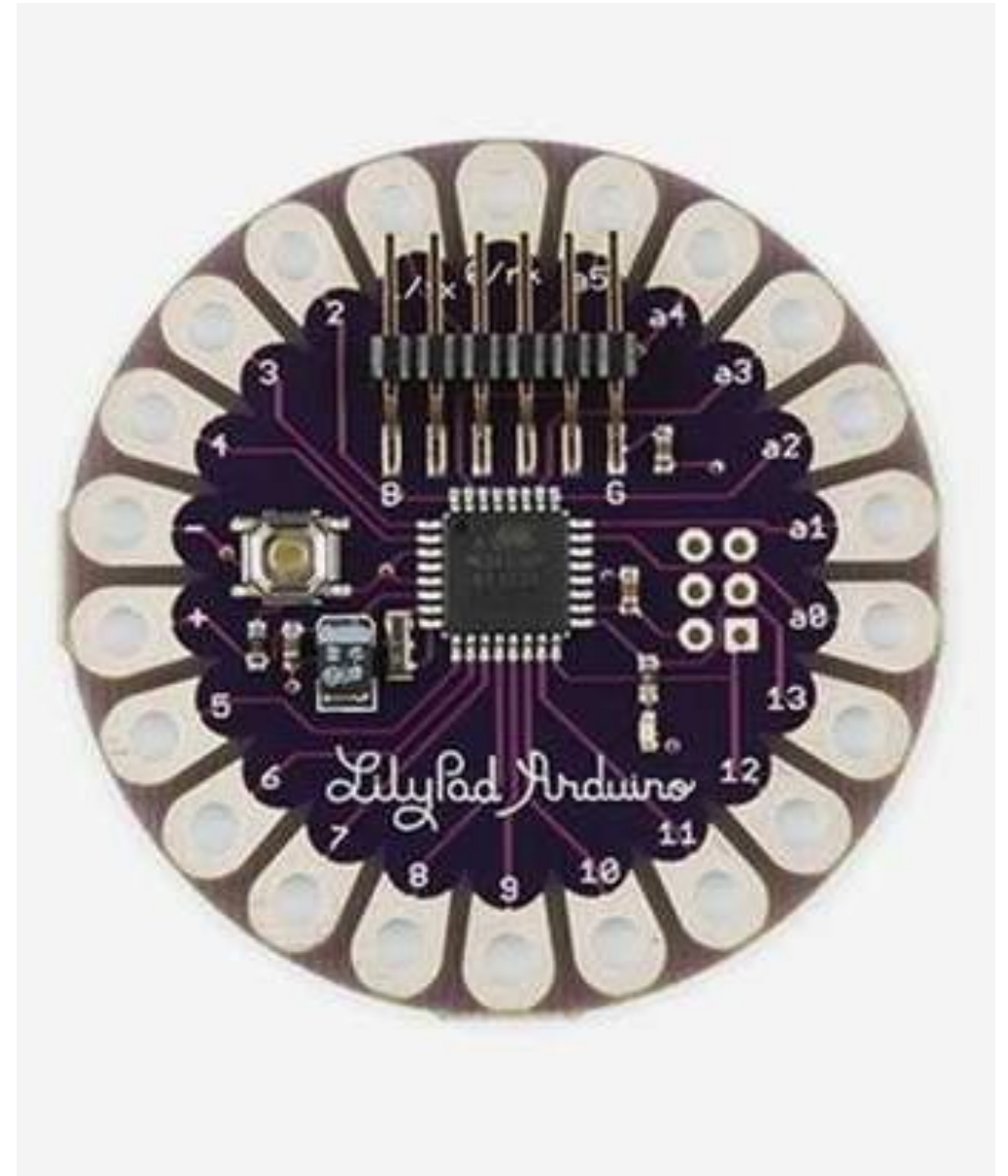
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E-Textiles

- **Electronic textiles (e-textiles) combine digital technology with textile objects**
 - E.g., clothing with sensors, lights, motors
- **Applications in wearable computing, theatrical design, medicine, etc.**
- **Offer opportunities for teaching circuit design, computer programming, iterative design, etc.**



Research Questions

- **RQ1:** What contexts of use have prior e-textile studies examined?
- **RQ2:** What learning objectives have prior e-textile studies examined?
- **RQ3:** What measures have prior e-textile studies examined?

Scope and Methodology

- **Semester-long project focused primarily on:**
 - Attributes from RQs and design of e-textile interventions
 - Some edited volumes (e.g., Buechley et al. 2013) and prior reviews, but mostly C&C papers

Results and Discussion

- **RQ1:**

- Extra-curricular programs often showed a greater increase in knowledge than in-class activities

- **RQ2:**

- Topics included sewing, electrical currents, programming, problem solving
- Physical interaction and opportunity to connect with the information

- **RQ3:**

- Often pre- and post-questionnaires assessing knowledge and satisfaction

- **Other takeaways:**

- Most studies focused on middle- and high-school students
- Emphasis on diversity and inclusion

Future Work

- **Next steps:**
 - Based on review, design and evaluate an educational e-textiles intervention
 - Undergraduate focus



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