

A RAG-system as curriculum co-designer for Sustainable Interaction Design

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Abstract

We present a retrieval-augmented generation system (RAG) to serve as co-designer for sustainable interaction design curriculum supporting educators in planning and scoping teaching activities. The system is developed through a collaboration across five European institutions. It draws on a curated dataset of academic resources, lecture materials, exercises, and student work and more than 15 educational teaching pilots ranging from single workshops to semester-long courses. The tool is designed as a curricular thinking partner which produces single, considered responses to educator queries while leaving design judgment in human hands.

CCS Concepts

• **Human-centered computing** → **Interaction design**.

Keywords

Sustainable Interaction design

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1 Motivation

It is far from trivial to nurture a sustainability perspective in Interaction Design teaching at university level [4]. Although, first slow and in recent years taking up speed, Blevins seminal paper coining the term Sustainable Interaction Design (SID) [1] has pushed to embed the concern also in educational programs. Yet, there is a rich diversity in what constitutes the field oriented towards classical computer science [5], building from product design [3], inspired by service design [12], artistic based [8], planning for the catastrophe [13], etc. which have caused Bremer et al. [2] to discuss if we have taken on too much, or even too little [10] arguing that the field among others has failed to include economics as an assessment perspective of sustainability and the notion of economics in SID is expanded further by [11]. As an educator planning and developing, a teaching activity on SID there is little help to find and only a few full educational programs like [7] exists. Thus in an EU Erasmus+ funded project on teaching Sustainable Interaction Design (www.sustainableixd.com) bridging the five institutions represented by the co-authors of this paper we have taken on the task to develop an online co-design tool aiding an educator in scoping, sizing, content building and positioning educational activities to be demoed at NordiChi2026. The co-design tool will help develop teaching activities ranging from short seminar days over week-long workshops to semester-long projects and even programs.

2 Developing the course co-designer for SID

The demonstrator we present is designed to embed and respect a rich variety of approaches to, complementary strengths in and enable distinct local teaching traditions.

The development of the tool was grounded in more than 15 teaching pilots, ranging from single-day workshops to semester-long courses, conducted across all five of the institutions between



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Spring 2025 and Spring 2026. These pilots surfaced practical realities educators are faced with when finding, scoping, and planning SID content for a course. To address these challenges, the system serves as a qualifying tool for co-designing curricula in dialogue with a human educator. It operates on a data-set curated by the project consortium, build from tagging content academic papers, lecture notes, exercises, assignments, student projects.

A central element to the development process was thus the shared tagging and annotation applied to the resources. Examples of the tagging includes four axes: Thematic domains (e.g. systems thinking, ethics, etc.), type of contribution from resource (e.g. basic theory, applied theory, tool, method etc.), conceptual level (foundational intermediary, or advanced), and estimated workload (especially relevant for resources like exercises). The collective structured curation completed across the consortium is an important element in enabling the system to reason meaningfully about curricular fit. Finally, we have gone to lengths to design an interface that is suggestive rather than authoritative, this is among other evidenced in the design of the system's interface which clearly marks if what is produced is the doing of a human or a machine. This is to spur that accountability sits with the human designing a course and not the systems.

3 Description of system

Consider the example of an educator tasked with designing a one-week workshop on SID for first-year Master level students who have some prior theoretical exposure to the field, or a educator building a completely new course in a BA programme, needing to map out which themes and foundational theories should appear when, and how complexity should be introduced. These are the kinds of tasks the course co-designer is built for. At its core, the idea of the system is to act like a curricular thinking partner than can reason across a curated body of teaching resources to help an educator develop and design their teaching.

The course co-designer is build on a RAG-model [6], where the server loads a BibTeX library exported from Zotero, converts each entry into searchable text, and embeds and indexes them using the Mistral API. Importantly, the system does not process the full text of resources but operates exclusively on the structured metadata and tags described above. This is a deliberate design choice as the the collective judgment of the consortium and experience from the pilots is the backbone of the system rather than document content.

When a query is submitted, the system uses the tags to identify the most relevant resources, then exposes the full BibTeX entries of those selected resources to the model to generate its output. On the users side, resources are presented in separate views in the left column, highlighted in green and yellow respectively when drawn upon in a response. Clicking any highlighted item reveals its details like links, abstracts, and tags, supporting the educator in evaluating and contextualising what the system has surfaced.

Rather than a conversational back-and-forth, the system is intentionally designed to produce a single, considered response to a carefully formulated query. The user is expected to invest thought in how to take the output into their own working environment like a text-editor. The complete system is available in the repo [9].

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