DEPIT

Designing for Personalization and Inclusion with Technologies

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Report on the pilot phase with Italian and Spanish University students

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The Depit App training for students at the Università Cattolica del Sacro Cuore, Milano

As planned with partner Universities, we used DEPIT APP during the university course of "Education Technology" held by Professor Pier Cesare Rivoltella, during classes and a practical activity guided by a tutor. We used the following proposal, designed for university students, focused on the evaluation of the DEPIT APP considering 2 steps:

1. APP use experience with university professors guidance;
2. University students' design experience with APP.

Our students in fact are not in their internship yet, so we could not let them to a direct use of the APP at school. We consider, though, their use as university students and as "teachers to be" during a guided group session aimed at designing an activity following the EAS method (in English, Episodes of Situated Learning) with the DEPIT APP. In this way we could gather both the perspective of a students and the one of a "teacher user", as group work was designed to produce an output using DEPIT APP entirely. For this reason students attended a short seminar on the use of the APP in order to be able to practice it during their group work. This training has been led by Serena Triacca, a member of the CREMIT Research Center and expert researcher in education technology.

We deliver the main results in two steps: the first refers to the use off the APP with university professor guidance, that means as university students. The second refers to the direct use of the APP.

Time spent with the APP has been important (4 weeks, than means 4 lessons), as students usually have different skills, especially referring to the use of digital media and APPs (a lack of time is in fact an issue underlined in the evaluation): group is not homogeneous for technical skills, but also considering their experience at school. We collected 88 evaluations, 81 are considered valid and complete. Within these 81 students, 21 do not have an educational design experience (question: **Did you already have experience in educational design?**) and 21 students do have a teaching experience (1 to 13 years, with an average of 2 years-experience at school).

The App use experience with university professors' guidance

Students considered a bunch of problems experiencing the APP used by their Professor, the main are linked to:

- technical issues (most negative feedback are on this topic, also considering that they used the app before the revision and bugs fixing);

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- distraction trying to follow all the steps, as it was a novelty for the class;
- the structure (just at the beginning) looks hard to define;
- It demands teacher a lot of work (this issue comes from a student who has no teaching experience, but knows education design).

Considering positive issue and benefits, students considered many interesting options:
- knowing the frame helps them to learn better (a very interesting statement, more or less 80% of the feedback refers to this issue);
- getting a better link between activities and lessons (which means to make a good connection to topics and ideas discussed during the semester, for example, this is also a very common comment for there entire group);
- a nice graphic looks important to learn and appreciate the content;
- every material is stored in the same place (that means, it is useful when you need to find images, schedule, examples, presentation and different stuff).

As a consequence, considering the comparison between a course designed using the APP or without it, what makes the difference is connected to the possibility to transfer theory into practice, to have a bright idea of all the passages needed to get to the result and to understand the development of the content itself (this is a very common issue, at least for 2/3 of the students). 6 students also considered the importance of the APP to learn how to design with EAS method as it looks like the perfect frame for a structured method, helping them to see all the different moments of the learning episode. Another student also underlined the fact that - using the APP - teacher do not risk to talk about something else, something not designed for that lesson, that means to go off the grid.

Having a structure is then the most important thing for many students (more or less 70 students within 81).

The university students' design experience with the Depit App

Considering the second step (students as active users of the DEPIT APP), the APP looks like usable (question: **On a scale of 1 (= not usable) to 6 (= totally usable) how do you define the usability of the APP**): only 1 student consider the level 1, 13 marked the level 2, 22 the level 3, 28 level 4, 12 students chose the level 5, 2 student the level 6. So, gathering this data, more than 50% consider the app very usable in their educational context. The reasons are simple: they need time to learn how to use it, they had many technical problems and the APP is very structured and this needs to be organized (as a teacher especially, this can be a plus in fact). As said before, time is an issue: "really, once you learn how to use the APP, it looks like easy, but at the beginning I was a bit confused", said a student with education design experience and currently teaching). Few students (4) mentioned the setting of the APP as an obstacle: English is not very welcome.

Considering the strengths of the APP, we gathered the following 4 recurrent topics:
- "the use of the DEPIT APP allows teachers to organize and define previously all the activities/lessons considering time and limits, but especially to correct them while teaching", a student said (organization and error detecting);

- have a detailed idea on the path (where you are, what to do next for example);
- "the APP let us organize and define the steps in details";
- an important issue refers to the need for a clear idea of competencies requested by each activity: "this allows teachers to think about the aim and what he or she is asking to students, so that each activity could really answer to their needs" (said a student with no teaching experience);
- and last but not least, the APP makes it possibile to document each activity and get a strong idea on your teaching.

Referring to weaknesses, the design experience led to these ideas (question: **What weaknesses did you highlight in the APP design experience**). First students suffered the impossibility to work together on the DEPIT design at the same time, and experienced a problem with synchronization (at least 85% detected these problems). This was a limit, including some technical issues (more or less 70%). Just one students said that "the problem was to find a common idea and a common topic to work on", that means that what's necessary is also a strong aim and content (before starting to design).

Last, considering the relationship between the DEPIT APP and the EAS method, students really approve it as a sort of "realistic" EAS APP to design lessons and learning episodes (question: **Thinking about the didactic design of the EAS method, how do you rate the APP model overall? On a scale of 1 (= not at all satisfactory) to 6 (= completely satisfactory)** what is your overall judgment). 12 students chose the level 3, 24 chose the level 4, 34 chose the level 5 and 6 gave a big 6 to the APP as suitable to design according to the EAS method. Summing 4- 5 - 6 level it sounds like a thumb up.

Summing up: DEPT APP revealed the importance to have a structure, to design episodes and lessons in details, reaching students' need and collecting a lot of materials to deal with the same topic; it also needs method and asks teacher not to improvise (it does not mean to forget to be creative, on the contrary the APP allows to change path or correct mistakes on the go).

The Depit App training for students at the University of Sevilla

The piloting of the DEPIT application with university students has been performed at the University of Seville within the subject "Prácticas Docentes I – Previous Training". The DEPIT application has been tested in two groups of third-year students in Primary Education Degree. Pilar Colás Bravo and Teresa González Ramírez have been the professors of the first and second groups, respectively. Pilar Colás Bravo, in collaboration with Irene García, has worked on tracking the practices with the APP. Likewise, Teresa González Ramírez has worked in collaboration with Ángela López and Inmaculada Pedraza.

The period of this formation comprises from February 11 to June 7, 2019. The first training – corresponding to the piloting of the DEPIT application – was limited to 4 weeks; 3 weeks in the month of February, with 1.5 hours of class per week, and 1 week in June dedicated to the evaluation of the start-up of the DEPIT application. The intermediate period corresponds to the internship period in schools, where university students have experienced the APP with previously designed teaching units.

The DIDACTIC SEQUENCE developed in the subject is structured in three phases:

Phase I: Familiarization with the DEPIT APP.

   First week: February 11-15, 2019. Presentation and demonstration of the APP
   o   Introduction of the DEPIT APP.
   o   Initial demonstration of pedagogical and technical functionalities of the DEPIT application.
   Second week: February 18-22, 2019. Design of a Didactic Unit using the APP.
   o   Download of the app by the students. Key distribution.
   o   Creation of working groups for the beginning of experimentation.
   o   Initiation to the Design of a Didactic Unit (of free creation) group.

Phase II. Experimentation in the practice centres with the DEPIT APP.

   Third week: February 25 to March 3, 2019.
   o   Preparation of a Didactic Unit with the APP.
   o   Review of unit designs.
   o   Clarification of doubts.

In this second phase, the objective is for students to design an individual Didactic Unit, adapted to real school context. This unit will be implemented during the development of the practices. Students should also record the implementation through video in a real classroom situation. This activity would be performed during the three months of the internship period: March, April and May 2019.

Phase III: Evaluation of experience.

Fourth week: June 3 to 7, 2019.
- o Data collection for the DEPIT Project report. The information obtained corresponds to 52 students in the first group, and 33 in the second group. The former respond to questionnaire 43, whilst the latter complete questionnaire 32.

The App use experience with university professors' guidance

The experience of using the application with the professors' guidance has led students to mark the main strengths and weaknesses.

Concerning the weaknesses, students mainly manifest technical issues when using the application, specially with the installation process. These issues are mainly related to both incompatibilities of APP with the personal device and unavailability of some options. These difficulties generated stress and apathy towards the use of the application. In addition, students opined that the use of the APP shows some complexity due to the reduced time to get familiarized with the APP. This has generated doubts about its operation.

Additionally, students highlighted the difficulties of materializing designs and organizing information in that format. In other cases, they have found difficulties to see the applicability and advantages over personalization and attention to special educational needs (SEN). The main cause of such difficulties is that students were using a non-final version of the application. Besides, students in the centres did not have access to it. In summary, they understand the potential of the APP but have not been able to fully experience the practicality in terms of personalizing their teaching.

Regarding the strengths of the APP, students highlighted that drafting a pedagogical design with DEPIT was absolutely time-saving. Similarly, they remarked its potential in the realization of designs, allowing visual and attractive proposals for different age-range students. Moreover, the APP was considered a useful tool for planning and organizing information in a simple and intuitive space – that offers possibilities such as competencies, observations, personal annotations, etc. Students also stressed that technology is an element of interest and motivation for their pupils, so the APP has become a significant help to manage the classroom context.

Despite not having experimented with the final-version APP, some students highlighted the future potential for sharing their designs with other colleagues in a real context.

Attending to difficulties and potentialities, we conclude that technical issues cause the major problems, along with inexperience in designing teaching and learning processes in digital environments. The use of the APP has meant for the students a break with respect to their previous conceptual structure, and they have appreciated the help of the professors, as well as the existence of a pedagogical and technical guide. To them, planning, but no design, is always in relation to the curriculum (planning by subjects). Eventually, this makes their design to become unsynchronised. Therefore, extending the use and practice with DEPIT becomes essential in order to get acquainted with this environment in this training period before any external internship.

In conclusion, throughout this experience, students have valued the APP as a tool of great help within the classrooms regardless the initial barriers. The use of the APP has shown them a more transversal pedagogical design, linked to a specific pedagogical objective, not so much to content objectives.

The university students' design experience with the Depit App

During the design of the Didactic Units, students perceived a low usability of the APP. In the scale of 1 (= not usable) to 6 (= totally usable), most of the answers are placed in level 3. That is, 34% of users consider that the utility of the application is low. The reasons are multiple. For example, it is a very complex app if there were no support guides, the language barrier (translation was sometimes a difficulty), or the technical requirement and technological supports to launch the APP – absent in some in educational centres – limited the potential of DEPIT.

Regarding difficulties, we must remark that students had problems working together in the centres with the APP: some errors in the synchronization, technical problems to download the APP (Apple mainly), saving and restarting the APP caused its block, etc. Unfortunately, these problems were aggravated when students try to apply their design in the classroom and there was poor sign or projection quality.

Despite these handicaps, students showed different strengths: the APP helps generate classroom programming, allows content and activities organization, and provides numerous visual resources (insert images, videos, links, etc.). Moreover, its personal preference option permits the creation of a private space for teachers, with their own organization invisible to students (preserve privacy). Finally, students highlight that everything is collected on the same platform; an aspect that facilitates the availability of many resources and easy access to the daily routine of teachers.

The most positive aspect is related to consequences and effects on motivation. In this sense, several students indicated:

"*It is more beneficial to work with the APP because it motivates and attracts the attention of students*".

"*Older people pay more attention, knowing that it is an application that comes from a Project and that is being used by other children in other countries*".

In summary, the evaluation revealed the importance of the APP when it comes to structuring content and designing activities, as well as having the resources organized and making the entire teaching-learning process visible. Finally, we must highlight the appreciation that some student make about the potential of the application for the generation of customizable itineraries in the same platform.

As a final conclusion, students valued positively the DEPIT experience both during its first stage, when this experience was mediated by the teacher, and during its second stage, focused on experimentation in real context. The identified difficulties are mainly attributable to technical aspects in improvement processes and connectivity difficulties in schools. Finally, the most remarkable achievement of this experimentation is undoubtedly the conceptual change that the DEPIT experience has provided the students.

The Depit App training for students at the Macerata University

The DEPIT application was used in university teaching at the Department of Education Sciences, Cultural Heritage and Tourism of the University of Macerata as part of the Primary Education Sciences course, a professional training course for future teachers of nursery and primary schools.
The pilot was conducted along two different lines, which covered the following aspects:

1) Use of the app as a tool for designing and sharing the didactic path by the teacher, to understand the potential of visible design in terms of student orientation, alignment of learning objectives between teacher and student, and awareness of the relationship between macro- and micro-design in terms of skills and expected results.

2) Use of the app as a design tool for students (pre-service training), to try to understand the mechanisms of macro- and micro- design and to make some particular aspects of transposition and didactic mediation tangible.

With regard to the first point, the pilot was carried out in the following courses:

- General Didactics, teacher Prof. Pier Giuseppe Rossi. Second semester of the first year of the course, no. of students involved about 150.
- Italian Grammar, teacher Prof. Maila Pentucci. First semester of the second year of the course, no. of students involved about 150.

With regard to the second aspect, the pilot was carried out in the following courses:

- Educational Technologies, teacher Prof. Chiara Laici. Second semester of the second year of the course, no. of students about 100.
- Theories and Methods of School Design and Evaluation. First semester of the third year of the course, no. of students about 200.

Pilot by the teacher
The first field pilot was aimed at testing the DEPIT application as a design tool in university education, and to understand its elements of sustainability, strengths and weaknesses.
In order to have the widest possible view, it was decided to produce design artefacts with the application both in connotative teaching, linked to the fundamental pedagogical-didactic themes of the degree course, and in specialised teaching, linked to a single discipline.
The teachers agreed to design a modular course with three levels of depth: the course level, which illustrated the entire semester teaching program; the module level, which grouped the topics by subject and marked the phases of the course (in the case of Italian Grammar it also provided for a periodic evaluation linked to the individual modules); and the session level, which brought together the different theoretical and practical activities used during the lessons. This level also included downloadable attachments of the materials used by the teacher and/or useful for students in the study and preparation for exams.
The potentialities observed and detected through specific questions in the final evaluation questionnaires filled out by students were as follows:

- Possibility for students to prepare for the course of study, understanding the workload involved in preparing for the exam and observing the themes and topics covered in detail.
- Possibility for teachers to share in advance the materials and themes on which they would have structured the next lessons.

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- Possibility for students to align their studies with the expected results expressed in the various design cards.
- Possibility for teachers to set up parallel paths such as workshops.
- Possibility for students not present at a lesson to find the content and to follow the consistency of the path and to review what the teacher has done.
- Possibility, both for teachers and students to review the programme carried out before the final exam or the intermediate exams to consolidate or revise some concepts.

Student Pilot of the application

The second pilot mode was prepared to test the application as a training and professional development tool for future teachers.

The use of the app has been planned at two distinct levels: during the course of Educational Technologies, the functions and the theoretical background on which the DEPIT project are based were illustrated to students, who were able to test some functions of the application in groups and to produce simulated design artefacts.

Instead, in the course of Theories and Methods of School Design and Evaluation, students were asked to develop a design of a work session through the application which they then did in the classroom, during the direct internship, which was carried out in a primary school class.

Each student was given a personal password and was able to explore the application in its overall functioning. The work carried out involved reproducing the curriculum of the welcoming teacher (the teacher who hosts them in their class for the direct internship) on the level of macro design and to be included in one of the modules or learning units to structure a lesson completely, completing the relevant cards and attaching the materials that they would use with students in the class.

This pilot was very complex and took nearly an entire school year to be carried out and then analysed. The analysis was carried out taking into consideration two types of evidence:

- The students' project documents presented by them during the final exam
- Specific questions on the use of the application included in the evaluation questionnaire provided at the end of the course.

The students highlighted the following aspects:

- The use of the application allows a greater awareness in the production of designs as it guides novices and helps them to structure consistent and complete paths.
- The design artefact produced is an excellent tool for self-evaluation with respect to the practical skills that are learned during the course.
- The design artefact also provides security and greater orientation when students have to conduct their first lessons in class.

For teachers of the examination board, the review of the students' artefacts made it possible to examine some aspects that usually remain hidden: the ability to reify in practice some principles and teaching methods, the ability to build sustainable and organic design paths, and the ability to integrate mediators and materials in a balanced and consistent way with the defined objectives and competences.

Annex – Evaluation form

1. APP USE EXPERIENCE WITH UNIVERSITY PROFESSORS GUIDANCE

Student Name and Surname:

Teaching/Class:

Professor name and surname:

Year of study:

Degree course:

1. How long did you use the APP at university classroom? (app used by university professor)

2. What weaknesses did you find when the APP was used by professor?
(eg. I was distracted by the design and I was not able to handle the attention for a long time)

3. What strengths did you discovered when the APP was used by the professor?
(eg. I better followed the link from one activity to another/from one topic to another)

4. In your opinion, are you better oriented in the course design when professor used the APP or when professor didn't use it or compared to course where other professors didn't use the APP? In what? (eg. I better understood the relationship between different lessons, I understood the work steps, I understood the development of the design…)

5. What application do you think the APP can have in teaching and/or learning situations?

2. UNIVERSITY STUDENTS' DESIGN EXPERIENCE WITH APP

1. Did you already have experience in educational design?

YES NO

2.*(If YES at question 1)* **Do you teach?** YES NO

3.*(If YES at question 2)* **How long have you been teaching?**

2. On a scale of 1 (= not usable) to 6 (= totally usable) how do you define the usability of the APP

1-2-3-4-5-6

If possible, clarify your answer

………………………………………………………………………………………………

3.What strengths did you highlight in the APP design experience? (it can be related to the method, to technical issues linked to the use of the app…).

4. What weaknesses did you highlight in the APP design experience? (it can be related to the method, to technical issues linked to the use of the app…).

5. Thinking about the didactic design of the EAS method, how do you rate the APP model overall? On a scale of 1 (= not at all satisfactory) to 6 (= completely satisfactory) what is your overall judgment?

1-2-3-4-5-6

If you want you can clarify your answer

………………………………………………………………………………………………