

Design education in Brazil

Regina Celia de Souza Pereira
ESPM-RJ Escola Superior de Propaganda e Marketing,
Brazil
rpereira@espm.br

Ricardo Manfredi Naveiro¹

Abstract – This article offers an assessment of the quality of industrial design education in Brazil undertaken with teachers of design courses and by designers working in the market. This assessment is part of a survey and includes interviews with industrial design teachers, industrialists, product designers and design professionals working in research organisations. It discusses the performance of industrial designers working for industrial concerns on development of projects and processes which innovate and differentiate these industries from their competitors. The ability of industrial designers to promote their work, communicate, find jobs, develop concepts, solve problems and take efficient actions was also investigated. The purpose is to obtain information that can help improve the quality of design education and bring closer to the designer those who contract his or her services. The survey relates design and innovation and discusses its possible contribution to making Brazil an innovative economy. The quality of education has long been debated and questioned. Engineering, for example, has been considering the social needs, with emphasis on knowledge and creative thinking. The designer works for organisations that value the so-called intangible factors: knowledge, creativity, emotion and sensitivity, but seldom offer a suitable working environment. There seems to be a gap between what the students learn in school and what is expected from them in real life. These results suggest that education must be reviewed in depth and that the context is not always favourable to the designer. They also suggest that teachers often fail to recognize inadequacies in the education of the graduates, know little about the work universe of the students they teach, and need, themselves, to update and recycle their training.

Index Terms – design education, designer, innovation, quality of design education, teachers updating.

INTRODUCTION

The designer – someone who is able to define the characteristics of a certain object – has always existed. There has always been a designer through the centuries, known or anonymous, who shaped objects. Some of these objects are so good that they are still here today practically in their original form – the music stand, axe, stage lights, handsaw, umbrella, for example [1].

The design activity, however, is relatively recent. In Brazil, the first school – ESDI - in Rio de Janeiro was founded in 1962. The area of design in the country has already had some specialist magazines, congresses, monographs, dissertations and theses. However, what were still missing (or insufficient) were the answers to many questions, such as: where/how do students find work after graduating? How do they introduce themselves? Are they convinced of their skills? Do they know how to formulate concepts? Are they apt to solve their employers' problems? Are their actions effective? Do they communicate properly? Do they know how to learn, listen and reflect? Do they have enough proper technical know-how?

Traditionally, the disciplines of science teach natural things: what they are like and how they function. And the engineering courses teach artificial things: how to manufacture articles that have some desirable characteristics and their concept.

Engineers are not the only professional designers. “Everyone designs who devises courses of action aimed at changing existing situations into preferred ones. The intellectual activity that produces material artifacts is no different fundamentally from the one that prescribes remedies for a sick patient or the one that devises a new sales plan for a company or a social welfare policy for a state. Design, so construed, is the core of all professional training; it is the principal mark that distinguishes the professions from the sciences. Schools of engineering, as well as schools of architecture, business, education, law, and medicine, are centrally concerned with the process of design” [2].

The objectives of this paper are to inform more about the design activity, to understand the necessary skills of designers, the social requirements that they must fulfil and, consequently, provide them with better education. So this article is organised in five sections. The first section addresses industrial design. The second discusses innovation and differentiation and their relation with design. The third section presents a survey carried out in Brazil in which some data are highlighted and discussed. The fourth presents some of the results of the survey. And the fifth examines these results. Lastly, the conclusion evaluates the results achieved and suggests further developments.

INDUSTRIAL DESIGN

“Design is a creative activity whose aim is to establish the multi-faceted qualities of objects, processes, services and their systems in whole life cycles” [3]. Design is the “central factor

¹Ricardo Manfredi Naveiro, COPPE, Production Engineering Program, Federal University of Rio de Janeiro, Brazil, rnaveiro@pep.ufrj.br

of innovative humanisation of technologies and the crucial factor of cultural and economic exchange” [3]. It is up to the designer to seek to discover structural, organisational, functional, expressive and economic relationships that enhance cultural, social and global ethics. These relationships involve concern for global sustainability and environmental protection; benefits and freedom for all human beings alike; with cultural diversity, despite globalisation [3].

Design involves defining and solving problems, analysing, inventing and appraising, guided by great sensitivity concerning the environment, and aesthetic, cultural and functional needs centred on humankind [4].

Both product design and engineering are concerned with planning, development and production of goods. Product designers tend to concentrate on people’s requirements and on how to produce safe, user-friendly products comfortably adaptable to the way in which people live; to deal with concept, human factors, appearance and performance, while engineers work with details, functionality, performance and production. Engineers concentrate more on the problems of making a product function better for the tasks it is designed to do and optimise its design for production [4].

Design teachers and professionals are always involved in the question of industrial designer skills. Nevertheless, the quality of new graduate designers is not analysed from the viewpoint of the employers’ expectations; there seems in fact to be a gap between what students learn in school and what they are expected to do in practice [5]. The possible reasons for the absence of relevant skills among the industrial designers could be the following:

- the range and content of the work of industrial designers has been changing over the years, but there is little updated information about placing designers in the job market;
- consequently, industrial design students are not well prepared to be equipped with the knowledge and skills required by the market;
- a conclusion has still to be reached on whether designers should be educated as generalists or specialists;
- industrial design courses welcome new students with a variety of qualifications, implying that the students’ skills, aptitudes and career goals may vary enormously.

I. Education

In Brazil, industrial designers can choose to graduate in a variety of skills: fashion design, textile design, graphic design, product design, and so on. As a result of private education, there has been an extraordinary leap in the number of courses: at the start of 2000 there were 54 courses and by 2004, 107 were offered [6]. Several possibilities exist of *lato sensu* specialisation courses. There are seven courses on Master in Design and there is one on PhD in Design [7].

II. Professional advancement

Industrial designers work in and/or for companies, as employees (internal design) or as consultants (external design). They may earn for their work a salary, monthly fee, by contract, royalties or combinations of them.

INNOVATION AND DIFFERENTIATION

Technological innovation is defined by implementing technologically new or substantially upgraded products (goods or services) or processes. The innovation is implemented when the product is launched on the market or when the process is started up by the company [8].

Design is associated with innovation, since its aim is to relate equipment to dimensions, instinctive responses and the user’s needs. Some new products, however, do not involve technological change [9]. Strategic management must that consider design adds value, increases efficiency of production in using materials and energy, and multiplies profit. Industrial design, therefore, is important for developing the form of innovative products and for designing new but not technologically original products.

Companies operate in dynamic competitive environments, and this means that management processes must also be dynamic, preserving efficiency and profits [10]. New product development (NPD) can be affected by some business changes, such as: growing competition (more companies disputing the same markets), fast changes in the market environment, higher rates of technical obsolescence and shorter life cycle of products.

Companies that innovate and differentiate products earn on average much more than the others, export on average much more than the others, and have an edge in international trade; they are the ones that have a higher competitive rate. However, the innovation rate and quality of innovation in Brazil are still very low compared with those in more advanced countries [11].

The reference [12] outlines a profile of industrial development by sector and size of company in various areas, including design. It shows some challenges for the country, one of which is to increase its export performance. It does not include design among the main advances during the 1990s. It informs that in Brazil companies basically use their own resources to develop their design products, and larger companies tend to invest more in design.

The report also provides other data: in terms of the results of investments in design, more than half the companies say they have increased their sales; over 40% said that their profits rose, while one third of the companies had an increase in their production costs.

SURVEY ACCOMPLISHED

To check the quality of the education of industrial designers a survey was planned and accomplished, as an exploratory study, in which the role of the graduate in industrial design was considered – as a product designer, who works in and/or for industries, developing designs/processes that effectively contribute to innovation and these manufacturers’ competitive edge.

The new social and industrial requirements in engineering and product design were also considered. The engineering curriculum is being frequently altered to accompany changes in society. Taking Hong Kong as an example [13], the traditional focus on apprenticeship and techniques shifted to a focus on analysis and technology, and

later to an approach emphasising knowledge and creative thinking. Just like Hong Kong, Brazil has changed and the world has changed. Design also needs to accompany these changes.

I. Survey objectives

The objectives of the survey were as follows:

- to validate the context of education and role of designer;
- to listen to the various players involved – professionals, researchers, representatives of research institutions and of manufacturers;
- to analyse the education offered in Brazil, discovering the gaps;
- to analyse the demands for design by the various production sectors;
- to compare the resulting information, send proposals and suggest developments.

II. Methods and techniques adopted

Twenty-seven professionals were interviewed, six of which are teachers in industrial design courses (five industrial designers and one engineer), and eight are experienced designers, partners in design offices. All are mature and results driven professionals.

The interviews followed a previous script in which the proposed questions were organised in six blocks:

- (A) interviewee's name;
- (B) the interviewee's concept of design and designer;
- (C) design education, in which 29 aspects were rated on the knowledge of the new graduates, as follows: excellent – good – regular – bad or very bad;
- (D) production, in which the interviewee assesses the situation in industries that need design;
- (E) professional role, in which the interviewee expresses his/her viewpoint on questions regarding the design activity or designer's attitude; and
- (F) politics and public authorities, in which 11 aspects of the knowledge of the new graduates are assessed, as follows: excellent – good – regular – bad or very bad (this knowledge, when inadequate or missing, can jeopardise the professional's performance);

The interviews were recorded, the content transcribed, the data obtained was tabulated and analysed.

SURVEY RESULTS

This article is presenting the results obtained from interviews with teachers and experienced designers, corresponding to blocks B, C and F of the interview script.

I. Concept of design and designer

Teachers interviewed gave their own personal views that each has on design. It was quite evident that they found it difficult to formulate the concepts, despite the didactic nature of their work as teachers.

Experienced designers formulated his or her views on design as a result of their own experience. They did not use the standard definitions of the activity and professional established by researchers, institutions and organisations.

Their answers help build a mosaic from the qualities that the interviewees attributed to the designer.

II. Design education

The graph in figure 1 shows the opinion of the interviewed teachers, and the graph in figure 2 shows the opinion of the interviewed designers; both graphs are about the quality of the education. The concentration of at least 50% of the answers at the same level was considered.

On examining graph 1, it is found that the opinion of the teachers interviewed on the quality of the designers' education covers, in short, the ratings ranging from excellent/good to bad, and is heavily concentrated on regular. There were five aspects on which the interviewees considered the new graduates' knowledge to be excellent or good: use of software, project methodology, visual methodology, ergonomics, professional practice. Three aspects of the recent graduates' knowledge were considered bad by the interviewees: demand patterns, consumer behaviour, benchmarking. The interviewees considered ten aspects of the recent graduates' knowledge as regular: research methodology, negotiation, project management, restraint management, intellectual property, environment, innovation, technologies, professional regulation and ethics. The interviewees dichotomized on four aspects; and disagreed on another four aspects.

On looking at graph 2, it shows that the opinion of the experienced designers interviewed on the quality of design education concentrates strongly in the range of ratings from regular to extremely bad. No aspect was considered excellent or good by the interviewees on the new graduates' knowledge. The interviewees considered six aspects regular in relation to the new graduates' knowledge of the following: consumer behaviour, benchmarking, design methodology, visual methodology, ergonomics, professional practice. The interviewees considered the knowledge of the new graduates bad or extremely bad on 16 aspects: two and three dimensional representation, negotiation, project management, deadline and cost control, restraint management, reverse engineering, simultaneous engineering, demand patterns, materials and processes, technical standards/quality, intellectual property, technologies, professional regulation, ethics, professional organisation institutions, information sources. And the interviewees disagreed on four aspects.

The two groups of interviewees only agreed on the assessment of three aspects: bid formulation (bad), product life cycle and trends (regular).

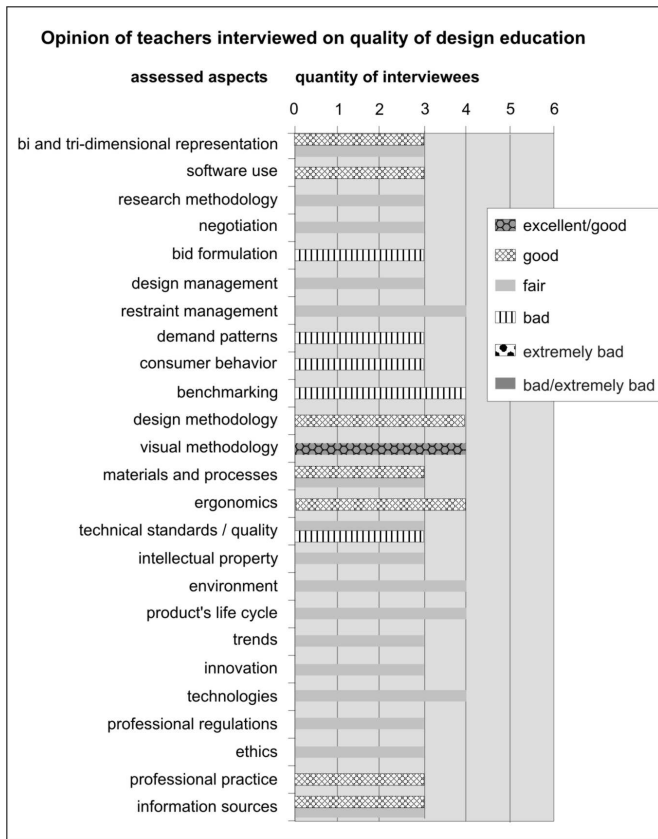


FIGURE 1
DESIGNER EDUCATION IN THE OPINION OF TEACHERS

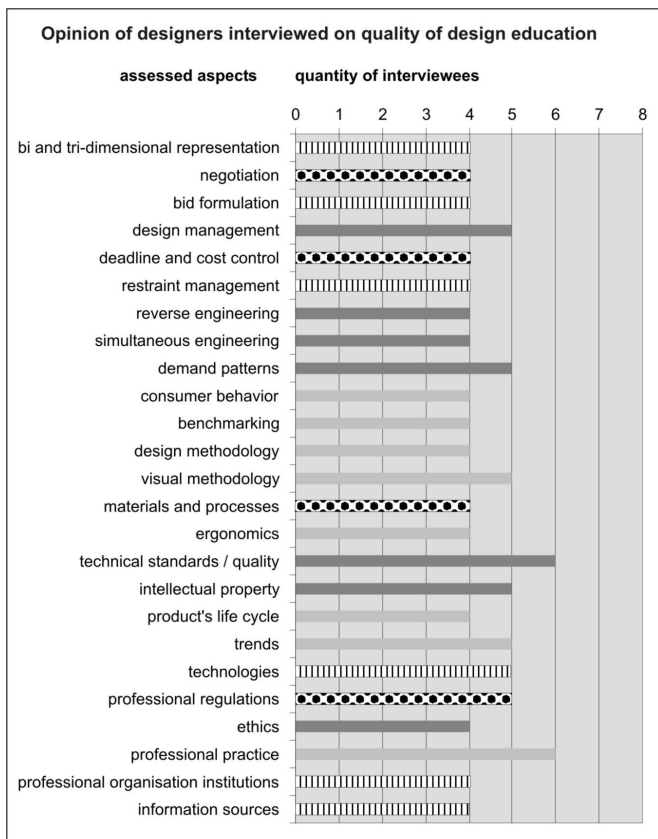


FIGURE 2
DESIGNER EDUCATION IN THE OPINION OF EXPERIENCED DESIGNERS

III. Policies

The graph in figure 3 shows the opinion of the interviewed teachers and the graph in figure 4 shows the opinion of the interviewed designers, both graphs being on particularly important knowledge. The concentration of at least 50% of the answers at the same level was considered.

On examining graph 3, it is found that the opinion of the interviewed teachers on the quality of the designers' education in these topics is heavily concentrated in the range of ratings from regular to bad. The interviewees only considered one aspect good – waste – in the knowledge of the new graduates. On three aspects the interviewees considered the knowledge of the new graduate designers regular: integration university/ industries, identity of national products, technical standards for design. On six aspects the interviewees considered the knowledge of the new graduates bad or extremely bad: consciousness of the business segments in relation to design, time of working life, profitability of design project, value of design in relation to total cost, composition of final price of product, reworking. And the interviewees disagreed on one of the aspects.

When examining graph 4, it is found that the opinion of the designers interviewed on the quality of the designers in these 11 items of knowledge is fully concentrated in the range of ratings from bad to extremely bad. The interviewees considered no aspect of the knowledge of the new graduates excellent, good or even regular.

EXAMINING THE RESULTS

The interviewed teachers found it difficult to formulate concepts and they were cautious when assessing the recent graduate designers (whose education is their responsibility).

The experienced designers, on the other hand, were more objective when formulating concepts and succeeded in translating into words several peculiarities of the professional's role – their own role. And they were discerning when assessing education, possibly because of what they had to conclude from their own education, besides what they can see in the new graduate designers that they hire or have already hired.

The main conclusions to be drawn are: on one hand, that the teachers found it difficult to admit inadequacies in the education of the new graduates, while the experienced designers see considerable inadequacies in the education of the new graduates.

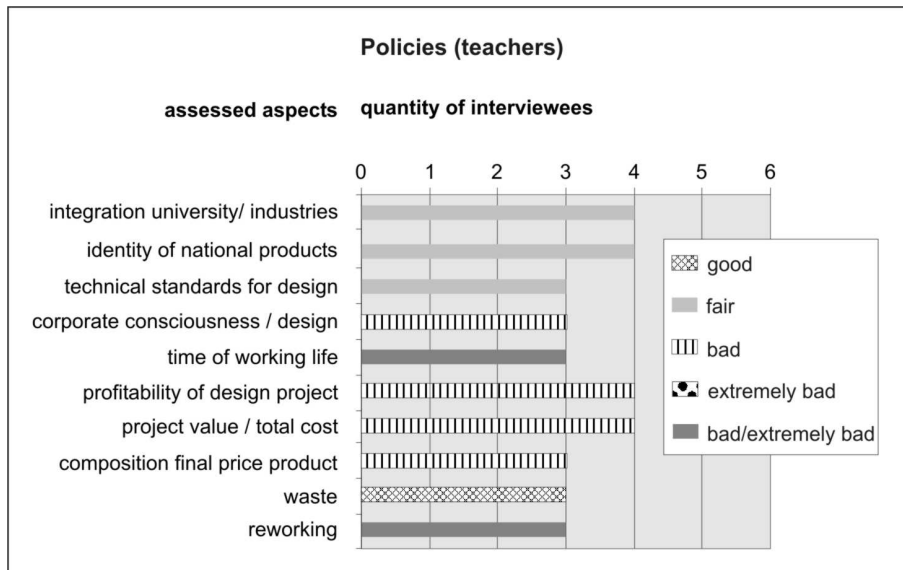


FIGURE 3
POLICIES, IN THE OPINION OF THE TEACHERS

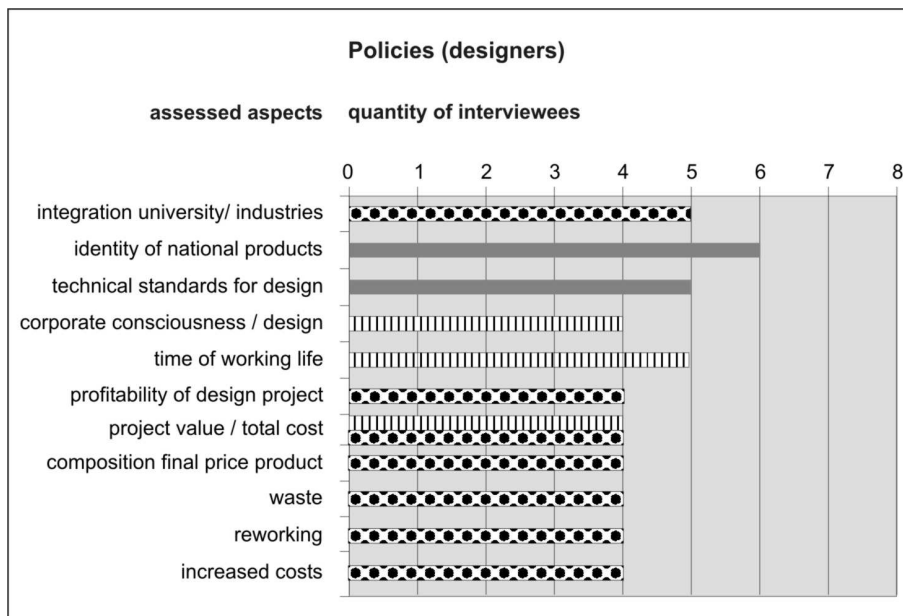


FIGURE 4
POLICIES, IN THE OPINION OF EXPERIENCED DESIGNERS

CONCLUSIONS

This article addresses the question of education in design in Brazil, a fairly new theme if considering that this education does not yet have indicators for its assessment. The country has already been debating the quality of education as a whole, and design education is one of the items in the discussion of the quality of university education. But the topic is relevant because of the growing number of university courses that launch an increasing number of designers into the job market. These new graduates do not find the corresponding increase in demand (since the reference [12] shows that the reality of the Brazilian industrial park is not particularly favourable to design). This context explains the

difficulty of working encountered by the new graduates and the side effect of increasing the actual market with new teaching jobs in newly opened design courses.

A resulting question lies in the set of changes of society, which now demands from graduate professionals much more than technical know-how, analytical capacity and command of technologies: the emphasis in educating the professionals is on knowledge and creative thinking. Apparently, design education has still to meet this requirement, which may explain the effect of complaints and negative comments about the knowledge, skills and attitudes that the new design graduates have in general.

Another question refers to the sometimes mistaken dimensioning of the design activity. Or perhaps it is over-valued – and is then expected to be a universal panacea,

which solves all problems – or loses prestige – and then they lose or postpone all opportunities where design could give an effective contribution. It is possible that the designer finds him/herself involved in design questions of some employer at the wrong time, place and in the wrong conditions, which could make the work unfeasible.

Possible actions include:

- Reviewing classroom practices, including interdisciplinary aspects;
- Bringing teaching (teachers and students) closer to the market, through visits, internships, partnerships;
- Redefining the teachers' role and, consequently, their didactic, cultural and professional advancement, bringing to everyone in the school environment new inspiration and preserving experience;
- Reorganising the physical spaces in the school and reviewing administrative procedures, which will help the courses to gain comfort, quality, dynamism, results and recognition;
- Encouraging entrepreneurship and the creation of business incubators;
- Organising sets of information about the design activity and offering them to the students even before they choose to study design.

The benefits of these proposed actions are evident, although some of them find restraints when implemented. Some examples are the disadvantage of teaching institutions that do not offer courses in all areas, resistance to change by teachers and institutions. Opening up these actions involves a process and it is important to start.

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