Studies in Material Thinking
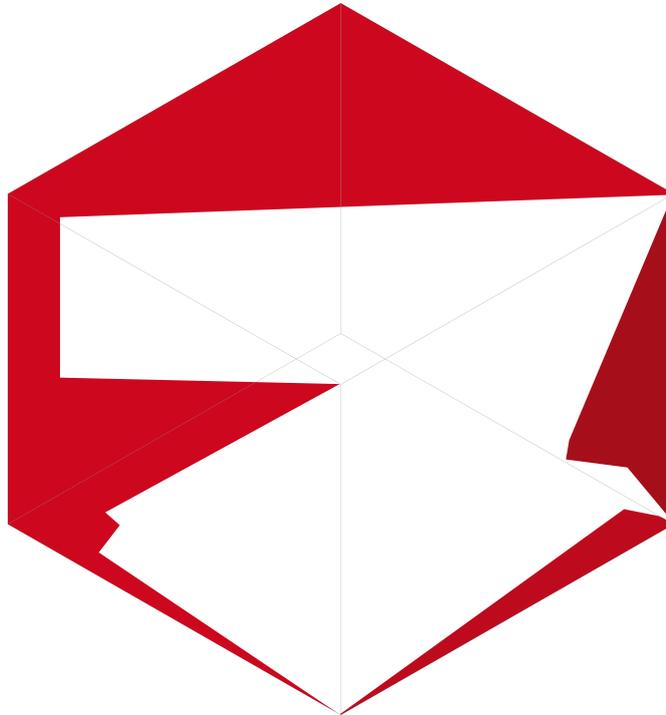
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Design Literacy for Longer Lasting Products

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Abstract: In this article, we discuss the design literacy concept from a Nordic educational perspective. Design literacy is used for the expression of competence, where different ways of communicating meaning, function and quality are important. We regard design education as a precondition for sustainable development within the perspective of consumerism. This paper links design literacy to materiality in context of 'longer lasting products'. In an educational context, design literacy is linked to general education for citizenship and to the promotion of democratic ideals through participation and dialogue. Orienting the concept of design literacy is viewed in relation to the broad spectrum of research that deals with the concept of literacy and highlights what it means to be a competent participant in a culture based on multiple modes of knowledge.

Key Words: Design literacy, design education, sustainable development, materiality

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Introduction

The term literacy is frequently used in educational contexts, and it has begun to appear more and more often in combinations such as media literacy, visual literacy, science literacy, ecological literacy, multi-literacy and critical literacy. There could be several reasons for the increasing appearance of such literacy combinations, but that is not within the scope of this article. Instead, we will discuss whether the use of literacy in combination with design is expedient in terms of creating an increased focus on practical skills, materiality and sustainable development within an educational perspective.

The combination of design and literacy into the design literacy concept is not new. It has been used by Steven Heller (1999) to describe competencies in graphic design and by Digranes and Nielsen (2012) to promote the lifelong learning of design for citizenship. Recently, design literacy has also appeared within the European Union (EU) system. In the report Design for growth and prosperity, the European Design Leadership Board (EDLB) has given 21 recommendations for the future development of Europe to the EU Commission (European Design Leadership board 2012). The report acknowledges that decisions regarding the structuring and implementation of education and training cannot be based on a top-down approach, and the recommendations are linked to education within a long-term perspective. Of special interest is recommendation 20, in which the EU is recommended to: 'Raise the level of design literacy for all the citizens of Europe by fostering a culture of "design learning for all" at every level of the education system' (European Design Leadership Board 2012: 73). This recommendation focuses on general design education for all, while recommendation 21 focuses on professional design education. There, member states are encouraged to support the development of design competencies for the 21st century by embedding the strategic role of design across disciplines in higher education (European Design Leadership Board 2012: 73). It has not been the role of the EU report to delve deeper into the design literacy concept. It is, however, imperative to articulate the content and limitations of the concept for further development. In this article, our challenge is therefore to reflect upon issues concerning design literacy within the perspective of sustainable design and thereby shed some light on the important challenges ahead. We will begin with some reflections on the term literacy before we move on to reflections on design literacy within the perspective of a sustainable tomorrow.

Literacy from a General Education Perspective

In the general educational field, the term literacy is used differently in various disciplines. In an everyday-language context, literacy is frequently understood as competence in reading and writing, which is connected to knowledge regarding a common cultural heritage. However, within the academic context of general education, literacy 'competence' has many nuances. It is defined by UNESCO as follows:

> Literacy is the ability to identify, understand, interpret, create, communicate and compute, using printed and written materials associated with varying contexts. Literacy involves a continuum of learning in enabling individuals to achieve their goals, to develop their knowledge and potential and to participate fully in their community and wider society (UNESCO 2004:13).

One could note that the definition narrowly includes only 'printed and written materials', keeping in mind how new insights into competencies have influenced educational debates. In the early 1980s, Howard Gardner challenged the conception of learning, which had previously been defined within a logic-mathematic and verbal-linguistic tradition. Gardner developed the

theory of multiple intelligences and stated that human beings have several different ways of learning and processing information and that these methods are relatively independent of one another (Gardner 1985). Gardner's critique of the dominant conception of intelligence, IQ, can be seen as a starting point from which to broaden our understanding of literacy.

During the last 10 years, the Programme for International Student Assessment (PISA) has tested school students' abilities to read and write. The first PISA survey was initiated by the OECD (Organisation for Economic Cooperation and Development) and took place in 2000. Today, PISA surveys the competence of 15-year-olds in reading, mathematics and science all over the world. The terms used to describe these competencies are reading literacy, mathematics literacy and science literacy. The linking of literacy to science could be interpreted as a way of nuancing the term literacy to include more than just reading and writing. The PISA survey is conducted every third year, and the results seem to have a major influence on debates on school practice. This is alarming for those who are invested in school subjects other than the ones tested. In Norway, PISA seems to have a greater influence on educational debates and practice than the national curriculum does. The increased educational investment in reading and mathematics has led to a greater focus on theoretical lessons in the school system and, consequently, it may weaken the position of practical subjects. In this context, it is essential to raise the awareness of literacies connected to subjects with a high impact on practical skills and knowledge. Having in mind how the articulation of literacies in the PISA survey has influenced priorities in education and society, we find it appropriate to examine whether and how literacy is linked to practical skills and reflect upon how practical literacies can be promoted.

From the Nordic media and communication field, Svein Østerud also discusses the understanding of literacy as competence in reading and writing, and positions this verbal linguistic understanding of the term in a historical perspective. His historical overview explains how writing and reading, as mediums of communication, have dominated the development and understanding of the term literacy (Østerud 2012).

As social and institutional practices, including forms of communication, have changed throughout the ages, the term literacy has also been modified. Semiotics was fundamentally changed during the 1980s and 1990s and, as a consequence, the conventional linguistic theories did not fully explain multimodal constituted meanings. Since then, the multimodal literacy concept has reflected how multimodal texts are produced and used within late-modern society (Kress 2000). As a comment on this development, Svein Østerud claims that:

> In our time, with the advent of the converging digital media, written words face increasing competition from images, diagrams, numbers, and sound in our cultural environments. Developing multimodal literacy is therefore essential for those who want to keep abreast with recent cultural developments (Østerud 2012:14).

We are tempted to claim that the content and focus of the PISA surveys indicates that the multimodal literacy perspective has had a weak influence on the large European community of PISA. A narrow testing of students' logic-mathematic and verbal-linguistic abilities hardly corresponds with a multidimensional conception of literacy and a society of diverse communication practices.

Within a multimodal perspective, the importance of practise for learning is both well-documented and problematized within mother tongue research. The value of writing has been stressed. Through the act of writing, students make the learning outcome explicit and discover whether they have acquired understanding (Løvland 2013). When the intention is to acquire subject matter understanding, writing is commonly perceived to be relevant and appropriate. We find parallels between the activity of writing for learning and developing competence through making. In our context of design literacy, the aim of learning requires a different approach than is needed when theoretical subject matter understanding is desired. Being able to understand the complex process of making or designing and become aware of

how these processes have an impact on our surroundings has an innate practical essence. In this way, different modalities are appropriate for different goals.

In various fields of knowledge, we see how literacy is important regarding political formation and community involvement (Foros & Vetlesen 2012). Foros and Vetlesen claim that political formation implies language competence and the ability to challenge political power. Otherwise, a gap exists between political power and expertise on the one side and the people's general language on the other (Foros & Vetlesen 2012). Further, the authors describe how general language has begun to erode and how competence in reading and writing has weakened among ordinary people. At the same time, the experts increasingly develop advanced and specialized language and terms through professional research activities. Foros and Vetlesen also explain the experts' lack of communication ability within a common context. In both perspectives, however, a growing language gap seems to have evolved. Such a gap could have crucial consequences when weak communication limits people's ability to participate in democratic processes. This situation reveals the need for a common language or a reinforced literacy commitment.

Within a general education perspective, the theory of multimodality problematizes the way in which to become a competent late-modern 'reader' and 'writer' when connecting various text-forms is crucial. Through new technology, new text-genres are also born. School students must develop these multimodal competencies and ideally also develop a critical relationship with them. From our design literacy perspective, this literature contains weak insights concerning two areas. Firstly, the multimodal text-term only partly treats physical artifacts. Secondly, as a result of the first area, multimodal theory hardly discusses knowledge construction within these physical cultural expressions beyond the theory of social semiotics.

Design Literacy in Context

We acknowledge that research on literacies has been the subject of considerable debate and has been redefined in several areas of research (Coiro et. al. 2008). Literacy is no longer narrowly tied to the ability to read and write printed text. Literacy is used for the expression of competence, where different ways of communicating meaning are incorporated. However, so far, as earlier mentioned, our studies of the literature related to literacy and combinations of literacy and other fields of knowledge have revealed little concern about materiality in particular or about dealing with, experiencing, creating, touching and acquiring skills concerning the qualities of various materials. Materialization has, however, been connected to literacy and the production and use of graphic or digital design tools, such as the difference between a sheet of paper and a digital screen.

If we take a closer look at fields of knowledge that are related to design and materiality, we find some interesting perspectives. Within the media research community, digital literacy is discussed through what it *means* to be a competent 'reader' and 'writer' in our culture (Erstad 2010). Within the field of visual literacy, there is a similar understanding. Ann Stankiewicz discusses how changing technology in a complex society mandates expertise in visual language and the deciphering of the power relationships that exist in these social structures (2003).

When Nathan Stegall discusses ecological literacy, he claims that the idea of a 'sustainable product' within the design field has been misunderstood so as to include only recyclable products and, to a smaller extent, awareness of the object's purpose and use (2006). Stegall explains the shortcomings of 'the sustainable product'. Even if a company could design and manufacture a product that used only solar energy, gave off no toxins and was fully recyclable, it would not be truly sustainable unless every person who used it did so in a responsible manner and recycled it at the end of its life. The impact that any product has on the social and ecological environment depends as much on its use as on the technology it deploys. Stegall claims that: 'The crisis of sustainability is more than simply an issue of poor technology; it has emerged as an extremely complex sociological dilemma, where the lifestyle that we have adopted is rapidly eroding our ability to survive' (Stegall 2006:57). Ecological literacy involves skills above and beyond the traditional eye for form and function. A broad knowledge of science, art, engineering, communication and human interaction is needed to promote

harmony between nature and humanity (Stegall 2006:63). Stegall's reflections on the short-comings of consumer competences regarding the awareness of ecological literacy are of great concern for further discussions of materiality and sustainability.

Let us consider an example that is identifiable for all consumers: decisions made regarding how to treat and select textile garments. The recommendations for washing and drying are given on the information tag, and these instructions are not too difficult to follow. Other aspects of material knowledge might also be easy to learn, such as how to determine if a fabric is wool or synthetic. It will 'melt' when exposed to a flame if it is synthetic, but this is, of course, difficult to test in a shopping situation. It is more difficult to know whether the fabric is of high quality and suitable for the intended use of the garment. The quality of the fabric is of great importance in terms of a long lifespan, and price might coincide with quality—but not always. Unfortunately for the consumer, the environment and society, we are often seduced through our shopping. In many cases, expert knowledge is required to make informed deci-sions and, for this purpose, material knowledge, such as trained tactility, is needed. It is possible to develop such competence through many years of experience and a continuous awareness of phenomena such as how a fabric 'feels' and falls. A person with material 'con-noisseurship' enhances his or her competence in making informed choices based on material in various contexts. Such 'connoisseurship' is complex and built upon knowledge. Their competence might seem intuitive, but it is built upon many years of practice (Lave 1997; Reitan 2007; Schön 1983). Such apparently intuitive knowledge is closely connected to practice over time. The ability to articulate and communicate qualities is a part of this and is included in the term literacy.

When we use the design literacy concept, we build upon an acknowledgement that it is possible to develop *grounded knowledge of sustainability.* By dealing with 'the making' (Dunin-Woyseth & Michl 2001) of physical material, we can understand the aspects of both time and energy concerning the production of a product. We can develop an understanding of material quality based on what is lasting, what is functional, what represents ecological awareness and what supports a sustainable environment. Developing a sensitivity to, and awareness of, materials is a matter of reflectivity towards the physical dimension, including both unprocessed materials and final artefacts. It is within this perspective that we find it appropriate to ask whether the inclusion of materiality into the design literacy concept can give attention to practical knowledge in combination with other literacies. Material knowledge is important in itself, but because materiality needs to be seen in a plural context of purpose, use, production, transport, ecology and ethics, it is, as we see it, necessary to underline this context.

Stressing materiality as a component of design literacy might lift the understanding and study of both design and materiality into a wider context, impacting future development. For the field of design, it is necessary to be emancipated from being associated with a narrow understanding of design as merely form and colour. In the same way, it could be expedient to see materiality in a complex context that is not limited to the production and processing of materials. The questions raised on the basis of Stegall's (2006) work on consumer knowledge as a precondition for ecological literacy are also decisive for our understanding of the design literacy concept.

Sustainable Development for Longer Lasting Products

In 1987, the former prime minister of Norway, Gro Harlem Brundtland, made the *sustainable development* concept well-known through the report 'Our Common Future' from the United Nations World Commission on Environment and Development (WCED). The report focused on environmental concerns and put these concerns on the general political agenda. The report emphasised the role of building public awareness to prevent the destruction of the ecological balance of the world. The educational and scientific community was challenged to build such public awareness:

…we appeal to 'citizens' groups, to non-governmental organizations, to educational institutions, and to the scientific community. They have all played indispensable roles in the creation of public awareness and political change in the past. They will play a crucial

part in putting the world onto sustainable development paths, in laying the groundwork for Our Common Future (WCED1987:9).

The Brundtland report has had an impact on other political documents in which future development has been discussed. There have been written reports on climate change, among them the influential report by the Intergovernmental Panel on Climate Change (IPCC 2007), but still, the most challenging question remains unsolved: the increase of waste as a consequence of unwise consumerism. In 2008, the I*nternational Association of Universities and Colleges of Art, Design and Media* (Cumulus) signed the *Kyoto Design Declaration*, in which member universities declared:

> …to contribute to sustainable social, environmental, cultural and economic development for current and future generations, the Cumulus members will commit themselves to accepting their part in the further education of our youth within a value system where each of us recognizes our global responsibility to build sustainable, human-centred, creative societies (Cumulus 2008).

In the time after this declaration, all universities in Norway where design education is performed have included a sustainable perspective in their curricula. This is probably also the situation for similar university studies in other countries. Educated designers can play a crucial role in turning an unsustainable development into a sustainable one. Everyone knows, however, that important decisions regarding the production of products are related to the economy and are rarely made by designers alone. There are, of course, positive movements and theories about greener design, such as long-term sustainability (Bowers, 1995), design from 'cradle-to-cradle' (McDonough & Braungart 2002) and design for longer lasting products (Cooper 2010). While industry has given too little attention to the use of sustainable materials in their production, consumers have not been fully aware of their power to refuse to buy unethical artefacts in terms of material, use or production. This puts consumer knowledge on the agenda in terms of sustainable design. The promotion of longer lasting products will presuppose material knowledge and consumer awareness. The grounded knowledge of materiality is essential in making sustainable choices, whether one is going to knit a sweater or buy a chair. The consumer act is connected to ethical issues and, in the western world, we seem to buy more than we need (Klein 1999).

In the introduction of this article, we referred to the way in which the design literacy concept has been incorporated in EU terminology. It is of high relevance for future consumer awareness that general education in design is focused on recommendation 20 for the EU Commission (European Design Leadership Board 2012:73). We think this is a great challenge for the field of design research and design education. Considering the growing amount of consumer waste, making reflective choices when buying is crucial. We cannot continue to buy merely for our own pleasure; we need to think of the soundness of the ecological system. This is an argument for putting the values of design literacy, including material knowledge and sustainable design, on the general education agenda. In our view, it is possible to develop material knowledge for the public through general design education over many years. We see such competence, design literacy, in the perspective of longer lasting products, and sustainable development and design education for citizenship in perspective of democratic participation (Nielsen & Digranes 2007).

Continuing Foros and Vetlesen's perspective (2012), the educational challenge not only concerns students' technical skills in reading, writing, using digital tools or knitting but also how to develop a critical awareness of how various groups are being socialised as consumers and producers. That is: knowing the most suitable way to produce and use material artifacts in today's society and in this way creating identity and belonging which, in turn, gives power, access and membership to a community. This brings new life to the educational ideas of Paulo Freire (1970). As mentioned earlier, Kress claims that the conventional linguistic theories do not fully explain multimodal constituted meanings and asserts that multimodal texts require theories and an explicit meta-language that explain how these texts are produced and used.

We believe that developing such a 'meta-language' connected to material artifacts is dependent on a 'reflection in action' approach. Through the mode of 'making' in physical material, a grounded knowledge of sustainability could be incorporated via the hands, body and mind as an alternative counterculture. A critical stance regarding shallow symbolic design-values is needed.

Challenges

There could be several reasons why our consumer society, with its strong, growing material culture, does not increasingly problematize the fact that 'things', or artefacts, escalate in both scope and quality and the fact that this should emphasize the importance of design curriculum in school practice. Material culture has a greater influence on the lives of people—and on our ecological system—than ever before.

EU recommendation 20, in attempting to raise the level of design literacy for all European citizens at every level of the education system, is ambitious. It is, however, time to be future-oriented on behalf of the balance between nature and culture. The design literacy concept must be further discussed. Thus this article leads to an additional question: What challenges need to be addressed in design education at various levels in order to boost the advancement of design literacy?

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