

Qualitative Research as a Tool to Carry out Architectural and Industrial Design Projects: a Vision from the Academic Perspective

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Abstract

In recent years, qualitative research has gained ground as one of the main tools to analyze reality and propose innovation projects. This qualitative methodology has strengthened an innovative pedagogical structure, within the teaching of design disciplines. This is the specific case of our educational activity in the Modular System (UAM X), which facilitates the application of these tools in the design process. Reviewing the data in the analysis in a more qualitative way, promotes a more credible, reliable and valid vision to propose solutions to the problems detected. Thus, achieving a comprehensive understanding of the phenomenon and considering the factors involved in order to generate more relevant solutions. Within architecture, some projects that are addressed, such as the historical and cultural heritage of spaces and cities, use qualitative research techniques to discover and interpret the real vision of the inhabitant/ visitor of these spaces. It is essential to understand how the city is lived from the point of view of the different actors that interact in the space, in order to generate plans and projects that reinforce and enrich social interaction. In industrial design, the students take these tools and apply them to the first phase of their project in search of insights that will allow them to bring forward innovative products with a real impact on society. This paper addresses these two cases, highlighting the importance of these tools being internalized by our students completing their training with a research profile focused on design.

Keywords: qualitative research, knowledge, skills, Modular System, teaching of architecture and industrial design.

Introduction

Qualitative research as a tool for industrial design and architecture projects. A vision from the academic perspective.

Qualitative research methods have been widely developed within the social sciences since long ago, but in areas such as architecture and design, their implementation has been recent.

The professional training of architects and designers has been traditionally within the methods focused on creativity, however the new situations proposed by the context make these disciplines approach methods related to social sciences that allow them to have a qualitative vision of context and the user or inhabitant.

In the Xochimilco UAM, this condition is very frequent because the proposed pedagogical model, the Modular System, implies starting from reality itself; therefore, the involvement of the qualitative vision is not foreign, however, it has not been given much emphasis due to the paradigms of design and architecture in its traditional teaching and the free professorship that is given in the institution.

Because the Modular System is the basic teaching model at the Universidad Autónoma Metropolitana Unidad Xochimilco (from now the university will refer as UAM X), it is important we give context to this model.

UAM Xochimilco and the Modular System

In 1974, the UAM opens its doors. One of its main purposes is the training of professionals in Mexico City. The Xochimilco unit, unlike the other four units that make up the UAM; undertakes its activities with the proposal of an innovative pedagogical project, with the aim of training professionals with a vision of reality and a greater social commitment to their country and its context.

The Modular System emerged, then as a pedagogical alternative that faced the student and his commitment to social problems, seeking greater sensitivity and making him the architect of his own training.

Starting from the principles of structuring and construction of Jean Piaget's knowledge, cognitive development based on the dialectic between Vygotsky's individual and society and combining it with the concepts of interdisciplinary and operational groups, the Modular System challenges the student to be himself, from his own experience, becomes a transforming subject of reality and thus his knowledge takes on a true meaning.

The Modular System, as stated in the conceptual bases, allows the formation of agents of social transformation, with "capacity for critical thinking, capacity for creative action and capacity for global understanding of the facts" (UAM, 1974-78).

As a complement to the postulates of the Modular System, the activities that guide the daily work in the institution are the three substantive functions of our University: teaching, research and service:

1. Research as knowledge production based on specific social objectives.
2. Teaching as communication and practical confrontation of knowledge.
3. Service, as the social application of such knowledge" (UAM, 1974-1978).

In general, these functions allow the university's daily work "to contribute to the attention of problems, the generation of research, development, innovation, production, commercialization and sustainability, among others" (UAM, University Legislation, p. 243).

The basic postulate for the construction of knowledge, according to the Xochimilco Document (UAM, 2012) takes as a tool the application of scientific research, this was due to the fact that the Divisions within which the academic activities began were those of Social Sciences and Humanities, and Biological and Health Sciences. In these areas, from the processes of systematic observation, measurement, experimentation and hypothesis formulation, the objective was to minimize the subjectivity of the knowledge construction process.

However, the processes in the Division of Science and Arts for the Design of this Unit, hereinafter CyAD, required a more linked method with subjective aspects such as human creation, with a different approach to address the problems that society poses.

Beyond the traditional pedagogical training by disciplines, the Modular System proposes to link the teaching-learning process to a relevant social problem to be approached in an interdisciplinary way. Currently, we are immersed in a process of resignification and updating of the Modular System, it is recognized that although it has some critical points, it has been more successful in relation to its link with reality itself.

This approach is applied in the three UAM-X Divisions, which 45 years after its foundation has 14,007 students in 18 degrees and 972 students in 29 Postgraduate plans.

Vocational training consists of 12 modules or teaching-learning units, proposed from the objects of transformation, which are socially relevant problems to solve. The educational character is concretized in the development of three fundamental concepts in the student's formation: the capacity for critical thinking, creative action and the global understanding of the facts. All focused on social transformation.

An important element is the rethinking of the objects of transformation and disciplinary and interdisciplinary fields that come to resignify and transform professional practice. The Bachelor of Architecture and Industrial Design are not foreign to this phenomenon.

Today, at UAMX, the Architecture and Industrial Design degree require a different dynamic derived from the new challenges of education and context. As Bauman (2007, p. 33) tells us: "the world, as it is lived today, seems more an

artifact designed to forget than a place for learning." The challenge is to rethink the relevance and significance that academic structures have for the world as we live it.

Qualitative research in the Modular System

For Taylor and Bogdan (1987) there are two theoretical positions to conduct research: the positivist who seeks "the facts or causes of social phenomena regardless of the subjective states of individuals" (p.15) and the phenomenological one that "wants to understand social phenomena from the actor's own perspective. Examine the way in which the world is experienced" (p.15) Given the fundamentals of the Modular System, the second position is the one that works most for the purpose of starting from a context and a reality of its own and thus identifying the elements and situations that they become important to that person or community that is being investigated.

For Denzin and Lincoln (2012, p. 3) qualitative research "is a situated activity that locates the observer in the world. It consists of a set of interpretive, material practices that make the world visible. These practices transform the world. They turn the world into a series of representations, including field notes, interviews, conversations, photographs, recordings, and memos to the self." The Modular System places us in concrete reality and asks us to transform reality from the deep knowledge of your problems and needs. Identifying, how, from our specific position in the world you can contribute to a reality as complex as the one we live.

According to Creswell (2013), qualitative research is based on assumptions and uses theoretical and interpretative frameworks to be able to approach studying specific problems or situations. The possible approaches, from the qualitative position (narrative research, phenomenology, grounded theory, ethnography and case study) provide a particular perspective throughout the research process, which begins with the approach itself, through the collection of data, the analysis process, until reaching the final report.

An element that stands out in this research process is "the final written report or the presentation [which] includes the voices of the participants, the researcher's reflexivity, a complex description and interpretation of the problem" (Creswell, 2013, p. 44). By linking it with the purposes of the Modular System, this type of "reports" are the ideal products for the construction of knowledge based on their own experiences.

Starting from reality to return to reality itself with relevant proposals, is the path that research proposes to travel. This means, as Denzin and Lincoln (2012) say that qualitative researchers study things in their natural environments, trying to make sense or interpret phenomena in terms of the meanings that people give them, and making sense from their own interpretative frameworks.

It is necessary that from interdisciplinarity, concept raised early in the teaching model of the Modular System, and with the knowledge and the possibility of implementing "a wide range of interconnected interpretive practices" (Denzin and Lincoln, 2012, p.4) that facilitate the understanding of the context, making possible a different vision from each particular practice, enriching the interpretation of events.

Qualitative research is then a perfect complement within the teaching model of the Modular System. And taking place within CyAD, it is the opportunity to make our architecture and industrial design students more sensitive to the reality around us. Qualitative research offers us a variety of possibilities to walk in the framework of research. A method that has strengthened the path of the different teaching-learning processes in the different disciplines that are related to design, specifically in CyAD.

The great challenge and value in the transformation objects proposed for the teaching of design and architecture in our unit, is to work with real problems or situations, which demands actions different from those proposed by traditional design methods.

The training of architects and designers in CyAD

In response to the multiple visions that occur within our academy, the freedom of professorship allows each teacher to choose the design method they prefer to share with their students and with which they intend to approach to solve the problems of reality.

This includes traditional design methods where the approach is given by the same teacher and the student only has to "be inspired" to generate a large number of possibilities to solve the specific problem bounded by the teacher. Two

situations are obvious: the first has to do with the process that the teacher has followed to identify the same problems, needs and problems to solve, the second has to do with giving the student the questions and not allowing him to distrust of that approach.

In this situation, the research phase of the design process is limited to inquiring about production technologies, and existing references, preventing seeing beyond the approach previously established by the teacher.

Other design methods contemplate research as a starting point to be able to frame the problem statement. It is here that qualitative research becomes the ideal tool to place the teaching-learning process in reality itself.

The direct approach of the student with reality leads him to question his value judgments and prejudices around the topics and contexts addressed, to try to understand in an empathic way the specific situations. Once the realities are lived and experienced, the student is more sensitive to ask questions and explore possible solutions.

Approaching reality allows the student to identify more needs than the same user or inhabitant is aware of. These needs are called implicit, latent or non-articulated needs, which are the result of detailed observation and in-depth analysis.

When the user articulates the need, the project remains to please the user, when the designer identifies the unarticulated need, the project can scale the limits of the proposals and reach true objects or systems that solve that need.

It is in this sense that qualitative research methods provide those perspectives that allow identifying true needs, or latent needs and allow them to propose innovative objects and / or spaces.

Qualitative research in the teaching of Architecture in CyAD

In the training of architecture students at UAM X, integration is considered as a fundamental element for their analysis and study. In this sense qualitative research, ethnography, psychology and many other disciplines have a great acceptance among this field of teaching; what has allowed us to find in these qualitative research methods a valuable instrument to approach and know the reality of society and its habitable spaces.

In many cases, quantitative and statistical approaches are not entirely sufficient for the analysis and study of human behavior, since they exclude the subjectivity of the interaction between people and the researcher's vision to obtain situated elements and objectives.

Within the qualitative research applied to living spaces, the researcher is aware of the influence he can exert when collecting information. Being aware of this makes him sensitive to his influence on his object of study and will generate a more complex interpretation of the phenomenon.

To work with undergraduate and graduate students in architecture, it is necessary to analyze and verify directly with reality. This is being built in relation to the different problems present in the social, spatial, environmental, architectural and territorial fields. Addressing reality from this systemic perspective allows us to build a complex interpretation of everyday life and contribute to the generation of knowledge in this area.

With qualitative research methods, architects are permanently trained in the interpretation of reality through interaction. Life stories, participant observation and case studies, allow to gather the necessary information for this.

In this sense, qualitative research proposes methods and procedures that enrich the architect's vision. That is, a new paradigm, a new model that supports an operation to obtain certain results. It can be said that it is a search for knowledge that is very committed to reality and to the people who inhabit it.

The search for knowledge in this way, provides a new point of support for the search for knowledge in living spaces. This qualitative search promotes elements for the development of architectural proposals, which is constantly evolving and in the search for social innovation.

Qualitative research in the teaching of industrial design in CyAD

The degree in industrial design is no stranger to the situation of the free professorship described in Architecture. Each teacher decides the method with which their students will develop their design projects. These methods range from the traditional ones that start from the approach of the problem, for example the one proposed by Munari (2004), to methods where students are asked to approach reality to understand it as the Design Thinking proposed by Brown (2008), but at the time of implementing it in the classroom it is reduced to creativity techniques.

Since the industrial design began to be formally taught, the human aspect has been fundamental, however, the approach was based on intuitions about what users did users prefer. This generated processes focused on the creative moment and unlinked from the deep knowledge of the user, in this way, the design process begins by posing a problem and goes on to generate solutions, resulting in an almost pre-established response.

A few years ago, when the user went from being a group of specific people with established demographic characteristics, to an individual with qualities, designers began to identify opportunities in the multidisciplinary design and work method. Here comes qualitative research because it allows us to understand the user in a more empathetic, more real way.

Finding different views on the same user helps to understand it in a more comprehensive way, identifying elements that are not obvious, allowing the questions to be framed and generating the answers in a different and innovative way.

This recovers and reorders the design practice, from another level, integrating a stage where emphasis is placed on context and user research. It is important that the designer take on the challenge of carrying out certain activities to limit the scope of the problem, understand the context and know its user.

Some techniques that have been proposed to design students to get closer to reality, have to do with techniques that involve interaction and dialogue, such as semi-structured interviews, or shading, and techniques that privilege observation, such as participant observation, visual ethnography and user footprint analysis.

The registration of activities to gather information is a fundamental element in this process. The designer is afraid to approach someone he does not know, to observe him, but this is understandable due to the distrust and fear that exists in societies like ours. However, one of the best ways to approach reality and users is to explain the purpose of interacting with them.

The designer is used to propose solutions, but it is very difficult for him to ask himself the questions. Qualitative research and the approach to reality promote this type of professional training, make the designer assume roles of researcher, but requires many conditions so that it can be carried out.

The training as researchers of the architects and industrial designers of CyAD UAMX

Something that differentiates us from graduates of other schools of industrial design and architecture is that our professionals leave with the sensitivity and training to approach reality and identify problems and opportunities for innovation.

The new professional field implies that the designer begins to train as a researcher. Beyond transforming the environment through objects or spaces, both the architect and designer will have the ability to identify and raise pertinent questions to interact with the context.

Moving towards more complex solutions demands an interdisciplinary approach and a deep understanding of the context. It is essential, without a doubt that based on qualitative research tools, designers and architects can collect the information properly to continue with the different stages of the design processes, without losing sight of the fact that design is a tool that allows improving quality of life of beings inhabit the planet.

The importance of the researcher (architect and / or designer) in qualitative research is fundamental, since it promotes a relative perspective, where the filters granted by the researcher will allow a better understanding of the phenomena to investigate. For the analysis, this new researcher provides interpretive frameworks based on his previous knowledge and experiences, which, complemented with those of other researchers, will allow him to approach the complex interpretation of the facts.

The possibilities of this research are unlimited, because as the world continues its progress and transformation in the historical course, the phenomena are reconsidered and allow new interpretations. This research is able to adjust to the events and problems that the researcher faces day by day.

The project practice, typical of architecture and design, implies a process of reflection based on the origins of the project. Where, beyond the creative process, the designer assumes himself as a researcher and plays an important role in the interpretation of social events and events in order to achieve more complex and pertinent approaches to the reality that is happening.

The designer, beyond his creative posture, where he only produces the answer to the questions that others have asked, assumes a much more reflective, participatory and critical posture, which allows him to integrate from the very origin of the project, identifying opportunities for Innovation in social contexts.

Beyond the traditional profession of architects and designers, the researcher profile demands a professional with specific skills and abilities, participating in systematically organized processes which increases their knowledge, obtaining better results.

According to Buchanan (1995) the characteristics that develop in the formation of design thinking are: curiosity, decision making, interaction with others, empathy and argumentation, all in relation to the development of design projects. In addition to the five characteristics Buchanan mentions as essential in the designer's thinking, his profile as a researcher must be strengthened. This implies that the investigator's own characteristics are integrated with those of the designer allowing a designer / architect profile more sensitive to reality.

There are skills and qualities that are already in the individuals and it is only to promote, encourage and induce them to achieve a higher level of development and sensitivity, as Sánchez mentions: "for man, knowing is task and undertake. It is a program of life in terms of being historical and social" (2010, p. 60).

In this sense, six operations are proposed that will encourage the growth of designers as researchers: opening operations such as observation and reading. Expression operations in reference to the exchange and production of signs. Operations of creativity and rigor, operations related to socialization, construction and conceptualization operations, and strategy operations that involve teamwork, planning and decision-making capacity (Sánchez, 2010).

The design student is called to leave his role as a formalizer and to assume a new role of researcher that develops specific skills and allows him to position himself in the current design landscape worldwide with an innovative profile. The use of tools from interdisciplinarity, contextualization of referents and arduous analysis processes are the keys to successfully linking research processes with the results of the design process.

Qualitative research then becomes a basic tool of the entire design process and interdisciplinary linking is essential to carry out design projects. Thinking becomes a basic skill and conducting analysis leads directly to the process of generating strategies for innovation.

Conclusions

Speaking of this "new" method that allows a vision of practice integrated to the designer, neglects the responsibility of the shape of the objects that make up the artificial environment of man, to think more broadly and participate in the whole process that it involves generating a design project.

For this it is essential that the designer develops tools as a researcher, in the first phase of the design; as a designer whose skills are given in the materialization and execution of the design project, and also as a communicator to be able to enter the deliverable phase and be able to adequately transmit the results of the design process.

The designer and the architect then become more participatory and less intuitive, managing to consolidate an integrative, analytical and critical thinking in search of the best answers to concrete problems of reality. The challenge would have to be to integrate content into your training that will help you assume this new role and allow you to have a greater vision and critical thinking ability.

The teaching of design and architecture within the Modular System requires a more qualitative approach, because from a concrete reality, students must be more sensitive and receptive to the phenomena that occur in their reality. But they must also be able to analyze and synthesize these concepts in more relevant and real solutions.

The architect and designer graduated from UAM X, develops research skills that allow him to differentiate himself from graduates of other institutions that use traditional teaching methods. Some developed features have to do with the capacity for analysis and reflection, critical thinking and diversity of paradigms, models and procedures that give them a complex vision to interpret reality, in an open search for knowledge, which make the human realities better understood and its problems in context.

As Bauman would conclude in his reflection on education: "We still have to learn the art of living in an oversaturated world of information. And we must also learn the even more difficult art of preparing the next generations to live in such a world" (Bauman, 2007, p.46).

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