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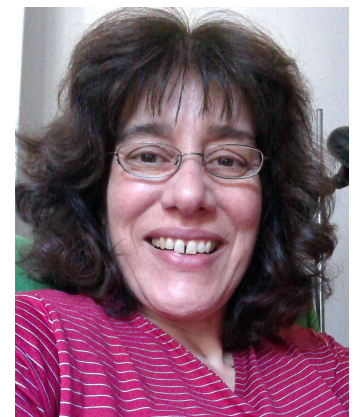
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Enhancement of Russian creative education: new post-graduation programme in digital art practice (Universidade Aberta, Portugal)

Abstract

In Project TEMPUS “Enhancement of Russian Creative Education: new Master Programme in Digital Arts in line with EU standards” (2014-2016) the Russian students had the opportunity to study in EU Universities for one semester.

The Universidade Aberta, in Portugal, didn’t have a master degree in Digital Arts so a pilot programme had to be created: a new post-graduation in Digital Art Practice.

This new curriculum, using b-learning (based on online and face-to-face activities) with transdisciplinary methods, aims a practice-oriented training on digital art.

It started with a deep understanding of Lisbon, the relationship between people, cultural and artistic spaces and their environments.

This knowledge inspired the students to produce and to create an artistic artefact presented in exhibition to an audience.

With this post-graduation new possibilities started for reflection about global challenges for education in the millennium.

Keywords

Art education, Master New Programme, Transdisciplinary, Teaching methodology

1. Introduction

Tempus is a programme of the European Union that supports the modernization of higher education (mainly through university cooperation projects) in the partner countries of Eastern Europe, Central Asia, the Western Balkans and the Mediterranean region.

Universidade Aberta (the Portuguese Open University), Lisbon – Portugal, is the coordinator of the project co-financed by the TEMPUS – “Enhancement of Russian Creative Education: new Master programme in Digital Arts in line with EU standards” - with nine Russia partners (Saratov State Technical University named after Yury Gagarin, Saratov; Ural State University of Architecture and Arts, Ekaterinburg; Ogarev Mordovia State University, Saransk; Peter the Great St. Petersburg Polytechnical University, Saint Petersburg; Moscow State Pedagogical University, Moscow; Russian State University for the Humanities, Moscow; Stroganov Moscow State Academy of Design and Applied Arts, Moscow; Nosov Magnitogorsk State Technical University; Siberian Federal University) and three European Union partners (Great Britain, Teesside University; Netherlands, INSEA-Europe; Finland, Aalto University)

In the beginning this project intended to build a single curriculum but with the development of the project it was understood that the different characteristics of the intervenients wouldn't allow this to happen, so each university decided to build a curriculum adapted to each own's reality.

Six Russian students had the opportunity to study in European Union universities (Universidade Aberta, Teesside University or Aalto University) for one semester.

In Great Britain, Teesside University, established a Master Programme (MA Digital Arts and Design) and the students followed the programme, which they defined together with their tutors.

In Finland's Aalto University, the Russian students could choose their own study plans which they defined together with their tutors, selecting a group of credits that they wanted to complete in Media and Design, inside the programme for a Master of Arts.

The Universidade Aberta (Portuguese Open University), in Portugal, didn't have a master in Visual Arts so a pilot programme had to be created: a Post-graduation in Digital Art Practice.

The general purpose of this article is to report this one time Post-graduation experience. In order to do this a number of key issues need to be explained. It will be contextualized the University, the place of study and programme objectives. We will look at Inspiration (transdisciplinary methodologies), programme organization (Learning Units) and Learning outcomes. A third issue is to report on the pedagogy used in each Learning Unit with description of classes, methodology, and results, including artefact development and exhibition project unit.

In the end we evaluate the difficulties faced, opportunities and new proposals.

2. Context

Universidade Aberta (the Portuguese Open University) is a public university focused on distance education (e-learning) to students from all over the world. The University offers different courses, with the Bologna process: higher education (degree courses, master's and doctoral) and other free courses (Lifelong Learning courses).

Innovative and creative, the teachers of the University receive new challenges with lots of energy.

Lacking a master's degree in digital arts, the University created a new graduate programme (taught in b-learning mode) with a pedagogic strategy centered in collaborative learning, action development learning and active learning based on

some important issues:

- Practice-oriented training on digital art;
- Creative programming;
- Sensors and actuators;
- Digital storytelling;
- Project of digital arts;
- Public artistic intervention through digital arts.

programme Objectives:

- Training IT professionals, designers and artists in digital art practice;
- Skills in creative computer technologies, computer artefact exhibition and artistic and intercultural intervention;
- Training in fundamental competences in the development of new applications, products and aesthetic narratives.

3. Programme

The new post-graduation in Digital Art Practice answers some of the 21st century education visions: “making content more relevant to contemporary life and global challenges, introducing innovative and participatory teaching and learning styles. We must rethink the purpose of education and prepare students for life, not exams alone” (Unesco Global Education, Priority 3: Foster Global Citizenship).

A different type of art (not a traditional one), Digital Art and their surroundings, is the starting point to think this post-graduation. Using new technologies (computer graphics, animation, 3D, internet, media, cinema...), the creative and critical thinking that art promotes and the importance of travelling (facilities of travelling and work in

different countries) are the basis for thinking different methodologies.

Students were immersed in the city (Lisbon), with teachers, understanding the culture, connecting with people and artistic spaces, and making some real interventionist actions.

The Learning Units, designed in accordance with Bologna model, are oriented with Lisbon Inspiration as starting point (fig. 1).

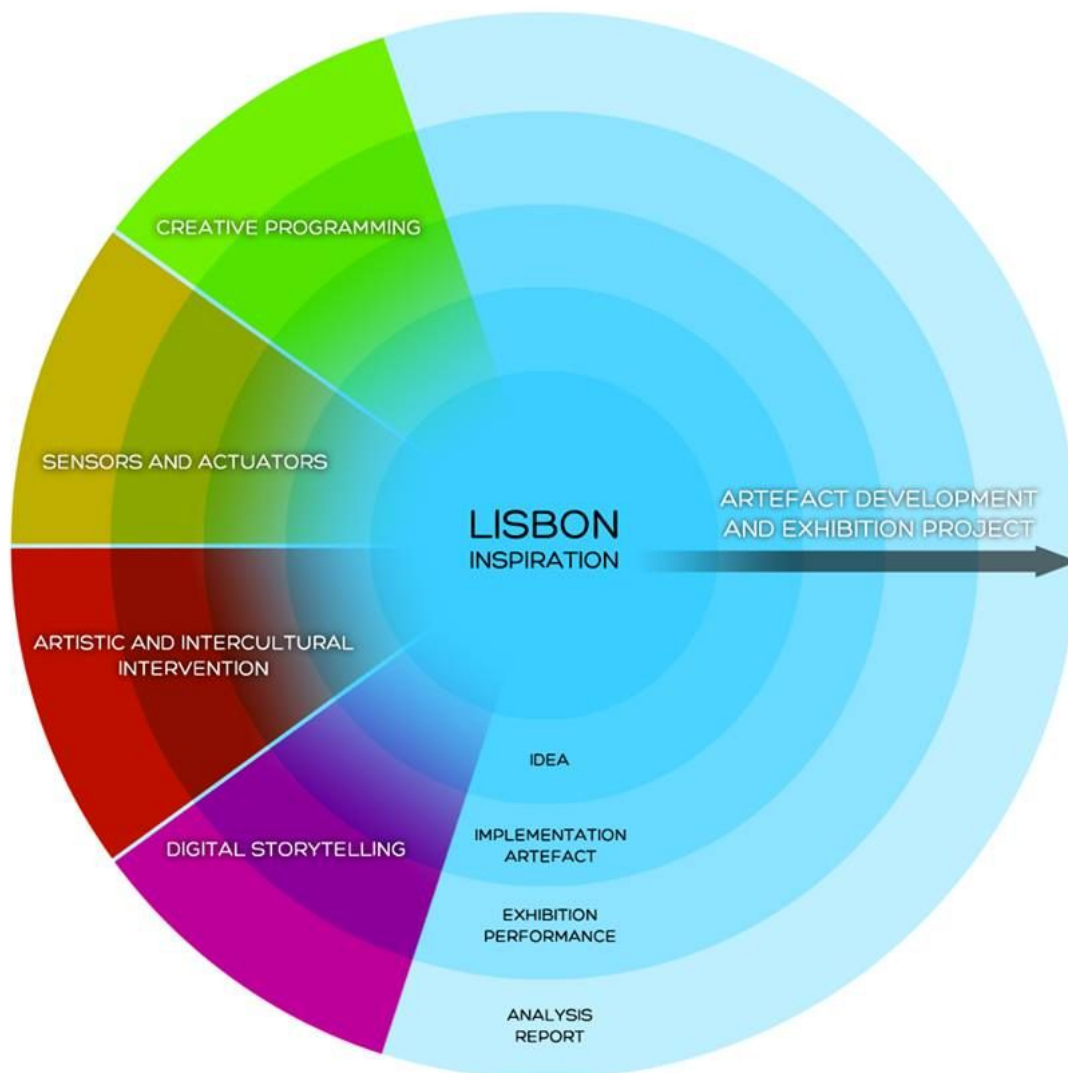


fig. 1: Programme Organization

Each Learning Unit from the curricular structure of the programme “aims at providing a rapid and practice-oriented training in digital art, including fundamental knowledge and technical competencies regarding the creative programming, sensors and actuators, digital storytelling, project of digital arts, exhibition of artifacts, as well as, public artistic intervention through digital arts.” (Post-graduation programme in Digital Art Practice, 2015:4)

General Structure of study plan:

Learning Unit	Credits (ECTS)
Creative Programming Practice	5
Sensors and Actuators Practice	5
Digital Storytelling Development	5
Artistic and Intercultural Intervention Practice	5
Artefact Development and Exhibition Project	10
TOTAL	30

4. Teaching Methodology

The Post-graduation, first edition, was implemented from 2nd of November 2015 until the end of January 2016, with seven russian students in presencial teaching and disposed of one extra month in the e-learning platform.

4.1. Learning Units:

4.1.1. Module 0: Introduction to E-learning

Duration: 13 hours/1 week

“This Learning Unit aims at socialization of participants and the creation of a ‘group of’ work, familiarization with the use of the e-learning platform in order to acquire the skills necessary for its efficient operation.” (Post-graduation Programme in Digital Art Practice, 2015:6)

4.1.2. Creative Programming Practice

Duration: 45 contact hours/130 working hours

The aim of the Creative Programming learning unit was to provide students with programming skills and tools for code development, enabling them to build digital artifacts (Bergstrom & Lotto, 2015). No experience was required prior in programming and the concepts introduced were based on very simple examples. The Processing IDE was used to provide these skills to the students. The unit was organized into seven topics, with increasing complexity. Each one was developed over a week, and broken down into tasks that the students had to perform in order to exploit the provided content. Each topic had an initial session (in classroom) and during the week, the students made a practical assignment to deliver in the following session. The assignments were done in groups of three up to four students. All topics had a support forum in which questions should be asked concerning the same and answered either by the teacher or by a colleague. Each assignment was scored with a maximum of 3.0 (assignments of topics 2 up to 5) or 4.0 (assignments of topics 6 and

7) points. The assignments were always published at the start of the week of the topic, during the session in the classroom. The students had 1 week to solve them and deliver it in the upload area available in the topic, presenting it in the next classroom session. Failing to do so was penalized by 0.25 points per each day of delay. The students to be approved at this unit, had to deliver all assignments and had a minimum total of 10 points. The sum of individual notes of the assignments constituted 100% of the final grade of this unit.

The students were also given several examples of interesting – yet accessible – art projects that relied solely upon Processing. The code was broken down into comprehensible segments in class, and the students were then encouraged to experiment, edit and alter the given code, to deepen their understanding of the structures and techniques.

4.1.3. Sensors and Actuators Practice

Duration: 45 contact hours/130 working hours

In introduction to sensors and actuators course, we invested in providing practice of use of electronics, with arduino and processing, to build interactive projects. The course was organized in three modules, in increasing order of complexity. The first have only basic electronics, the second uses arduino board with electronic circuits, and finally the third putting together processing, arduino and electronics. The final task in this course was an assignment that involved all the concepts, a processing programme in the computer, reflecting the value of some sensors, and actuating on some actuator, through arduino. The course was set with a working session per week, where the contents were introduced and the students realized the practice and answered to the challenges set by the teachers (see Fig. 2). During the rest of the week, the students made the report of the previous class, consolidating what they had

learned, and could make use of a forum to communicate with the teachers. The course suffered from some difficulties in the communication language and with the weak base knowledge of the students in this area, that was overcome with the enthusiastic response by the students. They do not find the classes boring, by the contrary, even classes that took the all afternoon, they were never in a hurry to leave the class. In the end, the students wanted more classes, but the course could not be increased to give some time to the students to build an artefact in the final project of the post-graduation programme.



Fig. 2

4.1.4. Digital Storytelling Development

Duration: 45 contact hours/130 working hours

The unit *Digital Storytelling Development* aimed to provide students with the knowledge and practice related to the development of digital stories, including the network-based deployment of such interactive products. In addressing this kind of content the study was predominantly focused on the theory and practice of web-based models within the context of the new digital media and global social networks.

The expected outcomes were initially to explain the importance of narrative in digital systems and interactive applications, to identify the principles, models and techniques relating to the development and production of multimedia, interactive systems, both for education and entertainment, and to create models and produce prototypes while applying the main principles and techniques based on digital storytelling.

Students were divided into two groups and had to develop a concept of a story, first starting with a tool to map the ideas as they surged (www.mindomo.com) and later using Prezi (www.prezi.com) to create a sequential presentation to be discussed in class. These two initial project concepts can be accessed here:

- *Rhythms of Lisbon*:

https://prezi.com/wm_j2qbjrfpt/group-1-rhythms-of-lisbon/?utm_campaign=share&utm_medium=copy

- *LX Imersão* (later called “*miXXkultura*”):

https://prezi.com/zlqyv7zdfpa/lx-imersao/?utm_campaign=share&utm_medium=copy

The two stories were also connected with the other units, namely with *Artefact Development and Exhibition Project*, so the story could be used as a backbone for the assembly of images and sounds, to be edited and presented as an interactive show. This process was very successful and evolved along six sessions in November, December and January, with students progressing from story development, to relevant media capture, and the making of a working prototype, this consisting of an

interactive multimedia presentation. The resources used included photos, graphics, video and music, eventually put together in a programmed storyline using *Processing* code. Several rehearsals were conducted to solve all the technical issues that surfaced during programming and installation.



Fig. 3 and 4: Groups presenting the interactive digital artefacts created

In the end both students and teachers were happy with the results, especially bearing in mind the short duration of this post-graduation programme. All topics were orchestrated in order to reach a common goal: the creation of two digital artefacts (the students' projects). This mission was accomplished within the scheduled timing.

4.1.5. Artistic and Intercultural Intervention Practice

Duration: 45 contact hours/130 working hours

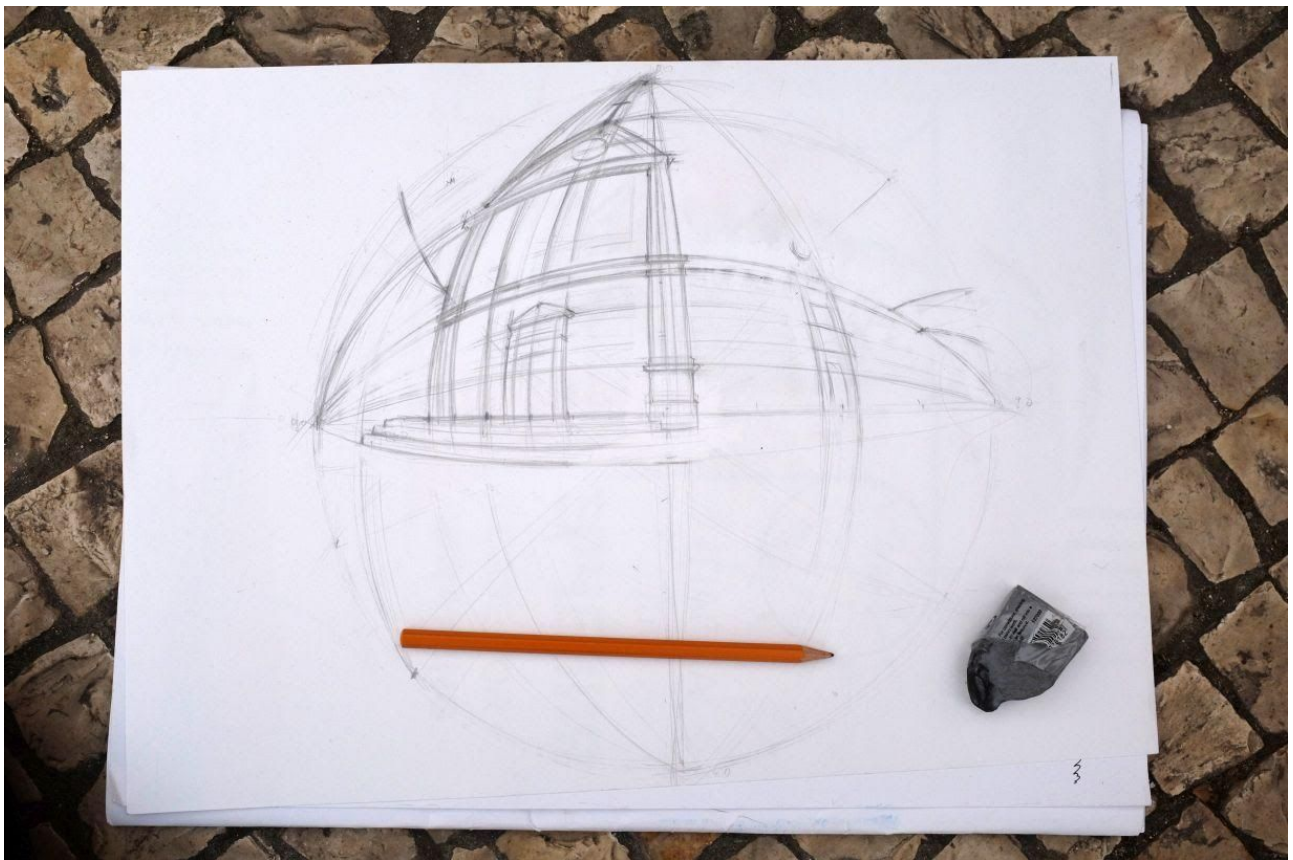
“It aims at experimenting artistic intervention in several communal and multicultural contexts. It will focus on the authors who produce art objects as well as on the reception and fruition dynamics. Also an important subject will be the transformation point of the view where lifelong learning happens through and from art”

(Post-graduation Programme in Digital Art Practice, 2015:9)

One particular aspect of the Artistic and Intercultural Intervention Practice unit was to guide the students in a graphical appreciation of their surroundings and experiences, through observational drawings kept in a visual log, or graphical diary, that was conceived as a *portfolio of experiences*. In an attempt to foster a different mode of observation, students were exposed to uncommon modes of visual encoding of these observations, through the use of non-standard, curvilinear perspectives.

What was most striking about these students was their technical preparation and their ability – and eagerness – to acquire new knowledge related to the technical aspects of art. A small workshop was prepared for them, on the subject of curvilinear perspective. They were to have a small informal lecture followed by practice at drawing the Lisbon square where the São Roque church stands. Some resistance was feared towards the more mathematical aspects of the matter, and we were prepared to let them experience a soft, non-technical version of the subject, followed by a session of intuitive wide-angle drawing. This fear came from some past experience with resistance to these aspects on the part of Portuguese art students. In Portugal, and much of Western Europe, modernity has meant a break with the traditions of

academic drawing, and a pervading belief in an opposition - rather than a positive feedback cycle - between technique and creativity. This is an abating trend, but one that left its mark. With this in mind, the students were told that the a formal version of spherical perspective was going to be demonstrated (following the methods of (Barre&Flacon(1968)), and (Araújo(2015))), the latter author being the lecturer in this session) but that they could just take some inspiration from it and “freestyle” away. After a short hesitation one of them asked: “but can we do the real thing, if we want?”. The whole group was of one mind in this, and the “real thing” they did. In a single session, with no previous exposure to it, they took in a good part of spherical perspective and finished up with some wonderful drawings (fig. 5, 6). The excellent level of their artistic preparation is also evidenced by the urban sketches they prepared for their *portfolio of experiences*, where well trained rendering abilities played supporting role to creative whimsy and keen observation (fig. 7).



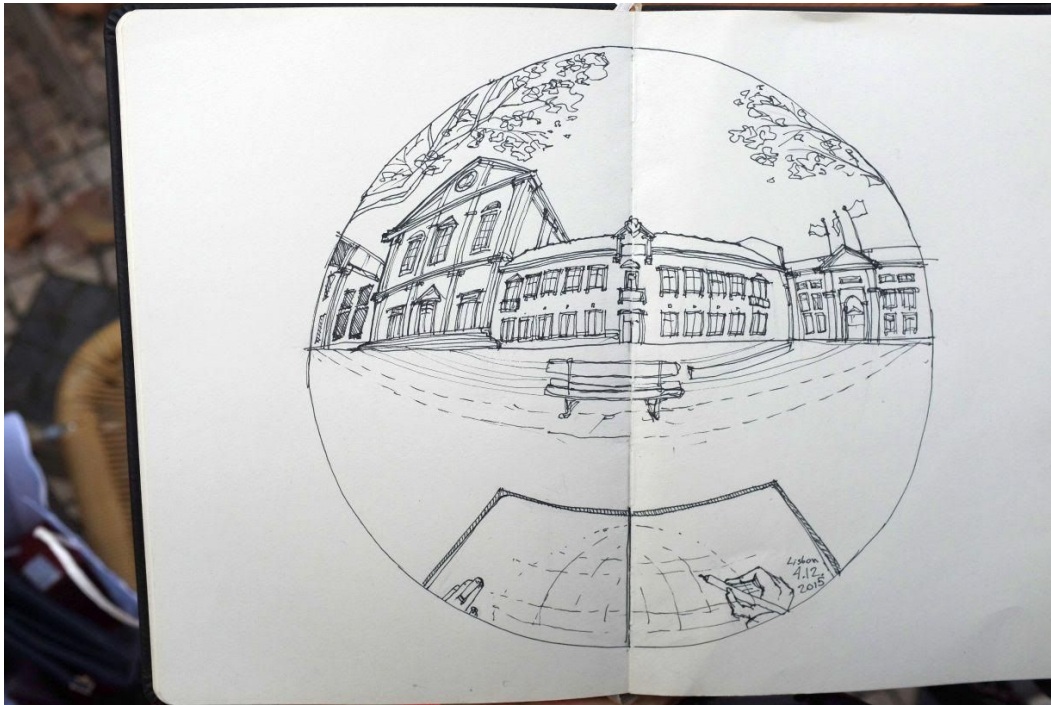


fig. 5, 6: spherical perspective drawings of Igreja de S. Roque, Lisbon



fig. 7: A view of the riverbank at Oporto

4.1.6. Artefact Development and exhibition project

Duration: 60 contact hours/260 working hours

The main goal of Artefact Development and Exhibition Project unit was the creation of a digital media art project, or artefact. The three main characteristics of digital media art are: interactivity, virtuality and randomness, and so in this light all artefacts created involved the audience in different types of interaction, from body positioning to touching and interference; it also created a virtual space where the artwork took form (visual/audio/other); and finally it avoided plain repetition by introducing controlled randomness, thus stimulating the continued usage, but not to an excessive degree, where the outcome was no longer coherent. The artefact project was a team development where each member played an active, participatory role of equal importance, both from the creative point of view, as well as technological. The project was implemented by departing from an inspiration/creation moment, evolving to the design - where all planning issues were contemplated, to the implementation - where the teachers and tutors were supporting students while assessing the gained knowledge, and it culminated at the public exhibition. Figure 8 illustrates the conceptual model behind this learning unit:

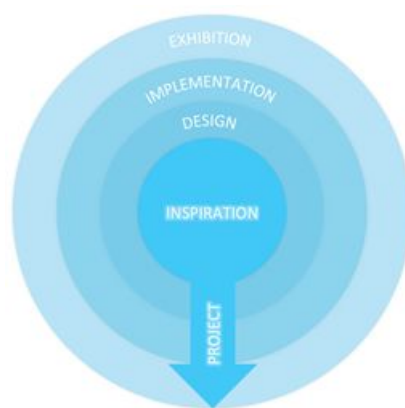


Fig. 8: Conceptual model

To achieve the goals the team integrated conceptual and technological elements:

multimedia elements, sensors and actuators, digital narratives and user interaction, bearing in mind a transdisciplinary approach, as illustrated by the following figure:



Fig. 9: Transdisciplinary approach

Probably the biggest challenge was to match the students' expectations and ambitions with their effectively acquired skills, and therefore both groups' project definitions had to be somewhat shaped and tuned into more manageable blocks that each team member could then tackle. For the final integration steps the students required some assistance, as each project's building blocks attained a level of sophistication through computer vision, motion detection, video manipulation and particle generation that were far from trivial. Both groups were also able to fully use their design skills into preparing the media that was fed into both systems: video, audio and graphics were an important part of the art projects, and their combination with the control mechanisms introduced by programming much contributed to the sense of accomplishment.

5. Evaluation

At the request of students, extra programme, a set of eight sessions of two hours each was provided in which students learned the everyday life spoken Portuguese

language, in personal presentation situations, how to greet, ride public transportation, go to the market, go to school, give an opinion... Each session also included the hearing / understanding of a Portuguese folk song.

At the end students were able to recite in public some poems of the greatest Portuguese modernist poet - Fernando Pessoa.

Students satisfactorily evaluated the learning they performed in this optional module.

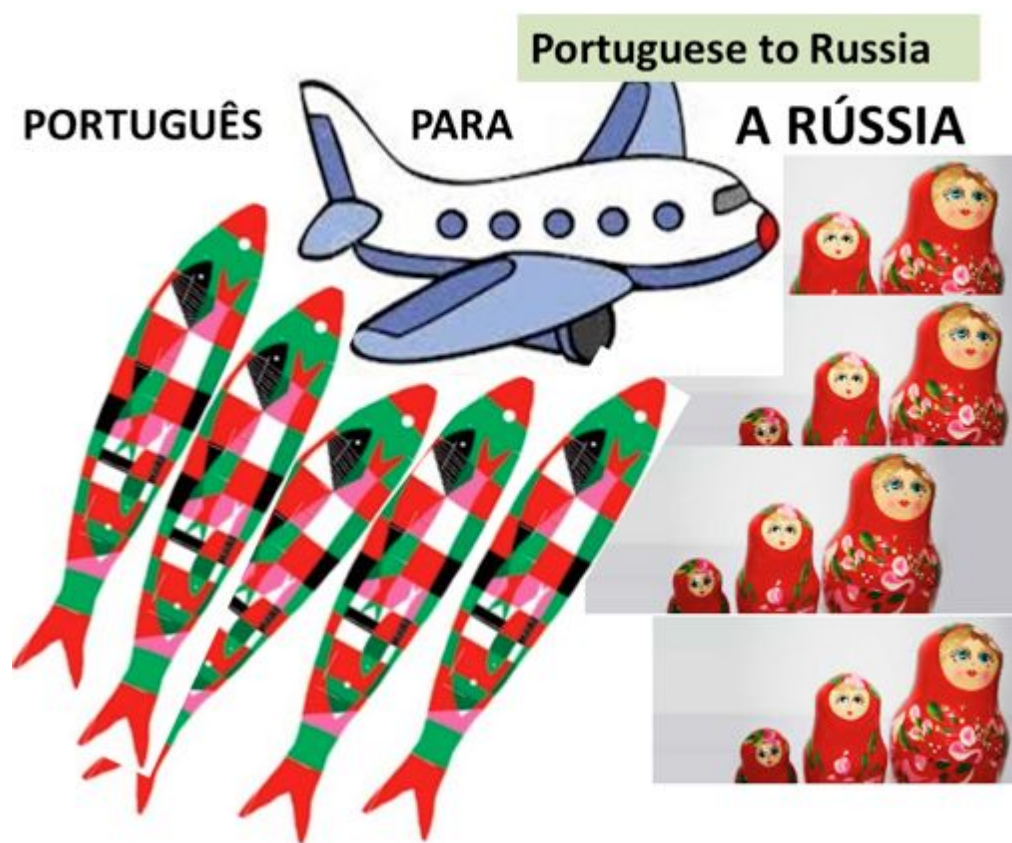


fig.10: Portuguese to Russia, Professor Carlos Castilho Pais

The Creative programming unit was one of the most challenging learning units to the students due to their complete lack of experience with any programming languages. Though the entire unit was designed and prepared to students with little knowledge in coding, some changes in the unit content had to be made in order to meet the audience profile. On the other hand, most of the students did not have a good level of

spoken English, thus creating some difficulty to understand their real needs and doubts. Although all these shortcomings, they were able to get the basics of the Processing programming and most of all, according to their comments and reports, they were satisfied with the whole coding experience. They realized that new paths and potentialities may be explored and created in the design and art world using Processing IDE, besides other programming languages. Besides this, they also realized that some effort and persistence must be applied to develop good programming skills.

The evaluation on sensors and actuators course was made by the demonstration of the work made in the class, followed by individual and collective questions. The teachers also introduced small errors on the instalations, so the students could correct them and confirm that they understood what they were doing. From one week to the next one, the students produced a report, to explain what they had done in the previous week, and consolidated knowledge and gained practice with tools for specifying sensor and actuators instalations. These reports where used in the evaluation. In the end, the students are not experts in doing instalations using sensors and atuatores, but they have the first contact with electronics in a sucessful way, and they will know what can be expected from this area.

6. Implications/Conclusions

It is a daunting task trying to teach a – programming – language, mediated by another – foreign – language, which, in turn, is not fully mastered by all the students. The doubt remains, when faced with the students' difficulties, on where the actual problem relies. Communication is key to a successful teaching/learning experience, and it was noted that the students also refrained from using the e-learning platform to express their doubts and questions, until the final weeks. And even then only those

with a better understanding of English dared to post some questions and engage in on-line dialogues with the teachers.

As a summary conclusion we would suggest the following: it is of key importance that good communication can be established in order to achieve perfect comprehension. We left with the sensation that the feeling of accomplishment at the end of the project would have been greater if all the students would have been able to fully express themselves and communicate with their teachers without linguistic barriers.

5.1. Programme evaluation

In the end of programme each student needed to make a Final report (for assesement) and answer an Evaluation Questionnaire about the programme. This type of data allows us a different analysis to evaluate the programme.

6.1.1. Final Report

Analysis with three categories and several subcategories that emerged in the students' final report.

CATEGORIES	SUBCATEGORIES
	Peer interactions
	The importance of Interpersonal relationships
	Sharing
	Multiplying diversity effect's principle

Personal Aspects	Questioning
	Personal Learning
	Awareness
	Recognizing the place/city
	Learning how to live together
	Confidence revelation
	Self-awareness
	Personal Involvement
	Critical Reflection
	Personal involvement
	Self-Awareness
Informational Aspects	Future projections
	Personal Learning
	Knowledge learning
	Personal characteristics revelations
	Experiences
	Recognizing the place/city
	Digital Art
Life Project	Personal Involvement
	Critical Reflection
	Personal involvement
	Self-Awareness
	Future projections

6.1.1.2. Analysis and interpretation of the biographic narratives – personal aspects

Students don't live in vacuum, they are the result of a community and a story.

To increase learning with meaning it is also to (re)construct life stories, contextualize actors and understand narratives.

The personal search for what is close to us, what makes sense to us and above all what the depths of our beings claimed.

In a collaborative learning, the professor can't contribute to a student learning without the student giving a little bit of him or without understanding his path (past-present-future), in a contribution for a dynamic learning: from Me to You, unique and with a personal narrative.

The student reveals personal aspects in everything he does: In the way of being, in his works, in conversations, in capture and choice of images... in a tireless search for making sense in what once upon a time seemed distant. (Saldanha, 2010)

It seems possible to understand that context in the works done at classes are connected to the self representation and collective representation, they help students to reflect about themselves, using constant references to themselves, not only justifying the creative process but also using it in free texts, in a search for knowledge in their personality.

We can also point out by the systematic reference the importance of interpersonal relations for these students.

When questioned about the emotions and feelings during the achievement of projects in this semester, we can see an attention focus and personal aspects revelation in the works.

6.1.1.3. Analysis and interpretation of the reflections about the learning

experiences – informative aspects

The students' final report tells to the one that reads them the evolution, the works made for a class and above all the students' reflection on these.

The students throughout the final report reveal different learning experiences not only using factual texts but also reporting their personal learnings and meaningful moments.

These reflections aid the professor, student and the community, to understand how he learns, what he wants to learn, if the messages were well transmitted, in a constant evaluation of the classes, the professor and the student.

The learning experiences are constantly done in documents as if there was a need to write everything that they did in a methodical way.

The words "I have learned" appear constantly in the reflections revealing that the students acknowledge their learnings and how these are built and they are the objectives of the educational environment.

Another characteristic that can be mentioned, due to constant use in reflections, is the students' need to reveal their personal taste as an essential element to the learning.

When we analysed the Final Report we understood that general competences are connected on one hand to learning, to practice, to reflection about classes, about works and on the other hand to informative aspects.

Self-awareness is one of the essential competences to acquire by these students, because they need to develop individual potentialities, with every essential personal dimensions, with all its complexities.

To develop these skills they need to do critical reflections about everything that surrounds them.

The professors know students have developed the skill of "Learning how to

know”, when they are able to do a self reflection about what they do, about what they want to do and what they will want to do. They start with a dissatisfaction that needs to be satisfied, in a constructive ideology, when the individual builds conscientely their own self-learning. (Saldanha, 2010)

This competence was shown in the Final Report through personal researches, revealed interests and tools to do the works in classes, but also shown through day-by-day experiences.

We need to live together in community.

Learning about living together is another competence to develop with students, which enter a job market at the end of this training. So we need to understand how we work and live with different types of persons, with different characteristics and cultures, in this global age.

Understanding this reality, working with others, learning about how to manage relations, emotional intelligence, it is important in this intercultural and divergent society.

6.1.1.4. Analysis and interpretation of reflections about student expectations in relation to future: Life project

University must prepare students for the future.

Learning only makes sense if it contributes to a more fulfilling life, promotes self-awareness and also a relationship with others, to find a place in the world.

So, learning’s biggest challenge is to project the student into the future, making more capable citizens, with greater autonomy and aware about self-options, capable of acquiring tools to achieve their goals.

Conscience and capacity to project into the future benefits the students’ learnings, making them active participants in their learning.

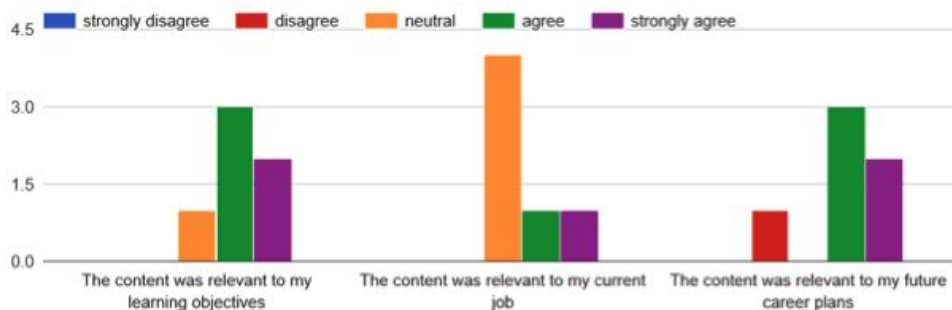
We can understand that their references to the future are focused on projections outside university, revealing their conscience about the changes in their lives and the end of a cycle.

6.1.2. EVALUATION QUESTIONNAIRE

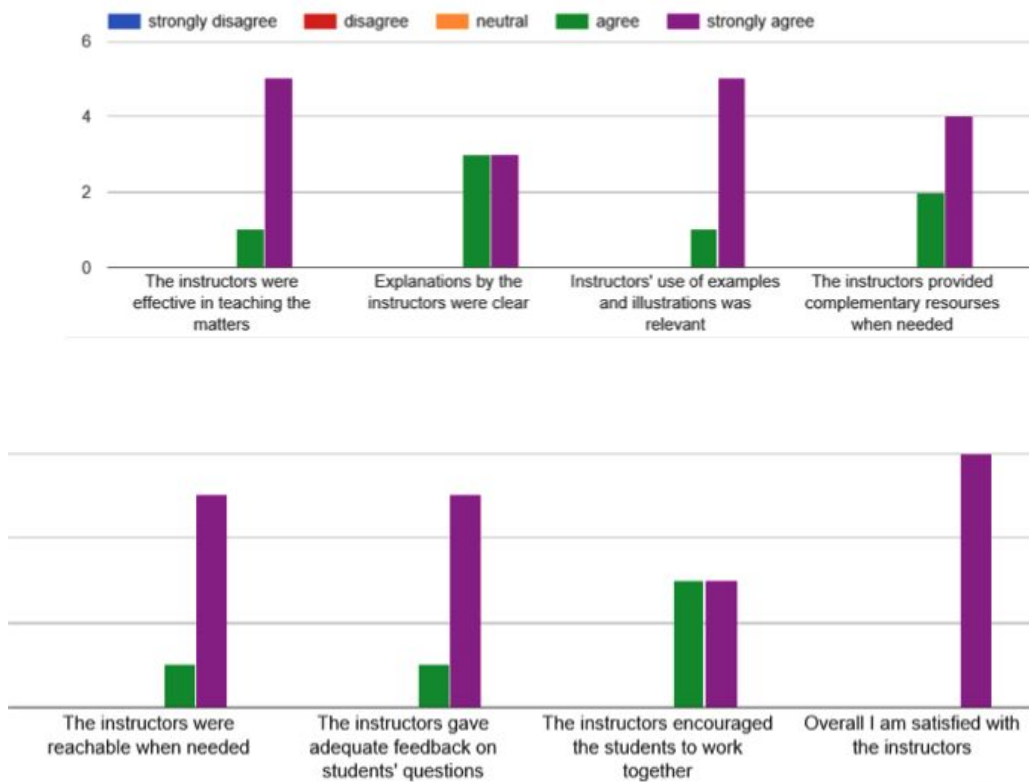
In the end of the programme we asked students to answer an Electronic Evaluation Questionnaire and we elaborated a statistical analysis to enable an understanding (with this quick questions) of the first impressions of the programme.

- Statistical analysis

Relevance of the PG-DAP program



Quality of instruction



5.2. Final Reflections

With this data analysis, because of its subjectivity, we can't reach conclusions.

But as Silva (2006: 292) refers, it is now important "to try a global and integration vision with the different views built on the same learning experience".

We don't want certainties but possibilities.

After this analysis we can highlight:

- The intersection of the analysis' basis categories (personal aspects, informative aspects and life project), support the idea that the student is one, non divided into

parts, so he should be seen as a whole;

- The revelations of principle of relationships (student-student, student-community, student-professor) referred in the beginning of this work, prove its validation and contribution to the learning's' construction;
- The life stories appear in every report revealing that to learn is to “make it their own”;
- The importance given by the students to sharing, understanding that learning involves also the other;
- The written and oral reflection and its sharing validate and enhance relationships (between students and student-professor);
- The revelations of future projections are built with the past or the present experiences;
- Importance of travelling and know other cultures;
- The existence of a conscience of the world and its surroundings;
- The promotion of self-esteem and cooperation;
- The student builds gradually his learning with conscience in his daily life;
- The student reveals individual and group characteristics essential to the professor to understand how he can contribute to his learning and conflict resolution;
- The student, using the written word, feels comfortable to express himself;
- The importance of Digital arts in professional life of students;
- The possibility to create a Master Web Creative Art.

There could be many more possibilities reached through this study, but with its conclusions we can already answer the questions raised at the beginning of this investigation.

The possibilities reached through the study could be more for the education, it is a rich resource for diagnostic, evaluation, reflection, but above all it is a method to learn.

It concentrates not only in the student's learning, but also in the constant learning of the professor and validation of the course, where the whole community has a place in its construction.

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Figures:

Fig. 1: Programme Organization

Fig.2:

Fig. 3 and 4: Groups presenting the interactive digital artefacts created

Fig. 5, 6: spherical perspective drawings of Igreja de S. Roque, Lisbon

Fig. 7: A view of the riverbank at Oporto

Fig. 8: Conceptual model

Fig. 9: Transdisciplinary approach

Fig.10: Portuguese to Russia, Professor Carlos Castilho Pais