

Lifelong Learning Program
Leonardo da Vinci
Transfer of Innovation project

REVIVE - Reviewing and Reviving Existing VET
Curriculum

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Harmonization of pedagogical and
technological methodologies for reviewing
and reviving existing VET curriculum

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1. General contextual objectives

VET Curriculum developed for different purposes and with different learning objectives has been designed in very different ways in different VET institutions. **REVIVE** project is dedicated to review existing curriculum with the purpose to update it so that it better meets participants' requirements and expectations, it is based on training activities preparing participants for the practical use of their knowledge and skills. Personal development is the factor that influences both, curriculum designers and the end users who benefit from the improved and updated curriculum and are able to reach learning objectives in a more efficient and individual way.

Different VET institutions have very different experience in curriculum development and learning organization. There are success and failures in training sessions in terms of quality assurance and application of innovative practices, but they are realized only after application, testing and evaluation is realized, and more than 1 session is needed for the minimum. With the very rapid development of different tools and techniques that are applied in training at VET institutions, it is complicated to ensure qualitative tools for curriculum realization to maintain innovative aspects. **REVIVE** project harmonizes pedagogical and technological methodologies and suggests synchronized approach in order to maintain both, pedagogical and technological solutions at hand. This ensures very reflective quality assurance process, when reviewing is being performed and a decision has to be taken choosing proper innovative methods and tools, as well as qualitative didactical solutions.

The “*context independent*” feature is fully maintained in harmonization of both methodologies, as they are to be applied to very different subject-based curriculum that will be selected and revived. Methodology fully corresponds to European Quality Assurance Framework phases: planning, implementation, evaluation and assessment, and review.

The methodology for reviewing and updating existing VET curriculum in **REVIVE** project ensures horizontal and vertical quality assurance (QA) dimensions, didactical and strategical – political point of views.

1.1. Pedagogical methodology

The main didactic approaches of the methodology:

- provides systematic approach to curriculum QA
- applicable to VET systems and providers
- context independent
- focus on internal consistency of competences and learning outcomes
- improving the matching between training supply and needs
- promoting better access to lifelong learning
- promote a culture of quality improvement and accountability at all levels

- addressing education policies in the area of competence – based approach

Among limitations of this methodology, subject-author decision should be mentioned, as methodology is not prescriptive, but descriptive, asking curriculum authors to accept decision.

1.2. Technological methodology

REVIVE technological methodology is based on *iCamp* - a research and development project results. The project moves away from traditional approach of Instructional Design towards an **Environment Design Model** that offers the learner more autonomy in terms of tools, activities and resources (Fiedler et al, 2007). This model recognizes the change of the perspective that has been taken place in education for a couple of decades now – the shift from teacher-centered to learner-centered environments. The learners should not only have more freedom in planning, monitoring and suggesting evaluation of their learning, they should also have the possibility to choose suitable environments for their learning. This means that computer supported learning environments must cease to be primary tutor-defined and controlled centralised systems. Instead learners must be given the opportunity to build their own **Personal Learning Environments** (PLEs) from a palette of both institutional and web-based tools, systems and technologies (Fiedler et al, 2007). Together, these individual PLEs of people (learners, teachers, peers, etc.) evolves into one common virtual learning environment.

Methodology enables evaluation and comparison of different systems and tools along different predefined perspectives as perceived affordances (some examples of affordances include: creating and editing an artifact, group work with a multimedia artifact, group time management, self-analysis and reflection, creating/managing groups, text-based group discussion, audio conversation,

video conference, peer-evaluation, ect.). iCamp Handbook¹ offers guides and tutorials for several open source tools for (1) communicating (Flashmeeting, Skype, XLite), publishing and sharing (Blog, Videowiki, Feedback, Feed-on-Feeds), collaboration (Blog and Feedback, XoWiki, Google docs, Google calendar, Doodle), Self-organisation of the learning process (Blog, iLogue), creating a social network (MyDentity, Scuttle), searching the net (SQI, ObjectSpot). In REVIVE , the highly innovative iCamp technological methodology from research to application stage is being transferred.

2. Procedures

Each curriculum author team needs to perform the following tasks in order to review and revive curriculum:

- implement curriculum SWOT analysis (SWOT analysis structural template is provided in Annex 1 to this methodology)
- prepare recommendations in order to start reviewing process and negotiations with methodology co-authors on curriculum improvement, evaluating the need to perform:

1. Re-definition or learning objectives

- Learning objectives to be based on learning results (competence-based approach)
- (re) considering the tools to present and indicate learning objectives in the curriculum

2. Re-developing of learning activities

- Performing analysis of existing curriculum and online learning resources
- Structuring learning material
- Attributing and applying the types of learning/ teaching
- Developing learning activity description
- Selecting the tools to realize learning activities online

3. Re-selecting of evaluation strategy and evaluation tools

- Preparing evaluation strategy
- Preparing evaluation tools
- Realizing evaluation tools online

4. Re-thinking learning support and communication

- Preparing support and communication strategy and tools
- Selecting support and communication online realization tools

5. Preparation of scenario for organization of learning, prepare the course guides and tutor guides.

- Preparing the user guide for content and navigation
- Preparing the technical help assistance.

6. Definition of further improvement recommendations

2.1. SWOT analysis

SWOT analysis is performed on the basis of template provided in Annex 1 to this methodology.

SWOT analysis contents cover:

- Curriculum in an institutional context
- Evaluation of educational/ didactical conception
- Evaluation of learning objectives in the context of competences to be achieved
- Review of existing learning organization methods
- Evaluation of learning outcomes: evaluation strategy and self-assessment
- Support system evaluation
- Content update necessity
- Technological realization tools

Recommendations for curriculum improvement are being formulated on the basis of SWOT analysis results. These recommendations are subject to change during re-development process, but they become the guidelines for further process.

2.2. Re-definition of learning objectives

During SWOT analysis, curriculum authors evaluate if learning objectives are formulated on the basis of competence or learning-result based approach. The main goal or general learning objective of the curriculum should correspond standard competence in VET competence standards or be measurable in order to be treated as a competence gained during the learning/ teaching process (according to R.Lauzackas, 2001):

When	Who	Verbal expression	Ability expressed
After completion of this task...	...the learner...	...will be able...	...to describe the steps of curriculum de-development

Table 1. Definition of learning objectives according to Lauzackas, 2001.¹

¹ Laužackas R. (2001) Mokymo turinio projektavimas. Kaunas, VDU.

The following tool can be helpful to prepare the plan or a schedule based on competences to be achieved:

Main purposes of the course <i>When the learners successfully finish the course they will be able to:</i>	Competence	Specific purposes of the course			
		Learning purpose	Committed weeks/days	"VISION" - PLANNED ACTIVITIES IN THE COURSE	
				Method	Method's description
1. Explain which technologies and tools could be useful to realize distance learning and to define categories of distance learning tools.	FENTO competence B1: Identify opportunities for using ILT	1. To review types of distance learning and the technologies necessary to realize them. 2. To list the categories of tools 3. To list the technologies required for distance learning and to explain how they influence technological realization 4. To know components of distance learning tools and to be able to compare them, to evaluate their advantages and disadvantages	1 week	1 activity	To prepare introduction about you and to list which technologies do you use in your institution. Attach (address) of that to forum.
				2 activity	Learners study literature and do the self-control test.
				1 test	Learners study literature, do the 1 st for the evaluation (for the mark)
2. Describe hardware and networks for distance learning, take technological decisions for preparing	FENTO competence B: (B 1, B 2, B 3)	1. To define what the computer hardware is. 2. To list the main parts of the computer	2 week	3 activity	To take a look of computer case from inside and to acquaint what inner computer devices are and where they are.

Table 2. Learning result based structure of Curriculum.

During the project run, the tool for Activity planning and synchronization of pedagogical solution with technological tools is presented in Annex 2 to this report.

Competence based approach will ensure that learning/ teaching curriculum is based on:

- Units of qualification
- knowledge, skills, abilities

- meets the challenges of transferability, transparency and reciprocity of competences.

Curriculum authors need to consider the contextual situation within a distance learning online curriculum where and how general and specific learning objectives will be presented for learners.

2.3. Re-developing learning activities

Redevelopment of learning activities should be started with the analysis of available and existing resources and their possible applicability to curriculum.

Analysis of curriculum contains:

- Analysis of similar curriculum design
- Quality evaluation for different learning resources
- Analysis of theoretical research findings in the area and their applicability
- Examples of online design, including the cases of ICT tools
- Analysis of possibilities to perform collaborative learning, self-learning and sharing, networking and other activities.

Analysis of available and existing resources and their possible applicability

consists more specifically in evaluating the existing tools, the use that has been made of them, and the possibilities of adjustment to attain this ideal situation. Unlikely that an existing solution will

completely satisfy the end user but it might be inspiring. It might broaden the end user horizons, and it might refine the picture of the ideal product.

Survey and review existing courses, resources (traditional and online design) helps to avoid “reinventing the wheel”. At the same time, evaluation of the quality of the information and the use that is made out of it is being analyzed at the very same time. It is the process that has to be evaluated: the adequacy of the pedagogical and technological choices with the context and the objectives of the training.

It might be helpful to make records of analysed and selected learning resources providing a summary of them for later re-use:

Link	Description	Opinion	Last visited	Type of material	
LINKS FOR THEORETICAL PART OF THE COURSE					
http://otis.scotcit.ac.uk/onlinebook/otisT102.htm	Good theoretical material: analysis of the existing, case analyses (mentioned below)	Very good synthesis of the cases	2003 11 04/ 11 24	Theory	+
				Case analysis	+
				Activity examples	some
				Learning by doing	-
http://otis.scotcit.ac.uk/casestudy/bowskill.doc	Nicolas Bowskill, "Tutoring in real time environments", University of Sheffield, UK This case study aims to support academics who are "new" to real time technologies (synchronous conferencing) or new to their use in a teaching context.	good advice on preparing and running real time sessions	2003 11 04/ 11 24	Theory	-
				Case analysis	+
				Activity examples	+
				Learning by doing	+
http://otis.scotcit.ac.uk/casestudy/clarke.doc	Patsy Clarke, University of natal, South Africa "Online Learners Doing it for Themselves" Good example of how to classroom to facilitate individual and		2003 11 04/ 11 24	Theory	-
				Case analysis	+

Table 3. Learning resource management (Volungeviciene 2004).

2.4. Structuring learning material

Having getting acquainted with new online learning resources and tools, curriculum authors might come with the wish to re-structure curriculum and learning resources. This depends upon the online solutions the authors choose, as it is directly influenced by the tools, in the majority of cases, online learning might still be primarily based on didactical solution.

3. Attributing and applying the types of learning/ teaching

iCamp project pedagogical framework followed the notion that European higher education should offer educational experiences to its students that correspond with some of the key features of international, distributed and technologically mediated work settings. It is important to note that iCamp's concern was not to demonstrate that the application of certain technological tools and services and particular educational activities would directly raise the efficiency or effectiveness of teaching and studying practices in a particular domain. Instead, iCamp tried to create, establish and carry out educational experiences that would at least partially resemble international, distributed work environments.

The areas of challenge that were of particular interest in iCamp were described as self-directing intentional learning projects, collaborating with others, and social networking. In the iCamp context we consider self-directing intentional learning projects under certain contextual constraints (of formal higher education) that somehow limit the range of actions and decisions an individual can take to reach his or her goals.

iCamp neither considered this to be a definite list of important areas of action, nor did it

conceptualise these areas of action as completely independent of each other. It was assumed that in real-life educational settings these areas of action would be inevitably intertwined. However, from an interventionist perspective one can indeed try to focus on stimulating and supporting competence advancement in a particular area of action within a given time frame.

The overall idea of iCamp's intervention approach was to re-arrange existing teaching and studying practices to allow for competence advancement in selected areas of action (self-directing, collaborating, social-networking) without overly compromising domain specific, curricular objectives.

However, formal educational systems impose a number of powerful contextual constraints and limitations that stand against any considerable intervention that tries to alter established procedures. Formal educational systems traditionally structure teaching and studying activities along curricular ideas of sequencing, pacing, and intended outcomes within set periods of time. Another key feature of formal education is the assessment and certification of indicators for levels of performance and achievement in a particular area of study.

iCamp has also explicitly demonstrated the effort to connect its conceptual work to certain contributions of Activity Theory (see for example Leontjev, 1978; Engeström, 1987; Kutti, 1995; Engeström et al., 1999) and its understanding of human activities. iCamp was concerned with distributed work settings in which technologically mediated communication had to be used to establish shared objectives, roles and tools within a given group of people.

Thus here, in Revive project, we have 2 different approaches that need to be harmonized here:

1. international, distributed, media – based collaboration and networking, focused on acquisition of

rich professional competences – learning to learn – which takes place in parallel to domain-specific learning (iCamp approach) (*author comment: In British English speaking context “rich professional competences” is used instead of “meta-competences”*).

2. traditional re-structuring of teaching and studying activities along curriculum ideas of sequencing, pacing, and intended outcomes within set periods of time (Curriculum - driven approach)

Within REVIVE methodology which incorporates and harmonizes here both approaches, there are learning and teaching events, presented on the basic classification done by prof. D.Leclercq and M.Poumay from University of Liege. They suggest sequence for teaching and learning/ studying activities that correspond to one or several learning/ teaching organization methods. Learning/ teaching events suggested by the scientists are the following:

1. Imitation – modeling
2. Receiving – transmitting
3. Showing – practicing
4. Creation – encouragement
5. Exploration – documentation
6. Experimentation – inspiration
7. Debating – moderating
8. Reflecting – co-reflecting

On the other hand, we introduce here rich professional competence approach in which curriculum authors and re-developers decide where they insert pedagogical interventions suggested by iCamp approach.

Therefore we suggest re-think and re-evaluate traditional practice, find new solutions to improve experience with necessary improvements and decisions undertaken, and integrate iCamp approach into new curriculum design solutions: it would inevitably be integrated and employed during activity design, learning support and learning scenario design and implementation, and it could be as well integrated in all other phases, depending upon the decision accepted by curriculum authors.

4. Curriculum driven scenario, integrating activity – based collaboration and networking

If we start with Curriculum re-development, when learning objectives are defined (see above), the most important issue then is how realization of different learning/ teaching events can be done with different tools. Here is the table filled in by suggestions to be considered by curriculum authors:

Learning/ teaching event	Technological realization tools (suggestions, ideas, examples – go ahead and apply others!)
Imitation – modelling	Textual, audio-visual presentation and demonstration of good practice examples

Receiving – transmitting	Tools for content presentation (textual or audio,-visual) LMS systems, blogs, wikis,
Showing – practicing	Tools for individual and collaborative writing, simulations, demonstrations, quizzes testing, synchronous painting, screen-sharing applications, etc. practical tasks and activities.
Creation – encouragement	Tools for collaborative writing, audio and visual presentation; tools for publishing and sharing; blogs, e-portfolios.
Exploration – documentation	Online repositories, bookmarking systems, RSS feeds and aggregators, mash-up systems
Experimentation – inspiration	Online labs, simulations, augmented reality

Debating – moderating	Text communication: discussion forums, blogs, instant messaging, Audio- and video-conferencing tools, Tools for easy scheduling
Reflecting – co-reflecting	Blogs, conversational learning dairies, e-portfolios

Table 4. Learning organization methods realized by ICT (Volungeviciene, Wild).

After the learning/ teaching organization methods are selected, **activity or task description** has to be developed.

Revive harmonized methodology suggests the following tools for activity description development:

1. In order to maintain consistency among all activity description segments, we suggest to keep to the following elements:

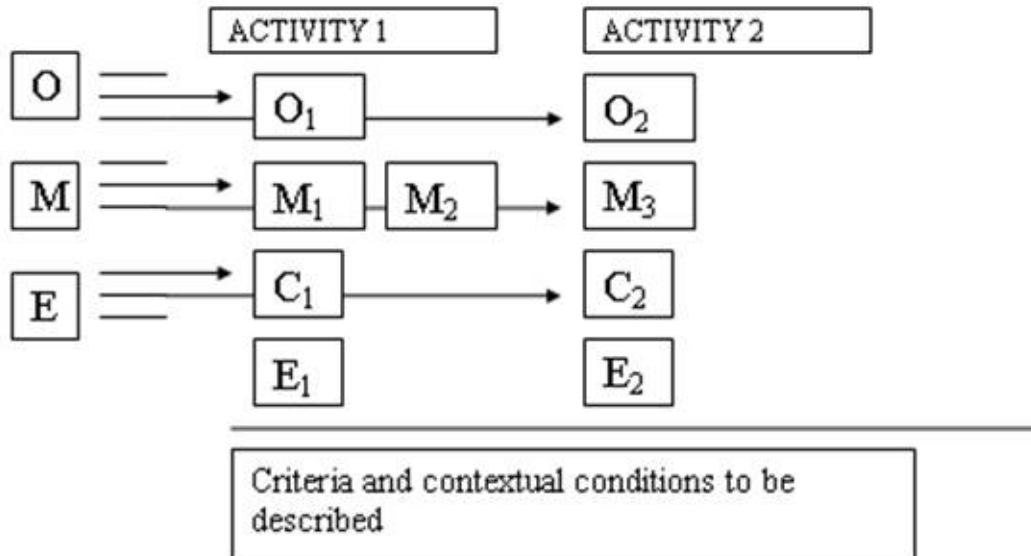


Table 5. Activity segmentation and modulization. Volungeviciene (2008¹).

¹ Distance learning and teaching curriculum reflective quality assurance. Dissertation, 2008.

Each activity is based on learning objectives (competence based approach) (O), which should be consistent with the methods (M), and evaluation tools (E) that contain evaluation criteria (C). Any activity may contain several learning/ teaching organization methods or evaluation tools. Criteria and contextual conditions should also be described.

Moreover, the tools for realization of this principle and didactic solution should be planned well enough. Here is the tool to help and foster the planning of such description (example):

<p>Specific objective(s) (SO)</p>	<p>To be able to:</p> <ul style="list-style-type: none"> • define tutor roles • define learner roles • suggest the ways to improve tutor-learner interactivity • organise peer work/ group work •
<p>Method/ steps to achieve SO</p>	<ol style="list-style-type: none"> 1. Each learner watches/ reads a problem-based situation 2. A tutor is assigned 3. The tutor has to follow moderate the discussion for problem solving 4. ...
<p>Expected output/ indicators</p>	<p>problems identified by the learners</p> <p>solutions found to solve the problems</p> <p>...</p>

Evaluation criteria
The tools (ICT) to be used to realize the activity online	

Table 6. Metodological tools for LA planning.

Detailed methodological tool for Activity planning along with the choice of technology for its realization is presented in Annex 3 to this methodology.

Then, after basic learning/ teaching events and activity models are designed, learning support and communication should be accurately planned and there, social networking tools are inevitably integrated and employed during activity design, learning support and learning scenario design and implementation.

5. Re-thinking learning support and communication

To plan communication and support tools, we need to think about:

- learning resource management
- synchronous and asynchronous communication and support
- competences necessary for learning/ teaching participants

- diagnosis of learners' progress
- recording of learning results
- encouraging of learner motivation

6. Preparation of the scenario for learning/ teaching organization

6 learning scenarios (Annex 4) have been developed by the project partners to guide the process of redesigning the curricula. For each of the scenarios some realisation tools have been suggested and included for training:

1. **Learning as an individual** (across all scenarios):
 - a. Searching the net – ObjectSpot and SQI plug-ins for Moodle
 - b. Tagging – Flickr
 - c. RSS Feeds – Google Reader, RSS in Moodle
 - d. Bookmarking and sharing – Delicious, Scuttle
2. **Collaboration and collaborative writing** (Annex 4a, 4b,4c)
 - a. Feedback plug-in for Moodle blog and Wordpress
 - b. Google docs and wikis for collaborative writing.
 - c. Doodle for task division and easy scheduling
3. **Reflection on content and critical thinking** (Annex 4d)
 - a. Moodle blog, Wordpress

4. **Learning contract, reflecting on learning, self-assessment** (Annex 4e)
 - a. Conversational learning diaries (Wordpress, Blog in Moodle), e-Portfolios (Mahara), quizzing tools and surveys

5. **Communicating and discussing** (Annex 4f)
 - a. Skype and Flashmeeting. Doodle and Choice in Moodle.

7. Re-defining (selecting) evaluation strategy

Speaking about evaluation, we mean different objects of evaluation, starting with course and curriculum itself. *Curriculum quality evaluation* can be based on internal and external assessment. Revive methodology is dedicated to curriculum internal evaluation, and it resembles the principles of isomorphism, when curriculum authors going through the methodology will implement curriculum evaluation step by step. We can also recommend different readings on distance learning curriculum quality evaluation.

Concerning *evaluation of learning outcomes* – these should be primarily ensure evaluation of learning results and competence achieved. The strategy of evaluation of learning outcomes should be consistent with the competence – based learning objectives. Evaluation tools and methods chosen should ensure this consistency, as well as other pedagogical evaluation strategy principles.

However, re-designing of curriculum should provide possibilities for learners to participate in construction of evaluation strategy. This is suggested, again, by scientists working on metacognition principles and various methods. Metacognition would empower evaluation of learning process,

learning success and learning progress during an early, middle and later stages of learning/ teaching process.

For the implementation of metacognition (empowering self-evaluation, process evaluation, progress evaluation and learning strategy evaluation), the following didactical and technological tools can be suggested as examples:

- **learning contract** – indicating the main parameters of learning process and progress, including *learning outcomes* (learning results are compared with the learning outcomes, and evaluation conclusions are based on the comparison of the two), *learning strategy* (flexible or restricted, upon the agreement of learning process participants and contract parties), *conditional restraints* (organizational restraints, such as time, place and other regulations), *interventions of learning process participants* (roles and responsibilities, degrees of freedom and independence, type of interaction and request for interactions);
- **Portfolio:**
 - Public and presentation files (to present best work in order to provide evidence of learner competences; to increase learner’s self-evaluation abilities; to contribute with responsibility – managing tools for the learner, to raise self-awareness, etc.
 - Intermediate and construction files (to highlight learning process and progress, to enable diagnosis of problematic issues, to enable learners to measure self-cognition, to establish links with curriculum, and to illustrate progress and achievements).
- **Degrees of certainty** (<http://certainty.wordpress.com>)

“By giving a degree a certainty having chosen the correct answer a student is giving

a judgment about his knowledge. The student is so referring to his knowledge. He is thinking about the quality of his knowledge. When someone doubts a double check is to be made. What does doubt mean? Does it mean being less sure than 100% sure? Anyway when a lower than 100% judgment is made Flavell's words are met: "I am engaging in metacognition if I notice that I am having more trouble learning A than B; if it strikes me that I should double check C before accepting it as fact." (p 232 in Metacognitive aspects of problem solving. In L. B. Resnick (Ed.), The nature of intelligence (pp.231-236). Hillsdale, NJ: Erlbaum)."

Metacognition principle should be maintained applying traditional evaluation tools, like knowledge evaluation using testing, application of knowledge – using tasks and projects, etc. etc.

Other challenges occur using group or peer learning evaluation tools. Individual contribution to group work are difficult to measure.

Criteria and indicators should be agreed upon to be able to apply individual grading to group members. It is considered to apply group peer – evaluation tools. For example, learners can indicate and suggest grading their peers during the group work, marking +1 or -1 mark for individual contributions to group work on the basis of criteria agreed in advance.

Electronic Evaluation Tools System
Group learning

Learning Unit Design Learning Unit Process

Project peer evaluation

Criteria	High input	Middle input	Low input	
content contribution	0	-1	-2	✗
discussions	0	-1	-2	✗
design and ideas	0	-1	-2	✗
activity management	0	-1	-2	✗
peer help and consultation	0	-1	-2	✗
	0	-1	-2	✗

Add a criterion

OK

Table 7. Definition of learning objectives realized with ICT to facilitate definition process. Leonardo da Vinci project EVETE (www.evete.org).

Having performed analysis of existing curriculum strengths, weaknesses, threads and opportunities, curriculum authors might possibly already have come to the conclusion about re-definition of evaluation strategy.

8. Definition of further improvement recommendations

Curriculum authors need to perform a second-cycle review and present recommendations for further improvement.

Annexes with methodology tables and examples.

1. Grodecka K., Wild F., Kieslinger B. (eds), How to Use Social Software in Higher Education, a handbook from iCamp project, 2008, Krakow