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CONNECT YOUR  
LEARNING

# Connect Your Learning

A Resource for Innovative Classroom



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# Introduction

Digital media become more and more important as teaching tools in schools across Europe: teachers use PREZIs, online materials, e-handbooks and give assignments to be done and reported with digital means. However, there is a characteristic challenge that arises here: what is initially received by students as exciting and motivating may soon align with the appeal of standard paper handouts unless we make them 'connect' with the learning content in a new way. This is exactly the advantage of new media which invite interaction, creative input and multiple forms of engagement, letting students become editors, designers, researchers or publishers. In brief, digital media have the potential to foster 'connected learning', not yet fully realised and exploited in many schools.

This publication presents a set of new educational scenarios with a view to fostering better student engagement in curriculum learning. Our aim is to encourage:

- Experimentation and play: the sense of play seems to have been completely lost in the mainstream school education in sharp contrast to innovative learning activities incorporating elements of gaming in informal settings.
- Border crossing projects: they require students to explore themes cutting across the curriculum and combining knowledge and skills from various disciplines, e.g. IT, design, language arts or social studies.
- Experiential, practice-based learning: hands-on tasks are an essential part of the process in which students actually engage in something meaningful to them.
- Sharing class projects with authentic audiences: learners' motivation is raised if they know that their work can be shared with a public close to them, in terms of interests and cultures.
- Making students active users of technology in the process of learning rather than passive receivers of digitally mediated instruction.

The idea of the publication resulted from a range of encounters of teachers working in different educational and cultural establishments in Poland, Croatia and Portugal. We all involve our students in creative use of digital media in the learning process. We follow different pathways though so we realised that a cooperation of such a variegated teacher group can bring concrete benefits not only for our classes but much further beyond. The particular approach that we have chosen for elaborating new learning scenarios was very much inspired by the work done by a research group at the Digital Media and Learning Hub who proposed an approach to education called "connected learning" (cf. <http://clrn.dmlhub.net>). The approach advocates for broadened access to learning that is socially connected, interest-driven, production-centred and oriented toward educational opportunity. Such learning takes place when a young person pursues a personal interest with the support of peers and caring adults and is able to link this learning and interest to school achievement, further career or civic engagement. There is ample evidence that when young people are able to connect the often fragmented contexts of school, home, community and peer culture they engage in the most meaningful and resilient forms of learning. Digital and networked media provide unprecedented opportunities for connecting these formal and informal spheres of learning.



The CLRN reform agenda has been focusing on the Global North with its research centres located in the U.S. and Great Britain but the approach also applies in other countries where digital media affect learning lives of young people. The framework clearly aligns with current European strategies in education which seek ways to leverage impact of digital technologies and foster higher participation in learning of young people and their better educational attainment (cf. recent publications on [www.schooleducationgateway.eu](http://www.schooleducationgateway.eu)). Through an empirical survey of educators in Poland, Croatia and Portugal we have identified particular challenges which we can address propagating connected learning pedagogy in our countries:

- The vast majority of applications of digital technology in schools pursues the goals and means of traditional education by digital means - technology provides convenient pathways to teaching arithmetical operations, presenting geographical locations or historical figures, visualising biological or physical processes, etc. However, in most cases this use is substantially different from an engagement with new media which taps into the students' authentic interests, peer culture and out-of-school practices.
- Such use of digital media is rare and by no means restricted to the IT part of the curriculum: the majority of innovative cases gathered by us relate to teaching social studies or languages, even though these teachers may have lower technical expertise than their colleagues from the fields of science.
- The reported cases seem however to be more of occasional efforts to enhance the learning with something 'connected' to the students' authentic passions, interests and peer cultures than a part of consistent pedagogy.
- Still the majority of teachers agree that such efforts foster students' engagement, elicit their creative input and improve curriculum learning outcomes.
- Most of the cases remain unknown beyond the particular classroom as very few teachers share their resources with others beyond their close circle of colleagues.
- At the same time most of them confirm their willingness to learn from others who managed to tap into their students' informal spheres of digital creativity.

The above findings prompted our initiative which aims at supporting growth of connected learning with digital media across the boundaries of in and out-of-school activities. Transnational cooperation gave us a unique opportunity to gain insights into educational contexts which would be otherwise inaccessible due to language barrier and lack of access to other educational environments in foreign countries. In what follows we share results of this cooperation. Two public schools and one informal learning provider contributed input to the publication.

## Education Centre EST - Wadowice, Poland

EST is a lifelong learning centre offering educational programmes to young people raising their competences in a range of disciplines and adults upgrading their qualifications.

The courses offered to school students from across the region include foreign language courses, computer workshops and arts/artisan classes, some connected with entrepreneurship initiatives. Hundreds of young people participated in our programmes; an average number per semester approximates 150. Adult participants include school teachers who have attended our regular courses (e.g. English certificate courses), participated in one-off initiatives organised by us (conferences, seminars, trainings) and European mobility events (meetings in other countries, exchanges).

In 2003 we developed our first EU project in the field of digital media communication which opened a new field of European cooperation. Since then we have participated in many European initiatives spanning the fields of adult education, vocational training and youth work. As a result, the courses offered by us have gained additional value through exchange of approaches with other organisations in Europe and an essential intercultural dimension. At present our priority lies in the field of digital creativity: game making, coding, 3D design and prototyping, robotics and drone construction.

The following members of our team were involved in the development of the publication:

- Aleksander Schejbal, coordinator of the project and editor of the publication
- Łukasz Putyra, digital skills trainer, designer of the publication layout

## Srednja Škola Dalj - Dalj, Croatia

Secondary school Dalj is a vocational school in East Croatia providing education for three vocational profiles: economist, agriculturer and agro technician. The main scopes of work are in close correlation and form an interdisciplinary curriculum based on the principle *learning by doing*. This idea is best implemented through activities in the school's student cooperative. The cooperative DALYA was founded in 2007 as has so far 10 sections: strawberry greenhouse, orchard, vegetable gardens, wine cellar, hotbeds, ethno tourism, beekeeping, accountancy and bookkeeping, marketing. The cooperative is an integral part of the school's curriculum and blends theory and practice, offering opportunities for innovative teaching and learning methods. The mission and vision of the cooperative is to teach students how to become good entrepreneurs, how to develop their idea into a startup. Student's cooperative is not a compulsory subject; however most of the students choose to be a member of it. Some of the most important skills students learn through this extracurricular activity are decision making, responsibility, team work, tolerance, moral and business ethics and entrepreneurial skills. The same teaching strategies are implemented through trainee companies. These are also integral part of the school's curriculum and are compulsory subject for all students of economy. These activities are a good example of how to teach the skills which none book can do – how to connect knowledge and practical skills.

The school's mission is to match its educational profiles and programs to current regional and local needs and priorities, teach and educate students with respect to their mother tongue, heritage and culture (the Serbian language and Cyrillic alphabet), to develop and foster student's moral and ethical values, teach them multicultural skills for a life in democracy and tolerance towards all kind of diversity, to develop student's working skills and teach them to take over responsibilities for a sustainable social development as well as to care about student's health and social wellbeing.

Secondary school Dalj has also gained experience in preparing and implementing projects addressing different topics focusing on development of civic and social skills of students and teachers. As aware of present backwardness of school system, especially in the field of secondary vocational education, we stream towards changes and innovations, trying to make at least small steps to contribute to changes in the existing curriculum. Points especially addressed with our latest projects are innovative learning styles, 21<sup>st</sup> century skills such as critical thinking, ICT literacy, digital, language and media literacy.

Teachers involved in the development of the publication:

- Zoran Kojčić, Croatian language and philosophy teacher
- Ivana Bertić Bulić, English language teacher
- Lidija Jagodić, economy group of subjects teacher

## Jorge Augusto Correia School - Tavira, Portugal

Jorge Augusto Correia Secondary School is a public school with regular and professional courses and also night school for over 18 years old. It is the head of a Vertical School Grouping from kindergarten to secondary school, where children with disabilities, special needs or learning difficulties mingle with mainstream students, for it strives for an inclusive education. It is the only high school in the municipality of Tavira and it is attended by students either living near the sea or commuting every day from the inland mountains to the coast.

The educational mission for general courses in Jorge Correia School is, mainly, to give students tools to succeed in national exams and to pursue university studies. Making projects and fostering school clubs has been part of our school mission but only as extracurricular activities for the school board must stick to a strict curricula and week schedule plan determined by the Ministry of Education. Besides the regular classes, many other activities fill up our school life from clubs (Science, Youth Parliament, Entrepreneur Minds, Drama) to seminars by teachers from the Algarve University, local Police and Firemen, nurses and doctors from the Health Centre and School Sports meetings, among others. A Students' Office to meet private needs of the students is run by a multidisciplinary team (teacher, nurse and psychologist).

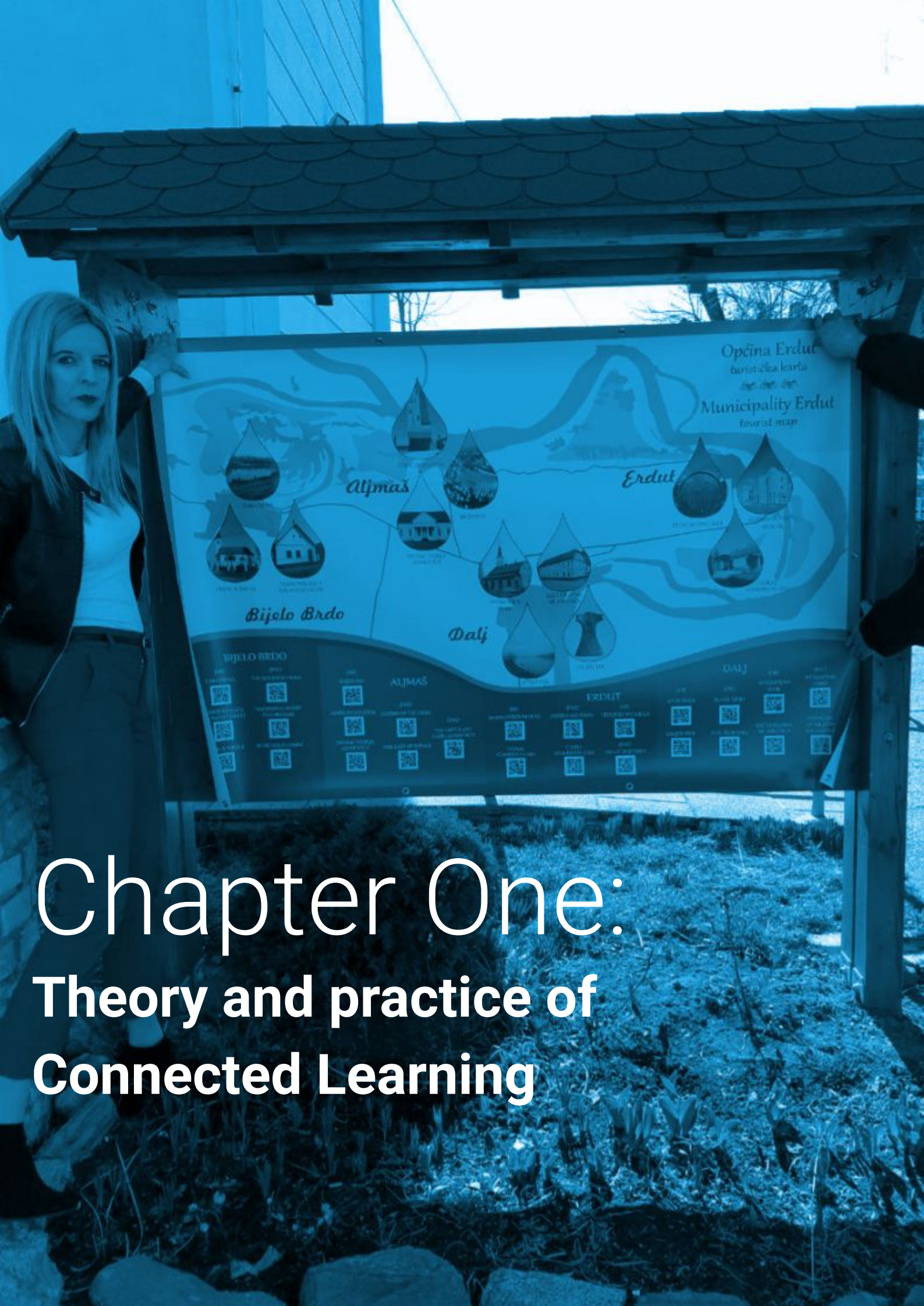
Creativity is stimulated either by written essays, videos, PPT and other new apps available and art work done by the students. Every year we have students enrolled in national contests supported by the Ministry of Education in Reading, Physics, Chemistry, Portuguese Language Olympics and Young Business Talents. Many of our students have reached the finals and some have been among the best.

Teachers are ruled by guiding principles, such as, promoting pedagogical and technological innovation as an encouragement for acquiring knowledge and learning; and stimulating cooperative work by sharing information, experiences and knowledge. Therefore, different Erasmus+ Projects and other innovative projects have been carried out by us over the years.

Teachers involved in the development of the publication:

- Fátima Martins, History teacher
- Edite Manuel Azevedo, Philosophy teacher
- António Silva, Economics teacher
- Ana Cristina Matias, school librarian teacher





# Chapter One:

## Theory and practice of Connected Learning



# Chapter One: Theory and practice of Connected Learning

We know from a number of studies that efforts to develop a new agenda for school education to better align it with changing patterns of young people's learning lives is one of the hottest topics in research and educational policy making. The approaches being explored revolve around concepts of youth identities in the digital age, young people's involvement in new media and the impact this engagement has on their school/academic progression and careers. The findings are conceptualised in different ways, those which particularly influenced our way of thinking relate to the concept of connected learning.

In the first part of the publication we want to encourage teachers to consider how the CLRN approach can help them better motivate their students to involve in the learning process. We focus on presenting concrete examples of the approach drawing on a variety of subjects and educational environments.



# 1. What is connected learning

Let us first define what we mean by connected learning. The following definition comes from the hub website of the network of scholars who developed the pedagogy: The Connected Learning Alliance, coordinated at the [Digital Media and Learning Research Hub](#) of the University of California [Humanities Research Institute](#), and supported by the John D. and Catherine T. [MacArthur Foundation](#) as part of its Digital Media and Learning initiative.



“Connected learning is when someone is pursuing a personal interest with the support of peers, mentors and caring adults, and in ways that open up opportunities for them. It is a fundamentally different mode of learning than education centered on fixed subjects, one-to-many instruction, and standardized testing. The research is clear. Young people learn best when actively engaged, creating, and solving problems they care about, and supported by peers who appreciate and recognize their accomplishments. Connected learning applies the best of the learning sciences to cutting-edge technologies in a networked world. While connected learning is not new, and does not require technology, new digital and networked technologies expand opportunities to make connected learning accessible to all young people. The “connected” in connected learning is about human connection as well as tapping the power of connected technologies. Rather than see technology as a means toward more efficient and automated forms of education, connected learning puts progressive, experiential, and learner-centered approaches at the center of technology-enhanced learning.” (<https://clalliance.org/why-connected-learning/>)

## 2. Principles of connected learning

The above definition will become clearer when we summarise the principles of connected learning. The approach has the following characteristic features.

- **Interest-powered:** Interests and passions that young people develop in a social context are viewed as essential elements. Interests foster the drive to gain knowledge and expertise. When the topic is personally interesting and relevant, learners achieve much higher-order learning outcomes.
- **Openly-networked:** Connected learning environments link learning in school, home and community because learners achieve best when their learning is reinforced and supported in multiple settings. Online platforms can make learning resources abundant, accessible and visible across all learner settings.
- **Production-centered:** Learning that comes from actively producing, creating, experimenting and designing is seen as particularly important because it promotes skills and dispositions for making meaningful contributions to rapidly changing work and social conditions.
- **Academically oriented:** Connected learning fosters interests and relationships that are tied to educational achievements that open up opportunities for learners. The approach encourages educational institutions to draw from and connect to young people's peer culture, communities and interest-driven pursuits so that learners can flourish and realise their true potential.
- **Shared purpose:** The most engaged learning happens while learners pursue a meaningful goal that is shared with others and with this in view create something or contribute to a community. Today's social media and web-based communities provide unprecedented opportunities for such collaboration. Shared purpose also opens opportunities for cross-generational learning and connection.
- **Peer-supported:** Connected learning thrives in environments where young people can engage in everyday exchanges with peers and friends, contribute, share and give feedback. There are rich possibilities for such peer-supported learning made available by today's social media but also in various non-formal learning establishments.

### 3. Connected learning practices

Over the years a wealth of collaborative projects rooted in connected learning approach have been developed. For this brief overview we have selected those which are close to the original source of the pedagogy so that we can have a baseline against which to plan our own scenarios.

The learning scenarios summarised here come from the Remake Learning Network organisations (<https://remakelearning.org/>) and have been inspired by their previously implemented connected learning programs. These projects come from varied sources, including public schools, museums, and makerspaces. Each project is deeply interdisciplinary: major themes include ecology, sustainability, and visual arts, but all of them delve into intersections between art, technology, science, history, and more. Some of these scenarios have been designed for a brief series of activities while others are intended as major projects that can unfold over several weeks or an entire school year. Another advantage of this set of examples is that all the scenarios are licensed under a Creative Commons Attribution-ShareAlike 4.0 International License with an encouragement for other educators to share, adapt, remix, and reuse them in their own classroom or learning space.

All the scenarios follow the principles of connected learning. However, in each case we can see some characteristics that particularly well illustrate one CLRN principle. They thus provide an excellent resource to practically explain each pillar of the approach.



## 3.1 Interest-powered: Video Game Design

Digital gaming is certainly one of the most popular pastimes of today's youth attracting interest in a variety of genres, aesthetics and playing modes. Before relegating this form of activity to a lower rank of little value for educational development of our students let's consider how we can take advantage of it and build learning experiences on young people's engagement in games.

An excellent example is provided by Carnegie Library of Pittsburgh's Learning Lab <https://www.carnegielibrary.org/kids-teens/the-labs-clp/> which offers teens with spaces for open exploration, peer-supported creativity and mentor-facilitated learning, thus expanding connected learning opportunities at their network of labs across the city. The scenario presented here uses a video game design tool called Bloxels to introduce middle school students to video game design. The students are not required to have a background in coding or graphic design. With the use the app they can develop their own game characters and levels to create a playable final product. Creativity and teamwork are at the core of the learning experience accessible to all the participants. The scenario invites students to think about developing characters, setting, plot, and narratives as well as introduces them to the idea of "modding" or modifying familiar games. Also the students need to think critically about the rules and strategies for their favourite games, moving from being the reactive game player to an active game designer.





The scenario takes the students through the following activities, which can also be organised as stand-alone units of learning.

### Session 1: Game design concepts

Students begin with playing an original game as well as its modified version on their tablets. Then in groups they discuss the game rules, mechanics, and the flow of the gameplay so they can enter the rest of the activities in context, having experienced what it's like to analyse and create rules for gaming.

### Session 2: Character design

Participants first brainstorm a character using paper grids and then recreate these characters with the use of PiskelApp.com or Sprite Something on tablets taking an initial stab at designing game characters. If youth have trouble deciding they can use the Decide Now app to spin the wheel and choose either heroes or villains for their game. Next they move on to character design with Bloxels app which is a hands-on platform to build, play and share video games.

### Session 3: Level Design

Students continue with Bloxels to build a videogame level. Bloxels are an innovative way of building a videogame in “real life” before uploading it to the Bloxels app. The activity focuses on this process and, if extra time is available, extends to creating theme music for the game with apps like Crayola DJ (younger groups) or GarageBand (older groups).

### Session 4: Complete Game Design

Youth complete work with Bloxels app on design of characters, levels, and objects in their game and proceed to the game controller design. Ideally, this could relate to the planning of their game idea that the youth have already done. This session would involve an activity with Makey Makey to learn how it works.

### Session 5: Game Testing and Tweaking

Students prepare for testing and tweaking their team's game. They also offer constructive feedback on other teams' games. With extra time they can experiment with Makey Makey – thinking about the importance of the controller and what it offers to gameplay.

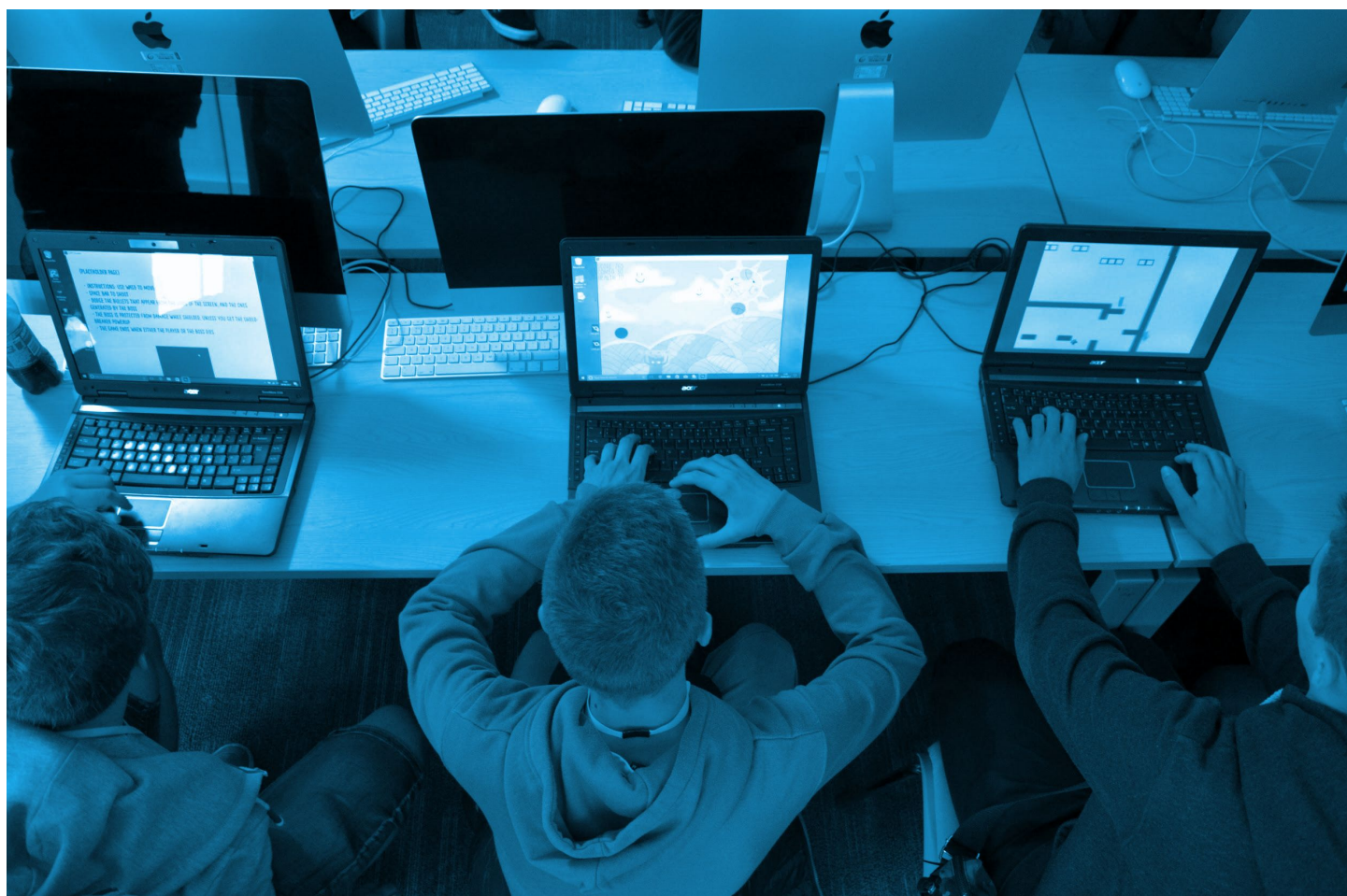
Now, how do all these activities, which don't usually need a “push” from the teacher as interest-driven all the way through, relate to educational standards? The answer lies in the very label often assigned to this type of interdisciplinary learning: STEAM, which stands for Science, Technology, Engineering, Arts and Mathematics. In this particular case the goal is to create a playable video game which leads to concrete learning outcomes, both in terms of knowledge and skills.

### The students will know:

- The components of designing a video game
- Elementary game mechanics and programming
- The process of design thinking
- The pros and cons of designing a video game with a team
- Effective ways to evaluate a video game based on established criteria

### In terms of concrete skills the students will be able to:

- Develop a game prototype
- Construct a multi-level video game on their own
- Use design thinking
- Evaluate and test video games



## 3.2 Openly-networked: Avonworth Galleries Project

Connected learning approach links learning in school and out-of-school environments in belief that students achieve best when engaged in learning in multiple settings. It is not only abundant online resources that can be used for this purpose but also resources available in various places and institutions. We have recently seen a growing interest in museums as learning spaces so it is worth presenting an example CRLN scenario from this context.

Avonworth High School from Pittsburgh [http://www.edline.net/pages/avonworth\\_high\\_school](http://www.edline.net/pages/avonworth_high_school) developed a program in which students design, create, curate, and manage exhibition spaces on the school campus. The programme was realised in partnership with the city's cultural institutions that include the Pittsburgh Glass Center, Carnegie Museum of Art, Toonseum and the Mattress Factory. These organisations served as mentors for students throughout the school year, as they work to fully curate spaces on their school campus that reflect the characteristics and mediums of the partnering museums. Also parents and community members were involved in the project. This scenario is presented with an encouragement for other schools and teachers: How might you do the same in your own community and connect with local arts institutions ? These could be museums, galleries, or local fine arts organisations. You might also consider connecting with individual artists working in your region.





The following activities are the key components of the Galleries Project. This is a broad outline that can be developed in different directions depending on the students' interests and the school's connections with local cultural establishments.

### Museum Visit(s)

Students visit their partnering museum, tour the specific exhibits and collect data on their visit.

### Design/Team Building

Using human-centered design strategies (affinity clustering, fly on the wall, etc.), students begin to develop ideas into an initial plan for an exhibit with their partnering museum.

### Mentoring/Iteration

Working with a mentor from their partnering museum and a school sponsor, students develop a multimedia presentation to pitch their plan. The plan must include their vision and inspiration, a design/layout, a budget and a timeline for implementation. Students go through several drafts before completing their final pitch.

### Presentation to Authentic Audience

Student teams present their designs and implementation plans to all the museum mentors, the school administration team, and the head of buildings and grounds, among others. The teams then regroup with their mentors to discuss feedback and to begin next steps.

### Installation/Art Show Opening

All exhibits are shared at the district-wide art show.

The above scenario is linked to curriculum standards in the field of art and design. However the expected learning outcomes in terms of acquisition of concrete knowledge, skills and understandings have a much wider relevance and applicability in other educational contexts. In particular, the scenario fosters the following transversal learning & innovation skills.

- **Creativity and innovation:** the students will learn how to use a wide range of idea creation techniques to produce worthwhile ideas and then analyse, evaluate and refine them
- **Teamwork:** they will learn how to work collaboratively with others, be open and responsive to diverse perspectives and incorporate group input into the work
- **Critical thinking and problem solving:** the learning scenario is an excellent way to practise how to reason effectively to accomplish a common goal
- **Communication:** the students will improve their ability to articulate thoughts, listen effectively to decipher meaning, exercise flexibility and willingness to make necessary compromises and assume shared responsibility for collaborative work

### 3.3 Production-centred: Assembling Identity

Connected learning puts particular emphasis on youth engagement in production-centred tasks, especially those that involve creating and experimenting with technology. Assembling Identity is a learning scenario in which middle school students create a mixed media, identity-based self-portraits involving collage and sewn circuit components. The final self-portrait makes visual connections between aspects of the artist's identity and involves a lit LED. This scenario has been designed by a non-profit association Assemble <http://assemblepgh.org/>, dedicated to providing pathways to STEAM interdisciplinary projects in their community. Their programs addressed to local youth provide a platform for experiential, creative learning and building confidence through making.

In this activity students learn about electricity and circuits while articulating the characteristics that comprise their self identities. The scenario thus connects with a science class where the students are beginning to study circuits and has further links to a social studies class where they discuss motivations, interests and actions of fictional or factual characters. The whole scenario comprises the following units of learning.





### Identity Intro Activity

Students learn the concept of identity as the way that we understand and define ourselves through traits, beliefs, and experiences but also how we make connections with others around similarities and differences. They illustrate their understanding by writing and/or drawing a list of 5 personality traits and 5 things that make you who you are. Then they go around in a circle and share parts of their identities that they feel comfortable sharing with classmates.

### Collage Prep Activity

The collage technique is introduced as an artistic technique that involves putting together an assemblage of different components to create something new. Students consider how individual parts of a collage can gain new meaning in the context of the larger piece. Then they move to think how a collage might connect to identity. Using their lists of personality traits as inspiration they look through magazines and drawings to assemble a collage of their own identity.

### Sewing Intro Activity

The teacher shows a running stitch example to present how to decorate or attach objects by stitching with a needle and thread. The demonstration is followed by the students sewing a basic running stitch like the one they'll be using for their sewn circuits. At this stage they only sew 2 parallel running short stitches.

### Circuitry Intro Activity

The students are introduced to electronic components for sewing, such as battery holders and LEDs. These components are designed to be used with conductive thread to create a functioning circuit. There are visual markers on these sewable electronics that provide information about how to use them properly. The students' task is to create a circuit with sewable LEDs, battery holders, batteries and alligator clips. These items have to be connected in the right way so that the LEDs light up.

### Putting It All Together

Students create circuit conductive threads on their identity portraits. First they make circuit drawings using pen or marker, directly on their collage. This provides a guide for sewing the circuits. The idea is to communicate some messages with their portraits adding stitches and making LEDs lighting up on the collages.

### Group Review

Students go around in a circle and share their projects. The following questions may surface: What does my project say about who I am? Where did I choose to put my LED and why? What did I struggle with while completing this project? What is something I learned while completing this project? After group review, students make modifications or revisions if desired.

Besides overarching understandings related to insights into how traditional and modern forms of art and technology can be used in tandem to create complex, visually interesting mixed media creations the students acquire concrete knowledge and skills.

#### Students will know:

- Basic definitions associated with collage, sewing, and simple circuitry
- The components and structure of a simple circuit

#### They will be able to:

- Identify and visually communicate connections between their personalities, interests, identities, and experiences through a mixed media project
- Combine art and electronic technology through the use of e-textiles
- Create a functioning sewn circuit that lights up an LED
- Think critically to troubleshoot issues with their sewn circuits
- Make connections between their projects and those of their peers
- Work independently and collaboratively to complete a project





## 3.4 Academically oriented: Spoken Word

Connected learning advocates building educational environments where the interests of the students are aligned with an area of academic knowledge. So far we have provided examples of learning scenarios which cover knowledge and skills in the areas where this is relatively easy: art, design and games naturally attract youth interests. However, connected learning also applies in other subjects which form the essential part of school curriculum. For example, consider basic literacy skills like the ability to use precise words and phrases to convey experiences or the ability to produce clear and coherent speech in which the style is appropriate to task, purpose, and audience. This is exactly the focus of the Spoken Word scenario.

The scenario is part of a curriculum developed at the Youth Leading Change Project

<https://remakelearning.org/project/pathway-youth-leading-change/>

It has been designed as a starting point for introducing students to key literary terms. It aims at fostering discussions of literary terms alongside an existing creative writing activity in English Language Arts classes. It lets students realise that those terms aren't just dry vocabulary to memorize; instead, they're helpful language for describing various creative productions. The scenario takes the students through the following activities.



### Lesson 1

The activity begins with a puzzling quote: “A photograph is a secret. The more it tells you the less you know.” Students first explore the meaning of this quote. Then they search and identify words or objects that provide the audience with a glimpse of who they are and how they view themselves. The results are presented in the form of enigmatic posters displayed around the classroom for the students to walk around, share ideas and respond to meaningful messages.

### Lesson 2

In this activity students move from short enigmatic quotations to explorations of the power of poetry that is written to be spoken or performed and engages them in some way. They examine examples of spoken word poetry.

### Lesson 3

The powerful form and content of the spoken word experienced in the previous lesson provides material for examination of different literary techniques in poetry. This experience facilitates learning the rules and conventions of poetry, including figurative language, metaphor, simile and symbolism, all with a view to interpreting meaning in the poetry students find emotionally engaging.

### Lesson 4

This final lesson envisages authentic production tasks: students identify one major theme in their life and then vocalise their feelings in an original spoken word poem. Thus this academically-oriented scenario (rules, conventions and meaning of poetry) also becomes production-centred around issues of significance for the participants.

The key question in this scenario is to understand how we can use our voices as a weapon to discuss the issues that are affecting us and the world in which we live in a creative and non-threatening, but an influential and effective way. This scenario takes the students closer to such an ability.

- They gain appreciation for poetry as a medium for authors to express commentary on the pressing social issues that affect our lives.
- In such emotionally loaded context they learn how to identify and utilize literary techniques used by poets such as: Rhyme, Alliteration, Simile Metaphor, Symbolism, Point-of View, Climax, Interpreted Meaning, Onomatopoeia, Repetition, Personification, and Hyperbole (a clearly academically-oriented list of items on the school curriculum)

### 3.5 Shared purpose: My Block is Beautiful

A meaningful purpose is an essential motivation factor for learners to engage in learning, especially when it is shared with peers. This goal can be of different nature: young people may gather together to create something, engage in a social campaign or organise an event together. Social media offer unprecedented opportunities to mobilise peers and initiate collaborative projects. Knowledge and skills gaps also open opportunities for cross-generational learning that strengthen bonds between youth and their mentors.

My Block is Beautiful, a project of YMCA of Greater Pittsburgh <http://www.ymcaofpittsburgh.org/>, an organisation with a mission to develop young people that are creative, connected and ready for college and career. YMCA offers a safe and exciting space for young people to explore their interests in music, film, photography, art and fashion. Experienced artists teachers empower young people to find their voice while building technical and transferable skills that position them for success after school.

This interdisciplinary project integrates art, media, technology and civic pride. Students participate in a series of workshops that include drone training, aerial photography, photo manipulation, screen printing and gallery installation. During these workshops participants learn about the science and practical application of drones and use them to take aerial photos of blocks in their community. They then transform these digital images into works of art – resulting in a digital/artistic beautification of their neighborhood. At each phase of the process, youth work alongside experienced mentors including drone experts, photographers, graphic designers and screen printers. If drones aren't available the project can be adapted to use other technology tools to photograph or otherwise document students' locations from a new perspective. The key point is to create artwork that reshapes perspectives and helps start dialogue about a place that the students know well.





Originally this is a 4 month-long series of workshops although the scenario can be shortened or extended. We summarise here all the 20 sessions that form the whole programme.

### Session 1: Community mapping

An urban planner, community historian or long time resident leads a conversation with the group. The discussion is based on interview questions prepared by the students and set against a large map of the community area projected from a computer while the conversation is taking place.

### Session 2: Drone safety and flight tests

Students review the rules, regulations and guidelines for safe flying in their region/city. They learn the parts of the drone and the controls on the remote. They then practice taking off and landing followed by other basic maneuvers and photography at low altitudes. One of the first aerial shots features the project group.

### Session 3: Location selection and photography basics

Students work in small groups and use local maps to identify compelling or interesting areas of their neighborhood that they want to photograph: visually interesting parts of the community, also important parts to capture and discuss. They review photography basics: the rule of thirds, the difference of close-up and wide shoots, etc. and consult a resource of tips on drone photography.

### Session 4: Drone shoot Day 1

Students meet at first locations. They take turns flying the drone and taking pictures. They are encouraged to take pictures at different angles and altitudes.

### Session 5: Drone shoot Day 2

Students take turns taking aerial pictures at second location.

### Session 6: Drone shoot Day 3

Students take turns taking aerial pictures at third location.

### Session 7: Review images and reflect

Images are printed or compiled on a computer connected to a projector. Each student is invited to say something about the image they took. The group responds with feedback, ideas or questions. All start thinking about creative applications for the images. Optionally, the group may invite a local photographer or visual artist to participate in the review and support the development process.

### Session 8: Example artwork and idea board

For added inspiration students look at examples of aerial art by distinguished artists and discuss what they like/dislike about their work. They then create an idea board by pinning their actual images to a cork board or whiteboard, adding words and phrases or additional sketches. The point is to draw some themes about the community from the words and images and further use creativity to further communicate them.

### Session 9: Intro to Photoshop

Students use an online Photoshop tutorial for beginners. With imported images they explore the basic functions of the programme such as applying effects, inserting text, using the lasso tool to create layers, using the paint bucket to fill colors, etc. Otherwise they can use GIMP which is a free image editing software that can be used in place of Photoshop.

### Sessions 10 & 11: Photoshop continued

Students continue to work with images in Photoshop. They experiment with images by turning them black & white or adding color saturation.

### Session 12: Photoshop completion

Students finalise their digital images and export them in preparation for screen printing or digital printing.

### Session 13: Screen printing planning session

Students finish exporting Photoshop files in preparation for screen-printing or digital printing. Digital prints can be further transformed by having students cut out objects, use paint and markers and turn cut-outs into a collage. This is a recommended option if there is no screen printing capability.

### Session 14: Field trip to art museum or art-making space

The group goes on a field trip to a local art museum, gallery or art-making space. Students discuss the actual meaning of the art as well they way it is presented. In the meantime during this break in the art-making facilitators have the images “burned” on the frames in a local screen print shop.

### Sessions 15 - 17: Screenprinting

Following a DIY quick guide to screen printing students screen print images onto designated materials - canvas, metal or wood.

### Session 18: Finalise Screenprints

### Sessions 19: Exhibition Prep & Event Planning

Students work collaboratively to design the installation of the gallery. Gallery exhibit can be a stand alone event or a component of a larger culminating showcase or community gathering. Students prepare to speak about their work and engage audience members.

### Session 20: Gallery Exhibition & Presentation

Students engage the audience at the exhibition in authentic ways to ask and answer questions from attendees to get feedback on their projects. This is followed by an internal discussion about the experience and completion of a self-reflection survey.

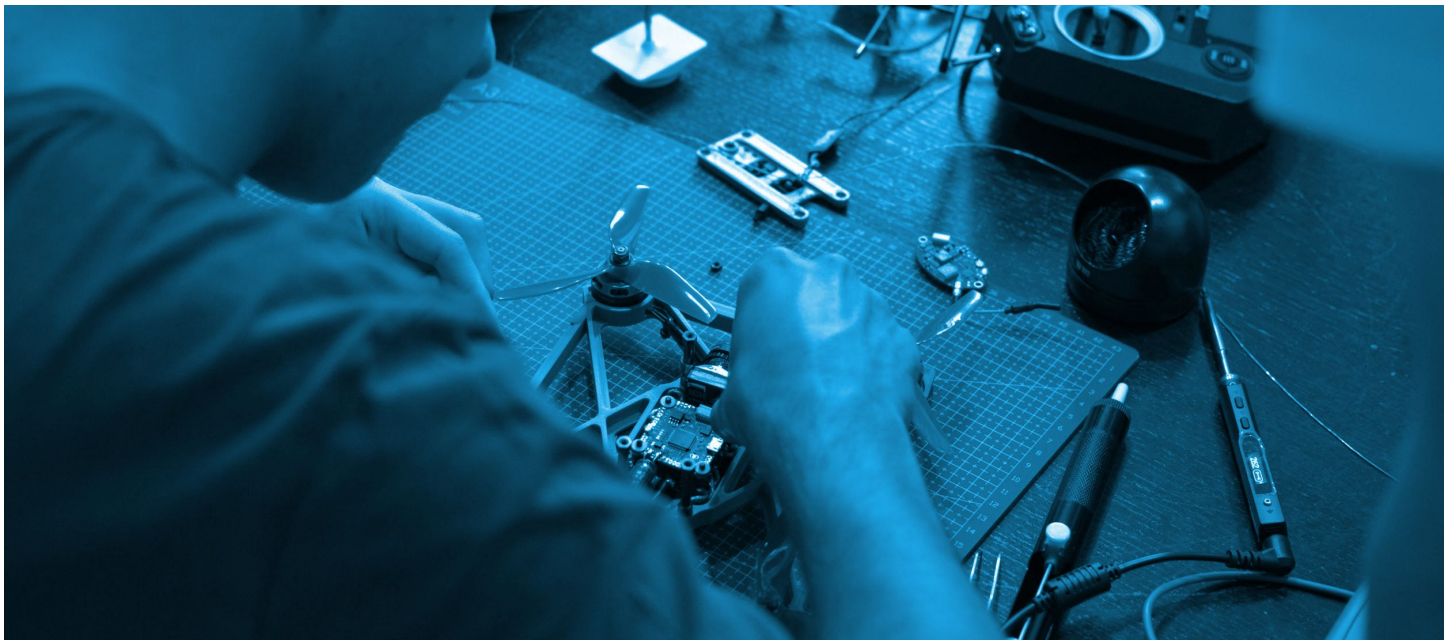
The workshop scenario explores the relationship between art, technology and community helping the youth understand the benefits and challenges of social practice art. The expected impact in terms of acquired knowledge and skills is the following.

#### Students will know:

- Various uses of drones and drone safety
- Basic urban planning concepts, examples of map-based artwork
- Various assets and challenges in their community reflected in their artwork

#### Students will be able to:

- Identify parts of a drone
- Fly and land a drone respecting safety rules
- Use Photoshop for photo manipulation; inserting text; applying effects
- Create screen printed artwork
- Present their works and explain the social practices and creative processes involved in creating their work





### 3.6 Peer-supported: Green City Remix

CLRN approach values youth learning that involves exchanges with peers and friends. In other words it favours collaborative learning scenarios in which young people contribute in line with their interests, skills and knowledge, share resources and give feedback. Today's social media and online resources offer unprecedented opportunities to foster such peer learning culture with a prospect of results that are meaningful to students and mobilise their genuine engagement.

This scenario is based on the Green City Remix project, a learning experience designed by the Heinz History Center <http://www.heinzhistorycenter.org/>. The Center is an educational institution that engages and inspires a large and diverse audience with links to the past, understanding in the present, and guidance for the future. This project experience interweaves historical research, social change, and design in the context of environmental smoke control campaign, requiring students to collaborate on a number of tasks bridging historical thinking, building understanding of change and visualisation of their learning with hands-on making. The final product is a “remixed” art installation displayed at the Center.

This scenario was designed as a framework for helping students analyse and engage with primary source materials and thereby reframe their understanding of their local community. The whole workshop programme includes the following stages.





### Lesson 1: Understanding change through primary sources

The teacher proposes a historic image that documents the issue of air quality in focus of the Green City Remix project: a 'night scene' image that shows the students' city at what appears to be nighttime, but was in fact a mid-day scene that was the result of air pollution (from the History Center archives). Students explore the image together to identify the issues that they see represented in the image. They share the tasks with peers to set the timeline for analysing the social change documented in this source, search for other sources on the period when the picture was taken and place them on the timeline. After all the sources have been placed on the timeline, the group collectively goes through and annotates the timeline to identify actions and strategies that may have either moved a desirable change forward, block it, or be an action of resistance. The teacher concludes the activity by asking learners to identify the key components of social change that they see documented in the historic sources.

### Lesson 2: Understanding social change today

The group reviews the results from Lesson 1 and makes a written list of the important change strategies documented in the historic sources: legislative or policy change, campaigns to change behaviors, attempts at changing business practice, raising public awareness, etc. Then students consider if the smog issue is still something people are concerned with today, and if so, how do they think it is being handled. A briefing on the current situation is then provided with support of relevant speakers, videos, research findings, news articles, etc. The point is to identify the strategies for change represented in the material. These strategies are then compared with the historic change strategies. In small groups students brainstorm on an example contemporary campaign against smog and pollution described by the teacher. Their task is to create a list of potential strategies that could help such a campaign succeed. Besides a list of ideas/concepts students create a reflective art installation to visualise the invisible impacts of air pollution on their city's skyline.

### Lesson 3: Building empathy

The purpose of this activity is for students to think about the past and social change in a more affective way, building empathy around the social change issue. Students share historic images depicting the problem of air quality, like the 'night scene' image introduced in the beginning. Instead of analysing the source they are asked how this image makes them feel. If they were standing in this image, what words they would use to describe their emotions. They take into account the environmental setting, the people and the interactions they see in the image. The teacher records the key words used by the students and then they consider together how such immersive descriptions of the past help us build empathy for the social issue. This realisation is important for planning their remix installation in order to understand how it will make the viewer feel, what emotions will connect the audience with the issue. Each small group selects one event, person or action from the picture and creates a prototype installation that reflects their chosen item. The groups then share out their prototypes and discuss what these installations represent and how they may impact on a viewer.

#### Lesson 4: Remixing the past and connecting the present

The purpose of the art installation is to find creative ways to re-interpret the previously gathered sources in a way that does not rely on traditional narrative. The group is provided with a set of 4 - 6 sources and asked to 'remix' the sources in a way that does not rely on chronology. The students are challenged to think what are other ways that we can group or interpret historic sources. They are encouraged to think about different forms of media to interpret the sources to talk about social change. Students work collaboratively in small groups to create an idea for a remix installation with a focus on deciding on the social change strategy the group would like to highlight and the medium for remixing, which could range from an image collage to music or video. Each group then shares their ideas and receives feedback from other participants and, following the feedback, creates a prototype that connects the historic interpretation they focused on earlier in the activity with at least one modern issue or social change strategy that they are concerned about.

#### Lesson 5: Installation design

At the final stage of the project, students split again in small groups for the creation of the installation. These groups can be formed in a range of ways: similar interests for the contemporary issue featured, a common interest in the medium/format being used and sharing a range of skills in writing, design, installation, etc. The teacher supervises groups through the installation process with an initial focus on the thesis statement and key idea. Each section of the project can be treated as its own session depending on the amount of time available for the project. The whole design and installation process may be iterative and require several sessions to refine the ideas and move the ideas into production.

The expected learning outcomes are the following.

#### In terms of knowledge students will:

- recognise the relevant knowledge that can be gained from historical analysis and the ways in which such knowledge can empower social change
- articulate how change was implemented in the past based on analysis of primary sources
- identify and analyse strategies and practices used in the past that advanced the cause or stalled it
- document how knowledge of the strategies and practices identified during their historical analysis influences their understanding of change
- apply this understanding to a current movement related to social change and articulate what is similar and different about the two initiatives

#### In terms of skills students will be able to:

- demonstrate an ability to make claim-evidence connections between primary and secondary sources and their interpretations
- map the relationship between different elements involved in social change, including policy, leadership, socio-cultural factors, and citizen activism
- balance different perspectives of those involved in social change by critically examining diverse pieces of archival evidence



# Chapter Two:

## Learning scenarios



## Chapter two: Learning scenarios

This part of the publication draws conclusions from the acquaintance with theory and practice of Connected Learning and presents a set of new original learning pathways for young people. By its very nature CLRN approach advocates design of learning activities in the context of particular interests, cultures and peer groups. We therefore addressed specific educational settings in our countries and elaborated a compendium of learning scenarios for the students. The composition of the partnership ensures the versatility of these contexts as our schools are different in terms of cultural and social backgrounds. Still the school curricula are comparable and we identified standards in the subjects that we teach which are the same or very similar. The scenarios show different learning pathways that cut across the curriculum of native and foreign languages, social studies, science, maths, IT, art and entrepreneurship. Although the scenarios originated in our particular educational contexts we believe that they can be adapted and implemented in other settings where teachers face similar challenges and search for new ways to foster engaged learning experiences for their students.





## Otto Adventure

**Subjects:** Maths, Science, Engineering, English (foreign language), Art (3D design and modelling), IT

**Grade Level:** 8-10 (14 - 16 years old)

**Estimated time:** Developed as 6-week project. Can be shortened or extended.

### About this learning scenario

Otto DIY is constantly growing community of makers, teacher, students and enthusiasts who work, teach, learn and play with Otto robot. This particular robot is relatively cheap (simple Arduino electronics, easy to get, 3D printable parts, free software) and easy to manage and for this reason has a potential to be used as an educational tool in many different settings, by the groups of students in many different age ranges.

This scenario includes programme for rather older groups, able to work with electronics, basic 3D design software and with basic English language skills. After completion the full scenario, students will gain knowledge from the fields of 3D modelling and printing, electronics, coding and develop math, science and language skills.

### Pro tips

The main goal of this learning adventure is to design, build and programme a simple robot. It would be great if each student had her/his own robot or if they worked in pairs. However, the most effective working group should contain ca. 5 - 6 people. If you plan to implement this scenario in a bigger class, consider dividing it into small groups.

The best effects of implementation of this scenario can be expected when there are several teachers working with the group, sometimes as mentors, sometimes as strong leaders. Cooperation of several specialists, together with parents, online communities, makerspaces, etc. will give more learning opportunities and possibly make the whole process more exciting.

At every stage you are free to decide, how much you want to teach and show to the students and how much you will require from them to find out and learn independently.

Some parts of the scenario require specific equipment, for example a 3D printer, however if you don't have an access to such a device, you can skip this part and focus on others.

### Materials & Technology

- Computer lab with at least 1 PC for a pair of students
- TinkerCAD installed on all computers
- 3D printer
- Basic tools for 3D printouts treatment
- Projector
- Arduino Nano together with other necessary parts specified on the [www.ottodiy.com](http://www.ottodiy.com) website

### Before programme begins

You should start with the checklist of all the equipment and necessary software. What will you need? Which programmes do you want to have preinstalled and which of them should be installed by the students? Which steps/session can be too difficult for them and when it is better to leave them alone and count on their creativity? You know your group the best. If you work with other teachers on this project, start the whole process with a brainstorm. Then prepare necessary equipment and other resources.

### Session 1: Project introduction

- The leader should explain the whole process and main goals at the beginning, so everybody knows what to expect. This will allow the students to be more active and creative during the whole process. Therefore, it is important to stress that they are free not only to ask questions but also suggest solutions, especially when it comes to difficult issues.
- Next step is to introduce OTTO DIY community. Besides the official website, they have profiles on GitHub, Facebook, Thingiverse, where one can find and share all the information necessary to build and code the robot, discuss difficult issues and finally show off your own Otto. Most of the resources are available in English which is a good opportunity to improve the foreign language skills. For some groups strong support of English teacher may be needed.
- The students should also see the Otto, either the real one (if available) or in one of the videos from the website [www.ottodiy.com](http://www.ottodiy.com)

### Session 2: Introduction to 3D printing technologies

- Although one can buy already printed parts of robot or try to use other materials, it will be interesting to print at least some of them if you have access to a 3D printer (basic FDM printer is enough in this case). If you don't have such access, you can skip this part and focus on the other sessions.
- The purpose of this session is twofold:
  - To give students some basic information about 3D printing as such (it is still quite innovative technology and young people are usually interested in such novelties)
  - To make them aware of some limits in redesigning robot parts
- Therefore the general information about 3D modelling and 3D printing together with a short introduction to this particular 3D printing technique which you are going to use should be enough. You can use information presented in the free online course available here: [www.youthart.eu/3dlab](http://www.youthart.eu/3dlab) or search together with a group for other sources.

### Session 3: Introduction to Tinkercad

- Tinkercad (<https://www.tinkercad.com>) is one of the most basic and user-friendly programmes for 3D modelling. It is free and available online – a great resource to start your adventure with 3D design.
- The purpose of this session is to make students acquainted with the basic commands and tasks in this programme. For most of them, who haven't worked in 3D yet, to start "thinking" in three dimensions will be a challenge, but after a while, they will be able to easily play with exemplary objects.

#### Session 4: Redesigning OTTO robot

- When all group members feel comfortable with Tinkercad, just go to the project of Otto: <https://www.tinkercad.com/things/1kl624iowUR#/> and experiment with its parts.
- You decide if it is more group or individual work.
- When changing the shapes, you must always keep in mind that some of them cannot be freely changed:
  - They have to fit one another, they have to be able to move in a certain way, and they have to have the proper dimensions to fit with the electronic parts.
  - Another limit comes from 3D printing process. Some shapes are extremely difficult or even impossible to print, especially on the basic equipment (see the Session 2)

#### Session 5: Printing the robot parts

- The full process of printing an Otto robot in basic shape takes ca. 10 hours. Depending on your situation, you should decide, if
  - you want to print all the parts by yourself
  - teacher print it together or without students
  - you prefer to buy them or outsource printing to an external service

#### Session 6: Introduction to Arduino

- The group should start from the Arduino website <https://www.arduino.cc/> to get general information about this project. The original platform is in English, but there are plenty of materials in many other languages, so it won't be difficult to find necessary information.
- This is a great opportunity to set it as a task for each member to find some info, share them in the group and discuss.
- Focus on the Arduino Nano and parts included in the Otto project.
- Install the Arduino software on the computers.

#### Session 7: Assembling and programming the robot

- Having all the knowledge and parts, you can start assembling your robots. It is necessary to use the scheme from Otto DIY and useful to watch some video tutorials from there.
- You'll be working individually or in pairs, but feel free to exchange information and help each other around the group.
- All the necessary codes are available at <https://github.com/OttoDIY/> and at <https://wikifactory.com/+OttoDIY>

#### Session 8: Special tasks – missions

- There are many different ways, which you can choose to use Otto and countless number of tasks, which it can get. The best way will be to start coding using Arduino mBlocks with Otto programme or Arduino programme.
- To make the robot move or perform any other actions, you need provide specific data using mathematical and physical quantities. Think about tasks, where the students will have to count, measure, provide algorithms, etc. You can ask them to work in English or try to translate the commands into your language.

## Knowledge, Skills and Understandings

### Understandings

#### Students will understand:

- The basics of 3D design and printing technology
- The basics of electronics
- The basics of coding

### Essential questions

- How to make people acquainted with working in 3D space?
- Where's the line between freedom of creativity and material abilities?
- How far can we go with exploring Otto?
- Where to get access to relevant technologies and information?
- How to encourage students' further self-learning and initiative?
- Which digital interest communities to contact/join for support?

### Knowledge

#### Students will know:

- Basics of 3D computer modelling programmes – Tinkercad
- Basics of 3D printing
- Basics of Arduino electronics
- Facts about the maker communities – Arduino, Otto, etc.
- How to code a simple robot

### Skills

#### Students will be able to:

- Design a 3D object in a simple programme
- Redesign existing objects
- Download and use free software
- Establish contacts with digital making groups for consultations and sharing their work
- Operate simple robot





## From 2D graphics to 3D modelling

**Subjects:** Art, Entrepreneurship, IT

**Grade Level:** 7 - 8 (13 - 14 years old)

**Estimated time:** Developed as a 7-week project. Can be shortened or extended.

### About this learning scenario

Primary and middle school curricula in the subjects of Art and IT cover a range of skills in digital design at different levels adjusted to the particular school grade. The expected learning outcomes include the ability to make drawings of objects and graphic edition skills. The software used is almost exclusively restricted to 2D design programs. However, 3D modelling skills are becoming essential in many sectors of modern industry (consider prototyping of various objects before production stage). In this learning pathway we are addressing the need to acquaint students with the concept and techniques of 3D modelling which they may need when they progress to higher levels of education, in particular vocational education in the areas like building construction, architecture, mechanics and engineering. This is an innovative extension of basic school curricula in the contexts that we investigated while preparing the scenario (transition from elementary to high and VET schools in Poland).

### Pro tips

The main challenge for teachers who want to venture into 3D modelling projects with their students is usually perceived as the need to get access to relevant technologies. Obviously there are some schools well equipped where this is not a problem and in such establishments an introduction to 3D design and printing is a part of regular programme of activities. This isn't the context that we are addressing in this learning path. Our objective rather is to show those teachers whose schools don't have state-of-the-art technologies that it is possible to involve their classes in exploratory learning of 3D design. This will however require going beyond the confines of the classroom walls and forging links with external digital makerpaces.

### Materials & Technology

- Computer lab with at least 1 PC for a pair of students
- TinkerCAD installed on all computers
- Projector

## Before programme begins

The whole programme of activities will benefit from a close cooperation of Art and IT teachers with a possible involvement of Entrepreneurship teacher (if such a subject exists - not common in all EU countries). You should agree how to implement the scenario in connection with your curricula. The learning path is flexible and the particular sessions can be adjusted to the school classes timeframe and sequence. Some activities will be organised outside of the classroom and will involve a visit/s at a digital makerspace in the region. Establish a contact with such a lab beforehand. The maker movement is growing more and more popular throughout Europe so it is likely that you will find such a workshop willing to host visitors. Such a visit can become an excellent occasion for a school trip in connection with the Science programme (usually school trips relate to the Humanities part of the curriculum).

## Sessions 1 - 2: Maker movement

The best point at which to initiate this learning path is an Entrepreneurship class in which students are introduced to new forms of business enterprises emerging in knowledge-based societies. The maker movement is a relevant topic here as we have seen its spectacular growth over the recent years.

- Begin with a class discussion of the iconic Maker Movement Manifesto - Rules for Innovation in the New World of Crafters, Hackers and Tinkerers  
<http://www.boerneneshovedstad.dk/media/1332/maker-movement-manifesto-sample-chapter.pdf>. Its essence is explained on two introductory pages, easy to read and discuss in class. Its original version will provide a good read for an English class and thus a possible extension of the scenario.
- Challenge the students with the following proposal - can we test this manifesto and see if we can make a little piece of something that would “embody portions of our souls”? And in the process of making:
  - Learn in a playful mode
  - Get hold of the right tools
  - Join a wider maker community
  - Support each other in this process
  - Share results with others
- The discussion shouldn't finish just with theorising, it should rather materialise into concrete projects. In order to move from the abstract to the concrete you may present the maker movement through some typical cases. The Make Magazine <https://makezine.com/> is a great resource of such examples featuring dozens of DIY technology projects in each of its by-monthly issues. It's published in English and its articles can also provide engaging reading material for an ESL class. Having explored some of the cases which exemplify how digital technology may transform the process of creating physical objects propose for the following learning pathway:
  - Let's begin in a computer lab and design an object meaningful from your perspective
  - Be realistic, aim at something that you can accomplish
  - If the object is to become a physical reality it must have a 3-dimensional shape
  - If you manage to design it we'll see how to produce it, the right equipment is there to reach

### Session 3-4: Tinkercad designs

Before the first lesson install Tinkercad [www.tinkercad.com](http://www.tinkercad.com) on all computers in the lab and set up a teacher account that will allow you to share the code to join with the students. The programme has an intuitive interface and it's an excellent tool to foster 3-dimensional thinking skills necessary to model physical objects. It also has an excellent resource of tutorials so choose those most appropriate to the level of your class and the tasks that the students will undertake.

- Let the students launch the app on their computers and give them sufficient time so that they can intuitively acquaint themselves with its functionalities.
- Those more versed in digital technologies can start working on their designs while the less advanced may need support in the form of individual teacher guidance facilitated by Tinkercad tutorials.
- Make the students first practise all the elementary functions: placing a shape to add or remove material, moving, rotating and adjusting shapes freely in space, grouping together shapes to create detailed models, etc.
- For more advanced students set them tasks to design 3D objects using code: dragging and dropping blocks together to make shapes, reordering blocks to refine the designs, and finally running the code to realise a 3D object on screen.
- Having mastered the above steps the students can proceed to designing objects of their choice which may vary from such a simple item as their initials to more advanced projects like a game asset.
- Encourage inquisitiveness and exploratory mindsets:
  - Where to look for learning support?
  - Which tools we miss that may be available in other apps?
  - What technical specifications are to be met for 3D prints of the designed objects?
  - In what formats to save the projects for 3D printing?

### Session 5: Visit at a makerspace

The scenario originated in a situation where a 3D printer isn't available in school. On the one hand this is a disadvantage, but on the other, a good occasion to raise the students' interest in technology hard to reach for direct acquaintance and experimentation. You should establish a contact with a digital makerspace properly equipped in advance and take the students on a visit there. The visits will have to be organised in smaller groups to manage the workshop sessions. Details of the programme and its timeframe need to be agreed with the manager of the makerspace before the trip in order to avoid pitfalls like the lack of room, unwillingness of the people there to guide the class or unavailability of equipment.

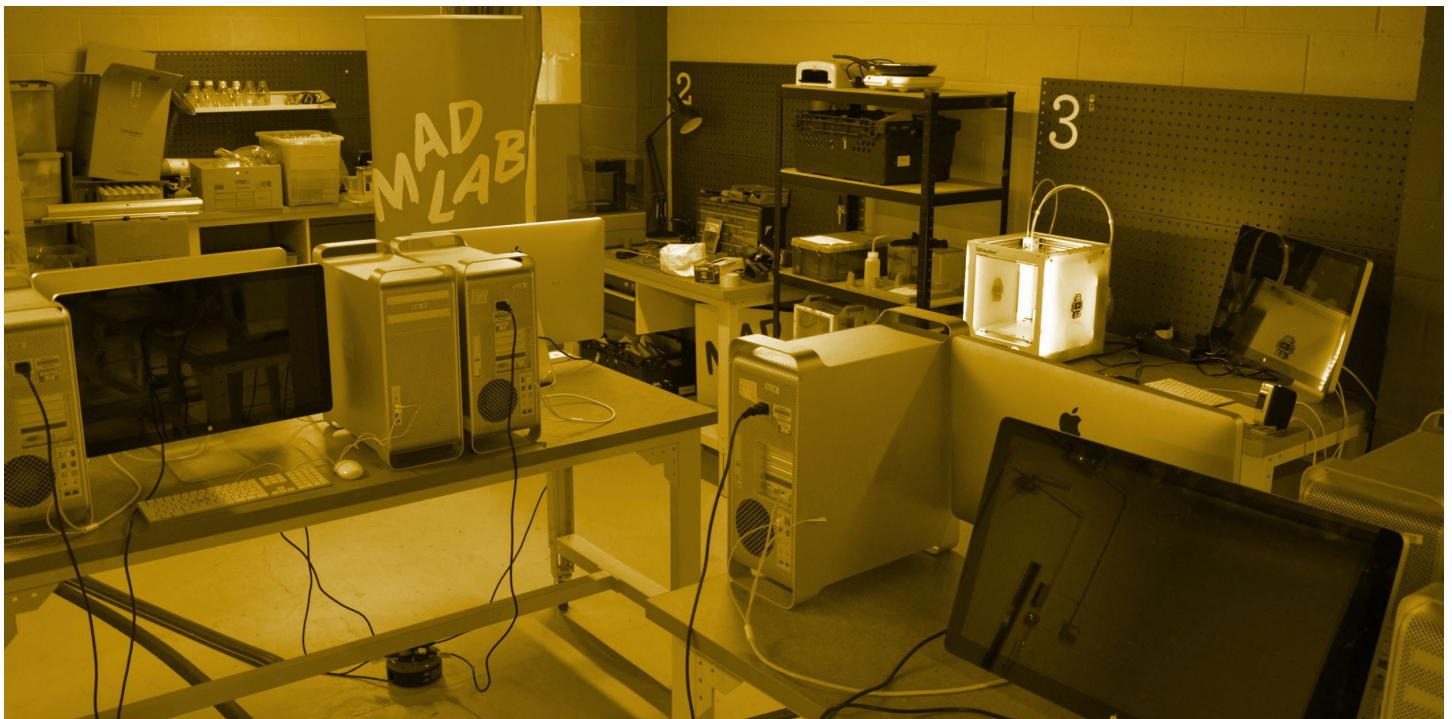
- Begin with an overview of the whole environment equipped with relevant technologies: 3D printers, scanners, laser cutters, workstations, etc.
- Focus on 3D prototyping process from computer design to printing.
- Ask the students to briefly present their Tinkercad designs to the makerspace guide and choose a project which can be printed during the visit (a relatively small object).
- The students observe the process, discuss functions of the printer and the phases of the whole production cycle. If time remains you can explore some other technologies, e.g. let the students lasercut a gadget or make a printout on a T-shirt.
- Order the other students' Tinkercad models to be printed and delivered so that each gets a tangible result of their work. These projects will certainly raise questions:
  - How to move forward towards more ambitious projects?
  - What software to use?
  - Where to look for advice and support?



## Session 6 - 7: Back to 3D design projects

It is a good idea to come back to the original Tinkercad designs when all the students get their printed objects and have an opportunity to compare and enjoy the results of their first steps into 3D design. Having reflected on the questions raised at the closure of the last session they may already have some ideas what technologies to explore further. Be ready to respond to their proposals which are likely to enquire into more advanced technologies.

- Their further interests may relate to other accessible 3D design software which allows for more creativity and flexibility than Tinkercad. If so, a programme to be recommended is Blender [www.blender.org](http://www.blender.org), a free 3D creation suite used not only by hobbyists but also professionals. Guide the students to its online tutorials which facilitate self-learning if they decide to go deeper into 3D modelling in their free time.
- The students may also be interested in tools that help in preparing their models for printing. In that case, introduce Ultimaker Cura <https://ultimaker.com/en/products/ultimaker-cura-software> - a programme that ensures integration between 3D design software, materials and 3D printer - also free and meeting professional standards. It creates files ready for printing that can be sent to a remote machine (e.g. the visited makerspace or online 3D print shop).
- Finally discuss the prospects of entrepreneurship that open in this sector. There are many successful start-ups that began as DIY makers. Take the Maker Faire portal <https://makerfaire.com> as a rich resource of ideas for the class discussion:
  - Can we locate such an event in our country?
  - Are there similar initiatives nearby?
  - Why don't we organise a school trip there?
  - Shall we get in online touch with some of the makers?
  - Are you inspired to develop your own projects?



## Knowledge, Skills and Understandings

### Understandings

#### Students will understand:

- The basics of 3D design and printing technology
- How the process of 3D modelling is conducted
- The potential of the technology for entrepreneurship

### Essential questions

- How to move from 2D to 3D imagination in computer design?
- Which tools to propose not to discourage students with too challenging tasks?
- Where to get access to relevant technologies?
- How to encourage students' further self-learning and initiative?
- Which digital interest communities to contact/join for support?

### Knowledge

#### Students will know:

- Basics of 3D computer modelling programmes - Tinkercad, possibly Blender
- Facts about the Maker Movement and Maker Faires
- How digital makerspaces are equipped and what they are able to produce
- 3D printer operations, materials, required file formats for printing

### Skills

#### Students will be able to:

- Design a 3D object
- Send their files online for printing
- Download and use free software for further independent work
- Establish contacts with digital making groups for consultations and sharing their work
- See career prospects in modern creative industries

## My Maps

**Subjects:** Geography, History, Polish (native language), IT

**Grade Level:** 8 - 10 (14 - 16 years old)

**Estimated time:** Developed as a 4-week project. Can be shortened or extended.

### About this learning scenario

School trips are a part of regular programme of activities throughout all the levels of school education. The objective usually is to take students to interesting locations and connect the sightseeing with experiential learning of certain items of the curriculum. Most commonly these trips are planned as journeys to distant cities of cultural significance where the students are taken on a tour of museums, monuments and exhibitions, preferably with a stop at a national park on the way to refresh the minds. In this scenario we argue for the value of explorations of the environment surrounding the place where the young people live with its sites of historic, cultural and natural interest. Such trips are easier to organise than long-distance journeys because the transportation and accommodation costs are much lower. Our point here is to suggest ways how to organise such trips as to tap into students' interest in digital technologies while addressing essential parts of the curriculum in the fields of Geography, History and native language.

### Pro tips

This scenario originated in a place surrounded by the mountains of the Carpathian Range with many trails crossing small villages and settlements, some with unique architectural features. Many of our students and teachers are passionate hikers eager to take opportunities for new explorations and sharing their experience so this learning scenario comes naturally to us. But you will easily see that the steps we propose to follow can be adapted to other locations suited for hiking, whether it's a trail around a lake, a path along a coastline or a walkway to a nearby town.

### Materials & Technology

- Equipment suited for hiking (depending on the trail)
- Mobile phones or tablets
- PCs with Internet access, at least 1 for a small group (2 - 4 students)
- Photo editing software installed on each PC
- Projector (recommended)

### Before programme begins

Agree on the whole programme of activities in a team of Geography, History, native language and IT teachers. The important aspect of the scenario is cross-curricular learning so an involvement of all these teachers will ensure comprehensive outcomes. It is likely that the trips will be led only by 1 - 2 teachers, but the preparatory and follow-up stages are best implemented if all these different subjects show their relevance for a common goal that the class is going to attain.



### Session 1: Project introduction

The learning scenario begins in a Geography class in connection with a lesson on maps. Depending on the grade the students are required to be able to use maps, including computer maps, to locate certain places and describe their characteristics as well as to use fieldwork to observe, measure and present human and physical features of their locality. The range of methods varies from less advanced (e.g. sketch maps) to a more demanding use of digital technologies as the students progress to higher levels. We begin at the stage where it is appropriate to introduce satellite navigation, GPS and GIS commonly used nowadays on computers and mobile devices.

- Divide the whole class in smaller groups (4 - 6 students). Half of the groups gets paper physical maps covering their region, the other uses only mobile phones, tablets or computers.
- Ask each group to locate a specific place on the maps, identify its position and measure the distance from the school. Make them also deduct any other features of the selected places - physical and human.
- The groups change the tools to compare the gathered data with the information that can be collected with the other method.
- Representatives from each group present their findings to the whole class.
- Close the lesson with challenging students with the following questions:
  - Did you get the same results?
  - Is the accuracy level the same?
  - What worked faster?
  - Which tools are more convenient?
- Think of advantages and disadvantages of both.

### Session 2: Planning a class trip

The places that the students had to identify on the maps in the previous session were chosen as potential destinations for a school trip. Their choice already took into account required transportation and accommodation in the case of an overnight stay as well as availability of sightseeing attractions (cultural, historic and natural). Now the students need to be involved in a shared decision what location to visit and explore. In our case we propose to align this session with a history lesson on the development of wooden architecture in the region but this can be easily changed and the scenario can be continued as a Geography project (geological features, natural monuments, etc.)

- Inform the students that the class is taking 1 - 2 days off school as part of outdoor programme of activities in the vicinity. They have a say on the choice of the route and localities to explore.
- Divide the class in 3 - 4 groups and ask them to choose a place from shortlisted proposals reflecting the work conducted in the previous session. Ideally each group chooses a different place so that there is a scope for argumentation/negotiations.
- Ask the students to list characteristics of their chosen place which make it worth visiting. The search should be done on the Internet with the use of the available technology - PCs, tablets or mobile phones, deepening the initial knowledge gained from the maps.
- Facilitate a class discussion with a view to agreeing on a destination which gets most 'likes'.
  - Why is the place attractive?
  - What are its features that give insights into local traditions, customs, style of architecture, etc.?
  - Where to start the trip and which route to take to get a proper view of the locality?
  - How much time is needed to explore the place? Is the plan feasible?

### Session 3 - 4: Digital mapping technology

The scenario moves to an IT class. Most of the students are expected to be familiar with Google Maps, still perhaps only few would know specific applications for mapping routes in the terrain. Only some hikers and bikers may know digital maps for trail navigation like Wikiloc or Wandermap. The purpose of this session is to introduce this technology to all the students, giving both theoretical background and practical guidance on its use.

- Explain and demonstrate to students how Google My Maps work: how to create a customized map, add places to it, choose layers and save directions, etc.
- Divide students in smaller groups and ask them to create a map of the area which they are going to visit during the trip with marked routes, sights to explore and basic info on these places (pics and descriptions from the Internet).
- Introduce trail navigation tools (e.g. Wikiloc) and make students install the apps on one mobile device in each group.
- Do simple path recording exercises in the vicinity of the school or even on its premises if walking distances are sufficient.
- Give the students the following tasks for homework:
  - Record your path to school with Wikiloc and mark a few waypoints illustrated with pics.
  - Mark the same path on Google My Maps.
  - Calculate the distance covered and elevation gain/loss.
  - Search for interesting online trails in your area shared by others on the Internet.

### Session 5: Route mapping on a school trip

Before going on a school trip the students should have mastered basic path recording and mapping skills on their mobile devices. Now they will have an opportunity to apply these skills in practice. The places to visit on the trip had already been preselected during History or Geography classes (or even a Biology class if the trip explores natural habitat). The trip's objective is to see these places in the real and document the sightseeing tour on an interactive map. It is important to plan the tour as a walk from one place to another with stops at points of interest so that the route can be reflected on the map.

- Divide the whole class in smaller groups, each having a mobile device to record the walkway (some students may not have mobile phones with sufficient parameters so be sensitive to this issue).
- Ask the groups to turn on the tracking functionality as they start walking and then place their phones in their pockets (so that the progress of the trip isn't hindered).
- When they see an interesting or characteristic point they should stop to mark a waypoint on the map and take a picture/s to illustrate it.
- The places which are in particular focus of the trip should be documented in more detail with full photographic coverage and notes on their features (the content will depend on the objectives of the trip which may relate to different school subjects, Geography, History, Biology).
- At the final destination the students finish the tracking and save their mapped paths for further elaboration in the classroom.
- On the way back it is a good occasion to discuss the learning experience:
  - What difficulties have you encountered?
  - Is it a good way to record explorations?
  - How can we improve/develop this learning path further?

## Session 6 - 7 Describing selected features

The gathered resources in the form of photographs and notes should be elaborated into consistent documentation of the visited sights. This is a possible task for a native language lesson where students practise concise informative writing to describe a place or an object seen on the trip. The fieldwork can now be extended into gathering data from the Internet or other available sources so that the students have additional material to draw on.

- Divide the class into the same groups that did the mapping on the trip. Their paths with marked waypoints provide a framework for the editing/writing tasks.
- To describe each location they should choose 1 - 3 pictures from the trip and elaborate brief notes made while visiting the place into a proper informative paragraphs.
- Monitor their progress to help with editing quality texts in terms of content and style.
- At the end of the session each group delivers a presentation of their work. It is likely that the descriptions of the same places visited on the trips will differ which opens a venue for a discussion:
  - Why do we have different perspectives on the same object?
  - Where do we have information gaps?
  - How to fill them?
  - Where to search for further data? (possible homework activity)

## Session 8 Updating the digital maps

This is a task for an IT class in which the students will focus on technical tasks related to illustration and annotation of their maps as well as their online presentation. At this stage all the content for the customised maps is ready - the issue is how to assemble and present it.

- Introduce photo editing software for use in class which may differ from applications used by the students on their own devices.
- Ask them to edit the photographs with which they want to illustrate the waypoints on their maps. Offer consultation on the proper format and size of the pics.
- Make them upload all the material - both pictures and descriptive texts - to relevant waypoints on the maps.
- When all the maps are finalised and saved explain how to embed them on other portals with relevant themes.
- The whole scenario is completed with students sharing their maps with other prospective visitors of the places which they explored. This final task can lead to follow-up questions as:
  - How to best position your resources on the Internet?
  - What should you do to elicit feedback from the audiences you want to engage?
  - Where to search for relevant "communities of interest"?



## Knowledge, Skills and Understandings

### Understandings

#### Students will understand:

- The basics of digital mapping technology
- How geographical data collection happens in the field
- How this data is then turned into a map that is useful to others

### Essential questions

- Can digital maps raise spatial understanding?
- How can you develop better geographical awareness through the use of such maps?
- Which apps are best suited for self-mapping of routes and locations?
- What are potential disadvantages of using and relying on technology?

### Knowledge

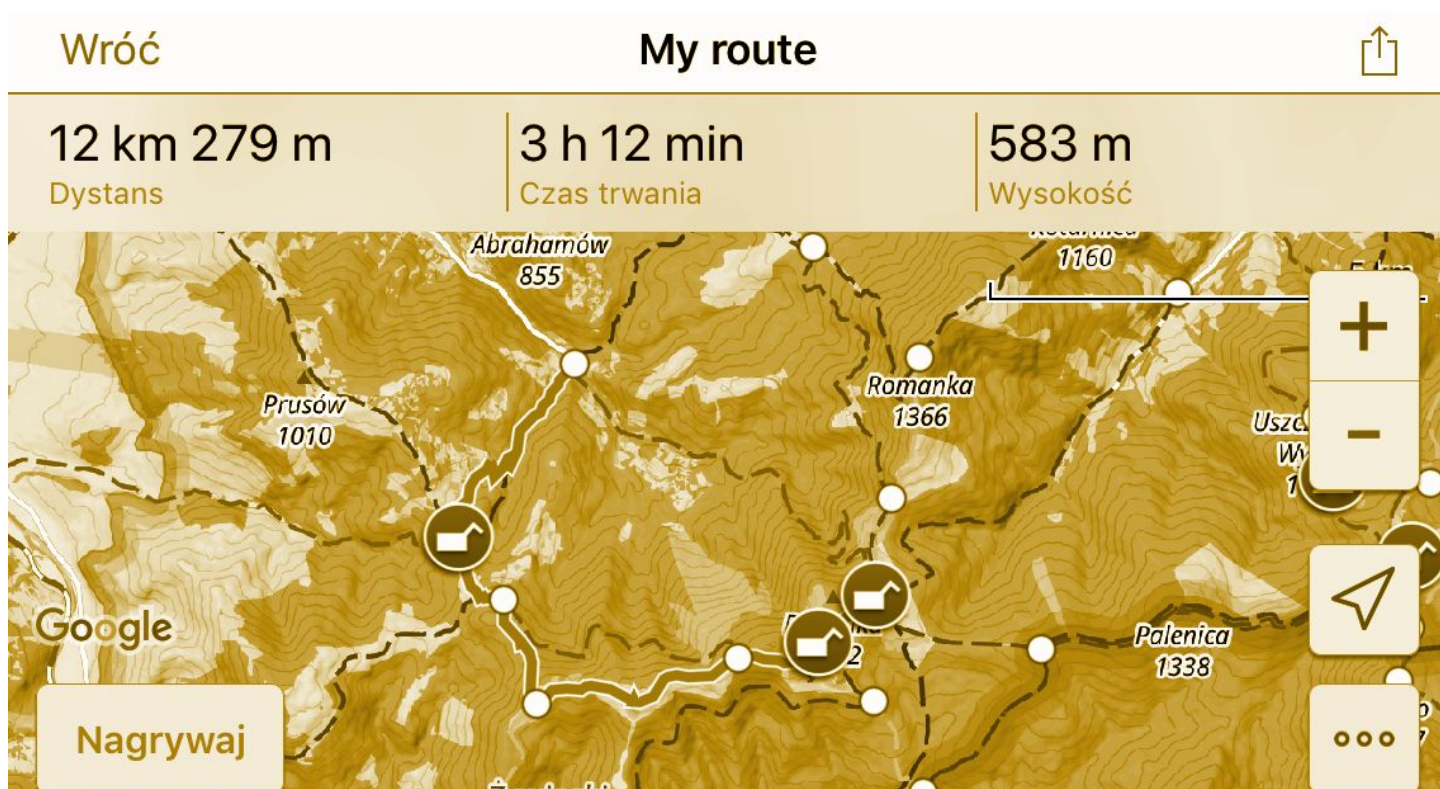
#### Students will know:

- Basic functionalities of digital maps
- The potential of mobile technologies for a spatial representation of localities
- Specific features of their region depicted on customised maps

### Skills

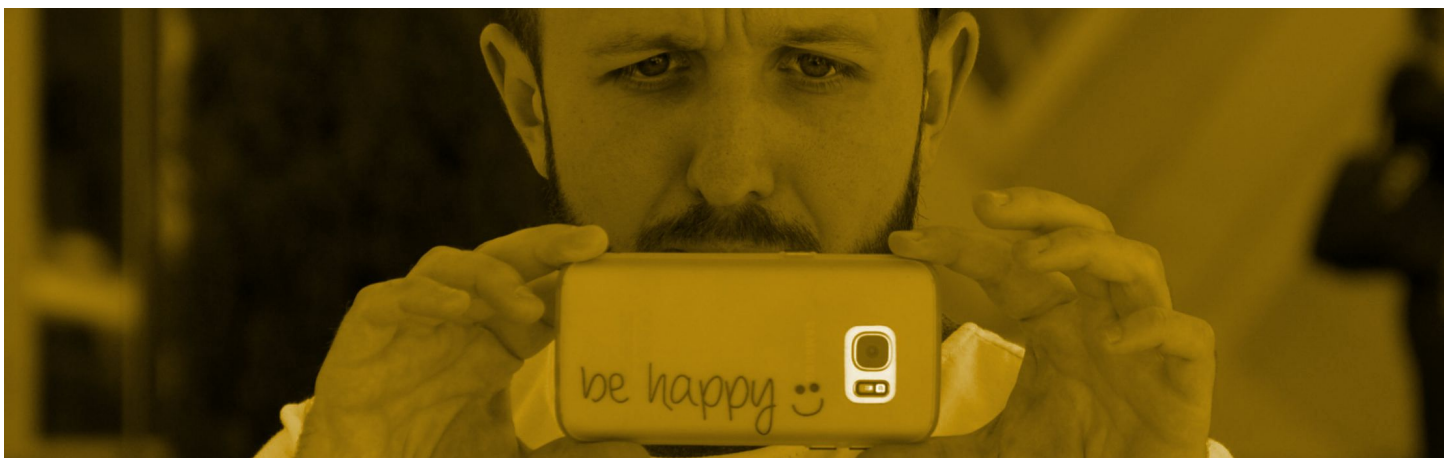
#### Students will be able to:

- Do geographical fieldwork in their locality with the use of mobile devices
- Create customised maps of selected routes and places
- Share the maps online with interested users



**Estimated time:** 14 lessons (6 months)

- Smartphone + Microphone
- Laptops + video editing software





### Sessions 1 – 2

- Introduction: explanation of the project, goals and tools
- Research on Instagram TV, creating an account
- Research on GDPR and other publication rules
- Choosing roles (camera, editing, writers, news readers and reporters, researchers)

### Sessions 3 - 4

Students should be divided into groups, once the roles are assigned to them. Each team will need to work on their own to discover what are the basics of their tasks and how do the professionals do them in working environment. The research process is compulsory for the next steps of implementation. Students will work on computers and Internet, reading and watching video tutorials for their tasks. For example, they will watch vloggers on Youtube with instructions and tips for shooting with a camera or a phone, or which topics could be covered in a story for journalists.

- Online tutorials for video editing software - research
- Basics of journalism - research
- Basics of storytelling – research
- Basics for camera recording - research
- Choosing the topics for TV stories which they will later shoot for the TV

### Sessions 5 – 7

- 1st TV reportage on Instagram TV: shooting, editing, writing, publication, marketing
- Possibilities for a longer (5 – 10 minutes) reportage: Local events, announcements, news, school activities, students hobbies or presentations on a topic, students tutorials, etc.
- Marketing: short promotion videos for Instagram TV channel
- By this time, students will already find their stories and implement what they have learned in introductory sessions. This will be published on their Instagram TV channel.





## Sessions 8 – 10

### Short reports on Instagram TV

- Set of several shorter news stories which would be shot/edited/written during the sessions, but published over some time as short (1 – 3 minutes) TV reports on an agreed topic or events. This activity aims to keep the account active, current and vibrant. Students will shoot their stories during the sessions, but also they should find some materials outside of school hours, within the community (e.g. they could interview their grandmothers on life some 50 years ago and their obligations in school).
- Marketing: short promotion videos for Instagram TV channel

## Sessions 11 – 13

### Interviews on Instagram TV

- Several short interviews with local citizens, members of local government, institutions or businesses regarding the agreed topic of interest to young people and school students. By now students should already be able to do editing and all other tasks, so this should not take long to complete.
- Marketing: short promotion videos for Instagram TV channel

## Session 14

Finalization and conclusions; what was learned; which activities were the most interesting, which skills did the students obtain; plans for sustainability of the project and interest for continuation with younger students, etc. Students of final years could for media club where they would transfer the Instagram TV account to younger students who are interested in running it, so that the project lasts for several years and generations.

**Group reflection** – since the group of students will be small, it is better to have their oral reflection which is contained in the lesson 14.

## Knowledge, skills, understanding

### Knowledge:

- Basics of journalism, TV reports, storytelling, writing, video editing, publication, new media, Instagram TV, recording, camera

### Skills:

- Research, investigation, critical thinking, objective informing, autonomy, initiative, creativity

### Understanding:

- Local problems, local life; marketing; school dynamics and school life; perspective of the others (students, teachers, parents, local community), importance of objective reporting in age of fake news.

## How commercials are made

**Subjects:** English language, mother tongue (Croatian), Marketing, Communication and presentation skills, ICT

**Grade level:** 3rd to 4th year secondary school

**Estimated time:** developed as an 8-week project

### About this lesson plan

The average person is exposed to a huge number of commercials and advertising messages every day. Newspaper and magazine ads, radio and TV commercials, Internet spam and pop-ups, junk mail, street billboards, slogans on T-shirts, etc. Some ads and commercials are irritating and others are entertaining, but they all have the same aim: to make us buy things (very often, things we don't even need!). Most of our young people already own mobile phones. But if we ask these same young people: how was the cell phone first marketed? they would have to think about it.

Teaching advertising is a great way to infuse media literacy, critical viewing, and high order thinking skills into instruction. We know our students are targets for all kinds of products and services. We know that advertisers use every trick in the book (techniques of persuasion) to make their products attractive, appealing and believable. We also know that most students watch media passively. Media literacy, among other things, is designed to turn them into active (questioning) thinkers/viewers.

For the most part, students have never been taught how to watch or deconstruct television. This lesson plan involves listening, viewing, critical thinking and encourages students to look deeply and to ask questions about the production techniques used to make a commercial.

### Pro Tips

The main goal of this learning scenario is creating a commercial and/or advert for the student cooperative and/or some of its products. Before you start, make sure you introduce to your students the basics of marketing and advertising (basic vocabulary, basic and most important terminology). The scenario can be done with 1<sup>st</sup> to 4<sup>th</sup> grade students of any secondary school. A student cooperative is not a precondition. Let your students decide what their commercial will be about, but try to keep your school's activities in focus of it.

For the technical part you will need a good internet connection, mobile phones, a digital camera and a video maker or alike program. It is advisable to form groups according to their skills and interests – e.g. a group responsible for photos, a group for videos, a group of creative writers to think of a good slogan for your commercial and a group of students good at ICT and design. These can be groups of 3 - 4 students.

The scenario combines several subjects such as mother tongue and foreign language (Croatian/Serbian and English), Marketing, Communication and presentation skills, ICT.

### Materials & Technology

- Digital camera
- Mobile phones, mobile phone application such as e.g. logomaker (or any other that can be found on Google play Store)
- PC with video maker and Photoshop installed

## Session 1 - 2: Starting off

To start off, students should be challenged with questions like:

- Who creates commercials and for what purpose?
- What techniques do the creators use to make a product appealing?
- How do they know who might be their “target audience”?
- Which specific “techniques of persuasion” might be used in commercials?
- Which television shows will the creators buy time within to show the ad?
- How much does it cost to make an ad; to position it inside a prime-time program?
- How are camerawork, lighting, music, editing used to tell the story?
- How do I feel after seeing a commercial? How does it appeal to my emotions?

The first 2 sessions can be done with all students interested to take part in the scenario. The questions should trigger their curiosity and motivate them to think more about how a good commercial is made.

If possible, schedule and invite a local/regional reporter or TV editor to share their experience and give students some clues or answers to some of the questions from above.

## Sessions 3-4: What do we want to advertise

At this phase students should decide what product(s) of the student cooperative or what aspects of the cooperative they want to advertise. Furthermore, now you should form groups – teams and assign 1 or 2 teachers mentors to each group. Once you’ve made a decision what your commercial is going to be about, discuss the following points as well: who is our target audience? which message do we want to send with our commercial?

## Sessions 5-6: The language of commercials

Before starting the process of creation, assign students to research the language of commercials.

Involve mother tongue and foreign language teacher(s) to mentor these sessions. E.g. if students have decided to make a commercial for strawberry and apple natural juice made in our cooperative, study commercials which advertise different kind of beverages. You can also prepare some of the most popular commercials to watch online, such as for Coca Cola, Cedevita or some other juices popular in your country. Collect their findings and discuss together. Sort out the words, phrases mostly used; study the structure of the sentences used, abbreviations or idioms if applicable. Help them out to decide on a slogan/message they want to use in their commercial.

For this activity you can use a web tool such as <https://www.wordclouds.com/>



### Sessions 7-8: Ethos, pathos, logos

After language, students should be made familiar with these 3 terms: ethos, pathos and logos. On the link below, you can find a handout with simple explanations and examples:

<https://cpb-us-e1.wpmucdn.com/cobblearning.net/dist/2/3338/files/2017/01/PersuasiveTechniques-pathos-logos-ethos-1ppp01t.pdf>

If possible, involve a philosophy teacher to explain the terms more closely to students and help them incorporate these into their commercial. Also, teachers of economy group of subjects such as Marketing, Communication and presentation skills should be involved in this phase to discuss different advertising techniques and their impact on audience.

After Session 8, students should have decided on target audience, a slogan and purpose of their commercial/advert, as well as on techniques they want to use.

### Sessions 9-10: Action time

At this point students should be introduced to basics of Photoshop and video recording, video cropping and editing. ICT teachers should help out here, or if possible you can invite an external expert on ICT, a photographer or cameraman.

There are free and quite easy to handle programs available online. For shooting and photography students can use their mobile phones or assign students responsible for the digital camera if your school disposes of one.

### Sessions 11-14: Field work

During these 4 sessions students will shoot and record for their commercial, collect materials they have and finalise their commercial. They will probably need help and/or advice, so make sure to organise short meetings during this phase just to make sure everything is running properly. Encourage students to be creative, open minded and the most important, to have fun during their work.

### Sessions 15-16: Show time

By the end of week 7 students should have a first version of their commercial. If necessary, make smaller changes to your commercial and finalise it.

### Re-Group and Reflect

Play the commercial and discuss it with students thinking about the questions from the beginning of this scenario. Can they now answer all the questions?

Reflection questions:

- What did you like most about this scenario?
- What did you find challenging?
- What did you learn?

## Knowledge, Skills and Understanding

### Knowledge

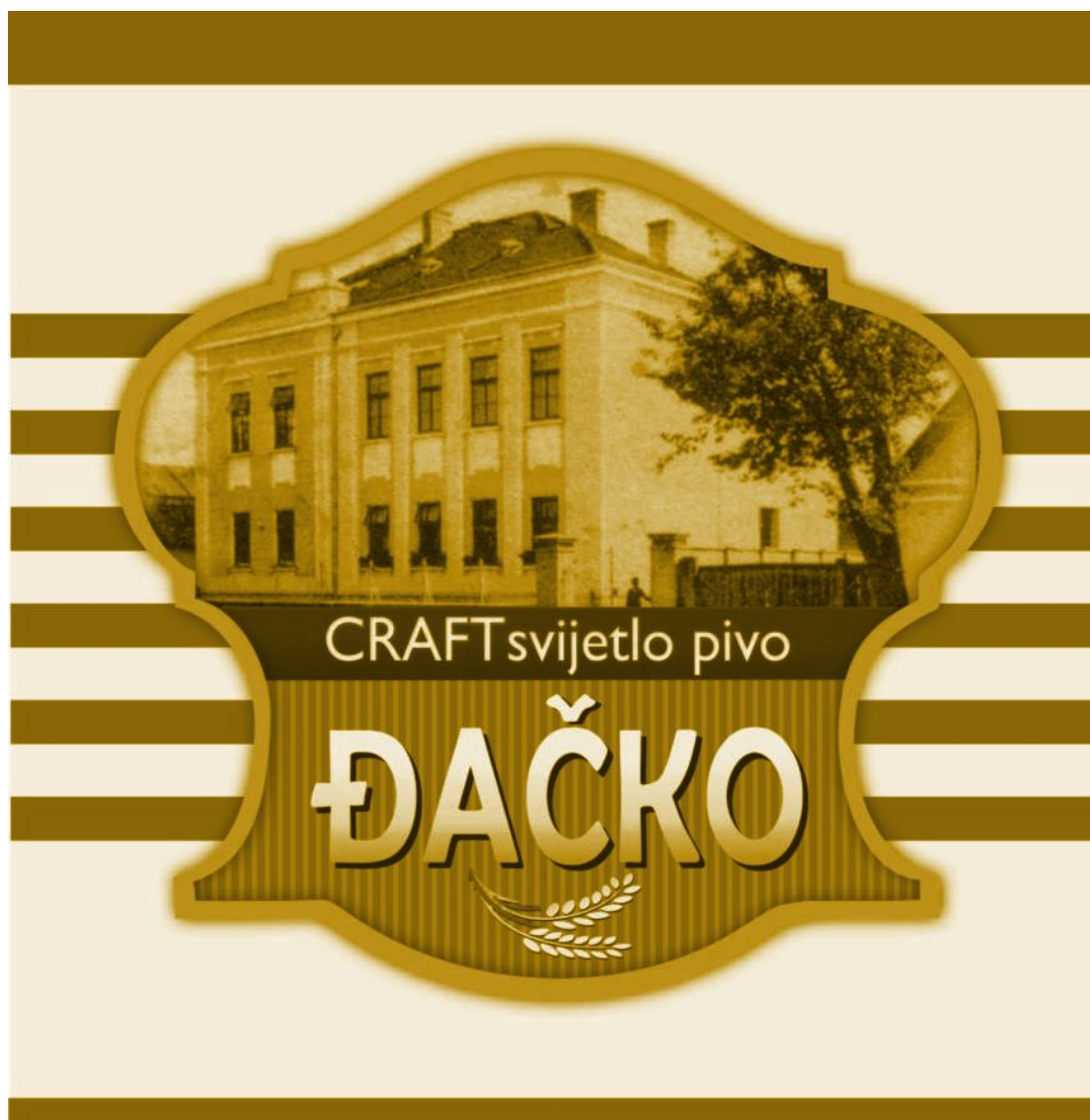
- Students will know who creates commercials and for what purpose.
- What techniques do the creators use to make a product appealing?
- Which specific “techniques of persuasion” might be used in commercials.
- How are camerawork, lighting, music, editing used to tell the story of a commercial.

### Skills

- Student will be able to use a digital camera for photography and recording.
- They will be able to work with simple Photoshop and video editing programs.

### Understanding

- Students will understand the purpose of commercials and adverts.
- What it means that “it is the commercial that sells a product”.



## My place in a Code

**Subjects:** History, Geography, Art, Graphic design, IT

**Grade level:** 1- 4 grade secondary school

**Estimated time:** developed as a 16-week project

### About this learning scenario

“My place in a Code” is an interdisciplinary project that integrates art, technology, media, history, geography and photography. High school students will participate in a 3 months long series of workshops that include: online research, field research, photography and creative writing. During all sessions students will work in groups according to the place/village they live. In this case these are the following villages in Municipality Erdut: Dalj, Erdut, Bljelo Brdo and Aljmaš. Sessions will motivate students to do online and field work research in order to deepen their knowledge about historical sights and legends of Municipality Erdut. Students will collect historical data and legends (through interviews with local community members, in the Public library and/or online) and take photos of the historical sites in their village. After each group chooses the best photos and prepares text for their sites, they will create QR Codes for the final QR Code Board which will be set in front of the school building. The QR Code Board will represent a map of Municipality Erdut with short descriptions and legends of the most significant historical sites presented through QR Codes.

At each phase of the scenario, students will work alongside teacher mentors including external experts on photography editing and graphic design.

### Pro Tips

Before you start, introduce to students the web page of Municipality Erdut, Public library and basic terminology such as QR Code. Since there are many different programmes and applications for QR Code making and reading, students should be made familiar with the most popular or easiest to handle with. Furthermore, make sure students’ mobile phones support QR Code reader applications.

The final product, the CodeBoard will be set up in front of our school (Secondary school Dalj) but it can be presented to local authorities and the local tourist office and set up on other spots in in the Municipality, e.g. in front of the local primary schools in Dalj, Bijelo Brdo, Aljmaš and Erdut.

This scenario focuses on our Municipality, but the idea of a CodeBoard with relevant historical sites is applicable to any other Municipality, town or city and can e.g. include different parts or districts of a town or city.

### Materials and Technology

- Digital camera
- Mobile phones, mobile phone application such as QR Code reader (or any other that can be found on Google play Store)
- PC with video maker and Photoshop installed
- Internet access

### Sessions 1 - 2: Starting off

To start off, students should be challenged with questions like:

- What are the most popular historical sites in your village?
- What do you know about them?
- Is there a legend about these sites? If, yes, can you retell it?
- Have you been to all the historical sites in our Municipality Erdut?
- Is there anything that could replace a tourist guide while going sightseeing in a new place?

In the first two sessions, students should be introduced to the purpose of this scenario. This is to connect their previous knowledge with new technologies and history in order to create something to present to the numerous tourists visiting Municipality Erdut but also to upgrade their knowledge about local history and interesting legends about the places where they live.

### Sessions 3 - 4: Online research

Students shall be divided into small groups of 3 - 4 according to the village they live. Their first task will be to do online research on the 3 - 4 most important sites in their village. They should collect the following data: year of origin, historical period, legend(s) if applicable, relevance of the site.

### Sessions 5 - 8: Field research

Field research includes sightseeing and interviews with the local community members.

Appoint a meeting with each of the group (day, time and meeting point – Dalj, Erdut, Bijelo Brdo and Aljmaš). At each meeting point take photos, walk around, talk and interview local people and takes notes of your findings.

### Session 9: Review and reflect

Invite each group to present their findings during their online and fieldwork research. Present it to other groups to get feedback, ideas, suggestions. After presentation each groups should decide and choose their best photo for each historical site they visited.

### Session 10: Text editing

After students have chosen their best photos, they will have to edit their notes and interviews taken during the fieldwork research. The text should be no longer than 250 words and should include: historical data + legend if applicable. At this stage student should consult their language teacher to help them edit their text in mother tongue and English language.

### Sessions 11: Final version draft presentation

By session 11, students should have prepared a final version draft and now present it to the other groups. The draft should include for each historical site: photo, name and text in mother tongue and English.



### Sessions 12 - 13: QR Coding

With help of IT teacher, students will transform the prepared text pieces into QR Codes. In order to simplify this procedure, the IT teacher can choose in advance a simple to use QR Coding programme. After students have prepared their Codes, they will print them and download an QR reader application to test their Codes.

### Sessions 14 - 15: Photo editing and graphic design of the CodeBoard

For the purpose of photo editing and graphic design of the CodeBoard, an external expert will be invited to help students. The final results of these sessions should be a graphically designed board (120 x 80 cm) that shows a map of Municipality Erdut on which all 4 villages of the Municipality are marked. Next to the village name, there will be photos of the most significant sites (4 photos per village); next to each site a QR Code. Once the user reads the code, text about the site will be shown.

### Session 16: My place in a Code

The CodeBoard will be printed and framed by external experts and finally set up by students in front of the school.

## Knowledge, Skills and Understanding

### Knowledge

- Students will review maps of their Municipality
- Learn new and interesting things about historical sites of their villages
- Learn about legends and myths about their local community and their history

### Skills

- Student will be able to use a digital camera for photography and recording
- Work with simple Photoshop and QR Code programs
- Improve their communication skills through field work research

### Understanding

- Students will have an understanding of the relationship between history, technology, photography and community.
- Students will understand the benefits and challenges of new technology

## In my mind, I view the world

**Subjects:** Philosophy, Psychology, English, Portuguese, Cinema...

**Grade level:** 10 - 12 (15 -18 years old)

**Estimated time:** developed as a 10-week project (20 sessions). Can be shortened or extended.

*From my village I see as much in the Universe as you can see from Earth...*

*So my village is as big as any other land*

*Because I'm the size of what I see*

*Not the size of my height...*

*In the cities life is smaller*

*Than here in my house on top of this hill.*

*In the city the big houses shut your sight with a key,*

*Hide the horizon, push your eyes far away from all the sky,*

*Make us smaller because they take away what our eyes can give us,*

*And make us poor because our only wealth is seeing.*

### In *The Keeper of Flocks*

Translation based on the critical edition by Teresa Sobral Cunha

Pessoa, Fernando. Alberto Caeiro: Complete Poems, retrieved on 15 June 2018 from <http://alberto-caeiro.blogspot.com/>

### About this learning scenario

Demotivation prevails in our schools mainly due to disproportionate weekly academic load, classes with 30 students, compulsory national high school examinations, theoretical demand and extremely long curricula. So, teachers and students feel they are under great pressure. Highly elaborate abstraction far beyond students' real cognitive development is expected. Free time for hobbies and other things besides school work is scarce. Yet, doing research work, finding a meaning for the world and for life, learning in a different way, maintaining curiosity, being the builder of your own knowledge and loving to learn still make sense for students and recharge teachers' motivation. Connecting with yourself (unveiling skills and spotting weaknesses), connecting with others (team working, leading, cooperating, listening to your peer, getting to know him), and together making projects are essential both for private and professional life. Therefore, listening to the students, giving them confidence, putting yourself in their shoes and motivating them to be their own coaches is absolutely necessary in our defragmented world, full of requests and where youngsters almost believe that success is naturally achieved.

### Pro tips

To make this Project, the school library and the Internet access are essential, so research work may be done. The school auditorium is also mandatory to present the final product to other students/local community members. Camcorders, film editing and computers will be handled by students.

The steps we propose are only one possibility and they can and should be adjusted to different classes according to students own answers while enhancing critical thinking.

### Materials & Technology

- Mobile phones, Computers and IPads
- Internet access
- Projector
- Printer
- Camera
- Camcorder
- Books
- Movies
- TED conferences

### Sessions 1 - 2: Critical thinking

- Free discussion on what do students think and feel about school:
  - Curricula
  - Organisation
  - Structure
- Writing short and strong sentences retrieved from the free discussion (one student will be responsible for gathering all the sentences written by his peers)

### Session 3: Building a project

- Reading out loud all the short and strong sentences and choosing the most meaningful for the students (<https://www.scribd.com/document/383148200/Short-and-Strong-Sentences>)
- Brainstorm: Now, what can we do with these sentences? What is our purpose?

### Session 4: Shaping an idea

- Some students in this classroom are very fond of the Rubik's cube. In fact, one of the chosen sentences states that: "Students are like a cube in disorder". Why is it so? WHAT DOES SCHOOL DO TO THEM? "It puts them all looking alike, having the same colour in each face."
- Planning the shooting of the scene with students and the Rubik's cube.

### Sessions 5 – 6: Filming techniques /cinema grammar

Students will become familiar with different filming techniques and their grammar:

- Dolly shot
- Handheld camera
- Stop motion
- Sound off
- Sound on
- Shooting angles (Bird eye view, high angle, low angle, extreme low angle, ...)
- Film script
- Cinema careers: producer, screenwriter, film editor, translator...

### Session 7: Filmmaking

- Filmmaking at school

### Sessions 8 – 9: Working like a filmmaker

- Editing
- Subtitling (in Portuguese and English)

### Session 10: Sharing...

- An invitation will be sent to different classes, teachers and parents
- Sharing the short movie with the school community at the Auditorium
- Presenting the film (short movie)
- Watching the short movie (< 10 min.)
- Debating ideas, being one of the students the debate moderator

### Session 11: What would students like to study? And how would they like to do it?

- Each student speaks up about their own interests and the teacher makes a list.
- Conclusion – all the topics named by the students are in my subject's syllabus – Philosophy: Ethics, Aesthetics, Religion, Politics... ..
- So, we need to think about another way to think more open minded.



## Session 12

- In one of my Philosophy classes, in which the students were doing self-assessment (metacognition), I added one more question:  
*Imagine you can make a question and you would always have someone answering it. What would you like to ask?*
- The teacher then processed the data and the results were:
  - Why do we exist? What's the meaning of life?
  - Is there life beyond Earth?
  - Does the present influence the future?
  - Why is there prejudice against gender, sexual orientation, being different?
  - Why are people so evil, ambitious and corrupt?
  - How did life begin on Earth?
  - Is it possible to travel in space and time?

BUT, THE MORE CONSISTENT QUESTION WAS: How does the brain work?

## Sessions 13 - 16: Working together

- Individual or peer work
  - Choosing a topic related to THE HUMAN BRAIN: brain structure, function, brain plasticity and learning...
  - Research work
  - Writing
  - Choosing pictures or film frames to illustrate their writing
  - Outlining the conference
  - Rehearsing the oral communication
  - Multimedia team: responsible for all the technical work needed and the presentations using PREZI PRESENTATION SOFTWARE

## Sessions 17 - 18: Working together

- Preparing the conference – aligning the speakers
- Presenting the conference at the school's auditorium
- Presenting the conference at the Senior Academy, Tavira
- Recording the conference

## Sessions 19 – 20: Multimedia work

- Editing the recording of the conference and making a short movie

### Extra session/ideal session

- Making a presentation with a 3D model of the brain and with sound links to all the delivered speeches at the conference. When clicking in different parts of the brain, one could listen to the first speech, then to the second and so forth.
- This presentation would then be made available online at the library's blog, Connect Your Learning site or shared with other schools.

## Knowledge, Skills and Understandings

### Understandings

#### Students will understand:

- Mass media – knowing the difference between manipulation and rational persuasion
- The role of the emotions in the functioning of the brain
- The brain as a complex and dynamic system
- The importance of life experiences including them in a narrative
- The importance of a Personal Life-plan

### Essential questions (metacognition – learning to learn)

- How do we learn?
- What did you learn in this learning process?
- Did you develop your skills or discovered a new one?
- Did you enjoy this project work? Why?
- What would you do differently next time?

### Knowledge

#### Students will know:

- Neurons, synapses, cerebral nerve cell communication
- Systemic function of the brain
- The role of the prefrontal areas, brain plasticity and learning

### Skills

#### Students will be able to:

- Work as a team
- Value the skills of their peers
- Moderate debates (advocating ideas and always questioning)
- Engage with different audiences (youngster / elders)
- Respond to the different steps of the project

## History is made with documents

**Subjects:** History, Portuguese (native language); English; ICT and Arts (Graphic Design and Photography)

**Grade Level:** 10 - 11 (15 - 18 years old)

**Estimated time:** Developed as a 7-week project (21 sessions)

### About this learning scenario

The learning scenario, "History is made with documents", comes in the wake of students' interest in local history. In this case, they are pre-university students in the area of Social Sciences and it is intended to take advantage of their interest in local history to develop competences in the area of research, processing information, integration in National History, and communication. Reading small ancient documents poses diverse questions that imply the research for their resolution.

The construction of a bilingual magazine requires the application of diverse knowledge such as the construction of the journalistic text, the translation, and the historical facts. Autonomy, critical thinking, leadership, initiative, meeting deadlines, conflict management within the group, sharing responsibilities within the large group and creativity are other skills associated to a project such as this one. The skills in the area of new technologies using a computer program to build a magazine, the techniques of photography and composition, as well as the graphic design of the magazine are also important.

It is the first time these students are confronted with small ancient documents, which constitutes a discovery and a challenge. During the transcription, any small progress is a defeated difficulty that makes new challenges.

### Pro tips

To develop this project, it's necessary to have easy access to Internet, to print the chosen documents, which may be short, and quite easily transcribed. It's also necessary to master the photography technique and to design the magazine. The cooperation with the school library is essential.

The steps we propose may be adjusted to other History learning scenarios. Instead of historical documents, students may collect information on local newspapers from the 20<sup>th</sup> or the 19<sup>th</sup> century, do research work on local heritage (e.g. monuments, legends) and then create an online magazine, or a printed one, to disseminate the information they now master.



# HISTÓRIA HISTORY Tavilla✿

Nº1 - 2018

<sup>†</sup> Designação da cidade na carta de libertação de um preso em que não foi respeitada a imunidade da igreja, pelo rei D. Manuel I, em 29/4/1516

\* Name of the city in a letter of liberation of a prisoner in which the church's immunity was not respected by King D. Manuel I, on 29/4/1516



## Materials & Technology

- Computer and iPad
- Internet access
- Projector
- Printer
- Camera
- Photoshop
- General books of Portuguese History

## Session 1: Project introduction

- Explain the challenge clearly.
- Choose the work groups and negotiate tasks.
- Choose the final product.
- Divide responsibilities among students (take photos; design the magazine; make the photo composition; compile the articles; ensure that deadlines are met; organize the presentation; publish and print the magazine).

## Session 2: Exploring the National Archive site

- Access the National Archive “Torre do Tombo” website (<https://digitalq.arquivos.pt/>).
- Explore how to find small documents (mainly letters) about Tavira.
- Explain how to get a copy of documents not available online.

## Session 3: Rules to quote a document

- Rule No.2: how to quote a document from books and/or available online (Internet).
- Show how to insert a footnote.
- Recall how bibliography references are made.

## Session 4: Choosing the document to work on

- Explore different ancient documents and choose one per group to work on
- Choose a history period to work on

Discussion questions:

- Why this Document?
- Am I able to transcribe it?
- Does it have any relevant information about Tavira?
- Can I explain the subject?

## Sessions 5 - 6: Transcribing the document

- Each document uses an ancient language, so it's necessary to transcribe it, solving difficulties, interpreting and joining the pieces like a puzzle.
- Find strategies to overcome the difficulties.

### **Sessions 7 - 8: Research on the questions raised by the documents**

- Contextualize the information

Discussion questions:

- When was this letter written?
- Is the message clear?
- Is there any hidden message?
- Why was this letter written?
- Who was the person who wrote it and to whom?
- What is the meaning of the concepts used?

### **Session 9 - 11: Journalistic language and articles for the Magazine**

- With a Portuguese teacher's help, the students learn the rules of the journalistic language.
- The students write the articles.

### **Sessions 12 - 13: Translating the articles into English**

- The students translate the articles, supervised by an English teacher.

### **Sessions 14 - 15: Exploring JOOMAG application and designing the magazine**

- Access a website (joomag.com) and create an account
- Choose a Magazine template
- Design the magazine (the order of the articles, the editorial, the credits, etc.)

### **Session 16: Taking photographs and making the photo composition**

- The students learn some rules on how to take good photos.
- The students take photos of Tavira for the magazine cover.
- The students make the photo composition and use PHOTOSHOP software (optional).

### **Session 17 - 18: Uploading materials and finalizing the magazine**

- All the articles, photos, editorial, credits are uploaded to create the final version of the magazine.

### **Session 19: Revising and printing the magazine**

- Revising each page, both in Portuguese and in English.
- Six copies of the magazine are printed and left in the library for free reading.
- The magazine is uploaded to the blog of the school library.

### **Sessions 20 – 21: Presentation and dissemination**

- Students are invited to present the project to the school community during the Social Sciences Week.

## Group Reflection

- The students answer an online questionnaire:
  - What did they like about this process?
  - Did they find it challenging?
  - What did they learn?
  - What would they do differently?
  - Did this project make them think differently about History?
  - Did this project make them think about future careers?

## Knowledge, Skills and Understanding

### Understanding

#### Students will understand:

- The relation between local and national History
- The difference between historical sources and historiographical texts
- The technique of journalistic language

### Essential questions

- How is History made?
- What is the relation between local and national History?
- How is a Magazine built?

### Knowledge

#### Students will know:

- How to write journalistic articles
- How to use historical sources
- How to transcribe historical documents
- How to create a magazine
- The technique of photography and photo composition
- Techniques for quoting from books and Internet pages
- The translation using technical English

### Skills

#### Students will be able to develop:

- Autonomy
- Critical thinking
- Leadership
- Initiative
- Conflict management within the group
- Sharing responsibilities within the large group
- Creativity
- Public presentation

## Connecting your money

**Subjects:** Economics (Finance, Webcast, Video, Graphic Design, Photography), English

**Grade Level:** 10 - 11 (15 - 17 years old)

**Estimated time:** Developed as a 6-week project (20 sessions)

### About this learning scenario

*Connecting your money* is a global project of Jorge Augusto Correia Secondary School, in Tavira – Portugal. This project started from a student's idea about the main question: "How to distinguish real money from fake money?"

The study of the security elements in banknotes and coins plays an important role in social studies, economics class and its curriculum. With this learning scenario, students will be able to recognize real money in a safe way. This scenario was also designed to teach and learn when connecting students from different countries and different currency banknotes and coins. The sessions feature targeted instruction and helpful approaches that provide practical real-life examples so students may develop their skills.

### Pro tips

This project is ideal to develop in a secondary school but it can be used to teach and learn in middle schools, and shared with families and general community. The three currencies (Euro, Kuna and Zloty) may be exchanged by any other (e.g. Swedish Krona, British Pounds and US Dollar).

### Materials & Technology

- Computer with front camera
- Pen drive
- External Camera for webcast
- Internet bandwidth for webcast video
- Video/photo camera
- Library publications about Euro money
- Economics and finance book for 10<sup>th</sup> level ('Economia A')





### Session 1: Introduction to the plan

- Presenting the plan with aims, schedule and contents of each session.
- Discussion with students about the different tasks and methodology to be adopted throughout the sessions, presentation and final products.
- Students form groups and divide tasks, creating a research guide that will include: sources of information and research to be used, data to collect, organization of information and preparation of the visual aids.

### Sessions 2 – 3: Completing the research guide

- Students start the research work at the school library file and search on Internet sites about Euro banknotes and coins' characteristics.
- Exploring documents and multimedia products, pages and files from sources like: European Central Bank (<http://www.ecb.europa.eu>) Portuguese Central Bank (<https://www.bportugal.pt>) European Union and Jacques Delors Information Centre (<http://www.eurocid.pt>), <https://europa.eu>

### Session 4: Preparing a guide to involve partners

Students will prepare a proposal in a Word document with the outline of their project: how to identify the variability and main characteristics of their country's banknotes and coins. Croatian and Polish partners will receive by email the Portuguese team proposal to be analyzed and discussed.

### Session 5: Webchat with partners

A webchat session with students from the three different countries will be held to discuss with the partners the document, explore differences and get to an agreement about the final document and presentation format.

The students will decide which online product will be used to share their project. We suggest a website on Webnode: Easy and free website maker, that can include links to documents (e.g. PowerPoint or Prezi online products), but students may come up with a different option.

### Sessions 6 - 8: Development of the work

Students are divided in groups and start their work by collecting data about Euro banknotes and coins, security elements of Euro coins and banknotes:

- Collecting links
- Writing information into Word documents
- Graphic images
- Picture and video files

### **Sessions 9 – 10: Producing video scripts**

Students prepare scripts for the production of short videos demonstrating the safety features of Euro banknotes and coins.

### **Sessions 11 - 12: Translating guides and preparing students to make a video in English**

Students translate the guides and practice reading the texts, supervised by an English teacher. Croatian and Polish partners will receive by email the Portuguese team proposals translated into English to analyze and discuss them.

### **Sessions 11– 14: Producing videos**

Students do role play in the videos, the filming, the editing and the graphic design. They choose a scenario to film, follow the script, record and are the actors of their own film.

### **Sessions 15 - 17: Creating a website**

A Webnode website will be created by students with a teacher supervising. The website will support the final product organized as a multimedia interactive peer to peer tutorial, useful to teach and learn. All the partners will be uploading their tutorials to the website and so knowledge can be disseminated and the webcast results shared with all the community. Therefore, anyone can learn and be aware of the physical security elements in Euro, Kuna and Zloty note banks and coins.

### **Session 18: Revising and uploading to the website**

Revising all documents in English and uploading multimedia products, checking links and all procedures to finish the website and publish it.

### **Sessions 19 – 20: Live class presentation on live peer to peer webcast**

Students will establish an Internet connection by video chat and make a brief presentation and live demonstration of the security features of the Euro banknotes and coins for their peer partnership. Then Croatian and Polish students will do their brief presentation of their banknotes and coins.



## Knowledge, Skills and Understanding

### Understandings

#### Students will understand:

- The purpose and importance of technology in the creation of safe money
- Money security elements and then share with others
- The importance of communication to share knowledge, teach and learn with each other about the project's subject
- The technique on how to speak in public, supported by IT tools

### Essential Questions

- How is money made?
- What is the relation between the technology of production and the creation of security elements in banknotes and coins?
- Is it possible to easily distinguish real money from fake money?
- Why is this subject important for students?
- Who are the targets for this learning activity? Why?
- Which benefits can students and the community get from this plan?

### Knowledge

#### Students will know:

- How to do research, select and organize information
- Basic IT knowledge: web design, filming with a camera, editing video, online tools and apps
- Basic Euro money concepts; and specifications of the process of creating banknotes and coins, with an introduction to the security elements
- How to operate a camera, edit, and organize information in a video
- Techniques of website construction, and operating with online software
- Techniques to detect real money from counterfeit money
- How to communicate with partners and translate written and spoken content to English

### Skills

#### Students will be able to develop:

- Autonomy to do research, collect and organize data into information about banknotes and coins
- Ability to operate software and hardware for web design, filming with camera, editing video, working with online tools and apps
- Creativity to combine scientific work with IT tools
- Initiative and project leadership
- Group work with responsibility and sharing tasks
- Know-how on producing videos, launching a website and making a quiz
- Capability to publish online products
- Communication skills and their fluency in English
- Confidence while doing live presentation and interaction with different partners





# Chapter Three:

## Outcomes of the learning experience



## Chapter Three: Outcomes of the learning experience

All the scenarios outlined in the previous chapter have been piloted and validated in the project partner schools in Poland, Croatia and Portugal. In each country we chose three classes of students aged 14 – 18, which is the crucial age of initiating interest-driven learning and tested one scenario with each class. All the learning pathways included hands-on projects connecting curriculum assignments with creative media-based productions. We gathered feedback both from the participants and the teachers to provide evidence of the learning outcomes that helped us improve the approaches.

Chapter III of the publication presents the actual ways in which we implemented the learning scenarios. We believe that the evidence of learning outcomes attained by our students involved in these activities in terms of acquisition of transversal skills, new media literacies and specific subject-related knowledge and competencies will encourage other teachers to follow the pathways proposed by us. This part is thus envisaged not so much as a closing chapter of the work but rather as leveraging a feedback loop: we provide evidence of our students' learning experience and expect to receive feedback from a wider teacher network to improve and further promote the approaches. This is in line with the philosophy of Connected Learning which very much supports teachers' networked learning seen as an essential factor in our professional development.

## I. Learning scenarios implemented by EST

Education Centre EST is an informal education provider. The project was a particular occasion for us to show that cooperation with regional schools from the sector of formal, compulsory education can bring concrete benefits to the students bridging curriculum learning with out-of-school activities related to their authentic interests. All the scenarios developed by us for this project had this aim in view. In what follows, we relate how they were implemented and what results they brought out.



## 1. Otto Adventure

Robotics is a field which attracts genuine interests of young people and motivates them to get involved in creative activities that cut across the domains of maths, science, art and IT. However, it is usually difficult to explore the whole spectrum in the classroom. The reasons are many: lack of time in particular lessons, lack of proper equipment or difficulty in setting-up smaller groups for project-based work. As a result, it is usually impossible to exploit the full potential of robotics in the framework of school classes. Our scenario was an attempt to break through some of these barriers. This is the way we followed.

The learning path was implemented with 7th grade students from a rural school in the region of Wadowice. The school is very well equipped and has a dedicated team of teachers but has never before organised robotics workshops. Our initiative was thus received with interest and a certain degree of caution. It was a very positive response from a maths teacher that helped us take the idea off the ground. The activities began in a maths lesson in the context of introduction to experimental probability. The students were challenged with a question how robots behave in the face of uncertainty. This raised a heated discussion, not so much about particular algorithms (too advanced level for this grade) but about the robot mechanics and programming. The debate hooked the students into an exciting project: let's build our own robot and see how it all works!

In the next step two English classes were devoted to reading comprehension of texts on robotics. We chose materials from a website with clear-cut instruction on a DIY robot OTTO. The students had to answer a questionnaire carefully designed to elicit key information on the whole process: designing, printing parts, assembling, fitting with electronics and coding. The motivation of the class was uneven - a small group of enthusiasts engaged in reading and discussions, with others taking the assignments as standard classroom tasks. The reading content and level was aligned with the 7th grade ESL curriculum (digital tech vocabulary, reading and writing skills). The average test scores document a good grasp of the language material.

The students were then invited to a digital makerspace at EST equipped with 3D design and printing technology (not available in the school). Small sub-groups visited our space as part of school programme of extracurricular activities. They could download parts of OTTO for printing and follow the whole process from a file opened in Tinkercad to producing a small physical component of the robot. Tinkercad was introduced only briefly with guidance on how to use it further, at home or in class. Majority of the students were interested in learning more about the software and its use which led to the following lessons in the school computer lab.



These lessons connected IT and art curriculum items for 7th graders. The task was to 3D design an object of the students' own choice with Tinkercad. Around 30% wanted to continue with designing parts of the OTTO robot, adding some features to the basic frame (e.g. decorations of the robot's head). All the successful projects were sent to EST for printing. Although not every student managed to redesign OTTO to suit his/her vision, they all created their own 3D name badges. After printing them at EST we handed them to their authors as a tangible result of their newly acquired skills in digital design, aligned with curricular standards in IT (ability to use design software) and art (producing pop-art artefacts).

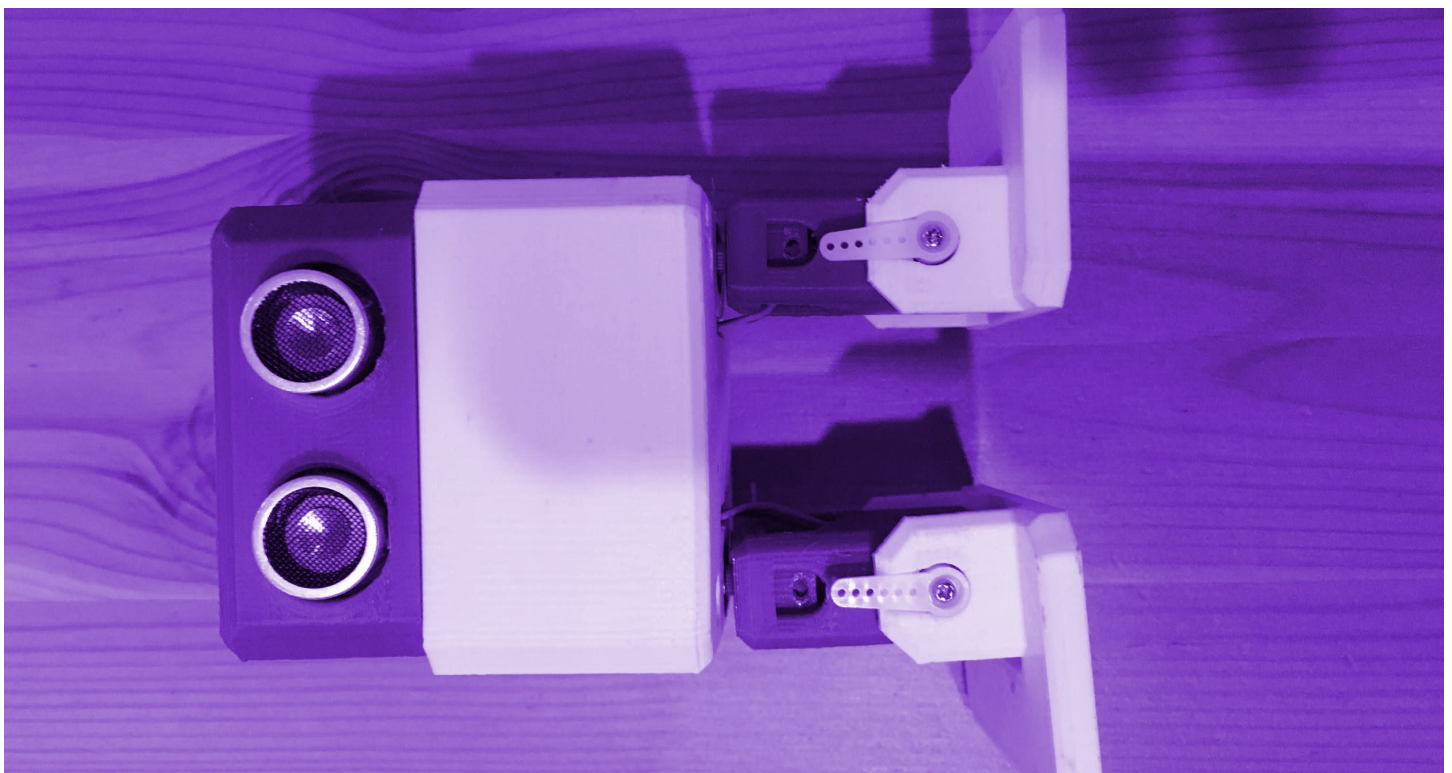
The continuation of the activities were optional. We invited all the class to EST lab to finalise the project - assemble the printed parts into a robot, fit it with Arduino electronics and programme with Scratch. In fact, around half of the class visited us, curious to see how OTTO develops into a fully-fledged robot. Some were more involved into manual assembling, some in programming, some only interested how to operate the robot with a smartphone. Still in all cases the students benefited in terms of gaining new knowledge and skills. We summarise here the learning outcomes acknowledged by the teachers as clearly relating to the 7th grade curriculum standards.

**Maths:** the students are able to indicate a concrete case of application of the theory of probability

**English:** the students are able to understand basics texts on digital technology and formulate steps of a simple robot construction process

**IT:** the students are able to use the basic functions of Tinkercad and Scratch

**Art:** the students are able to design a 3D object with unique artistic features and know the steps leading to its physical production (printing)





## 2. From 2D graphics to 3D modelling

This learning scenario was developed as a follow-up to OTTO Adventure in which students demonstrated a genuine interest in designing components of a robot with digital tools. We therefore thought it would be a good idea to focus specifically on this aspect of the workshops and devote more time to 3D modelling. Skills in this area open concrete career pathways and entrepreneurship opportunities in modern industries. Although school curricula don't usually set standards in this field they include digital design skills in the programme of IT and art at the middle and high school level. This is the reason that we decided to engage a class of students already at the secondary education level, in 1st grade of a vocational school in Wadowice.

It was an involvement of the school career advisor that helped get our new learning programme off the ground. Entrepreneurship isn't a separate school subject at this level but many of its themes surface in career advisory classes in which students consider how their skills and knowledge may impact on their futures - further education and jobs. A part of the programme includes visits at external establishments relevant for such careers. The teacher accepted our invitation seeing EST lab as an ideal opportunity to introduce the digital making movement to their students. This is a relatively new phenomenon in Poland as compared with many other countries where digital makerspaces have already transformed the landscape of creative industries.

The learning path was initiated during small group consultations with the career advisor as part of the school curricular activities. Each group discussed a different case of a start-up presented in the Make Magazine. The students had to identify the particular technologies needed to launch each of these initiatives and a particular range of skills. The classes followed the "flipped learning" approach - the students studied the articles at home before discussing them with the teacher and peers in class to deepen understanding of the opportunities afforded by the maker movement. The result was a genuine interest into how such spaces are organised, how they emerge, whom they involve and what they produce. Our invitation to visit a budding digital lab at EST was thus acclaimed as a great idea for a school trip.

During the visits which were organised in small groups of 6 - 8 students we presented the whole development process of a physical prototype, beginning with its digital design, introducing the editing process for printing and then the final realisation of the project on a 3D printer. The sample project related to the students' field of study at school, building construction, but the object which attracted most of the attention of the young visitors at our lab was a drone recently constructed with another group. The students were particularly impressed by the fact that many components of such a device can be produced on a 3D printer and then assembled with electronics to create a flying object. We followed up this interest to propose a continuation of the learning activities connecting the students' school classes with an engagement in an extracurricular project.

Back at school the students were given a task in an IT class to reproduce the drone frame printed in our lab as a digital design. The students first sketched the flat structure as a 2D object with the software they had already been familiar with - LibreCAD. The project thus provided an excellent opportunity to practise skills covered by their school curriculum - measuring, drawing and editing an object with 2D CAD drawing software. The additional challenge came with a task to move the sketches to a 3D CAD programmes. The groups split into a more advanced team eager to experiment with Blender and a less advanced one working with Tinkercad. The results varied from basic designs only provisionally grasping the shape of the original frame to some coming very close to the model structure. However, this was an engaged learning process in each case - most of the students were really struggling to achieve the goal of designing a frame for their own drone.

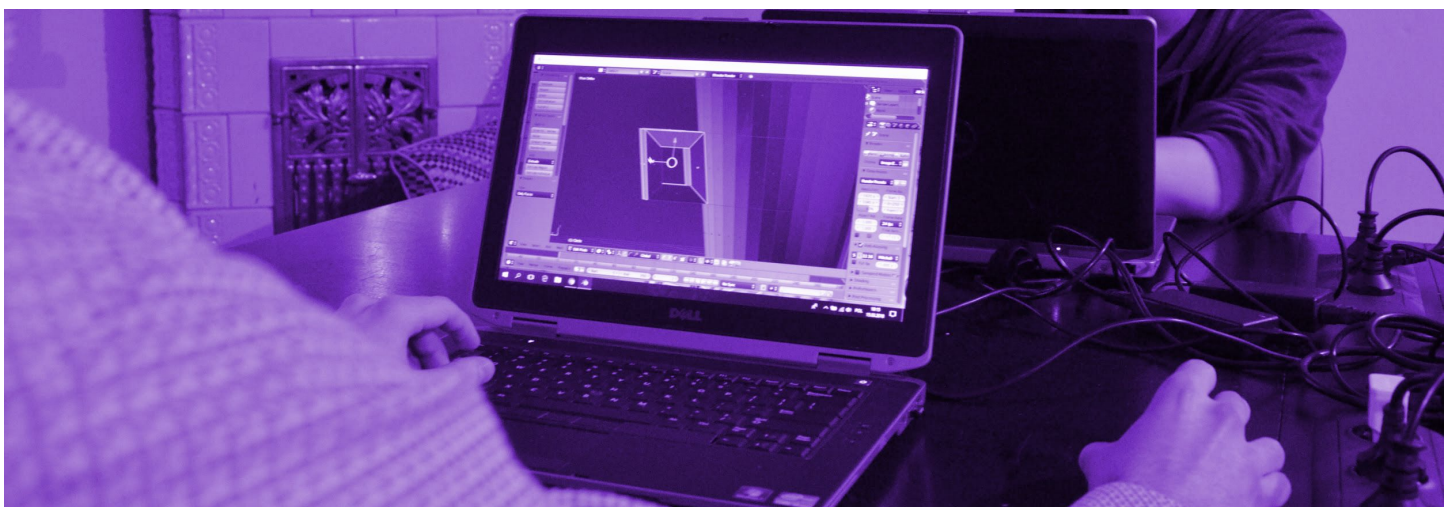
The school part of the learning path had to stop at this stage due to a heavy workload of curricular activities. Still the students were referred to an English website for drone enthusiasts where many tutorials are available as well as a variety of printable drone parts. A small group of students continued work on their project. They kept sending us various files for consultation and printing, coming to our lab to see results and discuss further steps. When we managed to produce all the printable components of the drone, they assembled the device with support of a student from the electronics field. The remaining parts were relatively inexpensive and all available in a digital DIY shop. The project was completed with a successful flight over the school backyard. There are good chances that more advanced youth projects will follow in the next semester.

We summarise here the learning outcomes acknowledged by the teachers as clearly relating to the school curriculum.

**English:** the students are able to understand texts on digital technology at an intermediate level and formulate steps of a drone construction process

**IT:** the students are able to design a 3D object with Tinkercad and/or Blender and create a file ready for printing

**Entrepreneurship:** they understand the potential of 3D design skills for their future careers in creative industries; they can see new opportunities provided by digital maker movement and possible pathways for further development of their digital skills in peer-supported maker spaces.



### 3. My Maps

The way we implemented this scenario was influenced by an interesting initiative by a history teacher from one of primary schools in our region. He regularly organises mountain trips at weekends on which not only students but also their parents are invited. The trips have become very popular in the school community attracting large numbers of participants. From our point of view the activities have a particular value as an exemplary case of connected learning - there is a genuine interest in hiking which motivates the participants, they come together sharing the same passion, the role of caring adults is significant in facilitating the experience and the out-of-school events clearly link to school engagement. We therefore seized this opportunity to introduce our touristically oriented scenario in this context, at the same time realising that it will probably have to be modified to adjust it to an existing programme of activities. The actual way of implementation looked as follows.

First we introduced the idea of using digital mapping tools to teachers who go on the trips; besides the history teacher the team includes teachers of geography, Polish and English. Most have not yet used dedicated apps for mountain hiking such as Wikiloc or WanderMap and they were surprised to see how many useful functionalities they include as compared with standard Google maps. For the following trip some of the group leaders and participants installed Wikiloc on their mobile phones to check how the tool works as compared to Google maps and paper maps. The feedback we received was very positive. We also checked that the app worked perfectly on most types of mobile phones that the participants take with them on the trips. On the technical level the ground for the following exploratory learning activities was thus well prepared.

The students participating in the trips come from different classes and levels hence it wasn't possible to devote whole lessons of a particular class to the themes planned in the scenario. However, we organised a series of after-school activities in the school's computer lab for a dedicated group of participants from the oldest classes (aged 12- 14). In the first step we delved deeper into how digital maps work, beginning with Google Maps and creating together a customized map of the school area, adding places to it, choosing layers and saving directions to a selected number of places in the school's vicinity. Then we challenged the students with recording some paths around the school with the use of their smartphones giving them a choice of apps. The majority opted for Wikiloc which proved to be the most handy tool and offered the most useful functionalities. Once they practically mastered all the key functions (marking the path, calculating distances and elevations, annotating and illustrating with pics, sharing online) we encouraged them to offer peer support to their classmates going on the weekend trips. For the following one we thus had a well prepared group, mobilised to use their smartphones for mountain trail mapping.



The programme of the following weekend trip was introduced in the framework of history and geography classes. The teachers presented a number of possible routes in the Gorce region connecting sites of cultural and natural significance. Depending on the class the learning activities focused on different themes (reading related texts, virtual tour of a museum of wooden architecture, study of geological features) aiming to prepare the students for direct explorations during the trip. The classes discussed together which trail to follow in order to visit the most attractive locations. An agreement was reached with a choice of mountain shelter where to stay overnight. The students were reminded to install/update the Wikiloc app on their smartphones which was needed for the documentation of the trip.

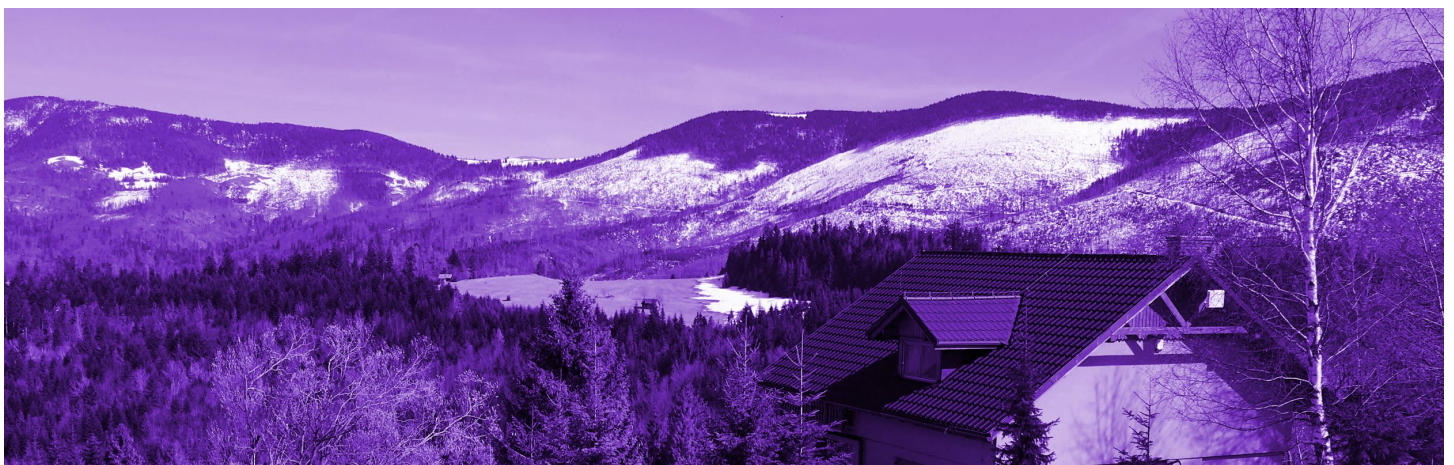
The trip proved a very successful experience. 35 young participants went on the 2-day trip led by the physics teacher and supported by 3 parents. Trail recording was done in smaller groups of 5 - 6 participants who mapped the same path but with different waypoints illustrated with different photos and annotated differently. The material gathered during the first day walk was then analysed and discussed at the mountain shelter where the group stayed overnight. All the maps were then uploaded to the Wikiloc website to reach a wide audience of hikers sharing experiences from mountain trips. From follow-up feedback rounds with the participants we know that most of the regularly use the map to recommend/consult interesting trails with their peers. Some have also edited their info in English and exchanged comments with hikers from other countries. We summarise here the key learning outcomes gained by the participants.

**Geography:** the students are able to record trails on digital maps and annotate them with geographical data gathered in the field. They raised their knowledge of the region through visiting sites of natural and cultural significance.

**History:** the students are able to discern characteristic features of traditional wooden architecture in the region.

**IT:** the students are able to use basic functionalities of digital maps and better realise the potential of mobile technologies for spatial orientation.

**Art:** the students are able to create digital photo documentation of an outdoor trip focusing on specific features (geographical, natural, cultural).





## II. Learning scenarios implemented by Secondary School Dalj

Secondary School Dalj as a vocational school has a predefined curriculum which mostly focus on vocation related skills and knowledge. Due to several extra-curricular activities and our students' cooperative, learners have the opportunity to broaden their interests, sharpen out their talents by being involved in somewhat different school activities, which they themselves identify as interesting and challenging. Keeping this in mind, we designed learning scenarios to enhance and encourage their active participation and here is how they were implemented and what results they brought out.



## 1. How commercials are made?

The exposure to Internet, commercials, advertisement and tempting but very often misleading marketing messages is nowadays inevitably. Young people are exposed to marketing tricks on daily basis but rarely think about their hidden messages and persuasion techniques. This lead to the conclusion that most students are passive watchers and listeners, which could result in a media illiterate generation, unable to critically view and think about messages and information coming over to them. This scenario was developed with the aim to challenge students to deconstruct media messages and commercials, to foster their media literacy skills and encourage them to become active viewers and thinkers. This is the way we followed.

All activities in this scenario were created to lead to a final output – a commercial. Since SSDalj runs a students' cooperative, we wanted the final output to advertise a product made in our cooperative. Students of 3<sup>rd</sup> and 4<sup>th</sup> grade economy and agro touristic technicians were invited to join the team. They already had some pre knowledge in basics of marketing (basic vocabulary and terminology). ICT skills was not a precondition but most of them had medium to high ICT skills, which made the implementation of the scenario even easier. The team included an English and mother tongue teacher, ICT teacher and teachers of economy group of subjects.

To begin with, students were challenged with a set of questions about who makes commercials, why, how and for whom commercials are made. The first four sessions included discussing the previous listed questions, watching various types of food, beverage and cosmetic products commercials, discussing the music, message, target audience, emotions that the commercial tried to or did evoke in the viewer/listener, etc. Students were also asked to pay attention to language used in commercials; foreign language and mother tongue teacher helped them better understand phrases, idioms, slogans.

Further on, students were asked to decide which product made in our cooperative they want to advertise and unanimously decided to make a commercial for our newest product – craft beer. The next step was to make the group familiar with the terms ethos, pathos, logos which explain different advertising techniques. Now they were ready to decide on the target audience, purpose and message their commercial should bring over. Not less important was to choose a slogan and name for the product. In order to involve more students, we invited all students to leave their idea on our school's facebook page. Finally, students involved in the scenario implementation decided on the one they liked best.

The most challenging but most interesting part for students was shooting of the commercial. After they have created a scenario, they were encouraged to use their mobile phones, digital camera and easy to use, online and free available video editing and cropping programmes. However, this demands a higher level of IT and graphic design skills. To ensure a positive outcome, we involved a professional photographer and cameraman to help them out. This resulted in new knowledge on how to use digital cameras, how to crop and edit videos, insert music, etc. and was an interactive workshop to enhance students' ICT skills. An additional product was created at this stage – the label. It was designed by 3<sup>rd</sup> grade students in a free online logo maker programme.

At the end of the implementation phase students were encouraged to think about creating commercials, labels, slogans for other products in our cooperative. According to the positive feedback of students, this scenario was an encouraging and ideas evoking activity and will surely be continued. We summarise here the learning outcomes acknowledged by the teachers as clearly relating to the school curriculum.

**English and Croatian language:** students understand and properly use marketing related language / terminology in context.

**Marketing and other vocation related subjects:** students understand the term marketing, it's purpose and techniques used in marketing and commercial industry.

**IT:** student can use a digital camera and/or their mobile phones to record short videos; students understand and show basic skills in graphic design and easy to use video editing programmes.

**Entrepreneurship:** students realize and critically think about potentials and importance of marketing; students are encouraged to develop new business ideas and marketing techniques to introduce these ideas / products on the market.



## 2. Media literacy - Instagram tv

With the emergence of new technologies and social media, students nowadays use the Internet for all kinds of various purposes, and teachers are usually falling behind these new ideas and uses in media implementation in the classroom. With this scenario, we wanted to change that and to offer students the chance to present our school to their generation and with the popularity that Instagram now has in their peers it sounded like the perfect opportunity also to present our school to a wider audience and potential new students.

We started with a group of fourth grade in high school, which participated in the first phase of the project, learning all the basics of what Instagram TV even is, and how journalism usually works. Our idea at the start was to develop different techniques in journalism to interview, report or just present several of their colleagues, local events, events in school and the like. The roles for this were designed in such a way that they meet several of student's interests.

At first, we imagined it like a real TV station, with presenters, researchers and writers, editors, and cameramen, and students generally agreed to this in the beginning, only to change their minds as the project went into the phase of implementation. We realized that Instagram TV does not work as a traditional TV station and that it has more freedom and creativity which could be expressed in various different ways, so we moved from our initial plan to something different. Even before this decision, we did all the previous actions we planned, mainly related to what research journalism is, how could we implement our knowledge in mother tongue when addressing the audience and what are our IT skills in finding the right programs and apps for video recording and editing materials, and also writing stories for our report or leading an interview with other interlocutors. This research was mainly done in classrooms and during the classes, but this task also demanded fieldwork and research outside of school, which for some students was tiring, but others used it in most creative ways, broadcasting from school trips and excursions, in order to let the others know what they are doing and whom did they meet along their journey. This also explains that some students were more eager to participate in this project than others and it showed the real need for change in one moment close to the end of the scenario implementation.

Since we worked mostly with final grade students, we realized that they are soon to leave the school. However, we did not want this project to end during their last year, but we want to keep informing our students with the news about the school life, just as well as we have a vibrant and active Facebook page which is followed by students, their parents, and the local community. This is the reason why we then transferred the majority of obligations to our third-year students, who are also more eager to participate in the project and keep the Instagram TV active and fresh for all others. This gives us hope that our idea will keep running for at least another year, after our project is finished, and hopefully for many years to come. Our challenge for the future is to keep the students interested in this format, at least for as long as Instagram TV is also active.



Our final results so far are mostly visible on our Instagram page, where we also posted a competition video which our students made along with several photos marking their travels and important dates for the school, together with some Instagram stories (which unfortunately don't stay for long on Instagram) with announcements and news in school. With this experience, we have seen in practice that a really important part is the communication between teachers as mentors and students as participants, and for this project, we also mainly used online communication, other than the one implemented in classrooms, as the majority of tasks was done in the field. At the final stage of the project students are now in possession of Instagram TV access and password, and with clear instructions, they are now working on new materials for news and stories they will publish in near future, before the end of the school year.

To summarize, we have seen the following skills being developed and learned within these activities:

**Croatian Language:** with practices in diction and in research writing, students are now able to use their storytelling skills in a more interesting way when presenting the results of their research.

**English:** as we often have foreign guests we also practiced English and used English classes for presentation and diction skills together with storytelling techniques and their implementation on air.

**ICT:** since students mainly did online research about different apps and programs, together with how Instagram TV works, we focused on research skills and learning tutorials mainly found online in order to see how we could implement the entire project within the imagine framework (recording, editing, broadcasting).

**Marketing:** students worked on basic marketing skills for their own program, especially online marketing on social media to learn how to express their message and show to a wider audience.



### 3. My place in a Code

This learning scenario was organized as an extra-curricular activity and gave students the opportunity to participate in different activities focused on developing their personal skills and potentials in the field of history, photography, ICT and foreign language. Furthermore, the implementation of this scenario focused on developing students' social competences, encouraged their creativity and enhanced team work and connection with their local and school community. The topic and activities plan of the scenario were based on students' choices and preferences and was developed and implemented through following stages:

Participants engaged in this scenario was a mixed group of 3<sup>rd</sup> and 4<sup>th</sup> year students of economy and agro touristic technicians. The first meeting was organized to get feedback from students, i.e. to define the activities plan and final outputs. All defined activities were connected to historical and touristic sightseeing of Municipality Erdut and included online research, field work, photography, graphic design, foreign language (English), mother tongue (Croatian) and QR Code design. The final output is an interactive touristic map of Municipality Erdut - 120x180 cm, set up in front of our school, visible to our school and local community, but tourists and guest as well.

Since Municipality Erdut includes four villages, students have been divided into four teams, according to the place where they live. The first task for each team was to do an online research about historical and touristic sights in their village and take notes of following data: oldness, historical facts, touristic features and possible legends about each sight. At this stage, the teacher's role is secondary. The mentor should just advise or link online resources to use in order to find proper and authentic information. The second stage in this scenario was field work. Each team has appointed time and meeting point in their village with the teacher mentor. Field work included the following tasks: take photos of selected sights, walk around and explore their local community, talk to people, friends, neighbours and find out more details and interesting facts about each sight, especially legends. Each team assigned a member to take notes, one to take photos and others were interviewing local people.

After students have collected all data, they were given time to prepare a presentation and include their most interesting findings. In school, each team presented their research results and had the opportunity to ask for and get feedback from others, comment and share their findings, point out the most interesting findings, choose the best photos and give their teacher mentor feedback on what they liked or disliked about their tasks so far, what were the obstacles encountered, etc. All students actively participated and willingly shared their findings with each other. The most interesting part for most of them was field work and interaction with their local community, while exploring legends. Municipality Erdut is opulent with legends and myths, which cannot be found in historical documents but spread by mouth over generations. After each team has chosen the best photos and text pieces, these were translated into English. At this stage, English teacher helped students to edit text, checked grammar and vocabulary.

The next step required ICT skills and was implemented with assistance of ICT teacher. Students were asked to create QR codes for their text pieces and print out the codes. To make sure the codes work properly, students tested them on their mobile phones. This task was implemented without any difficulties and students showed high ICT skills and knowledge.

The final stage was to graphically design and finalise the interactive touristic map of Municipality Erdut. Students designed the desired final version – they have chosen font and colours of text, arranged text and photo on the map. Final graphic design corrections and printing of the map has been done by an external graphic designer. As planned at the very beginning on the scenario, the finalized map was set up in front of our school to be visible to our school and local community, tourists and guests.

We summarise here the learning outcomes acknowledged by the teachers as clearly relating to the school curriculum.

**IT:** students know how to create and read QR codes; how to use new technology and mobile phone applications for educational purposes.

**Photography:** students are able to critically observe photography, take photos using different gadgets (digital camera, mobile phone), recognize the difference and importance of good focus and composition of a photo, use non-professional and simple to use Photoshop programmes.

**English:** students understand and use properly in context vocabulary connected to history, geography, art and ICT.

**History:** students can read historical texts with comprehension and interpret historical events from their local community; critically think about the importance of cultural and historical tourism.

**Geography:** students know how to read a map, how to create a simple map and locate significant historical heritage sights.





### III. Learning scenarios implemented by Jorge Augusto Correia School

The Secondary School is a public high school part of the Grouping of Schools Jorge Augusto Correia – Tavira. The learning scenarios implemented aimed the development of crosswise knowledge and skills and the involvement in challenging projects suited for students from different fields of study.

In what follows, we relate how we implemented the learning scenarios in the framework of the Connect your Learning project and their outcomes.





## 1. History is made with documents

This learning scenario arose from the 11<sup>th</sup> grade level students' interest on Local History and the expressed will to increase their knowledge on the History of Tavira. These are 16-17 year-old students, who attend 'Languages and Humanities' by choice and they want to pursue studies in the area of Social Sciences.

In fact, it was verified that although these students have already had History since elementary education, they had no idea on how 'History is made'. They had only read historiographical texts, without having ever analysed historical documents. Thus, this Learning Scenario was designed, proposing a challenge: to combine students' interest in Local History with the development of historical investigation skills and the analysis of historical sources.

The scenario was set off by leading the students to an online research of documents about Tavira's History, on the National Archive of Torre do Tombo's web site <https://digitarq.arquivos.pt/>. Then, sixteenth-century letters related to Tavira were selected by the students (Transcribing the handwriting of these 16<sup>th</sup> century letters is quite easy, each letter having a maximum of two pages). In this first step of the project the students downloaded the documents and transcribed them, working in groups of three. Each group selected the document on their favourite topic. The transcription of documents is a complex task, which requires time and technique, so the teacher's help was provided to overcome difficulties. Not all students involved themselves in the same way in the project. There were some whose resilience in solving problems proved to be better than others. Within each group there were about 13.6% of students (3 students out of 22) whose contribution to the success of the group's work fell shorter than the teacher had expected. Once the documents were transcribed, the native language teacher trained the students in the technique of writing journalistic articles (content of the Native Language curriculum in Secondary Education).

The next step of the scenario was the interpretation of the transcribed documents. At this stage, collaboration with the School Library was fundamental, since it was necessary to do additional research on printed books or online resources, on the context and meaning of some concepts and / or understanding of facts referred to in the historical documents. Afterwards, the students wrote articles for the bilingual Digital Magazine, so there was a translation work, under the supervision of the English Teacher.

With the articles ready and translated, it was necessary to design the Magazine, using a digital platform, [www.joomag.com](http://www.joomag.com). The graphic design of the magazine was students' responsibility under the supervision of an IT teacher. The graphic composition of the magazine and the photographic composition of the cover page were students' responsibility too. For this purpose, tasks were set according to the skills and interests shown by each work group.

Not all students showed the same involvement and commitment to the work, but in the evaluation procedure of the scenario it was verified that 90.9% of the students reported having enjoyed the project and only 2 students, 9.1%, didn't find it interesting.

<https://drive.google.com/file/d/17kLefp1Fu59mzt6RZQ7KbjVbMcJ3GjHl/view?usp=sharing>

Finally, the magazine was printed and distributed among the foreign local resident community <https://view.joomag.com/tavilla-tavilla-n%c2%ba-1-018/0394789001521538566?short>. These foreign residents are interested in having more information on local History, because it is not easily available in English.

### We can now conclude that this scenario allowed the development of different skills:

- Know Local History, relating it to General History;
- Understand how 'History is Made' and the importance of the historical documents in the process;
- Use the Journalistic Article technique for a specific situation;
- Understand the process of creating a magazine;
- Develop digital skills, including photography management and technique, graphic design and the use of software for digital projects;
- Improve the knowledge of a foreign language (English);
- Be accurate in identifying the information gathered in printed and digital documents retrieved from the Internet or in Historical Sources, using Rule number 2 of the bibliographic quotation.

A História faz-se com Documentos	History is made with Documents
<p>Este primeiro número de TAVILLA debruça-se sobre aspetos da História de Tavira nos séculos XV e XVI. Trata-se de uma edição preparada pelos alunos do Curso de Línguas e Humanidades, 11.º ano, turma C1, no âmbito da disciplina de História A, para o Programa Europeu Erasmus+, Projeto Connect Your Learning, em parceria com a Biblioteca ESJAC. Pretende ser um projeto com características diferentes, sobre História local, partindo sempre das fontes, ainda que sem perder as referências e respetiva integração na História Nacional.</p>	<p>This first number of the magazine TAVILLA looks at aspects of the History of Tavira in the 15th and 16th centuries. This is an edition prepared by the students of Languages and Humanities Course, attending the 11th grade, C1 class, under the subject of History, for the European Erasmus + Programme, Connect Your Learning project, in partnership with the ESJAC Library. It intends to be a project with different characteristics, on local history, always starting from the sources, and without losing the references and its integration in our National History.</p>
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<p><b>As Freiras Bernardas</b>  <b>8</b> A primeira e última casa feminina do Algarve  <b>10</b> A vida por detrás do Convento das Bernardas</p>	<p><b>The Nuns Bernardas</b>  <b>9</b> The first and the last nunnery of Algarve  <b>11</b> Life behind the walls of the Convent of the 'Bernardas'</p>
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<p><b>Começa a Pirataria</b>  <b>14</b> Os ataques piratas e o pânico das freiras  <b>16</b> Hospital de Tavira rejeita feridos</p>	<p><b>Piracy Begins</b>  <b>15</b> The Pirate raids and the Nuns Panic  <b>17</b> Hospital of Tavira rejects injured people</p>
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<p><b>CARTAS DE PRIVILÉGIO</b>  <b>26</b> Privilegios aos vizinhos de Tavira  <b>28</b> El-Rei distingue Rui Martins</p>	<p><b>PRIVILEGE LETTERS</b>  <b>27</b> Privileges for the residents of Tavira  <b>29</b> The King Honours Rui Martins</p>
<p><b>Sobre o título desta revista</b>  TAVILLA - designação da cidade na carta de libertação de um preso em que não foi respeitada a imunidade da igreja, pelo rei D. Manuel I, em 29/4/1516  IANTT, PT/TT/CSSML/Mo2/000013, acessível em <a href="https://digitara.arquivos.pt/details?id=6083702">https://digitara.arquivos.pt/details?id=6083702</a> acedido em 15/3/2018</p>	<p><b>About the Title of this magazine</b>  TAVILLA - Name of the city Tavira in a letter of liberation of a prisoner in which the church's immunity was not respected by King Manuel I, on 29/04/1516  IANTT, PT/TT/CSSML/Mo2/000013, retrieved on March 3, 2018 from <a href="https://digitara.arquivos.pt/details?id=6083702">https://digitara.arquivos.pt/details?id=6083702</a></p>

## 2. In my mind I view the world

The learning scenario – In my mind I view the world – was voluntarily set as cross-curriculum for it mingles Philosophy, Psychology, English, Portuguese, Cinema, ..., topics. It addresses the challenge of trying to teach in a different way, having students play the main role.

We advocate that all curricula should have a blank area allowing teachers and students to fill it with a project chosen by them. Ideally that should happen with the contribution of other subjects, enabling unusual meeting point topics. As our educational system is highly focused on contents to be validated in national examinations, as the degree of abstraction expected from our youngsters is far beyond the real cognitive development of our students, then many feel demotivated. Therefore, we decided that the challenge of being part of the Project Connect Your Learning was a good opportunity to fulfil the idea.

‘What do students think about school and how they feel about it’ was the starting point which led to making of a film <https://youtu.be/JSQl50aAzdA>. With this task, students became familiar with different filming techniques and its grammar: dolly shot, handheld camera, stop motion, sound off, sound on, shooting angles (bird eye view, high angle, low angle, extreme low angle, ...), film script, cinema careers: producer, screenwriter, film editor, translator... It was cathartic and the film was shown at school for several times just because the students felt it meant a lot to all of them. The next step was to ask, ‘What would students like to study?’ and ‘How would they like to do it?’ <https://pt.scribd.com/document/383148200/Short-and-Strong-Sentences>.

We processed the data and the topic ‘How does the brain function?’ was the common core. Maybe because the students are familiar with the Ted Conferences, they chose that model of presentation. Fully autonomously, they chose the specific topics and their tasks: Who wants to be a speaker? Who will be shooting the film? Who will be translating and subtitling? Who will edit the film? What will the alignment of the presentations be? Where will the conferences be held? All these decisions were made by the students enabling self and hetero awareness and respect for different skills and talents. The conference presentation at the senior academy was also quite interesting for it brought together different generations [https://youtu.be/\\_aA008CxdGY](https://youtu.be/_aA008CxdGY).





Thus, we believe that:

- self-awareness and awareness of others;
- respecting yourself and others;
- willing to know more;
- developing reflective, critical and creative thinking;
- finding new solutions and applications;
- using and mastering different tools to do research work, describing, evaluating, validating and critically and autonomously mobilising information, verifying different documental sources and their credibility;
- transforming information into knowledge;
- collaborating with confidence and in an appropriate manner in different communicative contexts, using different analogical and digital tools;
- being able to think critically and autonomously, being creative, and developing collaborative and communicative skills;
- being aware of the importance of lifelong learning for personal development and social intervention;
- analysing and critically questioning reality, evaluating and selecting information, formulating hypothesis and making reasoned decisions in a daily basis;
- summoning scientific and humanistic knowledge, using different methodologies and tools to think critically;
- adjusting behaviour to cooperative, sharing and collaborative contexts;
- team working and using different means to communicate in presence or in networking;
- interacting with tolerance, empathy and responsibility;
- discussing, negotiating and accepting different points of view, developing new ways of being, watching and participating in society .

All of these skills were reasoned and practised with the implementation of this learning scenario. The goal was to empower free, autonomous, responsible and self-aware students who know themselves and the world in which they are living in.

The learning scenario – In my mind I view the world – was successfully implemented due to the time set for it and because it was run in an optional subject which has no compulsory final national examination.

A Google form with 6 questions was answered by 43 people who attended the students' presentations. The results of the survey prove that this learning scenario was well worth it.

<https://view.joomag.com/in-my-mind-i-see-the-worldscenario-evaluation-in-my-mind-i-see-the-world-google-forms/0975924001548090549>



### 3. Connecting your money

The “Connecting your money” learning scenario was a global project of our school included in the Flexible School Curriculum and set for 10<sup>th</sup> form students of Economics Classes. The students interest motivated the teacher to extend the study of the Euro currency topic. The Euro is the official currency for more than 341 million people who live in the Euro area, having EU over 600 million people. Euro market is one of the most promising markets in the world and the Euro currency is very important and powerful so making counterfeit money is a temptation for some.

Knowing the security elements of Euro notes and coins is important in Social Sciences, Economics classes and its curriculum, but also in the curriculum *lato sensu*. With this learning scenario, the students got an awareness of the increase of the European trade market and learnt to tell apart real currency from counterfeit currency and know the main security elements in coins and banknotes. This scenario was also designed to teach and learn when connecting students from different countries and different currency banknotes and coins. Clear instructions and helpful approaches were very useful and provided practical real-life examples.

The scenario presented a set of conditions to explore the subject and let the students freely do their own research, work on it and present their own research to the community. The learning scenario began by a teacher’s presentation on the steps the students should follow to reach the final products and presentations.

The students were then divided into groups of four and had meetings to discuss how to get organized, define the working strategy to produce digital products and figure out how to present and disseminate them. They did research work on online documents and went to banks and exchange houses to find out more. At school, the collaboration of our school library was very important to do group work, research on and offline and support from teachers involved in the project.

The first step was to do research work at official Portuguese and European sources so that the origin of Euro could be understood right from its beginning and the preparation for the start of a new currency circulating in a great geographic trade area. <http://www.euroid.pt>; <https://europa.eu>; <http://www.ecb.europa.eu>; <https://www.bportugal.pt/>.

The second step was to discover how the currency is physically transformed into money (coins and banknotes). The manufacturing procedures introduce in every stage different security elements by using specific kinds of magnetic materials for producing the coins, as well as some peculiar final formats.

In what concerns banknotes, the process was more complex due to the material used and the security elements introduced in a sequence of production stages. The students were helped by the teacher and researched the materials from the European Central Bank

<https://www.ecb.europa.eu/home/html/index.en.html>, which was very important to know real money from counterfeit money. Those materials included some video demonstrations about real money where the observation of visible and hidden elements require special equipment, such as magnets, microscopes and ultraviolet lamps. The students downloaded some official materials and studied learnt about those elements.

The next step was a lab class where students tried and tested what they had learnt from the research on true currency and the specific tools to check it. Only then did they start producing their own projects choosing the multimedia tools for the final projects and their presentations. The students made some short videos to illustrate how to handle true currency and find the security elements. They prepared the materials, recorded, edited and achieved the final versions of their videos. Those videos were a very important part of the final products and presentations.

**Once they had gathered all the materials:** photos, videos and texts, they introduced them into the final multimedia tools they had chosen, such as PowerPoint presentations <https://office.live.com/start/PowerPoint.aspx?ui=pt-BR>, interactive websites on Wix <https://pt.wix.com/>, Prezi website presentations <https://prezi.com/> and Emaze website presentation <https://www.emaze.com/>. The students chose different ways of presenting their research: videos in English and Portuguese or just in Portuguese or English with subtitles, websites, PowerPoints and quizzes, but most of the products were bilingual. These products and the use of IT had the supervision of their Economics teacher, but the writing both in Portuguese and English was reviewed by our school English teachers.

We then assigned to the public presentations of nine groups. The presentations took up ten days. The students were able to show their work to the community in an oral presentation supported by the video projection of their digital products and some live demonstrations with the appropriate tools we mentioned before. The presentations were made at the school auditorium and webcasted for other classes. This last part was not well succeeded because the slow and weak internet connection available.

Finally, to test the learning and understanding of their presentations and products, the students made some quizzes in both languages and played the learning games with the audience. This product was made with kahoot quiz tools <https://kahoot.com/>. The result shows us an enthusiastic participation and a successful knowledge acquisition. All the information is now online and can be accessed for free from all over the world.

### Final Outcome:

- A website: "Knowing your money safely"
- Short tutorial videos to show Euro note banks and coins
- KAHOOT quiz to test learning, connecting and playing it as a challenge

### Available at:

<https://youthart.eu/connect/learnig-the-security-elements-of-euro-banknotes-and-coins/>

### With this learning scenario it was possible to develop the following skills:

- Autonomy to do research, collect and organize data into information about banknotes and coins
- Know-how to operate software and hardware for web designing, filming with camera, editing video, working with online tools and apps
- Creativity to combine scientific work with IT tools
- Initiative and project leadership
- Team working with responsibility and sharing tasks
- Know-how to produce video, website and quizzes
- Know-how to publish online products
- Communicating in English
- Ability to do live presentations and interact with different audiences.

## A evolução das notas

O BCE e os bancos centrais nacionais do Eurosistema são responsáveis por assegurar a integridade das notas de euro. Por conseguinte, desenvolveram uma segunda série de notas com elementos de segurança melhorados, que garantem a segurança das notas e mantêm a confiança do público na moeda. As notas de 5, 10, 20 e 50 euros desta série começaram a circular em 2013, 2014, 2015 e 2017, respetivamente.



## Online tools and resources

Connected Learning Alliance

<https://clalliance.org/>

Connected Learning Research Network:

<https://clrn.dmlhub.net/>

Commonwealth Centre for Connected Learning

<https://connectedlearning.edu.mt/>

Teaching in the Connected Learning Classroom

<https://dmlhub.net/publications/teaching-connected-learning-classroom/>

Institute of Play

<https://www.instituteofplay.org/>

The Class: Living and Learning in the Digital Age

<http://connectedyouth.nyupress.org/book/9781479824243/>

Hanging Out, Messing Around, and Geeking Out  
Kids Living and Learning with New Media

<https://clalliance.org/publications/hanging-messing-around-geeking-kids-living-learning-new-media/>

Digital Media and Learning Research Hub

<https://dmlhub.net/>

Educator Innovator

<https://educatorinnovator.org/>

Reclaiming digital futures

<https://digitallearningpractices.org/>

A Toolkit for Connecting Youth to Future  
Opportunity

<https://brokering.hiveresearchlab.org/>

Affinity Online: How Connection and Shared  
Interest Fuel Learning

<https://clalliance.org/publications/affinity-online-how-connection-and-shared-interest-fuel-learning/>



