

CIRCULAR DESIGN THINKING- AND DEVELOPMENT SHOULD BE IMPLEMENTED THROUGHOUT ALL OF EUROPEAN POLICIES AND SECTORS:

1. STARTING WITH EDUCATION IN SCHOOLS & UNIVERSITIES.
2. OFFERING A LIFELONG LEARNING COVERING ALL SECTORS, INCLUDING POLICY MAKERS.
3. CONTINUOUSLY ADDING HIGH LEVEL SUSTAINABLE DEVELOPMENT FOR ALL PROFESSIONALS AND BUSINESS TYPES.



Circular Design Education scheme

KEY FINDINGS & RECOMMENDATIONS

1. Innovation along production & value chain is needed in order to accomplish SDG's and European Circular Economy ambition:
 - a. Such innovation can only be achieved by redesigning products and services that go through these value chains, from production, to use, and to recapturing embedded value.

- b. In a value chain, there is not one problem owner, but there are many stakeholders, which makes the system complex. We are in need of a systemic approach, a design and system engineering perspective, to be able to integrate Circular Economy principles.
2. Circular Design thinking requires room for iterations and experimentation:
 - a. Innovators, frontrunners, and educators amongst us need designated (physical) areas which allow for error, iteration, piloting and experimentation to start exploring experimental materials, new construction principles, and services, providing easy access to quick testing and laboratories.
 - b. Within these areas we have a need for leeway in law and liability, allowing companies, students and startups to participate in accomplishing Circular Economy goals before scaling up concepts and companies,
3. To determine more quickly and cost-effectively which product and/or service has a sustainable advantage over others, companies aspiring to adopt Circular Economy principles require more accessible and simplified tools to determine a product's Life Cycle Analysis (LCA's). These tools should be developed and introduced at all levels of education, including professional development and life-long learning.
4. Circular Design is a distinctly different practice than design has been up to now. Yet a substantial percentage of the design practitioners who will have to practice Circular Design, have finished their formal training some time ago. Furthermore, the same applies to the design teachers that will have to teach circular design at all levels of education.

WHY CIRCULAR DESIGN EDUCATION?

1. We are in need of fundamental change in our value systems – as the current one is leading to a local and global environmental collapse.
2. In the development of new value systems and perceptions, design has a crucial role to explore alternative value chains, whilst understanding the complete (sub-)system the product and / or service serves (*see figure 1*).
3. Stakeholders in the production-consumption cycle are resistant to change towards more sustainable practices due to various internal and external barriers, hence, it is important to incorporate circular design into education to raise future designers capable of resolving these barriers and initiate this transition.

Cluster 1: A better future for the coming generations

1. Planetary boundaries have been passed. The current ways of production and consumption are adding up to the depletion of resources. This also causes inequality in terms of accessibility to those resources.

2. A transition towards a circular, regenerative economy is fundamental to preserve and replenish the renewable and non-renewable resources, to ensure accessibility to said resources, and to enrich our lifestyle, health and wellbeing.

Cluster 2: Future of design practice

1. The future generation of designers must be equipped with skills and capabilities to tackle the complex issues around sustainability, circularity, multiple stakeholders, value-chain and system innovation.
2. This education should involve a full understanding of the systemic opportunities and barriers around the design outcomes.
3. The only future of the design practice is therefore Circular Design. An overview of simple first stepping stones is needed for everyone to participate.
4. There is a need for continuous professional development education for those already in design practice, in formats aligned with their daily work.
5. There is a need for more sharing of teaching material and best practices between front-runner schools and institutions and the majority of schools that are only just starting.
6. Iteration as an integral part of design, education, prototyping and even production, rapid prototyping as a core principle in any design trajectory.

Cluster 3: New / alternative businesses

1. Designing for circular economy and implementing its principles into business can facilitate the sustainability of the businesses themselves from an economic perspective.
2. Accounting for the 'hidden costs' and incorporating them as part of the production and consumption of things will lead to socially equitable practices.
3. Alternative business practices enabling circular economy should be explored and incorporated into the design education.
4. It is important to create a common language among designers and other disciplines to facilitate the exploration of alternative business models.
5. Understanding the importance of stakeholders, development of how to improve design education in terms of stakeholder engagement and alignment, how to find launching customers and tools to allocate funding.

Cluster 4: Awareness

1. Incorporating circular economy principles into design education is crucial to increase future designers' awareness around production and consumption practices.
2. Through circular design, future designers should also need to work towards increasing the awareness of all stakeholders.
3. Social aspects (e.g. equity, fair trade, working conditions, etc.) are crucial for circular design and must be incorporated into circular design education.

4. Include clear case studies and examples of Circular Design in practice.

Cluster 5: Systems-wide change

1. Design is the starting point of systems-wide change, including more sustainable lifestyles, doing business and maintaining value.
2. Raising awareness about and understanding of the value chains is important for decision making in the design process, which can initiate a radical change towards a more sustainable production chain, and life.
3. Incorporating all levels of systemic change in circular design education is then crucial in initiating longer-lasting change for a sustainable and regenerative economy.
4. Finding common / agreed metrics that are accessible and understandable to all, to create agreed rules and guidelines that steer away from complex scientific heavy graphs, the development of product Life Cycle tools that can be easily applied to practice - for instance by utilizing AI.
5. Involvement and co-development of government and policy makers on local and global level, when developing products and / or services.

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