# THE ROLE OF CO-OWNERSHIP WITHIN PRODUCT DESIGN EDUCATION

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## ABSTRACT
Teaching product design is a complex activity, which deals with fast changing technology, emerging markets and unpredictable user-needs. During a design education program young designers appropriate an opportunity-driven approach; requiring decision making, doing experiments with different materials and machines and testing prototypes with real users. Therefore teaching design practicums have a certain "wicked component". No single design assignment, nor student is the same. To deal with such complexity, within a relative limited amount of time, we explore the concept of co-ownership as a practical tool to facilitate personal and community growth. Co-ownership can give new responsibilities to students within a dynamic school environment. In a design & engineering context it can be organized at two levels: on the one hand at (1) the level of the learning process itself (introspection) – the degree to which students become involved and responsible for their own education, growth curves and their learning outputs. On the other hand we make a clear distinction with (2) the level of the practical organization within a school community (extrospection) – the degree to which students take initiative with regard to the organization of extracurricular events, the housekeeping and clean workshops, the exploitation of a shop, photo studio, materials library and certain machinery. Experiencing both activities can gain real understanding of what it means to build a community and be part of it as a young professional designer with a unique identity.

*Keywords: Reflective practice, self-directed learning, shared responsibility, young professional, open education.*

## 1   INTRODUCTION
Industrial Design Centre (IDC) is an open knowledge centre fully connected to the education and research program of the professional bachelor Industrial Product Design in Kortrijk, Belgium. IDC continually sets up multi-disciplinary projects at the request of businesses and invests in state-of-the-art equipment available for use for students and companies. IDC focuses on design which is in line with all the evolutions in the field of product identity, engineering, well-being and smart products.

The field of industrial design is constantly changing [1]. Therefore, teaching product design is a complex activity, which deals with fast changing technology, emerging markets and unpredictable user-needs. During a design education program young designers appropriate an opportunity-driven approach; requiring decision making, doing experiments with different materials and machines and testing prototypes with real users. Therefore teaching design practicums have a certain "wicked component" [2];[3]. No single design assignment, nor student is the same. To deal with such complexity, within a relative limited amount of time, we explore the concept of "co-ownership" as a practical tool to facilitate personal and community growth.

The concept of co-ownership was agreed upon among our team of teachers and researchers since 2013. It helps us to define and discuss different stages for students to develop their design competences, learning growth, engagement/connectedness and autonomy. We also believe co-ownership enhances the subjective well-being for product design students while studying because we activate them based on the principles of constructivism. Constructivism as a pedagogical approach [4] has been crucial to set up our own educational framework. Learning according to the constructivist approach implies that new cognitive structures are acquired. These theories of learning propose that the learner is not conceived of as a passive recipient of knowledge, but is an active participant in the process of learning. The learner constructs his own knowledge based on his experience and

relationship with concepts. This approach is mostly interpreted as 'learning by doing'. In our concept of co-ownership there is a unique interpretation to constructivism, both on the level of learning outcomes and sharing resources.

In this paper, we reveal our co-ownership model, its mechanisms and its impact at every level and every year of studying the 3-year-bachelor program. A challenge of co-ownership we are currently facing is the development of relevant communication tools to make the model tangible for reflection with students. Therefore we will have a non-exhaustive look at some own developed communication tools to facilitate the model. Furthermore, we will reflect on some new initiatives our students have taken since we consciously use the co-ownership model.

## 2 CO-OWNERSHIP MODEL: INTROSPECTION (LEARNING) VERSUS EXTROSPECTION (RESOURCES)

Over the course of 3 years' time, we use a step-to-step process to let students adapt to the philosophy of co-ownership. Reflective educational practice [5] and building/sharing prototyping resources [6] are key elements. Let's first have a look at the model itself (Figure 1).
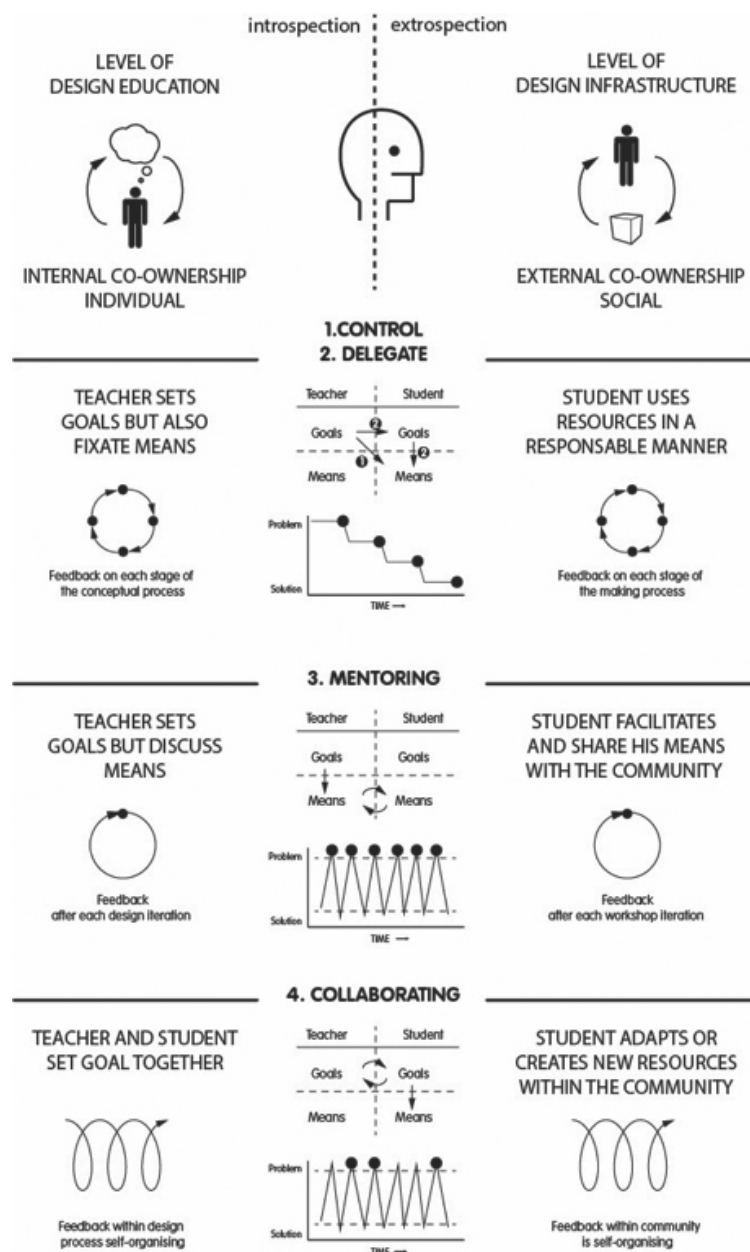


*Figure 1. Visualization of co-ownership model, version 2017 (adapted from Dubberly,2012)*

When we implement co-ownership on an educational level, we talk about something which is individual for students (left column of the model) whereas co-ownership on an infrastructural level is about using/sharing/making resources which belong to a community of teachers, students and stakeholders such as companies and researchers (right column of the model).

By reading the model on the left side and go from the top to the bottom, we take students on an educational journey of building design competences (in year 1) over integrating these competences (in year 2) to a self-direction of competences (in year 3).

We distinct 11 different competences to become a product designer and cover them with a symbol for an easy understanding among colleagues and students. We have been checking and benchmarking these competences within our network of stakeholders in the industry and partner schools across Europe and beyond.



*Figure 2. A list of the 11 competences of our product design program, defined in 2014*

When we then continue reading the right side of Figure 1 and go from the top to the bottom, we take students on a journey of using the existing resources in our Industrial Design Center (knowledge, machinery, materials, services) (in year 1), over sharing and facilitating the resources (in year 2), to adapting or creating new resources (in year 3).

Finally, when we read the middle column in Figure 1, we distinguish 3 different communication styles, described by Dubberly from a manager-designer perspective. The manager can delegate and control (= to direct what is done and how it is done by the designer); or he can be a mentor (= to discuss possible means for achieving a goal with a designer); or he can collaborate (= to talk about goals, beliefs, values and quality) [7]. We actually translate these communication styles to the setting of teacher-design student. The teacher tells the design students in year 1 what to design and how; what to be used as a material/prototyping technique and how; he becomes a mentor in year 2 and sets differentiated goals with the students; letting them point out their learning goals and he ends up being their collaborator in year 3, adding value and quality to the design process; he lets students organize

their own design environment. Both on an individual and community level, it starts with some control and delegation, it gradually evolves to more mentorship from teachers towards students, to finally get every stakeholder on board in a collaborative design culture respecting individuals, materials, machinery, time, money & resources. This open design education culture implies peer-to-peer learning; students training & teaching each other (by publishing manuals and howtos on platforms such as instructables.com, by organizing prototyping workshops, by inviting professionals). We will now discuss a non-exhaustive list of recently developed communication tools to support co-ownership at our school.

## 3   COMMUNICATION TOOLS FOR STIMULATING COMPETENCE GROWTH

Example 3.1, 3.2, 3.3 and 3.4 focus on the left side of the co-ownership model - introspection - reflective learning for individual students.
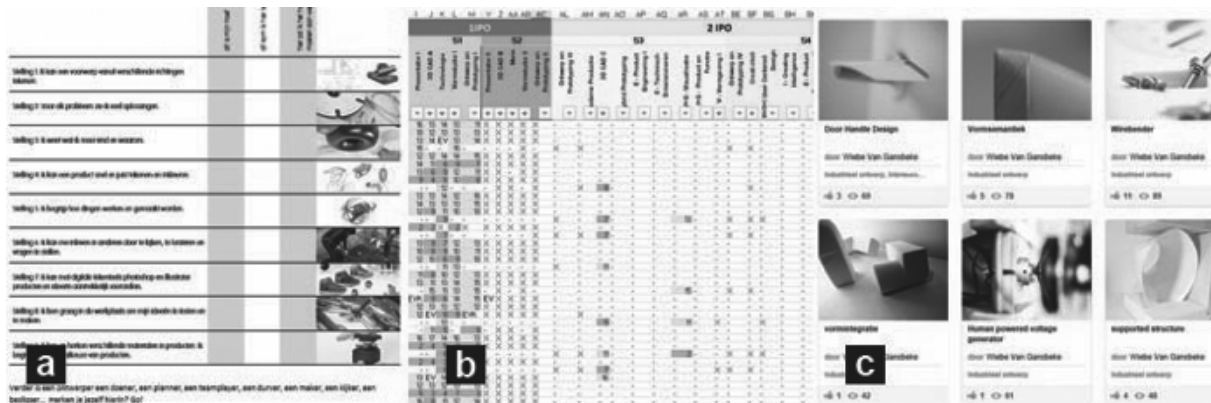


*Figure 3. (a) personal reflection test after the bootcamp. (b) student follow-up prototype in excell, 2017 (c) behance portfolio 1ˢᵗ year, 2ⁿᵈ year & 3ʳᵈ year student*

### 3.1   Getting to know competences: example boot camp

Around Easter, July & August each year, IDC organizes so-called "study try-outs". Within 2 days, we immerse students-in-spe in the different aspects of the course program: creative thinking, sketching, problem solving, prototyping & testing. We make students aware of their study choice, without giving any binding advice. At the end they get a reflection test to fill out at home (screenshot in Figure 3, a). It contains 11 rows (design competences) and 3 columns to mark either strong points, learning gaps and pitfalls to become a designer. We ask students to keep the document on a safe place and, when they subscribe, bring it to the first meeting with a teacher to discuss their results in the SOS-tool.

### 3.2   Building competences: example SOS-tool

We are currently prototyping a student follow up system in excel (screenshot in Figure 3, b). It facilitates our teachers to centralize all their score lists of different courses. All lists are accessible to and adaptable simultaneously by all teachers. Teachers have an instant overview on a weekly base, on how every student is performing in all different classes and do not have to wait until the next exam period or deliberation. Thanks to SOS, teachers have an instant overview of the study contract of every student with no need to login to the student administration software.

Students can ask teachers to open this SOS-tool and have individual feedbacks on their performance, in the middle of the academic year or when they feel like, not having to wait until the next exam period. The feedback comes with an easy colour code red-orange-green. Together with that teacher, the SOS-tool allows students to formulate personal goals for improvement up to every 6 months; notes are visible among all teachers. The SOS-tool is also useful in year 2 for students to reflect on their match with a company profile and start the search for an internship in year 3.

### 3.3   Integration of competences: example Behance-portfolio

Students get started at day 1 of their study to make a Behance profile. Doing so, they get connected with their class group (e.g. class 1IPO1, generation 2016-2017) and their study coach of the teacher's team. Students publish a picture and description of every task and design project they do at school, so they fill their portfolio slowly but steadily; they get peer-to-peer reviews on their portfolio site and in

year 2&3, students are used to build content, integrate their competences and display their work. It trains students to communicate about their ideas; at the same time, the school highlights its projects online and globally.

### 3.4  Self-direction of competences: example design brief

In the first year of study, students are provided very detailed and step-by-step design assignments to deliver technical solutions, ideas and concepts responding to a real-life company assignment. In year 2, students deal with more abstract and broader topics. They are able to deal with uncertainty in the brief and define a focus themselves. Finally, in year 3, as an example of reflective learning practice, students are able to write their own design briefs relying on their research competences and underpinned interaction with all stakeholders. They know how to add value, quality and meaning in a brief. They proof this by means of their bachelor thesis and their start-up project. In the start-up module, students organize themselves and work as a small design firm for 7 months. They have an office at school, are responsible for defining their own design brief, producing a product and launch it on the market. Students fully self-direct their planning, deliverables, meetings with teachers and external stakeholders, and so on.

## 4  COMMUNICATION TOOLS FOR USING, SHARING AND FACILITATING RESOURCES

We try to make students co-owner of all the resources at school. That way they get to know the backstage of their education: there is a solid network of companies and the context allows experiment and eventually failure (students know that). It helps them to develop a professional attitude: sharing materials & knowledge, students-teaching-other-students, students running the shop, students organizing design talks & study tours, students bringing in new company contacts to the course program, using the phone-for-students-to-call-companies installed in their design studio classroom, and so on.

Examples 4.1, 4.2 and 4.3 focus on the right side of the co-ownership model – extrospection (or outrospection) – using, sharing and building resources in a learning community.

### 4.1  Using resources: example project weeks

Project weeks for $1^{st}$ year students have a strong focus on using resources: students get a training in the workshop & labs and obtain their "prototyping licence" in the workshop (every machine has a label: green-orange-red and it marks the level of risk involved). Project weeks for $2^{nd}$ year students allows them to exchange their prototyping skills already with students from other disciplines & backgrounds (sharing). Students at this point discover their own role within a project team: dreamers out the design direction, managers divide the tasks, do-ers prototype and communicators test with users in the UX-lab.

### 4.2  Sharing/facilitating resources: example instructables

From the $2^{nd}$ year on, our design students make and publish online manuals illustrating the design & building process of their own prototypes, assisting devices or even DIY production tools and machines (such as small pattern makers, rotomoulders, small thermoforming machines). By doing so, they construct valuable resources to the IDC community.

### 4.3  Building/creating resources: example prototyping workshops

In the $3^{rd}$ year of study, students organize prototyping workshops for the $1^{st}$ year students. They also teach and prepare lectures about several topics; they can assist in the 1st year project week; or run the services at the shop or the materials' library in collaboration with the teachers.

*Figure 4. students-teaching-other-students sessions 2016*

## 5   CONCLUSIONS

In this paper, we discussed an ongoing search for a reflective learning environment for individual design students based upon the principles of constructivism, learning by doing, taking responsibilities, and peer-to-peer learning. At the same time, we see our design environment including its workshops, labs and offices at the Industrial Design Centre as a shared platform of resources/materials/knowledge/time/machinery at the disposal of a constantly evolving design community of students, teachers, researchers and companies.

The co-ownership model is a kind of framework to constantly (re)structure our daily practices. We consider co-ownership as a challenging hands-on method to let us think about our role as a teacher (delegator of tasks, a mentor for students or a collaborator with students) and to constantly redefine responsibilities for our students (learning, using, sharing, delivering, adapting & creating). The latter, we do of course in close communication with these students. Therefore we develop and experiment with communication tools as described in this paper. We prepare ourselves for a next generation of students carrying new sets of skills and values.

We notice that students appreciate it when we explain and repeat explaining them the structures behind their learning processes and their expanding responsibilities and involvement in the Industrial Design Centre. Then they clearly understand why they also have to take care of the building, share their knowledge and skills, help each other, bring in new contacts and projects into the community. All this is a holistically integrated approach of design teaching and it needs further qualitative research the coming years to measure students' subjective well-being while they study.

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