OPEN CONTENT DEVELOPMENT (OCD) IN THE PRACTICE OF TEACHERS' TRAINING

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Abstract

According to the innovation of the learning and teaching methodologies in the VET (Vocational Education and Training), our starting point was that the traditional curricular structures couldn’t follow the accelerated market and technological changes. Regarding the VET textbooks and teaching methods, as our survey found there is a massive deficit in learning materials. As our basic analysis stated [2] about forty-five per cent of the existing VET materials do not meet the requirement of being up-to-date. Changing the shortage of current VET contents our concept forwards to develop the teachers’ attitude for the local content development and implement the micro-content based teaching methods in the teaching practice. The lecture frames the first two year experiences of the OCD model developed in the teachers’ training. One of these initiations was the subject pedagogical research program prepared by the Hungarian Academy of Sciences between 2015 and 2017 that incorporated our project dealing with the development of VET methodology in 2016. Since 2017, we established a network of 12 schools where teachers and students implement content development activities.

The essence of our OCD (Open Content Development) model, which has been proved by our first development results, is that in the development of vocational content, the partnership that is much more open than traditional content development processes could establish between the teachers and the students. For all this, the online learning environment and interactive communication offer a favourable development environment where the partners’ activeness and so their development attitudes can mutually be improved.

The overall didactical environment of our OCD model offered new opportunity to integrate essential elements appearing as results in terms of the sustainability and the dissemination of the model. Thus, for example, new methodological modules were introduced and tested in the teachers’ training and further training. The adoption of learning framework systems with VET objectives has become general, which has established up-to-date possibilities in the field of online collaborative learning, and the creation of cloud technologies intended to provide infrastructural support for content development and to help the broad range application of micro-content (Benedek-Horváth, 2016) with an open-access attitude has also brought about promising results.

Keywords: Learning and teaching methodologies, Open Content Development, teachers’ training, Vocational Education.

1 INTRODUCTION

Curricula that can be modelled as a scale-independent graph (that is connected visual and verbal knowledge elements) combined with mathematical representations to enhance both theoretically and practical approaches, as well as case studies and practical examples, also added by the users themselves, may significantly promote acquiring and controlling knowledge. Accordingly, verbal explanations, visual representations easily understood by young people and mathematical representations adjusted to the relevant age group would be supplied to each element of the graph-like knowledge set formulating in virtual space. These knowledge elements formed on a broad professional base but verifiable by the culture of didactics of teachers would summarise theoretically and general information in a modern format and optimum quantity. The point of the concept was formulating active student’s contribution as participation in the network and access to information as well as to the software packages that were able to interpret information in various contexts, promoting cooperating and self-organised learning. This network concept, as the feature of active student’s contribution, encouraged the new educational content development [3] [4].
2 METHODOLOGY

According to the broad spectrum of VET and the dynamics demanding continuous changes mean a permanent development task is the case of education resources, as well. In our case, the dual functional linkage of teacher training (learning and transmission) allowed us to examine the first phase of the evolution of student attitudes. The creation of open contents has become an important direction for the pilot schools’ teachers for establishing the new VET contents and didactics; the process on the base of collaborative activities typically characterised by the constructive contribution by teachers and learners. The expected results of the research can be perceived already in the first phase (2017-2018) [5]. The evolution of the VET schools’ network is much more dynamic than expected before, the network of 12 schools created during three years has already been born, which indicates the interest in this process. Seventy-four teachers joined the 30 hour blended training was determined as the precondition for participation, it means that 5-7 vocational teachers joined the development program in each school. The number of the micro-content units related to the vocational learning units elaborated by the teachers is now over one hundred, and as a result of the teachers’ work, the first results of the students’ learning content development have also appeared in our model of open learning content development. The organization of the micro contents, their labelling and the creation of the possibility to analyze them show two significant results. On the one hand, the representational characteristics of the micro contents created within the frames of open content development have become searchable in several dimensions. Thus, our research on didactics essentially focuses on the differentiated control of the work of vocational teachers in class and the application of efficient educational methods and processes. From the aspect of this research, the general criteria of preparing teachers are partly traditional, manifested in knowledge, abilities and attitudes, and partly related to expected teacher competencies, broken down according to the following fields of competences [3] [8]:

- knowledge related to didactics and the given subject;
- supporting, organising and controlling learning;

Micro-learning presumes the generation of micro-contents and constructing their relevance network. Using these methods, traditional learning contents may be customised in a digital format for the screen of mobile devices and the context of these contents may be displayed for students like a hypertext. Knowledge elements may be collected and copied into customised sets of contents; these sets may be then analysed, estimating the quality of the entire curriculum regarding its contents and configuration. Customised collections of knowledge elements may be composed of parts from several subjects. Thus, the entire education of a particular student may be assessed and the best teaching methods can be chosen accordingly [1] [6].

3 RESULTS

The results of our survey have proved our hypothesis according to which one of the possible ways of increasing teacher activity is to offer, besides methodological support in learning the theoretically instant material in the increasingly accessible online learning environment, the possibility to join in the Learning Management Systems (LMS). The new micro contents except for their different forms and topics showed a large potential for using them in the teachers’ preparation for their lectures and practical work with students. Using the new set of micro contents 2018-2019 we established an archivation system for distributing the result of content development (www.mikrotartalom.hu), the next figures show a few screen pictures about the teachers’ support portal:
The important feature is broad scale public access that is facilitated by modern, interactive online interfaces. This specific field is dominated by initiatives in the tertiary education, (MOOC); however, the significant number of learners in vocational education, the wide range of professions they represent and the fact that the age of those attending such courses has been steadily increasing urge the adaptation of these methods in vocational education as well [3].

Thus, our research on didactics essentially focuses on the differentiated control of the work of vocational teachers in class and the application of efficient educational methods and processes. From the aspect of this research, the general criteria of preparing teachers are partly traditional, manifested
in knowledge, abilities and attitudes, and partly related to expected teacher competencies, broken down according to the following fields of competences:

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The Drupal framework also helped us to optimize the screen for compact displays. Some integrated code snippets support to open the Youtube videos and the lecture notes with the application, and it is also possible to use the picture taken by the camera of the smartphone as the basis of different newly created micro-contents.

Our achieved result is a native (Java-based), expandable Android application with which the different users, students and teachers of the Open Content Development Research Group and Partners and also the students from at least two faculties at the Budapest University of Technology and Economics can reach, use and create their learning units, the micro-contents on their smartphones.

Another specific feature of the activity of vocational teachers is that they are allowed to teach not only in schools but also in non-formal vocational training. Training teachers for teaching trade groups or using vocational contents related to particular sectors is hindered by the almost complete lack of textbooks that could support the teaching of professional subjects in vocational schools and vocational secondary schools. Thus, teachers could only rely on the actual course requirements within vocational framework curricula. It justifies the need for putting content development for actual subjects and thus the development of a new didactics into the focus of educational development, facilitating both the training of vocational teachers and learning professions at school.

The practical application of micro-contents as microlearning elements is justified by the new habitual ways of gaining information using the smart devices generally used now. Common features of the most popular mobile communication applications are the offering of instant experience, direct communication with friends and others using the same application, and customised “quantum” of received knowledge. This customization depends on the size and resolution of the mobile device’s screen, the limitations of the user’s divided attention, the design of the user interface and the way the user attempts to eliminate environmental disturbance resulting from being in motion while using the device.
The first curriculum like this is the electric course material “Introduction into Systems” for teachers working in secondary vocational education. Another significant feature of the research regarding didactics is the use of cloud-based services i.e. storing the complex open access didactics material (that is being expanded continuously regarding both the number of elements and their connections) in a cloud. It is thought to provide services for users in schools that are not restricted to one dedicated piece of hardware but several ones owned by the service provider, guaranteeing the continuous availability of redundant servers combined with efficient protection against data losses [7].

Our cloud-based systems generally attempt to establish cross-links between various platforms. This is an essential feature of the system as this way a particular service has access to contents generated in another one, so users do not have to bother with uploading all the necessary data and information when starting a new application. The most important feature of the open access application principle is free availability where the progressive use of security protocols is not required. Other advantages of this approach are the possibility of collaboration, continuous synchronising and saving of data, automatic updates shared contents and encryption.

In cloud-based data storage, several data storage providers are available; all of them specialised at using a particular platform, working in full harmony with the given operating system. For example, the possibly most widely used storage providers in global comparison are Google Drive combined with the Android operating system, Dropbox with iOS systems and OneDrive with the increasingly popular Windows phone operating system. This is why curriculum and learning content development focuses on generating visual contents by professional communities (teachers’ development programmes) when developing vocational contents.

4 CONCLUSIONS

The orientation framework of OCD development was the network concept, a typical feature of teachers’ training. This project encouraged the institution to "learn" in an environment where information exchange organised into an informal network supported by IT devices. Curricula that can be modelled as a scale-independent graph (that is connected visual and verbal knowledge elements) combined with mathematical representations to enhance both theoretically and practical approaches, as well as case studies and practical examples, also added by the users themselves, may significantly promote acquiring and controlling knowledge. Accordingly, verbal explanations, visual representations easily understood by young people and mathematical representations adjusted to the relevant age group would be supplied to each element of the graph-like knowledge set formulating in virtual space. These knowledge elements formed on a broad professional base but verifiable by the culture of
didactics of teachers would summarise theoretically and general information in a modern format and optimum quantity. The result of these activities integrated an original model of OCD (open content development) to formulate a real open environment where information exchange is organised into an informal network. The result demonstrates the tested concept of students’ participation in the network and access to the microlearning content packages that help to interpret information in various contexts.

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REFERENCES


