The Use of ePortfolio to Facilitate Ongoing Guidance within the Academic Path. The Experience at Roma Tre University

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Abstract: *This pilot-study presents the procedures and results carried out by the construction of an ePortfolio by the students of the academic courses " Didactic of the Educational Guidance "(EGD), First-level Degree in Education Sciences, and "Educational Strategies and New Communication Processes" (ES), Second-level Degree in Professional Community Educator, held in the Department of Education at Roma Tre University (Italy in the a. y. 2014/15.The aim is to facilitate the orientation of university students through the documenting of their lived learning experiences and the consequent reflection about them. In particular, a showcase portfolio has been realized using Mahara, an open source platform. The opinions of students, measured by input and output questionnaires related to the research hypothesis (Mahara usability, conception and design of the eP to promote the awareness of the educational process), show they positively experienced metacognition and individual and collegial reflection, as well as some critical issues related to the projection of the instrument in a future working field.*

Keywords: *ePortfolio; Mahara platform; showcase portfolio; diachronic educational guidance; individual and collective reflection.*

1. INTRODUCTION

The last decade has seen a remarkable expansion of the use of ePortfolio in the educational context. The term "portfolio" means a loose collection of papers and materials carried by a person to document the best works carried out; in the past, it was mainly used in the field of fine arts (Avraamidou & Zembal-Saul, 2002; Meeus, Questier, e Derks, 2006). The portfolio is a collection of documents selected according to specific criteria and accompanied by reflections and descriptions that illustrate the path followed and the efforts applied for their production and has the purpose of making visible not only the result but also the path, which allowed its achievement. The advent and diffusion of network technologies have led to a gradual evolution of the portfolio into an electronic instrument working on a web-based interface; this allows a more flexible and dynamic construction and enables subjects to prepare a collection of informative data immediately accessible by anyone interested. In this perspective, an electronic portfolio, or ePortfolio (hereafter eP), is defined as "a collection of digitized artifacts, including demonstrations, resources, and achievements that represent an individual, a group, an organization, or an institution" (Lorenzo & Ittelson, 2005, p. 2). In the educational field, an eP can be used to promote and to demonstrate competence levels progressively achieved by students in the learning process (Brandes & Boskic, 2008; Zubizarreta, J. 2009), responding to the evaluation interests of teachers and to the self-evaluative ones of students.

During the past ten years, many international studies (Galliani L. et al, 2011; Giovannini ML & Riccioni A., 2011; Bryant & LH Chittum JR, 2013) have dealt with the use of an ePortfolio at university and shown those experiences as extremely interesting and satisfactory. Because the eP is a flexible tool (Turns J. et al, 2012), relevant empirical studies show a varied use of the same, presenting it as suitable to promote: authentic assessment (Buyarski CA Landis & CM, 2014); self-assessment (Pitts W.& Ruggiero R., 2012); school guidance (Huang J.J.S. et al,2012; Swenson Danowitz E., 2012); professional guidance (Cross J., 2012); presentation of acquired skills (Johnsen H.L., 2012); representation of acquired skills (Snider E. &.McCarthy A., 2012); solicitation of soft and cooperative skills (Ehiyazaryan–White E., 2012; Carpenter et al, 2012); insertion in the academic

environment (Singer-Freeman et al, 2014);a more and more student-centered learning (Eynon B. et al, 2014).

To sum up, teachers can use the eP to observe and assess the progressive, documented acquisition of their students' competences; they also may refer to eP as a regulative idea for designing educational curricula. Students can use the eP to reflect upon their own learning and their own attitudes, in self-assessing while comparing their achieved, or missed, results within the various stages of their training. Students improve their self-esteem and their understanding of themselves; they also build, over time, the range of skills and meta-skills that will enable them to make crystal clear and responsible choices to guide their life-plan.

2. WHAT IS AN EPORTFOLIO?

What is an electronic Portfolio? Helen Barret (2004) reports the definition established by the National Learning Infrastructure Initiative (NLII, 2003):

An electronic portfolio is a *collection of authentic and diverse evidence*, drawn from a *larger archive representing* what a person or organization *has learned over time*, on which the person or organization *has reflected, and designed for presentation to one or more audiences for a particular rhetorical purpose.*[italics added]

We now propose a textual analysis of the definition provided in order to articulate a precise description of the instrument:

- an electronic portfolio is the selection of a *collection of authentic evidence* - The eP is an electronic container in which any entity (person or organization) may enter the evidence of their education and /or work.The term *authentic evidence* refers to the fact that in the eP the actual evidences of what a person has produced are inserted, transformed into digital documents with the help of new technologies. Therefore, the documentation of a fact can take the form of a video, audio, image, etc. It is also very important to highlight that the evidences are made both by the authentic document that shows them and by the comment that the subject writes to present and describe the document itself. For example, an authentic proof (Wiggins, 1990) is the image showing a work performed, integrated by the description of that work: the objectives to which it has responded, the time required for its completion, the context in which it was made, the difficulties faced, the solutions found, etc.;

- […] *and diversified* - The evidences entered can be diversified; that is, more events may be invoked in order to testify what the subject has learnt. In other words, it is possible to use multiple perspectives to enriching the meaning and value of the subject's skills, knowledge, competences;

- […] drawn from a *larger archive*- Of course the personal archive of documents that testify to the experiences lived by the person is much bigger than the number of evidences that it is possible to enter in eP, so that the person must make a selection of such evidences;

- *representing* - The selection of the evidence will be carried out in relation to what the person believes to be his/her own representation. This step is very important and offers a vision of an effective feature of eP: the person chooses which elements to enter and therefore how to build his/her own eP;

- What a person or an organization *has learned over time* - The subject offers a representation about him/herself selecting specific evidence among the many possible. The eP allows a double display of the person's experiences: a synchronic one because it presents a mixed picture of the events, a diachronic one because it keeps their historical traceability;

- […] on which the person or organization *has reflected*- The term *reflected* enriches the semantic space of the terms related to the selection of the evidences and to their representativeness: creating his/here eP, the subject chooses the evidences in which he/she recognizes him/herself, or those which give him/her the representation of him/herself that he/she feels closer to what he/she believes to be. For example, to prove he/she has a good knowledge of the English language, the subject may choose not to enter a certificate attesting his/her level relating to a standard, but his/her participation in a humanitarian project in which he/she had to relate to others conversing in English, perhaps by inserting videos or correspondence, as well as, of course, descriptions and comments;

- [...] and *designed for presentation to one or more audiences for a particular rhetorical purpose -* An eP is built by a person who has the desire or the need to present him/herself in various contexts, and/or to various other subjects, according to the objective which he/she aims to by the publication of the representation that he/she has given of him/herself in the eP.

For example, in the education field, the student will build his/here eP to offer a certain image of him/herself to the academic community, but if he/she desires, he/she can diversify the access to the content posted, depending on whether the visitor is a teacher, a classmate, a friend etc.

This allows to emphasize a very important concept: the eP is not merely a collection of documents; in order to express its true potential, it must be built with attention to the objectives that characterize its function and usability (Campbell et al 2000).

Varisco (2004) sums up the different types of eP identified in literature: learning portfolio, a kind of reflective diary designed for the same writer; assessment portfolio, a very structured one which demonstrates the achievement of objectives, even in relation to established standards; working portfolio, built to show evidence of skills and competences in order to get a job; showcase portfolio, a collection of documents, integrated by personal reflections highlighting the personal growth over time, enriched also by elements of creativity that make the presentation original.

Danielson &Abrutyn (1997) indicate the steps that students must follow to build a portfolio; these steps are also recalled in the literature on the electronic portfolio, despite the authors were referring to the paper portfolio. They are: *collection, selection, reflection, projection*. The *collection* is considered the first activity that the student must fulfil, however taking care not to collect everything, but keeping in mind his own purposes and the types of end-users of the portfolio; the *selection* of the really important documents should be made taking into account the aims that the student has in building up the portfolio; the *reflection* is the activity that each student will perform on each inserted document and will have to accompany the same document; the *projection* concerns the need to ensure that the portfolio looks ahead, so that it is not limited to describing the status quo, but endeavors to illustrate a future perspective.

Over fifteen years, Helen Barrett has focused her studies on the design of the electronic portfolio and has proposed a scheme in which she has presented the stages of portfolio development by placing them in ascending order with respect to the ease of use of the same (Barrett 2000):

Table1. *Barrett H. - Development steps of the electronicprtfolio*

0	All documents are printed out. Some portfolio data may be stored on videotape
1	All documents are in digital file format - using word processing or other commonly used software, and stored in electronic folders on a hard drive, floppy disk or a LAN server
2	Portfolio data are entered in a structured format, such as a database or a HyperStudio template or slides show (such as PowerPoint or AppleWorks) and stored on a hard drive in a ZIP, floppy disk, or LAN
3	Documents are translated into Portable Document Format (PDF) with hyperlinks between standard, artifacts, reflections - using Acrobat Exchange - and stored on a hard drive in a ZIP, floppy disk or LAN
4	Documents are translated in HTML complete with hyperlinks between standard, artifacts, reflections, using a Web authoring program and posted in a web server
5	Portfolio is organized with a multimedia authoring program, incorporating digital sound and video, then converted to format and pressed to CD-R / W or posted to the web in streaming format.

The scheme drawn up by H.Barret shows that the ease in using the eP goes hand in hand with the dematerialization and the delocalization of the documents to be collected; from the organization of paperwork supported by some video-recording, the portfolio gradually proceeds to a fully electronic portfolio, thanks the development of network technology. It is worth noting that a further stage must be added to the diagram, namely the creation of web platforms structurally predisposed for the creation of eP, which represents the last frontier reached in the evolution of the instrument.

3. EPORTFOLIO AND ONGOING GUIDANCE

Generally, guidance activities in schools are merely events organized at the end of a school cycle to introduce students to the structures that will receive them in the next step. Domenici (2009) defines it

synchronic final guidance and considers the incidence that this type of activity can have in supporting children to make both educational and professional informed choices about their future very low.

Indeed Domenici (2009) notes that a *guidance training* should accompany the curricular activities since the first grade of school, taking into account the peculiarities of each student, and therefore profoundly affect his educational and professional choices. Rather, *guidance training* should be an integral part of the educational curriculum because, through an individualized teaching, students can be made able to understand their vocations and thus to take the right and responsible decisions for their own life project. The eP selectively responds to the need of keeping a diachronically track of the student training, particularly in its electronic form that allows to avoid the excessive accumulation of paper material, unusable in practice for the collection of information (Domenici, in Domenici & Moretti 2006). Of course, an effective guidance is closely linked to an educational design that improves meta-cognition, reflection, and self-regulation (Pellerey 2004; Pellerey 2007). Huang (2012) notes that, according to Wade (2005), the eP links the ability of a student to self-regulate his/her own learning with his/her ability to improve meaningful learning and the acquisition of competences. In fact, students who are capable of self-regulation are persons who participate in their own learning in the meta-cognitive, motivational and behavioral perspective (Zimmerman, 2000). Further research emphasizes the positive relationship between the construction of an eP and the development of metacognitive strategies (Azevedo, 2005; Zellers &Mudrey, 2007). Zellers and Mudrey (2007) indicate that electronic portfolio can be an effective platform for students to increase their meta-cognition using an online environment of sharing; with regards to this idea, Huang (2012) reports the study of Wickersham and Chambers (2006) who found that the efficiency in the use of eP is closely related to the level of the technologies used.

In summary, according to the scientific literature analyzed, it can be said that the school system, at its various levels, from childhood to university, allowing students to build a eP, can provide young people a systematic tool to collect and document their formal, informal and not formal competences. Thus they can get a better idea about the relationship between the professional requirements of the market and the competences they have to offer. It is no coincidence, in fact, that, as a tool for diachronic recording of competences, the portfolio was born in the European context of lifelong learning and of transferability of skills linked to the mobility of persons, referring to the model of the European Portfolio of Languages (Among other documents you may see the following: Recommendation of the Council of Europe, December 20,2012; Decision No. 2241/2004 /EC of the European Parliament and of the Council, December 15, 2004; Europass-Language Portfolio; Portfolio for youth leaders and youth workers).

4. DESCRIPTION OF THE EXPERIENCE

As mentioned in the Abstract, this work presents the procedures and results carried out by the construction of ePortfolio, in the a. y. 2014/15. The students of two academic courses in the Department of Education at Roma Tre University (Italy) participated. The courses are: "Didactic of the Educational Guidance "(EGD), First-level Degree in Education Sciences, and "Educational Strategies and New Communication Processes" (ES), Second-level Degree in Professional Community Educator.

Both courses (EGD and ES) are held in blended form (presence and distance learning) and the construction of ePortfolio concerns the on-line activities.

The choice of EGD and ES was made out of the common features between the two courses and of other reasons related to their specificity. The common reasons can be summarized as follows:

- blended form structure: each course implies the performing of some on-line activities; Consistency of the theme of the survey with the contents treated in the courses.

The specific reasons are the following:

- EGD is designed for first-year students who, being freshmen, often show a certain confusion in understanding the academic dynamics. At the question "Why did you decide to attend to this course?" many of them were not able to offer a clear and conscious answer. They had no

conscience why they had made their decision and were not able to indicate the training events which led to the choice made.

- ES belongs to a Second Level Degree and is therefore designed for students who will refine the professional techniques appropriate to the management of the workplace as Community Educators. Their greatest need was to enter the work market, but many of them did not have clear and conscious answers to the questions "What can you do? What are your competences?

4.1. Hypothesis

Due to the issues discussed and the analysis of the scientific literature on the eP, the students of "Didactic of the Educational Guidance "(EGD), and of "Educational Strategies and New Communication Processes" (ES) were proposed to build a *showcase portfolio* on the web platform *Mahara*, on the basis that:

- the construction of a *showcase portfolio* enables the students to track down the formative events that resulted in their university study choice and reflect upon them by collecting documents and personal comments expressed in creative ways;

- the construction of a *showcase portfolio* enables the students to recognize and highlight the skills acquired in formal, informal and non formal education;

- The web platform Mahara presents the appropriate characteristics for the construction of a *showcase portfolio*.

4.2. Procedure

As mentioned, both courses (EGD and ES) are held in blended form (presence and distance learning) and the construction of ePortfolio concerns the on-line activities. Digital didactic is made possible using the platform of the Department, *form online* (http://formonline.uniroma3.it/) in which all the materials used in the lessons in the presence are inserted, and in which various types of forum are open, to allow students to dialogue on issues of interest, to interact with both the teacher and their classmates, to make exercises and to perform and deliver the tasks assigned. During the first two lessons, the teacher (the author of this paper is the teacher of the two courses) illustrated the structure of the courses, the topics that would be discussed in the presence, the goals that the frequency of the course allows to reach and showed the environment *form online*. Than the teacher asked to each student to present and justify the choice of the enrollment in their course, also in view of a future employment. In this contest of positive climate, input questionnaires, arranged to ascertain the possible knowledge of the eP and the level perceived by the students about their mastery in use of ICT, has been distributed. The same input questionnaire was also inserted in *form online*, where it was kept for about ten days, so that not attending students could fill it out; then access was blocked just before the lecture in which the teacher presented the eP. The description eP was provided to students after two weeks from the start of the courses, with a few lessons in which the characteristics of the eP, its history, its functions, the ways in which it can be built and Mahara *open source* platform was presented. Mahara was identified, among other similar platforms, as the most appropriate environment/tool to fulfill the purpose.

It seems useful, at this point, to propose a brief digression from the experience itself, to synthetically present Mahara and the reasons for its choice. The project Mahara was born in 2006 in New Zealand and involves several local universities; the principle that guides the development of the system Mahara ePortfolio is student-centered, thus developing a form of Personal Learning Environment, very different from the Learning Management Systems (LMS) that provide for the management of the learning by external agents. Of course, each system possesses its own value in relation to the specific tasks performed and to the set learning goals. Mahara architecture is inspired by the modular and extensible Moodle system, with which Mahara can efficaciously communicate. In Mahara system, the author can control which elements and which information (artifacts), among those contained in his eP, can be shown to other users; this makes Mahara different from other eP systems, and has determined its choice.

Fig1. *Home page of the open source platform Mahara - Italian version, translation adapted to the context*

English is Mahara's original language and, because the Italian translation available online did not seem entirely adequate, a new translation has been made to make the interface more friendly and familiar. Mahara Guide was consulted for the translation; the guide is in English, but written in an analytical and discursive language, obviously very different from the concise and direct language used in platform. Before enabling students to access Mahara, a simulation was carried out with an "avatar" profile, to test Mahara functions, the navigation mode, possible difficulties in file management, the consistency and effectiveness of the translation.

After presenting the eP and Mahara platform, the account to access and to surf in the platform was provided to the students, so that they become familiar with the on-line environment; at the same time, the slides on Mahara used for the lesson in class were uploaded on the learning platform *form online* and a forum in which the students can share considerations, problems, comments with both their classmates and the teacher was opened. The next step has been asking the students to fill in a form, which was presented and discussed in class and then was inserted and filled in *form online*; the form was titled "Objective: building the ePortfolio/showcase portfolio. Table of criteria for the selection of events". This tool was intended to direct and guide the students in the identification of the necessary criteria for the selection of artifacts to be inserted in Mahara. The term "artifact" refers to a set of two elements: the document that attests to the event and the comment that the student develops to describe and evaluate the document itself. The form has been structured into five major categories (cognitive, motivational, emotional, relational, meta-cognitivearea); some questions that have provided criteria for collecting artifacts were set out within each one. To make the research of documents more simple and immediate, a table was prepared for each question, where briefly enter the event that the student considered relevant to his/her education, both positively and negatively. To make the description explicit, a part of the tab above mentioned is shown here as example:

COGNITIVE AREA: the answers to questions/criterion within the cognitive area are useful to me to reflect on which events* of my educational path (inside and outside school) have contributed to create my link with knowledge, study and learning, and have influenced my scholastic, academic and professional choices.

**Please note that the term "event" refers to a complex situation that includes both the memory of an episode and the materials that can be considered the documentation of that episode. The material documents must be electronically processed, and accompanied by the appropriate comments useful to represent the subjective reflection on the episode. This process of reinterpretation and reformulation transforms documents in artifacts (remember that only artifacts can be inserted in Mahara). (It is recommended to view the slides of the lesson on Mahara as a support to the compilation of the table). Later on, the sharing of artifacts in our Mahara community will be arranged.*

1) What events of my educational path have led me to the desire to understand the importance of knowledge? (Knowing and Understanding)

Positive events	Negative events

2) Where are my current interests and aspirations rooted? What have the events that led to their creation and their development been? (Analysis) - *table following, as in item 1-*

3) What events have been particularly significant in helping me to evaluate more carefully my resources and my limits? (Rating) - *table following, as in item 1-*

4) What events have really shown me that I could concretely employ what I previously learned? (Application) - *table following, as in item 1-*

Fig2. *Section of "Objective: building ePortfolio / showcase portfolio. Table of criteria for the selection of the events"*

Each student has compiled the table in full freedom, i.e. they could add more questions/criterion and could answer only to those they considered useful. The compilation of the table required a great engagement and generated an interesting debate in *form online*; in fact, students met on the online forum and supported one another to found the way to proceed for the identification of the events, the collection of the material documents and their transformation into artifacts. After about two weeks from the submission of the table, because the pupils proceeded adequately to the work required, the green light was given to access Mahara platform for the construction of the eP. It was also given them the task to request and accept the friendship of all their classmates and of the teacher, in order to build a learning community on-line. The students were supported and directed by the teacher of the courses and by two students (one for each course), highly motivated and experienced in new technologies, that have played a role of peer-tutor under the supervision of the same professor. This phase has been lived with great enthusiasm: each student has uploaded artifacts built with flair and creativity, and has commented the pages of all eP classmates with interest and participation. Questionnaires in output were administered at the end of the two courses.

4.3. Methodology, Tools and Outcomes

The methodology used in this study was both qualitative and quantitative; in particular, regarding its organization, case study procedures have been adopted (R.Yin 2005); as for the monitoring, the traditional techniques of quantitative data analysis was used (statistical analysis of the frequencies; bivariate analysis for the diachronic comparison between the data collected by the input and output questionnaires; in the case of open-ended responses, *a posteriori* clustering by macro categories).

4.3.1. Comparison between Input / Output Questionnaires

As already mentioned, the questionnaires were administered at the beginning and at the end of the educational experience: the procedures of encoding, decoding and analyzing data were made in SPSS. The returned questionnaires were as follows:

Table2. *EGD / ES: Input and Output Questionnaires administered and returned (Questionnaires analyzed)*

Course	Input Questionnaires	Output Questionnaires	AnalyzedQuestionnaires *
Didactic of the Educational Guidance (EGD) First-level Degree in Education Sciences	39	19	19
Educational Strategies and New Communication Processes (ES) Second-level Degree in Professional Community Educator.	30	39	30

The Input Questionnaire (IQ) consists of three sections: 1. the ascriptive data; 2. eP knowledge; 3. relationship of the student with ICT. The Output Questionnaire (OQ) consists of seven sections, the first three are identical to IQ and the other four refer to the experience performed: 4. design of the eP in Mahara; 5. navigation in the MaharaeP; 6. eP impact on the training process; 7. role and functions of the tutors (This paper does not give account of the analysis of data from this section because the issue is not expected in the research hypothesis).

The analysis of the input ascriptive data shows that most of the students of both courses come from Pedagogical High School (40.5%), the 20% from Technical and Vocational Schools, the 39.5% is distributed in a substantially homogeneous manner among the other High Schools (Humanities, Scientific, Linguistic). The output descriptive data shows some variation; in fact, the eP was handed in by the 48.2% of Pedagogical High School students, the 23.3% came from Technical and Vocational Schools students and the 29.5% add together the data of the other High Schools students.

The comparison between the ascriptive data reported may lead to the conclusion that there is a greater sensitivity to the eP on the side of the students who have already acquired a pedagogical training or who have attended schools more characterized from the vocational point of view.

* After this first analysis, given the large numerical difference between the input questionnaires and output ones, it was considered appropriate to filter the output questionnaires from the input ones, in order to operate a real comparison between the data detected in the two moments of the trail. It also worth emphasizing that the analyzed questionnaires were filled out by the students who built the eP.

Now, looking at the results of the data analysis for each Course.

- Didactic of the Educational Guidance (EGD).

About input data concerning the second section, only one person claimed to know, albeit vaguely, what an eP is. The output data (detected through the categorizing of the open answers provided by the students in relation to the purposes of the eP) show that the students said that eP is useful to show their skills (10.5%), to help them in guidance (10.5%), to reflect on their education (31.6 %), to reflect on their own learning process (5.3%), to help them in self-evaluation (15.8%), to encourage them in job searching (5.3), to build a picture of themselves to offer to the others in according to specific purposes (10.5%), to see the eP of others to communicate with them and meet new people (5.3).About the definition of what constitutes the overall structure of the eP (again through the categorization of open responses), it should be noted that the students believe that the structure of the eP: depends by the subject's personal decision on what to include (26.3%) and by the goals stated (31.6%); shows the profile of the person and his/her career (10.5%); must allow a simple intuitive and direct navigation (15.8%). To answer the question about what are the material elements to be included, the 68% of the students lists the different types of files and the 26.3% points out that the files should be selected according to specific objectives. Finally, all students believe that the eP should be accessible to classmates, teachers, friends, family, and only 15.8% added to this list even potential employers.

A critical analysis of these results shows that the pupils responded according to their lived educational experience, rather than making a general reflection on the characteristics of the eP, which also had been widely discussed and debated during the lessons and in *formonline*.

- Educational Strategies and New Communication Processes (ES).

About input data, only two students said they knew the eP, the one for hearing about it from acquaintances and another during a course. About output data, regarding the aims of the eP, the 40%

said that the eP is useful to reflect on their training, the 46.7% to build an image of themselves to propose to others according to specific purposes. On the characteristics of the eP structure, the 97% of the students replied by listing the Mahara characteristics; on the material composition of the eP, the 90% listed the different types of files, and only the 10% pointed out that the files (that represents artefacts) should be selected according to specific objectives. The 36.7% said that the eP is addressed to themselves, to classmates, to teachers, to family and friends, and the 63.3% also includes potential employers. The reading of these data shows that students of ES have identified the eP as an effective tool to reflect on their education (40%) and to show to others the outcome of this process (46.7%), in particular to a prospective employer (63.3%).

It is interesting to observe the different representation of the eP described by the students that follow the two Courses: students of EGD have just come to the University and have caught the eP dimension more related to reflection and to the search of useful elements for understanding their own learning process; students of ES are projected to a post-graduate dimension and got in the eP an effective tool to introduce them in the world of work.

The data relating to the section asking the student to provide a self-assessment of their skills in the use of new technologies (comparing the data before and after the construction of the eP), show that students of both courses have improved, even if only slightly, their skills in the use of word, calculation, and drawing processors. Some interesting results for other descriptors have been registered, as the table below shows:

Table3. *EGD: Input / output Questionnaires Comparison - "Relations with ICTs" Section*

	INPUT				OUTPUT			
	NULL	MINIMUM	GOOD	HIG	NULL	MINIMUM	GOOD	HIG
Indicate your level in the use of media files processing programs	10,5	36,8	47,4	5,3	///////	15,8	42,1	42,1
Indicate your level in the use of programs for uploading and downloading media files	10,5	15,8	52,6	21,1	///////	5,3	36,8	57,9
Indicate your level in the use of on-line platforms	///////	///////	52,6	47,4	///////	10,5	31,6	57,9

As far as the students of EGD are concerned, a marked improvement has been observed in the self-perception of their technological skills for the first two items included in the table: in the comparison between input and output, the choice "zero" disappears and the levels "good "and" high" greatly increase. In relation to the third item, there is a seemingly reverse trend because the choice "minimum" does not appear in the input, but appears in the output instead; it is also worth noting that the choice "good" loses about 20pp, which are distributed evenly in the choice "minimum" and "high". It seems that the work on an on-line platform has allowed the students to better understand what was their skill level about the same on-line platform and to figure out where it was overvalued in the input and where it had improved in the output.

Table4. *ES: Input / output Questionnaires Comparison - "Relations with ICTs" Section*

	INPUT				OUTPUT			
	NULL	MINIMUM	GOOD	HIG	NULL	MINIMUM	GOOD	HIG
Indicate your level in the use of media files processing programs	10,0	36,7	40	13,3	///////	16,7	46,7	36,7
Indicate your level in the use of programs for uploading and downloading media files	///////	13,3	60	26,7	///////	20	43,3	36,7
Indicate your level in the use of online platforms	20	40	26,7	13,3	10	6,7	60	20

Also in the course of ES a marked improvement in the self-perception, by the students, of their technological skills related to the first and third item is observed: the comparison between input and output levels shows a significant increase in "good" and "high". In relation to the second item, there is

a seemingly reverse trend because, in the output, the levels "minimum" and "high" increase while the choice "good" loses about *17* pp,which are distributed evenly between the choices "minimum" and "high". Also in this case the use of the programs has allowed the students to better understand what was their skill level about the management of multimedia files and to figure out where it was overvalued in the input and where it had improved in the output.

The four sections concerning the experience are inserted exclusively in the output questionnaire and are therefore more properly referred to the hypothesis of the research, where it is assumed that the compilation of a *showcase portfolio* is able to stimulate students to track training events that resulted in their choice of university study and that the web platform Mahara has the characteristics suitable for the construction of a *showcase portfolio* offering to the pupils a familiar and intuitive environment to navigate.

The sections concerns: the design of the eP in Mahara (63 items divided into three sub-sections: observations on the efficiency of Mahara, features used, functions considered useful); navigation in the eP in Mahara (14 items); impact of the construction of eP on the educational process (22); role and functions of the tutorial figures in the construction of the eP (10). In these sections, four predetermined responses are proposed for each question, articulated according to a Likert scale with four levels (Very, Enough, Little, Not at all).

About the functionality of the Mahara platform, the data point out that the majority of students of both courses (between 75% and 95%) respond in a positive way (Very & Enough) to requests; therefore Mahara is clear, intuitive, easy to use in its various services (create pages, diary, Cv, profile, manage files, privacy, groups, etc). On the request to indicate the usefulness of different functions, too, the majority of responses came on the percentage already indicated, except for some cases: to the question "Is it useful to consult the Mahara Guide in English?", the 82% of the answers stands at "Little & Not at all", while to "Is the *managing friends* function useful? (ask and answer to the contact, comment, etc.), "Is it useful to share thematic pages?", and "Is it useful to identify the goals on which to build the eP?", the percentage of responses reaches 100% (Very & Enough) in all cases. It can therefore be inferred that the Italian translation was adequate; that students have greatly appreciated the opportunity to work in a group with classmates and that the crucial role covered by the formulation of objectives in the construction of the eP was very clear.

Also on the request to indicate the fallout of the building of the eP on their training process, the pupils respond very positively (between 90 and 100% summing up Very & Enough); therefore they believe that this experience helps them to direct the learning process, to reflect on their strengths and weaknesses, to understand their growth. Moreover, the students relate these elements with the possibility to navigate in their classmates' ePs.

4.3.2. Comparison between Table of Events / ePortfolio.

As mentioned above, before building the eP, students completed the "Table of criteria for the selection of events" that had the purpose to guide them in the selection of the artifacts to be included in Mahara. It is interesting to observe what types of events (both positive and negative) have been quoted more frequently by students, and to verify whether these events have been inserted in the eP built in Mahara. It is important to remind that the students were free to choose the events they considered to be important in their education; then, as for the analysis and the interpretation of data, the events included were grouped using the same macro-categories for each field of research (Cognitive, Motivational, Emotional, Relational, Meta-Cognitive).

*(Key: in **bold** the greatest scores obtained by positive events* <u>underlined</u> *the greatest scores for negative events).*

Table5. *EGD - Type of mentioned Events - (Scores expressed in% - Each score is independent of the others and represents the percentage of students who have chosen the event described by the cross-reading of the Categories ascribed in the columns with the Fields placed in the rows)*

	Cognitive field						Motivational field		Emotional field		Relational field		Meta-cognitive field	
	To know & to understand		To assess		To apply									
Macro categories														
	Posi Tive	Nega Tive	Positi ve	Negat ive	Posit ive	Negat ive	Posi Tive	Negati ve	Posi Tive	Neg ative	Posi Tive	N eg	Positive	Nega Tive

												ative		
Education background	**48,0**	16,0	**60,0**	_**48,0**_	24,0	0,0	12,0	8,0	16,0	4,0	8,0	24,0	**52,0**	4,0
Family background	24,0	**20,0**	16,0	4,0	4,0	0,0	**40,0**	4,0	28,0	4,0	16,0	16,0	0,0	8,0
Social context	16,0	**20,0**	0,0	8,0	16,0	8,0	8,0	8,0	4,0	0,0	**20,0**	8,0	16,0	0,0
Formal education	12,0	0,0	8,0	**4,0**	44,0	0,0	8,0	4,0	4,0	0,0	0,0	0,0	12,0	0,0
Non-formal education	12,0	0,0	20,0	0,0	**36,0**	0,0	20,0	0,0	0,0	0,0	20,0	0,0	12,0	0,0
Informal education	**36,0**	0,0	4,0	0,0	8,0	0,0	16,0	0,0	16,0	0,0	16,0	0,0	0,0	**12,0**
Internal factors	12,0	**16,0**	4,0	**16,0**	4,0	12,0	20,0	4,0	4,0	24,0	**40,0**	8,0	20,0	0,0
Job experience	16,0	0,0	12,0	0,0	**24,0**	0,0	20,0	4,0	0,0	0,0	8,0	4,0	16,0	8,0
Role of Teacher	**44,0**	**40,0**	0,0	0,0	0,0	0,0	20,0	**40,0**	48,0	20,0	0,0	4,0	12,0	4,0

Reminding the events that have left the mark in their own learning, the students of EGD have attributed to the school the most important role in the construction of knowledge and meta-knowledge and in determining the development of the ability to assess themselves on the level of reached competencies. It must observed, though, that the students also attributed to the school the highest negative percentage referred to the assessment; obviously, the pupils recognized the school the task of teaching them to choose, reflect, evaluate, but they felt that school doesn't go the whole hog. Students weight the knowledge acquired informally very highly and believe they have developed operational skills mainly by attending extracurricular structured courses or organized events with specific training purposes.

Within the motivational field, family has played a crucial role in the positive sense. Teachers, on the other hand, failed to adequately motivate students in dealing with their educational path. Teachers represent the most contradictory element on the table, infact, on the one hand it results they promoted knowledge, understanding and affection towards studying, and on the other hand they have been very inadequate in the same Cognitive field and in the Motivational field, because they failed in pushing students towards the training. This demonstrates that the figure of the teacher has a central role in the education of pupils, a role that, even after a long time, is remembered among the events that have determined attitudes and choices towards formation, both in a positive and in a negative sense. The students of EGD do not give great importance to social and work contexts, whereas they recognize a consistent weight to their personal characteristic in guiding their decisions.

Even the process of reflection undertaken by students of ES led them to attributing to the school the most important role in the construction of their knowledge and meta-competencies and, to a lesser extent, in determining the development of the ability to assess themselves on the level of reached competencies. The pupils also weight much the knowledge acquired informally and those competencies reached thanks to the teachers. However, teachers do not have any weight in the other fields observed. Experiences at work appear to have the greatest weight for the acquisition of the competencies on application and assessment; students believe that the events related to working experiences have allowed them to develop operational capabilities and decision-making. The students think that also attending to extracurricular structured courses and organized events with specific training purposes have an important role in the acquisition of practical skills. Within the motivational and emotional field, the students believe that the greatest weight is determined by internal factors, that is from events that have highlighted a positive or negative attitude of the subject, a personal attitude, a particular frame of mind. Students of ES do not give great importance to the events that concerned social context and family.

The comparative reading of the two tables and the verification of the artifacts included in the Mahara eP, stress the difference between the types of students who follow the two courses. Students of EGD (Degree Level I) have still in mind the memory of events that occurred in the school and in the family,

and especially recall the events related to specific behaviors of teachers who have had a profound effect on the perception of their competencies and, consequently, on the courses of study they have undertaken. Most of the students of SE (Bachelor's Degree) have already had work experiences; therefore, while recognizing the importance of the school in their training and decision-making, they mainly related to events regarding their work experience.

Table6. *ES - Type of mentioned Events - (Scores expressed in% - Each score is independent of the others and represents the percentage of students who have chosen the event described by the cross-reading of the Categories ascribed in the columns with the Fields placed in the rows)*

Macro categories	Cognitive field						Motivational field		Emotional field		Relational field		Meta-cognitive field	
	To know & To understand		To assess		To apply									
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
Education background	**72,7**	9,1	**33,3**	9,1	18,2	0,0	18,2	3,0	27,3	12,1	30,3	12,1	**66,7**	<u>15,2</u>
Family background	12,1	12,1	3,0	3,0	6,1	0,0	**33,3**	<u>12,1</u>	30,3	9,1	12,1	0,0	15,2	0,0
Social context	6,1	0,0	9,1	6,1	3,0	3,0	6,1	<u>12,1</u>	6,1	9,1	**27,3**	9,1	18,2	18,2
Formal education	27,3	0,0	30,3	9,1	**63,6**	6,1	12,1	0,0	9,1	3,0	30,3	0,0	33,3	6,1
Non-formal education	**33,3**	0,0	24,2	12,1	**36,4**	3,0	18,2	0,0	9,1	0,0	**30,3**	0,0	**33,3**	0,0
Informal education	**21,2**	0,0	9,1	0,0	0,0	0,0	3,0	3,0	15,2	0,0	9,1	0,0	**24,2**	3,0
Internal factors	9,1	12,1	30,3	9,1	9,1	6,1	**36,4**	<u>18,2</u>	45,5	15,2	33,3	<u>21,2</u>	24,2	15,2
Job experience	24,2	3,0	**45,5**	<u>15,2</u>	**75,8**	12,1	18,2	0,0	12,1	6,1	27,3	0,0	21,2	9,1
Role of Teacher	**42,4**	<u>18,2</u>	6,1	3,0	0,0	0,0	6,1	9,1	18,2	12,1	9,1	3,0	12,1	3,0

It has also been found that only about 30% of the events mentioned in Table of Events were included in the eP; for example, on 24 students that, in the Table, have referred to the school context, only 8 of them have inserted the same specific events in the eP. One reason could be the fact that it was not possible to document all the events mentioned, as the students said during the lessons.

5. FINDINGS

Being aware that a research carried out within the methodological framework of the case study does not allow any kind of generalization, but can only detect signs of trend, we can affirm that the experience was very positive, as the results of input and output questionnaires administered to students show.

In particular, we can observe that the students have very clearly understood the sense of building the eP: formulating goals, compiling the "Table of the Events", researching the documents to elaborate in electronic format, constructing artefacts, using the Mahara platform. They also figured out that the function of the eP may be that of: a tool that can assist them in the educational process, a valuable support for reflection on their own learning, a virtual context in which develops individual and relational competencies.

A very interesting result, not explicitly stated in the research hypothesis, occurred about the use of ICT: students have improved their use of new technologies and this seems particularly interesting considering that the pupils, because of their age, are very familiar with the latest technological devices.

A critical element can point out that, in the course of EGD, we did not succeed in transmitting students the consciousness that the eP is also a *projective* tool that can surpass the experience made, even if it revealed strong and exciting. On this respect, some observations can be made. The first is

about teaching: although during the course the eP was described in detail in its different types and functions, probably the teacher has not provided the students with an effective indication aimed to the construction of a section of the eP conceived for their future professional career. The second observation is methodological: this experience was the first experimentation of the eP in our Department; therefore it has been impossible to develop its real potential, which can be implemented only over time.

Thereupon, Swenson (Swenson 2012) notes that in the Universities eP is often used by the teachers of specific courses as a tool to make an ongoing evaluation related to their discipline and by the students to carry out activities of reflection and meta-cognition. Swenson proposes to build an electronic portfolio that can provide a network of wires (*tenure files*) between the various teachings and, one might add, among the extracurricular experiences lived by the students.

It is hoped that this first use of the eP can lead the way for a progressive and more systematic acquisition of this tool by the Department, or at least in the Degree Course, by extending, for next year, its building within further courses of study; in time, it might be possible to get to realize a tool that can accompany the pupils in their academic career, not just in single lessons/courses. Thus the ePortfolio could absolve the task of supporting the students in meta-reflection meta-cognition, while providing them the evidence to reflect on in view of an ongoing and diachronic-training guidance during the academic, and a projection towards the future world of work.

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