LEARNING IN MUSIC AND DESIGN AS AN EXAMPLE OF REFLECTIVE AND COLLABORATIVE EDUCATION

Miguel Jaime
Department of Architecture
American University of Sharjah, UAE
mjaime@aus.edu

Eugenia López Reus
ELISAVA School of Design, Barcelona, Spain
eugenia.lopezreus@gmail.com

ABSTRACT

Our current educational system, based on content and not skills as it is, does not meet current challenges. This way of teaching is not able to cope with the unprecedented acceleration of globalization. Students should not be trained simply to learn and apply knowledge through technology. Rather they should be trained to rethink unfamiliar problems, to be critical, to make connections across disciplines and to invent new ways of doing things.

The reason why music and design can offer a model to other subject areas is that, for a century now, reflexive learning has been integrated in its educational practices. Music interpretation and architectural design share the Practicum as a basic methodology; furthermore, both of them do so from the beginning of the learning process. This way of learning, that challenges Meno’s paradox, is based on the reflexive value Dewey assigned to experience. However, the Practicum could be improved through the incorporation of the Vigotskyan peer interaction to it.

This paper reviews the theoretical background and procedural and contextual facts of two case studies in music and design that started in the 1970’s. The first one is “El Sistema”, the National Network of Youth and Children’s Orchestras of Venezuela, a successful state program founded in 1975 by Jose Antonio Abreu that has got a lot of awards and has been exported all over the world. The second one is the reflexive practice Donald Schön discovered in the design studios of the MIT School of Architecture around the same time and which he proposed as an ideal in the education of what he called the reflective practitioner.

The most important findings of this paper are the effectiveness of the Practicum from the beginning until the end of the curriculum, and the improvements collaborative learning can introduces to the Practicum.

Keywords: reflexive practice, collaborative learning, architectural design.

1. Introduction

We live in a new reality marked by changes that take place at a speed never witnessed before. However, teaching methods have changed little. The current education system needs to become more dynamic and effective in order to be
useful to society. More specifically, two far-reaching aspects of conventional education required change: first, it needs to embrace the reflective spirit, and second, it must strengthen the social orientation of its methodologies.

On one hand, the aim behind proposing a reflective education system is to abandon the attempt to model students’ minds on the appearance of scientific language. Scientists, in fact, do not think scientifically anyway; they reach their conclusions through a process of inferences, suggestions, trial and error, predictions, tests and mistakes without which truth would never appear in their minds. This discovery process is as important, or even more so, than the static formal conclusions it reaches and should therefore be the focal point of education.

On the other hand, the purpose of stimulating the social dimension of learning is to improve the production of knowledge instead of preserving the already discovered. Just as the object cannot be appraised unless it is done by the subject, and subjectivity and objectivity can therefore never be completely separated, the individual condition is constructed from the individual's interaction with his social context, and not vice versa, as is often believed. Dewey expressed this reality with a clear example: the more a thief steals, the more he learns about stealing, but that should not be considered real progress. The only way to distinguish experiences which are of educational value from those which are not is by regarding them from the point of view of the apprentice's benefit as a social being and not as an abstract accumulation of knowledge.

Two case studies are presented here - one in the realm of music and the other in design and architecture. They are examples of a good balance between reflexivity and collaboration in education - though there is always room for improvement. The first is the system of orchestras of J. A. Abreu in Venezuela; the second, the contemporary teaching and learning of design and architecture at Polytechnic Universities around the world. The first is imitable and exportable, as is indeed already being done; the second, while historically and pedagogically valuable needs certain improvements as discussed below.

### 2. The Orchestra System

The National System of Youth and Children's Orchestras of Venezuela, founded in 1975 by José Antonio Abreu, is a prime example of how an educational model based on reflective and collaborative learning can bring about the highest standards of academic quality and social inclusion. “The System” – as it is called – is made up of 280 schools and orchestras throughout the country. It has extricated over 400,000 children and young people from social exclusion while educating a new generation of outstanding musicians. This free public project has received numerous awards (Erasmus 2010, Prince of Asturias 2008, UNICEF 2006, Right Livelihood Award 2001, among others), and organizations such as OAS and UNESCO currently support its implementation in over 20 countries.

As a starting point for studying the pedagogical blueprint of this innovative educational project, at least two fundamental differences can be noted that set it apart from traditional music tuition.
1. It delves into the collective nature of learning - group performance is the backbone, and the orchestra is the center of the whole system.

2. It builds knowledge from practice - learning begins with the musical experience of singing and playing within a group and then proceeds to learning theoretical concepts.

The Practicum has been the basis of traditional music teaching for many years. However, learning by doing does not usually include peer learning, since the intervention of a teacher is usually the only source of formal support for the learner. Moreover, with respect to instrumental performance, traditional music education used to teach standard music notation first and then move on to more practical issues.

The first radical difference that The System proposes is to influence individual training by emphasizing the collective condition of learning as a knowledge-generating source. Collaborative learning is the essential pedagogical paradigm of The System; it is a radically different conception of artistic culture that transcends individualism and artistic ego and also incidentally transforms students’ family and social conditions.

The educational model of The System provides three types of support for students’ learning process. First, individual effort (by providing spaces, materials and musical instruments for study); second, peer learning (in the form of help from more advanced peers) and, third, the scaffolding provided by tutors, experts and teachers. These three forms of support are complemented weekly with three levels of practice: one within a group, one by sections (string, metal and other instruments) and individual practice. This educational strategy places learning in what is technically known as ZPD “zone of proximal development” (Vygotsky, 1978, p. 131). This means that young people test their skills in three different situations, learn to know the difficulties that must be overcome to achieve good performance, and know who to turn to when they reach the limits of their own possibilities. From this perspective, effective learning is not only about addressing what students already know or can accomplish independently, but specifically what they are capable of learning with the help of others by collaborating with peers or through the guidance of a tutor.

In this way, they set off from the premise that choral and orchestral group work stimulates a reaction of self-improvement where higher levels end up pulling lower ones along. Teachers consistently pose problems as challenges -such as regular presentations at public concerts- that keep learners highly motivated and inspired by their own personal achievements, and those of their peers and the group as a whole. The support or scaffolding given to students for their progress is not arbitrary because it adapts to the actual needs of each individual student and to the requirements of each step in the process; this is the key to its effectiveness. In the words of Abreu, director and creator of The System, the key to this educational model is

“… the balance between individual education and group work. This did not use to exist in music education. The effort of individual work should be applied to group discipline permanently; if this is not done, the effort will be
for nought (...). Three conditions are necessary for the entire scheme to work: individual disposition, group dynamics and effective management and leadership to get the best possible results. These are the three factors that promote high standards; if any of them are missing, the result is hopelessly mediocre. The System is responsible for articulating all three. When wisely combined, results ensue. This is the key to our pedagogical consistency.” (Ruiz, 2011, p. 30-32)

The second difference between The System and traditional music teaching has to do with the way the curriculum is implemented. Typically, students have to learn to read musical scores prior to beginning to play musical instruments. The dry experience of learning by rote a number of specialized symbols and specific markings used for reading and writing music (staves, clefs, notes, rests, accidentals, scales, tempo, rhythm, dynamics, phrasing, ornamentation, etc.) leads, has led and will often lead to discouragement and students dropping out of many conservatories throughout the world.

Just as learning the mother tongue first emerges as a means of communication during a child’s interaction with his or her environment, and then goes on to become a way of generating and organizing thinking (Vygotsky, 1978), the curriculum of The System begins with the living practice of music. Studies are presented as an intuitive and playful approximation that introduce children who do not know musical notation to the pleasure of singing and playing musical instruments as a collective experience. Musical education begins, at around four years of age, with sensitizing children towards music through imitation and repetition of songs in a group, polyrhythm physical games, and manipulation of objects and toy instruments that are similar to the real ones they will come into contact with later in their training.

From age five on, children begin to play the drums or the recorder and join a choir. While experimenting with these instruments, they gradually learn to read and write the music they play (by then, the integral nature of their initial experiences has indelibly marked them). Later, when they choose the instrument they will play in children’s and youth orchestras, they will acquire the knowledge they need to improve the quality of their performance: music theory and solfege, counterpoint and harmony, music history, aesthetics, chamber music, complementary piano, etc. With the help of this new knowledge, advanced students begin to construct the meaning that playing at a professional level depends on. The combination of the individual Practicum - rehearsing with the teacher of the instrument to adjust phrasing, tuning, etc. - and the collective Practicum - orchestral ensemble to work on sound accompaniment and the expressiveness of instruments- are key strategies to achieve inclusive, effective learning, and high quality musical results.

The music tuition offered by The System is thus reflective because it builds knowledge from practice and not vice versa. It does not apply rules or theoretical concepts to instrumental performance but seeks to generate them from practice, and attempts to solve fundamental issues of musical performance by building an experience that involves a series of decisions about phrasing, fingering, tempo, sound, etc., that, as far as The System goes, involves creating and collectively managing specific knowledge through practice. It is through the Practicum
(individual, group, sectional and general rehearsals) that students learn to make and execute decisions by the skillful handling of their instruments.

Reflective and collaborative learning is one of the cornerstones of the orchestras of the Venezuelan Orchestra System. It is a novel way of understanding music education which has enabled its young graduates to achieve standing ovations from the demanding public of Vienna, London, Berlin and New York. The crux of the matter is to understand that an individual's education should be comprehensive (encompassing intellect, emotion and will) and must include social context. The orchestra functions as a learning community that, in Abreu’s words, aims to "practice harmonization to generate beauty" (Gomez, 2009, p. 70), which combines all of the above in an indissoluble synthesis. Thus, practice and artistic learning are understood as collective stimuli and as a shared responsibility towards reaching a common goal.

3. Design Studios

Around the same time that José Antonio Abreu began The System in Venezuela, William Porter, dean of the school of architecture and urban planning at Massachusetts Institute of Technology (MIT), asked philosopher and business consultant Donald Schön to come to the design workshops and have a look at what was happening. Porter sensed that there was a seed of creativity in the Architectural Design workshops, and that this deserved to be researched. He was not wrong. Schön coined his famous concept of reflection in action as a result of this experience and used it to define the core competence that enables professionals to solve problems marked by "uncertainty, uniqueness and value conflict" while working in their particular fields of expertise. Drawing on the design workshops, this new capacity was the basis of the new epistemology proposed by Schön himself years later as the soul of the new American educational system (Schön, 1995).

In the design workshops, Schön found tremendously motivated students who channeled their efforts to solve extremely complex problems under the supervision of an expert tutor. What surprised him most was that no content was taught even in the first workshop of the course, and that no tools were given to students straight away to solve the problems given to them. Students learned to design by designing. Indeed, in what appears as a staging of the Platonic Meno paradox, novices were asked to begin solving a problem in the design workshops as if they were professionals, without giving them any initial rule, regulation or preparatory support.

Upon close inspection, this situation is not so unusual. What happens is that the hegemony of instrumental education makes us immediately suspect a lack of rigor in any reflective model, including architectural design education. But in fact, it is not farfetched to say that the building where you are reading this text right now was designed and built by an architect who was trained under this system. In fact, architectural design has been taught through reflective practicum since the beginning of the twentieth century all over the world.
One of the prejudices associated with the ever-present predominance of instrumental reasoning in the current educational system—which regards science as supreme knowledge from which all truth emanates—is that it assumes that learners do not know anything merely because they are not erudite. And this is simply not true; students know lots of things and more so every day. Apprentices today are, above all, very active and, in practical issues such as design, willing to adopt new attitudes and play new roles with the aim of getting closer to the cherished goal of becoming creators of material culture.

It is also true that students—and humans in general—know more than they think they do. Schön himself concluded that the paradoxical method-of-no-method design workshop was possible because students come with a wealth of knowledge that they do not even know they have. This is the case of “tacit knowledge” (Polanyi, 1967), knowledge that is at hand despite there being no awareness of it and which explains, for example, being able to recognize a familiar face in a crowd. On the other hand, there also exists what Visker calls the “appreciative system”, subsequently located in the field of design by other scholars such as Scrivener (2004). This is the body of knowledge that is spontaneously generated in collaborative environments (among professionals, critics, specialized press, etc.) and to which the vocational student somehow belongs even before starting his or her degree.

There is another reason for the permanence of the Practicum in design education: its analogous distance between art, science and technology. Designing, in its broadest sense, is about sculpting reality which it does for eminently practical purposes. Moreover, it does so without resorting to legitimizing models or prescriptive patterns, as its products must be innovative. The action model that institutionalizes innovation and forces one to work without pre-existing rules is a modern product that arose in artistic realms at the turn of the last century in the midst of a cultural crisis similar to the current one. The major work of art theorist Konrad Fiedler Über den Ursprung der künstlerischen Tätigkeit published in 1887, postulated “visuality” as an action (drawing) that transforms material reality according to visual rules (Fiedler, 1991).

In the late nineteenth century, art could not solve the problem of how to craft the vast number of new products for industry to produce on the market. The simple and instrumental application of classical standards of beauty led to eclectic outbursts and to the frivolity of art for art’s sake. The historical avant-garde movements—particularly cubism, purism, neo-plasticism and constructivism—unveiled a new creative rationality which was immediately transmitted to modern design and architecture. This new rationality, also called “reflexive nature” (Jaime, 2000) is based on an intelligence that monitors the behavior of the subject while he/she generates an artifact. This course of action is what best describes the reflective behavior of the contemporary designer. Creative reflectivity is a source of sui generis authentication in which understanding intervenes in a paradoxical manner. The reflective condition of artistic practice not only led Schön to lecture on “professional art” (Schön, 1983) without embarrassment, but also it led Dewey in his Art as experience published in 1934 to deem aesthetic experience something unparalleled (Dewey, 2005), after which he argued in his essay Experience and education of 1938 that education must be based on experience (Dewey, 1998).
Schön was a musician, not a designer. In fact, he studied Pau Casals’ music performance Practicum as thoroughly as that of the MIT workshops. Maybe it was precisely his lack of personal experience in design that led him to overlook some of the problems of traditional design workshops which have been pointed out by critics (Webster, 2008). But even Schön’s critics ignored the pernicious individualistic drift that traditional reflective design Practicum harbors. No matter how much workshops are guided by the example of modern artistic practice, the characteristic subjectivism of all creative enterprises requires a basic social and community counterweight to avoid falling prey to arrogance. Indeed, the most debatable aspects of the current design Practicum – besides a lack of minimum academic training of instructors – is the lack of social attitudes such as collaborative learning and teamwork, limited awareness about the role of the tutor, and the dearth of key ethical issues that are essential in a branch of human endeavor as committed to society as design.

In spite of the shortcomings of current design workshop, the undeniable benefits of reflexive Practicum explain its potential as an educational model. Among the corrections to be made to the Practicum, it is worth recommending a shift in attitude about the cult of personality, rethinking tutorials, introducing ethical and social aspects and fostering truly student-centered learning. On the plus side it must be said that it is difficult to find a better testing ground for changes in the educational system. It is expected that this experience may be extended to other areas of education, from school to university; otherwise, it will be difficult to overcome the delay that the current educational system is experiencing due to technological and cultural changes.

It should not be a surprise that the current crisis is regarded as a result of the transition from industrial society to a “knowledge” society. This is more than just a change in notions - it is a change of beliefs in the Ortegian sense. The present time demands a review of the foundations of knowledge upon which we have relied so far. It is not about putting forward great philosophical reflections that merge new systems of thought. What is needed is rather to reflect on what is happening and how we can make the most of the resources we have in order to face new challenges. In this respect, education has a key role to play and the Practicum may be a strategic tool.

4. Conclusion: The Practicum first

To give an idea of the magnitude and complexity of the challenge facing those who wish to, it is worth considering the recognition that the Practicum receives in higher education today. In Spain, for example, awareness of the importance of the Practicum at the university has resulted in the introduction, by law, of changes to many existing curricula (LRU, 1983). These changes, however, have failed to incorporate the concepts of integration and training normally linked to the Practicum. Rather, what has been achieved has been the improvement of traditional practices or student internships in future jobs, so that they may cater to the university’s interests and the students themselves (Zabalza, 2011). This change is undoubtedly an improvement that brings college a little closer to society and contributes to the employability of students. However, upon close examination,
these initiatives cannot solve the basic issue of the lack of connection between the university and society precisely because they do not integrate the full extent of the relationship between knowledge and practical competence.

In new, more advanced curricula, the Practicum is more than just another subject at the end of the degree. In other words, the Practicum should be implemented as a genuine originator of knowledge throughout the degree and not just as a specialty application at the end of the degree. The virtue of the reflective Practicum in the cases of music and design discussed above is that it is not placed at the end of the training but at the beginning and during the course of study. The goal is not to make better use of science and technology but rather to make future professionals learn reflectively. It involves training professionals in the execution of a competence which is essential if we are to address the difficult problems of the present and the challenges of the future.

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