



VASE Report 1 part I: Desk research on teaching for values in design in higher education

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For more information about the project, and the development process:

<http://vase.mau.se>.

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Abstract

This report provides an overview of information relevant for teaching students about values in design in the context of higher education. It addresses why values play an important role in design, and why students in engineering and design should be aware of values.

Thereafter, it specifies more exactly what we mean with values, especially in the light of the term 'values' being used in many different ways in the literature related to engineering and design. Subsequently, we discuss some existing models for values and then turn to how values in design have been addressed and taught previously, as well as some of the resources already available for teaching students about values in design and how to become responsible designers. The report ends with three descriptions of potential teaching activities that form the basis for the development of a set of teaching activities with accompanying assessment activities for teaching students in higher education engineering programmes about values in design and how to become responsible designers.

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Introduction

This report is written as part of the Erasmus+ project Value sensitive design in higher education (VASE¹). The purpose of the report is to provide an overview of information relevant for teaching about values in design in the context of higher education. It starts with an argument for why values play an important role in design, and why students in engineering and design should be aware of values. Thereafter, we discuss in more detail what we mean with values, especially in the light of the term ‘values’ being used in many different ways in the literature related to engineering and design. Subsequently, we discuss some existing models for values and then turn to how values in design have been addressed and taught. Taking it one step further, we focus on practical tools and activities that have been used to support the attention to values in the design process, and/or more directly, the teaching about values in the design process. Finally, we give some suggestions for how to think about teaching values in design.

Why consider values in design?

Scholars in a wide range of disciplines have acknowledged that values are embedded in technical systems and devices, consciously or unconsciously (Knobel & Bowker, 2011). New technologies, such as AI and Big Data have the potential to either strengthen or undermine values. Political theorist Langdon Winner (Winner, 1980) for example argued that classist values were built into the physical infrastructure of New York City, and Rachel Weber (Professor in Urban planning and policy) (Weber, 1997) argued that the design of air force training systems systematically discriminated against female pilots. In the context of Information Systems design Friedman and Kahn (Friedman & Kahn, 2003) describe several of the views on how such values can become implicated in design: embodied, exogenous and interactional.

Values can be embodied meaning that designers inscribe their own intentions into the technology, which then determines specific human behaviour (also referred to as technological determinism). Values can also be exogenous, meaning that societal forces significantly shape how a deployed technology will be used. Finally, the interactional position holds that whereas the features or properties that are designed into technologies more readily support certain values and hinder others, the technology’s actual use depends on the goals of the people interacting with it. Furthermore, in a forum examining the future of human computer interaction (HCI) it was suggested that it is important that we do consider values in design, because the changes in the world (such as shifting boundaries between technology and humans) make values a core concern (Harper et al., 2008). However, addressing values in design also provides opportunities for stakeholders to contribute values to the design. The

¹ <https://vase.mau.se/>, accessed on 2021-09-02.

Participatory Design tradition, for example, involves values like empowerment and democratization, which requires active involvement of stakeholders (Iversen, 2012).

Designers ought to be aware of the influence of their designs, take responsibility and be able to reflectively address the role that values play in design. This does not only apply for actors in the industry, but also in the educational field, preparing design students for their upcoming tasks. Thus, design and development programmes, such as interaction design, information science, computer science, technology enhanced learning, educational technology, industrial and product design programmes, need to provide students with the awareness of the role values play in design and the skills and tools needed to become responsible designers of the future. The project Value Sensitive Design in Higher Education (VASE), aims to meet this need by developing and sharing teaching resources to effectively educate their students to reflectively consider and intentionally work with values in their designs. As part of the project an overview of the current status of the field is produced, and reported upon in the following.

The aim of this report is to present an overview of how value sensitive design approaches have been addressed, acted out, and taught to design and development students in higher education. Furthermore, it intends to give suggestions for how to develop learning activities, or a course on values in design. A series of tools and teaching resources developed for teaching value sensitive design approaches is presented and reflected upon. Before going into the outcome of the actual review, a theoretical introduction to the concept of values will be presented, as well as a classification of human values.

What do we mean with values?

Values play an important role in design but there are many different ways to consider values, and a literature review of values in design will encounter many of these different notions of value. When teaching students about values in design we need to disentangle these different notions and consider how different methods can be taught for each of the relevant notions. We distinguish three different axes that may be relevant.

Axis 1: Value or Values As several authors have pointed out (e.g. Bekker 2019, Cox 2018), there is a difference between the meaning of the word “value” and the word “values”. “**Value**” often refers to the worth of something, whereas “**values**” refers to what is important in life. The objective view of “having value” can be linked to an economic view of value, and the subjective view of “being of value” can be linked to a sociological view of value. Concepts and definitions of value in the context of innovation have thus been explored in economy, psychology, sociology and ecology (den Ouden, 2012). This use of the word “value” is closely connected to how “value” was initially used by Cockton (2006), and which was later renamed to “worth”, meaning *what a technology brings to its end-users*. In this report we are interested in **values** as what is important in people’s lives. What we mean by this, is that we aim to teach students to take responsibility for their own values, and how their designs can support or undermine other stakeholders’ values (where other stakeholders can be defined in the broadest sense, such as end users, society, but also e.g., nature).

Axis 2: Focus on the process or the product

In the design context, values can be connected to either the *product* of design or the *process* of design contributing to values or expressing values. The notion that values can be embodied in design, as expressed by Friedman and Kahn (Friedman & Kahn, 2003) relates to the product's values, while the notion of empowerment, which forms the basis of participator design (PD), also relates to the process' values. Of course, values also underlie the ethical framework for doing design and research in general, making sure that stakeholders are treated with respect.

Axis 3: Focus on designers' value(s) or stakeholders' value(s):

Finally, as already hinted at in the previous sections, we can consider values from the perspective of the designers and/or from the perspective of the stakeholders. As den Ouden (2012) has pointed out, stakeholders may exist on many different levels, from users, to organisations, the ecosystem, and society. To be sensitive to values, designers need to be aware of their own values, as well as the values of all stakeholders. Thereafter, they need to make decisions about potential value conflicts between and within stakeholders.

Classifications of human values

Schwarz

A commonly used model from psychology is the motivational value model developed by Schwarz (2012). He distinguishes ten value types, which can be presented in a circular model. The ten values can be described at a meta-level with two dimensions that create four meta categories. The dimensions and higher order values are *self-enhancement* (achievement and power) versus *self-transcendence* (universalism and benevolence), and *openness to change* (stimulation and self-direction) versus *conservation* (security, conformity and tradition). Hedonism belongs to two higher order categories: self-enhancement and openness to change.

Rokeach

The social psychologist Rokeach (1973) developed a model of human values that distinguishes between instrumental and terminal or end values. He distinguishes between values that are instrumental (or preferable modes of behaviour) to reaching end values (values one would like to achieve during a lifetime). Some examples of the 18 instrumental values are: ambitious, cheerful, obedient, polite, forgiving and self-controlled, and examples of the 18 end values are: family security, self-respect, happiness, pleasure, a world at peace and social recognition.

Hofstede

The social psychologist Hofstede is also interested in values (1980). However, he sees values as one of the four different levels that describe culture: symbols, heroes, rituals, and values. Symbols represent the most superficial, and values the deepest manifestations of culture, with heroes and rituals in between. The core of culture is formed by values. The values are the most stable, rituals change slowly and symbols usually move with fashion and

trends. Hofstede developed the cultural values in a work context. They include five dimensions: power distance, uncertainty avoidance, individualism vs collectivism, masculinity versus femininity, long-term versus short-term orientation. A difference with the other models for values is that they focus on those values that can distinguish between cultures. Therefore, the five values do not cover all possible human values in the same way as those defined by Schwartz and Rokeach. For our purpose, we are more interested in all possible human values. Therefore, we do not focus on Hofstede's values, although it may be useful in some cases to explicitly think about the values typical for different cultures.

Meta-Inventory of Human Values

Cheng and Fleischman (2010) developed a meta-inventory of human values, including those of Schwartz and Rokeach. They included value inventories that describe basic human values as opposed to general value dimensions, which is why they did not include Hofstede's work in their meta-analysis. The final inventory includes a list of 48 value concepts, of which 16 value concepts were found in five or more existing value inventories. These include: freedom, helpfulness, accomplishments, honesty, self-respect, intelligence, broad-mindedness, creativity, equality, responsibility, social order, wealth, competence, justice, security and spirituality.

Value dimensions

Shilton and colleagues (2013, 2014) have developed a framework that describes dimensions related to the source of the value (the setting, environment, or context from which values are elicited) and the attributes of the values (salience, intention and enactment). This framework provides a more detailed understanding of values in design in considering the unit from which the values are uncovered (e.g. individuals, families or institutions), the assemblage (homogeneous or hybrid human and technological actors), the agency (values ascribed to objects, or values determined and expressed by subjects), the salience (peripheral versus core values), intention (accidental or purposive values) and enactment (potential, but inert versus materialised or performed values).

Approaches to addressing and/or teaching values in design

In this section we focus on approaches to addressing values in design, and wherever possible, also on approaches used to teach students about values in design. See Table 1 for an overview. In some cases, approaches used in design projects are also taught to students, whereas in other cases approaches are only used by experienced researchers, or only to teach students about values in design.

Values in Design and Values at Play

Nissenbaum has created the Values in Design (VID) Council². The VID Council (Nissebaum, n.d.) proposes a process containing three steps. The first step is to *discover* the values relevant to the project. The second step is the *translation* of those values into specific design features. The third is to systematically *verify* that the values' content of what is created matches the intentions.

Nissenbaum has taught a course on Values Embodied in Computer and Information Systems. This course is mainly a reading course consisting of two parts: In the first part, the students read about the social, political and moral dimensions of technology in general. In the second part of the course, the students focus more on information and communications technology specifically.

The Values at Play curriculum (Belman et al., 2009), which is the outcome of one of the projects performed by VID, is meant to be incorporated in any game design course as a four-week module. Students participate in four activities, one for each week, with accompanying readings. Some specific tools or activities used during the four weeks are the Grow-A-Game cards activity (Belman et al., 2011), preparing a video clip of a game in which values are at play, creating a prototype of a game, and play-testing and critiquing the games.

Value Sensitive Design

Friedman is one of the founders of Value Sensitive Design (VSD³). VSD builds on an iterative methodology that integrates conceptual, empirical, and technical investigations (Friedman, 2004; Friedman et al. 2017; Winkler & Spiekermann, 2018). Conceptual investigations focus on who the direct and indirect stakeholders affected by a design are, what values are incorporated in a design and how they affect the stakeholders. Empirical investigations aim to understand the context of use for a design, and technical investigations suppose that a given technology is more suitable for certain activities and more readily supports certain values while rendering other activities and values more difficult to realize. Technical investigations may also involve the proactive design of systems to support values identified in the conceptual investigation.

Several of the founders of VSD have given courses on this topic. Friedman and Borning have for example taught a course on Value Sensitive Design at the University of Washington. While the course explains the theory and methods of Value Sensitive Design, they are “to be used in consort with other existing technical and design methods”⁴. To this end, students are expected to choose a quarter-long project in which they apply Value Sensitive Design.

Values-led Participatory Design

Iversen and colleagues have coined the term Values-led Participatory Design (Iversen et al., 2012). They propose that designers should engage in a “dynamic and dialogical process of

² <https://nissenbaum.tech.cornell.edu/>

³ <https://vsdesign.org/>

⁴ <https://vsdesign.org/courses/insc543/>

cultivating the emergence of values, developing them and supporting their grounding”. According to Iversen et al. (2012) “the way we work with values means that they emerge in collaboration with stakeholders, with the values interacting recursively with the design process and permeating the entire process. The designer also brings values to the design process through ‘seeing as’, and through making design judgement, established through his or her design repertoire. [...] However, in our cases, it is also prior to action, in our preparation of the design process.” (p. 5)

Iversen et al. (2012) propose a recursive 3-phase process that supports the emergence, development and grounding of values. However, they describe the emergence phase in the most concrete way (Iversen & Leong, 2012), noting that this phase in itself was a “miniature cycle consisting of not only values discovery, but also displaying some initial development and initial grounding of values” (p. 1).

While valid as a general model for working with emergent values in a Participatory Design process, the methods used are fully adapted to the specific situation with specific stakeholders by an experienced designer. This makes it a difficult approach to teach to students starting to work with values.

Value-centered Design/Worth-centered Design

Value-Centered Design (VCD), as originally proposed by Cockton in 2004, focused on product value, capturing both the commercial sense of value (i.e., value for the supplier), and the economic sense of value (i.e., value for the buyer). In order not to focus on commercial development only, they simply used the term “value”. However, unlike Value Sensitive Design, the value meant here was not necessarily related to moral considerations. To avoid confusion, Cockton thus renamed VCD to worth-centered Design (WCD). Although worth-centered design may seem unrelated to other notions about values in design, they are indeed related. According to Cockton, “VCD and VSD are different routes to the same end” (Cockton, 2006, p. 4). As stated before, in order to create worth for users, either in a product or process, it may in some cases be useful to understand the users’ values.

A problem with WCD is that it is an approach, and not a method. As Cockton and colleagues state, “It promises no guarantees and depends absolutely on the knowledge and commitment of whoever applies it” (Cockton et al., 2009). This makes it rather hard for design students to grasp, and no literature has indeed been found on how to teach design students WCD. However, Cockton has taught several courses, both at CHI and at the User System Interaction (USI)-education in Eindhoven where aspects of worth-centered design were covered. Since our intention is to work with values in design in a broader sense, Worth-centered design may be too restricting.

Design Challenge Based Learning

The Design Challenge Based Learning (DCBL) approach was developed by Blevis (2010), who was frustrated by the lack of studio-based learning approaches for design students at universities. According to Blevis (2010) “the core idea of DCBL is to present designers with

humanity- and life-centered issues-based design research and design-concept challenges in the arena of HCI [...]” (p. 2). In this sense, it is not a design approach, but rather a pedagogical paradigm. However, one of the pillars is that “[i]t is an issues-and values-first paradigm” (Blevis, 2010, p.2) so therefore it is of some interest for this report. In DCBL, students work on individual, collaborative and competitive activities involving public presentation and critique; they receive implicit rather than explicit inclusion of rigorous concepts in the service of motivated, design challenge goals; and linked pairs of research and concept projects prompt the students to practice, ensuring that their concepts follow from research insights and that their research insights lead to concepts. Although DCBL could be an interesting approach to define projects for students to work on, it does not explicitly explain to students why values are important, or how they can deal with different values of different stakeholders.

Name	Vale and/or values	Products and/or process	Designers and/or stakeholders	Used in education
Values at Play (Belman et al.,2009)	Values	Product	Designers	Main focus on education
Value Sensitive Design (Friedman, 2004)	Values	Product	Effects on stakeholder	Yes, and extensive underlying framing.
Values-led PD (Iversen et al, 2012)	Values	Product and Process	Designers and Stakeholders	Unclear, extensive underlying framing.
Worth-centered Design (Cockton, 2006)	Value	Product	Stakeholders	Yes, and extensive underlying framing, used in the HCI domain (master and post-master level)
Design-Challenge Based Learning (Blevis, 2010)	Values	Product	Designers and stakeholders	Main focus on education.

Table 1. A summary of the five approaches presented.

Tools and teaching resources

Several teaching resources for teaching about values in design to students in higher education have been developed and applied in various settings (some related to the approaches described above, others as standalone tools). In the following section, a selection of such tools and teaching resources is presented.

Tool or Teaching resource	Source or Approach it belongs to
<p>Grow-A-Game cards</p> <p>A deck of Grow-A-Game cards contains four categories or subsets of cards:</p> <ul style="list-style-type: none"> • Values Cards: each card lists a value term, e.g. trust, privacy, liberty, sustainability. • Verb Cards: each card lists a game-related verb, or mechanic, e.g. leading, building, matching, avoiding, nurturing. • Games Cards: each card names a familiar game to build upon, or mod. • Issues Cards: each card names a problematic social issue, e.g. displacement, global warming, racism, urban sprawl. (Ref.) <p>The cards can be used in various ways, and two applicable areas suggested by the developers are:</p> <ul style="list-style-type: none"> • Values-focused <i>analysis</i> of games Participants draw or choose a values card from the deck, and discuss the value on the card with reference to existing games. By taking an analytical perspective towards their prior play experiences, participants often discover that games they assumed were value-neutral are charged with social, moral, and political meanings. • Supporting the act of values-conscious <i>design</i> Participants begin by drawing or choosing a values card from the deck. The value on the card becomes the focal point for the exercise, which can be 15 minutes of brainstorming for rough game ideas, a finished semester project, or anything in between. Participants commit to consistently affirming (or otherwise exploring) the value on the card through both the mechanics and narrative/ representational elements of their design. 	<p>Values at Play (Belman, 2011)</p>
<p>Envisioning cards</p> <p>The Envisioning cards aim to help designers consider the long-term influence of new technology. The cards are meant to evoke consideration and discussion of such concerns within the context of design practice. The Envisioning Cards tool consists of 28 cards (and four white cards), where each card relates to one of the following four envisioning criteria:</p> <ul style="list-style-type: none"> • The <i>Stakeholder</i> criterion, a key concept in VSD, which emphasize the range of effects of a technology, both on those who are in direct contact with a technology (direct stakeholders), and on those who might not be direct users, but whose lives are nevertheless affected by various interactions around the technology (indirect stakeholders). 	<p>Values Sensitive Design (Friedman & Henry, 2012)</p>

<ul style="list-style-type: none"> • The <i>Time</i> criterion helps guide designers to consider the longer term implications of their work – implications that will only emerge after the technology has moved through initial phases of novelty to later phases of appropriation and integration into society. • The <i>Value</i> criterion emphasizes the impact of technology on human values. • The <i>Pervasiveness</i> criterion emphasizes systemic interactions that follow from the widespread adoption of an interactive technology. <p>One side of the card contains the card title and an image related to the card theme. The other side highlights the key criterion for the card; the card title; a theme describing the card’s key concept; a focused design activity related to the theme; and a “big” action word such as “think,” “identify,” “sketch,” or “ask.”</p> <p>The Envisioning cards have been used in various settings, but the exact use is not prescribed in detail by the developers. A few examples of suggested activities in which the cards can be applied are (see website⁵):</p> <ul style="list-style-type: none"> • Getting unstuck: pick a random card as a design team and perform the activity. • Tracking progress: identify cards that represent concerns specific to your project. Pin them up in a visible place and use them to monitor progress towards addressing these concerns. • Engaging students: have students select a few cards to help guide them during a design project or let them select a theme from one of the cards to guide research into related issues in the local community. • Soliciting clients’ concerns: ask clients on their own or with the designer to consider the issues on the cards and indicate possible concerns. • Connecting with the local environment: choose cards that represent your primary concerns and go out to gather pictures in a relevant location that corresponds to these cards. 	
<p>Stakeholder Tokens</p> <p>Identifying all relevant stakeholders is a first important step in a value-sensitive design process. Yoo (2017) has developed a method for identification of all stakeholders and their dynamics, called Stakeholder Tokens. Stakeholder Tokens employ a style of tabletop game, presenting a playful and holistic approach to stakeholder analyses. In line with the traditions of participatory design and co-design, stakeholder tokens emphasize the role of stakeholders’ participation in creative design processes as a way to elicit more salient and realistic understanding of the study context. This method serves a multiplicity of purposes, including</p>	<p>Value-Sensitive Design (Yoo, 2017)</p>

⁵ http://www.envisioningcards.com/?page_id=594

<p>(a) generating a more inclusive set of stakeholders, (b) identifying a more robust set of key stakeholders, and (c) clarifying stakeholder dynamics.</p>	
<p>HuValue tool The HuValue tool is a tool to raise designers' awareness about human values and facilitate using human values in a design process. The goal of this tool is to help designers enrich their design concepts with human values. The tool consists of a <i>value wheel</i>, <i>value words</i> and <i>picture cards</i>.</p> <p>The value wheel is a circle with nine value groups. Designers can rank the importance of each group of values from most important to least important on a five-point scale.</p> <p>Value words are 45 two-sided cards with a value word on the front and its relevant value group (based on empirical research) at the back.</p> <p>Picture cards contain 207 cards of activities, persona and products. Activity cards contain a picture showing an activity or a behaviour, without any description, where designers can write their own interpretations. The persona and product cards are combinations of pictures and texts.</p> <p>The tool is envisioned to be used in various phases of the design. In the analysis phase, the design challenge, design goal, the context of use and the user's needs and wants can be studied from a value-centered view for a wider and deeper understanding of the design situation. In the design phase, it can be used as a source of inspiration to diverge ideas, to cluster and converge ideas, and as criteria for deciding on the final idea. In the evaluation phase, the final concepts can be evaluated from a value perspective. The HuValue tool has been used with students during a design project.</p>	<p>Independent PhD project by Shadi Kheirandish from Eindhoven University of Technology (Kheirandish, 2018)</p>
<p>Ethics for Designer tools: Seven template-based tools to help designers incorporate ethics into their design process⁶. The tools address three basic ethical skills: <i>moral sensitivity</i>, <i>moral creativity</i>, and <i>moral advocacy</i>.</p> <p>Moral sensitivity: <i>De-scription</i> is an activity to analyse a design created by others and understand the intentions and world-view of the designers. <i>Ethical Disclaimer</i> is a tool that helps the designer to set the ethical terms at the start of a project by imagining unethical situations and discussing what the designers take responsibility for.</p> <p>Moral creativity: <i>Moral agent</i> is a game in which the members of the design team receive different values to create design solutions, which</p>	<p>Independent Master project by Jet Gespen from Delft University of Technology</p>

⁶ <https://www.ethicsfordesigners.com/>

relate to their common design brief. *Design Noir* is an activity to imagine two extreme situations the design team is working on could evoke. These extremes are then used to create design ideas that would achieve that situation. Thereafter, two scenarios are chosen for each extreme to be acted out and filmed. *Normative Design Scheme* is an activity in which the design team writes down their design goal and assesses this goal using the three main normative views: virtue ethics, deontology, and consequentialism. Based on this assessment the design can be improved.

Moral advocacy: *Moral value map* is an exercise to be performed together with the stakeholders. First, the human values relevant to the design are selected, then each value is translated into a concern to describe how it is present in the context of the present design. Thereafter the relations between the different concerns are mapped and any conflicts between stakeholders are discussed. Finally, the design's effect on each concern is written down by using the words inhibits / supports / limits / enhances / prevents / enables / reinforces / undermines / challenges this concern. This is then discussed to make any changes to the design. *Ethical contract* starts with explaining the Ethical disclaimer (described previously) to all involved stakeholders. The unethical situations are discussed and important ethical themes are collected. The ethical themes for the project are defined and responsibilities for each unethical situation are noted down. Three ethical objectives are formulated and discussed, and the design goal is updated with all stakeholders agreeing upon it. The contract is signed by all stakeholders.

Deciding how to teach about values in design

In this section we describe some topics to consider when planning to teach about values in design. These include deciding on whether the focus of the course/ workshop is on values and/or value, values in the product and/or process, designers' and/or stakeholders' values.

Most approaches described above deal with values rather than value, which is not surprising given our intention to make designers aware of the influence of their designs, take responsibility and be able to reflectively address the role that values play in design. However, values and value are not completely disparate concepts. Therefore, it may be necessary to explain to students what the connection between value/worth and values could be, especially in the context of working with businesses. For the VASE project we do mainly focus on values and how these may also relate to ethics and morals.

Most approaches focus on the values in the product rather than the process. Values-led PD is the only approach that also focuses on values during the process. This is not surprising since stakeholders are closely involved in the process of PD. However, whenever working directly with stakeholders in other approaches, it may also be useful to consider values (and even value) in the process. While we do think it can be useful in many programs to consider

approaches that focus on values in the process, such as (values-led) PD, in our project we mainly focus on approaches that address values in the product and the consequences of these values, even though we touch upon values in the process as well.

There is a split between approaches that focus mainly on understanding and accommodating for stakeholders' values, and those that focus more on understanding and expressing designers' values. To provide students with a full understanding of what it means to address values in design, we argue that we need to incorporate both.

While VaP and VSD have been taught to students, Values-led PD and Worth-centered Design have mainly been used only by experienced designers, even though we are aware that they have introduced it in some courses. However, we have not been able to find any papers describing how to teach these approaches in detail.

When teaching students about values in design, it may be useful to determine whether one wants to work with a certain set of values, such as those defined by Rokeach and Schwartz, or whether one wants to leave the concept of values more open. Here, we do not think we should adhere to a certain framework of values. Rather, we suggest making students aware of the different frameworks. Furthermore, it can be important to decide whether one wants to delve deeper in the different kinds of values and how they may or may not relate to morals and ethics. In Value Sensitive Design for example, the focus is mainly on values that have moral implications, rather than on all possible values.

Other considerations when planning to teach about values in design that will influence how the course will be set-up include:

- Who are the intended students, what curriculum are they following. For example: design students, engineers, social scientists
- Length of learning activity, course. For example: introductory workshop, 8 week course.
- Level of knowledge of the students in relation to values and/or design: beginner or more advanced
- Attitude and intention of the course (vision): ranging from providing knowledge to indicating the role of activism (active or pro-active)
- The **dimensions** of knowledge, skills and attitude that need to be taught (competences, and through lines), e.g.
 - Awareness activities pointing out that values are a part of design
 - Investigating diverse (own and stakeholders) values
 - Designing for (diverse) values
 - Evaluating values
- Coverage of different design phases, and teaching a balance between knowledge, skills and attitude.

To illustrate how the above considerations may lead to different learning solutions we present three different scenarios.

Scenario	Curriculum	Beginner/ advanced	Applied, knowledge	Length
1	Design	Beginner	Balanced	short
2	Social science	Second level	Mainly knowledge	middle
3	Design	Second level	Balanced	longer

Scenario 1: Short introductory workshop for design students

A short introductory workshop of 2-4 hours could include learning goals creating initial awareness about what values in design are, and that values can play a role in the design and the product. It could include information about the various approaches to values in design, and include a short exercise to experience how values are embedded in a product. The students might reflect on how values of designers, users and other stakeholders might be represented in a product.

Scenario 2: Course for social scientists

A second level course on values in design could be envisioned as a course of 2-3 ECTS (75-90 hours of work) with about 10 hours of work during an 8 week period. This course might assume some initial knowledge about values in design.

Learning goals include:

- Show awareness about values in design
- Show an understanding of the background of different approaches to values in design, and their similarities and differences
- Show awareness about how values in design can be related to societal challenges.
- Show an understanding about different methods for including values in design
- Being able to analyse products (in use) in terms of how values are embedded

The course could be set up around lectures and reading exercises. Furthermore, some small exercises might be included to show the applicability of the reading material, and conduct analysis of design cases.

Scenario 3: Long course for Industrial Designers.

A second level course balancing knowledge and skills on values in design could be envisioned as a course of 5 ECTS (140 hours of work) with about 14 hours of work during a 10 week period. This course might assume some initial knowledge about values in design.

Learning goals include:

1. Show an awareness about value and values in design.
2. Show an understanding of diverse **approaches for values in design**.
3. Show an understanding of how values can relate to product and process
4. Show how to apply some **methods** as part of user-centred design

5. Show an understanding of how to analyze data gathering through value sensitive design methods.
6. Show an understanding of how to apply value sensitive design methods to develop empathy with the user and stakeholders
7. Show awareness about how values in design can be related to societal challenges.

The course could be set up as a combination of lectures, workshops and project-based work. The students go through a design process, and in parallel are taught about the underlying theory and assumptions of the approaches, and about specific methods to apply during a design process.

Next steps

In the VASE project we will develop learning materials for different learning contexts. The learning materials will be developed in an iterative manner and evaluated during the process. Finally, the developed learning materials will be made available through the VASE website (<https://vase.mau.se/>).

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