EARLY
SCHOOL
WORKERS

METHODOLOGICAL FRAMEWORK AND COMMON TOOLS FOR DEVELOPING NEW CURRICULUM

Tools and support material for developing new curriculum based on the UTC model

2

ESW
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Erasmus+ KA2
Strategic Partnership
for vocational education
and training

Publication edited by

Silvia Fava (ENDO-FAP)

Roberto Franchini (ENDO-FAP / Università Cattolica Del Sacro Cuore)

Emanuele Serrelli (Università Cattolica Del Sacro Cuore)

Luca Calligaro (ENAC Ente Nazionale Canossiano)

Giampietro Brunelli (ENAC Ente Nazionale Canossiano)

Simona Puggioni (ENAC Ente Nazionale Canossiano)

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Project Reference

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Programme

Programme: Erasmus+

Key Action: Cooperation for innovation and the exchange of good practices

Action Type: Strategic Partnerships for vocational education and training

Duration

3 years (01/10/2018 – 30/09/2021)

ESW PROJECT

VET systems need a radical renovation to be competitive. In fact, it is clear that Young people need to acquire specific competences to be successful in the world of work and it is necessary to address and prevent the Early School Leaving (ESL) problem, as well as the lack of key competences among young people.

The UTC (http://www.utcolleges.org) approach seems to be capable of addressing these challenges. In these schools knowledge and skills are acquired through the resolution of real problems or projects. Their approaches deliver an innovative training concept, which is able to narrow the gap between knowledge and competences acquired at school and those required by the companies. The aim is to tackle and solve the Early School Leaving problem, and to increase the competences of each student during IVET programmes.

The possibility to reach these excellent results has been possible thanks to innovative methodologies and by re-thinking spaces, times and learning approaches. Each UTC is backed by employers and a local university who work with staff to develop an innovative curriculum that gives students first-hand experience of what life is like after school, also integrating three types of learning: technical, practical and academic. A UTC curriculum includes one or two technical specialisms, which are linked to the skills gaps in the region.

All the aspects of these colleges are built around a specific methodology called PiXL Edge, namely a model that gives students the possibility to develop skills useful for the rest of their lives and for their future professional activity (Leadership, Organisation, Communication, Initiative and Resilience).

The project aims at supporting the renovation of VET systems in Europe with the ultimate goal of tackling Early School Leaving and increasing the employability of youngsters while fostering their active role in the society.

In order to reach this objective, **the project intends to further strength the key and technical-professional competences of young people attending the VET pathways, analysing and adapting the English UTC model to the Italian / German / Spanish context.**

In this way the project tries to provide an answer to a common issues faced by European VET system:

1. increase the level of key competences among the youngsters and reduce the skills gap;

2. promote new partnership and WBL organizational models/approaches

The idea is to transfer the English model to training realities in other countries to face the training gap and the ESL. On one side there will be the provider partners (schools from the UK) that will transfer their successful models and, on the other side, the user partners that will study these models and try to adapt these good practices to their national contexts.

The project aims at analysing the UTC model, with its theoretical and practical features, and it fulfils the following goals:

1. Elaboration of a model (organizational and educational variables) transferable to all contexts.

2. Transfer this model and adapt it to VET centres in other countries implementing new training pathways in professional sectors by combining national standards and the innovative aspects of UTC model

3. Test and validate the model

4. Monitoring and evaluating the learning outcomes

This project involves 7 Partner Organisations and 3 Associated Partners from 5 European countries.

PARTNERS

5	1	1	3
TRAINING ORGANIZATIONS	UNIVERSITY	EUROPEAN NETWORK	PUBLIC INSTITUTIONS

ENAC
enac.org

cjd
cjd.de

ENDO-FAP
endofap.it

INSTITUTO VIRGEN DE LA PAZ
ies.lapaz.alcobendas.educa.madrid.org

UTC WARRINGTON
utcwarrington.org

UNIVERSITÀ CATTOLICA del Sacro Cuore
brescia.unicatt.it

EfVET European Forum of Technical and Vocational Education and Training
efvet.org

Regione Emilia-Romagna
regione.emilia-romagna.it

Comunidad de Madrid
comunidad.madrid

REGIONE PUGLIA
regione.puglia.it

The projects foresees 4 main intellectual outputs:

- IO1 Critical Review on the UTC and Concept model
  Document aimed at explaining the UTC model and support VET provider to replicate it in their own contexts

- IO2 Methodological framework and common tools for developing new curriculum:
  Tools and supporting materials to create new curricula based on the UTC model

- IO3 New curricula
  6 new curricula based on the UTC model

- IO4 Final evaluation report
  A report highlighting the main project findings.

PROJECT OUTPUTS

INDEX
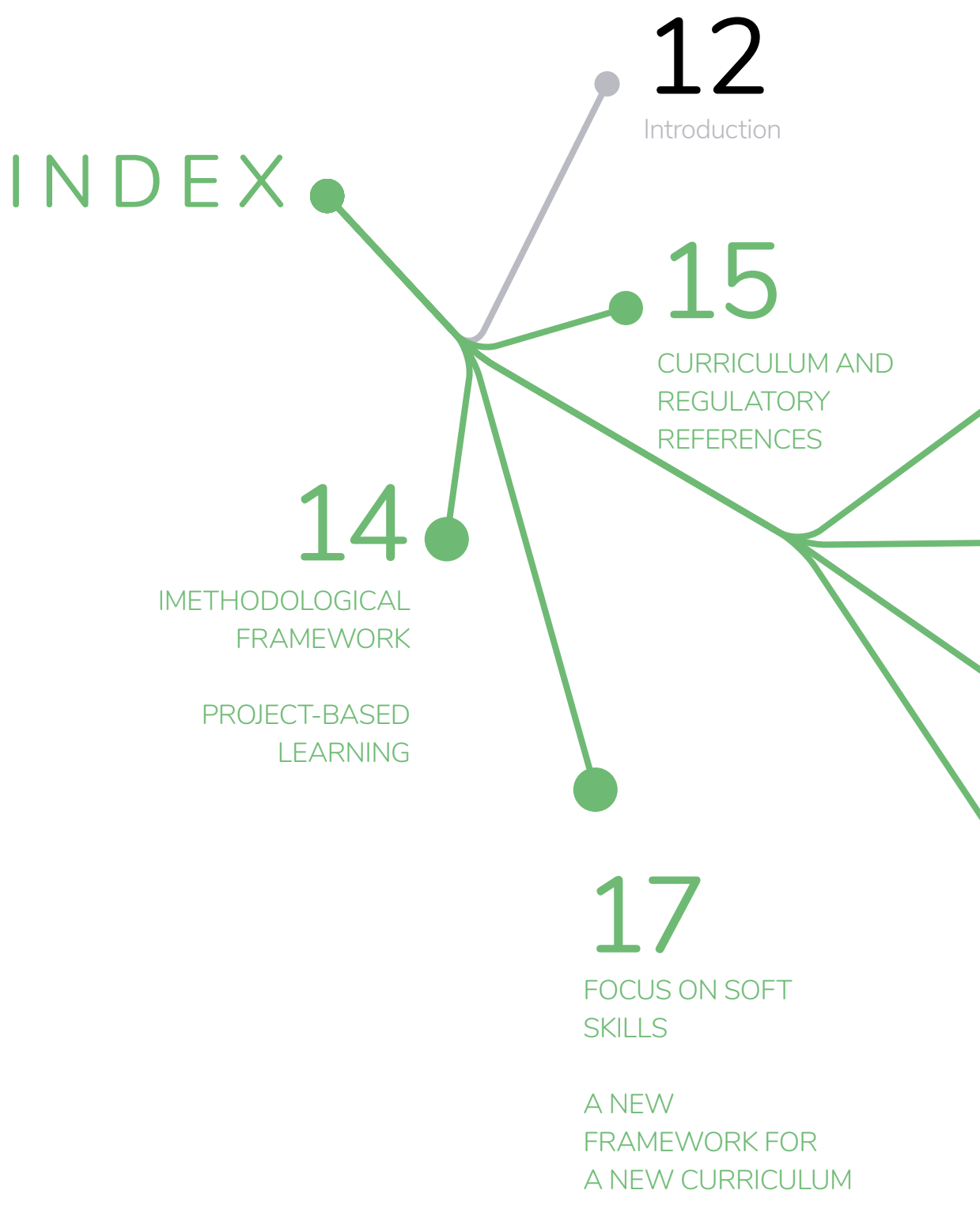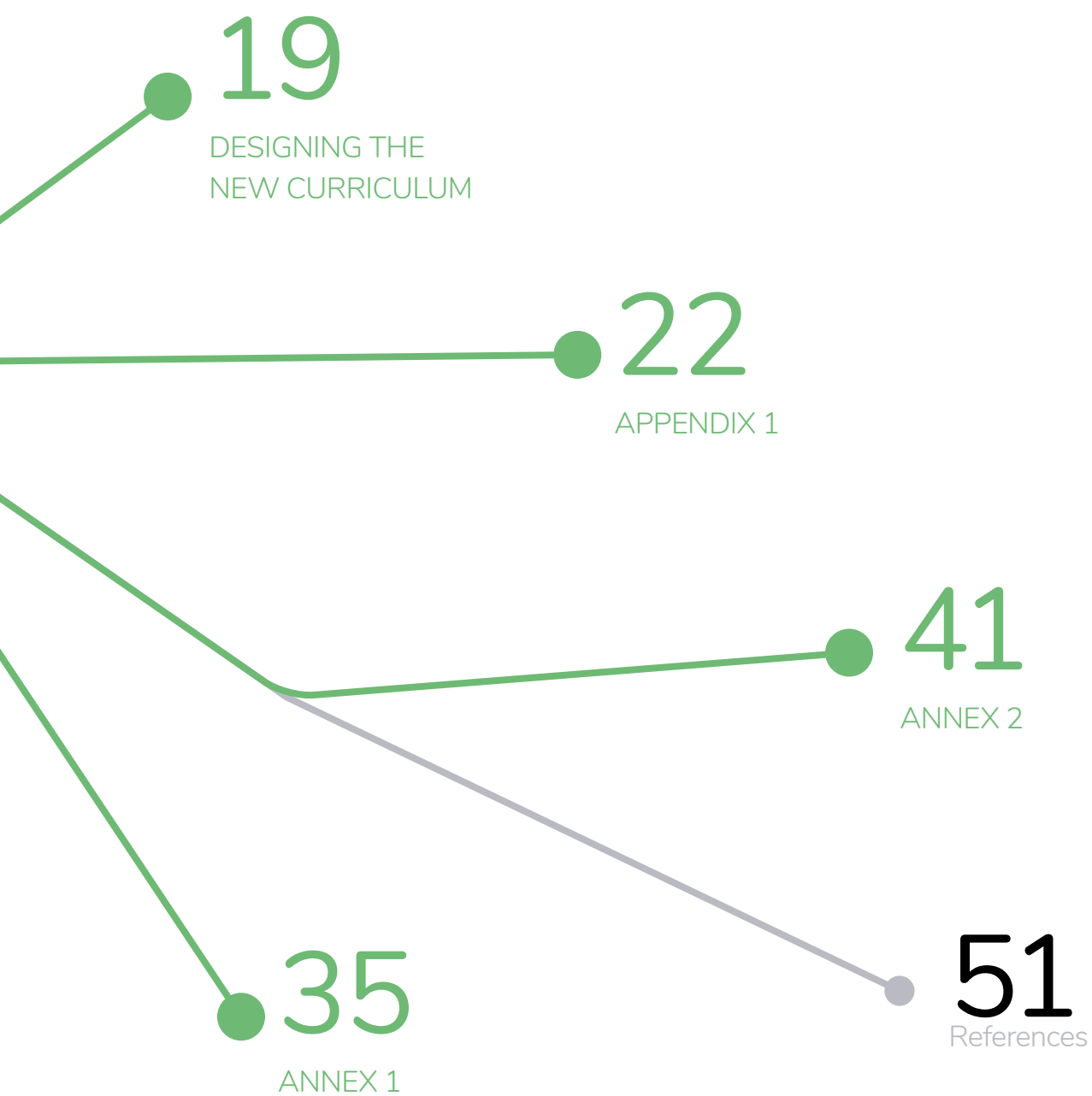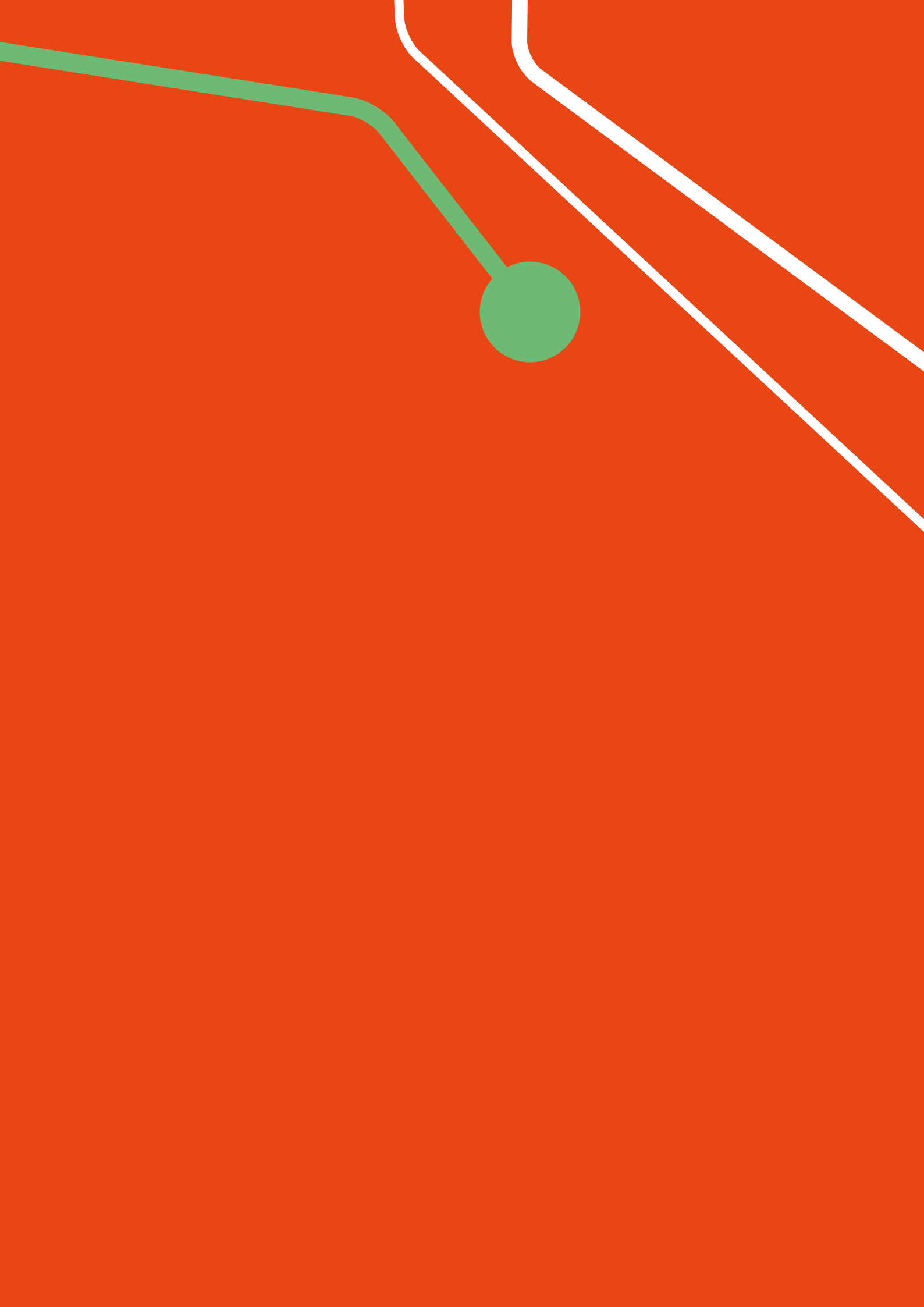
INTRODUCTION

Work Package 5 is dedicated to the implemen-tation of a methodological framework to be used as a basis when designing new curricula and for piloting new training courses aimed at young VET students.

The specific goal of this WP is the creation of tools that partners can test during the initial pilot phase to then apply them during the actual trial (WP6).

The expected result is the application of the tools in three countries (Germany, Italy, Spain) and for each of the professional areas identified by each partner.

The outputs produced and validated are:

1.   Framework of soft skills for employability - *Annex1*

2.   *Template for designing the new curriculum - Annex2*

Methodological framework

The process of developing the methodological framework stemmed from the analyses of the UTC conceptual model and the "UTC Transferability Guidelines" (Output 1 - WP4). In particular, the focus was on the importance of "establishing fundamental references and principles of the curriculum" (Section 4.3.1 of the guidelines) and the need for a VET centre "to choose and implement a validated model for the acquisition of transversal skills (soft skills, life skills, employability skills) and include them explicitly in the curriculum" (Section 4.3.4 of the guidelines).

The new methodological framework is therefore the product of the synthesis between the need to integrate - in the sense of recognizing the necessary regulatory references - and the desire to innovate thanks to the UTC model.

This resulted in the implementation of a skills acquisition model that must be explicitly included in the curriculum. This model, once validated, represents the shared, and therefore "non-negotiable", vision of the community involved in the training process - that is, the businesses, the teachers and staff and, last but not least, the families.

Project-Based Learning

In the Appendix, the topic of Project-Based Learning (PBL) is covered, such methodology is a distinguishing feature of UTCs (see IO1, in particular sections 1.8, 1.13, 1.13, 3.4). PBL, is aimed especially at obtaining and developing:

- Work-readiness skills, including social and emotional development, communicative abilities and propensity to team work, personal growth and self-confidence, that is, those transversal skills (soft skills) that employers often complain are lacking.

- Tangible results and qualifications/recognition for the students: the products or projects created by the student in their group during the experience, often presented during suitable events which are then evaluated/rewarded by the employers, do not go unnoticed on a CV, in an academic reference letter.

- Opportunities for professional growth thanks to the acquisition of skills and qualifications sought after by industries and the opportunity to make contact with a series of potential employers.

On the basis of several academic texts on PBL (provided by UTCW) and practical observation of how UTCW applies PBL within its curriculum, the Appendix completes the methodological framework of the skills with a recognised educational procedure, aimed at forming, stimulating and evaluating them.

Curriculum and regulatory references

The first step in designing the new curriculum consisted in the analysis of the relative regulatory framework and in particular of the standards and skill repertoires expressed in both national and local legislation as well as recommendations by the European Union.

As regards the national framework, the reference is the national/regional legislation. For instance, in Italy the reference is to the PECUP (Cultural and Professional Educational Profile) of the Educational and Professional Training pathways, which include:

- key citizenship skills (Ministerial Decree 139/2007)

- basic skills in the fields of languages, mathematics, science, technology, history, sociology and economics for the third (qualifying) year and the fourth (diploma) year as detailed in the Accordo Stato Regioni agreement of 27 July 2011), while for the first two years, the national guidelines referring to the introduction of Cultural Axis and Citizenship Skills remain as references (Ministerial Decree 139/2007);

- common technical professional skills, pertaining to the areas of Quality, Safety, Safeguarding Health and the Environment, that are detailed in the same agreement;

- specific technical professional skills pertaining to the given profession, as contained in the Accordo Stato Regioni agreement of 27 July 2011 and its integrations in the Accordo Stato Regioni agreement of 1 August 2019, as well as in the regional qualification system (Emilia Romagna and Puglia regions) with reference to the Vocational Education and Training pathways (FPs).

On the European level, the common framework for all partners is the Council Recommendation on Key Competences for Lifelong Learning, published in May 2018 by the Council of the European Union. The Recommendation outlines the eight milestone skills that young people should develop in order to enter the world of work satisfactorily, and to achieve independence becoming active citizens.

Framework of fundamental skills

PROFESSIONAL STANDARDS	CULTURAL AXIS	KEY CITIZENSHIP SKILLS	EUROPEAN UNION 8 KEY COMPETENCES
EQF	*DM 139/2007 (in Italy)*	*DM 139/2007 (in Italy)*	*EU Recommendation May 2018*
UC1	Languages	Learning how to learn	Literacy
UC2	Mathematical-Scientific-Technological	Planning	Multilingualism
UC3	Historical-social	Communicating in different ways	Numerical, scientific and engineering skills (STEM)
UC4		Collaboration and partecipation	Digital and technology-based competences
UC5		Acting independently and responsibly	Interpersonal skills, and the ability to adopt new competences
		Problem solving	Active citizenship
		Pointing out connections and relations	Entrepreneurship
		Acquiring and interpreting information	Cultural awareness and expression

8 KEY FOR COMPETENCES LIFELONG LEARNING COMPETENCES	
EU Recommendation - May 2018	
1. Communicating in a mother tongue	5. Learning to learn
2.Communicating in a foreign language	6. Social and civic competences
3. Mathematical, scientific and technological competence	7. Sense of initiative and entrepreneurship
4. Digital competence	8. Cultural awareness and expression

Focus on soft skills

The innovation of the curriculum was based on focusing on the objectives expressed in terms of transversal skills and employability skills.

The choice is closely linked to the recommendations of UTC model analysis and transferability guidelines. In this model, soft skills help to build the professional identity of young people and are therefore a priority for both teaching and learning.

Their centrality is also confirmed by the importance of the involvement of employers and their decisive role in recognising and indicating individual skills that promote employability: in addition to technical skills and knowledge related to specific sectors that young people must possess, the business world requires workers with interpersonal skills.

The focus on soft skills is also important in relation to the transnational context of experimentation: in contrast to individual national legislations that establish the basic and technical-professional skills required, the construct of "responsibility for employability" is, in itself, flexible and adaptable to different socio-cultural contexts and national spheres.

A new framework for a new curriculum

Operationally, soft skills were defined by analysing some transversal skills frameworks, which were selected and examined in relation to the scope of development, application context and communication effectiveness.

1. The first framework examined is the one adopted by UTC Warrington: the PiXL

Edge model, referred to by the acronym LORIC (Leadership - Organization - Resilience - Initiative -Communication). It is characterized in particular by the explicit reporting of excellence outcomes for teachers (Outstanding Teaching) and students (Outstanding Learning).

2. The second framework is the Top 10 Employability Skills developed by STEM-NET, a British network created to promote the spread of science and technology (Science Technology Engineering Math). The top ten is the result of a survey of a sample of partner companies, which were asked to indicate: the main skills required of potential workers, the description of each skill ("what it means"), an example of a learning result in a school environment "evidence in lessons" and an example in the extracurricular field ("evidence outside lessons").

3. Entrecomp into action is the European Skills Framework for Entrepreneurship, published by the European Council in 2016. Beyond the areas developed on the specific theme, the framework is distinguished by its descriptive effectiveness and, in particular, by the choice to present each skill with a suggestion or exhortation ("a tip") and with the learning outcomes expressed in levels.

4. The Europe Digital Programme 2021-2027 has been examined by virtue of the emphasis it places on cybersecurity skills and the intelligent use of digital tools.

These frameworks represented the references for a new application tool.

The end result was the development of a framework of eight milestone skills, each of which is presented through:

▪   a concise description;

▪   a stimulus-phrase or hashtag, aimed at engaging young people in a more immediate and direct way;

▪   a set of indicators for the trainer (Tea-

ching outcomes), with the aim of sharing learning objectives unequivocally;

- a list of learning outcomes from the student's point of view (Learning outcomes), that is, easily recognizable behaviours or evidence.

Selected benchmark employability skills frameworks

The PixLEDGE framework	10 EMPLOYABILITY SKILLS	ENTRE COMP	DIGITAL EUROPE 2021-2027
LORIC	*STEM_NET*	*2016-2018*	*2021-2027*
Leadership	Communication and interpersonal skills	Self-awareness & Self-efficacy	Advanced digital skills
Organisation	Problem solving skills	Motivation & perseverance	Cyber security
Resilience	Using initiative and being self-motivated	Planning & Management	
Initiative	Working under pressure and to deadlines	Coping with uncertainty, ambiguity and risk	
Communication	Organisational skills	Working with others	
	Team working	Learning through experience	
	Ability to learn and adapt	Spotting opportunities	
	Numeracy	Creativity	
	Valuing diversity and difference	Ethical & Sustainable thinking	
	Negotiation skills		

The new soft skills framework

COMPETENCES	OUTCOMES
SELF AWARENESS SELF-EFFICACY	Identifing your strenghts and being confident on your abilities
EFFECTIVE COMMUNICATION	Identify, understand, express, create and interpret concepts, feelings, facts and opinions in both oral and written forms, using visual, sound/audio and digital materials across disciplines and contexts
MOTIVATION AND PERSEVERANCE	Focusing on tasks, showing passion to achieve goals and keeping going even when facing difficulties
WORKING TOGETHER	Being open to work with others as well as on your own, showing respect for others, playing different roles and take some responsability
ORGANIZATION	Being able to recall the order of steps, manage resources and plan to meet goals and deadlines
INITIATIVE	Taking an active role in your learning, being creative and innovative
DIGITAL SKILLS AND CYBERSECURITY	Confident, critical and responsible use of digital technologies Being smart for a safe use of digital technology
SUSTAINABILTY	Behave ethically Think sustainably

Designing the new curriculum

The framework is completed by a tool to provide guidance in designing a new curriculum.

From a methodological point of view, in fact, the transferability guidelines of the UTC model underline the need to devise and update the curriculum by building "clear links and integration between the generic and the professional part of the curriculum and between the various forms of learning" (4.3.1).

The innovative element of the tool is determined by:

- the centrality of transversal skills and employability

- the injection into the curriculum and educational methodology of learning in context, Project and problem Based Learning (PBL) and real tasks

To this end, the proposal is a design based on transversal skills, divided into eight main tabs, one for each of the defined skills-goals.

The template enables the recording of scheduled activities and their intersections with disciplinary areas (Evidences), linking them to the indicators of the eight key skills sets and to learning objectives (What that means)

The application of the tool integrates with regular teaching design and good practice, and allows an innovative presentation of the curriculum.

Template for designing the new curriculum

COMPETENCE	
DESCRIPTION	
SKILLS SET	
WHAT THAT MEANS	
EVIDENCE EXAMPLES	
NEW CURRICULUM WP6	
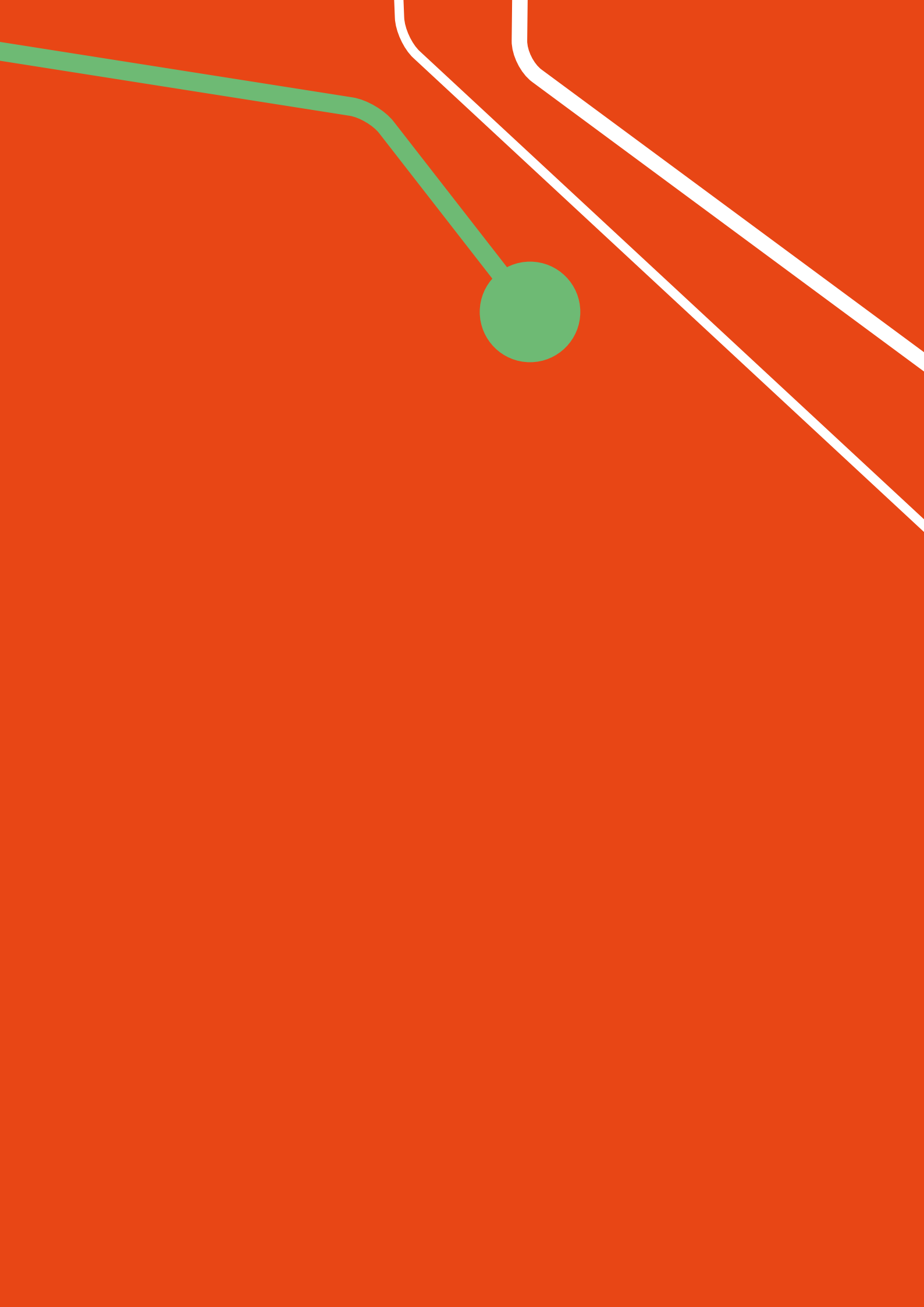
APPENDIX 1

Learning through projects (Project Based Learning)

This appendix is based on the study of several academic texts on PBL (provided by UTCW) and on concrete observation of how UTCW applies PBL within its curriculum.

The analysis of this didactic methodology is aimed at supporting partner bodies in the development of PBL activities key to the approach on which the review of curricula is based.

According to UTC methodological guidelines, PBL "Serves as a medium for students who don't usually participate, Accommodates different kinds of intelligences, helps students develop a variety of social skills relating to group work and negotiation, establishes a supportive and non-competitive climate for students, and makes learning more apt to be personalized and valued".

In fact, by working on PBL with employers, UTC strengthens its position in the local training and work environment, formulating training that is both attractive to students and appreciated by local employers. Employers, in fact, do not only establish the skills that will be required of future employees, but by taking part directly in PBL they have the opportunity to see students in action and to see the match between the training offered by UTC and their requirements. The projects are tied to the specific area of specialization and however challenging they may be for teachers, they offer them greater flexibility and more freedom of tuition than the constraints set by the curriculum. Students, for their part, recognise that the projects and the involvement of the employers have positive effects on their academic learning underlining, in particular, the value of direct contact with employers made possible by PBL.

Features and concrete steps for the implementation of PBL

There are numerous reference texts for this teaching practice. For the Buck Institute for Education (2017), for example, PBL is "a teaching methodology in which students acquire knowledge and skills by working for an extended period of time on researching and solving a problem, an issue, a challenge, that is authentic, engaging and complex" (page 1).

An additional element often mentioned for UTC is employer involvement. Projects may be devised in two slightly different ways. In the first case, the project begins with an idea by an employer that is subsequently developed by UTC and the same entrepreneur collaboratively, taking into account the needs of the students on their pathway towards qualification. In the second case, employers are presented with a curriculum and asked which aspect of the programme they would like to contribute to. From then on, the project is developed in the same way as described above. In any case, the chosen project should be really and obviously relevant to the employer. The employer will be directly involved in the project according to the extent they are able to, but should, at the very least, present it to the students and gather comments and observations on its outcome. Although all projects are generically defined as "employer projects", some of them are actually proposed by universities. Some employers have "ready-to-use" projects that they have already used with other UTCs. This can be useful but working with employers to develop original projects strengthens the partnership and avoids "watering down" the impact on school staff and students.

According to Warrington UTC , the involvement of employers is only a particular example of a more general feature: "Learning experiences are designed as complex, authentic (real-world) projects; The contexts for many of the projects are found outside the school walls; Projects emerge from needs in the community or home; they arise from social issues, or perhaps physical, emotional, or recreational needs"; "Some [only some!] can be linked with industry or business activities".

All teachers should participate in the planning process, whatever subject they teach, so that they can appreciate its relevance to the subject they teach and how the latter may contribute to the development of the project itself. Therefore, PBL goes through a phase of concerted planning in which all staff take part, so everybody's relevance and con-

tribution to the project is visible[1]. The activity should involve both practical and theoretical aspects, and the cross-disciplinary are one of the main criteria for assessing the quality of a PBL. Recruiting and retaining quality staff is therefore one of the main challenges to be faced when deciding to implement PBL together with employers, working effectively and in close collaboration with industrial partners. One aspect linked to this is the professional development of teachers, which, through PBL, should be achieved and, at the same time, monitored and evaluated. According to Warrington UTC, "PBL is a model for classroom activity that shifts away from the classroom practices of short, isolated, teacher-centered lessons and instead emphasizes learning activities that are long-term, interdisciplinary, and student-centered."

Ideally, the group of students for PBL is a mixed group regarding age and skills and includes students who have shown an interest in the topic. This composition offers very interesting advantages: younger students learn from older students how to plan and manage projects, and all students learn how to work in and lead groups of people with different backgrounds and experiences. The group meets for a few hours a week for several months, although the time available for projects varies throughout the year, decreasing at key academic moments such as exams (guideline 4.1.8). At first, Warrington UTC also offered "vertical" PBL, which involved students from different years, but this method proved to be very time-consuming and could never be replicated, as there would always be some pupils who had already experienced the same project the year before.

How long does a PBL activity last and how is organized over time? UTC documents state that projects last for eight weeks, although the time spent on the project during the week may vary. Eight weeks are not a magic number, but are simply due to the fact that they fit perfectly into the school calen-

1 According to a table provided by Warrington UTC, a PBL project has 3 stages: Curriculum Design, Instructional Delivery and Assessment and Evaluation.

dar. Some UTCs change the duration of the project as needed. In terms of working hours, a project could be carried on one afternoon a week, regardless of the group to which the students involved belong, between September and February. However, it is also possible to schedule "Drop Down Days", in which classroom-structured lessons are completely replaced by activities used to strengthen the practical application of students' skills and provide a deeper learning experience. The use of drop down days for PBL, however, is not given and may vary from year to year. UTC Reading, for example, used to use this mode to carry out projects involving the entire school population, but as the number of younger students grew, the leaders of the advanced classes began to object that the input received from employers was not worth the investment. In the following year, drop down days, unchanged in number, were therefore used for workshops related to cross-skills, or for mentoring, vocational guidance and interviews with the employer. At the UTC in Liverpool, on the other hand, the weekly student hours include two weekly sessions of participation in projects proposed by the industry, usually working in teams. Jaguar Land Rover, for example, organises a five-weeks project, during which students have to measure, with an extremely high level of precision, the depth of water contained in a glass. No use of special tools or devices is required, but it is a fundamental task for Engineering, to learn how to carry out a measurement and interpret the result and, above all, to understand its importance (examples from McCrone et al. 2019).

PBL projects at Warrington UTC can be short (1-2 days) or more complex and develop over several weeks. They can involve few or many subjects and tend to change frequently depending on the context and current partners. The project has a teacher in charge (often a head of department) but always involves other subjects and departments. The subject of the project takes into account what students have achieved by that time of the year, either in terms of the prerequisites that students must have to participate, or in
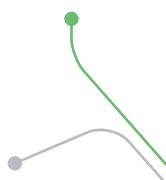
preparatory terms for the content that will be addressed immediately after.

A thousand shades of PBL

Although the "ideal model" of PBL implies a whole range of requirements, in our last training at Warrington UTC we found that the characteristics of PBL can also be present in part, and at different degrees of development, in every teaching activity of the school. In other words:

1. there are activities of PBL that develop only some of the characteristics of the model;

2. on the other hand, there are educational activities which have some characteristics of PBL but which are not, however, identifiable as PBL activities.

Take, for example, the important characteristic of employer involvement. It has been said that the PBL achieves maximum effectiveness when it is developed in collaboration with local employers. In our training we have witnessed two "drop down days" with intense involvement of external organizations. In the classrooms, young businesses such as Mako Create (https://www.makocreate.co.uk/) and Medical Mavericks (https://www.medicalmavericks.co.uk/) could be seen instructing kids on how to use certain technologies (drones, music sequencers, programmable robots, green screens) and launching group challenges[2]. . The operators had brought all the necessary equipment

with them. These activities were part of two days dedicated to coding and creative activities based on technology. One of the interventions was focused on careers in paramedics. The activity on medicine took place with brief demonstrative activities to be done more or less individually

On interviewing the operators we found out that Mako Create and Medical Mavericks are educational organizations specializing in workshops for youths (not "employers" in the strict sense) and that the activity day had been purchased by the school. In addition, the activities were short and focused. From PBL, therefore, they inherited the involvement of external personnel, group work and the same purpose of motivating and providing vocational guidance, but lacked other important characteristics.

Sphero project (Mako Create): Building a maze with Lego and then programming a robot-sphere that navigates it

Drone project (Mako Create): Team race to program a flight path for a drone with simple instructions

2 SPHERO PROJECT: This workshop was aimed to Code-A-Sphero with the final aim of teaching students the power of coding. Students designed and built a Sphero using LEGO, then learn how to code a mini Sphero to move (roll), change direction (spin) and alter its colour.
DRONE PROJECT: This workshop aimed at using mini-drones to demonstrate the power of coding in a fun, creative and safe environment for students. It was a great way for students to learn basic knowledge about computing skills. The session wants to inspire students about coding.
ROCKET PROJECT: The project consists of creating and testing a rocket using a plastic bottle. The rocket is then tested by using a manual pump.

Rocket project (Mako Create): Build and test a rocket using a plastic bottle

Becoming health scientists (Medical Mavericks): carrying out instrumental examinations with real tools

The activities observed on the second day came closer to the description of PBL. Again with Mako Create, this time the boys and girls went through three connected workshops with the aim of making a music album. The themes of the three workshops were electronic music (music content of the album), green screen graphics (to make the cover) and the creation of a logo and a pin-badge showing it (merchandising)[3].

In the meantime, another PBL activity was taking place. In this case, the external body involved was the educational branch of the IET Institution for Engineering and Technology (https://education.theiet.org/). The IET proposes annual challenges called "Faraday Challenges" to motivate students towards engineering professions, making all the material, from work guides to illustrative videos, available online. The project we observed is called "remote operations" and asks groups of students to design and build a device that allows to simulate a kidney and heart transplant. The final test, at the end of the day, is to use the devices built to position a tennis ball and a ping pong ball (which simulate the heart and kidney respectively) in special trays placed on a cardboard panel representing a human torso. To get to this test, the student groups must design, obtain material (from a predefined set choosing how to use a limited number of credits) and build the prototype. Teachers then assess the outcome.

Here we certainly have some features of PBL, but it is a 'toy' problem, not a real problem, even if it applies the principles of gripping, sliding and leverage. Noteworthy was the presence, as observers, of representatives of a local company in search of potential interns.

Music making

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3 GREEN SCREEN PROJECT
A workshop aimed at teaching techniques to effectively use a green-screen to take a photo and create cards.
Students could understand
– How Green Screen works
– How to shoot photos with a green screen
– How to edit and add your image to a card
BADGES PROJECT
This workshop gave the students the chance to create custom pin badges. They learnt:
– How to design and badges using traditional pencils and paper.
– How to prep designs for the production.
– How to use an industrial badge making machine.
– How to turn a photo in to badge.
DIGITAL MUSIC MAKING
This workshop gave the students a taste of digital music. They were able to create their own digital music applying strings of bloc codes.

Green screen project (creativity for album cover)

Faraday Challenge: Remote control

The last example is a case that we have only been told about: the Neighbourhood Weekender Music Festival Project. In this two-day project, the aim of the student groups was to design a real music festival after listening to a lecture by Jack Dowling, of SJM Concerts. Over the two days, the student groups participated in design, finance, marketing, logistics, report writing, and oral presentation seminars. All this before presenting their products to the staff. A selection of three finalist groups came to present the proposals to Jack, and each of the five students on the winning team was awarded a weekend ticket for the Neighbourhood We-

ekender festival donated by SJM concerts.

This example shows all the fundamental features of PBL: an external expert who commissions work, evaluates products, and awards a prize; a realistic task (the concert was really to take place); a final prize; the involvement of many subjects and disciplines.

Whatever method is used, the project will have to be based on a problem or a situation that does not involve a single solution or a single result, and must require teamwork.

Two-day PBL timetable "Neighbourhood weekender"

Poster (real) that the students worked on for the festival and for which the winning group received the tickets as a prize

Teaching within PBL

PBL pathways, which begin with meaningful and challenging experiences, have varying durations for periods of time that are not too fragmented and sufficiently continuous. The composition of the PBL groups tends to remain stable, based on genuine interest in the project expressed by the students. During PBL, teachers/facilitators:

- Provide opportunities for developing particularly valuable and important topics

- Enable learners to become more autonomous in building artifacts that are meaningful to them and represent their own learning

- Motivate students by engaging them in their own learning

The teacher running the project must be very available, responsible and proactive. Through PBL, the staff also has the opportunity to increase the flexibility and creativity of their teaching compared to the constraints of the curriculum (4.3.8).

How do you assess the participation and success of the individual student at the PBL? First of all, you have to ask yourself the questions:

- What will I do to help students understand content, develop processes and mental habits?

- How will I focus my teaching on getting students to gain key knowledge and skills?

- How will I provide useful feedback to students?

- What evidence of learning will there be to be traced in the work of students (products and processes)?

- What assessment tools will be used?

- Will assessment be integrated, that is, will it effectively link processes, products and demonstrations?

The most usable assessment techniques are: *(Table 1)*:

APPEARANCE TO BE EVALUATED	METHODOLOGIES
Global	*Judgment (judgment by the teacher and/or by the student)*
Knowledge (a posteriori testing of knowledge)	*Tests / Quizzes / Reports / Presentations*
Understanding (applying knowledge)	*Showing and Demonstrating*

Sample questions to evaluate a PBL activity

A sheet for designing and presenting a PBL task includes the following questions:

- Project title

- Guiding question

- What will the students produce?

- What content will be taught through the project?

- What cross-curricular opportunities will the project enable?

- What connections with the community?

- How will students be evaluated?

- What technological opportunities can be used for the project?

- How does it connect to the employability skills framework?

- What will the students presentations look like?

The PBL involves students in complex and real problems and has the following characteristics:

- It is academically rigorous:

  1. Students employ pre-existing knowledge and research skills

  2. Students determine what new knowledge and research skills need to be acquired for the project to be carried out

  3. Students collect information from a variety of sources

  4. Teachers encourage the work to be as complex as possible and to appeal to the full spectrum of students' skills

- It is relevant to students and the community:

  1. Students choose projects they are interested in

  2. Student learning is valued within the community

  3. The curriculum is linked to real-world issues, helping students understand what they are learning and why

- It gives students ownership of their own learning (empowerment):

  1. Students become experts in using and demonstrating knowledge, not just storing it

  2. Students negotiate design ideas and evaluation criteria with teachers and community membersI docenti svolgono il ruolo di coach e facilitatori

  3. Teachers play the role of coaches and facilitators

  4. Teachers encourage the taking of intellectual risks

To verify the consistency of a PBL activity, Warrington UTC suggests that you make sure it passes the test of the "6 As" of good design: Authenticity (#1), Academic Rigor (#2), Applied Learning (#3), Active Exploration (#4), Adult Relationships (#5), Assessment Practices (#6).

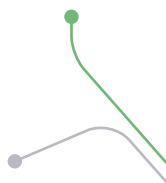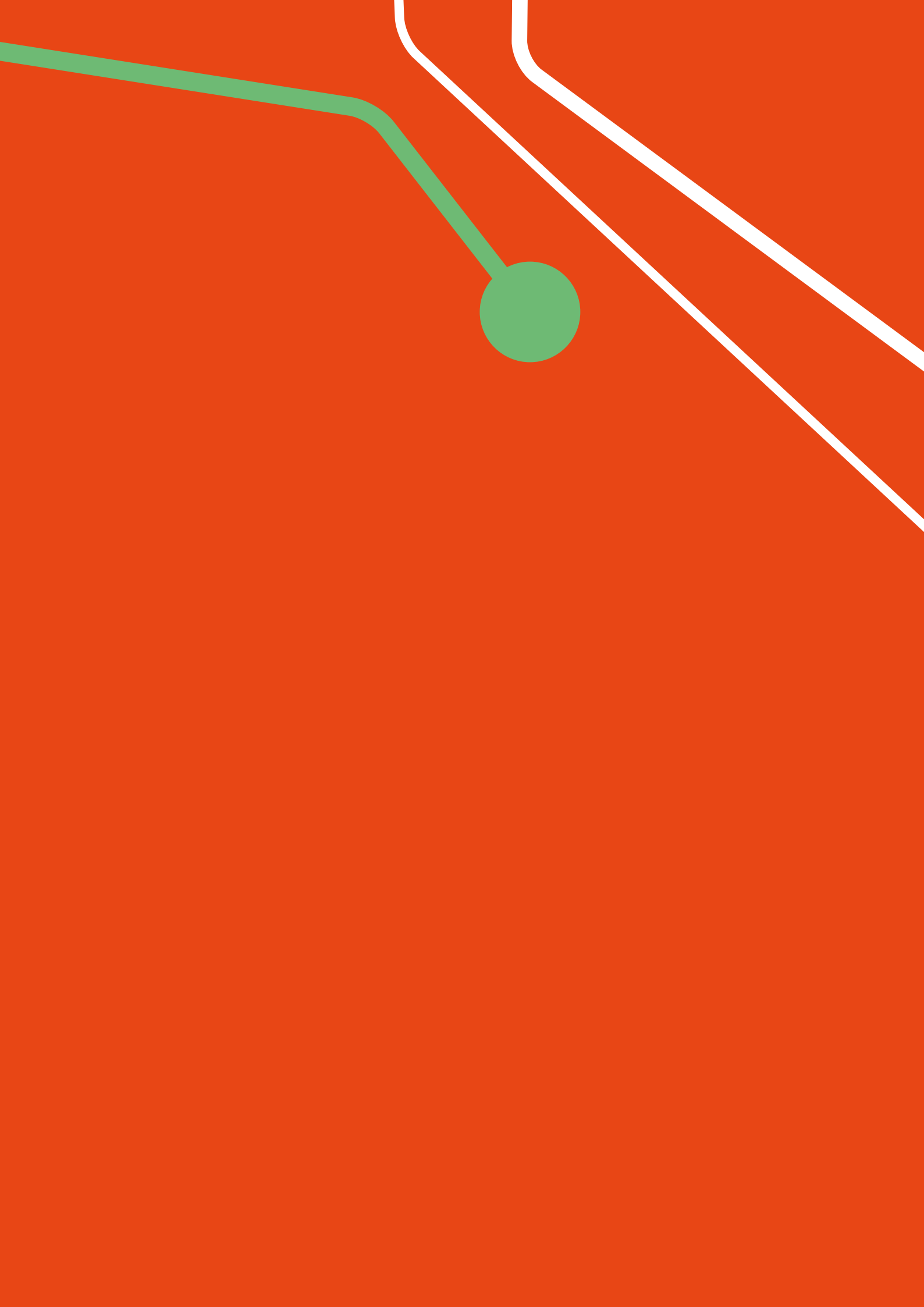Three questions are suggested for each of the 'A's:

Table 2

Authenticity (#1)	• *Does the project emanate from a problem or question that has meaning to the student?* • *Is it a problem or question that might actually be tackled by an adult at work or in the community?* • *Do students create or produce something that has personal and/or social value, beyond the school setting?*
Academic Rigor (#2)	• *Does the project lead students to acquire and apply knowledge central to one or more discipline or content area?* • *Does it challenge students to use methods or inquiry central to one or more discipline? (For example: thinking like a scientist)* • *Do students develop higher order thinking skills and habits of mind? (For example: searching for evidence, taking different perspectives, etc.)*
Applied Learning (#3)	• *Does the learning take place in the context of a semi-structured problem, grounded in life and work in the world beyond school?* • *Does the project lead students to acquire and use competencies expected in high performance work organizations?* • *Does the work require students to develop organizational and self-management skills?*

Active Exploration (#4)	• *Do students spend significant amounts of time doing field-based work?* • *Does the project require students to engage in real-life investigation, using a variety of methods, media, and sources?* • *Are students expected to communicate what they are learning through presentation and/or performance*
Adult Relationships (#5)	• *Do students meet and observe adults with relevant expertise and experience?* • *Do students have an opportunity to work closely with at least one adult?* • *Do adults collaborate on the design and assessment of student work?*
Assessment Practices (#6)	• *Do students reflect regularly on their learning using clear project criteria that they have helped to set?* • *Do adults from outside the classroom help students develop a sense of real-world standards for this type of work?* • *Will there be opportunities for regular assessment of student work through a range of methods, including exhibitions and portfolios*

ANNEX 1

Framework of soft skills for employability

	COMPETENCES	HASHTAG	OUTCOMES
1	SELF AWARENESS SELF EFFICACY	#BELIEVEINYOURSELF!	Identifing your strenghts and being confident on your abilities
2	EFECTIVE/CONFIDENT COMMUNICATION	#MAKEYOURPOINT! Speak your mind	Identify, understand, express, create and interpret concepts, feelings, facts and opinions in both oral and written forms, using visual, sound/audio and digital materials across disciplines and contexts (U Key Competences 2008)
3	MOTIVATION AND PERSEVERANCE	#DON'TGIVEUP!	Focusing on tasks, showing passion to achieve goals and keeping going even when facing difficulties (EntreComp)
4	WORKING TOGHETER	#LET'STEAMUP!	Being open to work with others as well as on your own, showing respect for others, playing different roles and take some responsability (Entrecomp)

	SKILLS SET	WHAT THAT MEANS STUDENT'S OUTSTANDING LEARNINGS
1	Identify your needs, wants, interests	I can describe my interests and wants
2	Identify your strengths	I can describe things I am good at
3	Identify your own qualities and attitudes	I can describe my own qualities and attitudes
4	Recognize skills and abilities you have been learning	I can describe skills I have been learning
5	Describe which qualities and abilities are needed for a job	I can describe which qualities and abilities are needed for (this) job
6	Evaluate your learning and progress	I can realistically judge my new abilities and skills I have been learning
7	Getting confident on your own improvements	I can recognise my improvements
8	Be proud of yourself	I celebrate with others my achievement
9	Identify and understand concepts, feelings, facts and opinions	I identify concepts, feelings, facts and opinion in oral and written language
10	Express yourself through spoken and written language	I express myself through spoken and written language
11	Describe in a clear and concise way	I describe in a clear and concise way
12	Explain in a clear and concise way	I explain in a clear and concise way
13	Understand and use professional specific terminology	I can understand and use professional specific terminology
14	Understand and use specific terminology in another language	I can understand and use specific terminology another language
15	Public speaking	I can present a work I have done to my classmates
16	Use and create visual, sound/audio and digital materials	I can use and create a visual, sound/audio and digital material
17	Learn from feedbacks and mistakes	I ask questions about my mistakes and learning
18	Show your interest	I ask questions when I am curious about
19	Get involved	I give suggestions and have new ideas to share
20	Focus on your goals	I stay driven by something that I liked or is good for me
21	Embrace challenge	I take on a new task
22	Be perseverant	I keep on working even if I make a mistake
23	Be resiliance	I can work hard to achieve a goal
24	Working under pressure	I can handle stress that come with deadlines
25	Get support	I ask for help when need it
26	Give your help to others	I give my help when I am asked for
27	Team up	I am open to work with others (in pairs or in group)
28	Share	I share my ideas and knowledge
29	Listen actively	I show interest toward others
30	Valuing diversity	I value diversity of backgrounds, expertise and needs
31	Be involved	I care of being part of a group project
32	Negotiate	I can reach an agreement with members of my team to achieve an outcome

	COMPETENCES	HASHTAG	OUTCOMES
5	ORGANISATION	#GETORGANIZED!	Being able to recall the order of steps, manage resources and plan to meet goals and deadlines (Stemnet)
6	INITIATIVE/CREATIVITY	#JUSTDOIT!	Taking an active role in your learning, being creative and innovative (Loric)
7	DIGITAL SKILLS AND CYBERSECURITY	BEASMARTSURFER!	Confident, critical and responsible use of digital technologies
			Being smart for a safe use of digital technology
8	SUSTAINABILTY	BEHAVESUSTAINABLE!	Behave ethically
			Think sustainably

	SKILLS SET	WHAT THAT MEANS STUDENT'S OUTSTANDING LEARNINGS
33	Manage resources	I take care of my tools and keep in order the equipment
34	Plan your work to meet targets	I carefully read the assignment and recall the steps
35	Plan your work to meet deadlines	I can carry out a simply plan for acivities
36	Define priorities	I can identify the basic step to start
37	Monitoring your progress	I keep ensure I am on track with deadline
38	Be efficient	I hand in my work by deadline
39	Be effective	I can find strategy to overcome difficulty
40	Focus on challanges	I am focus on the best possibile outcomes
41	Explore and get inspired	I am actively involved in exploring new ideas or new products
42	Be inspiring	I can lead by example
41	Be creative	I can explore new ways to make use of existing resources
43	Be innovative	I can describe how some innovations have transformed society
44	Problem solving	I can apply my knowledge from different areas to solve a problem
45	Learn from experience	I can recognise what I have learnt and what is missing for my development strategy
46	Shape your future	I can describe my skills and competences related to career options, including self-employment
47	Confident use of digital technologies (information &data)	I am confident on using digital technologies (information &data)
48	Confident use of digital technologies (media)	I am confident on using digital technologies (media)
49	Access, filter, create and share digital content	I can access, filter, create and share digital content
50	Engage with professional software and device	I can engage with professional software and device
51	Being aware of the legal and ethical principles involved in engaging with digital techonolgies	I am aware of the legal and ethical principles involved in engaging with digital techonolgies
52	Manage and protect information, content, data and digital identity	I can manage and protect information, content, data and my digital identity
53	Recognise behaviour that show integrity, honesty, responsability, courage and commitment	I can recognise behaviours that show integrity, honesty, responsability, courage and commitment
		I can describe ethical behaviour in professional context
54	Recognise examples of environmentally friendly behaviour that benefits a community	I can list examples of environmentally friendly behaviour that benefits a community
		I can practise environmentally friendly behaviours
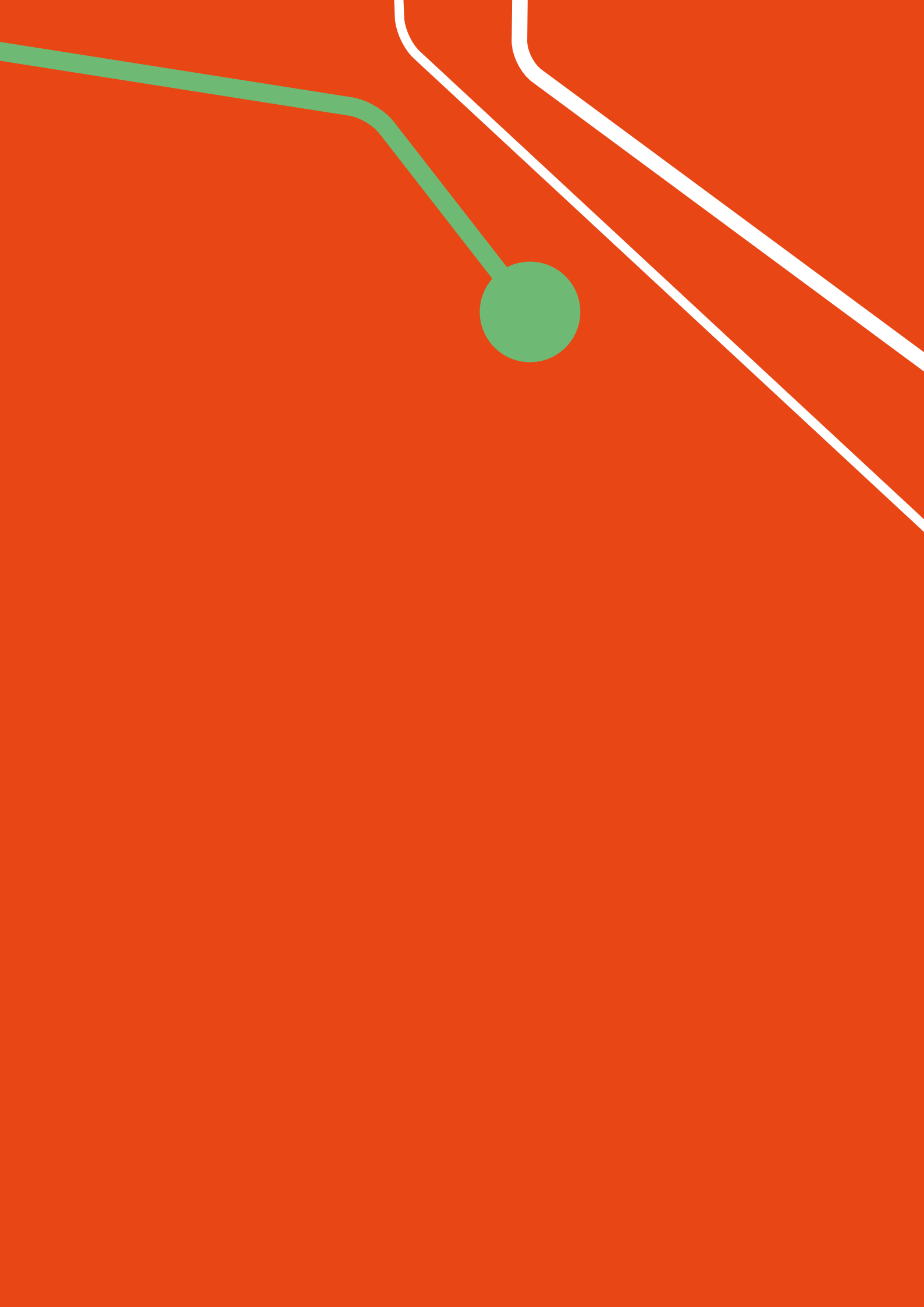
ANNEX 2
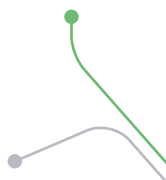
Template for designing the new curriculum.

Competence 1 – SELF-AWARENESS & SELF-EFFICACY

COMPETENCE	SELF-AWARENESS & SELF-EFFICACY
DESCRIPTION	BE CONFIDENT Identifying your strenghts and being confident on your abilities
SKILLS SET	☐ Identify your needs, wants, interests ☐ Identify your strengths ☐ Identify your own qualities and attitudes ☐ Recognize skills and abilities you have been learning ☐ Describe which qualities and abilities are needed for a job ☐ Evaluate your learning and progress ☐ Getting confident on your own improvements ☐ Be proud of yourself
WHAT THAT MEANS	☐ I can describe my interests and wants ☐ I can describe things I am good at ☐ I can describe my own qualities and attitudes ☐ I can describe skills I have been learning ☐ I can describe which qualities and abilities are needed for (this) job ☐ I can realistically judge my new abilities and skills I have been learning ☐ I can recognise my improvements ☐ I celebrate with others my achievement
EVIDENCE EXAMPLES	You introduce yourself to classmates You fill in self-assessment test You present school activities at the Open Day You promote school activities on social media & network You describe your work experience ....
NEW CURRICULUM WP6	Attached PBL Format & Enrichment activities: .... Other competences linked : .... Actions to be evaluated: .... Guidelines ☐ Employers/Companies involvement ☐ Time, space and grouping ☐ Communication and dissemination activities ☐ ......

Competence 2 – EFFECTIVE & CONFIDENT COMMUNICATION

COMPETENCE	EFFECTIVE & CONFIDENT COMMUNICATION
DESCRIPTION	MAKE YOUR POINT (Speak your mind) Identify, understand, express, create and interpret concepts, feelings, facts and opinions in both oral and written forms, using visual, sound/audio and digital materials across disciplines and contexts
SKILLS SET	☐ Identify and understand concepts, feelings, facts and opinions ☐ Express yourself through spoken and written language ☐ Describe in a clear and concise way ☐ Explain in a clear and concise way ☐ Understand and use professional specific terminology ☐ Understand and use specific terminology in another language ☐ Public speaking ☐ Use and create visual, sound/audio and digital materials ☐ Identify and understand concepts, feelings, facts and opinions
WHAT THAT MEANS	☐ I identify concepts, feelings, facts and opinion in oral and written language ☐ I express myself through spoken and written language ☐ I describe in a clear and concise way ☐ I explain in a clear and concise way ☐ I can understand and use professional specific terminology ☐ I can understand and use specific terminology another language ☐ I can present a work I have done to my classmates ☐ I can use and create a visual, sound/audio and digital material
EVIDENCE EXAMPLES	
NEW CURRICULUM WP6	Attached PBL Format & Enrichment activities: .... Other competences linked : .... Actions to be evaluated: .... Guidelines ☐ Employers/Companies involvement ☐ Time, space and grouping ☐ Communication and dissemination activities ☐ ......

Competence 3 – MOTIVATION AND PERSEVERANCE

COMPETENCE	*MOTIVATION AND PERSEVERANCE*
DESCRIPTION	*DON'T GIVE UP* *Focusing on tasks, showing passion to achieve goals and keeping going even when facing difficulties*
SKILLS SET	☐ *Learn from feedbacks and mistakes* ☐ *Show your interest* ☐ *Get involved* ☐ *Focus on your goals* ☐ *Embrace challenge* ☐ *Be perseverant* ☐ *Be resiliance* ☐ *Working under pressure*
WHAT THAT MEANS	☐ *I ask questions about my mistakes and learning* ☐ *I ask questions when I am curious about* ☐ *I give suggestions and have new ideas to share* ☐ *I stay driven by something that I liked or is good for me* ☐ *I take on a new task* ☐ *I keep on working even if I make a mistake* ☐ *I can work hard to achieve a goal* ☐ *I can handle stress that come with deadlines*
EVIDENCE EXAMPLES	
NEW CURRICULUM WP6	*Attached PBL Format & Enrichment activities: ....* *Other competences linked :* *.................................* *Actions to be evaluated:* *.................................* *Guidelines* ☐ *Employers/Companies involvement* ☐ *Time, space and grouping* ☐ *Communication and dissemination activities* ☐ *......*

Competence 4 – WORKING TOGETHER

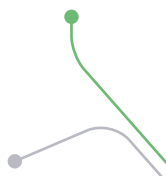|	
COMPETENCE	*WORKING TOGETHER – GETTING INVOLVED*
DESCRIPTION	*LET'S TEAM UP* *Being open to work with others as well as on your own, showing respect for others, playing different roles and take some responsability*
SKILLS SET	☐ *Get support* ☐ *Give your help to others* ☐ *Team up* ☐ *Share* ☐ *Listen actively* ☐ *Valuing diversity* ☐ *Be involved* ☐ *Negotiate*
WHAT THAT MEANS	☐ *I ask for help when need it* ☐ *I give my help when I am asked for* ☐ *I am open to work with others (in pairs or in group)* ☐ *I share my ideas and knowledge* ☐ *I show interest toward others* ☐ *I value diversity of backgrounds, expertise and needs* ☐ *I care of being part of a group project* ☐ *I can reach an agreement with members of my team to achieve an outcome* ☐ *I ask for help when need it*
EVIDENCE EXAMPLES	
NEW CURRICULUM WP6	*Attached PBL Format & Enrichment activities: ....* *Other competences linked :* *....................................* *Actions to be evaluated:* *..................................* *Guidelines* ☐ *Employers/Companies involvement* ☐ *Time, space and grouping* ☐ *Communication and dissemination activities* ☐ *......*

Competence 5 – ORGANIZATION

COMPETENCE	ORGANIZATION
DESCRIPTION	GET ORGANIZED Being able to recall the order of steps, manage resources and plan to meet goals and deadlines
SKILLS SET	☐　Manage resources ☐　Plan your work to meet targets ☐　Plan your work to meet deadlines ☐　Define priorities ☐　Monitoring your progress ☐　Be efficient ☐　Be effective
WHAT THAT MEANS	☐　I take care of my tools and keep in order the equipment ☐　I carefully read the assignment and recall the steps ☐　I can carry out a simply plan for acivities ☐　I can identify the basic step to start ☐　I keep ensure I am on track with deadline ☐　I hand in my work by deadline ☐　I can find strategy to overcome difficulty
EVIDENCE EXAMPLES	
NEW CURRICULUM WP6	Attached PBL Format & Enrichment activities: .... Other competences linked : .... Actions to be evaluated: .... Guidelines ☐　Employers/Companies involvement ☐　Time, space and grouping ☐　Communication and dissemination activities ☐　......

Competence 6 – INITIATIVE

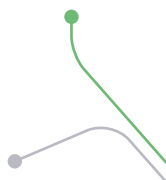|	
COMPETENCE	*INITIATIVE*
DESCRIPTION	*JUST DO IT* *Taking an active role in your learning, being creative and innovative*
SKILLS SET	☐ *Focus on challanges* ☐ *Explore and get inspired* ☐ *Be inspiring* ☐ *Be creative* ☐ *Be innovative* ☐ *Problem solving* ☐ *Learn from experience* ☐ *Shape your future*
WHAT THAT MEANS	☐ *I am focus on the best possibile outcomes* ☐ *I am actively involved in exploring new ideas or new products* ☐ *I can lead by example* ☐ *I can explore new ways to make use of existing resources* ☐ *I can describe how some innovations have transformed society* ☐ *I can apply my knowledge from different areas to solve a problem* ☐ *I can recognise what I have learnt and what is missing for my development strategy* ☐ *I can describe my skills and competences related to career options, including self-employment*
EVIDENCE EXAMPLES	
NEW CURRICULUM WP6	*Attached PBL Format & Enrichment activities: ....* *Other competences linked :* *....................................* *Actions to be evaluated:* *....................................* *Guidelines* ☐ *Employers/Companies involvement* ☐ *Time, space and grouping* ☐ *Communication and dissemination activities* ☐ *......*

Competence 7 – DIGITAL SKILLS & CYBERSECURITY

COMPETENCE	DIGITAL SKILLS & CYBERSECURITY
DESCRIPTION	BE A SMART SURFER (Save surfing) Confident, critical and responsible use of digital technologies
SKILLS SET	☐ Confident use of digital technologies (information &data) ☐ Confident use of digital technologies (media) ☐ Access, filter, create and share digital content ☐ Engage with professional software and device
WHAT THAT MEANS	☐ I am confident on using digital technologies (information &data) ☐ I am confident on using digital technologies (media) ☐ I can access, filter, create and share digital content ☐ I can engage with professional software and device
EVIDENCE EXAMPLES	
NEW CURRICULUM WP6	Attached PBL Format & Enrichment activities: .... Other competences links : .... Actions to be evaluated: .... Guidelines ☐ Employers/Companies involvement ☐ Time, space and grouping ☐ Communication and dissemination activities ☐ ......

Competence 8 – ETHICAL & SUSTAINABLE THINKING

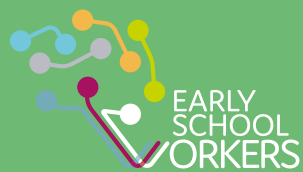|	
COMPETENCE	*ETHICAL & SUSTAINABLE THINKING*
DESCRIPTION	*Behave ethically & think sustainable*
SKILLS SET	☐ *Recognise behaviour that show integrity, honesty, responsability, courage and commitment* ☐ *Recognise examples of environmentally friendly behaviour that benefits a community*
WHAT THAT MEANS	☐ *I can recognise behaviours that show integrity, honesty, responsability, courage and commitment* ☐ *I can describe ethical behaviour in professional context* ☐ *I can list examples of environmentally friendly behaviour that benefits a community* ☐ *I can practise environmentally friendly behaviours*
EVIDENCE EXAMPLES	
NEW CURRICULUM WP6	*Attached PBL Format & Enrichment activities: ....* *Other competences links :* *...................................* *Actions to be evaluated:* *...................................* *Guidelines* ☐ *Employers/Companies involvement* ☐ *Time, space and grouping* ☐ *Communication and dissemination activities* ☐ *......*

This work would not have been possible without the presentations, tables and documents delivered and provided by UTC Warrington leadership and staff, especially Lee Barber, John Ferguson and Kris Burge. In addition, research was conducted on the following publicly available documents:

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WORKERS

earlyschoolworkers.eu
info@ earlyschoolworkers.eu