Circularity for Educators

01. Scope

Establishing a vision for circular education: the Circular Learning Objectives (CLO) list

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The Circular Learning Objectives (CLO) list represents our vision for a future circular education, but also a systematic approach for circularity to become effectively embedded in curricula. The CLO list follows the classical taxonomy of knowledge, skills, and competences as a means for establishing a relatedness with the system of objectives already employed by the faculty. Furthermore, its modular structure also allows us to effectively incorporate what we have learned so far from our research on circularity as expressed in the "Scales to Aspects" model. The CLO list can be used to drive curricula changes at large scale, but also smaller changes to individual courses.

Basic Blocks

The first block, -just like its name implies- focuses on contextualizing circularity within the broader architectural discourse. These objectives revolve around the relation of circularity to systems theory and complexity theory: what does the systemic change circularity calls for, really mean? The relation of circularity to sustainability is also included here as well as its relation to the water, energy and food nexus. Finally, the social relevance of circularity as well as its potential in contributing to the establishment of new design ethics is also accounted for. How can circularity inform design decisions? What are the values it relates to?
Basic Knowledge block, on the other hand,

features a series of terms that have a proven value in representing circularity in either a verbal or a designerly way. The main role of this block lies in facilitating communication, whereas different approaches can be distinguished and therefore, facilitate, in turn, decision-making processes.

These two blocks from the CLO list also form the basis of the content included in the present course. All content units have been structured along these lines; one part follows the discussion on contextualization, another provides with basic definitions, one discusses materials and finally, another examines design. All of these parts are accompanied by pedagogical material as well. How can we teach the components of these two Basic Blocks?

The Three Levels of Learning

The list further distinguishes between three learning approaches: Level one represents the disciplinary approach and focuses on circularity as it currently manifests within the design discipline. This level of learning examines circularity as an organizing principle for design and refers mostly to the model's inner configuration of the scales' interdependency. Knowledge and skills of that level are related to getting learners acquainted with the most prevalent design approaches and engage them in circularity in a designerly way. We call this

knowledge *applied*. Learners should be able to distinguish between the scales and identify their interdependencies; acknowledge the existence of aspects (the outer ring) as what conditions the scales' interdependency; and recognize how circularity specifically affects design decisions.

The Circular Design Atlas (CiDeA), another action originating from Circular Impulse Initiative, represents such an attempt. The Atlas will feature state-of-the-art examples of application of circular principles applied across the six scales identified by the "Scales to Aspects" diagram.

Level two represents the interdisciplinary approach: it looks more closely into the synergies that circularity stirs between the design discipline and other affiliated disciplines (mostly what the model describes as aspects) such as economy, management, social studies, as these have been already identified. We call this knowledge *critical.* As such, it pertains to an attitude that engages in recognizing the intricate relations between disciplines and their limitations as well as producing ways and tools of making informed decisions.

Level three represents learning that it is transdisciplinary. Trans-disciplinarity is intended here as the ability to work in the space in between the well-defined disciplines to explore new ways of thinking that have not yet been discovered. This approach alludes to producing novel ways of increasing the impact of circularity as well as recognizing opportunities for circularity to benefit from different contexts. We call this knowledge *new.*

There is in no way a strict divide between the three levels included in the CLO list nor does this listing necessarily represent a temporal sequence; it simply

represents different approaches in understanding and managing how circularity challenges design thinking. New knowledge can always be created within any of the three approaches. Furthermore, what comprises knowledge and skills is not finite, and it is itself subject to change should new understandings or perceptions emerge.