

Linked projects in the Design synthesis and evaluation area at *Universidad Iberoamericana* in Mexico City: Study cases¹

Projetos vinculados de Design na área de síntese e avaliação na Universidade Iberoamericana na Cidade do México: estudo de casos

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Abstract

This paper objective is to present, socialize and share an experience in teaching – learning in the graphic design curriculum at the Universidad Iberoamericana. It centers in three linked project (PV) aimed at solving some design needs of real institutions by means of the techniques taught in Design VI course (Global Image: Identity and Signalectics). The first two agencies: Mexican Confederation of Organizations in Favor of Intellectually Disabled People, A.C. (CONFIE) and Exceptional People, A.C. (GE) prepare intellectually disabled people to engage in a job, while the project for the third one, Vasconcelos Library (BV) that has the largest store of books in braille in Mexico City, will focus on the necessities of visually impaired persons. General purposes of these projects were to specifically design the global image for GE as well as apply to the three institutions, CONFIE, GE and BV, the expressive iconicity's values required by signalectic designs within our society's cultural context through a signage system.

Key words: graphic design, linked projects, synthesis and evaluation area, disabled people.

Resumo

O objetivo deste artigo é apresentar, socializar e compartilhar uma experiência no ensino-aprendizagem do currículo de design gráfico da Universidade Iberoamericana. Centra-se em três projetos ligados (PV) que visam desenvolver alguns projetos necessários para instituições reais por meio de técnicas ensinadas no curso de Design VI (Imagem Global: identidade e sinalética). As duas primeiras agências: Confederação Mexicana de Organizações em prol das Pessoas com Deficiência Intelectual, A.C. (CONFIE) e Pessoas Excepcionais, A.C. (GE) preparam intelectualmente as pessoas com deficiência para participar de um trabalho, enquanto o projeto para o terceiro, Biblioteca Vasconcelos (BV), que tem a maior loja de livros em braille na Cidade do México, terá como foco as necessidades das pessoas com deficiência visual. Os objetivos gerais destes projetos foram especificamente para projetar a imagem global da GE, bem como aplicar às três instituições, CONFIE, GE e BV, valores a iconicidade expressiva de projetos exigidos pela sinalética dentro do contexto cultural da nossa sociedade através de um sistema de sinalização.

Palavras-chave: design gráfico, projetos vinculados, síntese e área de avaliação, as pessoas com deficiência.

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Introduction

A strategy has been developed at the Universidad Iberoamericana (UIA) directly linking those students registered in subjects of the Design course (also known as Design Workshops in other universities) with real projects for companies, organizations or institutions. This educational approach, called *situational teaching*, stems from the Vygotsky's theory and tries to supply adequate solutions to the design problems these entities have. The procedures are known as *linked projects* (PV for its initials in Spanish) and they promote students development as conscious and compromised persons, as they assume social responsibility.

Additionally, the projects we intend to present were enclosed in the subject of Design VI, pertaining to a major area within the curriculum and departmental structure, corresponding to the prefiguration area. In this subject the analysis, synthesis and management for identifying design is developed, besides generating a visual communication strategy and a signalectic system. Likewise, Design VI is located in the Synthesis and Evaluation Area (ASE), which promotes students integration to apply and evaluate the acquisition of generic and professional competence and the possibility of implementing this ability in specific situations. It should be noted that ASE is conducted as part of the undergraduate activities necessary to get a Bachelor of Arts Certificate in Graphic Design in three different opportunities: in the 3rd half, with the subject Editorial Design III (ASE I), in the 6th half, when dealing with Global Image: Identity and Signalectics (ASE II) and in the 8th half, while studying Integral Design: Communication Strategy and New Products Development (ASE III).²

The paper will be structured as follows: first, the subject matter of *linked projects*, its definitions and objectives will be dealt with. After, we will present the Synthesis and Evaluation Area, so that the interrelation of a project of this nature with an area fundamental in our students evaluation is understood.

In the last part of the paper, we will present, in a systematic, detailed and explicit way, the three study cases mentioned in this section: procedures followed from the projects' beginning, participation and interaction of all the parties involved (subject teachers, Graphic Design coordination, the institution – client – representative and users of the design), complete working procedures implemented with the students, processes and methodological strategies utilized, both theoretical and practical, the creative process, qualitative test performed with users (for example, focus group realized and documented in video or by means of written reports by some groups), evaluation process description and final presentation of the project selected by the institution. In its closure, the document will state the main experiences derived and a series of conclusions.

Development

(a) Linked projects (PV)

Presently, design students training must enable them to face our Mexican society's real and complex problems up. So, since 1994, academic personnel appointed to the Design Department in the Mexico City campus of the UIA committed themselves to study different characteristics that could shape the professional profile of their students in accordance with the new times and circumstances and complying with the principles and objectives of the Department proper and the UIA (Espinosa, 2009a, p. 12, 20, 22). In this way, accepting *situated cognition* affords didactic and curricular elements in showing the students ways to follow, similar to those they will faced in their professional exercise.

According to Espinosa (2009b, p. 2) PVs can be taken as *an educational interstice feasible to be applied in Design students professional education, as much in Mexico as in other countries. Besides, it sets up their backing as persons more conscious of their environment and capable of assuming a professional responsibility toward society*. Following the same author, she explains that PV arise because, from the point of view of the Department, design must be a mediation factor between human beings, its culture and the environment in which it evolves. Thanks to the education she or he obtains, a designer is capable of integrating knowledge and skills to solve problems of individuals or of the society through establishing strategies and visualizing objects, in a complex, plural and highly sophisticated world.

In the Design curriculum, PVs pertain to the area of syllabus foreshadowing, which is the essential phase of the design process, being the one in which solution alternatives are evaluated and the one best solving the problem's approach and defined necessities is optimized. Accordingly, subjects in which students develop the analysis and formal experimentation pertaining to design projects concentrate in this area (Espinosa, 2009a, p. 23).

A linked project, as its name shows, looks forward relating design students to diverse active or functional organizations or institutions presenting some specific design problems that can be tackled by them, supervised and supported by a teacher, from the university. Working directly with different institutions by means of a PV allows student to confront the real necessities of clients and final users of a certain design, with regard to a specific group of problems. This approach generates much learning in the students involved with the institution and its problems within the social, economical, cultural, environmental and regulatory context, that is, they undertake the complete design problem, with all its complex structure and formulation.

According to what Espinosa (2009a, p. 27) proposes, implementing students' professional competences is a fundamental and complex part of PVs, an aspect that is possible to evaluate through: (a) the degree of compromise they

² Part of this document (the Exceptional People, AC. Case) was presented at the International Colloquium in *Design: Design and global changes in local societies*, that took place in Toluca, Mexico, on September 23-24, 2010. This colloquium was convened by the Autonomous University of the State of Mexico and five other Mexican state universities, together with the Public Administration of the Government of the State of Mexico's Editorial Council.

show during the project development by their active participation in it and the quality, the quantity of their proposals and way in which they present them; (b) The seriousness of their planning and carrying out of project's research and (c) the commitment they assume with users and receivers as well as with the client, creating a closeness atmosphere with them, taking into account their approach and including it into the design proposals and the identification and knowledge of the environment from which the needs to solve surge.

The PVs presented in this document were carried out together with the following institutions:

- Mexican Confederation of Organizations in Favor of Intellectually Disabled People, A.C. (CONFE), who looks after intellectually disabled people and trains them in different fields, in order to integrate them into society and improve their way of living. This institution's project required of the design of 47 pictographs and specific signage in its different areas, as well as the creation of a color code for the varied activities, providing in this way an additional element for the correct and fluid displacement of the trainees within its wide and complex architectonic space.
- Exceptional People, AC. (GE), who similarly to the former one, teaches a trade, particularly *tamales*³ fabrication, to intellectually disabled people, particularly those with Down syndrome, to enabled them for the job market. The requirements of this organization were the design of its institutional image and of a signalectic system, as well as to bring forth some "didactic – informative cells" for its visual factory providing precise information about the production process of the *tamales*.

Vasconcelos Library attempts to be a modern institution, with advanced technological resources accessible to the widest sectors of population, particularly to the visually impaired, offering them an opportunity to integrate their educational and for the job training. This client asked for the design of a signalectic system that aesthetically and functionally harmonizes the physical space and the signage with its institutional image, privileging the design for visually impaired people so that they can displace themselves in the same way that those normovisual within the place.

(b) Synthesis and Evaluation Area (ASE)

As mentioned in previous paragraphs, the linked projects presented corresponded to the Synthesis and Evaluation Area (ASE) in its Phase II, where the subject Design VI, Global Image (Identity and Signage) is inserted. This area has as objective that *pupils recover the educational intentions referring to his or her professional formation, to the dimensions of an integral university's training, to social articulation and to achieving generic competences at a transition's level*. In ASE II, starting from an analytical – synthetic exercise, it is assumed a critical position found in the problems, challenges and defies of the professional

performance in the local, regional, national and global context (UIA Puebla, 2006, p. 4).

Among the characteristics of the subjects or curricular spaces of ASE, we find the following:

Due to the nature of these matters, the most convenient situation is to have them taught in the school, as they will contribute valuable elements for the student, the program and the university. They are courses and cannot be regained or replaced by others. Also, they are serially arranged, having prerequisite subjects. They systematize, synthesize and assess the process of integral tertiary education which each one pertains. Groups shall be of reduced size, with a maximum capacity of no more than 15 pupils. There are some prerequisites to be able to comply with the implied aims of the area to which they correspond.

It is desirable that the profile of the teaching staff imparting ASE material is governed by the following characteristics: they have to be capable of conducting group processes and to propitiate collaborative work; they shall promote discussion and reflection processes among the students, as well as procedures favoring self regulation; they shall create a climate of confidence and mutual respect; they shall have a vision of design not only from within the subject (intradisciplinary), but also from the point of view of different disciplines (inter and multidisciplinary) favoring processes of information recuperation and systematization; they shall operate information and communication technologies (ICT); they shall be able to conduct self analysis and self evaluation processes; they shall be capable of interacting in an appropriate way in front of contingent situations; they shall act competently in developing an open working ambiance, in which the student person and its formation processes are accepted and respected; they shall systematize, analyze and interpret the teaching – learning processes; they shall identify possible research lines linked to departmental challenges with regard to future developments; they shall be able to develop complex synthesis and evaluation processes and, finally, they shall have a global vision of their own educational process (UIA Puebla, 2006, p. 4).

It must be mentioned that, at this stage of their formation, designers can make arrangements to perform their social service. The linked projects completed for CONFE and GE were incorporated to this modality, which allowed the students participating in them to comply with the requirement of the social service, assuring its conclusion and monitoring.

The three projects described in what follows are integration exercises, as every day life of disabled people, being their disability of an intellectual, physical or sensorial type, include activities such as work, read, move, communicate, eat, dress themselves, have fun themselves and many more implying the satisfaction of diverse needs. Although these needs are identical to those felt by other persons, the limitations that these men and women have must be taken into account, studying the specific requirements that the objects and services they use must comply with.

In Design, there is a concept known as *accessibility*, strongly related to *universal design* or *assistive technologies*. This concept definition refers to design of products,

³ A traditional Latin American dish made of a starchy, corn-based dough, which is steamed or boiled in a leaf wrapper.

environments, programs and services that are inherently usable by all people, both without or with disabilities, to the greatest extent possible, without the need for adaptation or specialized design, but it shall not exclude assistive devices for particular groups of persons with disabilities where this is needed.

The Convention on the Rights of Persons with Disabilities⁴ establishes the importance for persons with disabilities to have an independent way of living and be guaranteed its full enjoyment without discrimination. It also states their right to receive and impart information and ideas through all forms of communication of their choice, including by: languages, display of text, Braille, tactile communication, large print, accessible multimedia as well as written, audio, plain-language, human-reader and augmentative and alternative modes, means and formats of communication, including accessible information and communication technology.

Study cases

(a) Mexican Confederation of Organizations in Favor of Intellectually Disabled People, A.C. (CONFE)

One of its main goals is to raise funds and obtain material and human resources so as to improve the life quality of intellectually disabled people and their families, as well as favor this group integral development and their inclusion in society by means of a national coordinated effort.

Training is imparted in five fields: industrial assembly (storage, packing, conditioning, assembling proper, labeling, codifying and bottling), sewing (cutting and sewing workshop, linen fabrication, packing), cookies fabrication (cookies preparation and production, cookies manufacture, bulk sale of cookies, packing of cookies in different presentations), gardening services (preventive and corrective maintenance of gardens, pruning and weeding, soil preparation, irrigation and fertilization, fumigation), cleaning services (cleaning of shops and offices, toilet cleaning⁵).

The specific objectives for the CONFE's project were:

- Design the signage required in the building and the symbols (47), according to the diverse areas forming the institution, taking into account the intellectual and learning abilities of the people going there and incorporating a color code for the different zones integrating the institution, so that their movements in the place are facilitated.
- General objectives were:
- Reduce the existing confusion among different symbols in the place. Increase and/or improve the facility with which external and internal users move and locate themselves.
- Reinforce CONFE's image as a center with all the necessary infrastructure characteristics (through the

help of a SS) for an educational and support center for intellectually disabled people.

- Unify all symbols so as to have an effective signalectic system.
- Produce a Users and Application Manual for the designed system.

(b) Exceptional People, AC. (GE)

It is an institution to generate a productive project to train young people with the Down syndrome (SD). This association is generally known by the name of *Daunis*, which corresponds to the trade mark under which they sell the tamales made by people with SD. This is the training strategy their directives follow in developing the self-sufficiency for an adequate life of the people the institution has at its care. GE's objective is to generate social conscience about the aptitudes disabled persons have and troubles they confront, in order to encourage a new culture of respect, dignity and equal rights for them in the Mexican society⁶.

Exceptional People, AC. has as its mission to train grown-up people affected by SD or with a minor or moderate cerebral injury (exceptional persons they indeed are) in order of obtaining their social inclusion, with a dignified, independent and productive life. Daunis (GE) vision centers in being the leader institution of reference in Mexico regarding the subject of labor and social inclusion of people with the Down syndrome and a model, at World level, of integration with employers. Daunis tries to be a self supporting institution through marketing tamales, so the grown-up people with SD can find companies in which to get a dignified and well remunerated job.

The general objectives for the GE project were:

- Design the Corporative Identity for Exceptional People, AC., who did not have one of their own then.
- Create the Corporative Image Manual for GE.
- Design applications for GE's stationary.
- Design a signalectic system keeping synergy with the established Identity.
- Develop iconography for the organization and production and the cells in the process of fabrication by means of symbols.

These activities were aimed to:

- Reduce the existing confusion among different signage used in the place.
- Increase and/or improve the facility with which external and internal users move and locate themselves.
- Reinforce GE's image as an educational and support center for intellectually disabled people.
- Unify all symbols so as to have an effective signalectic program.
- Produce a Users and Application Manual for the designed system.

⁴ Office of the United Nations High Commissioner for Human Rights, *Convention on the Rights of Persons with Disabilities* (<http://www2.ohchr.org/english/law/disabilities-convention.htm>).

⁵ Information obtained from CONFE (2011).

⁶ Information obtained from Daunis (2011). Also, from the project ASE II brief.

Specific objective: foreshadow the designs for both projects in a manner adequate for the cognitive characteristics and skills of mentally impaired people (Down syndrome and minor mental disabilities).

Vasconcelos Library is a book repository located in the northern part of the Mexican capital, contiguous to the old railroad station of Buenavista and to the Chopo's Cultural Tianguis⁷, which is the work of the Mexican architect Alberto Kalach. It is a luminous place due to the play of transparencies that its glass roof and walls produce. It has three upper levels and a floor plant, being an admirable item of modern architecture. It can hold to a maximum of 5 thousands persons daily, which is equivalent to 4.5 to 5.5 million visitors in a year. Some of its areas and services are: the Multimedia Room, the Children's Room, the Braille Room, with the greatest library for blind and visually impaired people at Mexico City, the Music Hall, the Auditorium, the Multiple Uses Room and rooms accommodating some 640 computers, with free access to Internet. Its mission is to generate policies and establish procedures facilitating fair, free and costless access to knowledge and culture, as well as to encourage reading in the libraries of the National Network of Libraries.

The general objectives for the project were: To design a signalectic system according to the corporative image and restrictions in the use of materials in BV for the floor plant of the institution (complete signalectic), emphasizing inclusion of disabled people, particularly those with impaired vision.

Specific objectives: design of a signalectic system composed of signage for all the areas and services of the BV, industrial design of the signs (format, material and attaching system), solution of the integral system (attached to wall, pending, pennon, self-supporting and labeled on the floor), implementation or seeding, specifying production and location orders, Signage Manual.

Users identified for the three projects (CONFE, GE and BV):

- (i) Physically disabled people (intellectually, visually and crippling).
- (ii) Non handicapped employees of the institution.
- (iii) General public attending the place.
- (iv) Objectives and benefits of the signalectic system for the three projects (CONFE, GE and BV):
- (v) A signalectic system has as its objectives to inform, address and communicate to diverse users about the different areas in a place in a clear, quick and adequate way, according to their skills and characteristics.
- (vi) The signalectic system shall permit the users' flow within the environment of training, displacement and action.
- (vii) The signalectic system shall show an adequate handling of the iconic values for clear understanding of mentally disabled people and of the

Braille system for people with impaired vision in the institution.

- (viii) The signalectic system proposed shall, in a persuasive and clear way, facilitate displacements, understanding of processes and actions taking place in the building.
- (ix) To generate line patterns and symbols production.
- (x) To generate prototypes for the symbols, cells and signalectic directories required.
- (xi) To generate a Signalectic Manual with the design and production requirements of the system.

Projects defies:

- To create a Visual Identification System, with its applications, specifically for GE.
- To design a signalectic system for CONFE, GE and BV according to the image of these institutions.
- To standardize criteria among the teachers involved, in order to reach the goals in time and as they were established.
- To be sure that customers will assume their responsibility and the compromise to attend meetings for the taking of decisions during the project, as well as implement promptly the winning project.
- To get positive and adequate results for both clients and users.

Working method

The process begins at the Social Service Department of the UIA, where the institutions CONFE and GE had to comply with some requisites in order to be considered a client. In the BV case, Dr. Angélica Martínez made the initial contact and it was presented to the Graphic Design Department (DG) later on. In all the three cases, the DG coordination, together with the incumbent professors of Design VI, took the decision of developing the projects.

In meetings with the teachers, the course coordinator, the client and an officer of the Social Service Department participating, the scope of the project is delimited, its brief drawn up and its schedule fixed. These gatherings start some 6 to 8 weeks before the semester ends. In the three cases, plenary sessions were held with the students, where the projects were presented, giving them enough information to start it up, together with its scope, quantity and quality of the designs expected and so on.

Once in classroom and having the students known the project, the teacher proposes them to form teams of 2, 3 or 4 people to develop the work. The process starts with a visit to the client installations⁸ and an informative talk by a representative of the institution. In parallel, the teams perform diverse bibliographical researches, both theoretical and qualitative about themes related to the project, attend conferences⁹, talks and interviews and consult documents in line to back their research.

⁷ A *tianguis* is a traditional market or bazaar, in Mexico and Central America.

⁸ Addresses of the three institutions are: CONFE: Carretera México-Toluca 5218 Col. El Yaqui. C.P. 05320 México, D.F. GE: San Luis Potosí #101, Col. Roma Norte, México, D.F. BV: Buenavista C.P. 06350. Eje 1 Norte (Mosqueta), Buenavista, Cuauhtémoc, México, DF.

⁹ For example, they attended a talk at the UIA titled: "The rights of intellectually disabled persons. Experience of young people in the Building Bridges Program of the Universidad Panamericana", on March 17, 2010. Also a sensitizing workshop on blindness in the library of the first institution.

The GE case started with the development and design of the Corporative Identity (IC). Once the proposals have been finished and qualitatively evaluated, the client was invited to attend a presentation by the students in the classrooms and then select one of the three options presented by each team. According with the client selection and observations, the pertinent applications for the stationary and all the line patterns were designed. Later on, each team developed the corporative identity manual.

In all the three projects, and according to the governing design concepts of their corporative identities, the design of the corresponding signalectic systems was started (some steps in the process were: free hand sketching, geometrization based in harmonic patterns of the golden section *sectio aurea*, iconic synthesis, graphics, abstraction, and afterwards, vectorization in Illustrator and Pantone application). In this stage, the students focused their work in selecting the material necessary for the signalectic system according to the client requirements and current signage regulations, as well as to the safety, mounting, fixation and cleaning of signs. A materials specialist addressed a talk dealing with these themes to the students and they, based in the information gained at the lecture, the understanding of the NOM's and their own research, proceeded to design the enveloping surfaces following the proxemic formula¹⁰. Then test of perception by the users were realized and Braille alphabet was incorporated. Some adjustments and design changes were done based in these tests and the definitive prototypes were created.

Once the signs were designed, the chromatic code was selected and the signage was digitally implemented or "sown" in the institution's pictures taken during visits. Finally, the signalectic system manual was prepared.

At the semester's end and with the projects concluded, the students made their final delivery and present orally the results they obtained, explain the processes they followed and the outcome of their research, contributions as well as the learning gained¹¹. They were allowed to use digital presentations (videos or animations). ASE final presentation is held in diverse auditoriums of the university and it is the opportunity for the examiners integrating the board to make the student final evaluation¹² to value their competences and skills and feed back some commentaries and remarks to them. Through these observations and qualifications, the winning proposals are selected, two of each one of the four teams formed, being those best valued by the examiners and most satisfactorily complying with the appointed objectives.

Afterwards, the selected projects are presented to the client, who normally is represented by its top management. This is an enriching moment for the student, as they

have to disclose their work in a professional manner and to a real client, who usually participates in a very generous way with his commentaries and observations regarding the project.

Selected Projects

Mexican Confederation of Organizations in Favor of Intellectually Disabled People, A.C.

The winner team was the one formed by Alonso Sierra, José Luis Sánchez and Pablo Castellanos with its signalectic proposal based on the TEACCH system (*Treatment and Education of Autistic and related Communication Handicapped Children*), method used in the creation of posters and labels formed by visual keys, which must be clear and definite so the specific person to which it is addressed can understand what it is intended to communicate him or else, he can pass what it is meant along to others (Figure 1).

The signalectic system followed the concepts recommended by the TEACCH system. For example, the signs were located in accessible places, providing a quick impact, pictograms clearly differentiate among themselves and having the minimum possible abstraction. All effort were made in order to make it clear what action, image or object they represented.

Pictograms were designed according to the recommendations, objectives and educational techniques of the TEACCH system, carrying the iconography out with low abstraction, with the action and its description in the image proper. To differentiate each activity, either of a diverse type or realized over dissimilar materials, a distinctive color was selected (Figure 2).

Exceptional People, AC.

This project was designed by the students Mariana Cossío López and Carlos García Granados, who proposed the metaphor of a "man tree" to represent the corporative identity of Exceptional People, AC. They identified the concepts of inclusion, autonomy, respect and community to include them in this visual metaphor, by means of a graphic representation of medium abstraction. The IC symbol is located between the iconicity degrees of 3 and 5 in the Moles scale and in degree 4 in the Estivals scale, according to the theory of iconicity and schematization¹³. This means that its elements keep a more logical than topological relationship among them, for it is necessary to insert the institution's name in order that its identity is interpreted in an adequate manner and in a global way (Figure 3).

¹⁰ Some of the regulations that were studied and will be complied with in this project were: NOM 026 STPS 1998, NOM 003 SEGOB/2002, NOM 120 SSA1 1994 (Property and services. Hygiene and sanity practices in the process of food, soft drinks and alcoholic drinks) and NOM 001 STPS 1993 (Buildings, premises, installations and areas in working places – Safety and hygiene conditions).

¹¹ Each of the students teams working in this project shall submit: (i) Identity Design (logo) mounted on a rigid surface (panel) (GE). (ii) Dummies of letter paper size A, business card, envelope, folder and invoice form. (iii) Application of the identity system to three promotional materials (GE). (iv) Signalectic system design. (v) Implementation or "sow", specifying production and location orders (to be included inside the manual). (vi) Three prototypes (Trying to present of different systems. The self-supporting ones shall be done to scale). (vii) Identity Manual and Signage Manual. (viii) Complete quotation of the project production. (ix) A compact disk with the following archives: (a) Identity Manual in PDF format. (b) Signalectic Manual (PDF). (c) Work methodology or process. (d) Working archives (vectors), including: logo, symbols, "sow", etc. (e) Archive of the digital presentation to the examiners.

¹² To this document ends, the "board" is defined as the inter disciplinary group of professors appointed to jointly evaluate the student at the course's end.

¹³ *Teoría de la iconicidad y esquematización* (Costa, 1998, p. 103-113).



Figure 1. Posters formed by visual keys.



Figure 2. Pictograms.



Figure 3. Gente Excepcional logo.

The signalectic system designed shows the “man tree” (taken from the corporative image of GE), whom is represented performing different actions to signalize them (this is the reason for its arms being longer than its trunk). The final measure of the basic GE symbol was obtained from the proxemic formula ($S = L^2 / 2000$), being the dimensions obtained of 24 cm x 24 cm. However, as the proposed use for this signage corresponded to a horizontal format, it was dimensioned again according to the golden section, resulting in its final magnitude of 44.7 cm x 24 cm.

The signs were fixed to the walls by means of magnets, so that it was easy to remove them in order to clean them (Figure 4).

Some of the conclusions set out by our pupils were:

“The challenge was to carry the “Aduana” cell out, explaining the processes performed in this area through the “man tree” character, because the client asked originally to use photographic images only. Retrospectively, it was advantageous that we realized the necessary research and could end up offering him a better option.”

“The worst problem arising while we were developing our project was due to the printer, who combined our archives, impairing the quality of our project. We think that he was the first, but not the last printer that is going to give us this kind of problems. Anyway, it was something very good to learn for the future, as it depend on us to control and maintain the quality of our projects and take care and look forward to have a good and clear communication with our suppliers”.

Vasconcelos Library

The finalist for this project was the proposal of the students: María Perujo Lavín, Andrea Salcedo Margain and Laura B. Turrent Carriles, with the following characteristics:

The pictographic and typographic signage carries indications in Braille alphabet in it, for the users with impaired vision, which is one of the main objectives of the design. Additionally, a system of tactopodal guidance was proposed to make more functional the Braille signalectics (the proposal complies with the standards and measures established in the ADA system).

Pictograms of medium abstraction were created for each one of the lounges, with reference to the characteristic shapes of the imagotype. The iconicity degree used is between 4 and 5 in the Moles scale.

The color selected were: black for pictograms and typography, so as to obtain good contrast over the gray of the aluminum, blue for the marks of pictographic informative signs, red for the prohibitive ones and green for the directional ones (in accordance with NOM – 026) (Figure 5).

It is proposed that the symbols be printed on *dibond*¹⁴ 3 mm thick in order to get a better quality, endurance and visual unity. As one of the main limits imposed is not to damage the installations, it is proposed that the signs be attached to the walls with a transparent glue, plus self supporting movable signage for directories and nylon for pennons to identify zones A, B and C (Figure 6).

In what follows, we will mention some of the conclusions at which these pupils arrived: “The project was particularly interesting for us as this was the first opportunity that we have had to realize a signalectic design

¹⁴ This material is constituted by sheets 1.22 x 2.44 m, formed by a core of foamed PVC, 2 mm thick, covered on each side by an aluminum sheet, 12 mils in thickness, with different textures and finishes. Information obtained in Diseños Plásticos del Futuro, S.A. de C.V. (2011).



Figure 4. Signalectic system.

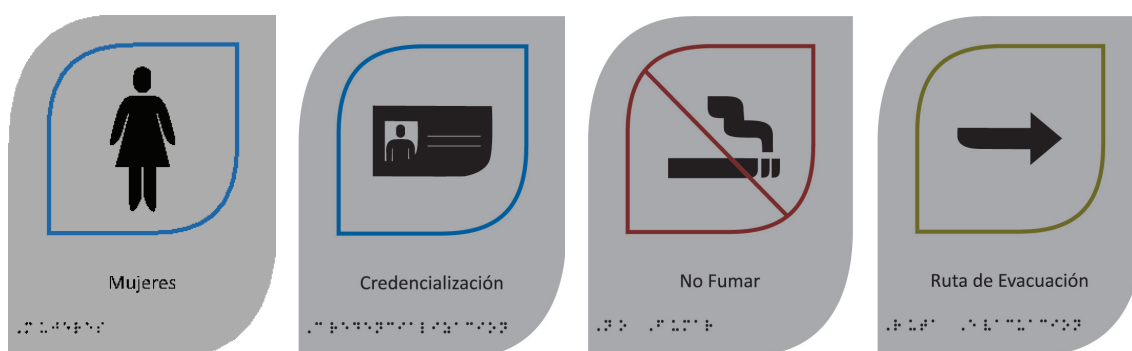


Figure 5. Pictographic and typographic signage with indications in Braille alphabet.

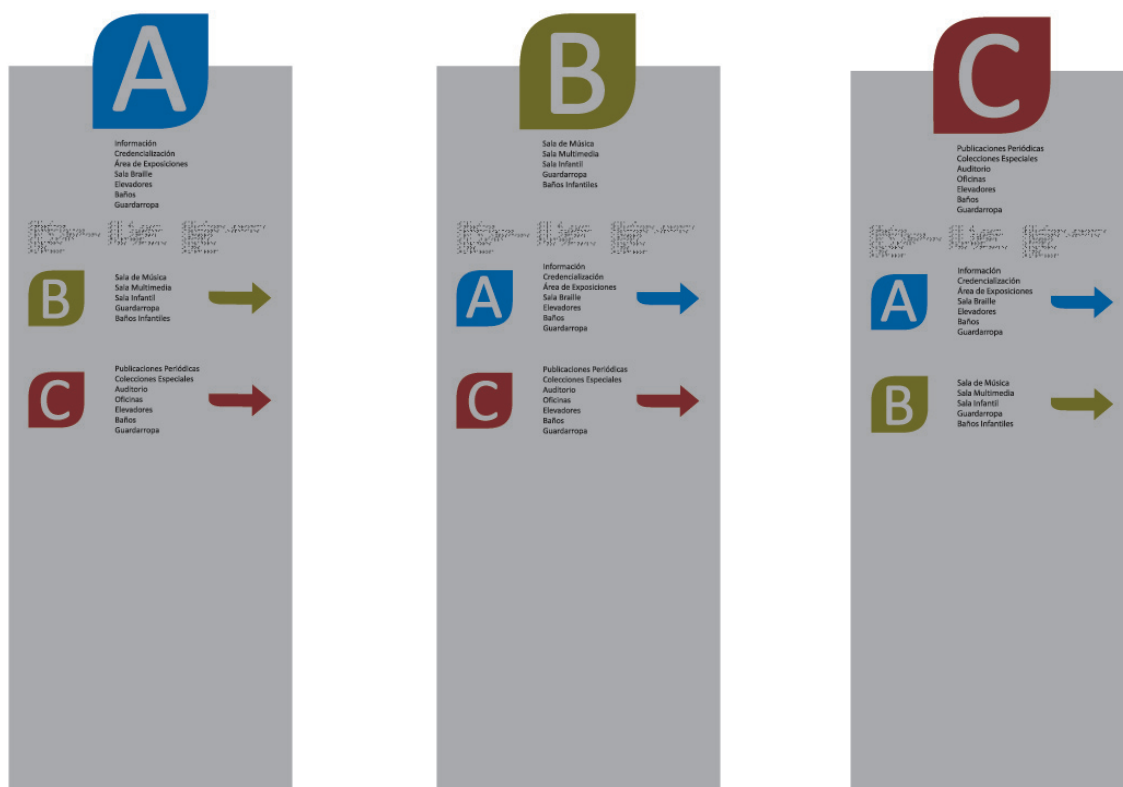


Figure 6. Pictograms.

addressed as much to normovisual users as to people with impaired vision. We had to make some research on the theme and get a first hand knowledge of the form in which people with impaired vision interact with the signs world.

We had to confront a number of defies, for example, the first prerequisite we had to comply with was to avoid generating "visual noise" in the library but be capable of attract attention.

Finally, once concluded the design in accordance with the requirements and concepts stipulated, to get a reliable printer (regarding his punctuality, honesty and the quality of his work). It was a difficult task, but everything came well in the end."

Conclusions

According to this teaching – learning experience, we can conclude that work performed in this type of projects induces the students *to reflect on how their proposals evolved, what were the results they obtained and the form in which they arrived to them, as well as how they could present them by means of solid arguments*, produces a more durable learning, which heightens the future designers vision, secures the experience of working directly with a client for them and produces participative and users centered designs. Specifically, the projects we have described here permitted our students to participate in the world of inclusive design focused on disabled people. The design results generated by means of PV appear to be more adequate to persons and their contexts and favor more creative responses from the students, as their work proceeds in a more free and flexible way.

We have noticed that the requirement of a "professional presentation" for these projects is assumed by students in a most serious manner. The teachers usually support the planning and organization of the project suggested by the students. Besides, they get involved in direct interaction with suppliers in budget analysis, schedule follow-up, materials and resources management and the solution of problems originated in this interplay. Another advantage of these projects is that the proposals regarding materials, processes and costs are more realistic than in the case of a purely theoretical exercise, because the students are conscious that it is intended to carry the projects out.

And more so, they constitute an area of personal and professional growth, as "the work develops in a non-static process, as frequently client's expectations change in the course of the project, a situation that is complex and continuously happens in professional life." So, students must face uncertainty because of a customer variable decisions or lack of seriousness of a supplier, which makes them consider their decisions in a position closer to what they will have to do in their professional life.

Some weaknesses and threats that must presently be dealt with in the academic environment are: to find an equilibrium between amount of work involved and time available to complete it, as the projects are some times too ambitious in comparison with the duration allowed to them in a semester (that really last from 6

to 8 weeks). Another one, susceptible to be converted in strength, is the evaluation system applicable to this type of project "that must be done from the perspective of those involved in the project (the designer, the client and the users), which implies for the student to carry a complex synthesis out, as the expectations of each of them are frequently different". Then, we here propose to establish an specific evaluation rubric for each PV linked project, with the intervention of all the teachers involved in it and taking into account as elements to evaluate the student skills and abilities and also the project's precise specifications, the number of elements to deliver, the methodological process and the expected product quality. This more systematized type of evaluation will permit, in our view, to judge not only the PV, but all the matters previous to ASE as well, which will provide precise data on what to stress and reinforce in them, integrating their syllabus in a way that allows to control their teaching. We consider that to have an evaluation rubric per linked project will allow a greater validation in the teaching dynamics and strategies (notwithstanding academic freedom), for example, in all related to accomplishment of the project's objectives, brief's follow up and achievement, schedule's fulfilling, number of designs to deliver and quality of them.

In addition to what have been said, we are convinced that PVs constitute an excellent educational strategy, favoring that students acquire knowledge and skills, besides of allowing them to apply and strengthen diverse professional competences. They also create different areas of opportunity and growth for the Design Department of the UIA. We believe that strength of PVs is the compromise and linkage they set up among four groups of fundamental participants: the linked institution, the Social Service area, the Design Department (coordinator and professors) and students. It has also been noticed that students participate with great motivation and contribute great effort in this type of projects. A significant area of opportunity is the professional experience acquired by the students from the university with the direction and guide of their professors, independently of the existential and curricular value for the student.

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