Design of Didactic Material: a multidisciplinary experience

Rita Maria de Souza Couto
ricouto@puc-rio.br

Cristina Portugal

Pontifical Catholic University of Rio de Janeiro,

1. Introduction

Design in Education is the object of in-depth study and it has opened many doors for action by the designer, reaffirming the interdisciplinary vocation of this area of knowledge. This topic is one of the main objects of study at the Interdisciplinary Laboratory for Design/Education - LIDE, in operation since 1997, within the scope of the Graduate Studies Program in Design at DAD/PUC-Rio[1].

Starting from the principle that knowledge is constructed through social relations, the intention is to also provide a space for interaction between professionals from various areas, providing those subjects involved the chance to develop their creative potential through human relations with theoretical and technical procedures.

This paper will present a proposal for a 360 (three hundred and sixty hour) Specialization Course entitled 'Design of Didactic Material: a multidisciplinary experience', aimed at offering teachers, pedagogues, designers, educational psychologists, managers of education policy and others interested in the theme the chance to work with diverse methods and techniques to elaborate didactic materials from a Design perspective.

The course stems from experience accumulated over many years of work with municipal schools of Rio de Janeiro, which resulted in several objects designed as support for didactic activities developed by teachers and students of Planning, Projects and Development courses offered by DAD/PUC-Rio.

Created in LIDE as a result of experiences related to Design in Education, 'Design in Situations of Teaching-Learning' is a line of research preferably inserted in the academic field and that agglutinates works where there is designer participation in projects geared towards Education at any level - Nursery,

Elementary, High School, Higher and Advanced - as well as for studies and research related to the teaching of Design in the extra-university, technical, extension, undergraduate and graduate ambits. Its basic principle is to enhance the knowledge acquisition process through artifacts, environments and analog and digital systems. In this perspective, each Design solution represents the search for equilibrium between interests and needs of the teacher and student, as well as of educational institutions.

The proposal of the 'Design of Didactic Materials: a multidisciplinary experience' projects work with concrete and virtual supports, offering differentiated models for constructing didactic materials. Its relevance is found in the new demands for education required by the Law of Guidelines and Bases for Education – LDBEN, law no. 9.394/96 and in the technological revolution taking place in our day and age.

The 'Design of Didactic Materials: a multidisciplinary experience' course fulfills changes that have been occurring in contemporary society, since it will seek to enrich ways of teaching and learning, aimed at interconnections between several fields of knowledge, creating subsidies for planning didactic material from a multiple and inclusive perspective.

2. Nature and Objectives

The specialization course project 'Design of Didactic Materials: a multidisciplinary experience' considers the following aspects in its pedagogical proposal:

- Interaction between Design and Education through the application of Design's methodological resources in planning and elaborating didactic materials.

- Constructivist base that emphasizes development, construction and consolidation of knowledge by the group, leading to the active participation of the student in the entire teaching/learning process;

- Flexibility of disciplinary barriers between the themes that comprise the axes of content.

- Structuring of subjects aimed at incorporating activities like: onsite classes; remote activities; workshops and seminars.

- The 'Design of Didactic Materials: a multidisciplinary experience' course will promote the exercise of reflection, debate and criticism providing the professional

---

1   The results of the projects are recorded as a 'Summary' at the Design Reference Nucleus at the Department of Arts and Design, coordinated by Prof. Dr. Rita Maria Couto since 1994.

with an encompassing view of Design and its possible applications to Education.

- The general objective is to empower professionals to conceive, develop and evaluate didactic materials in situations of formal and non-formal education, involving different production supports. The specific objectives are:

- Provide strategies, in light of Design methodologies, for constructing concrete and visual didactic materials.

- Provide theoretical knowledge that supports discussions on issues of Design and Education.

- Provide theoretical and practical knowledge about technicians, materials, supports, etc., for elaborating concrete and virtual objects.

- Provide basic knowledge about resources offered by the new information and communication technologies applied in didactic materials.

- Work on developing the creativity of participants.

- Contribute towards an expansion of visual literacy of participants.

- Characterize Design as a field of interdisciplinary knowledge.

- Present and discuss the 'Design in Situations of Teaching-Learning' line of work.

The theoretical and practical content of the subjects shall be worked throughout the course aimed at arousing reflections on didactic material, addressing their functions, possibilities for development, content, applications, configuration process, applicability, among other aspects. Besides the on-site lecture classes for establishing a foundation, with visual support, the list of subjects below also encompasses workshop activities and development of objects from a methodology in Design perspective.

3. Course Modules

Despite the initial conviction of this Design potential, we seek to spotlight it throughout development of this course. For such, we have outlined an ample panorama on issues that somehow influence the teaching-learning process as a project in the field of Design, as well as new technologies, visual culture, image and language. Based on the ideas of authors who addressed these issues, we have articulated thoughts that will serve as a theoretical basis for students.

The subjects are divided into five modules, which are: Design in situations of teaching)- learning, Creativity, Visual Culture, New Technologies and Scientific Research Methodology. The concept map of the course 'Design of Didactic Materials: a multidisciplinary experience' shows the nodules and the disciplines.
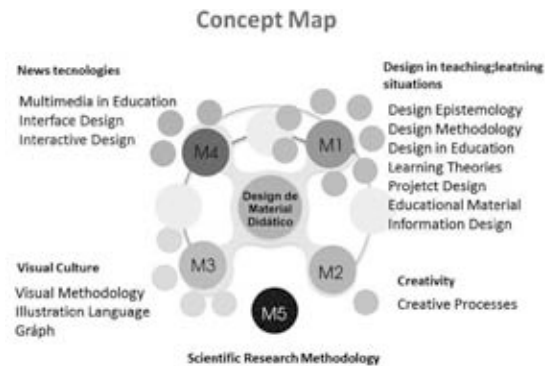

Figure 1: Conceptual map: the subjects are divided into five modules

Module 1 – Design in situations of teaching-learning: consists of reflections of an analyticalcritical, reflexive-theoretical nature. Essentials of Design based on historical, philosophical, sociological and economic paradigms that constitute the field of Design. Design as a body of knowledge. History of Design: Design concepts, theories, institutions and activities from the 18th Century to our day and age. Means of organizing the production and promotion of Design in the world and in Brazil, instances of legitimatization, possible implications of historical development for social practices. Interdisciplinary relations between Design and Education. Interdisciplinary attitude as conception inherent to the field of Design and its interface with the fields of knowledge.

Module 2 – Creativity: consists of the conceptualization of creation, innovation and creativity.Creative processes and their exploration in Design. Development and practical application of creative processes.

Module 3 – Visual Culture: the designer's social responsibility as a producer and creator of functional, communication and esthetic systems will be discussed, based on an analysis of instructions, objects, practices, values and beliefs that are the resources through which a social structure is produced, reproduced and contested for its visual look.

Module 4 – New technologies: encompasses issues of Information Design. Digital Interface Design. Informational ergonomics. Potential of new technologies within the scope of teachinglearning.Development of critical analyses on the use of new technologies in Education. Possibilities and resources available in the field of new communication and information technologies for use in didactic material projects: site, blog, educational object, animations, collaborative resources, multimedia resources, virtual learning environment, games, presentation on digital supports, among others.

Module 5 – Scientific Research Methodology: consists of the conceptual characterization of the knowledge process, scientific methods. Relations between science and technology. Scientific research, typology / classification, methods and techniques for collecting data. Elaboration and execution of academic and scientific didactic work based on theoretical-methodological essentials and on Brazilian Association of Technical Norms standards.

We can also say that the practice of Design in Teaching-Learning Situations enables designers to deal with complex problems. In this particular point, the formation of interdisciplinary teams is indispensable, since they provide for the creation of efficient educational artifacts, promoting and sustaining educational relations, providing dialogue between the teacher and student in the teaching-learning process.

4. Final considerations

LDBEN, law no. 9.394/96, art. 26, § 2, stipulates that the teaching of art is an obligatory curricular component at the diverse levels of basic education, promoting the cultural development of the students. It will observe the following guidelines: the content will be distributed among the various grades and levels of basic education by the schools, and it will obligatorily encompass: a) music, theater and dance; b) visual arts and design; c) artistic, cultural and architectural heritage (Brazil, 2009).

The course being offered can also enable the offer of content related to visual literacy as complementary education. Studies have shown that for people to be taught visual literacy, they need to undergo a methodological visual experience that includes explorations, analyses and definition with the objective of enabling an increase in their capacity to understand the visual experience. This should find a place of reference within the heart of the school.

This is a theme of recent interest in the school environment and is lacking in practical and theoretical collaborations. It brings new demands in relation to the formation of teachers in the diverse languages mentioned. Design, as an area related to visual culture, can be part of this experience. This thus presents the union of three pillars: Design, Visual Culture and Technology, as the three conditions of knowledge that come from society for education and present by default of formative intellectual processes.

References

BRASIL. Lei de Diretrizes e Bases da Educação Nacional: Lei no 9.394, de 20 de dezembro de 1996. Brasília, 1996. Disponível em: <http://portal.mec.gov.br/arquivos/pdf/ldb.pdf>.

BONSIEPE, G. Design, Cultura e Sociedade. São Paulo: Blucther, 2011.

BUXTON, B. Sketching User Experiences: Getting the Design Right and the Right Design. São Francisco: Morgan Kaufman, 2007.

Luiz Antonio L. (org.). Conceitos-chave em design. Rio de Janeiro: Ed. PUC-Rio: Novas Idéias, 2008.

COUTO, R. M. Escritos sobre Ensino de Design no Brasil. 1. ed. Rio de Janeiro: Rio Book's, 2008. v. 1. 96 p.

DONDIS. D. A. Sintaxe da linguagem visual. São Paulo: Martins Fonseca, 2003.

ENGELHARDT, Y. The language of graphics: a framework for the analysis of the syntax and meaning in maps, charts and diagrams. Amsterdã: illc-publications, 2002.

FONTOURA, A. M. EDADE – Educação de crianças e jovens através do design. Tese (Doutorado em Engenharia da Produção) – Programa de Pós-Graduação em Engenharia da Produção, UFSC, 2002, 337 p.

FUENTES, R. A Prática do design gráfico. Uma metodologia criativa. São Paulo: Edições Rosari, 2006.

LUPTON, E; MILLER J. A. ABC da Bauhaus. São Paulo: Cosac Naify, 2010.

MANZINI, E. V. C. O desenvolvimento de produtos sustentáveis: os requisitos ambientais dos produtos industriais. São Paulo: EDUSP, 2002.

MEGGS, Phillip. História do design gráfico. São Paulo. Cosac Naify, 2009.

MOGGRIDGE, B. Design ing Interaction, s. Cambridge: MIT Press, 2007

MORVILLE, P. Ambient findability. O´Reilly, 2005.

MORAN J. M, MASETTO M, BEHRENS M. Novas tecnologias e mediação pedagógica. 7ª ed. São Paulo: Papirus; 2003.

PORTUGAL, C.; COUTO, R. M. S. Design in Situations of Teaching and Leering a case study. In: EDULEARN10 - International Conference on Education and New Learning Technologies. Barcelona, 2010.

STRAUB, Ericson; CASTILHO, Marcelo. Conexões: como os designers conectam experiência, intuição e processo em seus projetos. São Paulo: Infolio. 2010.

SHEDROFF, N. Information interaction Design: a unified field theory of Design. Disponível em: <http://www.nathan.com/thoughts/unified/>.

SPENCE, R. Information Visualization: Design for Interection, . New Jersey: Prentice Hall, 2007.

SUDIJC, Deyan. Linguagem das coisas. Rio de Janeiro: Intrinseca, 2009.

TUFTE, E. The visual display of quantitative information. Cheshire, Connectictut: Graphics Press, 2002. 200p.

VALENTE, J. A.; MAZZONE,J.; BARANAUSKAS, M. C. (org). Aprendizagem na era das tecnologias digitais. São Paulo: Cortez/FAPESP, 2007.