

## CREATING AUTHENTIC LEARNING AND ASSESSMENT ENVIRONMENTS

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### Abstract

The aim of this study is to investigate how the concept of “authentic learning” and “authentic assessment” is formed in the discourse of education executives. Authentic learning is based on the theory of social constructivism, according to which the social nature of knowledge is emphasized and the learner builds knowledge by creating meaningful authentic activities. Authentic assessment is described as a dynamic form of assessment which focuses on the skills developed by students during the learning process. The design of learning environments is based on the nine features of authentic learning, constructivism and the theory of embedded learning. In this study examples of authentic activities that support authentic learning environments are presented. In these activities a variety of authentic techniques are used and they are related to different subjects, such as Physics, Ancient Greek, Mathematics, Environmental studies, etc. The sample of the study consisted of 114 adults participating in a training program as a qualification for their professional development during the year 2018-2019. Quantitative analysis of the data was conducted. The analysis of the data revealed that an authentic learning environment consists of experientiality, interdisciplinarity, team work, problem solving, self-assessment, peer-assessment, real-world relevance, which are characteristics of authentic learning and assessment. Moreover, the implementation of authentic learning activities in different learning contexts can lead to the development of cognitive, metacognitive, social and communicative skills of the 21st century.

**Keywords:** *Authentic learning, authentic assessment, authentic activities, 21st century skills.*

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### 1. Introduction

Authentic learning may be more important than ever in a rapidly changing world, where individuals are expected to progress through multiple roles. Although foundational skills (reading, writing, mathematics, history, language) remain essential, a more complex set of competencies are required today. The skills that are required to adapt to new conditions are classified into four categories (Binkley, Erstad, Herman, Raizen, Ripley, Miller-Ricci, Rumble, 2012): ways of thinking ways of working, working tools and living in the world (citizenship, life and career etc). Therefore, schools must be connected with the real needs of society and promote changes that are necessary for the development of the 21st century skills. The changes must aim at different learning and assessment environments that can be created by "authentic learning".

Authentic learning is based on the theory of social constructivism and supports authentic learning environments where learners build knowledge by creating meaningful authentic activities. According to Lombardi and Oblinger (2007), authentic learning is “a type of learning that focuses on real-world, problems, using role-playing exercises, problem-solving activities, case studies, simulations, virtual learning communities, self-assessment and peer assessment” (p.2). Har (2016) defines it as “learning which happens by participating and working on real-world problems” (p. 2).

Authentic learning environments simulate real life problems and create the opportunity for using alternative approaches to solve a problem combining different ways of working and thinking. Therefore, problem-solving activities, simulations, on line learning communities, projects etc. can be used to implement authentic learning in school environments. Reeves, Herrington and Oliver (2002) describe what authenticity means in the design of learning activities. They present ten characteristics that define authentic Learning activities: 1. Authentic Learning activities have real world relevance, 2. Authentic Learning activities are ill-defined, 3. Authentic Learning activities require sustained student effort, 4. Authentic Learning activities involve multiple perspectives and resources, 5. Authentic Learning activities involve collaboration, 6. Authentic Learning activities provide opportunities for reflection, 7. Authentic Learning activities encourage interdisciplinary perspectives, 8. Authentic Learning activities

integrate assessments, 9. Authentic Learning activities create polished products, 10. Authentic Learning activities produce diverse outcomes.

Students taking part in authentic learning activities are able to develop cognitive, social and metacognitive skills, as they use knowledge to decide the steps and the strategies they must take on to solve a real life problem (Wornyo, Klu & Motlhaka, 2018; Reeves, Herrington, & Oliver, 2002).

## 2. Method

### 2.1. Objective and research questions

The objective of this study is to investigate the concept of “authentic learning” and “authentic assessment” as it was revealed by education executives. In specific, the present study explores:

- How education executives create an authentic learning environment using specific examples of authentic learning activities.
- What results they expect to receive from the implementation of the authentic learning activities
- What education executives consider as “authentic learning” and “authentic assessment”

Research Questions:

- What learning and assessment techniques do education executives use to ensure the authenticity of learning and assessment?
- What are the characteristics of authentic learning activities according to education executives?
- What kind of skills do they consider to be developed by students through the specific options?

### 2.2. Research strategy and instrument

A qualitative data analysis was carried out. The qualitative study was regarded appropriate because the researchers were interested to investigate how the concept of “authentic learning” and “authentic assessment” is formed in the discourse of the education executives (Delikari, 2005). All recorded data were analyzed by thematic analysis (Creswell, 2000). Data were collected in one phase for all the participants. The questionnaire that was administered to the education executives was divided into three categories. The questions were open, so the education executives had the opportunity to express their conceptions about the meaning of authentic learning and authentic assessment. Moreover, quantitative analysis of the data was conducted. 114 questionnaires were collected in total.

### 2.3. Participants

The sample of the research consisted of 114 adults participating in a training program in order to obtain a certification in leadership and management in education during the year 2018-2019. The trainees were education executives with previous experience in education. At the end of the training program the trainees had to complete questionnaires online. They had to define “authentic learning” and authentic assessment”, describe the connection between authentic learning and authentic assessment and give examples of authentic learning activities and techniques of authentic assessment that they had used in their teaching practices”.

## 3. Results

48 men (42%) and 66 women (58%) participated in the study. 43 of the men and 56 of the women answered the questions. 15 of them did not answer the question about giving examples of authentic learning and assessment techniques.

Table 1. The participants according to gender.

|        | They answered |      | They did not answer |      | Participants |     |
|--------|---------------|------|---------------------|------|--------------|-----|
|        | n             | %    | v                   | %    | v            | %   |
| Male   | 43            | 89,6 | 5                   | 10,4 | 48           | 100 |
| Female | 56            | 84,8 | 10                  | 15,2 | 66           | 100 |
| Total  | 99            | 86,8 | 15                  | 13,2 | 114          | 100 |

Table 2 shows the type of authentic activity chosen by education executives according to their gender.

Table 2. Types of authentic learning activities according to gender.

|                  | Men |      | Women |      | Total |      |
|------------------|-----|------|-------|------|-------|------|
|                  | v   | %    | v     | %    | v     | %    |
| project          | 21  | 23,3 | 28    | 22,8 | 49    | 23,0 |
| portfolio        | 11  | 12,2 | 23    | 18,7 | 34    | 16,0 |
| role-playing     | 6   | 6,7  | 5     | 4,1  | 11    | 5,2  |
| case study       | 6   | 6,7  | 5     | 4,1  | 11    | 5,2  |
| problem solving  | 6   | 6,7  | 5     | 4,1  | 11    | 5,2  |
| rubric           | 7   | 7,8  | 5     | 4,1  | 12    | 5,6  |
| concept map      | 5   | 5,6  | 9     | 7,3  | 14    | 6,6  |
| simulation       | 3   | 3,3  | 9     | 7,3  | 12    | 5,6  |
| self-assessment  | 5   | 5,6  | 7     | 5,7  | 12    | 5,6  |
| peer-assessment  | 4   | 4,4  | 8     | 6,5  | 12    | 5,6  |
| diary            | 2   | 2,2  | 3     | 2,4  | 5     | 2,3  |
| ICT              | 7   | 7,8  | 5     | 4,1  | 12    | 5,6  |
| experiment       | 2   | 2,2  | 3     | 2,4  | 5     | 2,3  |
| brainstorming    | 0   | 0,0  | 1     | 0,8  | 1     | 0,5  |
| observation      | 3   | 3,3  | 3     | 2,4  | 6     | 2,8  |
| debate           | 1   | 1,1  | 1     | 0,8  | 2     | 0,9  |
| visit            | 1   | 1,1  | 3     | 2,4  | 4     | 1,9  |
| Answers in total | 90  | 100  | 123   | 100  | 213   | 100  |

The findings resulting from qualitative data collected through questionnaires were grouped in three categories according to the purposes of the study. The researchers divided the findings of the research into the following three categories: the types of authentic learning and assessment techniques, the characteristics of authentic learning environments and the skills the students can develop through the participation in authentic activities, according to the perceptions of the education executives.

The education executives, who were of different specialties, gave examples of authentic learning and assessment activities supporting authentic learning environments used in their daily school practice in a variety of subjects such as Maths, History, Geography, Biology, Physics, Literature, Religion Education, Chemistry etc.

Most education executives in the sample (n=83) answered that project and portfolio are the authentic techniques they mostly use in their school practices. According to their answers, project and portfolio have the characteristics of authentic learning and assessment and support authentic environments. Using this kind of techniques, students learn to work in groups, reflect on their experiences, develop critical thinking, cognitive, social and metacognitive skills, use strategies to solve a problem, design plans and follow steps to achieve a goal. One dominant skill that came up from the study is the skill that students can develop to solve a problem using a variety of sources distinguishing relevant from irrelevant information. The students associate the gained knowledge with everyday life discovering links, they become an active part of the process of gaining knowledge and they are activated through a process of creation.

From their answers emerged the fact that all the above authentic activities are a form of experiential learning where students are initially exposed to an experience and then encouraged to reflect on it and develop new knowledge, skills, attitudes and behaviors (Phillips, 2004). “*Students’ develop imagination and creativity. They apply knowledge in practice and in situations of everyday life and they develop critical thinking through experiential activities*” (P.89). Indicative examples of project that focus on experiential learning are the following: “*In Geography students were asked to make a research of a country they were interested in and to make a tourist guide of that country. Then they had to take on the role of a tour guide (role playing)*. (P.3). *A primary school in a tourist coastal area had to make a tourist guide for their area in which they had to highlight the advantages of their place among other schools in Greece in order to make other students visit it. Students had the chance to select between a printed tourist and a digital one by creating a website or posting it on local blogs*” (P.10)

In Experiential learning skills, which is a basic characteristic of authentic learning, knowledge, and experience are acquired outside the traditional academic classroom setting. “*Students of an elementary school who want to study plants make their own vegetable garden and through this they learn all the stages of vegetable development, the ways of cultivation, the parts of the plants, their species, the amount of water they need as well as the frequency of watering. They learn how to take responsibility for their protection, get to know their enemies and the ways of protection*” (P.33).

In role-playing activities “*Learning takes place through a role-playing game for students, sometimes representing traders and sometimes customers. In an experiential way, students learn how to use the knowledge they acquire in dealing with real-life situations*” (46). “*In authentic learning contexts the students take on the role of Municipal Counselor and try to face the big problem of pollution in the city they live. They try to propose solutions in order to solve the problem*” (P.100)

According to the participants' answers in all kinds of authentic activities (project, simulation, role playing, case study, c-map etc) students become an active part of the learning process through their participation in authentic activities. "*Students act on their own by researching data, recording opinions, exchanging opinions, announcing results and developing cognitive and social skills.*"

Another basic characteristic of authentic learning and assessment which became apparent from the analysis of the answers is team work. In all kinds of authentic learning activities students work in groups, interact with others, cooperate and respect the other members of the team. "*Students share and exchange views, attitudes, experiences and information about a problem*" (P.58).

Moreover, the analysis of the data revealed self-assessment and peer assessment as dominant authentic characteristics in all kinds of the authentic examples (project, simulation, role playing, case study, c-map, diary etc.). The students are able to learn on their own how to find answers to some of the inconsistencies they came across and to resolve the ambiguities embedded in some of the tasks. For example "*Students evaluating the work of their classmates, realize their mistakes and reflect on their own learning process*". "*They can get information from the others team members and compare it with theirs, express their point of view and correct their mistakes*". "*Using concept maps, teachers can identify students' weaknesses and adapt their lesson to the students' needs*". "*The student chooses the tasks he will include in his/her portfolio based on goals and criteria that are defined by him/her with the help of the teacher*" (P.74).

In authentic activities students are able to get engaged in inquiry and problem solving, decision making and scientific research. Problem solving was emerged as a basic characteristic and as a metacognitive skill. "*In Physics a rainy day can be the cause for exploring the circle of water. The students ask questions, such as "why is it raining?", "where does the rain come from", etc. After activating the pre-existing knowledge, the teacher follows the steps of constructive learning, i.e. students formulate questions, make predictions and are led to formulate functional definitions and draw conclusions. Through experimentation they will approach the concepts of melting, coagulation, solubility, ventilation*" (P.22).

#### 4. Discussion

In this study we have focused on the definition of authentic learning and authentic assessment according to the perceptions of education executives. The participants through specific examples given on how to create an authentic learning environment were led to the definition of authentic learning and authentic assessment, which is consistent with the literature (Oblinger, 2007; Har, 2016; Herrington & Oliver, 2000 Wornyo et.al, 2018). From the results of the research the authentic techniques that have been used most were project, portfolio, problem solving, self-assessment and peer assessment, role playing and the use of ICT.

In authentic learning and assessment students construct their own knowledge through research and problem solving and develop critical thinking and metacognitive skills. Through authentic learning, students work in groups, they take initiatives and think creatively. Through inquiry and the expression of different ways of thinking, the students are encouraged to collaborate, to respect and consult one another (Wornyo et.al, 2018). According to the participants' answers, for example in the project method students are able to explore and solve problems by choosing information through collaboration and dialogue. The results are consistent with other research, where through Project Based Learning (PBL), students have the opportunity to be involved in problem-solving, decision-making and scientific research (Hmelo-Silver, 2004; Panasan & Nuangchalerm, 2010; Thomas, 2000). Regarding rubrics, according to Jonsson, and Svingby (2007), when they are used by students to assess their own performance, the students are encouraged to take responsibility for their own learning and they are able to appreciate the strengths and weaknesses of their learning work. On the contrary, Orsmond and Merry (1996), argue that students might not find the qualities in their work even if they know what to look for, since they have a less developed sense of how to interpret criteria.

The findings of this study indicate that the above techniques give students the opportunity to use previous experiences and knowledge and share them in groups in order to gain new knowledge. According to Jarvis (1999:122), this happens, because these techniques are focused on students who use pre-existing knowledge to solve problems and collaborate. Authentic learning is an active learning process where students are not passive. It has been observed that this learning is necessary for developing critical thinking skills and scientific contents (Apedoe, Walker, & Reeves, 2006).

As far as experientiality and interdisciplinarity are concerned, the analysis of the data indicated that they are key characteristics of authentic learning, as we find them as key characteristics in many examples of our study, such as project, portfolio, role playing and problem solving. This is in line with literature according to which students' experiences are enriched by providing them multiple perspectives of a single topic or issue and authentic learning activities encourage interdisciplinary perspectives (Oliver,

Herrington & Reeves, 2011). Finally, the important role of ICT in authentic learning environments was referred by most of the participants.

From the answers of the participants, we are led to the conclusion that assessment of authentic learning can take the form of a number of evaluation measures which do not include formal tests, such as portfolios, journals, and self-assessment but they create opportunities which enable students to craft polished performances (McLellan, 1996).

## 5. Conclusions

While authentic learning environments are appealing, much research needs to be conducted on how to use them in an effective way in classrooms. In addition, much research needs to be conducted on the importance of the role of teachers who need to have a clear rationale for completing the task, understanding of the real-life application of the task and appropriate support to complete the task. Future research needs to focus on authentic environments that support student learning and enrich learning experiences. However, for this to happen it is necessary for teachers to carefully design and facilitate classroom tasks that promote the principles of authentic learning. Finally, the findings could be a trigger for further research in which the perceptions and views of the students about authentic learning and assessment could be investigated.

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