Intelligent Human Systems Integration (IHSI 2023), Vol. 69, 2023, 786–796
https://doi.org/10.54941/ahfe1002902

Design Skills Learned by Non-Designers to Improve Their Lives

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ABSTRACT

In this article, the design competencies transferable to Non-Designers (N-D) are deepened. With this in view, we analyze the process of acquisition of these tools and its impacts on N-D. The article starts with the description of our vision on design. This contextualization is important to identify the main competencies that designers must have. The study on which skills to select was based on authors who have a practical perspective of design, or observation of its praxis in common. The literature review allowed us to establish a set of fourteen skills, as well as hierarchize them: Empathy, Collaboration, Critical Thinking, Communication, Problem Solving, Openness, Experimentalism, Humility, Leadership, Innovation, Facilitation, Flexibility, Divergency vs. Convergency and Optimism. The fundamental idea of this paper is to ask N-Ds, with experience working in co-design teams, about their evolution in the face of these skills, before and after being exposed to the practice of design. In order not to give rise to different interpretations on the meaning of each of these areas of knowledge/competencies, a description was prepared followed by the relevance these competencies have for the subject of design. The results of the surveys and interviews allow us to perceive that, when exposed to design experiences, N-D are effectively able to assimilate competence in a very significant way, and, allowed us to perceive the importance of soft skills in co-design teams, namely, in what concerns its integration. In conclusion, we highlight the potential that these design tools may have for N-D.

Keywords: Design skills, Soft skills, Design for non-designers, Design process

INTRODUCTION

This article discusses design competencies and their process of apprehension by non-designers (N-D). This approach is based on the promotion of N-D quality of personal life and professional activity, their ability to solve problems and their social integration.

Design is regarded here as a way of finding solutions to people's current real problems. It is important to develop solutions that make people's lives easier and that meet their expectations. It is important to investigate concrete contexts, real communities, more than the abstract concepts of the consumerist society. This design is more activist and rooted in the local community. (Rawsthorn, 2013, p. 207).

This understanding of design is based on Design for Sustainability (D4S) or for sustainable development, or even design for complex systems. What

is meant by D4S is that it is an area of the design subject committed to creating a better world, in an ethical attitude of promoting the common good, considering that the lever of the processes are people framed in the various dimensions of life, in line with the UN guidelines on sustainable development (Design Council). This way, Design for Sustainability deepens these issues from a holistic and integrative point of view to promote actions applied to local needs.

Design for the complex world, an adaptation of Papanek's (1992) expression "complex function", alludes to the complexity of the problems the world faces today.

The complex system comprises problems in their various inter-phases of approach, particularly with regard to social, environmental, and economic issues.

The term complex world promotes the need to equate the issue within several perspectives. The multi-level perspective tool can help break down information into sub-themes, allowing you to deal with the amount of information and finding new intersections that can foster innovation more easily. Multi-level perspective consists of an approach to the problem considering its various dimensions. It is about decomposing complex systems into subthemes, to deal with the amount of information, to find intersections that can promote innovation.

As we believe that design can solve problems, as well as, find solutions to the problems of sustainable development, we also believe that it is fundamental to have mastery of design tools for a good resolution of these problems.

Given this positioning, the most important premise of all is to think of design as a process made with people. D4S development and design for the challenges of the complex world, is transdisciplinary, therefore, being important to work on building an integrative environment encouraging collaboration of all participants, where all knowledge is welcome. This way of acting in design presupposes an open-mindedness - **openness** - where individualities like Ezio Manzini (2015) claim that we are all designers. And the idea that "everybody Designs" also comes from the need to collaborate, to bridge the gap - **facilitator** - and to **lead**, between all the possible stakeholders of the design project. Because the world needs all solutions urgently to reach the objectives of sustainable development, because to innovate it is necessary to establish new relationships, breaking traditional silos of knowledge and incorporating the knowledge of various entities in a single dimension. Working in a transdisciplinary context implies being able to understand, or have the **humility** to realize that the ideas of others are valid, as much as or more than mine, and that all contributions are valid, because the subject is too new (Jones, 1992, p. l). Finally, involving all stakeholders promotes the co-responsibility of the decision-making processes and of the verification of these processes. This means that projects whose methodology is based on **collaborative** processes are more likely to be viable.

Table 1. Comparison and ranking of the main skills that designers should have or should develop, based on the authors Tim Brown (2008) Rawsthron (2013); Pilot cit. By Rawsthorn (2013), Jon Kolk (2017), and Freitas and Almendra (2021).

	Jon Kolk (2017)	Tim Brown (2008)	Rawsthron (2013 p. 208 and 223) and Pilloton Cit. Rawsthron (2013 p. 204)	Freitas&Almendra (2021)		Proposal
4/4	Empathy	Empathy	Empathy	Empathy	1	**Empathy**
4/4	Collaboration	Collaboration	Collaboration	Collaboration	2	**Collaboration**
3/4	Problem Exploration/Expiration)/Vertical Thinking/ Linear Thinking	Integrative Thinking		Systematic Thinking/ Critical Thinking	3	**Critical Thinking**
3/4	Communication		Communication	Communication	4	**Communication**
3/4	Problem Solving		Problem Solving	Problem Solving	5	**Problem Solving**
3/4	Openness		Openness	Open-Mindedness	6	**Openness**
3/4	Creativity/ Playful/ Illogical Free-association	Experimentalism		Creativity	7	**Experimentalism**
2/4	Humility		Humility		8	**Humility**
2/4			Leadership	Leadership	9	**Leadership**
2/4	Lateral Thinking		Innovation		10	**Innovation**
2/4	Guide / Facilitator		Diplomatic		11	**Facilitator**
2/4	Ability to Switch			Flexibility/ Adaptability	12	**Flexibility**
1/4	Divergent				13	**Divergency vs. Convergency**
1/4		Optimism			14	**Optimism**

CORE COMPETENCIES THAT DESIGNERS SHOULD HAVE

Designing for sustainability and for a complex world requires encouraging a design-centered positioning as an attitude. Because of the implications of this statement, it was necessary for us to reflect on which competences designers should have to face these challenges.

The authors on which this study is based share the fact that they have a strong relationship with design practice. Among them are Tim Brown (2008), Pilloton cit. By Rawsthorn (2013), Jon Kolk (2017), Rawsthron herself (2013) and Freitas; Almendra (2021).

This study enabled us to get to the set of knowledge/skills described in Table 1. To make this table, we compared the characteristics listed by each author, checked which ones are mentioned more often and then ranked them from the most mentioned to the least mentioned, from the most important to the least important. Other characteristics or virtues were not included in this study, because they are the same mentioned, or because they are less consistent, including: Integrity, Efficacy, Ingenuity and Appropriateness; Compassion; Attuned to the frailties; Ambition or Courage; Diplomatic (Rawsthorn, 2013); Learn to Learn; Team-Work; Self-direction; Ethic/Comprise; Entrepreneurship (Freitas; Almendra, 2021).

The knowledge/skill set we got to is as follows: 1) Empathy; 2) Collaboration; 3) Critical Thinking; 4) Communication; 5) Problem Solving; 6) Openness; 7) Experimentalism; 8) Humility; 9) Leadership; 10) Innovation; 11) Facilitation; 12) Flexibility; 13) Divergency vs. Convergency; and 14) Optimism.

Each of these knowledge/skills is explained to deepen their meaning in the context of design practice, followed by an interpretation of their importance for design activity.

Empathy

Empathy is the ability to recognize and share other people's mental states (Lupton, 2020, p. 84). Putting it in other words, empathy is the ability to place yourself in the other person's shoes, allowing the establishment of a true connection and understanding about their feelings.

Designers need to be empathetic to understand the way others feel and experience, to know how to identify needs and opportunities. The aim of empathy in design is the faculty to understand and interpret how to value, incorporate, and promote solutions that fit with that reality of others. This empathic connection is significant both for understanding, interpreting and valuing the other, in the sense of respecting the opinions and contributions of the various partners in the co-design process, as well as for understanding the needs of others. On the one hand, empathy refers to emotion and creativity/**experimentation**, these characteristics being interconnected (Lupton, 2020, p. 12). On the other hand, empathy is associated with observation and insight, as fundamental elements for any design project (Tim Brown, 2010, p. 38). Empathy, as a way of knowing the other person and understanding their world, is at the initial base of the design process and should act as the great stimulus; it is also considered as a key to the success of projects. Only in this way is it possible to create solutions that (effectively) improve life (Lupton, 2020, p. 12).

Collaboration

When referring to collaborative processes, what this means is the capacity to engage through participation and co-design. Participation refers to the involvement of people in a generalized way, where everyone is invited to attend, while co-design implies a deeper involvement in the creation of the project, a joint work, where authorship is mixed between the intervening partners, the co-authors.

Design creates empathetic strategies that allow stakeholders to be involved in decision-making processes (Vasconcelos, 2022). This suggests that co-design projects whose methodology is based on collaborative processes are more likely to be viable. Co-design teams can be multidisciplinary and interdisciplinary or transdisciplinary. This way, design for the complex world carries out work between collaborators or between peers (Vasconcelos, 2010, p. 2). Everyone is invited to participate, "everyone must be free to think about the whole" (Jones, 1992, p. l) The advantage of collaboration is to create an environment in which there are good relational qualities, where people can freely contribute to solving their specific problems (Vasconcelos, 2008, p. 2).

Critical Thinking

It is the ability to delve into a topic, problem, or design opportunities. It is to go beyond a superficial first approach, which may be a *cliché* or a biased solution.

Critical thinking means the ability to expose ourselves to reflection; it takes the form of knowing how to reason and the ability to be critical of reality, with regard to observation, analysis of contradictions, the construction of a

discourse with an argument, the identification of concepts, the elaboration of work objectives and purposes, the analysis of various types of information, sometimes from several subjects. There is no design without critical thinking. This critical thinking can be termed in several ways. Among them: Integrative Thinking, Problem Exploration, Vertical Thinking, Systematic Thinking (Freitas; Almendra, 2021).

Communication and Visual Communication

achieved in various ways: through writing and images, through speech and through one's own behavior. Communication serves to establish rapport with others. A good communicator is one who conveys a message or information efficiently and thus enables people to understand each other through a process of dialogue (Infopedia).

Designers use visual communication to support the communication system. Visual communication is the ability to use visual elements to communicate information and ideas, and to establish the relationship or communication between people.

Problem Solving

Is the ability to solve problems. To Rawthorn (2013), design is, above all, attitudes. It is a practical and paradigmatic attitude towards life, an attitude to search for solutions to the day-to-day issues of people and their communities.

Design practice is founded on the identification of design issues, the study of their context with the end goal of proposing to implement new solutions. With this attitude, design projects achieve the goal of improving quality of life, simplifying everyday life, valuing people and their communities (Vasconcelos, 2022).

Openness

In essence, openness refers to the ability to integrate, listen and be flexible regarding the other, to be able to share information, and to the possibility of considering various perspectives.

The designer must have an attitude of openness, which is revealed through the ability to **cooperate.** Rawsthorn (2013, p. 223) alice goes further and says that we live in an open source era, so the designer shouldn't be defensive, but should be more open to other subjects as a way to reach and learn from the opportunities that arise. This openness is also important for **experimentation**, which in turn provides **innovation**, and relates to the ability to work in a **collaborative** and **flexible** way.

Experimentalism

Having the willingness to experiment, which means, having the capacity to expose oneself to risk or be free to make mistakes. To experiment is to explore something more deeply through creativity. Thus, experimenting is associated to the uncertainty of the (artistic) creation process, which aims to propose something that did not exist. For design, experimenting is associated with divergent thinking, to create variations or diverse interpretations of a

given situation. Experimenting should be a fun activity; however, it can create anguish because we are not sure about the result and because it is based on a process that is not linear and is sometimes illogical. Divergence can open the "Pandora's box" for subjectivity and one can become confused and lost. Not going through the experimentation process can compromise the final solution. The importance of experimentation forces one to reflect and find the solution, sometimes the result of chance or random error. Thus, it is our belief that the ability to experiment is a key element of design as an initial condition for the development of the innovation process.

Humility

Humility is the quality of being humble and modest (Costa; Melo) as opposed to being arrogant.

Humility in design is the virtue that relates to being receptive to the opinions of others rather than wanting to impose one's own ideas. Humility is, in this way, related to **collaboration** and **flexibility**.

Leadership

Leadership is the ability to coordinate and lead innovative creative processes.

Design leadership aims to know how to define future strategies, to have the ability to manage the work process, to be responsible for its realization and implementation. In design processes for sustainability or for the complex world, it is important to build the bridge between stakeholders (**facilitator**) and simultaneously know how to manage people, designers, and N-D, involved in the project.

Innovation

Ability to explore new ideas.

In design, innovation is the level above creativity or **experimentation**. For there to be innovation, there must be creativity or an appetite for experimentation. However, on the one hand, the innovation process starts by empathetically observing people's needs and in the **collaborative** relationship where design opportunities are built (Vasconcelos, 2022). On the other hand, the search for thought and its application to **divergence** as a process of analysis of the complex world is necessary. Divergence allows information to be gathered and the crossing of information makes it possible to establish new relationships and build bridges not previously identified, i.e., it allows nonlinear thinking. Innovation can also be fostered by the fact that design can bridge the gap between people, making use of the **collaborative**, **facilitative** and **leading** processes.

Facilitation

Being a facilitator means knowing how to reconcile and involves the knowledge of how to bridge the gap between people with complementary knowledge, sometimes transdisciplinary or interdisciplinary. In a complex world it is necessary to have a holistic vision to know how to apply it to local

projects. This type of project brings professionals from various sectors together. Designers need to be facilitators to build and boost the bridge between these various fields of knowledge. The designer emerges here as a mediator and a driving force of these various sectors.

Flexibility

Being flexible is about being open to change and not sticking to one idea. Flexibility in design is particularly important because it allows us to accept and analyze the ideas of others and allows us to explore our own ideas.

On the one hand, the designer needs to be flexible to integrate and **collaborate** with the other actors involved in the process. Thus, being flexible is a feature that is directly related to the ability to be **empathetic**. On the other hand, flexibility is directly related to creativity or **experimentalism**. There is no creativity, let alone innovation, without flexibility. The ability to be flexible also reveals itself in other situations, namely, in relation to the need designers may have to sometimes lead and sometimes be led (Bruce, 1998).

Divergency vs. Convergency

Divergence refers to the capacity to expand the boundary (Jones, 1992 p. 64) to obtain various points of view, or one could say that it is the deconstruction of the design question. Divergence can also be defended as the ability to open horizons. Its aim is to deliberately increase uncertainty, so that it is possible to free oneself from preconceived ideas (Vasconcelos, 2014, p. 265). Divergence means putting the creative process into practice and can become an illogical process (Kolk, 2017). The relevance of divergence and convergence lies in understanding the design process as critical thinking.

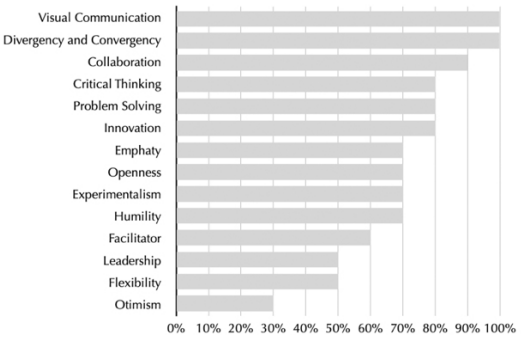
The importance of this binomial - intuition and reason - for design, lies in the ability to be creative/**experiment**, which will allow **innovation**, using the power of synthesis and criteria with clear purposes for that. The key to acting in design lies in this capacity to be **flexible** in terms of the structure of thought, both irrational and rational.

Optimism

It's thinking that there can always be a solution and that it's achievable based on the design tools we have.

For Brown it is the capacity to hear a no (Brown, 2008). Hearing a NO means that one must try to go another way. So, we can say that optimism is also associated with **flexibility** and **experimentation**. The design perspective for sustainability or for the complex world, requires this valence, otherwise it is not possible to believe that you can change the world however little it is, because resistance to change is and will always be great. In this sense, for designers to have this characteristic it is important to be aware of the value that design can add to projects.

Table 2. left and right. 2 left. Knowledge/skills that N-Ds feel did not evolve, remained the same. 2 right. Knowledge and skills that N-Ds intend to make a lot of effort to improve.



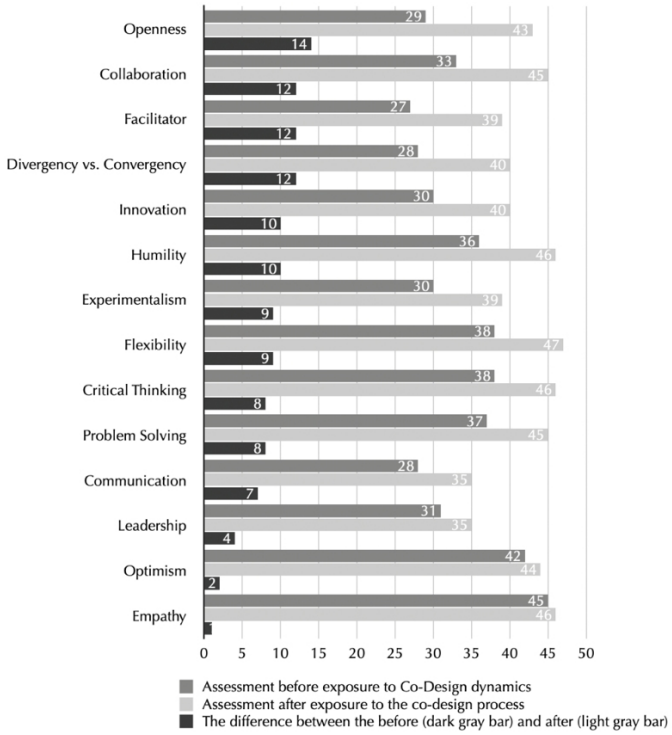
MAPPING THE RESEARCH ON DESIGN KNOWLEDGE/COMPETENCES APPLIED TO NON-DESIGNERS (N-D)

As the aim of the research is to understand what part of design knowledge can be more easily apprehended by N-D, a survey and interviews were carried out with the aim of: 1) ascertaining the importance that N-D gave to each of the parts of knowledge and competences before they had contact with design; 2 after having contact with design, evaluating how they classified their performance, i.e. how easily they picked this knowledge and competences; and 3) Finally, we were interested in understanding the importance they gave to different knowledge and skills, analyzing the predisposition to invest in this knowledge. The target group that we applied this study to were master students of the Design for Sustainability (D4S) course. In the year 2020/21, the course (D4S) started being taught at the Faculty of Fine Arts of the University of Lisbon. In this course students with degrees in all areas of knowledge are admitted. Classes are, therefore, composed of students with backgrounds in Design and students with other backgrounds in Biology, Geography, Heritage, Social Work, etc. The latter are the so-called N-D. The majority of the classes are with graduates from various design schools. Within the class we always worked in mixed teams, designers, and N-D. This interdisciplinary environment took place over 2 semesters (2nd year students) and 1.5 semesters (1st year students). Given this situation we hypothesize that there may have been a contamination of knowledge and some competencies may have been seized. To understand which tools have been more easily grasped by these N-D students, we conducted a survey. In this survey we asked how they assessed the knowledge and competences they had before joining the course, at the present time and in the future, what is the degree of importance that goes into improving this knowledge and competences.

FINDINGS FROM THE RESEARCH ON DESIGN KNOWLEDGE/SKILLS APPLIED TO NON-DESIGNERS (N-D)

Please see Tables 2 and 3.

Table 3. The trend of evolution of knowledge/skills of the group of N-D respondents.



CONCLUSION

Among the set of knowledge/skills analyzed: Empathy; Collaboration; Critical thinking; Communication; Problem solving; Openness; Experimentalism; Humility; Leadership; Innovation; Facilitation; Flexibility; Divergence vs Convergency and, optimism:

- We can state that the competencies where there is a tendency for greater evolution are Openness, Collaboration, Facilitation and Divergency & Convergency, which means that these knowledge/skills can be more easily increased in N-D.
- The skills in which N-Ds assume they had the most difficulty in progressing are Optimism, Innovation and Leadership.
- And finally, the knowledge/skills that students would like to improve and are willing to try to do so are Visual Communication, Divergency & Convergency; Collaboration; Critical thinking, Problem Solving and Innovation - these are the specific skills of the Design subject. The least valued competencies for trying to improve are Empathy, Openness, Humility, Facilitation; Leadership, Flexibility and Optimism - these are competencies referred to as intrinsic characteristics of the person and not specifically related to the subject of design.

It is meaningful to realize that co-design teams, consisting of designers and N-D, are integrative and, in this interdisciplinary context, it works. In view of

this study, we can affirm that knowledge/skills in design are sufficiently comprehensive or broad, between intrinsic characteristics and those that are easily incremented, so that N-D feel integrated, I. E., in conditions to contribute, equally, in design projects.

It is also important to note that collaboration is, on the one hand, an aspect where there is a greater trend of evolution, and on the other hand, one of the skills that they intend to make a strong investment in, in the future. As collaboration is a very important part of knowledge/skill for design, we can conclude that N-D participants are quite aware of its relevance. As for empathy, it is the skill that N-D participants value as the one which is most intrinsic.

In the final analysis, much of the knowledge/competencies mentioned as fundamental characteristics for the practice of design, are in the realm of soft skills, and are not appanage of design, helping to obtain co-design results. The expression "we are all designers" now makes even more sense.

It is also important to highlight that the participants involved in this co-design dynamic showed significant progress in the acquisition of design knowledge and skills. This means that with this study we have proved that it is possible to disseminate these design tools to N-D. And, that design knowledge and skills can be transmitted and learned effectively, obviously with the exception that there are skills that are more easily instilled than others.

This ability to acquire this knowledge and design skills by N-D has enormous potential if we believe that design, as an attitude, can improve people's lives.

It is, therefore, exciting to be able to provide these design tools to a wider population, to N-D in general, enabling ordinary people to better manage their interpersonal, creative and more rational skills, and also improve group dynamics, from interdisciplinarity and social cohesion, valuing one's own life and professional activity, as well as one's own personal happiness.

If we spread these design tools to N-D, the world will have more resources and in the end we will all live better.

ACKNOWLEDGMENT

The authors would like to acknowledge CIEBA, Centro de Estudos e de Investigação em Belas Artes, Faculdade de Belas Artes da Universidade e Lisboa e FCT.

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