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oriented network for training and instruction  
2014 - 2016

# VISConti project

Viability Innovation Scientific Creativity oriented network  
for training and instruction

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Project work assessment spectrum

Study / analysis intended to create a panoramic view of the methods  
of project assessment in VET related to science subjects and IT.



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The information contained in this document was collated by the VISConti project following input from the following organizations

Centro Integrado Público de Formación Profesional Misericordia, Valencia
Colegiul Tehnic "Gheorghe Asachi", Botosani
Colegiul Național "Ecaterina Teodoroiu", Targu Jiu
ISOV Vocational Technical Anatolian High School, Istanbul
Polo Europeo della Conoscenza - I.C. Lorenzi, Verona
Uşak University, Uşak
Zespół Szkół Ogólnokształcących w Suchej Beskidzkiej, Sucha Beskidzka
Stucom Centre d'Etudis, Barcelona
Colegiul Tehnic "LETEA", Bacau
Vocational upper secondary school of Axioupolis, Axioupoli
Istituto di Istruzione Superiore Liceo "Bocchi-Galilei" di Adria, Adria
Norwegian University of Technology and Science, Trondheim
Malta College of Arts, Science and Technology (MCAST), Paola
Akdeniz University Vocational School of Technical Sciences, Antalya



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## A. About this document

This document is one of the outputs of the VISConti project. It is the first of a number of products that the VISConti project will produce during its lifetime and that serve several purposes.

The purpose of this document is to produce a pan European panorama of the practices and tools used by VET schools to assess the project work of students studying science related subjects and IT. It enables the partner organizations that contributed to its content to be aware of practices in other countries, and outlines the areas covered by the VISConti project in order to provide better quality education in Vocational Education and Training.

## B. About the VISConti project

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The VISConti project is funded by the European Commission under the Erasmus+ Strategic Partnerships for vocational education and training funding programme.

It is a 24-month project during which 16 partner organisations from multiple countries under the leadership of NORGES TEKNISK-NATURVITENSKAPELIGE UNIVERSITET (NTNU) of Trondheim, Norway will work together in the field of Vocational Education and Training. Citing the corporate summary of the VISConti project:

*“It is a partnership that has come together to create a virtual working space for structured interaction between students and teachers of science related subjects and IT and science professionals from industry.*



*The project will develop and test web based tools for the assessment of projects by students in VET that will then be developed into a tool for use in a community of practice for creativity in science and IT, both in education and in industry. VISConti will introduce a new approach and a new methodology for the generation and presentation of ideas or projects. It will generate tools that teachers will use to assess technical viability, economic potential and scientific creativity in project ideas as a new model for assessment.*

*VISConti will create a community of practice in which students, teachers and professionals with a career in science or IT build their own professional profile and work their way towards better employability and possibly opportunities for mobility through a structured exercise in sharing ideas and soliciting or offering peer assessment on creativity and viability of ideas in science and technology. Members in the VISConti Community of Practice look at each other's projects from the aspects of technical viability, economic potential and scientific creativity using standard tools that will be available for the members of the community.*

*Assessment tools will be designed after research in the field within the network of partners of VISConti and it will cover several areas and territories in order that methodologies can be adopted and adapted to the precise needs of the target group. The technological platform will facilitate the use of the tools and interaction in the VISConti Community of Practice will be developed in a collaborative manner between a VET school and an IT company in a perfect example of the kinds of collaborations that VISConti will create between schools and industry.*



*The partners will benefit from training by experts from education and industry in two training events that will provide them with the right orientation towards creativity and viability aspects of ideas in science and technology. They will acquire knowledge about different approaches and views of creativity and viability and about the assessment and rating thereof. They will learn about the criteria and right conditions for successful communities of practice like the one they will take part in created by VISConti.*

*There will be three major multiplier events in which VISConti will be brought to the education community in VET and to players in industry besides the partnership wide effort to augment membership of quality in the network and in the VISConti Community of Practice. The events will be organized through the intervention of partners in the network that will ensure a successful synergy and partnership between VET and industry through joint activities in creativity in science, technology and IT.”*

### **C. Tools used for collating information**

The VISConti project surveyed project work in VET to obtain a panorama of approaches taken in various countries, including EU countries represented in the partnership and Turkey. In doing so, we looked for information on assessment criteria currently used for student projects. The main interest was in projects involving science, technology, engineering, mathematics and IT. The survey also covered teacher training for project assessment, if any, and whether teachers receive such training either in their initial teacher education / training or subsequently through professional development activities. The results of these questionnaires will be used by VISConti to showcase practices that will be published on its portal.



This was a network wide activity in which all partner organisations had the task of collecting information and submitting it in template format as per online tools that were generated ad hoc. Tasks included collation of information on training, assessment; project work mentoring and examples of good practice in order that the partnership generated an EU wide picture and included experiences of schools from outside the network. All the partners involved were themselves VET schools or other players in education. They made submissions of answers and feedback using the on-line tools produced in the previous activity. Content was vetted and corrections solicited by Akdeniz University as leader of this activity.

NTNU and VisMedNet played supportive roles and collated information from countries / regions not covered by the partnership.

14 partners including Centro Integrado Público de Formación Profesional Misericordia, Colegiul Tehnic Gheorghe Asachi Botosani, Colegiul National "Ecaterina Teodoroiu", Istanbul Il Milli Egitim Mudurlugu, Istituto Comprensivo Lorenzi Fumane, Polo Europeo della Conoscenza from Italy, University of Usak, Zespol Szkol Ogolnoksztalcacych w Suchej Beskidzkiej, Stucum SA, Colegiul Tehnic "LETEA" Bacau, 1o EPAGGELMATIKO LYKEIO AXIOUPOLIS, Istituto di Istruzione Superiore Liceo "Bocchi-Galilei" di Adria Europe, Norwegian University of Technology and Science, Malta College of Arts, Science and Technology (MCAST), and Akdeniz University Vocational School of Technical Sciences filled out the online tool.



## **D. Analysis of results per partner organization**

### **1. Centro Integrado Público de Formación Profesional Misericordia from Spain**

In this vocational school, students' projects are used, both as final projects and projects "within" subjects. Students' project work is subject to assessment. Projects are used both as final assessment at the end of the year and as a part of term homework.

The school has a standard form and criteria for assessment of projects. It has a template, a tool for assessment of projects, and legal procedures. The school management and teachers created the criteria and legal procedures collectively. Assessment covers aspects of project work such as planning, background research, method, data collation and analysis, written presentation, and oral presentation. The teacher who assigns the project work to the students, and a panel of other teachers, carry out the assessment of students' project work.

Students are aware of the standards and criteria. They have a template for presentation of project work that includes the assessment criteria, which are also communicated to the students by the teacher. Individual students or groups of students can present project work.

University of Valencia, Faculty of Economics has a competition for business plans in VET. University of Castellón has the same competition.

Teachers receive training in project work and project work assessment during their teacher education, as part of standard in-service training, in a non-formal setting in ad hoc situations, and during an internal course.





## 2. Colegiul Tehnic Gheorghe Asachi Botosani form Romania

It is a Vocational School. In Romanian high schools, both in the theoretical ones (especially dedicated to scientific matters), and in vocational ones (technical, artistic, resources, services, military, etc.), teaching activities often include individual or team work projects, carried out by students, under the coordination of one or more teachers.

Project themes are chosen, by teachers or/and by students, in order to allow further analysis to of subjects discussed during classes, to clarify and justify some theoretical aspects through experimental or practical applications, or to extend the specific domain to other related and inter-connected ones, which allow an exhaustive and differential approach to initial thematic elements.

The projects are presented by students during classes, and can be evaluated by the teacher(s) (as individual or group activity) or inter-evaluated by the other students in the class. Assessing is usually finalised with notes, provided to the entire team (the same note to all members), to each student in the team (depending on work carried out within it), or it can be taken into account as part of a final evaluation (at the end of a semester or at the end of the school year).

In certain situations, students' individual or team work projects, can be elaborated in order to be presented and evaluated in school or extra-curricular contests, competitions, fairs (scientific, technical, multi-disciplinary, etc.), or as one of the assessment tests in the professional competences certification exam, completed with relevant certificates at the end of high school courses (classes of the Technological domains, as well as of the Theoretical domain, Real profile, Mathematics-Informatics specialization).



Students' project work is subject to assessment. They are as part of the assessment associated with the professional competences exam, specific for all the VET high school graduates, as well as for the Mathematics-Informatics specialization graduates.

One teacher who gives the project work assignment to the students and one teacher possibly other than the teacher assigning the project work to the students, or a panel of teachers, members of the contests and competitions committees, members of the professional competences exams, other students (inter-evaluation) or even the project team (self-evaluation) carry out the assessment of students' project work.

The school has criteria for assessment of projects, template or tool for assessment of projects, and specific assessment criteria associated with school or extra-curricular contests and competitions.

Students are aware of the standard criteria for assessment of their project work. They have a template for presentation of project work that includes assessment criteria which are communicated to the students by the teacher.

The standard criteria for assessment of project work is obtained from the school management, or the criteria is created by teachers collectively, or copied from other sources / social media, Standard national curriculum, regulations and methodologies for local, inter-regional, national, and international competition.

Individual students or groups of students can present project work.



Assessment covers aspects of project such as planning, background research, method, data collation and analysis, written presentation, oral presentation, multimedia presentation, qualitative aspects of student's activity (addressing the theme in an appropriate manner, using a personal perspective and critical reflections, handling correctly the bibliographical references, solving problems and situations based on good practise examples, proving personal effort, originality, and imagination) and qualitative aspects of the project itself (validity in relation to theme, purpose, objectives, and methodology, use of justified and substantiated resources, intern consistency, logical sequences in conception and presentation, originality in finding both theoretical and practical solutions).

Here are the local, national or international competitions for project work in science:

a) Concursul National Interdisciplinar "InfoEducatie"/InfoEducation Interdisciplinary National Contest (<http://infoeducatie.ro/>)

The contest is organised since 1993 and is dedicated to students (14-18 years, any specialization) with skills, inclinations and interests to create educational applications of computer software, utility software, multimedia, web pages, and robots. The contest takes place in four stages: the drive for school, district, national and local. The national phase takes place in august in Galaciuc camp, Vrancea County.

At each stage students present their projects, which are assessed by a dedicated committee.

In the final stage there is also an "open" one day team competition, which consists in making complex software on a given theme, combining designing and programming.



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The final camp also offers communications sessions on IT and design topics, as well as a course on using multimedia devices.

All IT means are provided by Colegiul National "Unirea"/Unirea National College, the Tulnici Community, and Liceul "Vidra"/Vidra High school, and awards are offered by the Ministry of Education and local or national sponsors.

The contest's Online Section is organized by "Uniunea Profesorilor de Informatica din Romania"/Union of Romanian Informatics Teachers (<http://upir.ro/en/>) and sustained by Google RISE Awards (<https://www.google.com/edu/resources/programs/google-rise-awards/>)

b) Concursul National de Creativitate in Fizica si Tehnologii "Stefan Procopiu"/Stefan Procopiu Creativity in Physics and Technologies National Contest (<http://www.concursul-procopiu.ro/>)

The contest is dedicated to students from VI to XII grades and it is organized by the Iasi County School Inspectorate, with the support of the Ministry of Education, in collaboration with the Faculty of Physics (Alexandru Ioan Cuza University, Iasi), Faculty of Electronics, Telecommunications & Information Technology, Faculty of Electrical Engineering, Energetics and Applied Informatics, and Faculty of Mechanical Engineering (Gheorghe Asachi Technical University, Iasi), as well as Romanian Inventors Forum, Iasi.

The diplomas awarded in contest are: ARCHIMEDES-intuitive-thinking (holistic), spirit of observation, insight; NEWTON-analytical thinking (theoretical, scientific); COPERNIC-scientific thought flexibility; GALILEI-skills to experience; EDISON-productivity (fluidity) scientific/technical thinking; COANDĂ-technical skills (suitability of thought to reality); JULES VERNE-forward-looking scientific imagination EINSTEIN-originality of scientific thinking; REKHA-wide spectrum of scientific/technical skills.



The Competition Sections are: Tests (individual, written); Laboratory Techniques (experimental, individual or groups); Cooperative Groups (team projects); Scientific Reports (research, individual or groups); Technological (Applied) Physics (practical, individual or groups); Informatics Techniques (scientific computer-modelling, individual or groups); Scientific Themes Compositions (film, visual arts, literature, theatre, individual or groups); Entrepreneurial Projects (manufacturing, services, etc.), individual or groups).

c) Concursul National "Hai in viitor!"/ "Come into the future!" National Contest (<http://cnpetrurares.ro/main.php?agora=1420556317.750248&limba=Europe/Bucharest>)

The contest is included in the Educational Activities National Calendar. It is organized by Colegiul National "Petru Rares"/Petru Rares National College, Piatra-Neamt, Neamt County, in partnership with the Centennial Colleges Alliance Association, Euravia Association (Cluj-Napoca), and Colegiul Tehnic de Transporturi/Transport Technical College, Piatra-Neamt. The contest and all the other thematic activities included in the event are financed by Piatra-Neamt Local Council, Neamt County Council, Ministry of Education, Kober LTD, and RIFIL SA.

The contest is dedicated only to Romanian students, enrolled in schools and high schools. The projects may be carried out either individually, or by teams, coordinated by teachers, parents, etc. The projects can be scientifically based (studies, communications, etc.) or otherwise (page plays live, software applications, mock-ups, final products, etc.), and they must address a topic related to the problems and opportunities it brings technical progress in future years or solutions to one or more such problems.

d) Other scientific and technical creativity international project competitions, with national stages in Romania, and awards granted by the Ministry of Education and sponsors:



- InfoMATRIX (<http://www.infomatrix.ro/>), organized for children between 3-18 years old, by Lumina Educational Institutions Foundation, the Ministry of Education, and the Bucuresti Municipality School Inspectorate, with 5 sections (Programming, Computer Art, Hardware Control, Short Movies, and Robotics), aiming to encourage young people to apply their imagination, their passion, and their creativity to technology innovations that can make a difference in the world today;

- Concursul National de Stiinta si Tehnologie RoSEF/RoSEF Science and Technology National Contest (<https://www.monitorulsv.ro/Local/2014-06-20/Concursul-National-de-Stiinta-si-Tehnologie-RoSEF-2014-sambata-la-lulius-Mall> or <http://suceavalive.ro/consursul-national-ro-sef-2014/>), organized by the Suceava County School Inspectorate and the CYGNUS Scientific Society - UNESCO Centre, in partnership with the "Stefan cel Mare" University, Suceava, Colegiul National "Petru Rares" Suceava/Petru Rares National College, INTEL Romania and ForumIT Association, under the specialized expertise of the National Commission for UNESCO in Romania, as a national stage for the INTEL ISEF International Annual Contest (USA), during which students present their truly unique work, striking public with their creativity, inventiveness, and talent.

Teachers receive training in project work and project work assessment during their teacher education, as part of standard in-service training, in a non-formal setting in ad hoc situations, in informal learning setting organised by the school, thematic workshops, seminar, conferences, organized at various levels or included in European communitarian projects, and dedicated trainings for teachers, within the frame of projects co-financed by the European Social Fund (Operational Sector Programmes – Development of Human Resources).



### 3. Colegiul National "Ecaterina Teodoroiu" from Romania

This is a vocational school. Project work is very important in many areas in the school. Most of the teachers choose this kind of activity for their students, guide them and afterwards make evaluations. They use computers and the Internet for project work and some of the students are working on web development or post their projects on different platforms. Students' project work is subject to assessment. It is used both as final assessment at the end of the year and as a part of term homework.

The school has a standard form and criteria for assessment of projects. Criteria are collectively created by teachers, according to the standard national curriculum. Assessment covers aspects of project work such as planning, background research, method, data collation and analysis, written presentation, oral presentation and multimedia presentation. The teacher who assigns the project work to the students, and a panel of other teachers, carries out the assessment of students' project work.

Students are aware of the standards and criteria. They have a template for presentation of project work that includes assessment criteria, which are communicated to the students by the teacher. Individual students or groups of students can present project work.

There are local, national or international competitions for project work in science such as: <http://www.rotopcoder.ro/> , <http://www.infoarena.ro/> , and <http://www.infomatrix.ro/>

Teachers receive training in project work and project work assessment during their teacher education, in a non-formal setting in ad hoc situations, and in informal learning settings organised by the school.



#### 4. ISOV Vocational Technical Anatolian High School from Turkey

This is a vocational school. Students' project works are subject to assessment. They are used as final assessment at the end of the year.

The school does not have a standard form and criteria for assessment of projects. Therefore, teacher's discretion and experience is used to assess the projects. Planning, data collation and analysis, and presentation of project work are taken into consideration for assessment. Student project work is assessed by the teacher who assigned it. Individual students or groups of students can present project work

There are Science Cafes where students can share their projects.

Teachers do not receive any training in project work and project work assessment.

#### 5. Polo Europeo della Conoscenza- I. C. Lorenzi Fumane from Italy

This is a provider of training / in-service training for VET teachers. It provides training in project work and project work assessment for VET teachers. The organization offers training modules on project work assessment training to VET teachers.

The content of the training modules that are offered to the teachers in the field of project work assessment is available from the following links:

<http://www.sevir.eu/> , [www.keyttt.bg](http://www.keyttt.bg) , <http://keyttt.cct.bg/> ,  
<http://tellvit.euproject.org/>, [www.esimtra.eu](http://www.esimtra.eu)





## 6. University of Uşak, Turkey

It is a provider of training / in-service training for VET teachers. They provide training on project work and project work assessment to VET teachers. Tools for assessment forms the part of project work assessment training offered by Uşak University.

While primary and secondary schooling concentrates on general skills and knowledge development and the university sector provides broad skills and knowledge for professional work or study. Vocational skills include technical knowledge and broad process skills. These are called competencies; that is, skills and knowledge applied in a work context.

The critical skills, knowledge and attitudes or competencies which individuals need for employment have been compiled into a document for each industry or industry sector. This is called a Training Package.

Most Training Packages comprise a set of endorsed materials and an associated collection of support materials. The endorsed component of a Training Package is made up of three sections. These are competency standards, qualifications framework, and assessment guidelines.

The competency standards define the skills and knowledge required for competent performance in the industry. Individual units of competency may be grouped together to make up a qualification. The section within the Training Package which shows how this is done is called the qualifications framework. This section describes what a person has to do to get a Diploma.



The assessment guidelines make up the third endorsed component of the Training Package. This section sets out the industry's preferred approach to assessment. It includes specific advice on the qualifications needed by assessors, the design of assessment processes and the conduct of assessments. Many Training Packages also include support materials, which may include assessment materials, learning strategies and professional development materials. It is very important that assessors know which Training Package is relevant to their industry or industry sector and that they have a complete copy of the current version.

Assessment is the process of collecting evidence and making judgements on whether competency has been achieved. The purpose of assessment is to confirm that an individual can perform to the standard expected in the workplace, as expressed in the relevant endorsed industry or enterprise competency standards. Assessments may be carried out in the context of a New Apprenticeship, a VET in Schools program, a nationally accredited course, a self-directed learning program, institutional programs or a recognition process.

Competency based assessment should not be an isolated activity. In most cases it forms part of a pathway to employment, to a structured learning program or to further training. It is important that it happens within a context of work performance and learning and that skill gaps identified during the process are seen as opportunities for further development, not failure. It is also important that evidence collecting is viewed as a process negotiated with the candidate, not a one-off test of knowledge that has been imposed on the candidate. While there is no fixed approach to competency based assessment, quality assessment processes:



- provide pathways for the candidate
- actively involve the workplace in the assessment process
- make competency meaningful to participants by relating the units of competency to workplace activities, procedures and requirements
- involve the candidate, the assessor and the workplace
- clearly target the evidence that the candidate needs to present
- incorporate clear and efficient methods of evidence collection
- have clear procedures for making the assessment decision
- include efficient record keeping systems
- ensure that the candidate is given clear and constructive advice and fee

Quality assessment processes require the participation and cooperation of a number of people, including assessors, candidates, workplace supervisors and technical experts. Materials can help these different groups to develop a common understanding of key aspects of the assessment process, including:

- What does the assessment process involve?
- What is competent performance?
- What is evidence?
- How is evidence gathered and evaluated?



- How can candidates contribute to the evidence gathering process?
- How can supervisors contribute to the evidence gathering process?
- How can technical experts contribute to the evidence gathering process?
- How do assessors make the assessment decision?

#### 7. Zespół Szkół Ogólnokształcących w Suchej Beskidzkiej from Poland

This is a vocational school, which uses projects in almost all subjects. These projects are planned for short (one week) or long periods (a few months). Also, they are connected to the curriculum or to extracurricular activities. Sometimes projects refer to hobbies and problems in which students are interested. Students' project work is subject to assessment. It is used both as final assessment at the end of the year and as a part of term homework.

The school does not have a standard form and criteria for assessment of projects. Therefore, teacher's discretion and experience is used to assess the projects. Assessment covers aspects of project work such as planning, background research, method, data collation and analysis, written presentation, oral presentation and multimedia presentation. Assessment of students' project work is carried out by the teacher who assigns the project work to the students and one other teacher. Individual students or groups of students can present the project work.



The students take part in competitions for projects in a wide range of issues. Universities and other institutions, which support education and the work of schools, offer many competitions and contests for student projects. For example:

<http://www.fais.uj.edu.pl/konkurs-eksperyment-lancuchowy>

<http://fizyka.us.edu.pl/index.php/pl/konkurs-fizyka-sie-liczy/125-ii-ogolnopolski-konkurs-fizyczny-fizyka-sie-liczy>

<http://konkurs-chemiczny.us.edu.pl/>

<http://www.nowaera.pl/aktualnosci/projekt-z-klasa-strona-wejsciowa.html>

Teachers receive training in project work and project work assessment in informal learning settings organised by the school, and training organised by other institutions.

#### 8. Stucom SA from Spain

This is a vocational school. All vocational students have to write and present a final piece of work / research at the end of their studies. Their project has to be presented to an audience of experts, other vocational students, experts from companies and sometimes families. They present their written / digital research but they also have to do an oral presentation of their project that can be supported by media tools.

Students' project work is subject to assessment and forms the final assessment at the end of the year.



The school has a standard form and criteria for assessment of projects. The school obtains the standard criteria for assessment of project work from standard national curriculum. Assessment covers planning, background research, method, data collation and analysis, written presentation, oral presentation, multimedia presentation, creativity, innovation, and economic viability (whether the project can be used by companies, timescale). Assessment of students' project work is carried out by a panel of teachers.

Students are aware of the standards and criteria. The criteria are communicated to the students by the teacher. Individual students or groups of students can present project work.

There are local, national or international competitions for project work in science such as:

<https://www.google-science-fair.com/es/>

<http://www.inicecatalunya.com/>

<http://agaur.gencat.net/>

<http://www3.gencat.net:81/joventut/catala/jornades/jornada1.htm>

<http://www.amctaic.org/index2.html>

Teachers receive training in project work and project work assessment during their teacher education.

## 9. Colegiul Tehnic "LETEA" Bacau from Romania

This is a vocational school. The school often uses project work for students at the end of semester. Students' project works are subject to assessment. They are used both as final assessment at the end of the year and as a part of term homework.



The school does not have a standard form and criteria for assessment of projects. Therefore, teacher's discretion and experience is used to assess the projects. Planning, background research, method, data collation and analysis, written presentation, oral and Multimedia presentation aspects of project work are taken into consideration for assessment. Students' project work is assessed by the teacher who assigns it to the students, and a separate panel of teachers.

Individual students or groups of students can present project work.

There are local, national or international competitions for project work in science such as:

- Comenius Project - "About Birds in English" - coordinator Zespół Szkół Nr1 SwidnicaPolonia
- Comenius Project - "The Notebook of European Trip of our Puppet" – coordinator Miejskie Przedszkole nr 2 im. Jana Brzechwy w Toruniu Polonia
- Youth in Action - „Recognized by your Grandma” - Adana Turkey
- Local project - „Nimic nu se pierde - Totul se reciclează” - Consiliul Local al Municipiului Bacău

Teachers receive training in project work and project work assessment in a non-formal setting and in ad hoc situations.

#### 10. 1o EPAGGELMATIKO LYKEIO AXIOUPOLIS from Greece

This is a vocational school. Project work is used in the school:

- In the curriculum first grade “Project” course, where groups of students under the teacher’s supervision have to deliver a



written, oral and multimedia presentation of their project work (in a field of their choice) by the end of each semester.

- In the extra-curriculum “Actions of Innovation” activities performed voluntarily every year by teachers and students of our school.
- Integrated in laboratory courses, by giving one or more tasks to the students, where collaboration, innovation and team work is expected. Those tasks can range from creating an online newspaper (Information Technology sector) to constructing a custom-framed bike (Automotive Engineering sector).

Students’ project work is subject to assessment, and is used as final assessment at the end of the year and as part of term homework.

The school has a standard form and criteria for assessment of projects. They obtain it from the standard national curriculum. Planning, background research, method, data collation and analysis, written and oral presentation aspects of project work are assessed. The teacher who gives the project work assignment to the students also assesses it.

Students are aware of the standards and criteria, which are communicated to the students by teachers. Groups of students can present project work.

There are local, national or international competitions for project work in science such as:

- Eugenides Foundation: [www.eugenfound.edu.gr](http://www.eugenfound.edu.gr)
- Students Robotics Festival: <http://mfr.sch.gr/>
- Students Informatives Conference: <http://www.math-syn-pli.gr/>

Teachers receive training in project work and project work assessment as part of standard in-service training.





## 11. Istituto di Istruzione Superiore Liceo "Bocchi-Galilei" di Adria Europolo from Italy

This is a vocational school. The use of students' project work in the school depends on school topics and teaching.

Students' project work is subject to assessment. It is used as a part of term homework.

The school does not have a standard form and criteria for assessment of projects. Therefore, teacher's discretion and experience is used to assess the projects. Background research, and the written, oral and multimedia presentation aspects of project work are considered for assessment. One teacher, usually other than the teacher assigning the project work to the students, carries out the assessment of students' project work.

Individual students can present project work.

There are no local, national or international competitions for project work in science.

Teachers receive training in project work and project work assessment in a non-formal setting and in ad hoc situations.

## 12. Norwegian University of Technology and Science

It is a provider of training / in-service training for VET teachers. They provide training on project work to VET teachers. The three-year bachelor degree in vocational teacher training is carried out in cooperation between NTNU and Sør-Trøndelag University College (HiST). It was established in Trondheim in



2007, and both institutions will be merged together in January 2016. NTNU undertakes teaching, supervision and evaluation of topics associated with the professional discipline (educational sciences), while Sør-Trøndelag University College is responsible for issues relevant to the vocational subject content.

At NTNU there is each year a portfolio exam consisting of various work requirements, including written assignments, PowerPoint presentations and digital stories submitted during the academic year and processed before filing the portfolio in the spring. Presentations can for example be associated with practice in schools or businesses, for example various work processes in the workshop, professional characteristics, classroom training etc. Students also have lessons on campus (e.g. micro teaching) which must be approved in order to be allowed to take the exam. In the spring of year 3, all students present a research and development project at a conference at the Program of Education (R & D conference). This takes place in the auditorium with parallel sessions and approximately 20- 40 listeners. The project is based on R & D work students have completed in their practice placements and is part of the work on the bachelor thesis. At Sør-Trøndelag University College, assessed students also take more traditional school examinations (eg in mathematics for those who will become teachers in electrical engineering and building trades, anatomy and pathology for students in health and youth development, food technology for students within the restaurant and food processing). They also have oral exams and folder exams at HiST during the course and all have a final oral examination concerning their bachelor assignment.

Three-year vocational teacher training involves a total of 12 weeks practice in school and 12 weeks practice in business (4 + 4 each academic year). In their practice periods they are followed closely by supervisors. Teachers from NTNU consider whether the practice periods should be approved. This happens through practice visits and dialogue with the students' supervisor. All practices must be assessed as a pass before students receive their bachelor's degree. Our students have backgrounds within: Health and youth development, Technical and Industrial Production, Restaurant and food



processing, Electrical technology, and Building Trades.

Criteria for assessment makes up the part of the project work assessment training that the organisation offers to VET teachers. A good idea of the training content that is offered to the teachers in the field of project work assessment can be obtained from NTNU home page.

### 13. Malta College of Arts, Science and Technology (MCAST)

In this vocational school, students' project work is used in various contributions at different levels. For example; project work forms part of the formative and summative student curriculum at diploma level and projects often form part of the final student dissertation at degree level.

Students' project work is subject to assessment. It is used as as final assessment at the end of the year and as part of term homework.

The school has standard form and criteria for assessment of projects. The standard criteria for assessment of project work are obtained from the school management. Assessment covers aspects of project work such as planning, background research, method, data collation and analysis, and written presentation. One teacher possibly other than the teacher assigning the project work to the students assesses the project work.

Students are aware of the standard criteria for assessment of their project work. The criteria are communicated to the students by the teacher. Both individual and groups of students can present project work.

As local, national competitions for project work in science, students often participate in the NSTF Science EXPO challenge.



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Teachers receive training in project work and project work assessment as part of standard in-service training.

#### 14. Akdeniz University Vocational School of Technical Sciences

This is a vocational school under the umbrella of Akdeniz University. Better projects are reserved for student's projects exhibition and the others are used in students' labs by using their components. These projects are used as final assessment at the end of the year.

There is no standard form and criteria for assessment of projects. Teacher's discretion and experience is used in the absence of standard forms and criteria for assessment. Planning, written presentation, oral presentation, degree of difficulty aspects of project work are considered for assessment. One teacher who gives the project work assignment to the students.

Both individual and groups of students can present project work.

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"1.Turgutreis Estetik, Çevresel ve İşlevsel Deniz Aracı Tasarımı Yarışması" is a national competitions for project work in science.

Teachers do not receive any training in project work and project work assessment.



## 15. General analysis

### 1. Vocational schools

Out of fourteen respondents, ten are vocational schools, and four are providers of training/in-service training for VET teachers.

In Romania, project work is very important in many areas within the school. Most teachers choose this kind of activity for their students, guide them and afterwards make evaluations. They use computers and the Internet for project work, and some of the students are working for web development or to post their projects on different platforms.

In Poland, they are doing projects with almost all subjects. These projects are planned for short (one week) or long time (a few months). Also they are connected to the curriculum or to extracurricular activities. Sometimes projects refer to hobbies and the problems in which students are interested.

In Spain, all vocational students have to write and present their final work / research at the end of their studies. Their project has to be presented to an audience of experts, other vocational students, and experts from companies (and sometimes families are invited). They present written / digital research but they also have to do an oral presentation of their project that can be supported by media tools.

In Greece, project work is used in the school in the curriculum first grade "Project" course, where groups of students under teacher supervision have to deliver a written, oral and multimedia presentation of their project work (in a field of their choice) by the end of each semester. It is also used in the extra-curricular "Actions of Innovation" activity, performed voluntarily every year by teachers and students at the school. Moreover, project work is also integrated in the laboratory courses by giving one or more tasks to the students, where



collaboration, innovation and teamwork is expected. Those tasks can range from creating an online newspaper (Information technology sector) to constructing a custom-framed bike (Automotive Engineering sector).

Generally, in vocational schools, students' project work is subject to assessment. In six vocational schools, they are used as both final assessments at the end of the year and as a part of term homework. In four of them, they are only used as final assessments at the end of the year.

Most of the vocational schools have a standard form or criteria for assessment of projects. In Spain, there is a template, tool for assessment of projects, and legal procedures. The school management and teachers created the criteria and legal procedures collectively from standard national curriculum. In Malta, the school management created the criteria. In Romania, criteria are created by teachers collectively, according to the standard national curriculum. In Greece, they also obtain the criteria from standard national curriculum. In Turkey and Poland, the schools do not have a standard form and criteria for assessment of projects. Therefore, teacher's discretion and experience is used to assess the projects.

In almost all vocational schools, planning, background research, method, data collection and analysis, written presentation, and oral presentation aspects of project work are taken into consideration for assessment. Generally, the teacher who gives the project work assignment to the students carries out the assessment of students' project work. In Spain and Romania, a panel of teachers also carry out this process in conjunction with the responsible teacher. In Poland, assessment is carried out jointly, by the teacher who gives the project assignment to the students and one other teacher. In Italy, assessment is performed by another teacher, and not the teacher assigning the project work.



In most cases, students can present the project work as individuals or groups.

There are various local and national activities/competitions in different countries where students can present their project work. For example in Spain, University of Valencia, Faculty of Economics has a competition for business plans in VET. University of Castellón has the same competition. Moreover, The Agency for Management of University and Research Grants (AGAUR), an instrument for service and support to individuals and institutions constituting the Catalan academic and research system, is a national organisation about science projects. In Poland, universities and other institutions support the education and the work of schools, and provide competitions for student projects. The August Chełkowski Institute of Physics, which carries out experimental activities about condensed matter physics is such a national organisation in Poland. In Greece, there are Students Robotics Festivals, Students' Informative Conferences, and the Eugenides Foundation, whose objective is to contribute to the education of young Greeks in science and technology, also organises competitions.

Generally, teachers receive training in project work and project assessment during their teacher education, as part of standard in-service training, in a non-formal setting in ad hoc situations. In Poland, they receive this training in informal learning setting organised by the school and training organised by other institutions. In Turkey, they do not receive this training.

<b>Specific Aspects of Project Assessment</b>	<b>Countries</b>
Project work as a final assessment	Turkey
Project work as a final assessment and part of term homework	Spain, Romania, Poland, Greece, Italy, Malta



Standard form and criteria	Spain, Greece, Malta
No standard form or criteria	Romania, Turkey, Poland, Italy
One teacher who gives the project work assignment carries out the assessment	Turkey, Greece
One teacher possibly other than the teacher assigning the project work or a panel of teachers carry out the assessment	Spain, Romania, Poland, Italy, Malta
Individual students present project work	Italy
Group of students present project work	Greece
Both individual and group of students present project work	Spain, Romania, Turkey, Poland, Malta
Local and national competitions	Spain, Romania, Turkey, Poland, Greece, Malta
Teachers receive training	Spain, Romania, Poland, Greece, Italy, Malta
Teachers do not receive training	Turkey





## 2. Providers of training / in-service training for vet teachers

Out of fourteen respondents four of them are providers of initial or in-service training for VET teachers.

In Romania, they do not provide training on project work or project work assessment for VET teachers.

In Turkey, Italy and Norway, the provider gives training on project work and project work assessment to VET teachers. The organization offers training modules on project work assessment training to VET teachers. These training modules are organized by a number of organizations.

<b>Specific Aspects of Project Assessment</b>	<b>Countries</b>
Provide training in project work and assessment for VET teachers	Italy, Turkey, Norway
Provide no training in project work and assessment for VET teachers	Romania

## 16. Use of this document

This is not a research document and therefore should not be treated as anything other than a panoramic view that the partnership has put together in order to stimulate general reflection and assess the needs of the partnership.

Furthermore, this is not a standalone document. It is part of a larger document that will showcase methods and views of creativity, viability and economic potential of students' projects in VET.