VAB: an ePortfolio used to record and assess competences of adult students

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Introduction

According to the definition of a portfolio as an organised collection of materials that presents and verifies skills and knowledge acquired through experience it is of particular relevance to validating non-formal and informal learning because it allows the individual to contribute actively to the collection of evidence and also offers a mix of approaches strengthening the overall validity of the process. An eportfolio additionally offers increased capacity to accumulate data that can provide the audience with greater insights into the achievements and successes of the learner.

The eportfolio presenting in this paper is the product of the VAB (VAluing experience Beyond university) project[1]. The VAB project aimed at proposing an eportfolio as a pedagogical tool that along with an e-training would allow University teachers to take into account any competences acquired via non-formal/formal learning outside university, in order to assess their students. The VAB project via the eportfolio developed enables teachers to value the personal, social and professional experience of their students acquired beyond the University in order to enhance their professional integration. The main issue of the VAB project was to bridge the gap between University and the labour market by proposing a pass between theoretical/practical learning and professional skills and competences required by the labour market through a pedagogical tool proposed to University teachers/trainers.

This paper presents the VAB web based ePortfolio platform, basic elements of its structure, an example of its usage, the main outcomes of the evaluation procedure as well as topics for future consideration that have arisen during the project.

eportfolios

A portfolio may be defined as a purposeful collection of student work that tells the story of a student's effort, progress and/or achievement in one or more areas (Arter & Spandel, 1992; MacIsaac & Jackson, 1994). According to this portfolios involve students in their learning (as a tool for reflection); allow students to increase their ability to self-assess; teach students to make choices; encourage students to better understand themselves and focus on their strengths; allow students to reflect on their procedures, strategies, and accomplishments so that they can improve and correct them and ultimately succeed; promote feedback during the learning process, particularly during individual conferences; encourage students to reflect on their strengths, needs, errors, interests, challenges, and objectives; encourage interactive processes among students, teachers, and parents; shows student progress because it tracks performance over time; and they are used to assess competencies developed by students (Wad, Abrami & Sclater, 2005).

Nowadays, digital or electronic portfolios (eportfolios) offer additional advantages as:

- Digital portfolios provide an effective means for cataloguing and organizing learning materials, better illustrating the process of learner development.
- Students can easily integrate multimedia materials, allowing them to use a variety of tools to demonstrate and develop understanding.
- Students can develop their Information and Communication Technology (ICT) skills through the creation of multimedia work and use of the tool.
- Student work becomes easy to share with peers, teachers, parents and others, and lets students and others provide feedback through a single electronic container.

- Digital portfolios provide remote access to work for students to complete homework or when otherwise learning at a distance from school.
- Digital portfolios provide remote access to student work for teachers for review and assessment purposes.
- Digital portfolios provide an opportunity for greater and improved communication with parents.

To effectively use portfolios for assessment, a learning organization needs to establish a culture of evidence. Evidence in an electronic portfolio is not only the artifacts that a learner places there; to be considered evidence of learning, the artifacts need to be accompanied by the learner's rationale, or their argument as to why these artifacts constitute evidence of achieving specific goals, outcomes or standards. Furthermore, just because a learner makes the claim that their artifacts are evidence of achievement, the evidence needs to be validated by a trained evaluator, using a well-developed rubric with identifiable and specific criteria.

Numerous analysts and researchers have outlined the potentials and researched the impacts of ePortfolios, all finding that they have immensely improved organization and learning processes, at levels ranging from simple personal use through higher educational institutions. Moreover, despite the trend of modern technologies commonly costing the user increased amounts compared to previous technologies or methods, the ePortfolio is actually more cost-effective in addition to its enhancements (Wad, Abrami & Sclater, 2005).

Batson (2002) reported that ePortfolio implementations had taken place on numerous campuses, while it is common knowledge that the rise of distance education and other online mediums in standardized education have continued to increase at a dramatic rate. Batson (2002, p. 3) stated, "*students seem most interested in the ways ePortfolios can flesh out their resumes, both before and after graduation. If internship interviewers or potential employers can see an online resume that includes views of a student's actual work, that student may be more likely to obtain the position. Students also want to see where they are in their college career regarding requirements. ePortfolios can facilitate this*".

in-formal and not formal learning

Informal learning is resulting from daily activities related to work, family or leisure. It is not organised or structured in terms of objectives, time or learning support. Informal learning is mostly unintentional from the learner's perspective.

Non-formal learning is embedded in planned activities not always explicitly designated as learning (in terms of learning objectives, learning time or learning support), but which contain an important learning element. Non-formal learning is intentional from the learner's point of view.

Nowadays main tools adopted in Europe to describe what each one in general and in particular, students "*know, understand and/or are able to demonstrate*" at the end of a (*formal, informal or not formal*) learning process especially the concepts of *knowledge*, *skill*, *responsibility* and *autonomy* (*competencies*) on which are based the descriptors of the *European Qualification Framework for Lifelong Learning* (*EQF LL*) and for *Higher Education* (*EQF HE*).

In this frame European Commission sets out the eight key competences: *Communication in the mother tongue; Communication in foreign languages; Competencies in Maths, science and technology; Digital competence; Learning to learn; Interpersonal, intercultural and social competences, and civic competence; Entrepreneurship; Cultural expression.*

VAB ePortfolio Platform

The VAB project concentrated on the innovative approach of the VAEB project[2] (Valuing non-formal and informal learning on the basis of voluntary experience) and tried to extend it to other types of non-formal and informal learning (*personal, social and professional experiences*).

The VAB project (VAluing experience Beyond the University) is a Transfer of Innovation supported within the Leonardo da Vinci programme, funded by the European Commission under the Lifelong

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[2] http://www.eeuropeassociations.net/eeuropeassociations.gb.htm.

Learning (LLL) program. It consisted of Universities and experts in lifelong learning in 5 European countries: France (University of Evry val d' Essonne, leader of the project and iriv conseil, coordinator), Austria (die Berater), Greece (Hellenic Open University), Eire (University of Limerick) and Slovenia (University of Ljubljana). Hellenic Open University was responsible for the development of the project's eportfolio.

The common aim of the two projects was to value skills and competences neglected by the labour market while it has become crucial for the employability to meet the current needs of the employers.

A great effort was put for the ePortfolio developed to be a modular, easy to use, ergonomic and attractive environment. In this direction an Administrator environment, a Professors/Teachers environment and a Students environment as well as a Smart assistant module were developed.

The basic responsibilities and tasks for VAB administrators are to:

a. Register a new professor or student to the system

b. Assign students to professors

Professors/Teachers after registration and receiving their usernames and passwords via email (automated) they are able to:

a. Log in http://www.vab-univ.eu/ (eportfolio portal)

b. View the assigned student's portfolio and study its content (the students' submitted experiences).

c. Certify, Validate, or Reject the experience of their students. Professors/Teachers are responsible to offer guidance to their students, to extract the students' skills and

figure 1: A screenshot of VAB ePortfolio student's environment with the Smart Assistant on the right

competences from their description through experiences of informal and non-formal education, to assess them and to make further suggestions to the students in order to improve their competences. In the case of rejection students have to resubmit their experience after making proper changes according to their professor's suggestions and comments.

d. Review the corrected experiences and re-assess them

Students after their registration receive their usernames and passwords via email (automated). Once a student is assigned to a professor, he/she has to submit his/her experiences for evaluation. They are able to:

1. Use the username and password to log in to the link: http://www.vab-univ.eu/ (visit the tab "eportfolio" and then "my eportfolio"). He/she adds a new experience

2. Create the new experience by filling a form having certain fields (title, category of the experience, duration of the experience, description of the skills required for this, uploading a file with a certification for the experience acquired)

3. Summit the experience for evaluation

4. Improve the experience according to their teachers' comments and resubmit the experience if the first evaluation is asking to do so

5. Receive (print) a certification of validated skills and competences that are related to the specific experience
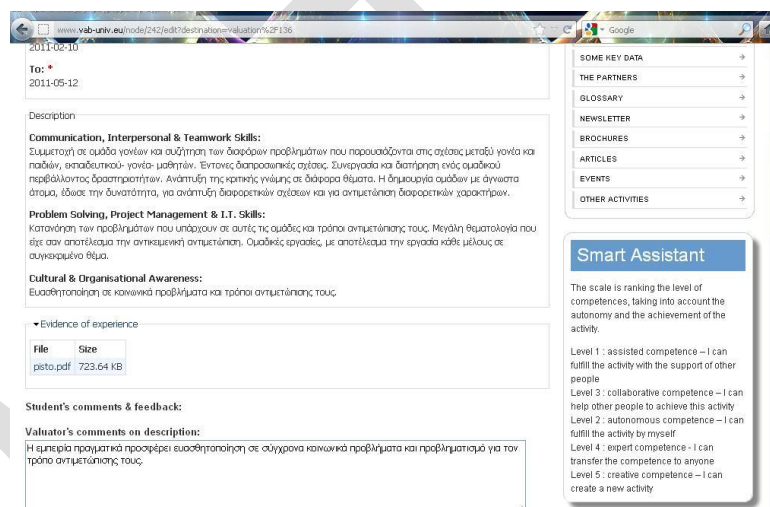
Both Students and Teachers while working with the eportfolio can receive help by the *smart assistant* (on the right side of the screen) as well as by the drop-down menus which appear in almost each field of the form, consisting of lists with skills and competences as well as helpful questions.

Students may describe their experiences/activities in one of the following domains:

- Sport, culture and art activities
- Involvement in association and active citizenship
- Professional activities
- Transnational /mobility activities

They may describe skills and competences they have acquired by filling in certain fields of the eportfolio, concerning:

- Communication, Interpersonal & Teamwork Skills,
- Problem Solving, Project Management & I.T. Skills
- Cultural & Organizational Awareness

They had also to provide evidence of their participation in the activity they describe (a certificate, a recommendation letter, etc).

Professors/Teachers have the ability to study their student's recorded experience, to assess and comment it, to correspond certain competences gained from the experience and judge a level of achievement for each competence.

Professors/Teachers may Competence:
- *Instrumental competences* (Analysis and synthesis, Planning and time management,

General knowledge in a field of study, professional, cultural, artistic... domains, Oral and written communication in the native language, Oral and written communication in a foreign language,

Elementary computing, Information management (ability to retrieve and analyse information from different sources), Problem solving, Decision-making)

- *Interpersonal competences* (Critical and self-critical, Acting or working in a teamwork, Interpersonal relations, Leadership, Acting or working in an interdisciplinary team, Communication with non-experts in different domains, Appreciation of diversity, Acting or working in an international context, Ethical commitment)

- *Systemic competences* (Grounding in basic knowledge of a domain, profession... in practice, New ideas production (Innovation, creativity), Learning, Adaptation to new situations, Leadership, Ability to work in an international context, Understanding of cultures and customs of other countries, as well as multi & cross cultural interactions, Autonomously acting or working, Project design and management, Quality, Willing to succeed)

A 5-levels scale is used to rank the level of competences, taking into account the autonomy and the achievement of the activity.
- Level 1 : *assisted competence* – I can fulfill the activity with the support of other people
- Level 2 : *autonomous competence* – I can fulfill the activity by myself
- Level 3 : *collaborative competence* – I can help other people to achieve this activity
- Level 4 : *expert competence* - I can transfer the competence to anyone
- Level 5 : *creative competence* – I can create a new activity

Students and Professors/Teachers or/and Career Advisors were offered a set of e-training modules as well as the smart assistant to assist them on the use of the eportfolio tool. Additionally, most of the Professors/Teachers or/and Career Advisors participated in an on-line seminar on the use of eportfolio, on the mapping of gained skills and competences to their students' activities and on the valuation as well as on the procedure of the experimentation (pilot phase).

Professors/Teachers or/and Career Advisors offered their students information about the aims and the content of the project and explanations/help needed while completing the eportfolio.

VAB Web Portfolio Specifications

VAB Web Portfolio and **Smart Assistant** are built as Drupal 6 modules. Drupal is an open source modular Content Management System written in PHP programming language. Drupal uses the MySQL data base system for data persistence. The Drupal Core libraries and modules provide basic functionality including System bootstrapping, Database abstraction layer, Caching, Access control, HTML Form system and API, File management API, E-mail system and API, Menu system and API, Path system and API, Theming system and API, Localization and translations system and API, User and session system and API, Node system and API, Logging system and API, Taxonomy system and API, Actions and Triggers system and API, and JavaScript/AJAX API.
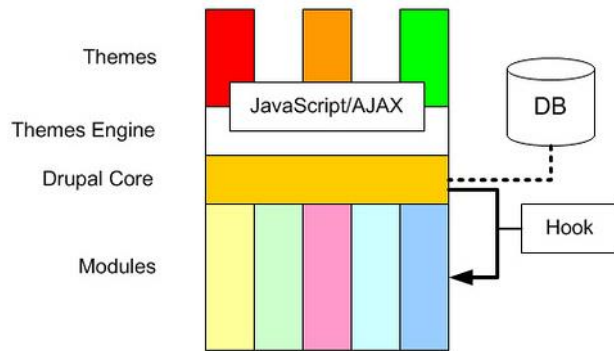

Figure 2: The Drupal architecture

Drupal functionality is extended through contributed modules and themes. Modules implement new functionality and plug it into the Drupal system. Modules can access the database through the database abstraction layer, enforce access control and define user permissions, alter the behavior and appearance of Drupal core components and content, and interact with other modules. Modules interact with Drupal core and with each other using special functions called hooks. To extend Drupal, a module needs to implement a hook. When Drupal wishes to allow intervention from modules, it determines which modules implement a hook and calls that hook in all enabled modules that implement it. Drupal themes use the phpTemplate theming engine and CSS to control the appearance of the web application. In Figure 2 the Drupal architecture is presented.

In this frame two Drupal modules were implemented, the **VAB ePortfolio module** and the **VAB Smart Assistant module**.
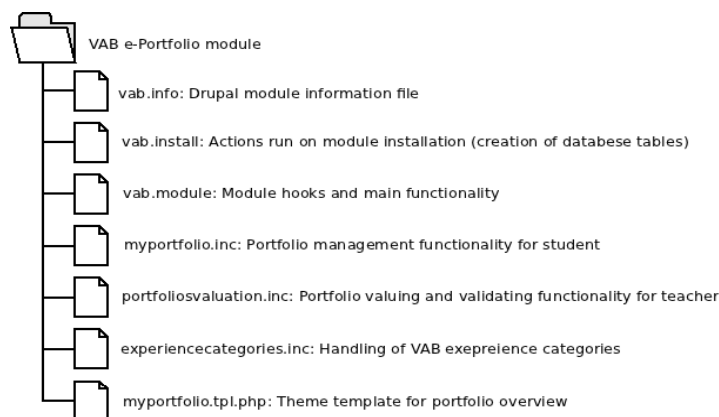

figure 3: VAB ePortfolio module architecture

The **VAB ePortfolio module** materializes the functionality of VAB ePortfolio. In VAB ePortfolio module the student and teacher user roles and access rights, as well as the vab_experience node type for representing the experiences of the students are defined. The VAB ePortfolio module implements the management of student's portfolio with overview, creation, editing and submission of experiences for evaluation, as well as student experiences' valuation and validation by teachers.

It also implements administrative functionalities such as registration of users and student to teacher assignment. Furthermore, the VAB ePortfolio module extends Drupal user profile module by defining VAB specific profile attributes for students and teachers. It also uses the Drupal actions and triggers system for sending automatic email notifications to users.
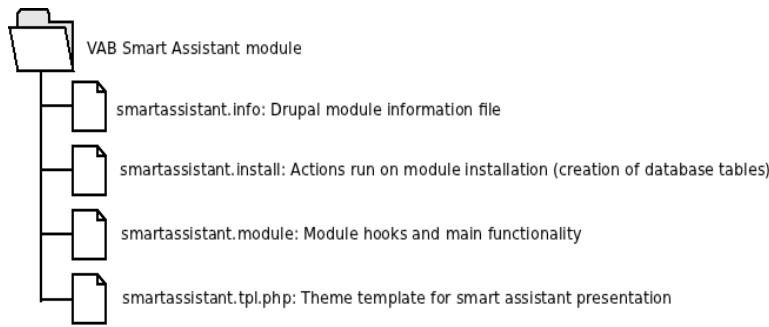
figure 4: VAB Smart Assistant module architecture

The **VAB Smart Assistant module** materializes the Smart Assistant functionality and is dependent on the VAB ePortfolio module. The VAB Smart Assistant module uses dynamic HTML and client side JavaScript scripting for providing useful live information and guidance to the user as he/she edits or validates a portfolio. The Jquery javascript library is used for providing interactive change of the content displayed by the smart assistant, based on the user's actions.

Usage example

Let suppose that student X recorded his experience coming from his involvement in a water polo team. He entered the Vab eportfolio student's environment, recorded the time period of his involvement, selected the *Sport, culture and art activities* experience category, put a characteristic for the experience title and described analytically his role and his activities in the frame of the specific experience. According to his opinion he gained *communication, interpersonal and teamwork skills* and he wrote down his

figure 5: A screenshot of the Student's experience recording

arguments to support this opinion guided by the smart assistant.

He also attached a certification to confirm his active participation in the water polo team.
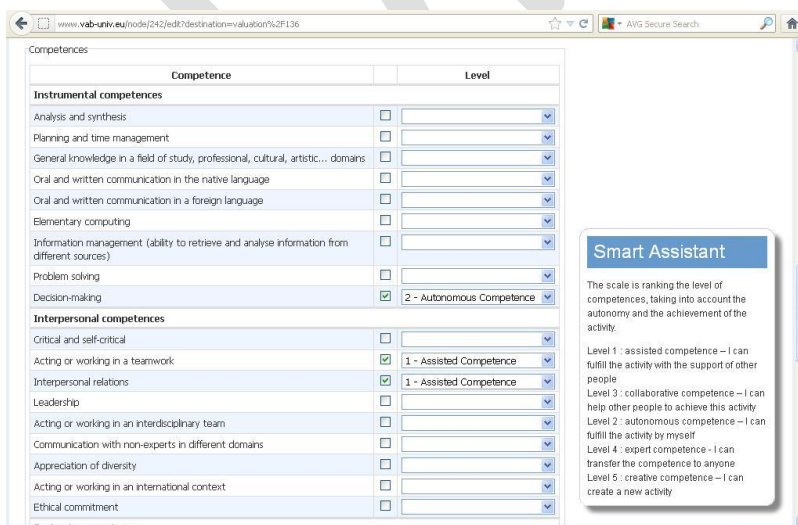
figure 6: A screenshot of the Student's evaluation procedure by the Professor

The assigned Teacher on the other hand, entered the Vab eportfolio Teacher's environment, studied his student's recorded experience, assessed it and corresponded certain competences to his student's activities as well as the level of their achievement.

More specifically, according to his assessment, the teacher judge that his student gained competences for *Decision making* at *Level 2 – autonomous competence*, *Acting or working in a teamwork* at *Level 1- Assisted Competence*, *Interpersonal relations* at *Level 1-Assisted Competence* and *Acting or working in a teamwork* at *Level 1 Assisted Competence* as well.

Pilot use and Evaluation Issues Discussion

A pilot use (experimentation phase) of the VAB eportfolio and its evaluation took place from September 2011 to December 2011. During the experimentation phase teachers and students from the participant countries used the VAB eportfolio. In Greece thirty (30) students filled in their eportfolio and fifty nine (59) experiences/activities were recorded (ranging between 1-3 activities per student). Sixteen (16) Professors/Teachers valuated their students' activities.

The procedures and the tools used for the evaluation included semi conducted oral interviews with teachers and students before and after their experimentation with the eportfolio and written on-line questionnaires for teachers and students after the use of the eportfolio. Questions included in this tools concern the familiarization with the practice of recognising informal and non-formal learning, the easy of use and the friendly environment of the Vab eportfolio, the role of civic engagement and competences gained from informal and non formal learning in academic life and employment.

Three workshops were also organized in Patras, in Athens and in Thessaloniki. In all the workshops Managers, Senior Employees of Public Authorities, Representatives from public and private Educational Authorities, University Professors, Career Advisors, Adult Education and Training Organizations and Non-profit Organizations participated. During the workshops, all the procedures of the VAB project as well as the results of the project were presented. A deep discussion on the theme of the project took place by collecting and exchanging ideas, opinions, thoughts and questions coming from all the participants' views. The main topics of discussion focuses on: a. Exploitation of non-formal skills in Employment and Career (Employers and people in charge of Public Authorities, Educational Authorities from the public and private domain, Non-profit Organizations participated), b. The role of the University in evaluation and certification of informal and non formal skills/competencies through the use of a digital portfolio (eportfolio) (University Professors, Career Advisors, Adult Education and Training Organizations participated), c. The usefulness and exploitation of ePortfolios like the Vab one.

After taking into account the Professors'/Teachers' answers to the interview questions (before and after the experiment) as well as to the questions of the on-lime questionnaire, the following conclusions can be pointed out:
All the Professors/Teachers claimed that it was easy to handle technically the tool in order to assess students' skills based on students' descriptions, but almost all of them faced contextual difficulties to assess students' skills according to one of the five 'levels' (1-assisted Competence, 2-Autonomus Competence, 3-Collaborative Competence, 4-Expert Competence, 5-Creative Competence) for each acquired skill.

Their proposals to overcome this difficulty are:

Students should describe in more detail what exactly his/her role was in the activity, what activities they carried out, what was the result of his/her effort. A certificate is not enough for evidence. More qualitative data are needed. An interview with the student could offer useful information to the teacher to assess student's competences. More explanation is needed in order for the five Competence levels to be used suitably. A more detailed introductory text should be included in the project portal. A more analytical documentation is also needed. The e-training modules focused on providing technical aid to the users, while they (Professors and students) needed help on the concept and the meaning of evaluating competences gained from volunteering, informal and non-formal education activities. Some analytical and practical examples for both the Professors and the students should be included. The examples could explain in a practical way how to describe the acquired skills for the students and how to assess by the teachers.

The majority of the Professors/Teachers stated that tools like the Vab project eportfolio could be used in evaluating procedures of non-formal skills. They should suggest the usage of such tools to their colleagues but they have additionally proposed the following:

More than one teacher should assess the competences derive from one student's experience in order for the evaluation to be fair, accurate and valid. Every teacher can assess in an accurate and valid way only a small number of his students' competences. During the evaluation procedure it is important for the teacher to have personal communication with the students under evaluation, to discuss with them and form a personal opinion for him/her. A valid evaluation is not possible to be done based only on paper evidence. Professors/Teachers should be educated (trained) in evaluating competences. A More

detailed categorization of the competences might be helpful. A categorization of competences according to the employment needs is necessary.

A portfolio like the VAB project one could be introduced in the academic system but it might be difficult for the Greek academic system and the Greek community to accept it since it stands out of the culture of most members of this community. Awarding Credits to non-formal skills may not be the best solution. An official report describing the students' assessed skills or a recommendation letter describing student's activities and competences, could accompany his/her degree. The concept of valuing informal and non-formal learning is important. Civic engagement should be recognised in some way because involved students may develop a wide range of skills and competences that they could not develop through their studies. During civic activities they behave as actors in the real world in an effort to support other people trying to have an impact in their community. Civic engagement might also be a part of students' academic life. Employers should accept official reports coming from the university and concerning students' non-formal skills.

After processing the Students' answers to the interviews' questions (before and after the experimentation) as well as to the questions of the on-lime questionnaire the following can be pointed out:

Students found the ePoortfolio environment easyto use and the Smart assistant module very helpful. They managed to describe skills based on their experience but they asked for some education/training on the topic. They suggest a short seminar explaining the basics and the procedure for describing skills and competences gained from informal and non-formal education. Practical examples of describing competences acquired from volunteering activities would also be helpful. The university academics could suggest the tool to other young people if there were offered credits for non-formal skills.

According to the discussions during the three workshops, among Professors, Teachers, Career Advisors, researchers, representatives from public authorities and public or private institutes, it can be concluded that:

The added value of non-formal skills has been recognized in practice and has been considered essential, especially in vocational guidance procedures. However, there are some 'red lines' on what 'should' and what 'can' be assessed. Key problems in the whole procedure are 'how' non-formal skills can be measured, in 'what context', 'what methods' and 'what tools' are needed, in order for the ''measurements' to be valid and reliable.

The necessity of the evaluation of non-formal skills is recognized by the society nowadays. Non-formal skills are horizontal skills, useful to any profession and as important as life skills (communication, problem solving, teamwork, creativity, initiative, etc.). They can offer a "competitive advantage in the labor market" as they have been gained in practice by individuals, they constitute important evidence of participation in non-formal activities and can make the difference in employment and society in general.

Today there is a tendency for employers to prefer employees having well developed soft skills (soft-skills such as communication, organization, teamwork, etc.) since there are many people seeking for a job with a variety of qualifications. Therefore, there is needed a method of discrimination and selection of appropriate employees among many having similar qualifications (hard skills).

A classification of non-formal skills per specialty and per field of science would be useful and important. Nevertheless, a debate about the certification of non-formal skills is growing.

The issue of granting credits to non-formal skills is the basis of an intense debate. Young persons should be governed by an internal motivation for their participation in activities of informal and non formal education. Credits should not be a motive for them order to be engaged in such activities.

The European Credit System for Vocational Training (ECVET) is more related to the employment and skills needed in this area so it could be more appropriate to be used for the certification of non-formal skills by the ECVET system. In Greece, National Organization for the Certification of Qualifications and Vocational Guidance (NOCQVG) is the official authority for the accreditation of qualifications coming from different career paths of a person. NOCQVG could have the role of the official authority responsible for the accreditation of bodies providing non-formal education.

Certification of non-formal skills should be distinguished in two types of certification: a) Certification of skills, b) Certification of the certification process.

The eportfolio developed during the VAB project was assessedd as a useful tool:

- for the evaluation of the skills gained by students during their work placement

- for keeping record of students' abilities that is kept Structures of Employment and Carrier in Universities

- for the assessment of workshops, theses, dissertations, laboratory courses and projects during students' studies at any level

- for the Personal Development Program (a program for the development of soft skills such as communication skills, skills in presentations, etc.), of the Athens University of Economics and Business. In the frame of this program, students participate in discussion groups on various topics such as networking, self-evaluation, job search techniques etc. The VAB tool could be used to track the evaluation of the above activities.

- To accompany the employer's interview with the candidate employee. Every employer wants to know about his candidate employee's skills creativity, cooperation, communication.

- To replace the first interview between an employer and the prospective employee: the employer initially studies the portfolio of the candidate and during the interview explores in detail positive or negative points identified in it.

- As an extended recommendation letter or an official degree supplement provided by the University.

Finally, as noted by all the participants in the pilot use of the eportfolio, the use of the portfolio was an interesting learning experience for both sides (teachers and students) that could change the way of communicating.

Conclusions and future enhancements

Overall, the design and development of the VAB ePortfolio platform was considered to be a useful experience by the participants (researchers, students and University professors). Nevertheless, a few reservations were expressed regarding, among others, (a) the universal applicability of the approach, (b) the need to customize the list of knowledge, skills and competences per subject, (c) the role of University professors as evaluators or coaches, and (d) the validity of the assessment with respect to the topic of studies.

VAB future enhancements include functionalities that allow students to export their valued resume in xml format and contact teachers and other students through live chat. Smart Assistant module will be enhanced with richer context – aware information and more interactive behavior. In the near future would also plan to implement VAB portfolio as a plugin for Mahara open source eportfolio and social networking system. We plan to implement a VAB Portfolio artefact plugin for Mahara that will give Mahara users the ability to add their experiences and maintain their VAB portfolio inside Mahara.

Acknowledgment

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