USE OF E-PORTFOLIOS IN EDUCATION

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Abstract

E-portfolio is commonly used to support evaluation process in all forms of education. It is considered to be a very useful tool by many professional organisations, working groups, projects and it is the leading topic of many conferences and workshops. These initiatives drive the development of e-portfolio and enhance its using with new technologies in education. By their activities – studies and methodical support – initiatives directly influence governments and especially education practice. The very important result is improving frequency of using e-portfolio during learning process and verification of effectiveness of the new technologies. The article offers detailed comparison of e-portfolio initiatives and shows connections and its possible application in the area of the Czech Republic.

Keywords

education, educational system, evaluation, e-portfolio

Introduction

Evaluation is currently widely discussed topic. Eurydice (Eurydice, 2011), OECD (OECD, 2012) and other European and world organisations regularly inform about this field. One of the observed tendencies is a gradual departure from summative and normative assessment, i.e. from those forms, which separate assessment from other aspects of education, they do not see a student as a partner in the education process and they do not perceive their self-awareness and distinctiveness as a base for their mutual relationship. Innovative approaches, which belong to this field, are e.g. introducing individual norms for every student, dispersing their doubts and concerns about negative assessment, encouraging student's participation in education, emphasizing self-presentation and self-understanding and paving the way to metacognitive thinking, during which students reflect on themselves the process and meaning of their learning (Suskie, 2009).

A number of published international surveys support this trend worldwide and this trend manifests itself in national and supranational conceptual and curricular materials as well. The importance of assessment is also obvious in the revised Bloom's taxonomy of learning objectives for learning, teaching and assessment, in which evaluation is placed on the second highest place in the cognitive domain. Equally, metacognologists define evaluation as the fourth highest level of the cognitive domain, before which they place knowledge of facts, conceptual knowledge and procedural knowledge. Mainly these innovative approaches to education require new stimuli of tendencies in education. One of the ways to achieve these attempts is to use evaluation tools. Pupil's, or student's portfolio, belongs to one of them, and it is also the topic of this article.

From the local school education programmes for primary (ISCED 1 and 2) and secondary schools (ISCED 3) and their guidelines for assessing education and student learning, it has been obvious recently that Czech schools are aware of current international trends in assessment and evaluation and they try to implement them into their curricula, which is possible due to the reform of education approved by the government in 2004. They also reflect the issue of portfolio assessment even though it is not stated in the Framework Education Programme for Basic Education (VÚP, 2005). Czech universities and high schools approach this type of evaluation differently and work with portfolios is usually done within departments (Tomková, 2008), exceptionally faculties (Svatoš, 2008).

The use of e-portfolio in education

Due to a considerable fragmentation of information in the use of portfolios in education, the attempts and initiatives which try to uncover its advantages, but also difficulties in implementing and using portfolio in education, are very important. These facts are underlined by the fact that portfolio has been making its way into its electronic version as e-portfolio (Lorenzo, Ittelson, 2005). For the purpose of an easier overview and understanding opinions on e-portfolio better, interesting world organisations, surveys and projects were chosen, which deal with this area and they can serve as valuable sources for deeper contemplation of portfolio evaluation. The part showing the use of portfolios in our country forms an integral part of this article.

Organisations worldwide and their activities

Within their activities, or having it as their main activity, a number of significant national and supranational organisations deal with e-portfolios. This characteristics concern mainly the following institutions:

European Institute for E-Learning[1] (EIfEL) is a not-for-profit association whose mission is to support organisations, communities and individuals in building a knowledge economy and a learning society through innovative and reflective practice, continuing professional

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[1] http://www.eife-l.org

development and the use of knowledge, information and learning technologies. EIfEL holds the International ePortfolio & Identity Conference (ePIC conference), it was also leading the Europortfolio consortium and was a founding member of The European Foundation for Quality in E-Learning (EFQUEL).

Europortfolio[2] is a consortium that promotes the use of e-portfolio in education. It contributes to the definition of technical standards, interoperability between portfolio and other portfolio-related technologies and services, establishes a reference platform implementing standards, updates current occupational standards of competence to promote the use of ePortfolios, provides support to and coordinates European initiatives with other national and international initiatives, mobilizes resources required to achieve its mission. It was set up by EIfEl and the following organisations.

European Foundation for Quality in eLearning[3] (EFQUEL) is a European foundation, the aim of which is to improve the quality of e-Learning within the EU by means of providing support within excellence and innovation. It is a network with over 100 members such as international corporations and universities and it has launched a range of worldwide projects. Its members meet regularly in order to share their experience. They have also an access to a range of sources and databases in the field of e-learning.

European Schoolnet[4] (EUN) is a network of 30 countries in Europe and beyond. It brings innovation in teaching and learning by means of supporting ICT, cooperation of schools and sharing their experience. Its stakeholders are ministries, schools, but also teachers and researchers. In the Czech Republic, we use EUN services to share good practice examples in ICT and to join the projects initiated by the European Commission. The Centre for International Services[5] is a coordinator of their activities. In 2010, the following European survey was published: *Review of National Curricula and Assessing Digital Competence for Students and Teachers: Findings from 7 Countries*. It deals with assessing digital competence of pupils, prospective teachers and teachers and ePortfolios are mentioned in connection with the ability of assessment and self-assessment (Balanskat, Gertsch, 2010).

Centre for Educational Technology and Interoperability Standards (CETIS) supported by non-governmental educational organisation JISC was mentioned in connection with the Leap2A standard. In the past, CETIS co-financed the projects by the British Newcastle University[6], working on its own ePET e-portfolio[7] and in connection with portfolios in 2005-2009 it realized two projects called EPICS[8]. Within these activities and in cooperation with other British universities, CETIS worked on case studies concerning ePortfolios in education. In 2008, JISC published the publication *Effective Practice with e-Portfolios*, which sums up its current JISC-funded projects in the form of a guide with effective instructions for the use of ePortfolios and

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[2] http://www.europortfolio.org
[3] http://www.efquel.org
[4] http://www.eun.org
[5] http://www.dzs.cz
[6] http://www.eportfolios.ac.uk
[7] http://www.eportfolios.ac.uk/ePET
[8] http://www.eportfolios.ac.uk/EPICS

examples of good practice as a support to learning and teaching and as an aid to progression to the next stage of education or to employment (JISC, 2008).

IMS Global Learning Consortium[9] is an American association to support standards and specifications on the basis of e-learning. It represents more than 160 organisations worldwide coming from every sector of the global learning community. IMS provides a neutral forum in which members work together to advocate the use of technology to support and transform education and learning. One of its panels aims to standardize the digital information exchange in ePortfolios and to publish universal specifications applicable to all systems which are interested in storing portfolios or in exchange with other systems, be it ePortfolio systems, education platforms (e.g. VLE Moodle), portals, evaluation systems, students' systems, social networks or others.

Since 2001, in recent years in London, there has been held an annual international conference ePIC[10] (International ePortfolio & Identity Conference) under the auspices of EifEL and partners. It deals with questions about personal e-portfolio, its contribution to the process of building human identity and support for acquiring skills in the 21st century, support of lifelong learning, its orientation in employment and also insufficient interoperability of ePortfolio systems. ePortfolios Australia Conference[11] belongs to further significant conferences. It has been held since 2010 by Curtin University, Perth. Its topics are vocational education and training, higher education, and community education.

Studies and projects

Various educational institutions coming from a range of sectors in the field of education, vocational education and training, lifelong learning and beyond, e.g. human resources or employability, deal with e-portfolios. Also a number of publications and surveys deal with ePortfolios and their use in practice. Some of them are presented below.

The already mentioned JISC study from 2008, which is a part of the e-portfolio portal[12], contains structuring of the use of ePortfolio from the learner's viewpoint in the system of initial or continuing education and from the viewpoint of portfolio audience. The survey points out the importance of the choice of used technology and the necessity of mutual communication and proper training so that the philosophy of portfolio would be accepted by older students, who are not used to such type of work from the beginning of their education. It also points out the importance to support diversity among students and their creative participation. From a practical point of view, portfolio must provide an opportunity to study, learn, teach and evaluate procedures, train and support current needs and self-evaluate. The study points out the necessity to change the dynamics of learning and teaching and that it is the pedagogy not the technical tool that comes first. It also shows good results with blogging as a way to create learning communities and to use its extracts for PDP (Personal development planning) and CPD

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[9] http://www.imsglobal.org
[10] http://www.epforum.eu
[11] https://eportfoliosaustralia.wordpress.com/conference-eac2011
[12] http://www.jiscinfonet.ac.uk/e-portfolios and http://www.jisc.ac.uk/eportfolio

(Continuing professional development). In terms of institutions, using e-portfolios requires careful management in order to beneficial. We need to reflect on identifying what is appropriate and sustainable, aligning curricular practice, managing potential risk factors and preparing for future development of systems. It is important to imagine all models of implementation and choose the most suitable ones, establish e-portfolio culture for its use and provide appropriate human resources including experienced project leaders and tutors working with students. Last but not least, it also concerns transferring data from portfolio into institutions.

Lifelong learning, extending far beyond formal education, encompasses a wide range of learning scenarios, including continuing professional development, job seeking and career change, and formal and informal learning. e-Portfolios are particularly important in lifelong learning, since a presentation, providing evidence of learners' progress over time and in the context of self-evaluation, enables reflecting on personal strengths and weaknesses and recognising gaps in existing knowledge and competences. A huge emphasis is put on continuing professional development, gained appraisals and peer feedback, or colleague feedback and the opportunity to evaluate each other. Since there are a variety of e-portfolio system types, it is important to select one that will meet its intended purpose, no matter if it is a commercial system or open source product, or a portfolio as such, or a package of mutually interconnected applications. Applications which can be easily integrated into already existing tools are most welcome here. From the point of effective use of portfolios, the portfolio audience is important, i.e. the people who are going to assess the portfolio. Among the audience, or target groups, the authors rank the following: classmates, workmates, teachers, tutors, but also personnel departments, employers, or appraisal and quality enhancement teams. According to the study, it is therefore important to engage into the work with e-portfolios those target groups, in which the impact of portfolios is under-researched. The selection of evidence for an e-portfolio presentation needs to be definite, pertinent, and tailored to the needs of the audience. For this purpose, it is necessary to ensure that the objects form data storage could be presented in the required presentation form or in a different form (JISC, 2008).

Other studies, which deal with the impact of e-portfolio on society, are the studies by BECTA[13] (British Educational Communications and Technology Agency), a British educational agency, the main task of which was ICT support and integration into education. In 1998- 2011, is was financed by the Ministry of Education, the UK. In 2009, BECTA published an e-Portfolio study for apprentices called *E-portfolios for Apprentices: A guide for providers and employers on functional requirements* summing up conditions, requirements and specifications for implementing an effective e-portfolio system into apprentices education (ISCED 3B a 3C). Its aim was to help the school practitioners make informed choices about e-portfolio suppliers, buy and use it effectively (BECTA, 2009).

MOSEP[14] is one of the big European projects supported by the European Commission within the Leonardo da Vinci programme. This project ran in 2006 – 2008 with participation of Austria, Bulgaria, Germany, France, the UK, Poland and Lithuania. MOSEP stands for *„More Self-*

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[13] http://webarchive.nationalarchives.gov.uk/20110309145656/education.gov.uk/schools/adminandfinance/procurement/ict/a0073825/becta

[14] http://www.mosep.org

Esteem with my e-Portfolio". The project focused on the self-esteem of young learners completing lower secondary education and choosing between going into upper secondary education or entering vocational training for their future career. The aim of the project was to develop a set of measures for the use of e-portfolios in different contexts. The outcomes of the project were a study, an online course, and accompanying materials for e-portfolio use focusing on training teachers, trainers and on support of teacher training institutions[15]. Mahara translated into the national languages of the project countries was selected as an e-portfolio system for this project. A summary report presents also other systems used worldwide and their structuring (MOSEP, 2007).

Eportfolio and Europass[16] was an international European project funded by the European Commission multilateral fund. It ran in 2008 – 2009 with the participation of France, Poland, Germany, Belgium, Rumania, Italy, Portugal and Estonia. The aim of the project was to create an on-line system of learning content and pedagogies and to provide support to the recognition of non-formal and informal learning in order to improve the attractiveness of higher education and vocational training systems. Methodology and tools for issuing diploma supplements and their certification were also part of the project. Key ePortfolio activities concerned quality, accreditation and self-evaluation, language portfolio, cooperation of e-portfolio and Europass[17] serving as *„a European set of documents on education, personal competencies, language knowledge, qualifications and work experience",* and introducing numerical literacy into Europass.

Australian ePortfolio Project[18] (AeP) is an Australian national project funded by the Carrick Institute for Learning and Teaching in Higher Education and The Australian Learning and Teaching Council. The project ran in two stages in 2007 – 2009 at local universities and with international collaboration. The aim of the first stage of the project was to investigate ePortfolio practice in the higher education sector in Australia in order to provide strategic and practical guidance about the use of ePortfolios in academic institutions. Next project aims were to consider the impact of ePortfolio use on student learning outcomes, to recommend ways to share excellent practice in the implementation and use of ePortfolios, to identify opportunities to advise and support their further development, and to develop community to support their future use in Australia. The second stage of the project was based on the outcomes of the first stage, which contributed to the competiveness of Australian graduates in a global employment market and to developing the relationships with international stakeholders across the school, vocational, business and professional sectors, as well as with worldwide ePortfolio communities. The second stage sought to extend the original aims into establishing, facilitating and encouraging an Australian Community of Practice for ePortfolio researchers and practitioners, and into introducing a regular Australian conference to provide a forum in which to explore and discuss ePortfolio research and practice. ePortfolios Australia Conference belonged to one of the project activities.

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[15] http://www.mosep.org/index.php/lang-en/toolbox
[16] http://www.eportfolio-europass.eu
[17] http://www.europass.cz
[18] http://www.eportfoliopractice.qut.edu.au

Also a new educational policy of New Zealand sought inspiration in a modern ICT concept. It was represented by the local Ministry of Education[19] in the form of new New Zealand Curriculum in 2007 and of The National Digital Strategy from 2008. Within this concept in the field of ICT for primary and secondary education, an already existing national service Virtual Learning Network (VLN) was incorporated into the National Curriculum. It provides support for students, teachers, schools and clusters. Specifically it targets schools wishing to collaborate with other schools and educational organisations and it provides them with a web based platform, online tools and support of collaborative projects. The popular activities include exchange of experience, communities of sharing experience (Communities of Practice), web conferencing, video conference and audio bridge, video streaming and educasting, learning platform based on the social learning platform Elgg, a tool for collaborative learning techniques (LAMS), e-learning environment Moodle, an e-portfolio administration system (Mahara). VLN plays a key role in enhancing the capability of teachers, schools, and other educational organizations. It seeks to support staff to become confident users of ICT, to provide leadership and advice to teachers and principals developing quality online networked tools, and to offer teachers environments initiating and coordinating their collaborative partnerships with other stakeholders.

Portfolios in the Czech Republic

Even though we cannot compare, as for the extent and depth, national theoretical and practical e-portfolio activities with the above mentioned international activities, we can find interesting activities even in the Czech environment. The older ones focus on students' portfolios only, whereas current activities emphasize the use of e-portfolios.

The Research Institute of Education in Prague (VÚP), which became a part of The National Institute of Education in 2011, works on several activities, which deal with e-portfolios, e.g. a project supporting the European Language Portfolio[20] in practice, used as an official European certificate in foreign language skills in the EU. It comprises a language passport keeping records of the pupil including their language skills according to the international levels in particular areas, a language CV recording a gradual process of language learning and self-assessment, as well as a personal file of documents and works including certificates and materials documenting pupil's performance.

One of the aims of VÚP in the above mentioned project is to make a digital version of the European Language Portfolio as one of the modules on the Methodology portal Framework Education Programme (RVP) operated by VÚP. The experience with the Dutch system and the electronic version of the language passport Europass for adults should be used. According to the blueprint, four versions in several languages reflecting on the pupils' age should be made. VÚP is going to run seminars and workshops for teachers within further education for teachers and practitioners. Digifolio[21] is next activity by VÚP on the RVP portal, which was integrated

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[19] http://www.minedu.govt.nz/
[20] http://www.msmt.cz/mezinarodni-vztahy/evropske-jazykove-portfolio
[21] http://digifolio.rvp.cz

into the Methodology II project funded by the European social fund in 2009. It is a full-bodied implementation of e-portfolio in Mahara, primarily used for administration of the teachers and institutions portfolios. Thanks to this, pages of schools, communities and other educational institutions can be established. It is also possible to present project and topic portfolios.

In 2005 – 2008, KVALITA I[22] system project funded by the European social fund ran in the Czech Republic. Its aim was *„to extend the system of pedagogical evaluation on different levels and hence support the quality of education and curricular reform"* in primary and secondary education (ISCED 2 a 3). The Centre for Gathering Educational Results (CERMAT), Institute for Information on Education (ÚIV) and The National Institution of Technical and Vocational Education (NÚOV) also took part in the project. It targeted a pupil, school and educational system as such. In terms of the pupils, the evaluation of crucial moments on the educational path of primary school pupils belonged to the main activities of the project. It was done through personal portfolio as a tool for continuous evaluation.

As for primary and secondary schools, the tools for evaluation and self-evaluation of learning outcomes belonged to the main activities. In terms of educational systems, the project activities comprised international pedagogical surveys (mainly PISA), national research and use of project outcomes for changing educational policy. All activities were under the umbrella of support systems helping to implement the system of pedagogical evaluation, which featured mainly seminars for the public and further education for school management and practitioners[23].

The research on personal portfolio consisted of portfolio evaluation at schools, computer adapted tests and a bank of tests. In terms of portfolio evaluation, the project focused on mapping the experience with portfolios at Czech schools and it encouraged schools to implement evaluation through portfolio into common ways of pedagogical evaluation[24]. In school year 2007/2008, a questionnaire was distributed to teachers of 14 primary schools and one secondary grammar school, all of whom worked with portfolios. The teachers were to answers the questions such as why they use portfolios, how they integrate them into the lesson, what kinds of portfolios and self- evaluation methods they use, pupils' and teachers' feedback. They also commented on their appropriate use and possible difficulties, which they encountered while working with them. They supported their activities with examples of portfolios from particular schools[25]. Follow-up proposals on further work with portfolio were prepared. They were divided into the following categories: for pupils, for teachers and for parents supplemented with hands-on advice on working with portfolio.

Examples of the use of e-portfolio can also be found in primary and secondary education, as well as in higher professional schools, e.g. Higher Professional School in Svaty Jan pod Skalou, were subjects such as Digital Portfolio I and II are taught. The teachers publish a number of articles on the use of pupil's, teacher's or institutional portfolio on the RVP methodology portal (Framework Education Programme) or other pedagogy-oriented portals. A lot of interesting information is also available in the school educational documents as evaluation rules for pupils.

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[22] http://www.esf-kvalita1.cz
[23] http://www.uiv.cz/clanek/543/1001
[24] http://www.esf-kvalita1.cz/portfolio/oprojektu.php
[25] http://www.esf-kvalita1.cz/portfolio/portfolia/skoly.php

The Information and Communication Technologies in Education Conference belongs to significant conferences reflecting on Evaluation of ICT-supported education[26]. It is regularly held by The Pedagogical Faculty of University of Ostrava and this year, it is entering its 13th year. Among other topics, it deals with integrating ICT into education, e-learning, using software and hardware in learning and teaching, and educational projects.

Sharable Content Objects[27] (SCO) is an international conference with a long tradition, which has been held alternately by different faculties of Masaryk University in Brno since 2004. Within this conference, workshops and e-learning course showcase take place. Among other popular topics, the conference deals with e-learning in all its guises and its standards, methodology and pedagogy, pupils' and students' evaluation, Wikipedia, electronic information sources, digital libraries and information sources and schools in the knowledge society.

Conferences called MoodleMoot[28] are also worth noticing. They are held worldwide by partners and fans of Moodle virtual learning environment. Since 2010, they have been held in the Czech Republic[29] as well. Its organizers are Czech universities and education-oriented commercial sector. Trends in electronic learning, teaching objects and good practice solutions, remarkable Moodle implementations and cloud computing belong to the main topics of the conference.

As far as universities are concerned, The Faculty of Arts, Masaryk University[30] makes experiments with the installation of Mahara application. VŠB – Technical University of Ostrava launched a system based on wiki pages called Dig-I-Port[31]in order to illustrate networking and forming teams in research and development. E-portfolio penetrates into a number of university courses as well. Paper-based portfolio is more common in the Czech Republic. The Faculty of Education, Hradec Králové University, uses portfolio in teacher training and subject didactics (Svatoš, 2008). Similarly, at the Primary Education Department of The Faculty of Education, Charles University, students work with their portfolio and if they like, they can take advantage of it when sitting the final state exam. In order to support this approach, there is a subject called Building Student Portfolio. Courses focused on work with portfolio or on using their support run at other faculties of Charles University as well, namely eg. at The Faculty of Humanities and The Hussite Theological Faculty.

All educational institutions, Charles University included, are to use the UMIM.TO[32] web portal run by The Department of Information Technology and Education at The Faculty of Education. It is based on Mahara application 1.4 Version published in June 2011 and it is supplemented with its own Czech localization. It supports other national languages as well. The portal uses MNet technology and single sign-on system (SSO) for signing in. The latter is nowadays, apart from Moodle, used in other projects as well. The portal runs as a community project and everyone with their own installation of VLE Moodle 1.9 Version or higher can use it. After connecting a particular installation with the UMIM.TO portal, pupils or students' and teachers'

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[26] https://konference.osu.cz/icte/
[27] http://sco.muni.cz
[28] http://moodle.org/course/view.php?id=33
[29] http://www.moodlemoot.cz
[30] http://elf.phil.muni.cz/mahara/
[31] http://rccv.vsb.cz/mahara/
[32] http://www.umim.to

user accounts are used in Moodle, which also verifies user's identification and their membership of a particular institution, or school. Users then sign in in Moodle and through a given link, they are forwarded to Mahara. School administrator of Moodle becomes at the same time an administrator of their institution on UMIM.TO, they have an access to specific portal settings, deal with users' requirements and coordinate a communication with administrators. A school can then take advantage of all functionalities of Mahara application and at the same time it can administrate their users and modify further settings by means of their administrator (Fuglík, 2011).

Discussion

The Education, Audiovisual and Culture Executive Agency (EACEA), which operates under the European Commission, perceives the need to integrate e-portfolio into learning process as highly up-to-date. This agency published within Eurydice, its international network, the document *Key Data on Learning and Innovation through ICT at School in Europe 2011*. It deals with evaluating key competences with the use of information technologies and in the *Educational processes* and *Assessment* section, it addresses current insufficient implementation of e-portfolios for pupil assessment and it considers portfolios *„a genuinely ICT-based assessment mechanism"* (Eurydice, 2011). The survey mentions, apart from e-portfolios, two more innovative approaches to pupil assessment, which can benefit from ICT. The first approach concerns using ICT for pupil self-assessment, the second is based on learning outcomes in connection with a paradigm of competences as target structures. Into key competences, we can rank secondary literacy as well, eg. information literacy. The study recommends that the evaluation of these literacies should be carried out only by means of ICT means. The Eurydice survey completed in school year 2009/1010 shows, based on the data provided by Czech primary and secondary schools (ISCED 1, 2, a 3), that self-assessment is seen as implemented, e-portfolios as planned and approaches to learning outcomes as so far unprocessed.

The survey also mentions missing recommendations of the Ministry of Education on the use of ICT for pupil assessment at central level. On the contrary, in the field of the evaluation of ICT competences through theoretical and practical exams and project evaluation, the Czech Republic uses all above mentioned tools compared to other countries. Unfortunately, this type of testing is not used for school leaving exams and when completing a particular educational stage. A computer literacy certification through unified ECDL tests is available in the Czech Republic, but the decision to certify their pupils and teachers against ECDL standards lies in schools. The ECDL concept is therefore used partially only (Eurydice, 2011).

Conclusion

From the above mentioned chapters it follows that evaluation with the accent on e-portfolio is currently an up-to-date topic worldwide at all education levels. The Czech Republic is no exception. We can see first signs of using portfolios as tools for evaluation, self-evaluation and self-reflection at all educational levels and also as occupational portfolios. However, Czech

evaluation of education still faces problems, which hinders the use of portfolios and which are newly summed up eg. in the OECD Reviews of Evaluation and Assessment in Education: Czech Republic 2012. The review recommends building capacities for evaluation in the whole educational system, supporting a teacher's role in pupil assessment and enhancing its systematization in connection with the introduction of national standardised testing, developing teaching standards, teacher appraisal and certification, strengthening school evaluation and evaluation in the whole evaluation and assessment framework (OECD, 2012).

Based on the examples of good practice and international experience, there was a pilot project on implementing e-portfolio into extramural studies in Information Technology running in the winter semester in school year 20011/2012. Its outcomes strengthened the motivation for its extension into other study programmes (Fuglík, 2012). Further implementation of portfolio evaluation for prospective teachers is about to happen also thanks to the teacher career structure, which is in preparation, and a related system of teacher certification. This is the area where not only practice or previous education, but also teacher portfolio should play its role. Currently, a transfer to the newest 1.5 Version of Mahara application is being prepared, which would bring a range of new functionalities and improvements towards the services based on cloud computing.

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