

REPORT: „Playing, learning and creating in the digital age”

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COST Action: IS1410, Digital literacy skills and practices in the early years

STSM: Playing, learning and creating in the digital age

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NARRATIVE REPORT

Between the 14th of March, 2018 and 28th of March, 2018, I visited CICANT research center of Universidade Lusofona (Lisbon, Portugal), through the Short Term Scientific Mission grant, within the COST Action IS1410 Digital literacy skills and practices in the early years.

CICANT research team, led by Maria Conceição Costa, conducted a research project, GamiLearning,¹ that is similar in scope to the Makey project² that I am currently a member of (part of the Romanian team). The concept around which GamiLearning was built was that of media and internet literacy (MIL). Their research objective was to develop critical and participatory dimensions of media literacy in young people from 9 to 12 years, through collaborative learning experiences with digital games. Our MakEY project explores the place of the rising ‘maker’ culture in the development of children’s digital literacy and creative design skills. Also, I aimed to exploring the possibility of collaboration through a future research project, drawing from my experience in MakEY, but also in *0-8 Young Children and Digital Technologies*.³ A future research project focusing as well on digital literacy as a trigger of all the other literacies that are associated to learning.

¹ Details about the project on <http://gamilearning.ulusofona.pt/en/gamilearning/>

² Details about the project, <http://makeyproject.eu/>

³ The report of the project can be found on the webpage the Romanian Academy’s Institute of Sociology, <http://www.insoc.ro/institut/RaportYoungChildrenAndDigitalTechnologiesRO.pdf>

During my stay, I realized the following:

I presented MakEY project to CICANT research team, in multiple meetings, focusing on the activities in the project and on the methodological issues.

I was introduced in the inner workings of GamiLearning by both Maria Conceição Costa and Carla Sousa, in various sessions during my everyday presence at the lab.

I attended and participated in GamiLearning project team's meetings – on coding, discussing media and internet literacy and methodologies in general.

I interviewed two researchers in the project on the good research practices and the research design, and also research methodologies.

I also interviewed one librarian who was part of the project during the interventions in schools (also visited the school where he was a librarian). Due to the Easter break in Portugal that overlapped with my last week there, I wasn't able to visit more schools or meet more people from the secondary education system.

I met with Cristina Ponte, member of Young Children (0-8) and Digital Technology and also of EU KIDS ONLINE with whom i discussed methodological issues and also aspects of working with children and the media.

Upon my return to my home institution, I presented to my colleagues, during a two-hour meeting, the research, the specificities of the Portuguese educational system and also Universidade Lusofona and its research centers.

In 23th of April, I presented in front of a meeting with librarians and teachers in Brasov (Casa Corpului Didactic, contact person Camelia Mocanu), in an workshop, both MAKEY and GAMILEARNING research projects, as well as the European research networks and resources – Digilitey and COST program.

I also wrote one blog posting for the MakEY blog, that I hope it will be published soon, inspired by the resources I consulted during my stay in Lisbon, at CICANT.

SCIENTIFIC REPORT

GamiLearning

GamiLearning (2015-2018) is ,a research project that aims to promote critical and participative dimensions of Media and Information Literacy (MIL) in children through the creation of digital games'. (Costa, C., Tyner, K., Henriques, S., Sousa, C., 2018) The theoretical framework was constructivist; children (9-14 years) from four schools (two in Portugal and two in the US) participated in 25 workshop sessions: in-school workshops, one a week, during school hours. Through a variety of pedagogical strategies (such as expository lecture, guided reflection, sessions of Q&A), they got to create a videogame aimed towards the idea of intenet safety. The team also used Caesar cypher and Scratch during the workshops, and also drawing sessions, as the first steps of script thinking and designing the game (children used drawing to describe themselves and create their avatar in the game). Observation grids were used, research observers filling them during the workshops to better track the activities and progress – and then coded and analyzed.

To assess their Media and Internet Literacy, ,a MIL questionnaire was created and administered before and after the project's intervention. Results from the four schools indicate statistically significant differences between pre and post questionnaires, considering MIL skills in general, and in several groups of skills, namely Operational Skills, Editorial Skills, Digital Identity Management Skills, Critical Media Literacy, Learning and Social Interaction' (idem).

Children uploaded their results on SAPO Campus, an online platform dedicated to that and socialized on it – their digital identity management skills were used at this point.

The project also comprised a series of media and internet literacy workshops for teachers.

MakEY - Makerspaces in the early years: Enhancing digital literacy and creativity

‘Makerspaces in the early years: Enhancing digital literacy and creativity’ (MakEY) is a 30 month project funded by the EU H2020 Research and Innovation Staff Exchange (RISE) programme. The project, led by Professor Jackie Marsh at the University of Sheffield, UK, will run from January 2017 – June 2019. Each of the countries involved (Denmark, Germany, Finland, Iceland, Norway Romania, UK) has designed their own makerspace workshops – either in formal (nurseries and schools) or informal (museums and libraries) educational settings – in a collaboraton between the researchers team and makerspaces. The research team will work in partnership with academics in Australia, Canada, Colombia, South Africa and the USA, creating a global network of scholars who will work together to further understanding of the role of makerspaces in developing young children’s digital literacy and creativity. This project explores the place of the rising ‘maker’ culture in the development of children’s digital literacy and creative design skills. The Romanian team – Anca Velicu and George Marusteru at the moment of the design of workshops (I joined the team later) – chose the concept of „Space Academy” for the three series of workshops fiven to 7-8 year olds and devised a mix of arts and crafts, cubelets and videogames (Kerbal) that would raise their

interest in STEM. Kerbal Space Program is ,a game where the players create and manage their own space program. Build spacecraft, fly them, and try to help the Kerbals to fulfill their ultimate mission of conquering space`.

*

Although these research have different objective and use rather different tools, they are similar in the following: they use intervention; in school; by a researcher team seconded by a makerspace or Visual Arts teacher (GamiLearning); they created videogames but also drawing (combining the digital with the analogue) and are related to the concept of ,literacy`.

The differences are: Romanian MakEY workshops were offered after school hours, in school, without their teacher being present (with only the researchers and the makerspace team), while GamiLearning workshops happened during various schol hours, with the teacher being present, alongside an IT instructor and the research team. MakEY used video recording of the sessions, GamiLearning used observation grids, where expectations were coded (making the coding much easier). MakEY empowered children to film, photograph and present their creations to the camera (one GoPro camera was destined to them, but they also had access to all the other cameras), while GamiLearning children had the SAPO Campus platform where they could use as a self-expression tool within the project. Another difference is the age of the children (7-8 versus 9-14), which explains the difference in approach – MakEY children were expected to assemble a rocket, launch it and return back with it at base, while GamiLearning’s older students used Scratch to create a videogame aimed to internet safety.

One thing I noticed during my stay in Lisbon was the similarity of approaches, at policy-making level, towards digital literacy and competences. Transversal guidelines were offered to teachers for a variety of issues, including digital literacy.

WORKING WITH CHILDREN IN RESEARCHING NEW LITERACIES: SOME QUESTIONS AND POSSIBLY, SOME ANSWERS

Drawing on my experience in MakEY, ,Young Children (0-8) and digital technology: A qualitative exploratory study across seven countries` and on the discussions with the GamiLearning project team, a series of research-related questions came to me, whose mere consideration would prove useful to a research team, when its members would start working on a project on children and digital literacy/ies. These questions are of many kinds – methodological, conceptual and theoretical – and almost all related to the research design, when action-research is used.

QUESTIONS

Does an intervention, with all its experimental aspects, work better than any other approach of research aimed at digital literacy?

As an action-research approach to research in education, intervention aims to inducing change through research. Gaining insight into the problem is the path leading to solving the problem

(Good, 2015). Action research is a process in which a specific problem is identified and an experimental “intervention” designed and tested with a view to gaining insight into the problem and ultimately solving it (John Elliott, 2001; David Kember, 2000).

Although ‘intervention’ is a term that was mainly used for medical research for decades, it is claimed more and more by social studies, with the social work being the beacon of such approach (psychological and community intervention, see Argyris, 1970). Other fields lend themselves to interventions – such as, research on progress obtained directly via the experiment. In the digital literacy case, using intervention was a choice related to the issue of assessment.

Should another approach and method be used, the assessment would have to rely on self-report. But is self-reporting reliable enough?

Which leads to another question:

Who evaluates what? How could be digital literacy evaluated?

The three types of assessment – a. the comparative self-report (comparing one’s self with the others) or the general self-report (how much you agree with the following assertions: „I am good at X”, on a 3-point or 5-point scale); b. the self-report on specific competencies or c. the assessment of behavior by an observer – were and are used in a lot of research and not only. In school, the assessment of digital competencies is task-based. The Romanian high school graduation exams (Baccalaureate) comprise a digital competencies exam where students are assessed based on their knowledge and abilities of solving precise tasks (such as, identify the source of a document, search for specific information online, etc.

But in research, the decision to use the self-report in assessing the digital literacy might be riddled with traps, as the students might be contaminated by the fact they know a concept and thus assume they are mastering the skills behind it.

The issues here are:

1. The costs of observation-based assessment (the cost can be also the time invested in archiving and curating the huge video, audio or photographic content associated to recording the sessions);
2. Who decides upon the key competencies that are being assessed?
3. How the rapid development of technologies might impact this set of competencies fast enough as to make the longitudinal measurement difficult;
4. For self-report, there is always the danger of under- or over-reporting (i.e., girls tend to underestimate their competencies and, thus, under-report them).

Another discussion would be related to the types of digital skills – between the creative, operational and critical skills. GamiLearning team used Divina Frau Meigs’ approach and distinguished between operational, editorial and organizational, with ‘digital identities managing skills’ on top of them (Costa et al., 2017). The European framework, DIGCOMP⁴, is a holistic and integrative approach for all these competencies.

⁴ At the address <https://ec.europa.eu/jrc/en/digcomp/digital-competence-framework>

Validating an universal assessment instrument or rather using adapted instruments (to the age of the child, the situation, to some particular situations)?

The concept of literacy is a productive field of negotiation between those who only see one digital literacy and those that tend to fragment the literacies and find different ones for different aspects of knowledge. But, either we call it digital literacy or media and internet literacy, the need for a assessment instrument goes through the same debate: a unique instrument, validated by the researchers or adapted instruments for assessing various subsets of skills & knowledge, at different ages?

Could the gamification of an intervention aimed at researching literacy work better than a ,classical’ pedagogical assessment method? Do things such as expository lecture, guided reflection and project-based learning, go well together in action-based research?

In MakEY’s workshops, at the expository lecture stage, children (7 to 8) tended to lose focus and attention after a few minutes. As their expectations were rather to play than learn, any attempt to take them to the already familiar learning format was identified as such and led to attention loss or even loss of interest. As such, more fragmented expository lectures were inserted in the workshops, almost of a granular manner, so that children could not identify them as ,schooling’. In GamiLearning, the research team used a mix o strategies for the in-school workshops they offered to students, among which: expository lecture, discussions (Q & A sessions), guided reflection upon the themes and subthemes at hand and project-based learning, as well as badges to motivate them (Patti Dyrup, Gabrielle Lindstrom, 2017; Gamrat et al, 2014).

The use of badges witnessed a revival in the digital age, as games use them extensively – and in education they are reclaimed in new research by Reid et al. (2015).

The need of a control group. The legitimacy of experimental design in social studies.

I would first argue that, in an intervention (action-research), the researcher cannot control all the variables; thus, the differences between a control group and the experimental group can also be traced back to other socio-cultural aspects beyond the intervention itself and out of control. So, how do we measure literacy? Is there room for a before-and-after approach? And if so, is the ,after’ always retraceable to the intervention itself, or is it time also a factor – as in, children would eventually get to be aware of online safety issues, with or without participating in a research? When the intervention unfolds on a longer period of time, it is possible that the children whose literacy level we study might have acquired it also via other activities than the intervention itself.

Can we assess the increase in interest in and learning of STEM, by evaluating their manifest interest in the workshops they are provided?

If so, then manifest engagement should be seen as a precondition of acquiring knowledge. But isn’t it possible that knowledge would also appear without volition? Where do we place manifest interest and engagement, in this process – and what is their role? And, more than anything, how do we define engagement?

Should the researcher chooses a loose research design, intervention-based, is he/she to assess the process or the outcome?

More specifically, when researching digital literacy in children, do we focus on results and build the intervention around the possible outcomes (thus linking the final product to the process of learning or acquiring skills and competencies), or on the process itself?

In DIGCOM, the competencies are defined on three dimensions: skills, knowledge and attitudes. While focusing on results, we could lose the aspect of knowledge (since children can do things without really understanding what they did and why – for instance, they can ‘learn’ and use an algorithm), or lose the attitude aspect: even if, at the end of the process, they didn’t get to any result, they could change their attitude towards technologies, from a consumeristic standpoint to a producer’s perspective.

Thus, while designing research, the idea is to adapt the design as to be able to capture/measure all these three aspects, although some are easily quantifiable, while others are not so easy to grasp.

Nevertheless, there is at least one type of literacy needed, if not two, that can prevent students from performing well in Kerbal Space Program: the plain literacy of knowing how to read and write (the students in MakEY were at their first grade and didn’t all know how to read, followed by the need for some English literacy, needed when gamers had to choose among different options (fuel tanks, rocket parts, etc.).

How does the researcher design his/her research project to cover all the risks associated to the unforeseen shortcomings – from those related to calibrating the resources and personnel, to those related to technical issues, space appropriatedness, time constraints, etc.?

While comparing notes with the GamiLearning team, we realized that one of the shortcomings in design was related to the classroom arrangement. The fact that the ICT labs are sometimes displaying the computers all along the walls, with the students having their backs to the teacher is preventing a direct eye contact between the teacher and students, thus losing attention and focus in the perpetual twisting around between the screen and the teacher. Such small details could be tested in a simulation. Yet, some aspects that were incorporated in the design cannot be changed – only mitigated by using supplementary tools or efforts.

Note to self: be prepared to transform the shortcomings, first by admitting them, then by incorporating them into the results, via a thorough theoretical re-framing that would help analyze the findings associated to them, whenever possible.

Using games in education: a change in paradigm?

While the research on videogames stressed for decades on their (negative) ‘effects’, based on their violence, the last few years research on videogames shifted towards another perspective. Taking into consideration the user/gamer as a person with agency, new research and papers see the games as conveying knowledge (Buckingham, Burn, 2007), being used as educational resources (Gee, 2008), or even improving one’s attention and motor functions. Nevertheless,

researches focusing on how videogames are structurally ,changing the brains' of users (Palaus et al., 2017 – a neuroscience approach) are still to be expected.

In our research, children played Kerbal and got familiarized with notions of physics, astronomy, etc. In GamiLearning, children learnt about digital safety via creating videogames.

As gamification enters more and more fields, the use of games in small children research will most likely lose its 'ethics challenge' aspect it still has, while games will be more and more educational and more embedded in the social game.

Is there any ethical consideration of the fact that some children may benefit from an intervention type of research, while their peers wouldn't (for not having been included in the study)?

This idea came to me while discussing the before-and-after evaluation of students participating in the study. As having a control group would necessarily mean some students participate in the workshop, while others don't, I started thinking about the way these differences will play out on the long run. Also, the mere participation to a study or a research can generate increased reflection upon the subject of the research, and this builds up in a change in the sort of knowledge and attitude students develop towards the subject. In my interview with Carlos Pinheiro, librarian and teacher that participated in the GamiLearning research at the intervention stage, he recalled that students from the study displayed an increased interest in issues related to digital literacy, after the 25 once-a-week workshops they received.

And finally, is it fair to raise the hopes for a brighter future, policy-making-wise, through research, in countries where the educational system seems not to be willing to change the educational paradigm and embrace new technologies?

There's no answer from my part on these latter questions.

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I hereby confirm the activities conducted by Monica Mitarca during her stay at CICANT and approve this report.



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