Exploring the Competence Matrix

- as a tool for curriculum development and communication within the subject of sustainability in design education

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Teacher's training Teaching development project 2017

"Our project does not relate to a specific course and therefore no specific learning goals can be identified."

"The project does not at this stage include e-learning activities, given that e-learning does not bear acute relevance for the development of a competence matrix for the subject of design education and sustainability".

(We have both filled in Appendix 1).





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The pedagogical challenge

Background

Design School Kolding offers a number of traditional design disciplines such as Industrial, Fashion, Textiles, Accessories and Communication Design. Simultaneously, the school has three strategic focus areas: Sustainability, Play & Design and Social Inclusion. These focus areas lie across the disciplines and have developed organically within the different departments through individual initiatives and disciplinary interests. They are therefore in various degrees embedded in the teaching and more or less explicitly present in the course descriptions. This spring, Design School Kolding is in the process of developing a new master course based on the three strategic focus areas. In order to secure the right content and progression, the institution needs to create an overview of current activities in the educational program.

Context

Our development project leans against a bigger curriculum project (also undertaken by the authors) that runs from January to September 2017. Given that this project finishes after we hand in the teachers training project, we have in our development project chosen to focus on the development of a competence matrix as a way to frame and make concrete approaches to sustainability within the institutional curriculum. (find ref fra curriculum bog)

Subject/theme

Competence matrix as a basis for curriculum development for the sustainability subject area at Design School Kolding's bachelor (BA) and master (MA) programs.

Problem field and own competence development

This project is about competence matrices and curriculum development for a specific subject area (sustainability) that intersects the traditional design disciplines, and accordingly has fallen between the established areas of responsibility. The lack of overview regarding sustainability teaching activities fosters certain challenges in terms of planning and communication, both internally and externally, which affects management, teachers and students.

Therefore, the pedagogical challenge consists of developing a material that can secure correlation between content, competence learning goals and progression in the education overall for the sustainability subject, as well as aid communication between stakeholders. We therefore wish to generate knowledge about the competence matrix (Worsaae, 2010) as a tool for curriculum development (Christiansen et al., 2015).

Through this process, we will strengthen our own university pedagogical competences in relation to development and application of competence matrixes as foundational for curriculum development and learning goals.

Problem statement

In our development, we have worked with the following problem statement:

How do we make visible the subject area of sustainability in an institutional context?

In our development project, we will experiment with and investigate the effect of developing a competence matrix as a means to further and inform a future sustainability curriculum for the entire education at Design School Kolding.

In order to operationalize the problem statement, we have identified the following sub questions:

- How might the development of a competence matrix contribute in creating overview of curriculum content?
- How might the application of a competence matrix contribute in securing coherence and optimal progression in curriculum?
- In what ways might employment of a competence matrix support communication in relation to curriculum between relevant actors? (department heads and teachers)
- In what ways might the employment of a competence matrix strengthen the communication regarding a sustainability curriculum for future teaching activities?

Background for data collection

Educational structure and means of evaluation and measurement

The School has a standard three-year bachelor and two-year master education. The educational structure is a combination of various models. The BA-level is part disciplinary and integrative (Harden, 2013: 23) as each discipline requires specific learning, and part modular for the interdisciplinary courses (Ibid.: 25). Both are set in a spi-

Plan for data collection, choice of methods and evaluation strategy ral structure, whereby students meet subject areas several times during the education, each time at a higher level (Cita Nørgaard, 2016). The master program has until now followed the same combined form as the BA, but will from this year undergo a change to a strict modular format, in order to support a shift from a disciplinary product and problem solving focus, to an experiential and social critical focus based in the three strategic areas (O'Neill, 2015) with a high level of combinatory flexibility.

Design School Kolding uses Bloom's taxonomy of learning, combining the original (Bloom et al., 1956) and the revised version (Anderson et al., 2000; Krathwohl, 2002) to clarify learning goals and objectives in the curriculum (Hasling, 2015). Thereby the 6 levels: Remember, Understand, Apply, Analyse, Evaluate and Create are applied in the course descriptions to specify levels of intended learning outcomes within the three qualification areas Knowledge, Skills and Competences (Christiansen et al., 2015).

Sustainability

We lean on a number of selected texts that account for and define the concept in relation to design in terms of scope and context (e.g. Ceschin and Gaziulusoy, 2016; Hasling, 2016) and to design practice and methodology (e.g. Keitsch, 2015; Manzini, 2015). More specifically, we draw on a sustainability competence framework (Wiek et al., 2011) that has been developed through an extensive review of sustainability teaching, learning and curriculum building practices across educational sectors.

Competence matrix

According to Worsaae, the purpose of the matrix is 'to visualize the contribution by the individual courses to the competence objectives (intended leaning outcomes) of the education as well as to visualize coherence among the courses' (Worsaae, 2010: 184). The format thus seems appropriate for our objectives, as it can be a tool for synthesizing a complex of elements (disciplines, courses, semesters, progression, competences), and for communicating the content visually to others.

Part processes of data collection

In order to create data on current activities we needed to identify courses, teaching activities and learning outcomes (academic year 2016/17) that relate to the subject of sustainability. This work was conducted by reading through all of the existing course descriptions

for the entire (current) education, while screening for content that corresponds to sustainability definitions.

Part process 1

In order to understand the many activities in relation to sustainability definitions and competence models (DeKay, 2011; Fleming, 2014; Wiek et al., 2011) we needed to understand data through visual mappings by use of large scale curriculum representations and colour coding (Everitt et al., 2010).

Part process 2

In order to obtain both input and feedback, we needed to create data through interviews, dialogue meetings and evaluation (Crouch and Pearce, 2012; Kvale and Brinkman, 2009; Steensig, 2010) with teaching colleagues who emphasize sustainability in their teaching as well as with department heads and representatives from management.

Frame of analysis

- Course descriptions for the entire education have been assessed (a total of 108) in terms of level of sustainability content. The assessment has been performed by one person (UR), but has been continuously discussed and course descriptions have been re-assessed during the process.
- 2. Throughout the project, we have employed visual mapping and tables as ways to further develop our analysis of the material at hand. As a base for our mappings, we (KMH) have created a visual overview of the entire course for the academic year 2016/17 depicting how courses are planned within each year and for each discipline.
- 3. The visual mappings have been used as 'dialogue tools' to further and inform the data we receive from other stakeholders.
- 4. Synthesis of findings is created by use of the competence matrix format.

The individual process steps and appertaining findings of the analysis will be accounted for in section 4.

How do we evaluate the outcome?

As described, the outcome has been evaluated by colleagues during *Analysis and result* the project process. Furthermore, the finished matrix will be presented to relevant groups such as the study board and the disciplinary committees, and will also be introduced at the yearly teacher meeting for internal and external teachers in August 2017. Although many

of these evaluation activities take place after the project deadline, there have been plenty of opportunities to test, how the matrix might function as a way to communicate content, as well as to receive feedback on the matrix itself.

How do we present the data in our report?

In the report, data is presented in a combined form i.e. visual mappings, matrix examples and explanatory text.

(1.)

Mapping the curriculum

One point of departure for our analyses and results generation has been a curriculum overview (referred to in frame of analysis point 2). In the curriculum overview, for the five disciplines, courses were mapped. Below (figure 1 and figure 2) small versions of the curriculum overview are presented divided in BA and MA level. A larger version can be found in appendix 1.

In the overview, blue areas are discipline specific courses, brown areas are cross-disciplinary courses, purple areas are exam periods, pink areas are graduate projects (BA and MA respectively) and light green areas are reserved for internships.

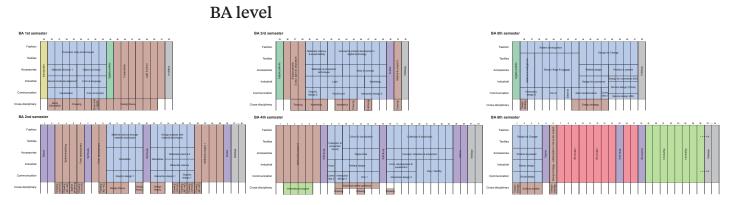


Figure 1. Course overview for BA-level.



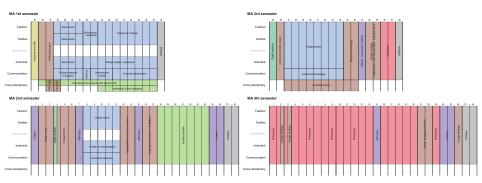


Figure 2. Course overview for MA-level.

Mapping 1: Explicit and implicit articulations

In mapping 1, explicit and implicit aspects of sustainability were first identified in the curriculum based on reading through course descriptions after which courses were categorised by colour. These aspects can be found in appendix 2. In figure 3, the mapping is shown and a larger version can be found in appendix 3:

Explicit articulations (green).

Course where we know that something is going on, but this is not articulated in any way (yellow).

- Implicit articulations, i.e. courses that are centred on learning in areas related to or associated with sustaina bility, without an explicit use of the term 'sustainability' (orange).
 - Courses with 'low hanging fruits', i.e. courses that do not presently address sustainability, but easily can incorpo rate aspects of sustainability in the current curriculum (pink).

Findings

- There were surprisingly few course descriptions that contained explicit content, and the few explicit courses where all situated in the Fashion and Textile curriculum
- On the other hand, there were an extensive number of courses with sustainability potential
- There were no new explicit activities in the MA (external students can join the BA sustainability courses).



Figure 3. Overview of identified explicit and implicit articulations of sustainability according to the course descriptions.

Consequence for the further investigation

We needed to find out more about how the beacons (fagledere) view sustainability, since it is so little present in the course descriptions (Fashion and Textile apart). Is it a conscience decision, lack of knowledge or simply a tradition for using other terminology and conceptual framing of responsible approaches to design than sustainability?

The fact that many courses showed a potential to include sustainability aspects lead us to investigate general competences of sustainable education – to form an understanding of possible types.

We decided to focus on the BA level in our investigation and competence matrix development, and use it as base for the bigger curriculum development, including the new MA.

3. Mapping 2: Wiek et al.'s 5 key competences of sustainability education

In mapping 2 we find inspiration in a study identifying 5 key competences of sustainability education (Wiek et al., 2011). The authors of the large-scale review claims that it 'synthesizes the substantive contributions in a coherent framework of sustainability research and problem-solving competence' (ibid.: 203). We apply this framework in order to identify and contextualize sustainable competences in the design curriculum with the aid of Wiek et al.'s competence definitions (ibid.:207-211):

Systems Thinking competence is the ability to collectively analyse complex systems across different domains (society, environment, economy etc.) and across different scales (local to global), thereby considering cascading effects, inertia, feedback lops and other systemic features related to sustainability issues and sustainability problem-solving frameworks.

Anticipatory competence is the ability to collectively analyse, evaluate and craft rich 'pictures' of the future related to sustainability issues and sustainability problem-solving frameworks.

Normative competence is the ability to collectively map, specify, reconcile and negotiate sustainability values, principles, goals and targets (including) first, to collectively assess the (un-) sustainability of current and/or future states of socio-ecological systems and, second, to collectively create and craft sustainability visions for these systems.

Strategic competence is the ability to collectively design and implement interventions, transitions, and transformative governance strategies towards sustainability.

Interpersonal competence is the ability to motivate, enable, and facilitate collaborative and participatory sustainability research and

problem solving.

In this second mapping, we once again made use of the visual curriculum overview. This time we analysed and colour coded courses (content and intended learning outcomes) against Wiek et al.'s 5 competence definitions:



Systems thinking competences (green)

- Anticipatory competences (yellow)
- Normative competences (blue)
- Strategic competences (white)
- Interpersonal competences (orange)
- Courses that to some extent can be related to a competence.

A small overview is seen in figure 4, while a larger overview can be found in Appendix 4.



Figure 4. Overview of identified competences in the curriculum according to Wiek et al. (2011).

Findings

The assessment of the curriculum through the lens of Wiek et al.'s competence definitions, shed new light on the current activities in a number of ways:

- The analysis showed that Wiek et al.'s competences to a great extend are addressed in the interdisciplinary - and in some respects the foundational curriculum. Thus, the competences are already developed, but not described or communicated in terms of sustainability.
- We found that Wiek et al.'s competences surfaced in the existing curriculum as progressive, i.e. some were more present in the early semesters, others more present in the later semesters.
- The mapping showed that courses can address several competences at simultaneously. i.e. to some extend they can be difficult to separate in practice.



Feedback from other stakeholders

At this point in the process, we held a number of meetings with various stakeholders, in order to present part findings and gain feedback. We held individual sessions with some of the department heads (disciplinary level), with the Head of the sustainability lab (developmental level), with a teacher working with sustainability in his courses (teacher level) and with the Head of education (management level).

Findings

- We got confirmation that no-one had any overview of the current activities in the education in relation to sustainability
- The implicit/explicit mapping of current activities, functioned well as a dialogue tool with all stakeholders and caused reflections on how to improve the curriculum in terms of content and progression.
- Contrary to hear say, there seemed to be no objections to the subject of sustainability within the particular disciplines (those we spoke to). Rather, a desire to strengthen the topic, and a wish to discuss how to do so. As example, communication design expressed a wish to heighten the students' awareness of material usage and CSR early in the education.
- The mapping of competences, as described by Wiek et al., needed more explanation on our part, in order to be understood by the stakeholders. It is therefore important to further clarify and address critically, how the competences should be translated and understood specifically in a design context
- There is a constant worry in the disciplinary faculty, that evermore new 'stuff' takes over valuable time in what is considered the core disciplinary curriculum. Therefore, the main point of the mapping i.e. that the current cross-disciplinary design curriculum also builds fundamental competences within sustainability, was positively received.

(5.

Developing a synthesis matrix

To aid the understanding of the data, we have made a different process tool in form of a matrix. At this stage, the matrix contains on one side (lifted from Wiek et al.) sustainability competence concepts, methodologies and sources for the five types of competences. On the other side of the table, we have placed the current courses in the curriculum at Design School Kolding according to the mapping. An overview of the mapping can be found in appendix 5.

This process has enabled us to look further into the connections and possible digressions between curriculum terminology and design concepts and Wiek et al.'s proposals. In our further work the matrix will be expanded further to include:

- · Current courses conducted at Design School Kolding.
- · Concepts from design research (and exemplary references).
- Foundational and exemplary literature that relate to each of the concepts.
- Links to sustainability card categories, a collection of sustainability training cards recently developed by the authors to support integration of approached to sustainable design in design education – for more information, see www.sustainabilitycards.wordpress.com.

Findings

The types of competences in the respective categories can in relation to design differ from the general competences, as advised by Wiek et al. For example, we have placed aesthetic theory in the normative competence category, whereas Wiek et al. do not mention aesthetics at all.

There are a number of alike terms employed in the course descriptions, that seems to refer to related design practice concepts, but can be difficult to differentiate between. E.g. design fiction, design futures, future design, future scenarios.

Building the competence matrix – components and processes

Due to the multifaceted content of the intermediate stages, the products of this report have different characteristics.

The first product is related to the progression of the curriculum with respect to Wiek et al.'s five competences and the development of an overall competence matrix. After having identified which courses that relate to each of the five competences, for each discipline (i.e. fashion, textiles etc.) a diagrammatic overview was made, where courses were placed in the semester they are taught in and within the competences they had been identified to relate to. In figure 5 an overview of the sustainability related courses for the fashion design BA program is shown. Here the courses in black are discipline specific and the course in green are cross-disciplinary courses. Overviews for all five disciplines can be found in appendix 6.

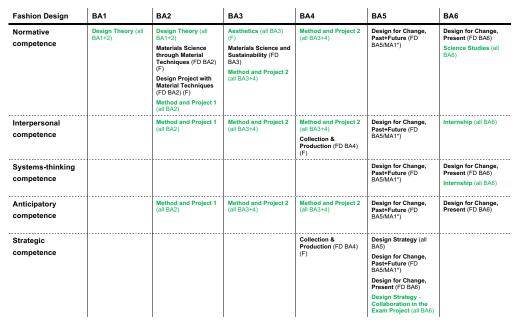


Figure 5. Courses with applied sustainability approaches mapped for BA fashion textiles.

In Wiek et al.'s introduction and discussion, the five competences do not seem to be hierarchically ordered. However, as we interpret the competences and based on our experience with working with aspects within the competences, they can be hierarchically ordered in accordance to a progression in the cognitive understanding of the respective competences. Consequently, in the following, we work with an order of the competences being:

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Normative – Interpersonal – Systems-thinking –
- Anticipatory – Strategic
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When doing so, in the mapping of the disciplinary curriculum for fashion design above, it appears that the current curriculum already follow a certain pattern when it comes to the order of courses. Based on this, we will propose an elaborate focus on one competence per semester as it is illustrated in figure 6. This is in line with the above-proposed hierarchical progression of the five competences and would mean that each semester in the five first semester of the BA would introduce a new competence. As the competences overlap and in different ways influence each other, it should not be understood as allowing students to only work with one competence at a time, but to promote course activities and topics that can activate different competences at different times. The sixth semester, when students are having their internships and they make their BA graduate projects, they have, in different detail, worked with all five competences and will be able to integrate it into their projects.

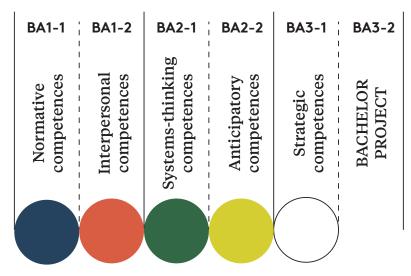


Figure 6. Proposed progression of sustainability competences for the first five semesters in the BA curriculum.

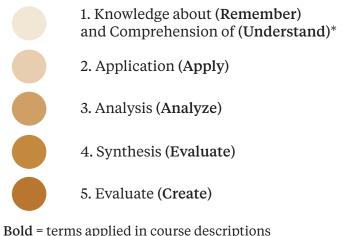
Final Product

This taxonomy of competences can further be translated into a guiding competence matrix to increasingly integrate sustainable aspects in the curriculum. This competence matrix is shown in figure 7.

	BA1-1	BA1-2	BA2-1	BA2-2	BA3-1	BA3-2
Normative competences						
Interpersonal competences						A T
Systems-thinking competences						CHELO
Anticipatory competences						BAG
Strategic competences						

Figure 7. Color-coded guiding competence matrix.

In the competence matrix, the colours relate to a cognitive level in accordance with Bloom's taxonomy:



Bold = terms applied in course descriptions *we combine the first to levels, as they are often connected in the course descriptions

Figure 8. Colour codes for the competence matrix in relation to Bloom's taxonomy.

The matrix depicts how the competences are developed through the BA program, reaching in to the MA, in the sense, that the competences are further developed and almost all reach the highest level on Blooms taxonomy during the MA education.

We are aware, that the next step in the matrix work, is to describe the exact level of expected competence within each of the matrix' boxes. Yet, this work requires an attentive and sensitive translation of Wiek et al.'s five competence definitions (and/or sorting of appertaining concepts and methodologies) to a design context, in a manner that accommodates all disciplines. Therefore, the translation process must involve people that can supplement our own backgrounds, and that is a process that lies outside the scope of present developmental project.

Conclusion

Share your reflections E on, how you can use this in approach to future pedagogical development.

Based on the above described investigations, we will return to our initial problem statement being *"How do we make visible the subject area of sustainability in an institutional context?"*. To answer this, we have explored how a competence matrix can contribute to creating overview of the curriculum content and how it can strengthen coherence and progression in the curriculum.

In order to do so, we first mapped the curriculum in respect to explicit and implicit approaches to sustainability extracted from course descriptions and in respect to Wiek et al.'s five competences. From interviews with teachers, department heads and representatives from the management, it was evident that there is overall support to further strengthen focus on sustainability in the curriculum, but this is challenged by different perceptions and knowledge on, what sustainability is and how it can be integrated in different levels. It is further challenged by the fact that disciplines apply different structure and the degree in which students across disciplines are working with sustainable aspects are therefore not synchronized and coherent.

Design School Kolding uses Bloom's taxonomy to define learning goals and consequently, we have aligned a proposed guiding matrix to this and linking it to Wiek et al.'s five competences. Based on our experience with working with sustainability, we understand these five competences as hierarchical and in our mapping of the current curriculum it was evident that the course structure somewhat follow this progression (see figure 5 and appendix 6). Nevertheless, we also argue that this progression can become clearer by emphasizing one competence per semester, as this can ease the ability to define and position course content and learning goals.

We believe that a competence matrix can support communication in relation to curriculum between relevant actors, as it can be regarded as a tool to communicate shared intentions and goals. This is relevant not only internally between department heads and permanent staff, but also for the great number of external staff, i.e. professional practitioners hired in to take part of courses.

However, we are also aware that not all courses are and should be directly related to sustainable thinking and that some of the competences students acquire are relevant to design practice in general as well as to the school's other focus areas. It can be suggested to modify the course descriptions to indicate into which strategic area(s) the course can be related to and to which degree, but this is beyond the scope of this part project and would require similar investigations and alignment in the school's two other strategic areas.

Based on this study, we further believe that a competence matrix can strengthen the communication regarding a sustainability curriculum for future teaching activities. Mapping 1 identifying implicit and explicit approaches to sustainability in course descriptions, showed that there are many 'low-hanging fruits' and that it's possible to strengthen focus on sustainability in a course without having to change the entire structure and content of the course. From Mapping 1, it was also clear that few course descriptions explicitly emphasise sustainability even though they possess a strong potential in working within a sustainability framing. Therefore, it is proposed to explicate these aspects in the course descriptions and a competence matrix that elucidates cognitive competence (according to Bloom's taxonomy) and sustainability competences (according to Wiek et al.' five competences) can be regarded as a tool for this.

The competence matrix has in this project emerged as a format that seems able to engage the many levels and disciplinary backgrounds contained in the education. Our experience is, that the competence matrix is perceived by the many types of stakeholders (management, researchers, developers and practitioners) as a neutral ground, from which dialogue can set out, and thus aid the overcoming of perhaps otherwise immediate responses, in terms of resistance or reluctance to align. We therefor see the competence matrix as a good tool for further curriculum development at Design School Kolding, embracing other subjects e.g. the other strategic areas of Play and Social Inclusion.

Moreover, we have reflected upon how the competence matrix might work well as a way to formulate a literature curriculum, in terms of semester based textbooks, which could make it easier for external and internal teachers to familiarise themselves with applied approaches and theory.

Lastly, the process of developing the matrix i.e. the extensive mapping of current activities and the synthesis of data, has shown us, that the matrix not only functions as a container of information, but also as a way to develop new knowledge. This insight holds potential in terms of grounding further pedagogical initiatives in relation to matrix building within our research activities. i.e. making research based curriculum development.

Literature

Anderson, L.W., Krathwohl, D.R., Airasian P. W., Cruikshank, K.A., Mayer, R.E., Pintrich, P.R., Wittrock, M.C., 2000. A taxonomy for learning, teaching and assessing: A revision of Bloom's taxonomy of educational objectives. Longman, White Plans, New York.

Bloom, B.S., Engelhart, M.D., Furst, E.J., Hill, W.H., Krathwohl, D.R., 1956. Taxonomy of educational objectives: The classification of educational goals. Handbook I: cognitive domain. David McKay Company, New York.

Ceschin, F., Gaziulusoy, I., 2016. Evolution of design for sustainability: From product design to design for system innovations and transitions. Design Studies 47, 118–163.

Christiansen, F.V., Horst, S., Rump, C., 2015. Course design, in: Rienecker, L., Jørgensen, P.S., Dolin, J., Ingerslev, G.H. (Eds.), University Teaching and Learning. Samfundslitteratur, pp. 135–148.

Cita Nørgaard, 2016. Curriculumdesign.

Crouch, C., Pearce, J., 2012. Doing Research in Design. Berg Publishers.

DeKay, M., 2011. Integral Sustainable Design: Transformative Perspectives. Earthscan.

Everitt, B.S., Landau, S., Leese, M., Stahl, D., 2010. Cluster Analysis, 5th ed, Wiley Series in Probability and Statistics. Wiley.

Fleming, R.M., 2014. Integral Theory: An Expanded and Holistic Framework for Sustainability, in: Filho, W.L., Brandli, L., Kuznetsova, O., Finisteraa do Paco, A.M. (Eds.), Integrative Approaches to Sustainable Development at University Level. Springer, pp. 259–274.

Harden, R., 2013., in: Swanwick, T. (Ed.), Understanding Medical Education: Evidence, Theory and Practice. Wiley-Blackwell.

Hasling, K.M., 2016. Using a "Five Perspectives of Sustainable Design" Model in Fashion and Textiles, in: Proceedings. Presented at the Circular Transitions Conference, London, UK.

Hasling, K.M., 2015. Learning through Materials - developing materials teaching in design education (PhD dissertation). Design School Kolding, Kolding, Denmark. Keitsch, M., 2015. Sustainable Design - Concepts, methods and practices, in: Redclift, M., Springett, D. (Eds.), Routledge International Handbook of Sustainable Design. Routledge, pp. 164–178.

Krathwohl, D.R., 2002. A Revision of Bloom's Taxonomy: An Overview. Theory into Practice 41, 212–254.

Kvale, S., Brinkman, S., 2009. InterView. Gyldendal Akademisk.

Manzini, E., 2015. Design, When Everybody Designs: An Introduction to Design for Social Innovation. MIT Press.

O'Neill, G., 2015. Curriculum Design in Higher Education: Theory to Practice.

Steensig, J., 2010. Konversationsanalyse, in: Brinkman, S., Tanggard, L. (Eds.), Kvalitative Metoder.

Wiek, A., Withycombe, L., Redman, C.L., 2011. Key competencies in sustainability: a reference framework for academic program development. Sustainability Science 6, 203–218.

Worsaae, K., 2010. Coordination and development of a master course with many teachers - using a "Competence matrix" for the planning process. Improving University Science Teaching and Learning 183– 190.

Appendix overview

Appendix 1: Overview of implicit and explicit approaches to sustainable design in course descriptions

Appendix 2: Curriculum overview

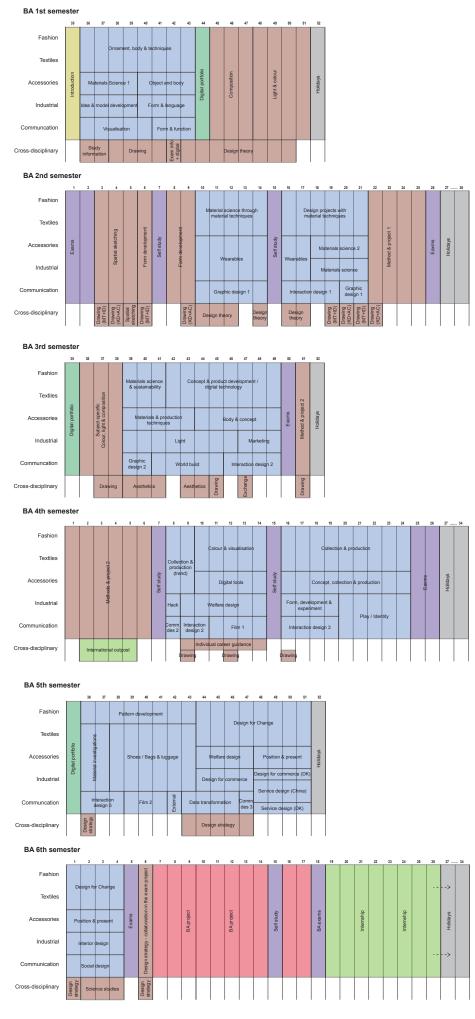
Appendix 3: Mapping 1: Explicit and implicit articulations

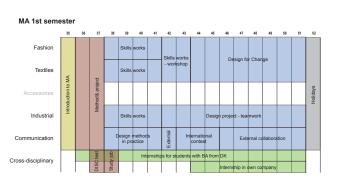
Appendix 4: Mapping 2: Overview of identified competences in the curriculum according to Wiek et al.

Appendix 5: Developing a synthesis matrix

Appendix 6: Mapping of courses relatable to sustainable design practice in the current curriculum

Design School Kolding curriculum 2016/17





MA 2nd semester																												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	36
Fashion																												
Textiles			Design camp Dicital contfolio	0					De	sign fic	tion					f notified	5				le							
Accessories	Exams			gital portfol	Design fliction		Self study							mal contax	Self study	al acatout	ational context				Elective module				Evene		Holidays	
Industrial					ō				C	esign	for den	nograpt	nic	Teaching Ea	n gamaa w			Organisation				Ē						
Communcation									Advar	iced ex	cpertise						2											
Cross-disciplinary																												

MA 3rd semester Fashion Design strategy pration in the exam project - early job focus Textiles Exams - one project + theory oject Digital portfolio Holidays Industrial Communication Adva Cross-disciplinary

MA 4th semester

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	34
Fashion																												
Textiles		9y	Λb																		av (exhibiton)					9y		
Accessories	MA project	Design strategy	Design strategy			MA project			MA project			MA project			Self study						strateor (e		MA project	Lovmo		Design strategy	Holidays	
Industrial																					Desior	b						
Communcation																												
Cross-disciplinary																												