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Transferability and Evaluation Guide

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About the project

The activities performed are the development, implementation, performing and evaluation of pilot courses in C-VET, the programming of a supporting software tool for trainers, the implementation of a training course for trainers to learn about the new techniques and the creation of a transferability and evaluation guide for the use of the developed outputs.

Project data
Ersamus+ KA 2 project
Project number: 2017-1-ES01-KA202-038256

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Partner: EFQBL, DigiLab La Sapienza, SADE, University of Aveiro
Web: www.tibl-project.eu

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Preface

This transferability and evaluation guide will help trainers and teachers to transfer the developed products and innovations in this project to other learning and training environments
Several innovations have been developed and implemented during the project's lifetime. All mentioned methods and tools have been used, tested and been evaluated by the consortium during the implementation and performing of the pilot courses.

Figure 1: Learning with multiple devices - techniques is a fact in learning.
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The two pilot courses focused on

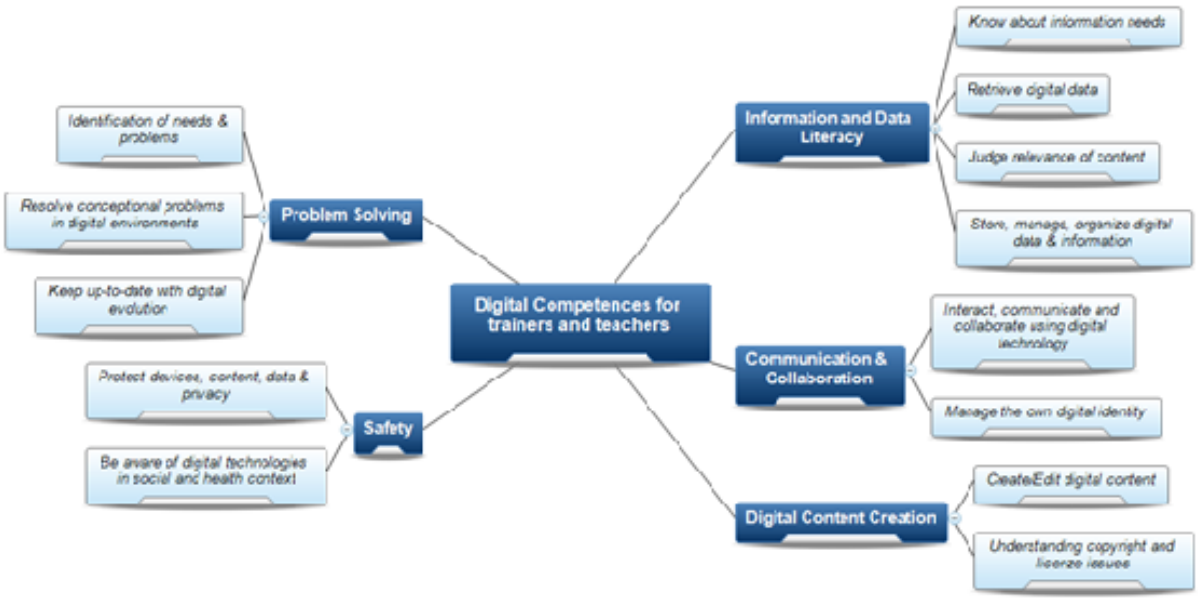
- Formal VET education
- Non-Formal C-Vet education of people just working in the professional field.

This makes it necessary to publish some considerations about the transfer of the developed tools and praxis as well as the evaluation of new developed courses to be sure that they will follow the guidelines developed in the project.
In this preface several issues are mentioned and discussed. These matters can be seen as the preconditions to create and implement VET courses using multiple devices as developed in the Frame of the TIBL methodology.

Digital competences

Digital competences of trainers are crucial. The project describes the use of digital devices, content delivered by a distance learning platform, and the use of multimedia.
All adults in training courses as well as learners are European citizens. A course provider can expect the necessary competences or should check the availability.
The Joint Research Center of the European Commission has developed a specific framework focusing on digital competences (DigComp 2.0, Link: https://ec.europa.eu/jrc/en/digcomp/digital-competence-framework)
This framework describes the expected digital competences of European citizens. From this point of view, this framework is applicable for trainers and learners as well.

Digital competences for trainers and teachers



The necessary competences are:

Information and data literacy

This is the basic level to handle digital content. The trainer or teacher must be able to evaluate the used information and to offer seriously evaluated material.

- To articulate information needs
- To locate and retrieve digital data, information and content
- To judge the relevance of the source and its content.
- To store, manage, and organize digital data, information and content.

Communication and collaboration

Communication is the competence to keep contact with the learners, to supply them in their learning, to keep contact and to facilitate them.

- To interact, communicate and collaborate through digital technologies while being aware of cultural and generational diversity

- To manage one’s digital identity and reputation.

Digital content creation

Content creation as one of the most important competences to create courses, mainly to create the distance learning parts of the course. A specific challenge is the creation of multimedia based and interactive content. This covers also the use of video, the production of interactive videos and related and similar items.

- To create and edit digital content
- To improve and integrate information and content into an existing body of knowledge while understanding how copyright and licenses are to be applied.
  This is crucial for trainers and course creators!
- To know how to give understandable instructions for a computer system.

Safety

Safety considerations must be done to protect the privacy of the learners and to protect the distance learning platform, the stored content there, and other issues like user data.

- To protect devices, content, personal data and privacy in digital environments.
- To protect physical and psychological health, and to be aware of digital technologies for social well-being and social inclusion

Problem solving

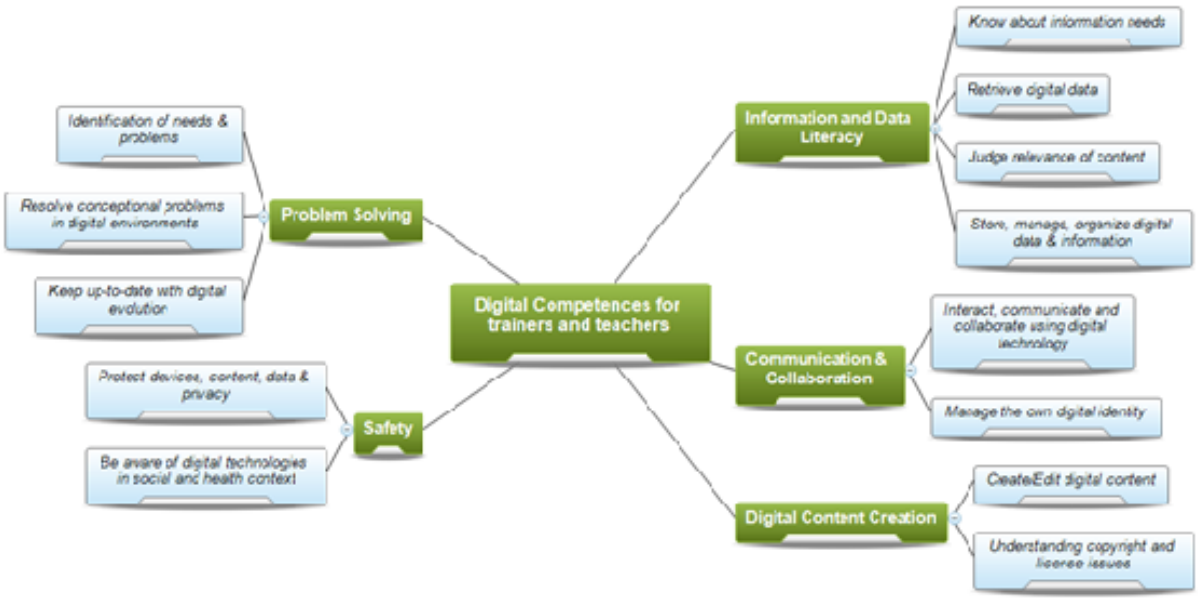
Here items are mentioned that refer to course creation and to facilitate the learners.

- To identify needs and problems, and to resolve conceptual problems and problem situations in digital environments

This is a crucial competence for trainers to maintain their learners and to assist them (for example in the use of the distance learning platform).

- To use digital tools to innovate processes and products.
- To keep up-to-date with the digital evolution.

Digital competences of trainees and learners



The necessary competences are similar to the competences the trainers' or teachers' needs. Nevertheless, the competences are used partly in a different context:

Information and data literacy

This is the basic level to handle digital content. The learner as the receiver of the information must always check the reliability of sources and content.

- To articulate information needs
- To locate and retrieve digital data, information and content

- To judge the relevance of the source and its content.
- To store, manage, and organize digital data, information and content.

Communication and collaboration

Blended learning courses base on communication and collaboration. This covers the typical interactions of learning processes like interaction between trainer and trainee or the interaction between learners in a collaborative learning experience. A new item is the cross activity, this type of collaboration was not part of this project (see www.isa-jahnke.com/).

- To interact, communicate and collaborate through digital technologies while being aware of cultural and generational diversity
- To manage one's digital identity and reputation.

Digital content creation

Learners typically create digital content during the learning process. In a digital based and technical environment, the creation of content is crucial for the learning success.

- To create and edit digital content
  This does not only mean texts but other content like presentations, graphics, slide shows, videos and all other types of digital content.
- To improve and integrate information and content into an existing body of knowledge while understanding how copyright and licenses are to be applied.
  This is crucial for trainers and course creators!
- To know how to give understandable instructions for a computer system.

Safety

Learners must care for their data protection and keeping of their privacy in the same way the trainers of teachers do. Data protection and care for the privacy is a cooperative task where both sides must contribute in an optimized way.

- To protect devices, content, personal data and privacy in digital environments.
- To protect physical and psychological health, and to be aware of digital technologies for social well-being and social inclusion

Problem solving

Here items are mentioned that refer to course creation and facilitate the learners.

- To identify needs and problems, and to resolve conceptual problems and problem situations in digital environments
  This is a crucial competence for trainers to maintain their learners and to assist them (for example in the use of the distance learning platform).
- To use digital tools to innovate processes and products.
- To keep up-to-date with the digital evolution.

Use of multiple devices

Blended learning is not really new: The traditional schools offered a brick & mortar teaching (lecture based) and the learners had to do their home work at home. This is more or less a kind of blended learning. Blended learning developed to technology enhanced learning where learners as well as teachers and trainers use their devices during the learning process independent from the learning

environment.

What are multiple devices

Technology enhanced learning started with heavy desktop PCs. The use of laptops, tablets and smart phones makes it possible to learn irrespective of place (which means “mobile learning”). All these similar devises, like desktop PCs, laptop, notebook, netbook, tablet, and smart phone can be summarized with the term "Multiple Devices". The term “Multiple Devices” was created by Peter Mazohl (EFQBL) and Carlos Guerrero (SAFA) in 2017.
Some advantages of using multiple devices is the mobility, the use of multimedia and interactive learning elements, and the possibility to learn at any time and any place.

Use of multiple devices

Learners, especially mobile users, have particular expectations in modern technology enhanced courses. These are real time access, technical stability, well-done graphics, animations, and graphical interactions. Multiple devices support all this; however, they may not

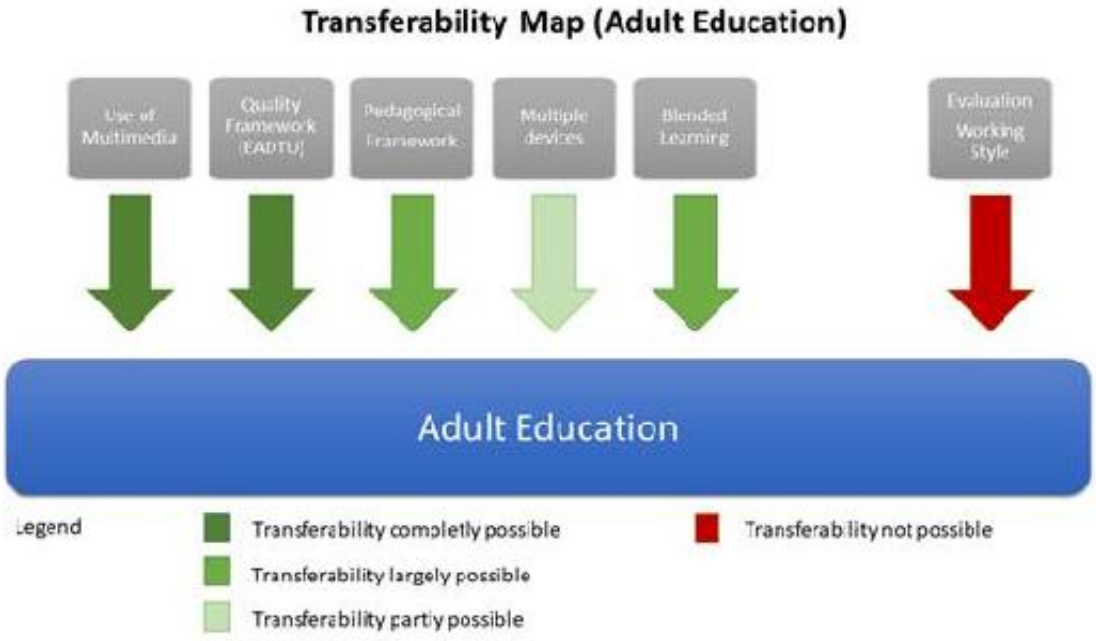
deal with it in the same way. This may depend on the operating system of the device, on the screen size, or also on the missing keyboard or the low power of the device.

Use of multimedia and interactive content

The use of multimedia elements and interactivity in courses is an excellent way to make courses more interesting for learners and to help them to achieve better learning results. Richard Mayer describes in his book the valuable and optimized use of multimedia. The outline the positive impact of interactivity on learners and their learning success is proven. Jon Bergmann (the developer of flipped learning) points out the role of an active learner using multimedia based and interactive tools in their learning. Gary Beauchamp argues that interactive learning environments and active engagement of learners will be fruitful for the learning success.
All these reasons convinced the project team to make intensive use of multimedia elements and interactivity in the pilot courses. The feedback of the learners confirmed this approach and the used technologies.

Transferability to Adult Education

The TIBL course concept covers everything that is necessary to create high-quality, efficiently implemented Blended Learning courses with a high level of learning outcomes. The transfer of the TIBL course concept (in origin form Vocational Education and Training) is shown in the following transferability map.



The two major items developed during the project's life time are the Trainers' Toolbox and the MOOC.

Transferability of the Toolbox

The toolbox is a web-based application consisting of several tools which supports the trainer in the logical and organizational development of the training. The tools work interactively – trainers give an input to the system (using interactive forms) and get

individually created guidelines, plans, checklists and course creation instructions.

Figure 1: The various modules of the toolbox

The tool will handle requests dealing with the pedagogical framework, the embedded quality enhancement framework, the use of multimedia, the evaluation of courses based on the TIBL concept, and finally assessment helps.

Course Planning

The planning (and preparation) for training in adult education starts with the definition of the competences that will be taught. These competences are usually defined/described in a kind of curriculum or syllabus. For example in language teaching to adults the EU language level is defined. Sometimes they are listed and described in private programs for specific training courses.

The seven items mentioned in the toolbox are valid for adult education and could be used as described.
These seven items are:

1. The course provides a **worthful learning** and **conductive atmosphere**.
2. **Significant course goals** have been developed and communicated.
3. **Content** has been created taking in account the training/learning goals.
4. Course attendees and **learners** are from the **target group** with **well-known pre-knowledge** (that fits to the course).
5. **Learners' characteristics** are available.
6. The selection of the **instructional methods** follows the pedagogical framework of "**Sustained Learning**".
7. An appropriate **feedback culture** has been implemented in the course.

Course Design

The course design in Adult education is similar due to the similarities between VET learners and adult learners (both target groups are adults, have their experience in everyday life, are used to learn something new, and some more).
The design of a blended learning can be done in the same way as for VET courses. Here are some issues that should be taken into account when designing a new course:

- How to organize (or split) the course contents and activities into the online and the onsite parts of the training?
- Which elements must we take into account in order to meet the quality level that we seek for our blended course?
- What knowledge and competence must both trainers and trainees have in order to achieve a successful training?
- How can missing competences (especially digital competences of adult learners) be identified and adjusted?

- What are the affordances trying to reach, and how can they be solved with the use of multimedia and technology?
- How can we make use of multimedia materials and create an interactive experience for our learners, independently of the devices they use for their learning process?
- What about the alignment of the learning outcomes, activities and assessments?
- In which way will the course be blended?
- What should the role of the trainers be? And the role of the learners?
- Which role will play multimedia and interactive content in the course (to initiate active and sustained learning)?

In the course design there are a lot of similarities visible (between Adult Education and VET/C-VET)

Course Delivery (Implementation)

The course implementation describes the realization and execution of the course. The implementation od Adult Education courses based on Blended Learning and using the TIBL concept works more or less equally to the implementation of VET courses.
The toolbox provides a comprehensive description of issues valid for the course implementation. These descriptions can be taken for the implementation of Adult Education courses as they are.
The provides interactive checklist can be taken unchanged.

Image 1: Learning every time - everywhere -also in Adult Education Blended Learning courses.

Course Evaluation

The course evaluation enables to find out to what extent the developed course fulfils the TIBL criteria.

List of Software

The developed software list is a useful tool for trainers. The proven and freeware tools help trainers to create the necessary content without any investment in expansive software. Nevertheless, the training to use the software is a time-consuming issue, especially in the case of multimedia creating software.

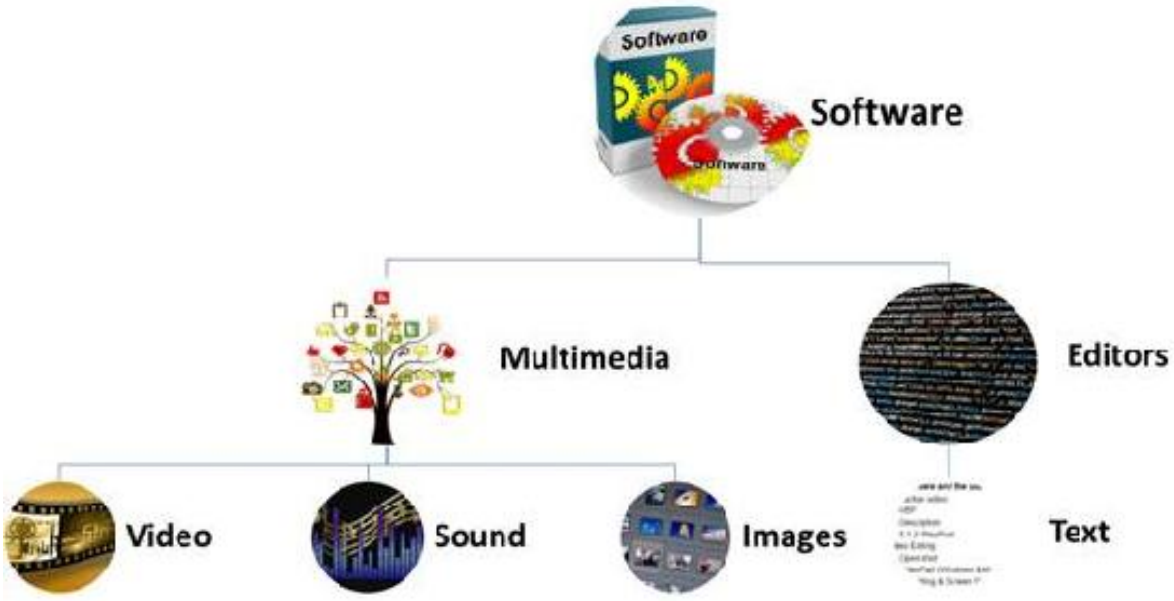


Figure 2: Various groups of software used in content creation

You will find an interactive tool creating a software list in the toolbox (Toolbox: Software List)

Tutorials to use Moodle

Moodle is a free and open-source learning management system, it is continuously further developed and with each new version new features appear. On one hand the innovation in MOODLE makes it difficult to keep the knowledge at the state of the art, on the other hand the basic features did not change so intensively in the last time.

The knowledge to use a learning platform as well as the necessary skills must be practiced permanently.
You will find some training videos dealing with the use of MOODLE

and specific MOODLE features in the trainers' toolbox (MOODLE tutorials)

Quality enhance framework

The quality framework is valid for adult education in the same way as it is important in VET. The quality framework used in the TIBL-concept focuses on the course design, the course implementation, and on the support (of trainees). It is based on a benchmarking system, where a statement (defining a specific quality item) is to be compared with the created course.
For adult education, the benchmarks "curriculum design" of the used e-xcellence framework of the EADTU should be taken into account and used in the planning and development of the course.
All other modules can be taken as they were developed in the TIBL project.

Pedagogical Framework

The pedagogical framework developed in the frame of the project is the "sustained learning". This framework can be transferred without major changes to adult education.

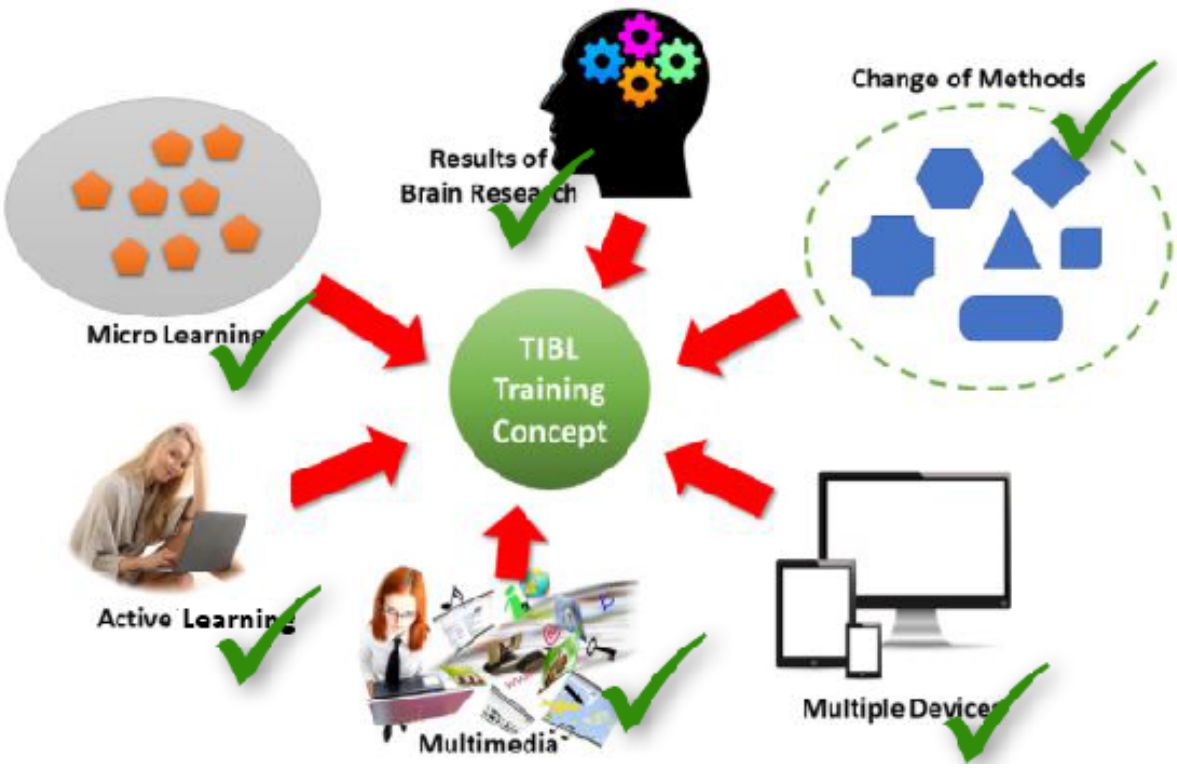


Figure 2: The various elements of the TIBL pedagogical approach (Sustained Learning)

Transferability of the MOOC

The MOOC is a self-running training course for trainers. Performing the MOOC trainers get an overview of the TIBL method (which is a specific approach to Blended Learning using a quality enhancement framework, an innovative learning approach in the way of sustained learning, and a concept to use multiple devices in the training.

Blended Learning in Adult Education settings

Blended Learning is a fact in Adult Education today. Many Adult education courses use the Blended Learning for the delivery of the

course and are partly very similar to VET courses.
The starting point for the learning differs. While people in VET (or C-VET) education have a high level of motivation because of fact that, what they learn they need in their job, adults are learning by their free will. Their motivation often is that they are interested in the topic or they want to learn something from pure delight and enjoyment.
Special instructions may be necessary to use the Distance Learning platform and to practice cooperative learning.
The basics do not differ in Adult Education (compared with VET). Specific activities, like labs or handicraft activities are dedicated to the onsite learning, other issues (like theoretical content, design activities, practicing) are dedicated to the distance learning part.

Image 3: Pottery course - practical work in onsite teaching.

In Adult Education groups often are extremely inhomogeneous. It is necessary to find out (from the beginning) with which level people

start the course and which people need special support.
Hint: To bring people to the same level some Micro Learning units can be prepared. Micro Learning supports individualized learning and can be used to compensate existing deficits.

Technology enhanced training (for adults)

Unlike in most VET and C-VET trainings the learners will not have similar devices for their learning. Specifically, in company trainings the trainees will use (a more or less) uniform or consisting digital equipment. In mixed VET courses (trainees come from different companies) the situation is similar to adult education. In these courses you must be aware of all types of devices. Therefore, it is crucial

- To take care for an implementation of the course (especially for the distance learning part) that ensures that the content can be displayed on all used devices.
- If – due to the used content – any restriction of devices must be done (for example smart phones are excluded because the screen is too small, or a pointing device is needed) this must be communicated from the beginning.
  Hint: It is a good idea to announce the useable devices from the beginning including the course announcement.

Image 4: The use of multiple devices, including the advantages of learning any time and any where are valid for Adult Education as well.

Recommendation: Adult education organizations could care for some well-fitting devices for the course participants. These devices could be lend to learners (in the frame of the course agreement). In any case it is necessary to care for the availability of the devices from the course begin.

Assessment

The maturity and the motivation of adult learners are similar to trainees in VET education. Formative and summative assessments should be the used standards in assessments.

Image 5: Assessment may differ in Adult Education due to different pre-conditions

Nevertheless, many adult courses **are not evaluated** (by a final summative evaluation) and **do not end with a diploma** or a **certificate**. People attend the course because they are interested in gaining certain competences. In many cases, they are not interested in exams or formative and summative evaluation. It is good practice that a certificate is given to the trainees. The conditions of evaluation (formative and summative) must be foreseen, planned exactly, communicated before the training starts, be implemented in an appropriate way and executed correctly.
Group activities and collaborative assignments also can be used to assess the learning result.

Implementation of Blended Learning courses

Many adult education organisations do not own a learning platform and therefor the implementation of the blended learning course uses some cloud-based solutions. This is not in line with the intention of the TIBL concept because several principles of course implementations are not fulfilled. Using a cloud repository instead of a MOODLE server does not support

- The concept of a unique virtual place where all the material can be accessed
- Does not support the use of multimedia content in a best-satisfying way
- May lead to problems in the collaboration

Besides the problems mentioned above the implementation should follow the concept as described in the MOOC. Additionally, the toolbox provides a well-done summary of the implementation concept and offers an interactive checklist for the implementation as well.

Similarities in working style

VET trainees are adults, nevertheless the working style of learners in Adult Education is different (due to different motivation and preconditions). This starts with the different motivation of adult learners (they attend courses in the most cases on their free well and are not sent to attend the course by their employers), continues in the different typical learning behavior and ends by the missing need to attend this course (This need to get a certificate is often a core intention of VET learners).

Image 6: There a minimum differences in the working style between Adult Education and VET.

Evaluation of the course

This addresses two different items: evaluation of the course by the learners and the evaluation of the course to compare it with the principles of a TIBL-concept based course.

- **Evaluation of the course by the learners**

Here all typical and traditional used methods can be used. It is a good idea to focus on the TIBL-concept based items so you may find out how successful the modern course concept is seen by your learners

- **Evaluation of the course in comparison with the TIBL concept**

In the MOOC, you will find a chapter dealing with the course evaluation and the content can be transferred to Adult Education courses as it is described there.
Using the TIBL concept you should find out to which extent you could implement the new course approach. For this reason, you may use the checklists provided in the Toolbox. These checklists focus on

- The information about the course
- The display of content (this is a more technical and versatile issue)
- The training approach (using Sustained Learning)
- The quality framework and
- The assessment (summarizing the proven assessment methods and concepts taken from the pilot courses)

Summary

The transfer of the TIBL course concept can be done largely without major changes. Most of the items of the concept can be transferred as they have been developed for VET. This is valid for the toolbox as well as for the MOOC.

School Education

The TIBL course method covers everything that is necessary to create high-quality, efficiently implemented Blended Learning courses with a high level of learning outcomes. The transfer of the TIBL course method (intended in origin for Vocational Education and Training) is shown in the following transferability map.

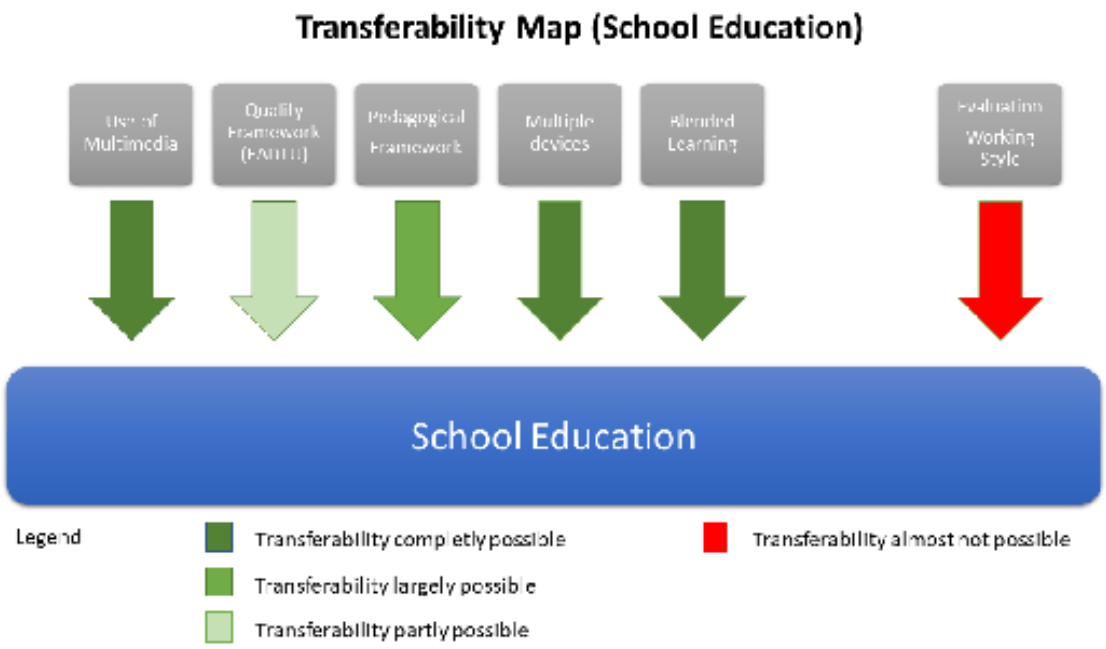


Figure 1: Transferability map for School Education

The Toolbox can be used partly in School Education (SE). Generally speaking, in SE blended learning has always been an issue. In traditional teaching learners attend school (onsite teaching) and get some assignments or homework (to manage and fulfil at home = distance learning).
The use of technology in School Education did not change the fundamental structure of schools. What has been changed was the learning environment (of students and teachers as well) and the learning space school itself.

Transferability of the Toolbox

The toolbox is a web-based application consisting of several tools which supports the teacher(s) in the logical and organizational development of the course. Most tools work interactively – teachers give an input to the system (using interactive forms) and get individually created guidelines, plans, checklists and course creation instructions.

Figure 2: The various modules of the toolbox

The tool will handle requests dealing with the pedagogical framework, the embedded quality enhancement framework, the use of multimedia, the evaluation of courses based on the TIBL method, and finally assessment helps.

Course Planning

Course planning starts with the decision of the teacher to teach some part of the curriculum using Blended Learning and implementing it with the TIBL method.

Items mentioned in the toolbox like the significant course goals, the decision for the content, the creation of a conductive atmosphere are valid is School Education as they are in VET courses.
The learner characteristics are easy to identify, especially as the teachers usually deal with homogeneous groups of learners that are (in most cases) well-known to the teachers.
The selection of the instructional methods follows the principle of “changing methods” (a well-known and proven didactical approach) in School Education (in most European countries). So the decision to use the TIBL approach with sustained learning is not a problem.

Course Design

The course design follows the ideas developed in the TIBL project.

Course Implementation

The course implementation can be done following the descriptions of the TIBL method.

Course Evaluation

The course evaluation process enables to find out to what extent the developed course fulfils the TIBL criteria. The toolbox offers 5 different interactive checklists to run a benchmark evaluation of the created course comparing it with the TIBL concept.
These are:

- Course information
- Display of course content (technical issues)
- The accessibility of courses
- The pedagogical approach
- The assessment used in the course

List of Software

The developed software list is a useful tool for trainers. The proven and freeware tools help trainers to create the necessary content without any investment in expensive software. Nevertheless, the training to use the software is a time-consuming issue, especially in the case of software ti create multimedia elements.

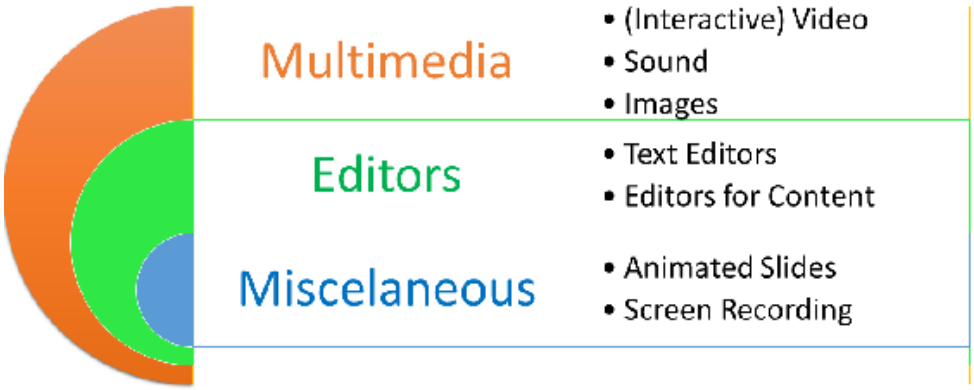


Figure 3: The various software types in the toolbox

Tutorials to use Moodle

Moodle is a free and open-source learning management system, it is continuously further developed and with each new version new features appear. On one hand the innovation in MOODLE makes it difficult to keep the knowledge at the state of the art, on the other hand the basic features did not change so intensively in the last time.

The knowledge to use a learning platform as well as the necessary skills must be practiced permanently.
You will find some training videos dealing with the use of MOODLE and specific MOODLE features in the trainers' toolbox (MOODLE tutorials)

Quality enhance framework

The quality framework is valid for School Education in the same way as it is important in VET. The quality framework used in the TIBL-concept focuses on the course design, the course implementation, and on the support (of trainees). It is based on a benchmarking system, where a statement (defining a specific quality item) is to be compared with the created course.
All modules can be taken as they were developed in the TIBL project.
Pedagogical Framework
The pedagogical framework developed in the frame of the project is based on the ides of “sustained learning”. Sustained Learning is partly well known in Schools. So is the “change of methods” a well-known principle that has been taught to future teachers in the subject of Didactics in many European countries. The comprehensive idea of sustained learning is a new approach and can be implemented as a promising approach to learning in general.

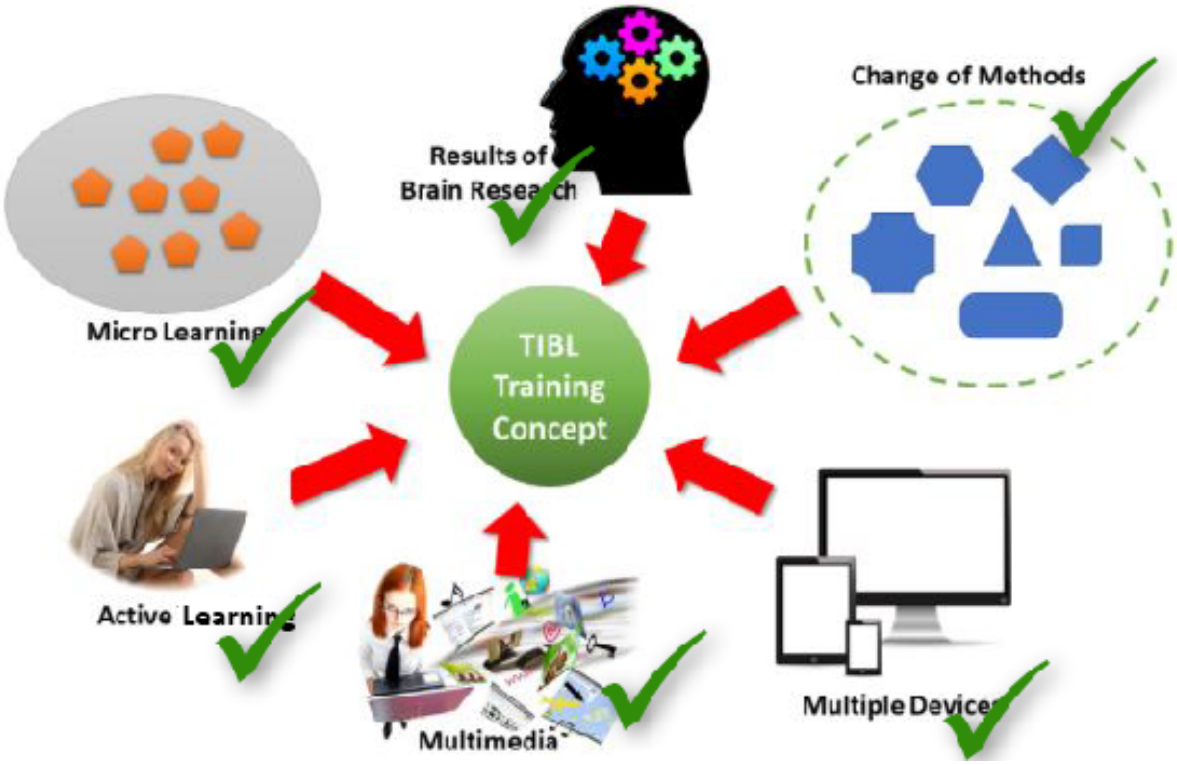
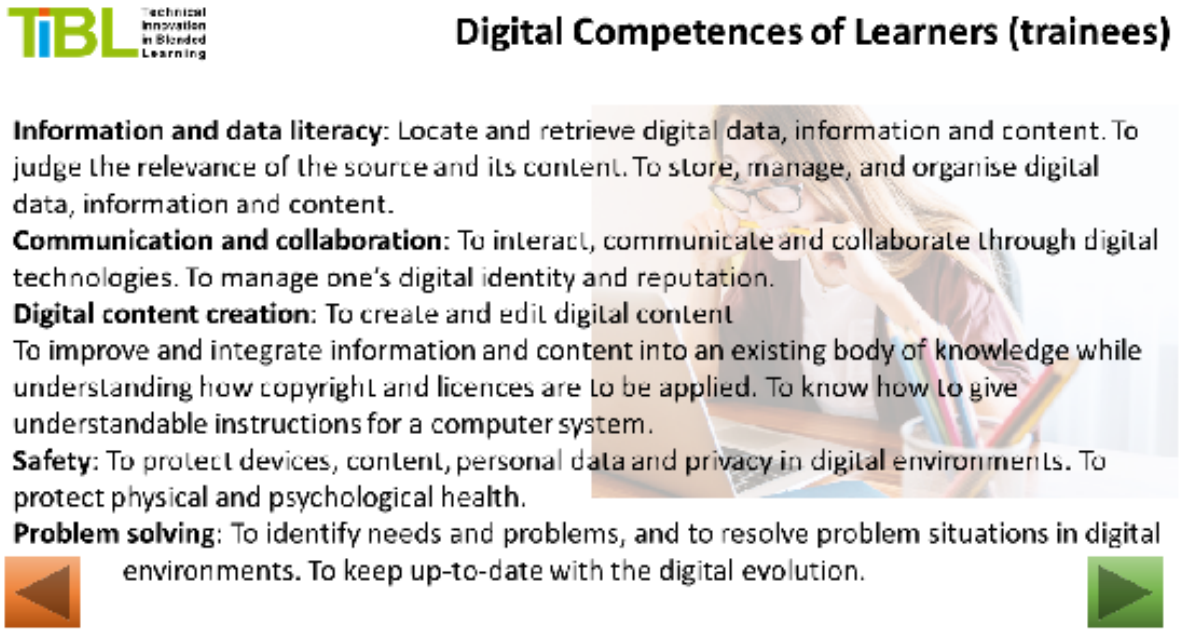


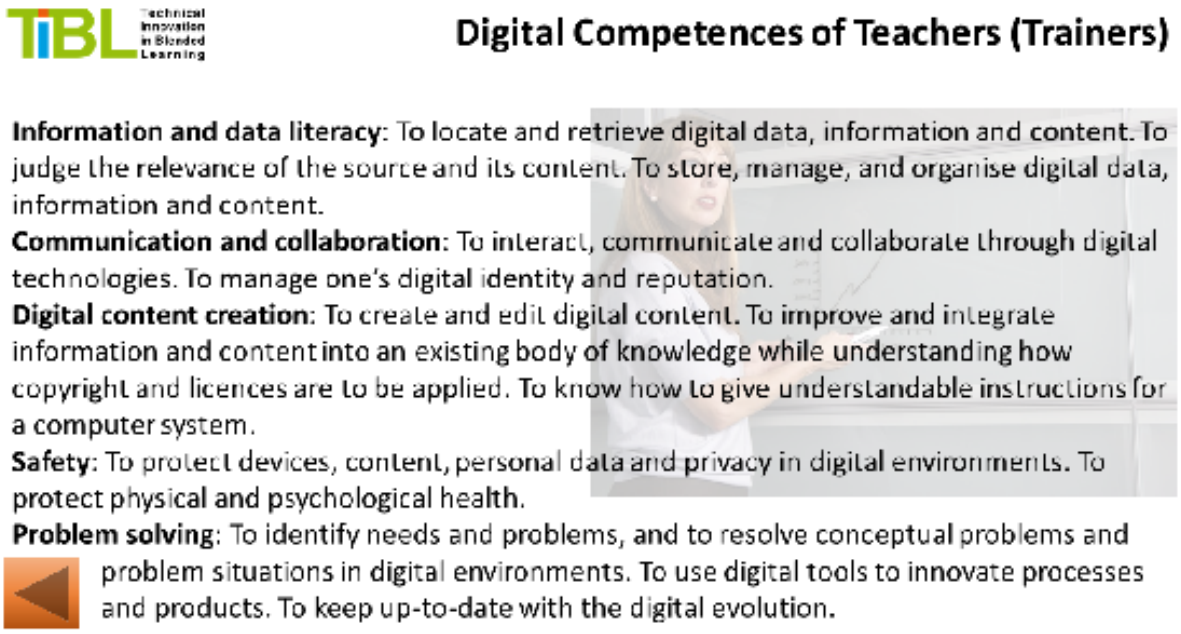
Figure 4: The various elements of the TIBL pedagogical approach (Sustained Learning)

Digital Competences

Following the findings of the DigComp Framework (of the JRC Joint Research Center of the European Commission) in average 46 % of the European citizens lack basic digital competences. This will be valid (more or less) for students in school education as well.
The necessary digital competences for students and teachers are described in the MOOC.



Summary: Digital competences of **learners** (following the DigComp framework)



Summary: Digital competences of **teachers** (following the DigComp framework)

Non-Possible Transfer Items of the Toolbox

The developed Toolbox can cut costs for enterprises and enable to organize high quality courses with low costs.
In School Education the costs will not be lowered by using the various items of the toolbox currently. The use of the results may lead to higher quality in teaching and better learning results, but currently it seams not possible to decrease the costs in education. The more the blend takes place in education the higher will be the costs for the teachers supporting the learners in the distance learning or to develop the courses.

The MOOC

The MOOC is a self-running training course for teachers. Performing the MOOC teachers get an overview of the TIBL method (which is a specific approach to Blended Learning using a quality enhancement framework, an innovative learning approach in the way of sustained learning, and a concept to use multiple devices in the training.

Blended Learning in School Settings

Blended Learning in school settings is argued to be the most efficient and effective learning. Here – from the bottom – technology enhanced teaching is meant. The shift from traditional media (books) to ebooks is visible, for example in the use of classical school books. Here teachers find some adds and recommendations on how technology can be used to enhance the learning outcomes. Nevertheless, most materials are delivered in simple PDF format, which finally replaces books and spares paper (what's good for the environment).
In School Education the learning groups are (almost) homogeneous in age as well as from their pre-knowledge.
The most important difference is the duration: SE normally lasts for several years, while the CVET courses lasts for some weeks or maximum months. VET courses offered by the Education system are usually longer than these.

Technology Enhanced Teaching

Despite Vocational Education and Training (VET) where the employer must care for an appropriate device (if the learner does not own one) not all students have their own device or have to care privately for an appropriate device.
Another difference is the type of device and the use of this device. Actually, in school education the use of an electronical device in all subjects is strongly connected with the availability of a hardware keyboard. The reason is that active writing during lessons or in the distance learning phase requires more than the software keyboard at the display of the device.

Due to these facts, the most learners use a laptop (notebook or netbook) or a tablet with an extended hardware keyboard. Nevertheless, the recommendations for the creation of courses to make them be displayed on all devices is also valid for School Education.

Image 1: Technology used for the teaching is standard in most European countries today

In SE (reports from 2013) the initiative “Bring Your Own Device” (BYOD) is performed currently and evaluated in various case studies. There seem to be big differences in the participating countries (source: http://fcl.eun.org/byod-europe-world).

Special Situation for Evaluation

In schools, marks are used to make the learning success visible. This is unusual in VET courses (except in vocational schools). The

evaluation methods in school education are more strict (due to the often-lacking maturity of the young learners). Nevertheless, formative and summative assessments are common und mostly used in all European countries. This makes the implementation of the TIBL course method easy for schools.
One issue both groups of learners should have in common is that learning should focus on competences. These competences are defined in Schools in a curriculum, in VET education by the learning aim (which is often a small very specialized competence).
The definition of competences as used in TIBL can be taken as a model in School Education (if it is not yet standard in the school).

Image 2: Assessments can be done also electronically (if it is ensured that students cannot cheat).

Implementation of Blended Learning courses in School Education

Information and communication technologies profoundly and irreversibly affect the ways of working, accessing knowledge, socializing, communicating, collaborating - and succeeding – in all areas of the professional, social, and personal life of European young people and citizens.
The implementation of Blended Learning courses in School Education is similar to VET. Many schools own and use a learning platform (the most widely used is Moodle) or get supported with a learning platform by the school authority. Often this learning platform is maintained by a technical support team (responsible for several schools in the near area).

Hint: In Europe, Google offers a cloud solution for schools. This enables the access to learning material by the Internet but does not replace the Moodle platform.

Here is a difference to VET, where many Small and Medium Enterprises (SME) don’t own their own server or do not have the well-educated technical staff to supply and maintain the server.
The implementation of courses as described in the TIBL results can be transferred without major changes into School Education. This refers to the quality framework as well as to the DigComp 2.0 framework (defining the expected digital competences of the learners as well as defining the necessary digital competences of the teachers).
Blended Learning with the modern approach as developed in the TIBL Project offers several benefits for the students.

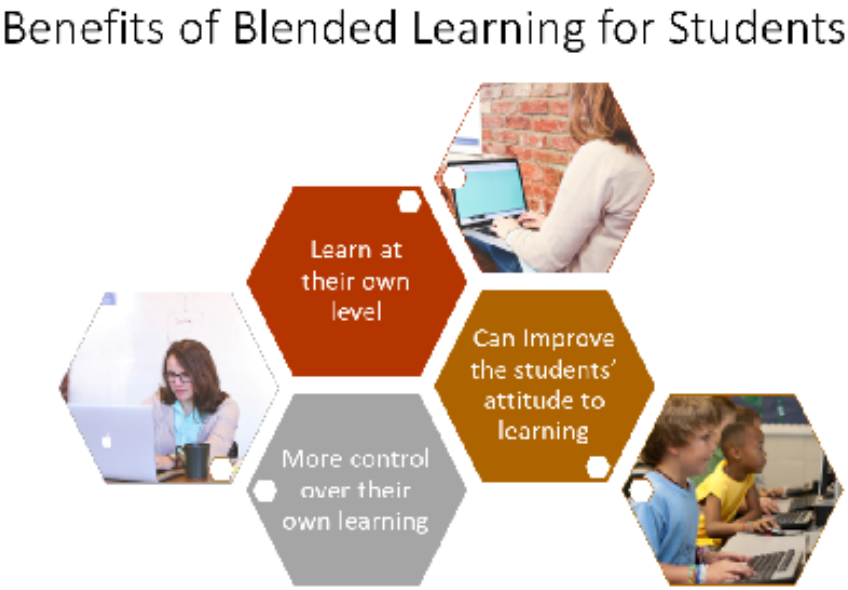


Figure 7: Benefits for students in Blended Learning

Differences in Working Style (of students)

Young learners (as typical in School Education) have a different learning style as adults (or often have not yet developed an own learning style and are just in a kind of orientation phase).
On the one hand, students are easily distracted during the use of digital devices (checking their Instagram account or looking for something interesting in the internet) and they like to play around. Adults – especially with a special interest or pressure from the enterprise to learn something in most cases act more strictly in their learning. On the other hand, students like multimedia-based material with a certain proportion on interactivity. Therefore, the concepts of the use of multimedia, interactivity or interactive virtual labs, interactive videos can be used in the same way as developed in the TIBL project.

Evaluation of the course

This addresses two different items: evaluation of the course by the learners and the evaluation of the course to compare it with the principles of a course based on the TIBL model.

1. (a) Evaluation of the course by the learnersHere all typical and traditional used methods can be used. It is a good idea to focus on the TIBL-concept based items so you may find out how successful the modern course concept is seen by your learners
2. (b) Evaluation of the course in comparison with the TIBL concept
   In the MOOC, you will find a chapter dealing with the course evaluation and the content can be transferred to School Education courses as it is described there.
   Using the TIBL concept you should find out to which extent you can implement the new course approach. For this reason, you may use the checklists provided in the Toolbox. These checklists focus on

   - The information about the course
   - The display of content (this is a more technical and versatile issue)
   - The training approach (using Sustained Learning)
   - The quality framework
   - The assessment (summarizing the proven assessment methods and concepts taken from the pilot courses)

Conclusion

The transfer of the TIBL course concept can be done largely without major changes. Most of the items of the concept can be transferred as they have been developed for VET. This is valid for the toolbox as well as for the MOOC.

Transferability to Higher Education

The TIBL course model covers various topics that should be considered to create high-quality, Blended Learning courses, efficiently implemented and aiming to promote learning outcomes at a high level. The transfer of the TIBL course model (created for Vocational Education and Training) to Higher Education is analyzed in the module 6 of the TIBL MOOC, “Transferability of the TIBL project results,” and take into account the items represented in the figure below .

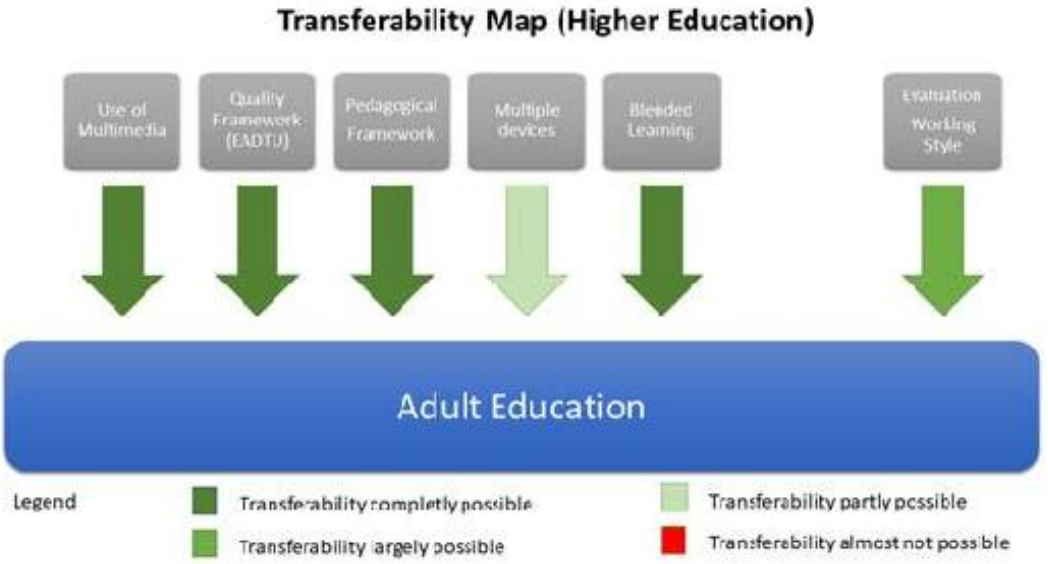


Figure 1: Transferability map to Higher Education (Source: Peter Mazohl; CC BY-NC-SA)

As illustrated in the figure above, all the issues covered by the TIBL courses model can be transferred to Higher Education. However, the degree of transferability of the use of multiple devices and of the evaluation and working styles depends on the students’ needs and on the course subjects (engineering courses require problem solving competencies and language courses aims to develop communication

competencies in authentic situations). In fact, in Higher Education students have their one multiple devices: they often access online course content using personal computers, tablets, smartphones… On the other hand, their working style is very diverse and how they are assessed depend on several factors, although formative and summative assessment are frequently used to assess the evolution of the students' competencies as well as the learning outcomes.
The following section analyses the transferability of the results of the TIBL project intellectual outputs: The Toolbox and the MOOC to Higher Education.

Transferability of the Toolbox

The toolbox is a web-based application consisting of several tools which supports the trainer in the logical and organizational development of blended learning courses. The tools work interactively – trainers give an input to the system (using interactive forms) and get individually created guidelines, plans, checklists and course creation instructions.

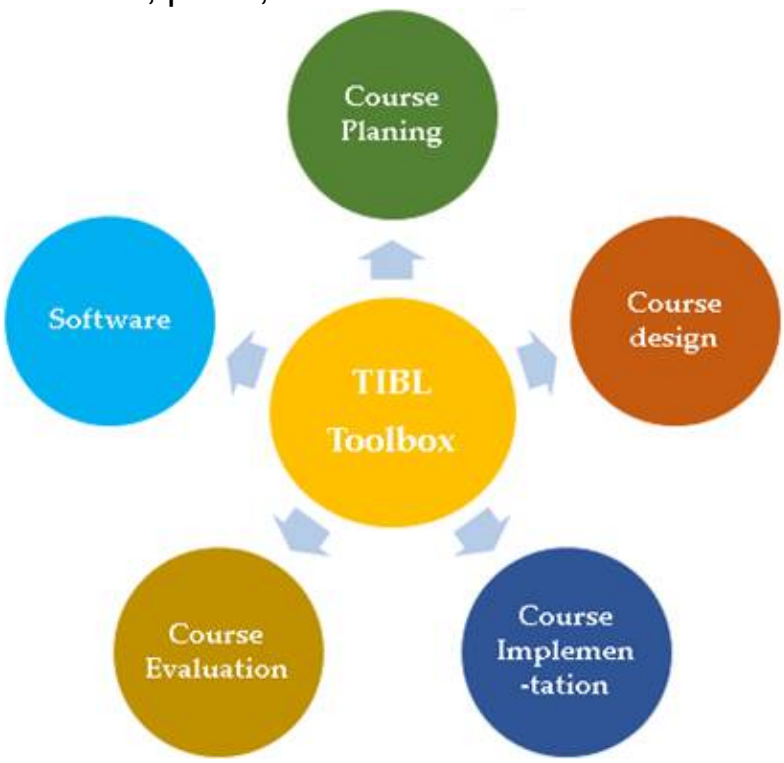


Figure 1: Modules of the TIBL toolbox

The following sections present the transferability of the different TIBL Toolbox to modules to Higher Education, following the structure of the toolbox.

Course Planning

As for VET education, in higher education teachers begin by defining the competences that students must develop as well as the topics to be covered. The establishment of the course aims and content are very often flexible to allow its adaptation to the students' needs or to take into account the preconditions to attend the course. In the latter case students may need to follow specific units, for instance, to develop their digital competences. These units may ask the students to assess their competencies in order to identify the gaps using an online self-assessment tool. The results of the test developed in the context of the Digital Skills Accelerator projectare delivered in a graphic and allow to identify the areas that need improvement, as illustrated in the figure below. The project also provides an open, online course allowing students to update their digital competences.

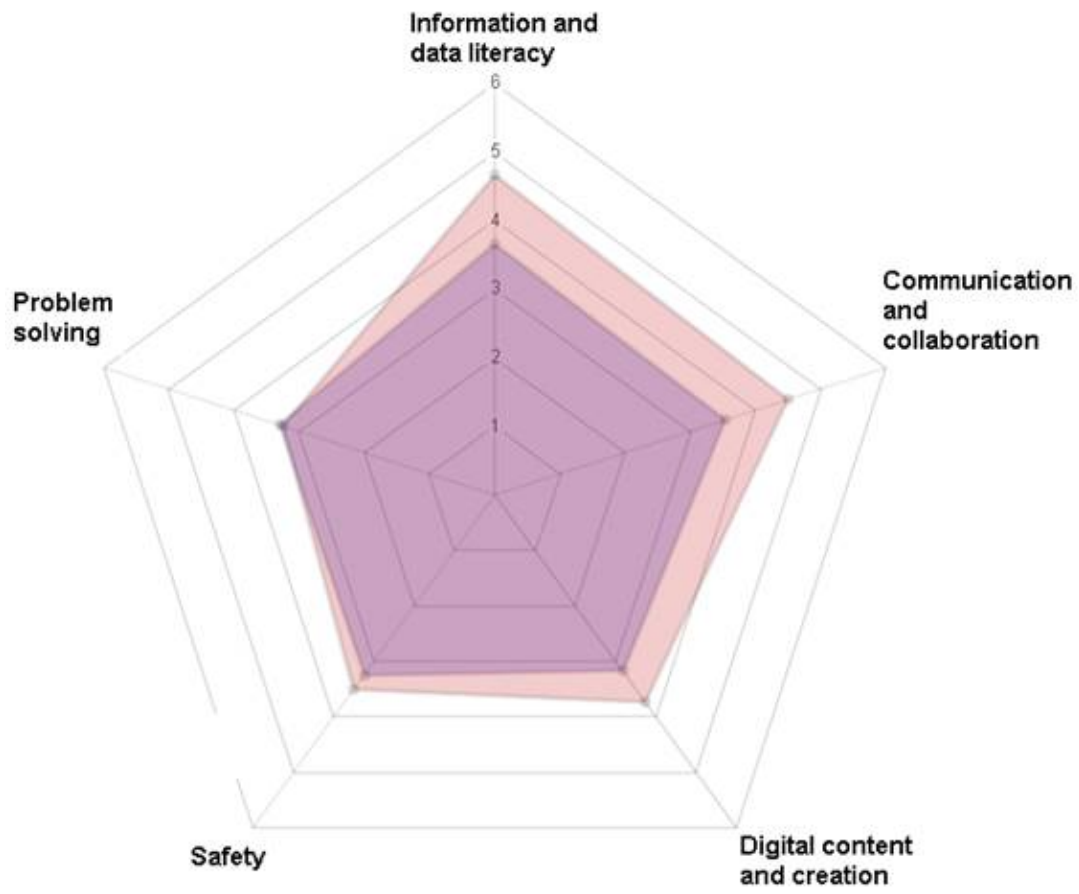


Figure 2: Graphic illustrating the results of a self-assessment tool about digital competencies

The teaching strategies, assessment methods and support materials/bibliography are also foreseen in this phase. These elements constitute the program/guide of the course and are often accessible in the online page of the higher education institutions. A more detailed guide is provided to the students in the adopted learning management system. It must be very flexible since very often in Higher Education problem solving and project work are the main active learning strategies.
To sum up, the issues that must be considered when planning a Higher Education course based on the TIBL course model are similar to the ones to plan a VET course that are described in the section Course Planning of the Toolbox.

Course Design

Like for Adult Education, the course design for Higher Education is like the course design for VET learners. The students of all the target groups are adults and motivated to learn, in particular in post-graduation courses.
The design of blended learning courses based on the TIBL model for Higher Education must also take into account the quality standards of the e-Xcellence framework although adapted for blended learning as illustrated in the quality framework, available from the webpage of the project.
In the section about course design for Adult Education there is a list of issues that also need to be considered in the course design for Higher Education that deals, among other, with the establishment of the onsite and online components, the quality standards, the pre-required competences, the use of multimedia and interactivity. This last one is very sensitive as in Higher Education it can be expected that the students have digital competences that allow the reutilization of available OER or its development.

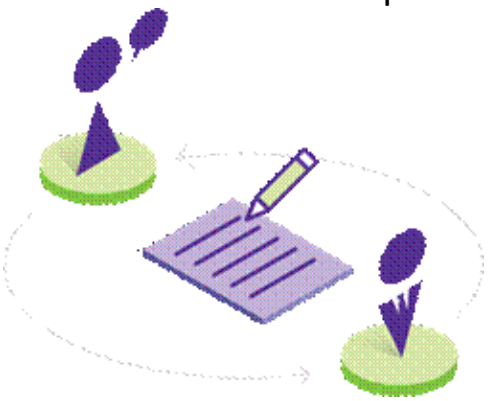
Course Delivery (Implementation)

After the course planning and design, the course is implemented. Several issues must be considered in this phase. The toolbox provides a summary of the items relevant to the course implementation that are valid for Higher Education. They encompass the setting up of the onsite teaching as well as the distance teaching, the teachers and learners roles, the technology that will be used to deliver the course, the use of the material. The toolbox also provide a useful Course Implementation Self-Evaluation tool.

Course Evaluation

The course evaluation enables to find out to what extent the developed course fulfils the TIBL criteria. The toolbox offer several checklists to evaluate a course, in particular related with the pedagogical approach, the assessment methods, the information about the course, the course accessibility and about the display of content. These instruments can also be used to evaluate Higher Education courses based on TIBL model and are very useful to be able to provide feedback about the

issues that must be improved to the course design team.



https://images.app.goo.gl/YkV3mbCM1jsAEF6q6

Recommendation: different instruments to evaluate blended learning courses should take into account the quality framework that underlines the TIBL model and is described in the Toolbox.

List of Software

The use of open software, as free and open source software, has increased in the last decades. This kind of software is available under an open license and the users can use it for free. Others allows to reuse the source code, that can be inspected, studied, modified and shared, as it is the case of Moodle.

Figure 3: Adapted from https://www.softwarefreedomday.org/about/why-foss

The use of open resources is one of the mainstreams of the TIBL model. Accordingly, the “Teachers Toolbox” offer a list of software to edit different kinds of media and to create interactive multimedia content. An interactive page of the Toolbox (Software List) allows to choose a type of software and returns a short list of more or less open software. In the module 4 - course design - of the TIBL MOOC, there is a section on preconditions that explains why and how to use Moodle and suggest authoring tools that can be used to create interactive multimedia content, as eXelearning and H5P.
Hint: To use these resources, the course design team must be aware that learning to use these tools is time-consuming issue and include members with good technical skills.

Tutorials to use Moodle

Moodle is a free and open-source learning management system; it is continuously further developed and with each new version new features appear. On the one hand the innovation in Moodle makes it difficult to keep the knowledge at the state of the art, on the other hand the basic features did not change so intensively in the last time. To be able to use its features the technical team must be up to date and have a practice permanently.

Some training videos dealing with the use of Moodle and specific Moodle features in the Trainers’ Toolbox (MOODLE tutorials)

Quality enhance framework

The quality framework of the TIBL model is valid for Higher Education in the same way as it is for VET. courses. The framework used in the TIBL focuses on course design, course implementation and support (of trainees). It is based on a benchmarking system, the EADTU E-excellence framework. The Toolbox offers a set of statements (defining a specific quality item) to be compared with the created course.

Pedagogical Framework

The pedagogical framework developed in the frame of the project is based on “sustained learning” and encompass results on brain research and self-determined learning, the exploitation of active learning strategies, like problem solving or collaborative learning, micro learning, the use of interactive multimedia materials and of multiple devices. This framework can be transferred without major changes to Higher Education.

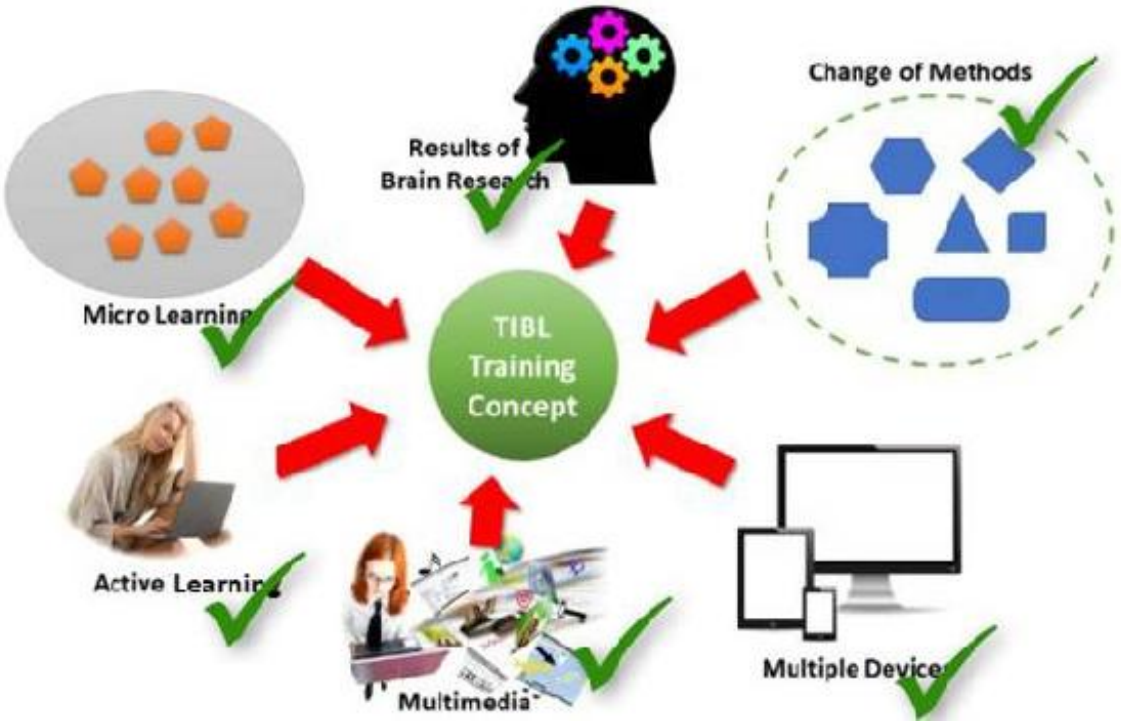


Figure 4: The various elements of the TIBL pedagogical approach (Sustained Learning)

Transferability of the TIBL MOOC

The TIBL MOOC is a self-paced training course for trainers. Performing the MOOC trainers get an overview of the TIBL model (which is a specific approach to Blended Learning using a quality enhancement framework, an innovative learning approach and the use of multiple devices in the training process). The MOOC can be freely used by accessing the platform as guest user. A user account can be created to

take the course as a student. Moreover, the backup version of the course can be downloaded to install it in your own Moodle server.

Blended Learning in Higher Education settings

Higher Education is one of the settings where blended learning has been explored more often. However, the most used model does not change the underlying teaching approach, since technologies are used to deliver teaching material or propose assignments, as exercises. The face-to-face component is based on teacher-guided practice or projects. The primary delivery of content is the teacher and active learning is scarcely promoted. Considering the Substitution Augmentation Modification Redefinition Model (SAMR) in this type of setting the available information and communication technologies are used to perform the same task as was done before the use of computers.

The blended learning models underlying the TIBL model are based on sustained and self-determined learning (consult the module 3 of the TIBL MOOC for furthers information). Technologies (multiple devices) allow the modification and redefinition of the learning environment and promote active learning strategies, such as micro-learning, collaboration, problem solving or gamification.

The basics blended learning concepts do not differ from VET Education. Discussion can be orchestrated onsite or online, the access to theoretical content, design activities, practicing may be performed at a distance, but hands on activities, like labs or project work are developed onsite in lab and creative workspaces as the one in the following image.

Image 1: Virginia Tech College of Engineering lab and creative workspaces

As presented in the Blended Learning Toolkit, transformative blended learning can improve outcomes such as students:

- arrive in class better prepared
- write more effective and longer papers
- create higher quality projects
- engage in deeper and more meaningful discussions of course content
- demonstrate a better understanding and deeper exploration of concepts
- succeed at an equal or higher rate than students in traditional blended learning courses.

Technology enhanced training (in Higher Education)

Although some Higher Education institutions still have computers labs, in particular in technical courses that demands the use of specific programs that only runs in higher performance machines, in most of the

cases students use their one devices (BYOD) and this can hinder the use of the online materials. Therefore, like for Adult Education, it is crucial

- to take care for an implementation of the course (especially for the distance learning part) that ensures that the content can be displayed on all used devices.
- if – due to the used content – any restriction of devices must be done (for example smartphones are excluded because the screen is too small, or a pointing device is needed) this must be communicated from the beginning.
  Hint: It is a good idea to announce the useable devices from the beginning, including the course announcement.

Image 2: Multiple devices are often used in Higher Education blended learning courses, Source: Ouinolanguages

Recommendation: it is necessary to care for the compatibility of the devices with the foreseen computer supported activities from the beginning of the course.

Assessment

The maturity and the motivation of higher education learners are similar to trainees in VET and C-VET education. So, both formative and summative assessments should be used to assess learning progress and outcomes (competencies).

Figue 5: The definition of the assessment instruments must be carefully planned, source: UTRGV

In the course guide the assessment strategies should be carefully described, clearly answering the questions:

- What competences will be assessed?
- When will they be assessed?
- With what kind of instruments?
- Are these instruments computer supported?
- Who will be involved?

and communicated before the beginning of the course, implemented in an appropriate way and executed correctly.

Assessment instruments should evaluate the theoretical content and other active learning activities like group activities, such as information seeking and selection, writing essays or lab work, and collaborative assignments.

Hint: in the Internet, there are good examples of assessment instruments, as rubrics, that may be adapted to different contexts.

Implementation of Blended Learning courses

Most of the Higher Education institutions have their one server and learning management system and the implementation of a blended Learning course based on the TIBL model should follow the hint and recommendations described in the module 5 of the TIBL MOOC. Additionally, the toolbox provides a well-done summary of the implementation concept and offers an interactive checklist. Nevertheless, it should be taken into account that university courses often require more time and have different subjects, involving teachers with different digital competences and backgrounds. To implement a successful blended learning course, a well-defined strategy must be adopted by the university and support services should provide technical and pedagogical professional development opportunities.
Hint: it could be helpful to consul the strategies of recognized Higher Education institution and international recommendations related to the implementation of blended learning courses fulfilling the demands of the 21st century.

Similarities in working style

As suggested in the TIBL MOOC module about the transferability of the TIBL model to Higher Education, like VET trainees, university students are a diverse group and have different needs. In addition to the course content and to be prepared for the uncertainty of the future professions, university students must develop 21st century competencies such as entrepreneurship, communication, cooperation, digital competencies, problem solving. To fulfill these requirements they must develop flexible learning and working styles and an in depth understanding of the course content and future professional needs.

Figure 6: Learning styles, source FITAS

Evaluation of the course

The evaluation strategies described in the module 5 of the TIBL MOOC are completely transferable to Higher Education. As already stated the toolbox offers checklists that can be used in the different phases of the course development.

Summary

The transfer of the TIBL model to Higher Education can be done largely without major changes. This is valid for the Trainers Toolbox as well as for the MOOC. Thus, most of the items of the model can be transferred as they have been developed for VET, although precautions should be taken in what concerns the use of multiple devices and assessment and working styles, as described above.

Evaluation Guide

This guide aims to help trainers (or training institutions) to evaluate a new created course following the TIBL concept.
The TIBL concept enables to create high quality Blended Learning courses. These courses can be used versatile in other educational fields as well. The TIBL project team has developed some tools (collected in the Toolbox Link: https://www.tibl-project.eu/web/en/trainers-toolbox/) that enable an easy and quickly done serious check if a course is following the TIBL concept.
For the evaluation, three major issues must be considered:

- The quality framework
  This framework covers the items “Course Design”, “Course Delivery” and “Support”
- The pedagogical framework, called “sustained learning” (Link: https://www.tibl-project.eu/web/en/about-the-project/projects-results/how-does-learning-work/) and
- The use of multiple devices
  This project result focuses on the use of multiple devices in learning. Multiple devices are desktop PSs, laptops, notebooks, convertibles, webbooks, tablets, and finally smartphones

Recommended course evaluation strategy

This strategy uses intensively the developed toolbox (Link: https://www.tibl-project.eu/web/en/trainers-toolbox/).

Evaluation of the course planning

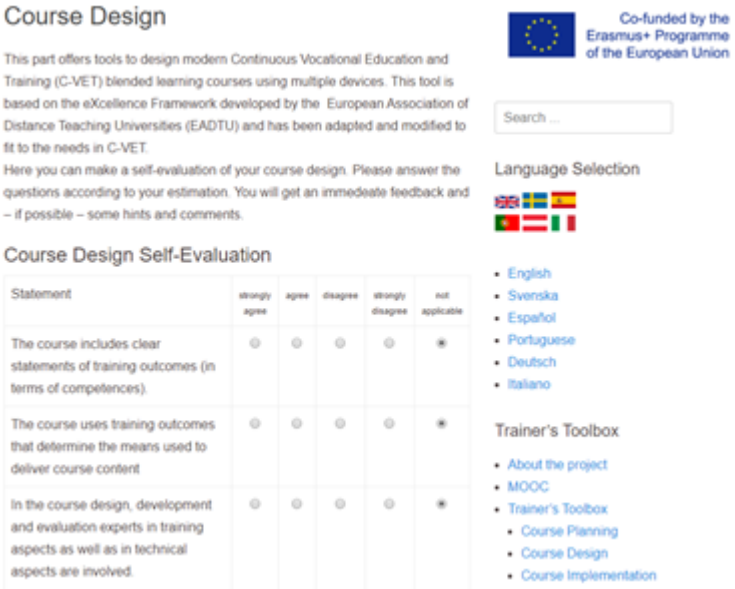
Here is a list of statements. Each statement should be checked as “considered in the planning”. The answers to the following statements should always be “YES”.

- The course provides a worthful learning and conductive atmosphere.
- Significant course goals have been developed and communicated.
- Content has been created taking in account the training/learning goals.
- Course attendees and learners are from the target group with well-known pre-knowledge (that fits to the course).
- Learners’ characteristics are available.
- The selection of the instructional methods follows the pedagogical framework of “Sustained Learning”.
- An appropriate feedback culture has been implemented in the course.

Evaluation of the quality enhancement system used in the course

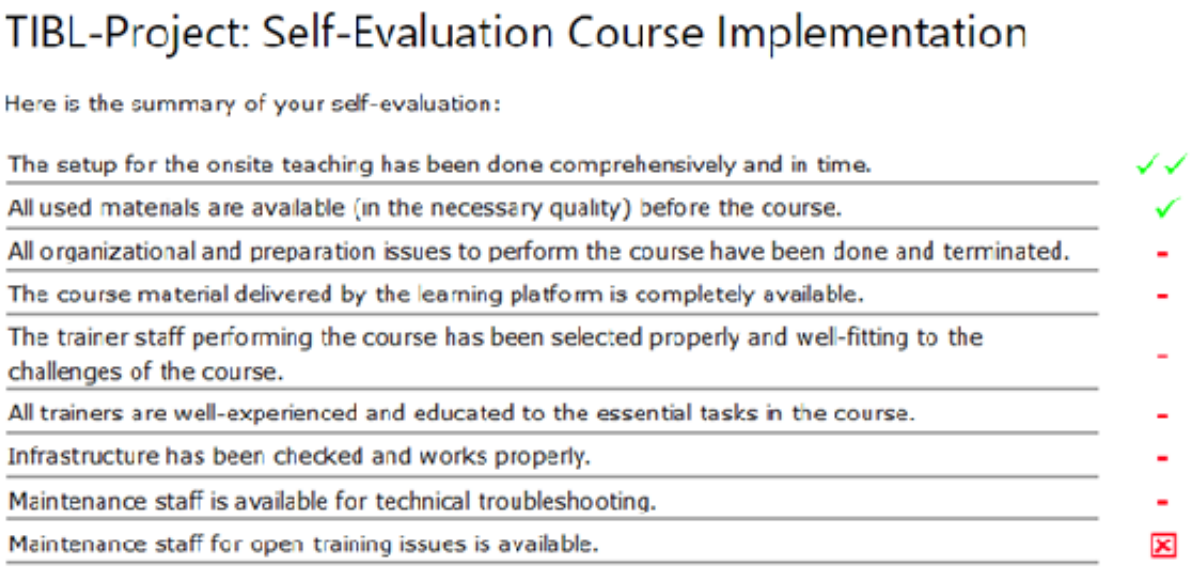
In the TIBL concept a quality enhancement framework, based on the e-Xcellence framework of the European Association of Distance Teaching Universities (EADTU) has been implemented.
The developed framework is available from the webpage (Link: https://www.tibl-project.eu/web/en/quality-framework/)
There exist several self-evaluation questionnaires for some quality

fields.



- Course design: https://www.tibl-project.eu/web/en/trainers-toolbox/course-design/
- Course Delivery: https://www.tibl-project.eu/web/en/trainers-toolbox/course-implementation/

Each self-evaluation is summarized in a new page and can be printed easily.



Additionally, each self-evaluation provides some comments in context with the evaluation of the questionnaire. This enables the user to find out, where (and why) there is some amendment potential in the course.
Recommendation: You should run these self-evaluation questionnaires each time **after** developing a course and **before** the implementation.

Evaluation of the pedagogical framework

The pedagogical framework is based on the papers developed in the frame of the project. You can download these documents from the webpage:

- Blended Learning in C-VET: https://www.tibl-project.eu/web/en/download/359/
- Pedagogical Framework: https://www.tibl-project.eu/web/en/download/364/

From these papers, the concept of “Sustained Learning” has been developed. Sustained learning takes into account the results of modern brain research and cares for longer lasting learning results.
To evaluate if your course is in line with the principle of sustained learning you should be able to answer the following statements with **YES.**

- I implemented as many positive factors in my course as possible.
  Hint: Some examples for positive factors are assignments that make fun, interesting multimedia-based activities, positive group discussions.
- I used short information packages in my course.
- I have implemented several group situations in my course.
- There are several micro learning units in my course.
- People have self-responsibility and do self-directed learning.

- Learning is not planned as a linear process.
- There are some motivating items in the course (like increasing of self-esteem, personal development or similar issues).
- Collaboration and active involvement are foreseen in my course

Course evaluation

In the TIBL concept, evaluation of courses plays an important role. High quality courses must be evaluated using different stands and points of view.
Hint: The toolbox offers several self-evaluation tests that can be used to get a feedback to the course evaluation and additionally with each self-evaluation a recommendation for amendments is given (if there is some amendment potential).
Here is a list of the evaluation steps that should be undertaken (with a link to the elf-evaluation questionnaire covering the mentioned context).

- Course information
  Trainees and learners must know all details of the course before the course starts.
  Self-evaluation: https://www.tibl-project.eu/web/trainers-toolbox/course-evaluation/course-information-self-evaluation/
- Content
  The created content must meet certain specifications.
  Self-evaluation: https://www.tibl-project.eu/web/trainers-toolbox/course-evaluation/interactive-checklist-display-of-content/
- In contrast to the face-to-face learning and training, the distance learning part in blended learning provides some traps, obstacles, and problems. Most problems occur in the field of accessibility. Please make the listed self-evaluation questionnaire before you implement the course.
  Self-evaluation: https://www.tibl-project.eu/web/trainers-toolbox/course-evaluation/course-accessibility-self-evaluation/

- For the training approach you should perform the self-evaluation questionnaire.
- Assessments are necessary, common and important elements in courses. To check the quality of your planned assessment you should do the self-evaluation questionnaire.
  Self-evaluation: https://www.tibl-project.eu/web/trainers-toolbox/course-evaluation/course-evaluation-assessment/

Summary

All listed evaluation steps should be done when evaluating a new created course based on the TIBL concept. This is valid for all educational fields where Blended Learning is used.
It is clear, that not all items that are foreseen in the evaluation guide fit perfectly to each course – here a certain flexibility of the evaluation is necessary. Nevertheless, the concept has been tested (for example in School Education) and worked very well.

Partners in the Project

Fundación Escuelas Profesionales
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University of Aveiro

European foundation for
Quality in Blended Learning

DigiLab University La Sapienza

Swedish Association
Distance Education