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Written by (name, e-mail): Malte Stamer and suggestions by SCAS and focus groups and reviews
Notes: There have been 2 reviews, from content aspect and VET aspect and a focus group on weight of units that proposed some changes and refinements of previous version. Most of them have been respected in this version.

DESCRIPTION OF OUTCOME-BASED UNITS IN WEB DESIGN



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I. Introduction

This "Description of Outcome-Based Units" is developed in the frame of project "Validation of self-acquired learning and cREdits trAnSfer in web design and compuTEr animation" /CREATE/, No: 2011-1-BG1-LEO05-05036 supported by Leonardo da Vinci Programme of the EC.

More information about the project and the rest of the products is available at: www.create-validate.org.

1. Aim of "Description of Outcome-Based Units"

The main aim of compiling this description of units of learning outcomes is to use it as a basis for assigning to these units methods for assessment of the results of self-acquired learning (or "informal learning"). Each unit is assigned with such methods and also each unit is assigned with the respective ECVET points depending on the unit's relative weight with regard to the whole description. As a further step to the developed description – interactive tools for validation of the results of informal learning are developed.

There are two such descriptions of units of learning outcomes developed in the frame of this project – one for **web designer** and another one for **computer animator**. The aim of choosing exactly these two fields was that they are highly creative fields where most of the learning outcomes are achieved through certain kind of informal learning – during work; through daily interactions, sharing among peers etc.

Thus these two descriptions of units of learning outcomes and the methods for assessment of the results of informal learning can be used as an example for the development of other such descriptions with a special part for assessment of the results of informal learning included in them.

2. Context and framework

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This description of outcome-based units is not only a result of CREATE LdV-TOI project, but also is one more step in line with EU policy in VET, namely validation of the results of informal learning. In this respect it contains two important elements: first concrete methods for assessment of the results of informal learning and second ECVET points assigned to those units making it possible that learning outcomes can be identified, validated and recognized. In this train of thought approaches and methods recommended during EQARF – ECVET Launching Conference Moving from Principles to Implementation /November 2009/ have been taken into consideration when compiling the descriptions.

Except for the EU policy in VET outlined also in the conference materials mentioned above this document also takes into account previous projects that have been dealing with the topic: “Embedding Standards” project /Coordinator – DEKRA Akademie, No: D/04/B/F/PP-146 192/ that gave the basis for CREATE project, a German-Israeli project called “IT-Skills”, to name a few. The partnership has carefully explored and discussed the results of such former projects and extracted some best practices related to the structuring of the description, to all the issues that should be included in it, principles of assigning ECVET points to units, etc.

Descriptions of Outcome-Based Units are also designed in accordance with descriptions of national qualifications and VET systems in Bulgaria, Germany and Ireland. Prior to compiling the descriptions partnership has thoroughly discussed also the following:

- “Structure of the Advanced IT Training System” in Germany;
- Recognition of Prior Learning (RPL) in Ireland;
- Standard qualifications (computer animator and web designer if they exist or other similar to those fields) in Bulgaria, Germany and Ireland;

Concerning the assessment process and the structure of the assessment organizations, the ISO 17024 standard should be explored.

3. Target group

Target group includes: trainers, policy makers, instructional designers in VET, managers of VET Centres.



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VET centres and organizations willing to assess results of informal learning in web design and computer animation and provide certification for this assessment can use the document for this purpose. However, in order that the process of assessment is complete, such organizations should complement this document by also using the interactive tools for validation of the results of informal learning and the manual, containing necessary guidelines (also developed in the frame of the current project).

Policy makers and instructional designers in VET can use this document as an example for the development of units of learning outcomes in other creative fields. Second, they can also use it as an example for the means of assigning ECVET points to units in view of credits transferability. Last but not least, they can use this document as an example of the methods that can possibly be used for validation of the results of informal learning.

Potential users: youth (16-25) & youth with special needs (early school leavers (ESL), long-term unemployed) who acquired learning in WD and CA informally and wish to validate it. **That is why the knowledge, skills and competencies required are selected in terms of user profile- people who are so-called "one man company" or self-employed or working in very small teams (2-3 people).** For example, such people will need some basic project management skills which are not necessary if they work in bigger companies where separate project managers exists.

4. Structure and levels

This document consists of three parts:

1st part – general introduction about the project, the context, target group, the descriptions of units as well as job description.

2nd part - Description of Outcome-based Units in *Web design* Part I – EQF Level 4 (more basic level)

3rd part - Description of Outcome-based Units in *Web design* Part II – EQF Level 5 (more advanced level)

For more information on EQF Levels, please see: http://ec.europa.eu/eqf/compare/eqf_en.htm#comparison

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This description is divided into two EQF Levels because this way it is possible for a person's outcomes of informal learning to be assessed and recognized:

- a. if these are at a lower level (EQF Level 4) only;
- b. if this person can cover both levels;

5. Terminology

There are several basic "terms" that need to be clarified when working with this document:

- **Unit** – also called "unit of learning outcomes". A unit is a component of a qualification, consisting of a coherent set of knowledge, skills and competence that can be assessed and validated. Units in the case of CREATE project are grouped into so-called working fields.
- **Working field (Module)** – a working field groups two or more units together. The working field puts units under a common denominator depending on how general or how specific the topics covered by the units are. In this respect in CREATE project there are two working fields in the descriptions: general topics and specific topics. One of the reasons to group units in descriptions into these two working fields was that this is the case in the Bulgarian VET standards where units are divided into two – those that cover general topics related to the profession in question and those that cover specific topics.
- **Learning outcomes** – learning outcomes are statements of what a learner knows, understands and is able to do on completion of a learning process. The European definition of learning outcomes uses the terms knowledge, skills and competence for describing learning outcomes.
- **ECVET points** – ECVET points are the numerical representation of the overall weight of learning outcomes in a qualification and of the relative weight of units in relation to the qualification.
- **EQF level** - EQF describes levels of qualifications in terms of learning outcomes. The eight levels cover the entire span of qualifications from those achieved at the end of compulsory education to those awarded at the highest level of academic and professional or vocational education and training. / http://ec.europa.eu/education/pub/pdf/general/eqf/leaflet_en.pdf /
- **Self-acquired/informal learning** – it includes learning at home, work, during daily interactions or by sharing knowledge in communities.

Definitions for “unit”, “learning outcomes”, “ECVET points” are taken from “Get to know ECVET better: Questions and Answers”, EQARF – ECVET Launching Conference Moving from Principles to Implementation /November 2009/.

6. Prerequisites

Knowledge, skills and competence necessary prior to obtaining EQF Level 4 of Computer Animator:

Knowledge	Skills	Competence

7. Job Description

This part of the Description of Outcome-Based Units contains the work elements, responsibilities, personal characteristics, work conditions, equipment and tools which are a part of the job of the web designer. The job description is divided into two for the two EQF levels (4 and 5 respectively) as is divided the description of outcome-based units below. One should apply only 7.1. or both 7.1. and 7.2. depending on the level covered.

7.1. Job Description for EQF Level 4

A web designer is the creator of the website from an overall design point of view. A core responsibility of the designer's job is to present information in a way that is both accessible and memorable. The web designer therefore needs mostly graphic design and creative competences. This does not include heavy programming and software



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development tasks (e.g. coding the various elements of a Content Management System (CMS) - the backbone of most state-of-the art websites) which are usually handled by a web programmer (a function that was not analysed specifically as it is very close to software programmer). In many cases, the web designer can be given the responsibility to manage the website and may act as webmaster (especially in SMEs).

a. Work elements

From each unit there are a number of work elements extracted. For example, from unit "Scripting" in computer animation below the following work element can be extracted: Elaborate the script for a computer animation movie or contribute to elaborating the script as a part of a team.

b. Responsibilities

Plays a pivotal role in the web development team by providing attractive ways of implementing websites from a design and content layout point of view.

c. Personal characteristics

Usually works with the web development team alongside technicians, such as web programmers, webmasters, web content managers, in which the web designer, in many instances, represents the marketing and communications point of view. Works also with the web marketer.

d. Work conditions

For example, the computer animator can work in an office or in a studio depending on his/her role and the type of animation.

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e. Equipment and tools

7.2. Job Description for EQF Level 5 /should contain the same items as 7.1. above/

(Here some abstract of the job requirements should be included)

a. Work elements

b. Responsibilities

c. Personal characteristics

d. Work conditions

e. Equipment and tools

II. Description of Outcome-Based Units in Web design Part I – EQF Level 4

Title of description:	Web designer
EQF level:	Level 4



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Title of working field 1:	Preparation and design based on standards defined by the software industry (W3C)
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Title of unit 1:	Planning		
ECVET points:	18		
Learning outcomes 1: Preparation	Knowledge	Skills	Competence
	<p>Basics of project management – needs analysis, user profiles creation, defining work packages and milestones, defining progress indicators and evaluation methods etc.;</p> <p>Basics of communication;</p> <p>Some aspects of marketing and advertising in order to identify the real clients needs;</p>	<p>To be able to communicate with the customers in different ways- face-to-face, by e-mail, by other online conferencing tools;</p> <p>To be able to divide the work in parts (work-packages)</p> <p>To be able to define progress indicators, to define some risks;</p> <p>To be able to prepare simple project presentation;</p>	<p>To be able to apply some approaches for identifying the customer needs;</p> <p>To be able to prepare a simple project management plan;</p> <p>To be able to manage a small project and evaluate the risks;</p>



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	<p>Fundamental understanding of IT-Systems;</p> <p>Basics of law in the field of activity (to be aware about property rights; contracts, privacy);</p>	<p>To be able to define the specifications for further development;</p>	
<p>Learning outcomes 2. Accessibility</p>	<p>Being familiar with different types of disabilities and understanding the unprecedented access to information;</p> <p>Existing accessibility support in web technologies including interoperability with assistive technologies; and WAI guidelines;</p> <p>Understanding basic specifications including, for example, WCAG;</p> <p>Fonts and colors impact on accessibility;</p>	<p>To be able to write recommendations for structuring HTML, fonts and colours in terms of accessibility;</p> <p>To be able to check the www site in terms of accessibility;</p> <p>To improve the access to the website via introducing access-free features;</p>	<p>To be able to plan and develop access-free interfaces and to ensure the access of people with disabilities;</p>



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	Knowledge of some basic HTML features and HTML structuring for the purposes of speech synthesizers and access-free browsing;		
Learning outcomes 3. Internationalization	Unicode-based encodings; To know the writing systems which require special support; The risks of different symbol use;	To be able to build specifications/recommendations that allow browsing without problems (in terms of letters/alphabet visualization);	To be able to design or develop the content, application, specification, and so on, in a way that ensures it will work well for, or can be easily adapted for, users from any culture, region, or language.
Learning outcomes 4. Usability	Knowing the ISO Standards (ISO/TR 16982:2002, ISO 9241); Iterative design, Knowing different development phases of the usability engineering; Knowing basic usability test approaches;	Identifies the core features of usability in relation to the target group; Is able to identify the best usability test procedures;	To design the product that can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use;



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Title of unit 2:	Design		
ECVET points:	37		
Learning outcomes 1: Java Web Scripts	Knowledge	Skills	Competence
	Some basic knowledge about: Document Object Model specifications form the core of DHTML; XMLHttpRequest; several APIs which make the integration of web applications with the local file system and storage	To handle scripts language efficiently and error-free;	Making web pages more dynamic by using script languages;



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	seamless.		
Learning outcomes 2. Graphics	<p>Some basic knowledge about:</p> <p>Image file formats and usage (GIF, JPEG, PNG, SVG etc.)</p> <p>Fonts;</p> <p>Raster and vector graphics usage and processing – knowledge of some existing image processing software;</p>	<p>To be able to select fonts and colors;</p> <p>To be able to import and change vector and raster graphics;</p> <p>To be able to use different graphics interface elements- menus, icons, buttons, bars etc.</p>	<p>To process vector and raster images;</p> <p>To design the layout of the interface and all the interface elements- menus, icons, windows etc.</p>
Learning outcomes 3. Audio and Video	<p>Some basic knowledge about:</p> <p>Audio digitalization (samples) and MIDI;</p> <p>Video digitalization and MPEG;</p> <p>Audion and Video Codecs;</p> <p>Media Storage;</p> <p>SMIL;</p> <p>Timed Text;</p> <p>Media Fragment;</p> <p>Media annotation;</p>	<p>To be able to import audio and video files;</p> <p>To be able to play audio and video files;</p>	<p>To be able to edit audio and video files in terms of integration in the web;</p> <p>To be able to integrate audio and video in web site;</p>



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Methods for assessment of self-acquired learning:	<ul style="list-style-type: none"> • Tests and examinations <p>Additional methods:</p> <ul style="list-style-type: none"> • Simulation • Declarative method 		
Title of working field 2:	Development of the web site based on standards defined by the software industry (W3C)		
Title of unit 3:	Development		
ECVET points:	24		
Learning outcomes 1: HTML/CSS	Knowledge	Skills	Competence
	HTML: Introduction to HTML; HTML Document ; Embedded	Publish online documents with headings, text, tables, lists, photos etc. Retrieve online information via	To develop a web-page using HTML, CSS;



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	<p>content; Hyper Links; Tables; Forms; Sections; Style and Script;</p> <p>CSS:</p> <p>Introduction to CSS; Styling, Box model; layout; advanced CSS</p>	<p>hypertext links, at the click of a button;</p> <p>To design a form for conducting transactions with remote services, for use in searching for information, making reservations, ordering products etc.;</p> <p>Include spread-sheets, video-clips, sound clips, and other applications directly in their documents</p>	
Learning outcomes 2: CMS	<p>Overview of the core features of a content management system;</p> <p>Knows basic features of at least one CMS</p>	<p>Is able to design data-base fields and tables;</p> <p>Is able present relations between data-base tables;</p>	<p>Is able to identify the customers' requirements in terms of data-manipulation and storage;</p> <p>Is able to define data-base structure;</p> <p>Is able to select proper CMS and integrate it to the website</p>
Learning outcomes 3: Web-Performance Optimization	<p>Browser rendering efficiency, protocol options;</p>	<p>To test a web pages from outside networks;</p>	<p>Monitoring and testing of websites to achieve optimum performance under given</p>



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	<p>Response-request cycles;</p> <p>Caching;</p> <p>Multi-server content and byte range requests;</p> <p>Measuring internal applications;</p>	<p>To be able to reduce the size of images, video and audio;</p>	<p>constraints;</p> <p>Ability to re-design the interface in terms of improving the performance (editing and re-integration of video, graphics, audio etc.)</p>
<p>Learning outcomes 4: Debugging and Analysis</p>	<p>Knows the typical debugging process: problems with different browsers;</p> <p>CSS and HTML validation;</p>	<p>Is able to debug a page;</p>	<p>Handling various common debugging and analysis techniques;</p>
<p>Methods for assessment of self-acquired learning:</p>	<ul style="list-style-type: none"> • Tests and examinations 		
<p>Title of unit 4:</p>	<p>Management (web sites management/maintenance)</p>		
<p>ECVET points:</p>	<p>12</p>		



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	Knowledge	Skills	Competence
Learning outcomes 1: Content updating	User interface; Newsletter technologies; Documentation technologies;	Able to change texts, images, etc. in news and article sections; Is able to communicate with a content developer;	Is able to establish procedures for content updating and customer comments; Update the technology and the content regularly;
Learning outcomes 2: Managing social networks	Basic knowledge about the usage of the existing social networks (Facebook; Twitter, Xing; Youtube, Flickr, Twitter etc.); Blogs; Knowledge about the privacy issues;	Is able to create pages in social networks; Is able to import files- texts, images and video in the social networks;	Has an overview about existing social networks, their strengths and their weaknesses; Able to create and maintain a page/event/group in the social networks;
Learning outcomes 3: Using statistics	Basic knowledge of statistics; Presentation techniques; Data collected by the website; Logfiles, google analytics;	Is able to select a statistic tool; Is able to install a statistic tool;	Integrating the statistics in the www sites; Using the statistics data for increasing the access rate;



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Methods for assessment of self-acquired learning:	<ul style="list-style-type: none"> • Tests and examinations • Evidences from work place practices <p>Additional methods:</p> <ul style="list-style-type: none"> • Declarative method 		
Title of unit 5:	Optimization		
ECVET points:	8		
Learning outcomes 1: Search engine optimization	Knowledge	Skills	Competence
	Knows relevant engine and their technologies: Implementation procedures	Getting indexed; Preventing crawling; Increasing prominence;	Is able to use the SEO for improving the access rate of the website



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<p>Learning outcomes 2: Mobile Web</p>	<p>Knows the difference between making a web site for a mobile phone and for a PC;</p> <p>Mobile web authoring guidelines;</p> <p>Device independent guidelines;</p> <p>Web 3.0 standards for mobiles;</p>	<p>Selecting the page resolution in relation to existing mobile phones that is supposed to be addressed;</p> <p>Selecting the page layout in terms of mobile visualization;</p>	<p>To propose and design a web pages for mobile access;</p>
<p>Learning outcomes 3. Semantic Web</p>	<p>Has an overview about W3C – Standards:</p> <p>Resource Description Framework (RDF) Core Model, the RDF Schema language, the Web Ontology language (OWL), and the Simple Knowledge Organization System (SKOS)</p>	<p>Understands the components and the standards;</p>	<p>Making use of the semantic web;</p>
<p>Methods for assessment of self-acquired learning:</p>	<ul style="list-style-type: none"> • Tests and examinations • Evidences from work place practices 		



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III. Description of Outcome-Based Units in Web design Part II – EQF Level 5

Title of description:	Web designer
EQF level:	Level 5
Title of working field:	Advanced aspects of web design
Title of unit 6:	Interactivity and animation
ECVET points:	13



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	Knowledge	Skills	Competence
Learning outcomes 1: Adding interaction with products for web- animation	<p>Basics of interaction;</p> <p>Fundamentals of object-oriented programming.</p> <p>Understanding the concept of symbols and their different types.</p>	<p>Could manipulate basic action scripts;</p> <p>Working with components.</p> <p>Working with timeline, key frames and tweens.</p>	<p>Is able to use scripts for programming the interaction;</p> <p>Is able to use some of the existing products for web animation and interaction;</p>
Methods for assessment of self- acquired learning:	<ul style="list-style-type: none"> • Tests and examinations <p>Additional methods:</p> <ul style="list-style-type: none"> • Simulation • Observation • Declarative method 		



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Title of unit 7:	Introduction to database systems		
ECVET points:	8		
Learning outcomes 1: Implementing a database in a web site	Knowledge	Skills	Competence
	Understanding the usage of the data-bases. Understanding connections (how to connect to a server) and queries.	Working with PHP – establishing a database connection, adding and using forms, etc. Working with MySQL, SQL or others – selecting, writing and deleting information from tables.	Creating dynamic web pages. Ability to use some of the existing products for data-base development;
Methods for assessment of self-acquired learning:	<ul style="list-style-type: none"> • Portfolio method • Tests and examinations <p>Additional methods:</p> <ul style="list-style-type: none"> • Simulation 		



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	<ul style="list-style-type: none">• Observation• Declarative method
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