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Jorge FRASCARA & Guillermina NOËL

WHAT'S MISSING IN DESIGN EDUCATION TODAY?

ABSTRACT

This article begins by describing a desirable design approach that is only practiced by a few designers today. This design approach is desirable because it responds to a society that suffers from a number of illnesses due to communications and artifacts that do not satisfy the needs of people. The article then proposes the kind of design education that could lead to forming designers within the outlined approach, and defines necessary terms and conditions. Lastly, it proposes recommendations, and the need for a deep reflection on the nature of design and of design education.

*“Imitation is not really a reliable
strategy to arrive at excellence in design
or design education.”*

THE DESIGN APPROACH WE NEED

Before talking about design education, we must envision design as we would like it to be.

We propose a design that, responding to real needs of society, could generate visual materials that meet the needs and abilities of their users. Society needs forms that employees in a business could use effectively, that tax payers could fill easily; or that hospital physicians could use without resulting in dangerous medical mistakes. We need signage that people in general and seniors in particular could understand and follow easily; teaching aids that could actually promote learning. We need transparent websites, easy to navigate and confusion-free; interactive programs not oriented to using the latest technological gizmos, but oriented to helping people do what they want to do. We need health education for the general population that could be clear enough and persuasive enough so that people could live healthier lives on the basis of making better-informed decisions. This is the kind of design we need. This is a design that fosters equality of access to the benefits, services and opportunities that society can offer. It is ethical design, one that recognizes the different profiles of users, accepts those differences and responds to them. To perform this function design has to be user-centered, evidence-based and results-oriented.

First, what does user-centered mean? It has to be a design built around the user, with the user and for the user. It is not design that seeks originality: originality has to be a consequence of good design work, it cannot be the objective of good design work.

Second, why evidence-based? It has to be a design that uses available knowledge as a launching pad. There is a lot of information in social sciences and design journals that is directly relevant to a human-centered design approach, particularly in cognitive and perceptual psychology, but also in educational psychology and anthropology. Design decisions cannot be based on hunches, but on available or new knowledge about human cognition and behavior. The design we need is not about looks, it is about people.

Third, why results-oriented? The reason why at a certain point someone decides that design is needed is because a reality has to be changed. If something has to be changed, one cannot design what one believes is a solution and walk away assuming that the solution will actually work. One has to wait, watch and evaluate the results achieved. The building of exquisite instruments is not the aim of the design we need, the aim is the change for the better in the reality we face. If 33,808 people died in motor vehicle traffic crashes in 2009 in the USA, and about 2.2 million were injured, the measure of good design action would be to visibly contribute to the reduction of deaths and injuries. Nothing more, nothing less. Cute slogans and smart images do not matter if the statistics remain stable. Someone might say, "Well, this is too high a bill for design, a multi-agency action is needed." Right, but who is going to plan that massive multi-agency action? In final analysis, it is a communication problem, within agencies, between agencies and between the agencies and the public. This involves a multidisciplinary approach to design that includes perception, cognition, persuasion, strategic design and information flow management; all provinces of communication design.

To promote this sort of user-centered, evidence-based and results-oriented design in departments of design around the world, we need to develop and teach appropriate conceptual and practical tools, and educate students in those tools so that human needs and wishes—and even emotional, cultural, cognitive or other flaws—could be addressed. To do this, we need a multidisciplinary design education. We should as well evaluate society's needs and priorities, so that young designers not only become able to work using sophisticated methods, but also become able to apply their research and design skills in fields of utter importance, such as health, education, peace, security, eating habits, financial management and environmental preservation.

Within this framework, we propose the following components for the design education we need, right now.

THE KIND OF DESIGN EDUCATION WE NEED: THE USER, THE EVIDENCE AND THE RESULTS AS KEY FACTORS

In addition to the topics we believe design education should pay attention to, it is necessary to embrace a system-level change in thinking. The present state of affairs will not be improved by adding a course on user-centered design or another on research methods. There is a

...need to change how we orchestrate the sequence of experiences in design at the department level and there really needs to be a core philosophy of how young designers need to be educated.
(Karen Schriver, personal communication, 9/12/2011).

Although we present the following three aspects separately, in reality they are intertwined.

The User

For many years professional practice and writing about design have been discussing the central role of the user for the work of the designer. User-centered, human-centered, participatory design... several names are given to approaches that include the user in the design process. Are schools responding to this? Not that we know. Most schools keep on exclusively trusting the judgment of the instructors when it comes to evaluating the work of the students. Similarly, in design practice, competitions trust the judgment of experienced designers to define the quality of submissions. But, what kind of quality are we talking about in both cases? Visual quality? What is “visual quality” if it is not contextualized within a purpose, a situation and a public? Perhaps it is aesthetics in regards to prevalent trends? What do trends have to do with the capacity of an old man to understand a pharmaceutical leaflet, a tax payer trying to fill a tax form, a person trying to use an emergency exit door, or a child needing to learn how to read?

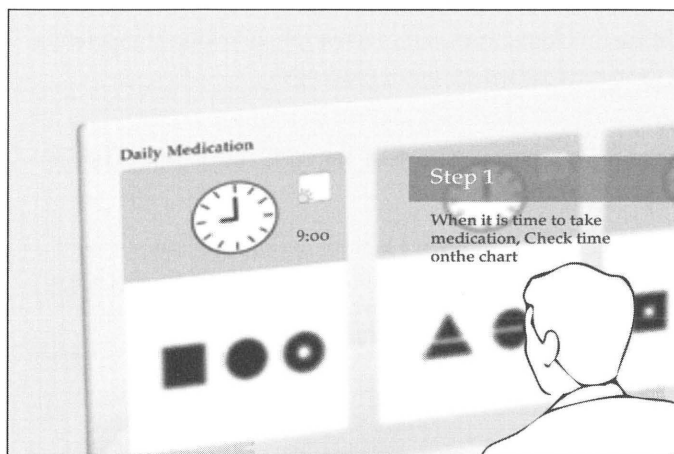


FIG 1.A, B & C

Three stills of a 50-second animation made to explain to persons with aphasia how to use a pill dispenser.

ANIMATION

Taewan An.

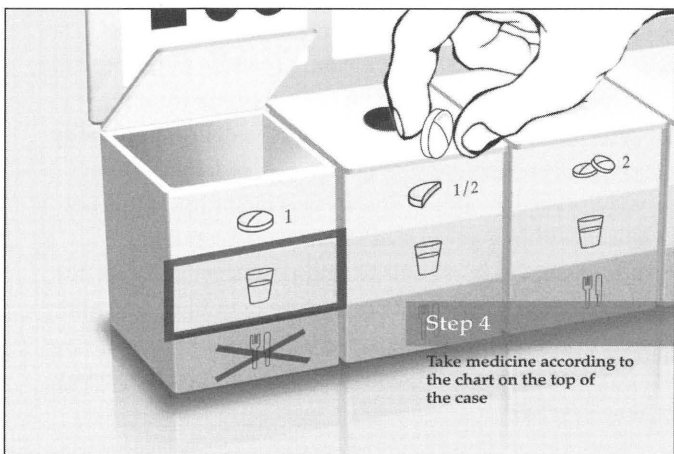
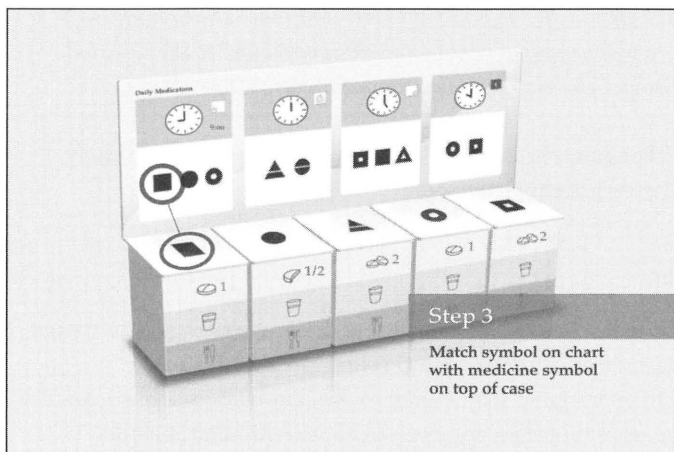
RESEARCH

Taewan An, Christine Jones and Cathy Socci.

FROM

J. Frascara and G. Noël, User-centred Graphic Design Workshop 2009, Philadelphia University of the Arts, USA.

Five different projects were developed by teams of students in five days. Users were interviewed during the development of the workshop to react to prototypes and provide additional feedback (Frascara and Noël, 2009).



The users have to be called in, we hope, in the near future, to help students complete the communication design equation, to stumble into the users, to see them from close quarters, confront their complexity, their needs and their differences (*Frascara and Noël, 2009*).

The user can help identify problems and can also help evaluate the design of prototypes. To be able to evaluate the performance of a design product when it is being used, we need to learn ethnographic observation methods, capitalizing from the many years invested by anthropologists in the development of approaches to the observation of life as it unravels. We have to train students in note-taking, and in the analysis and organization of field notes to arrive at the generation of insights that could direct the design efforts on the basis of intelligent perceptions obtained from real life.

Learning is promoted when learners are engaged in solving real-world problems (*Merrill, 2002, 45*).

The Evidence

A lot has been written about perception and cognition in the last century. Much of this work we find essential for the development of our work as designers of written documents. The existence of this wealth must be brought to the students. Otherwise, how can students arrive at decisions concerning type size, line length, size of margins, or levels of contrast, without considering the kind of reading task, the complexity of the text, the reading distance and several other dimensions that affect the performance of people in front of different typographic layouts? Evidence-based design helps the designer make dependable decisions concerning many variable possibilities, and it also provides the designer with strong arguments to defend solutions.

Readings in perception and cognitive psychology are sadly missing in school, and layout decisions are made on the basis of “best practices.” These “best practices” might be the best, but might also be not good enough. Imitation is not really a reliable strategy to arrive at excellence in design or in design education.

Mastery of the existing information about design is necessary, but we must also be aware that every design problem has specific features, and that existing knowledge often cannot be just mechanically applied, without adjusting it to the specifics of

different situations. For example, there is no universally true best way to communicate medical information visually, if we do not know what we will be communicating, who would be the reader, where is it going to be read and for what purpose. Here is where evidence derived from existing information must be complemented by the development of new information. Here is where the need arises for field research, for the design of tests, and for the creation of situations of use that could help the designer create the information that the readily available knowledge did not cover. Here appears the need for a whole range of research methods.

The Search for Results

The fundamental significance of visual communication design is not in the construction of communicational systems, but in the impact that those systems have on people. This impact may affect knowledge, attitudes, feelings or behavior, and it represents the reason why the design action came about. If we concentrate our efforts on the grammar of the system of products as an end in itself, if we evaluate the potential performance of the system on the basis of suppositions, and if we walk away once the communication plan is implemented, we will never know whether it worked or not, nor why it went right or wrong. Keeping the need to measure the results as an explicit aim, and devising the intermediate objectives and actions with a view to achieving those results, is the best way to make sure that design has a place in society. Design would get noticed by more of the public if there were some objective evaluative criteria brought to bear in talking about everyday artifacts of design.

To talk about a results-oriented design approach is to talk about the need for systematic evaluation methods. To be able to evaluate, it is necessary to begin with the establishment of measurable objectives, that is, objectives that, within reason and on the basis of available experience can be achieved at a given level. If one needs to evaluate, then it follows that all the steps of the plan have to be explicit, and all efforts have to be oriented at designing the steps that could take the design effort to the desired end. If our activity is not centered on results and cannot, within a certain degree, guarantee them, design will never be regarded as a profession, but as an art or even a craft.

DESIGN EDUCATION: OTHER INDISPENSABLE AREAS TO BE DEVELOPED

The Client

Designers do not work alone. They always have a client that commissions the work. Clients and designers should be partners, each contributing knowledge and experience to the success of the project. Clients cannot be absent from the education of designers, and designers need to acquire negotiation skills in school, in order to be on the same level with clients. Lester Karrass dictum “You don’t get what you deserve, you get what you negotiate,” could be applied to many fields, but it’s certainly true for the relation designer-client. This is not exclusively connected to the collection of fees, it is connected to every important decision related to the development of the project. Negotiating skills are not something that design schools can leave out. As an employee in a large design firm, or as a free-lance designer, negotiating skills are always needed (for a case study of the rhetoric of design, see *Schröter, 2011*).

Nothing can replace real clients, real jobs, real problems. Similar to the practice of medicine, design practice involves the knowledge of a body of generic information that has to be put to work for the solution of a specific problem. Acquiring the general knowledge is a scientific effort. Using that knowledge requires a different, but complementary, set of skills: listening, observing, judging the elusive qualities of the specific situation and selecting specific actions. Nothing can replace the feedback a young physician gets when practicing in the emergency room. Similarly, nothing can replace the feedback a young designer gets when working with a real client and listening to real audiences. Without developing these important skills of negotiation, observation and evaluation, we will keep on hearing designers complaining about not being sufficiently respected in society (like lawyers or physicians are).

The Text

Almost all communications involve text, and when it comes to scientific, educational, instructional or technical information, more often than not, text is at the center. We need schools forming

designers to manage textual information, maybe working in collaboration with technical writers. Text is not only there for designers to manipulate its visual presentation: we need to form designers able to analyze content, and organize it under the light of theories of reading, of learning and of cognitive psychology (*Wright, 1978*). We need to form designers able to critically analyze what is being said, why it is being said, what is the purpose of the textual communication, who are the issuers of the communication, who are the readers, and which would be the reading situations. Discussing purpose, Karen Schriver recognizes four common possibilities:

- 1 _____ *reading to enjoy,*
 - 2 _____ *reading to assess,*
 - 3 _____ *reading to do, and*
 - 4 _____ *reading to learn to do*
- (*Schriver, 1997, 290*).

With this on hand, designers need to evaluate all factors and decide in what way each one conditions the final design. One cannot learn to design a brochure with dummy text; dummy text serves just to take care of the cosmetic aspects of design. If design is to be communication design, and not only visual design, then it follows that we are responsible for the quality of the communication and should do our job.

The Presentation of Text and Images

Images can have different functions, but whatever the function could be, they should be connected to the objectives of the project. Lots of design projects include images because the kind of work in question normally includes images. However, image inclusion in any project needs to be critically analyzed. Many times educational aids include images that are more distracting than conducive to learning (*Torcasio and Sweller, 2010*). The same happens in health information materials for older adults, images can distract, instead of helping understand the information (*Griffin and Wright, 2009*). And then, if it is decided that images are needed, it remains to be decided what kind of images need to be selected or produced, as much in

content as in visual presentation, so that they contribute to the aim of the project.

The relations between texts and images has received much attention in the last fifty years, and has been particularly intensified with the development of distance education in the 1960s and with multimedia electronic presentations in the recent past. The articulation of the relations between texts and images as part of the need to help understanding, remembering and using complex information, is a topic that seldom appears in design schools (*Mayer, 2005a; Mayer, 2005b*). Design schools usually concentrate their attention on the visual integration of texts and images, but do not normally make the students hinge their decisions on the perceptual, cognitive and motivational impact of the relations established. The topic does not even enter the discussion. Real projects, with real users, that could show their responses to the design solutions in terms of understanding, learning, remembering and using the information, could be more eloquent for the students than endless abstract discussions or lectures.

The Visual Dimension

Education in the visual dimension is extremely important. But it is not important in and of itself. Many times people at public lectures ask what is more important in design: aesthetics or function. This is not an “either-or” situation: aesthetics is a function in design. Like any other aspect of design, the aesthetic dimension is to be constrained by all the requirements of the design in terms of purpose, public and so on. It is not advisable in our view to foster the development of a personal aesthetic by the design student. The blatant presence of the designer in the solution is not to be welcome. “An example from music clarifies the point. According to an article published a few years ago by the *New York Times*, a major problem for the then newly appointed conductor of the Philadelphia Symphony Orchestra was to persuade the musicians that the orchestra was supposed to be concerned with quality, not with identity. The previous conductor had tried to develop a distinct style during his time in charge. The central problem, the new conductor argued, was not to obtain a ‘Philadelphia sound,’ but Haydn’s, or Beethoven’s,

MODIFICAÇÕES: AGREGAR

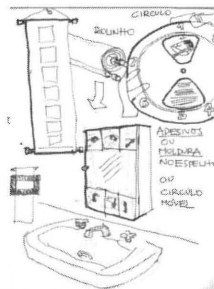
o SETAS

- Facilitam a compreensão do movimento;
- Servem para confirmar a informação textual;
- Atuam como destaque na ilustração.



BRAINSTORMING

- o Folheto com dobraduras (para em p4);
 - Para consultar e para interagir com os colegas.
- o Roleta de imagens mostrando um passo por vez;
 - Pendurado na parede do banheiro como um quadro.
- o Moldura no espelho do banheiro – local da prática;
 - Consegue observar os passos e se observar.



or Stravinsky's, or whoever the composer to be interpreted might be" (Frascara, 2004, 5).

Aesthetics is important because it provides the first encounter between the public and the design. Choosing the wrong aesthetics could make that first encounter fail, and the possibility for communication collapse. The knack of the designer is to be able to master different aesthetic systems, "speak in tongues" one could say, and realize where his/her limits lie.

In the case of information design, leaving aesthetics aside, visual sophistication regarding decisions that affect the presentation of information is indispensable. In relation to the presentation of text, it is what Robert Waller calls "macro punctuation" (Waller, 1980). A designer must be able — through testing, interviewing and observing users — to diagnose what is visually wrong with an artifact, and also why, and how to fix it. Visual sophistication means here the capacity to make distinctions that are significant for performance, and to have the resources for the creation of optimal solutions for the visual presentation of information. Layout affects comprehension (Wright, 1999).

Important as well is the ability to present information as diagrams, charts, drawings or any other non-verbal way, when it is deemed that this way will perform better than plain text, or that it will complement text well.

Lastly, educators need to have an idea of the designer they need to educate. Without this overall conception, and the competences and skills implied, it is not possible to design a curriculum and to evaluate the progress of the students.

FIG. 2.

INFORMATION DESIGN

teaching dental hygiene to 9-10 year olds.

Left to right:

2a User involvement.

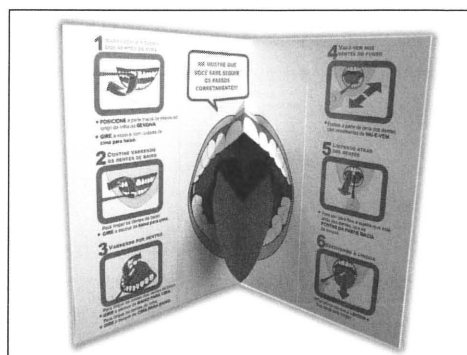
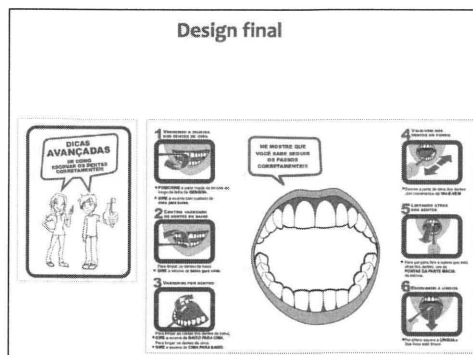
2b Brainstorming.

2c, 2d Final designs. José M. B. de Souza, Thiago Alves Faria y Mayra Laska.

FROM

J. Frascara and G. Noël, User-centred Graphic Design Workshop 2010, Universidade Positivo, Curitiba, Brasil.

Five different projects were developed by teams of students in five days. Users were interviewed during the development of the workshop to react to prototypes and provide additional feedback.



SOME USEFUL DISTINCTIONS

Teaching & Learning

Teaching involves engaging students with experiences that enable them to learn. Learning involves the acquisition of information, but also the development of learning skills. The information provided must be up-to-date, rich, accurate and relevant, and cognizant of the prior knowledge of the student. The skills must be those relevant to long-term educational objectives. Transmission is connected to teaching and discovery to learning. Both are fundamental in the educational process. Students should be taught, but they should also be taught how to learn on their own, from observing reality, from consulting the literature and from others (*Frascara, 2006*).

Primary Learning & Deutero (secondary) Learning

There is a primary learning, connected to the acquisition of information, that is conscious; and a secondary learning, that relates to the development of basic skills, and is an automatic and unconscious effect of primary learning. If I learn how to plan a project carefully, I also learn how to plan anything carefully. If I learn a foreign language, I also get better at learning foreign languages. Secondary learning should guide the planning of educational programs: it is necessary to identify the basic skills that the students should develop (Simlinger, 2007), rather

than to mechanically line up a series of projects oriented at transmitting whatever information, or at imitating professional practice.

To Instruct and to Educate

To instruct relates to training. To educate is to foster the development of judgment, personal initiative and the adoption of values. In order to be a good designer, one has to be a good citizen, a socially responsible person. For this, instruction is not sufficient. Instructed students who do not simultaneously reflect on the value of the acquired instruction, or do not integrate that instruction within social value systems, tend to become imitators; they cannot really become educated professionals.

The Levels of Design Education

Undergraduate programs are there to form students so that they can enter professional practice at a junior level. Master programs should guarantee that the students master the state of the art in the field of their choice. Doctoral programs should produce theses that expand the knowledge of the field. One level is not to be the continuation of another, as it is often witnessed: it should not be “more of the same.” The levels are intended to be of a different nature, and must have clearly distinct objectives.

The Problematization of Learning and Education

If design programs are to cultivate the next generation of design educators, they should provide the necessary knowledge in educational theories and methods. Similar to the practice of communication design, the important issue in education is not what one communicates, but what the students understand. Indeed, educators need to develop pedagogies that meet students where they are, and provide the right conditions for scaffolding their knowledge and helping them to reflect on what they learn (or do not learn). Design educators need to pay attention to the vast tradition of educational reflection, at least at the level of the most basic principles (Merrill, 2002). A link with faculties of education would be fitting, if design schools aimed at forming true

design educators, instead of hiring their own graduates as a way of perpetuating existing approaches (*Winkler, 1997*).

SUMMING UP

Recommendations:

- 1 _____ INCLUDE THE USER in design education.
- 2 _____ INCLUDE THE EXTENSIVE DESIGN-RELEVANT BIBLIOGRAPHY produced by the social sciences and other disciplines, for the development of an evidence-based design approach.
- 3 _____ INCLUDE INSTRUCTION ON RESEARCH METHODS, beyond bibliographic research.
- 4 _____ INCLUDE INSTRUCTION ON EVALUATION METHODS.
- 5 _____ INCLUDE INSTRUCTION ON WRITING AND READING.
- 6 _____ CENTER EDUCATION ON THE DEVELOPMENT OF COMPETENCIES, not only on the acquisition of information.
- 7 _____ FOSTER THE DEVELOPMENT OF AN ALERT ATTITUDE to observe reality, learn from it and find opportunities for meaningful design action.

There is an urgent need to include the social function of design, that is, to teach a design that could assist people in their daily needs. Design education needs to attend to the interdisciplinary nature of design, where the social sciences, educational psychology, business and computing sciences, to mention the most obvious ones, play important roles (*Frascara, 2008; Meurer, 1997*).

We hope design education could rapidly evolve toward forming the communication designers society needs. We need a new insight, appropriate for our time. We need to engage in reflecting and questioning how we teach, what we teach and what kinds of designers we want to form.

“Doubt goes hand-in-hand with uncertainty. And doubting what exists, what one thinks, and what one does is the most important aspect of creative action” (Meurer, 1997, p. 126).

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