Study on Supporting School Innovation Across Europe
Case study 1 – Croatia

Adriatic Croatia

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Fieldwork was conducted between November 2016 and May 2017

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1. Introduction and context: what, where and why?

1.1. Understanding the selected region: key characteristics

The Adriatic region of Croatia (Jadranska Hrvatska) is one of the two NUTS-2 regions in Croatia (see Figure 1) which is described as less developed according to socioeconomic statistical data. In 2013, the Adriatic Croatia had a 74,751 Kuna (9,870 Euros) GDP per capita, which is 3.5% below the national average. In the same year, the GDP per capita for the Continental Croatia was 78,805 Kuna (10,405 euros), which is 1.7% above the national average. The population density is significantly lower in the Adriatic Croatia (57.78 persons per km$^2$) than in the rest of the country (92 persons per km$^2$). The region has 1.4 million inhabitants, which represent 32.16% of the total Croatian population. In total, 35% of all investments in Croatia in the last decade were invested in Adriatic Croatia.

![Figure 1. Statistical classification of NUTS-2 regions in Croatia](image)

According to the Croatian Employment Service$^2$, the unemployment rate in 2105 was 17.0%, compared to 15.9% in Continental Croatia$^3$. The City of Rijeka is the third biggest city in the country with 128,384 inhabitants (Census 2011). It has 24 public primary schools with 8,228 students and 822 teachers$^4$. City of Zadar has 41,471 inhabitants.

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(Census 2011) and is the main city of the Zadar County. It has 9 public and two private primary schools with the total of 6453 students and 501 teachers. The education system in the Republic of Croatia begins with kindergartens or preschool institutions. Primary (elementary) education is obligatory and lasts 8 years. After completing elementary education, students have the opportunity to continue their education in secondary schools, which is not mandatory. Secondary education institutions are, depending on the type of educational programme, divided into high schools, vocational and artistic secondary schools. At the end of secondary education, students are obliged to take state Matura exam, in particular if they are continuing their education on higher education level. The early school leaving rate in Croatia was 2.8% in 2015, which is significantly lower than the EU average of 11.0% in 2015. Croatia invests 4.7% of its annual GDP in education, just below the EU average of 4.8% for 2015. According to the annual state budget, 85-90% of the education budget is allocated to salaries for the employees within the education system. The remaining 10-15% of the budget is insufficient for any significant investment in education – ranging from infrastructural investments, teacher education and training, ensuring equal opportunities for all students, and investment in school equipment. Therefore, ESF funds in the field of human resources development have been programmed for investments in educational system – e.g. infrastructural investments, school refurbishment, equipping schools with modern ICT technologies and training teachers in the implementation of those technologies for teaching (project ‘iSchool’ - see section 2.1). Above all, teacher salaries are among the lowest in the EU and are below the annual per capita GDP which demotivates young people to enter educational system as the wishful place of employment. In that sense, it is often interpreted that a “negative selection” of teachers is taking place. That said, it can be concluded that the system and the teachers do not have a stable and long-term supportive framework for developing and implementing innovations in teaching. The majority of actions depend on school principals’ willingness to implement changes and to find financial resources for that. Moreover, the system is dependent on teachers’ enthusiasm and passion for their vocation and students when it comes to self-learning about innovative pedagogies. Therefore, innovative pedagogies identified during school visits might not always be linked to high technologies and well-equipped schools, but rather rely on basic well-proven postulates of school pedagogy, methods and didactics of teaching and learning, integrated in and coupled with modern problems of society (e.g. ecology, cultural identity). Croatian schools and the education system do not possess sufficient capacities to follow the developmental dynamics of innovations in Europe. Nevertheless, there is an intrinsic driving force which moves teachers forward to prepare students to master essential key competences. One of the main focuses and concerns of the Croatian teachers and the system is to keep the students within the system until they finish secondary education. That is one of the reasons for having the lowest ESL rate in Europe. On the other hand, according to PISA 2015 results, Croatian students perform below the OECD average in scientific literacy. Compared with the results from 2006, there has been a significant drop in the average achievement of students in scientific literacy. On

5 Ibid.
6 Ibid
8 Ibid
average, achievement of Croatian students deteriorates every 3 years by about 5 points. When it comes to the levels of knowledge and skills on a scale of scientific literacy, 24.7% of Croatian students did not reach Level 2, or do not possess the basic science knowledge and skills necessary for everyday life\textsuperscript{11}. In that sense, the GLOBE programme provides opportunity to teach in innovative ways which will increase students’ interest in science and STEM subjects in general as it will be demonstrated for school 2.

1.2. Getting to know the schools selected for the field study: brief profile

1.2.1. School 1 - The Primary School Vežice
The Primary school Vežice, in Rijeka\textsuperscript{12} was founded in 1914 and has enrolled 373 students in the school year 2016/2017. From the organisational aspect, the teaching is organised in one shift\textsuperscript{13}, which enables the organisation of extra-curricular activities for students after the regular school hours have finished (mainly in the afternoon). The professional staffs in the school consist of a pedagogue and a librarian. In April 2006, after fulfilling all required criteria, the school was among the first ones to be labelled ‘Eco-School’ in Croatia, and became a member of an international network of schools that have received the ‘green flag’.

The Eco-school status is a reward system at the local, national and international level. Schools that meet the predefined criteria and promote respect for the environment as a permanent value and way of life, receive a charter on the status of the International Eco-school and the Green flag with the Eco-school sign. This prestigious international award is awarded for two years which is followed by the renewal of the status. The school must prove that the implementation of the programme, according to the set guidelines went "one step further", and has deepened and expanded work on selected topics. The programme’s greatest achievement is the fact that it produces generation after generation of sustainably minded, environmentally conscious people. These individuals will carry the behavioural patterns they uptake under the auspices of Eco-Schools with them through life, in turn teaching the next generation the habits to make a difference\textsuperscript{14}. Projects developed in Eco-schools are focused solely on action because this results in embedding transformative and critical thinking into everyday life and communities, especially in the field of ecology and environment protection.

Further to that, in May 2007, and after the voluntary inclusion in the programmes ‘For a safe and encouraging environment in schools’ and ‘Seven steps to a safe school’, the school received the title ‘School without Violence’. In August 2007, after fulfilling the requested requirements of the Ministry of Science and Education, the school received a positive decision on the establishment of the elementary school for classical ballet and contemporary dance in the premises of the elementary school\textsuperscript{15}, and became the first primary dance school in the city. The dance school is organised in the afternoon, after the regular school finishes.

The school uses iPads for teaching purposes, and has organised itself as an iSchool\textsuperscript{16}. This makes it a unique school in Croatia, since the majority of schools do not have sufficient level of basic ICT equipment (e.g. computers, Wi-Fi in the whole school) to be

\textsuperscript{13} The majority of schools in Croatia are organised in two shifts – one group of students in the morning and the other in the afternoon.
\textsuperscript{15} Note: this was possible because the primary school operates in one shift, which allows the ballet school to operate in the second shift
\textsuperscript{16} The term “iSchool” is used to point out the fact that the school implements iPads in everyday teaching.
able to implement ICT technologies as teaching aids in regular teaching practice\(^\text{17}\). Since the school year 2013/2014, the school uses e-Diaries\(^\text{18}\) (e-Dnevnik) instead of standard paper-format diaries\(^\text{19}\) as one of the innovative governance models. e-Diary is a web application for managing classroom books in electronic form, which was introduced as a pilot project in three secondary schools at beginning of the 2011/12 school year. The application was developed by Croatian Academic and Research Network (Carnet). In addition to the existing functionality of the classical classroom books in paper form, the application has the added value through a system of reports that enable analysis for pedagogical monitoring and preparation of reports prepared for the sessions of teachers’ council or for the preparation of various reports on grades and absences. At the beginning of the school year 2012/13, three schools from the pilot project and 29 other schools started using e-Diary in all classes. Since the school year 2013/2014 there is an exhaustive list of schools using the e-Dnevnik application\(^\text{20}\). From an organisational point of view, the school principal implements apps for communication with the teachers and professional staff because they are in the possession of an iPad– e.g. Google Drive, Blackboard.

The school cooperates with schools from the Netherlands, Singapore, and the UK, and transfers good practices to other national schools interested in implementing tablets or other IT tools in teaching practice. It participates in national and international conferences related to IT in education, where it presents its practices and results. The European dimension of the school is also visible in the participation in the EU project ‘Open Discovery Space’\(^\text{21}\), which enables the development and exchange of digital learning materials.

The goals of the school are to\(^\text{22}\): convert the school into a safe home of their students; make education a joyful experience to students, their parents and teachers, and teaching a joyful activity to teachers; further open the door to parents and the local community; allow as many elective courses and extracurricular activities so that students can be allowed to have quality leisure time and enable them personal growth and development into the capable, happy, and successful people; provide training on contemporary and alternative teaching forms to as many teachers as possible; refurbishment of the school area with the aim of providing education of students and preparing them for the future.

1.2.2. School 2 - The Primary School Zadarski Otoci

The primary school Zadarski otoci, in Zadar\(^\text{23}\), is a public primary school with 776 students, out of which 29 students have developmental disabilities (as well as learning difficulties and/or mental disabilities); and 72 teachers out of which 9 have the status of mentor. There are 6 students in a ‘special classroom’ for students with learning difficulties and/or intellectual disability which is a separate classroom for each school day throughout the whole school year. The school has one pedagogue, one psychologist, librarian and a special education teacher. There are also 9 assistants in the classrooms\(^\text{24}\).

\(^{17}\) Within the currently ongoing ESF funded project “e-Schools”, a research about the level of digital maturity of 151 schools involved in the project was conducted. The results showed that 27 schools are “digital beginners” whereas 124 schools are “digitally qualified”, [https://www.carnet.hr/e-presso/e-skole?news_id=4219](https://www.carnet.hr/e-presso/e-skole?news_id=4219). Accessed 25.01.2017.


\(^{19}\) The implementation of e-Diaries is still an ongoing process among primary and secondary schools in Croatia. The project started in 2011 when only three schools were involved in the project. In the school year 2013/2014 – 200 schools were involved; in 2014/2015 – 380 schools and in 2015/2016 – 554 schools out of 2130 primary and 742 secondary schools.


\(^{24}\) Their salaries are financed by means of the ESF project managed by the Ministry of Science and Education.
helping students with developmental disabilities and/or learning difficulties. The school was built in 2009 with the purpose of taking over the constantly rising number of students in the neighbouring primary school “Stanovi”. The project of building the new school was financially supported by the Ministry of Sea, Transport and Infrastructure in cooperation with the City of Zadar. The Ministry of Science and Education financed the purchase of equipment. However, due to the recession, there was a lack of financial resources to fully refurbish the school’s sports hall and the library. Nevertheless, the school and the librarian managed to provide sufficient books for the library based on donations. The school is designed for children and persons with physical disabilities. In 2009, the Association of Physically Disabled Persons Zadar County, signed with the school the “School Charter - a friend of people with disabilities”.

The teaching is organised in two shifts and the school implements e-Diaries since the 2014/2015 school year. The school is also the central school (in management and teaching aspect) for six smaller schools situated on six islands (branch-schools) in the vicinity of the city of Zadar: Veli Iž, Molat, Premuda, Silba, Ist and Olib (see Figure 2). In the school year 2015/2016, there is only one student in Premuda, 15 students in Veli Iž and 3 students on the island of Silba. Some of the teaching is organised remotely with the support of ICT technologies (teleconferencing) for students from the neighbouring islands who participate in online mode in the classes which are taught in the main school.

![City of Zadar and nearby islands of Veli Iž, Molat, Premuda, Silba, Ist and Olib](image)

Figure 2. City of Zadar and nearby islands of Veli Iž, Molat, Premuda, Silba, Ist and Olib

In terms of the organisational and managerial procedures, the school has several internal documents which regulate the organisational structures of the school (e.g. from the organisation of the library and the activities in the library to the communication towards parents). The school has a well-developed and implemented school curriculum which describes all extra-curricular activities in the school, including projects organised by

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26 The first shift (morning shift) starts at 8AM and the second shift (afternoon shift) starts at 2PM. The end of both shifts varies between 12AM – 1:45 PM, depending on the teaching schedule.
individual teachers (for more details, see section 2.2.1). The school participates in the GLOBE programme\textsuperscript{27}, which results in new teaching approaches of specific topics in geography, chemistry, biology, and physics, i.e. STEM subjects. The Global Learning and Observations to Benefit the Environment (GLOBE) Programme is an international science and education programme that provides students and the public worldwide with the opportunity to participate in data collection and the scientific process, and contribute meaningfully to human understanding of the Earth system and global environment. The mission is to promote the teaching and learning of science, enhance environmental literacy and stewardship, and promote scientific discovery\textsuperscript{28}.

The main goals of the school are to\textsuperscript{29}: train students for independent learning by implementing different approaches; develop students’ self-confidence, self-esteem and awareness of their own abilities; motivate and prepare students for further education and lifelong learning; develop skills for cooperation, tolerance and peaceful conflict resolution; develop a positive attitude towards healthy eating, physical activity and own health; develop a sense of Croatian identity; encourage love for tradition and the cultural heritage; develop creative skills in art, music and literary area; develop responsibility towards school property and school environment; encourage the full development of the European and global dimension of modern life; and to encourage cooperation and partnership with the local community.

2. Two perspectives on the school innovation process: what supports and what limits innovation?

2.1. The primary school Vežice

2.1.1. Presenting the innovative approaches practised in the school

The innovative pedagogy in the school describes the implementation of iPads for teaching purposes and creating an ‘iSchool’. The main goal of the so called ‘iSchool’ is to completely change the current way of teaching and begin a new era in the education of students by introducing new technologies. The use of tablets in the classroom will enable interactive learning accompanied by multimedia and the Internet. Moreover, digitalisation of teaching materials, production of videos and digital books (iBookAuthor) is fostered and thousands of free educational applications are available to teachers to use them in the classroom for learning through play. Students are able to be online 24/7 with their teachers and parents. Teaching materials and tasks are sent via e-mail, e-reading is supported, tests of knowledge are conducted online, which leads to acquisition of digital competences. The collaborative relationship between students and teachers will mean a higher level of activity in teaching. Students acquire the knowledge by themselves, whereas the teacher has the role of mentor – he/she leads and guides the students. Such an attitude implies higher engagement of students for the preparation of teaching classes, more research in teaching and more group work.

The iPads were introduced into the teaching upon the head teachers’ and teachers’ decision in the school year 2012/2013, based on the finances available at the time (the school owned one flat which was sold, which led the headmaster to initiate the purchase of iPads). The first set of iPads was bought for all teachers and for students of the 8\textsuperscript{th} grade which were the students with the lowest success and achievement rates in the school. Later on, five additional iPads were bought for teachers of the lower grade classes (1\textsuperscript{st}-4\textsuperscript{th} grade). The principle of using and sharing the iPads in the lower grade classes is

\footnote{28 Ibid.}

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the following: five iPads are shared within one class during one teaching day and afterwards they are given to another parallel class for another teaching day. This means that iPads are shared in a circle among the classes and teachers on a pre-defined schedule, managed by teachers themselves.

In order to implement the innovation in the classrooms, it was necessary to prepare teachers. According to the school principal, “since we aimed at changing the art and way of teaching, it was necessary to change the teachers’ consciousness, which we are still changing. Trainings were organised by Apple Croatia, offered for free and delivered on Saturdays in the total of 50 training hours.”

As explained by the geography teacher, “the main methodological characteristic of this practice, in the pedagogical sense of using iPads in the school, is the application of so-called “flipped learning”. Flipped learning is about inquiry-based learning”. It demands more preparation from the teacher side, in particular in the aspect of the approach of framing the right questions which lead to the acquisition of higher levels of understanding and knowledge. By definition, flipped learning is a pedagogical approach in which direct instructions move from the group learning space to the individual learning space. The resulting group space is transformed into a dynamic, interactive learning environment where the educator guides students as they apply concepts and engage creatively in the subject matter. The reason to flip a class is not the technology used to distribute content. The reason to flip is to bring the more difficult, more important elements of learning into class time: application, collaboration, critique.

According to the school principal, “the innovative approach to school organisation reflects in the democratic-holistic managerial approach. This means that I communicate with the teachers via e-mails, thus making the information available to all during all times. In addition, regular weekly meetings are organised in the school. I value opinions and contributions from teachers and consider them also when opinions differ. Before I make decisions, I consult and ask teachers for their opinion. What is even more important is to accept virtues and flaws of each employee and use their potential in the best way”. The school principal practices open communication with teachers without many formal procedures which enables easier and faster problem solving. Weekly meetings are places for discussion and exchange of ideas. Open flow in communication fosters creativity of teachers because they are not afraid to share their opinions and ideas which are primarily valued by the school principal (as mentioned above), who is the main school authority.

In addition, the school uses the Edmodo application. The teacher of informatics provided detailed description on how the application is used: “Edmodo is web-based platform which provides a safe and easy way to connect and collaborate, share content (e.g. digital resources for students), send information on and access homework and different notices for students and their parents, create and share polls for students to vote online. The application is used with the purpose to better organise communication between teachers and students by creating a secure virtual classroom group and to enable it in times after the regular classes have finished. It is also used as means to teach and train students in digital literacy, and in “how to behave on the internet and

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30 For example questions from higher levels of Bloom Taxonomy: Analysis - What conclusions can you draw (...)?; How would you classify (...)?; Synthesis - What way would you design (...)?; Can you formulate a theory for (...)?; Evaluation - What would you select (...)?; What information would you use to support the view...?; Based on what you know, how would you explain...?; examples from “Bloom’s Taxonomy Questions”, www.bloomtaxonomy.org/Blooms%20Taxonomy%20questions.pdf. Accessed 18.01.2017.


within internet communication” (e.g. internet security). Parents are also allowed to use Edmodo for communication with teachers. What differentiates Edmodo from some other similar tools is the fact that anonymous posting is not possible, and that private messages between students are not possible because students can only communicate with the teacher or the whole class”. This kind of virtual communication has demonstrated to be highly welcomed by both the students and teachers. Students, who are usually shy and less active during the school classes, open up more easily in a virtual world. This positive aspect is appreciated by teachers because they can indirectly motivate students to do more, to participate more actively, share their views and ideas which they do not feel comfortable sharing in the classroom and even achieve better results.

Another interesting activity which developed within the school as a result of the use of iPads, is the implementation of robotics as an extra-curricular activity organised by the teacher of informatics. As the teacher describes “the lessons are well visited and there is a growing demand from students. In 2015, the school applied for the participation in the Croatian Makers project organised by the Institute for the Development and Youth Innovation, as part of which the school was donated five educational sets of the mBot robot. All schools participating in the project also participate in the competitions on robotics organised by the Institute for the Development and Youth Innovation. As the result, the students of the Vežice School already won the 1st single place and the 3rd team-based place in 2015. The students also create robots by themselves, which means that they are learning electronics in the primary school – e.g. a car with remote control managed from an iPad”.

The precondition to have the possibility to use iPads and online tools in the classroom was the instalment of Wi-Fi in all classrooms in 2008, which is still a rare practice in Croatia. Mainly the managerial offices (i.e. school principal, pedagogue, accounting, etc.) are equipped with Wi-Fi, whereas the classrooms have access to internet to a lesser extent. The intention is to change that situation at the system level, i.e. in all schools, by implementing the ESF-funded project focused on the development of e-schools34.

2.1.2. Main enablers for innovations

The main supportive factor was the willingness and openness of teachers to new teaching methods, since there was awareness that students are in contact with computers, tablets, etc. on a daily basis.

The second important factor was the motivation, and the decision of the school principal to use iPads in their teaching practice. The decision was based on the fact that the school had financial resources available. As the school principal pointed out, “the existing legal framework does not limit or hinder in the legal sense the use of ICT technologies in the school. By the legal interpretation, they are considered as teaching tools and teaching aids, and in that sense the legal framework is supportive”. However, the teaching practice in schools shows that only a minority of schools implement ICT in classroom. That is due to the lack of financial resources, but also because teachers are not trained on how to implement ICT in the classroom (other than standard Power Point presentations), and therefore demonstrate resistance.

In the Croatian education system, decisions on teaching practices are made at the national, school and individual teacher level. At the national level, the Ministry of Science and Education prescribes the National Curriculum Framework35,36. It sets the values, principles, goals and objectives of general education; the conception of teaching and learning; teaching approaches; learning objectives for each educational area and school subject defined by learning outcomes or competencies, as well as evaluation and assessment of teaching practice and learning objectives. In terms of teaching

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35 http://public.mzos.hr/fgs.axd?id=17504
36 For Pre-school Education and General Compulsory and Secondary Education
approaches. The National Curriculum Framework presumes a high level of professional competence of teachers and their ability and flexibility to effectively utilise a range of methods and teaching aids and successfully organise education and teaching. This high level of freedom in teaching is a supportive factor on system level. In the case of school 1, the flexibility in the choice of teaching methods and tools was respected and even supported with the inclusion of iPads in everyday teaching practice.

Creative spaces and classrooms equipped with pictures illustrate the school’s creative working environment (see pictures 1-5). Moreover, since the school does not have sufficient space for the assembly room for teachers, it has created a kind of a “living room” (see pictures 6-7) where teachers meet and discuss everyday issues relevant for their work. Teacher team meetings are organised in the school as one of the ways for transferring knowledge and experience between them.

In organisational terms, what motivated both students and teachers for investigating the different possibilities provided by the use of iPads is the so-called organisation of “Project days”. As the school librarian explained “for each Project day, one topic is chosen (e.g. food; lavender) and prepared by teachers of different subjects from different subject-related aspects, with a focus on the learning content prescribed by the curricula. Students are offered workshops during which the learning content is mastered, either with iPads or practical exercises”.

Other supportive elements include invitations to the school principal and the teacher of informatics to participate in conferences and to present the school’s good practices, which is in a way reflecting the acknowledgment of the school’s good work.

Since the iPads are used for teaching from the 5th to the 8th grade so that each student has his/hers own iPad (1 on 1 approach), the lower classes are equipped with the so-called iLab. The iLab represents a set of 5 iPads which are used during only two teaching hours per week per teacher in lower classes (1st-4th grade). Despite the fact that the teachers can use iPads for a limited number of hours only, they do not see that as a constraint but rather as a motivational factor because “we are given the opportunity to experiment by ourselves and to teach with the support of iPads, which is a novelty in Croatian education system” (teachers of lower classes during the focus group discussion).

2.1.3. Main barriers for innovations

From the start of the iSchool development, and since the school was not able to provide iPads for all students, parents were asked to provide iPads for their children. As the school principal and teacher of informatics explained: “although the majority of parents, during the last five years were supportive to investing in iPads, parents of students of the 5th and 6th grade did not approve that idea (in the previous school year and the current one). Parents complained about the fact that technology “destroys” children, their sitting and reading habits and other health-related issues. The opponents were strong and their arguments prevailed, compared to parents who supported implementation of iPads. The problem was that all students needed to have iPads in order for teaching to be organised and delivered in the same way for all. For that reason and for informing the parents in general about the possibilities and effects of the use of ICT technologies in teaching, the school started organising workshops for parents on “internet security; benefits of implementing iPads for teaching and learning; how parents can control students’ learning and their achievements via iPads”. The results are still to come. In this case, parents’ lack of information on the efficiency of teaching methods resulted in repulsion.

Another obstacle is the fact that the financial autonomy was transferred from schools back to cities because cities manage the schools’ budget; whereas before, schools were allocated own budget which they were able to spend as needed. This means that schools cannot decide on their own how they will spend their budget, but have to consult and ask the cities to finance their needs, if financial resources are available.

In terms of organisational aspects, the strictly prescribed duration of one teaching hour of 45 minutes and the teaching schedule which regulates that one subject is taught after the other, does not provide the possibilities and opportunities for arranging so called
“block teaching hours”, i.e. two teaching hours of one subject. This creates a barrier since teachers are not given sufficient time for planning and delivering project-based and experiential learning, which are time-demanding.

On the contrary to motivated and enthusiastic teachers, it was pointed out by the interviewees of the focus group that “at the beginning of the iSchool project, there was a lot of fear and scepticism among teachers because they had no idea what will happen and what the results will be. Although the majority of teachers accepted iPads, there are still some which show fear and inability to change, personally as much as professionally”.

2.1.4. Main achievements
At the beginning of the iSchool project, there were no digital textbooks available, but the situation has now evolved. The school motivated publishers to develop digital versions of the textbooks as an option for parents, students and teachers. The publishers made it easier for the iSchool to teach with iPads because the students had their literature handy on the tablet, and therefore the weight of the school bags was diminished. In addition, digital books are free for socioeconomically disadvantaged students (at the national level).

The effects of using iPads at school were investigated and evaluated in cooperation with the Faculty of Philosophy of Rijeka. As stated by the school principal, “the results demonstrated that students were better motivated for learning, and slightly improved their school achievements. Students were more cooperative in building the teacher-student relationship, and teachers were more open to students in the sense of acknowledging their potentially better knowledge on ICT technologies, which resulted in students being praised for skills they have acquired in their leisure time.”

Based on the teachers’ statements from the focus group, “the implementation of Edmodo offered space for students who are more anxious and “closed” to open up in an unconventional way, in a virtual community. In addition, the application provided evidence that students are better in visual than in verbal communication. Moreover, the students who get “stuck” in their homework or while learning at home are given the opportunity to discuss the issues in question with the teacher”.

Students participating in the robotics classes are highly motivated for learning because they can see the concrete result of their work and learning process. Even more, according to the informatics teacher, “they would like to have robotics subject every day. Therefore, instead of planned two teaching hours per week we now have four or five hours”. She also added that “the new robot toys where assembled from old computer parts which proved to be excellent because students learn computer hardware equipment in the best possible way, taking them apart from old mobile phones, old toys, and also buying some parts on eBay. Students work as a team and do not need extra motivation for the task. They themselves bring some parts of old computers and electronics from home so that my classroom is filled with different parts (...) and with those parts that I have ordered on eBay, I will show them how they can do anything they have imagined, even drones!”. Through her interest in the subject, the teacher transferred her motivation and enthusiasm to the students. This was an example of teacher willing to learn and develop in her own field of expertise and beyond that field, which was essential if she wanted to create something new with the students.

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37 The results were not published, they were for internal use
38 The improvements were measured in two ways: a) by means of questionnaires in which students were asked to anonymously answer the questions based on what their opinion was and b) by teachers comparing the grades awarded to students before the implementation of iPads and afterwards
39 Since robotics is an elective activity, it can be attended by any student, but usually the selection is done by students themselves when they decide whether they would like to participate in robotics or not. The number of students varies between 12-18 students.
The geography teacher stated that “students had higher level of motivation not only because they used iPads, but also because they were able to use iPads for learning outside the classroom, i.e. in the nature (see pictures 1-8) in the real life surrounding”. The teacher using the iLab said that “the use of iPads enabled better communication between the students in particular because the students with lower grades openly cooperated with better students, which resulted in a peer-learning process that happened spontaneously. It also contributed to making visible what each student created, including those considered to be introverts.”

2.1.5. Sustainability of innovative practices

The use of iPads and Edmodo have been sustainable for several years now because they are, first of all, used by all teachers in the school, by students and are supported (and used) by parents as well. They became part of the regular school life and teaching practice. Moreover, the sustainability of this practice is also reflected in the continuous participation of teachers in national and international conferences related to IT in teaching and learning practice, where the teachers actively participate in holding presentations and sharing good practices (e.g. International Conference on Excellence in Education and Psychology\textsuperscript{40}; BETT\textsuperscript{41} - The world’s leading education technology event; CUC Carnet\textsuperscript{42} - Croatian Academic Network User Conference; MIPRO - International ICT Convention\textsuperscript{43}).

The interviewees pointed out the fact that the school principal is a leader, motivates for change and is following the trends and developments in the educational arena by participating in national and international conferences, reading professional literature, etc. In that sense, the sustainability of the practice can be observed in adding new aspects and dimensions to the existing practice with the aim of making it more innovative and more appealing to both the students and teachers. Since the position of the school principal is an elected position for a duration of 4 years, with possible re-elections, there is a risk that the implementation of innovative practices is dependent on the lifecycle of the school principal who introduced and implemented innovative practices.

2.1.6. Monitoring, evaluation, learning loops and planning of innovative approaches

In the Croatian education system, evaluations are rarely conducted, because the system itself is not constructed in a way that it would support or require monitoring and evaluation as part of the learning process. This is also concluded in the Education, Science and Technology Strategy\textsuperscript{45} which states that: "In Croatia there is a lack of clearly structured and coherent system for quality assurance in education". The Strategy foresees the “development and implementation of a comprehensive evaluation system, assessing and reporting on the level of acquisition of learning outcomes” on primary and secondary school level, which would include the development of a system on tracking, evaluation, appraisal and reporting on student achievements.

Currently, the National Centre for External Evaluation of Education performs assessments of students’ achievements in a form of national exams. National exams are conducted in first and secondary class of lower secondary education in Croatian language, mathematics and foreign language. Alongside the State Matura, which is conducted at the end of secondary education, and the national examinations, which are a form of

\textsuperscript{44} Detailed information was provided by the informatics teacher.
external evaluation of primary and secondary education in terms of students’ achievements, there is intention stated in the national documents that also other forms of evaluation will be implemented as well: experimental programmes\(^{46}\), monitoring and evaluation of new contents\(^{18}\), monitoring and evaluation of textbooks and other teaching aids\(^{47}\), monitoring and evaluation of educational technologies used in teaching, methods of teaching and assessment and the evaluation of educational methods in pre-school institutions, primary and secondary schools (public and private). However, those systems are not yet put in place.

However, the Vežice School was open to investigating whether there were tangible effects of using iPads in the teaching practice. In cooperation with the Faculty of Philosophy, Rijeka, the students of the Department of Pedagogy conducted the evaluation of the iSchool project as practical part of the subject “Evaluation Research”. The aim of the evaluation was to establish whether any changes happened to teachers and students by introducing tablets into teaching. The research was conducted during the entire summer semester 2012/2013 and included six teams of students, of which the two teams conducted research among teachers who use tablets in teaching (14 teachers), two teams conducted research among students (14 students), one team among parents (17 parents), and one with the project team (4 members of the project team). Key research findings\(^{48}\) are presented in Annex III in more detail. According to the school principal, “the research findings were presented to parents with the aim of demonstrating the benefits of using iPads for teaching and learning. Moreover, the results were presented on regional and national teacher conferences, but unfortunately the Ministry of Education did not demonstrate significant interest in the research results. On the school level, the research results provided evidence for what we have already sensed and have seen happen in the classroom.”

### 2.1.7. Stakeholders’ engagement

According to the school principal “one of the ministers responsible for education (2014-2016), who was the minister when the innovation was first implemented in the school, supported the action because he was a professor at the Faculty of Electrical Engineering and Computing and therefore was aware of the benefits of ICT technologies for teaching and learning. However, his support was primary declarative and only minor financial resources were attributed to the school (e.g. to visit conferences) in the name of the iSchool project”.

The local community (other schools in the city and wider surroundings, the city’s management structure, sports organisations, music schools, etc.) did not support the iSchool project in the beginning, neither via financial or professional support. Only after the innovation was implemented for a few school years, did the wider community of other schools show interest in the results and changes that happened in the school. The interviewees did not mention private sector as one of the supporters.

As already mentioned before, there was a good cooperation with the Faculty of Philosophy. However, the support from national institutions, such as the Ministry for Education and the Teacher Training Agency is rather weak and insufficient. According to the school principal, “the process on the system level is too slow. On the declarative level, everybody wants a change, but when it comes to the implementation, everybody is gone and stuck to the traditional ways and procedures.” It is also relevant to mention that according to him, “the parents want to have control over the learning process of their children. If teaching and learning is done in a creative way, the parents have the feeling that they cannot have that much control compared to the traditional way of learning.”

\(^{46}\) Currently performed by the National Centre for External Evaluation of Education

\(^{47}\) Currently performed by the Ministry of Science and Education

\(^{48}\) Research findings were shared by the school since they were not publicised.
2.1.8. Mainstreaming and transferring innovations

The idea for the innovation originated from the cooperation with schools within the EU which already use iPads in their teaching practice. The schools were the Apple Lighthouse School in the UK, which also utilises iPads in the classes, and the Steve Jobs School from the Netherlands, with which the Vežice School still cooperates and exchanges ideas online through collaboration web tools, such as Google Drive, BlackBoard, Google Hangouts. According to the informatics teacher “we were lucky enough to have had financial resources from the sale of the school’s apartment and have travelled to UK to visit the Apple school and learn from them. They demonstrated to us how they implement iPads and have let us observed the classes and teaching practice with iPads. They also shared their experience (short workshops) on how the iPads are used for school organisational purposes.” The teacher further explained that it was possible to transfer and implement just a part of their practices because they were better equipped with more iPads (compared to school’s creative solution of “iLab”) and their teachers were better trained in implementation of ICT in the classroom. In addition, the Steve Jobs School sent some used iPad cases to the Vežice School.

Transferring experience is achieved by participating in different conferences (described in more detail in previous sections). In addition to that, the concept of the iLab was transferred to two other primary schools in the towns of Gospić and Pula, based on their own interest and request. According to the informatics teacher, “there was a high level of motivation among some of the teachers, but still there was a certain level of resistance among teachers who did not see significant benefits of the iLab. Therefore, we used “demonstration” of our own practice as the best tool to convince them about the students’ positive reaction and higher level of active participation in the classroom’s activities.” Success was achieved when parents decided to buy iPads for their children so that the teaching can be done with one iPad for one student. The change of experience was achieved by means of school visits of other schools to Vežice, by observing teaching lessons and learning the tools used in the classroom. Further experience and good practice exchange happens on regular basis during school principals’ yearly conferences and trainings organised by the Teacher Education Agency, and at teacher continuous professional development (CPD) activities organised by the same Agency where opportunities for presenting best practice cases are made possible. During the focus group discussions, it was recognised that the factors on the system-level that would help bring the school’s innovation into the mainstream practices in the country would be: higher financial resources; commitment to provide operational support (e.g. cover transport costs for teacher trainings in other cities); committed strategy on the national level, or at least regional level to implement ICT for teaching; to prepare teachers for “modern” changes; to educate higher education students (future teachers) on how to use ICT in the classroom as well as theoretical backgrounds of pedagogy linked to ICT; to educate parents and lower barriers to acceptance of investments in ICT.

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49 Cooperation through EU projects and participation in conferences.
51 A Steve Jobs School offers a student a rich learning environment with the most modern educational methods, where the students not only learn all the compulsory primary school matter (i.e. what is prescribed by the curricula), but where they are stimulated in a unique way, to discover their own talents and to develop skills that are of vital importance for the world of tomorrow. In addition, the classrooms are not only equipped with technological support, but also have colourful visuals that support learning through game, which was also observed in Vežice School (see pictures 1-5).
2.2. The primary school Zadarski otoci

2.2.1. Presenting the innovative approaches practised in the school

The School “Zadarski otoci” (Zadar islands) is innovative in several aspects in terms of the innovative pedagogies and innovative organisational approaches. Two main factors influenced introduction of innovative pedagogies: a new school building and a significant number of students with learning and/or mental disabilities, which will be elaborated further with concrete examples. According to the school principal, “the main focus of integrating innovations was the aim to integrate students into the local community, to make them pro-active by bringing local community’s activities closer to students, and to build synergies between the school curriculum, teaching plan and programme and local community’s actions.”

In the context of its innovative organisational approaches, the school has developed internal school documents\(^{52}\) which regulate the organisation and the work ethics of the school. For example, these documents\(^{53}\) regulate the working conditions and working ethics; functioning of the library; rules of the procedure of the school board; and rules of the procedure of the teacher board. As stated by the school principal, “the regulation of work ethics is a novelty in Croatian practice. For us, it was important to write it down for transparency reasons towards parents and wider community.”

In terms of the national evaluation programmes on students’ achievements, the school has participated in the experimental external evaluation of students’ achievements in primary schools (2007)\(^{54}\) conducted by National Centre for External Evaluation of Education. However, since 2008, no further external evaluations were performed and therefore conclusions on school’s performance cannot be made. Similar to that, self-evaluation of primary schools in Croatia was conducted from 2009-2012, but since it wasn’t an obligatory practice, both the results and effects of the self-evaluation were not shared with the public.

Based on the school visit, the school proves to be oriented towards project-based teaching and learning by doing, i.e. inquiry-based learning starting from the 1\(^{st}\) grade to higher grades, where involvements in national and international projects are a common thing. The school is focused on the quality of students’ achievements and learning process by developing students’ independence for the results of the learning process. Professional independence and accountability is required from the teachers. Significant attention is given to projects and activities that foster local and wider community support for effective and quality education in the school (see section 2.2.7).

Distance teaching

The school also incorporates distance teaching (see picture 15) via means of ICT technologies (video conferencing), because the school manages and is responsible for 6 small schools on the nearby islands. As elaborated by the biology teacher, “distance teaching lessons are organised for subjects, in particular chemistry, biology, and physics, for which there are no teachers on the islands which could provide students with sufficient level of knowledge in specific topics. In addition, schools on islands are not equipped with laboratories and therefore experiments can only be seen via distance

\(^{52}\) In addition to the official programme of instruction, one of the important public documents is the school curriculum, which includes features which influence the creation of school's image, such as the quality of relationships, concerns about equality, the school performance evaluation by means of self-assessment\(^{52}\), and the ways in which the school is organised and managed. Instructional and teaching styles strongly influence the curriculum and in practice cannot be separated from it. In that sense the school curriculum defines that the focus of the educational process is not in the content but in the goal itself, and in the result of the educational process.


teaching”. The distance teaching was enabled by the project e-Otoci (e-Islands), promoted and supported by Carnet (Croatian Academic and Research Network) since 2013. Videoconferencing is also used for the communication between teachers of the main school and the schools on islands. It enables participation at school meetings and discussions, in particular if decisions concerning schools on islands have to be made.

**Focus on movement and kinaesthetic**

It is interesting to notice based on the interviews with teachers that the school is implementing innovative pedagogies which support movement in teaching and learning practice. Although this was not explicitly said by teachers, it was evident from their descriptions that they value kinaesthetic. That is an important factor in the learning process, according to the BrainGym concept and scientific research which finds supportive evidence for the positive correlations between physical activity, learning and achievement. The same experience was achieved in the school and is described further below.

The architectural construction of the school provided each of the classrooms on the ground floor with doors through which students can exit directly to the open space area (see picture 16). This open area is used by teachers for conducting short physical activities and exercises during the teaching hours (kinaesthetic and learning). The German language teacher organises classes without sitting (for both students and teachers), but rather focusing on movement. It is an approach supported by the school principal and the school council to a high extent. The innovation hidden behind the approach is to keep the students active all the time by being in the movement, by walking. According to the description of the school librarian, “the teacher creates different assignments at different spots in the classroom and as students move around from one spot to another, they discuss the topics, learn vocabulary, create communication scenarios, etc. This pedagogical approach is in line with the scientific findings of the brain science which claim that the brain learns better and creates stronger neural connections when a kinaesthetic dimension is included in the learning process. The visual stimulus is provided on the spots throughout the classroom and the verbal stimulus is formed during conversation”.

The school also offers different sport activities to its students (football, basketball, fitness, table tennis, volleyball, etc.). Students with learning and other mental disabilities also benefited from taekwondo lessons. According to the school principal, “what happened to the positive surprise of all is that those students have prospered not only in their motor skills, but have also improved their learning abilities and have achieved better results in the school. Although we have not performed any deep research on reasons behind that, we have continued with the practice because it showed to have good results.”

**STEM and project based learning**

The school is focused on the implementation of science, technology, engineering, and mathematics (STEM) interdisciplinary approaches in regular lessons. Since 2009, the

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56 This project has enabled the delivery of e-learning content to schools on Croatian islands, as well as the possibility of instruction in the home and in the schools to the students on the islands to enable them to have access to the same knowledge regardless of where they live. Indirectly, the objective was to enable the island population to remain permanently on the islands and, ultimately, contribute to the revitalisation of the islands. The project connected mainly regional primary schools with the main schools by means of wireless data connections that allow remote teaching via videoconferencing, exchange and access to learning materials, and have led to the reduced need for frequent travels.
school participates in the GLOBE project (see above), which organises regular and ongoing students’ measurements and observations of natural phenomena in the school environment and in the nature\(^{59}\). A team of scientists from the Faculty of Natural Sciences (Universities of Rijeka and Zagreb) are engaged in cooperation within the GLOBE programme in order to share their experience with students, to transfer the knowledge and to provide support to students in matters which they do not seem to have capacities to solve. According to the school principal, “those scientists have expressed great interest in the students’ measurements and observations, expecting to contribute to a better and more complete understanding of ecological relationships and changes in the global environment. The school has installed a meteorological station which enables the online presentation of meteorological data in real time on the portal Pljusak\(^{60}\). The data is publicly available and can also be used by other schools for teaching and research activities”.

**Students with disabilities**

According to the special education teacher, “the school has started using tablets only for teaching students with disabilities since 2014 and those in the special class with the aim of training them for a functional life. The project started two years ago, and was implemented based on the good results which were achieved by schools outside Croatia. The visual stimulus demonstrated to be an important element for those students because the level of attraction to the learning material, and consequently concentration was significantly higher”.

### 2.2.2. Main enablers for innovations

On the system level, the supporting factor was the fact that the new school building was built in times when infrastructural investments were on a very low level. The new building per se was a motivating factor for teachers to perform better. Another supportive factor were the in-service teacher trainings organised by Teacher Training Agency which shared the information about BrainGym. Nevertheless, the practical implementation was integrated based on teachers’ own motivation and further investigation and self-learning.

Similar to the Vežice School, understanding, support and openness of the school principal to new teaching approaches, organisational solutions, and new projects was important in order for many of the described practices to be implemented. Similarly, teachers’ enthusiasm and willingness to invest time and their own financial resources for the benefits of children was crucial. In that sense, teachers’ motivation and the respect to teacher calling are significantly important stimulators for any change and activity to happen.

One of the important supporting factors is the excellent cooperation with parents and with organisations and institutions from the community. Parents were involved in projects which fostered reading skills and reading as a culture, as a good habit – e.g. “Bag full of books” in which both parents and students were obliged to read and discuss the content of the books read at home; or “10 days without the screen” – both parents and students did not use any ICT devices for purposes other than learning and work and the main focus was on them spending more time together. The projects promoted values that were embedded in the everyday school practice, and were supported by parents. As described in section 2.2.8., organisations and institutions from the community are significant supporters because they become partners when certain themes are taught. This makes students more interested in teaching topics, develops sense of cooperation and community belonging, and enables them to connect the teaching content with the real life.

\(^{59}\) The collected results are inserted into a common database on the GLOBE server which is accessible online: http://www.globe.gov. Accessed 20.12.2016.

Interviewed teachers and the professional staff stressed that there is a significant capacity of the school staff in the professional sense since they act as supportive measures by providing opportunities for collaboration, discussion, exchange of experience and development of interdisciplinary projects.

2.2.3. Main barriers for innovations

According to the school principal, “although the school has been built five years ago, during construction time there was a lack of consultations with the school and its employees. This resulted in a building which has obstacles related to the level of usefulness of the school space. Due to the fact that the school has a growing number of students (it is positioned in a new part of the city), there is a problem of insufficient number of classes which then imposes a significant effort in planning a teaching schedule and allocating regular classes in two shifts combined with extra-curricular activities. Therefore, the school is limited by the space, although it is a new school and although it has good intentions to offer its students many extra-curricular activities”. In addition to that, according to the biology teacher “some school subjects, such as biology, do not have their own class, which means that teaching aids and teaching tools for these subjects cannot be kept outside the cupboards, in the classroom and cannot be offered to students for exploration outside the time when the class is scheduled.”

The school pedagogue elaborated further that “in terms of human resources, the school is hindered by the fact that 14 teachers (out of 66) teach in more than one school because they cannot gather/collaborate the number of teaching hours required by the law by teaching only in one school, therefore they have to work in at least two different schools in order to collect the prescribed number of teaching hours (this mainly refers to teachers of individual school subjects). For that reason, teachers cannot fully devote their time just to one school and therefore cannot participate in all school’s projects and activities. Moreover, the teaching schedule has to be adapted to them so that they can deliver their teaching hours in other schools too. Since the school operates in two shifts, teachers from both shifts cannot meet often and therefore their cooperation potential is kept on a low level. Despite e-mails and other forms of communication, direct communication and opportunities for group discussions are considered more efficient in terms of building trust and the sense of belonging”.

Another identified obstacle has a motivational and value-based character. According to the school principal, the school has “excellent, very creative and innovative teachers”. However, the system does not recognise that, either via financial rewards, or at the system level. The school principal continues “although this represents a significant factor for demotivation, teachers still have a sufficient ideal to put students and their interest before them. Since the autonomy of the school was reduced, including in terms of financial resources, teachers invest their own money to buy the necessary items for their innovative teachings, which means that the available resources are very limited”.

The school professional staff\(^\text{61}\) pointed out the fact that the cumulative burden of administrative work and daily problems related to students is too high compared to their workload capacity. Consequently, they cannot devote sufficient time to the development and implementation of both the innovative organisational practices and pedagogies in the school. The school psychologist stated that “at least one more pedagogue and psychologist are needed for such a high number of students.”

Due to the fact that the school has a rather high number of students with learning and/or mental disabilities, there is a high demand for teaching materials adjusted to the needs of those students (see pictures 17-19). Since there is a significant lack of such teaching aids, the teachers are hindered in offering students additional learning content because they have to spend time on preparing special teaching materials for both the regular and prescribed content. On the other side, the tablets come handy because there are more opportunities to create a lesson on the spot and to trigger students’ interest.

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\(^{61}\) Pedagogue, psychologist, and librarian.
In organisational terms of implementing the teaching plans\textsuperscript{62}, teachers in the focus group stressed the fact that “the teaching plan and programme is too condensed and that there is insufficient time left for the implementation of practical learning. The teaching plan is focused on factual rather than on practical knowledge, which would be more motivating for students. In addition to that, the plan does not allow to continue teaching the topics in higher grades that were already addressed in lower grades”.

\subsection*{2.2.4. Main achievements}

According to the teachers in the focus group, one of the main achievements was to foster peer learning in two ways. Firstly, when participating in projects and team work, the best students supported and helped students with lower achievements which raised their self-confidence. The second pathway was achieved when students from higher grades were asked to demonstrate experiments (in chemistry, biology) to students from lower grades. This kind of peer-learning activity was well accepted by students because teaching was made more fun and students felt more open to discuss learning topics with their peers.

Since the school has students with learning disabilities, among which Attention deficit hyperactivity disorder (ADHD) and dyslexia are the most common, the school contributed to the development of audio-visual teaching aids (e.g. audio books) for those students. The school also organised the Reading club with the aim of developing reading habits among students by offering them digital and shorter versions of books. According to the school librarian, “the Book club motivated students for reading and for literature in general to the extent that another project, which focused on inviting prominent writers and actors to the school library, was very quickly established”. Although the school does not implement evaluation exercises of the innovations in the school, the teachers mentioned that one achievement could be described as “by implementing something innovative, something different, the teachers have the opportunity to develop themselves, both in the professional and private sense”.

\subsection*{2.2.5. Sustainability of innovative practices}

Whereas some of the projects implemented in the school are one-off actions (e.g. projects in cooperation with parents) because of the lack of financial resources and of human resources which would organise one-off actions’ further, there are sufficient other innovations which are fostered from one to another school year, e.g. tablets for students with learning and mental disabilities; teaching German language through movement; GLOBE project. According to teachers and professional staff interviewed, the sustainability is dependent on the results achieved, and mostly by observing and receiving feedback information from students on whether they were motivated by the action, whether there were any benefits for them and whether it interested them at all. The sustainability is visible in the goals set by the school (described in section 2.2.1). The school visit demonstrated that the projects, extra-curricular activities, teaching approaches and innovations lead and contribute to the achievement of those goals.

\subsection*{2.2.6. Monitoring, evaluation, learning loops and planning of innovative approaches}

According to teachers and professional staff interviewed, the monitoring and evaluation is mostly done by observing and receiving feedback information from students. The feedback is mainly provided in verbal form by means of free conversation and is not systematically collected. Since it is not a formal approach, there is no framework and there are no indicators that would guide structured feedback loops. Above all, there is a

\textsuperscript{62} Teaching plan is the equivalent to curricula. The term “curricula” is being introduced in Croatian education system since 2010 with the document “National Curricula Framework for pre-primary, primary and secondary education”, published by the Ministry of Science and Education. With the current curricula reform which started in 2015, the aim is to develop curricula for all subjects which will replace the existing teaching plans.
lack of common approach to evaluation and monitoring at the school level. The need for evaluation was acknowledged in school curriculum document (see section 2.2.1), but the pathway to realisation of such a need seems not to be defined yet. The learning loops are enabled among teachers and professional staff and are supported by the school principal since regular weekly teacher meetings are organised with the aim of discussing and analysing the school’s results. At the same time the meetings are used to develop new projects and to discuss the possibilities of implementing something innovative in the school.

2.2.7. Stakeholders’ engagement

The University in Zadar and its Faculties for Pedagogy and Philosophy are important stakeholders because their students participate in the “school practice room” activities described in section 2.2.2. Other stakeholders include local libraries, numerous different NGOs (e.g. Glagolitic language, Caritas, NGOs of Croatian war veterans, Alka63), museums, radio, theatre, etc. However, private sector was not mentioned by the interviewees as an important stakeholder engaged in supporting innovations in the school. According to a lower grade teacher interviewed, “the stakeholders are very motivated to support the school’s activities and are keen in experimenting with new approaches. They strive to include the wider community and therefore the innovative projects are often presented with the approach “bringing the school and its cooperation partners to the street, which means that the activities are organised in public spaces where more people can access them and can get acquainted with the school’s achievements.”

In that sense, cooperation with other schools is also fostered (e.g. GLOBE programme), including the secondary education level when students from the Zadarski otoci school visit secondary schools in order to see what can be learned there and what innovative approaches to teaching are practised (e.g. demonstration on how to make a drone or how to implement 3-D printing).

2.2.8. Mainstreaming and transferring innovations

Although not described as a mainstream and transfer opportunity from teachers, there is one good practice in the school which is and can be used for transferring the knowledge and teaching experience to new generations of teachers. The school is recognised as a “school practice room” (školska vježbaonica) by the Ministry of Science and Education, which means that it is a “polygon for practice”, i.e. exercising teaching practice for higher education students of different subjects (in the case of this school it is about the following subjects: mathematics, physical exercises, biology, English, German, Italian, and Pedagogy). In the “practice room” students can observe the teaching practice and can learn from observation and from discussing the practice with the teacher mentor from the methodological, pedagogical and psychological aspects. In that sense, the practised innovative pedagogies and modern teaching technologies implemented in the school can be transferred to future teachers as concrete examples. The future teachers can then use the same methods in their practical educational work (which is supervised by the teacher mentor) by experimenting and trying out what works for them and how the students react to a certain method. However, the system does not monitor or track record which innovative pedagogies were acquired by future teachers and which were later on implemented in daily teaching practice.

Since the school acts as the regional leader for the GLOBE project, it has already attracted and prepared four other primary schools from the region to participate in the programme. Those schools were triggered by lectures and workshops given by STEM teachers of the Zadarski otoci primary school during in-service teacher trainings on Zadar

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63 See: http://www.alka.hr/?lang=en. Accessed on 25.01.2017. The Alka originated at the beginning of 18th century; it has been a continuation – and the only remainder – of numerous chivalric contests held in some major places of Venetian Dalmatia.
county level organised by the Teacher Training Agency. The school has educated teachers on how to implement the programme’s activities and has shared the experience on how to implement the GLOBE concept in interdisciplinary and inter-subject teaching. According to the biology teacher, “there was a high level of interest of other schools to be involved in the GLOBE programme because it is a prestigious acknowledgment, visible to wider community.” Teachers of lower classes in the focus group explained that “the interest of other schools to implement innovative teaching practices from the Zadarski otoci primary school is low because they think they are not equipped with the relevant knowledge”. It is also interesting to note that, due to the high community-based visibility, other schools are motivated to participate in community-based activities (e.g. activities related to Glagolitic language).

During the focus group, the main barriers for mainstreaming were recognised to be lack of interest, other schools’ lack of time, sometimes lack of physical space which would allow teachers to gather and reflect on their practices, lack of knowledge.

3. Innovation in schools: lessons learned and policy pointers

3.1. Understanding the barriers: what hinders the school innovation process?

The interviewed representative of the Croatian NGO of secondary school principals mentioned that one important barrier to the school innovation process is the lack of school’s autonomy. School principals are not sure what the boundaries of the autonomy are and to what extent and in what areas they have the freedom to implement organisational innovations other than the regular organisational practice that is prescribed by the legal framework. The curriculum is insufficiently flexible when defining the total number of teaching hours, both per subject and per teaching week, because the number of obligatory teaching hours during one week is prescribed. The recent curricular reform (since 2015) has the intention of awarding more autonomy to schools by defining a total number of teaching hours per school year, which then can be distributed in the organisational sense by schools themselves. That would allow to teach subjects as block-teaching hours (or to concentrate on lower number of subjects during certain periods of time, etc. This would also enable better correlation between the subjects because the teaching content could be better aligned between different subjects.

The representative of the Croatian NGO of primary school principals and the representative of the Ministry of Science and Education added that the National Teaching Plan and Programme and the National curriculum prescribe and define what needs to be taught in the school and consequently there is not much space for innovation in that context. On the other hand, the School Curriculum, which needs to be developed by each school, provides opportunities for planning and organising different extra-curricular activities which are of students’ interest. In that sense, both representatives agreed that the system, school principals and teachers are used to high level of ‘norms’ in the educational system, and actually require development of further norms. This would imply that ‘norms’ represent a comfort zone and provide security in terms of teaching and organisational responsibility. Norms as such provide limited opportunities for innovativeness. This aspect was stressed again in the workshop follow-up interview with the Ministry representative as the answer to the barriers identified as administrative.

64 Focus group discussion.
65 Interview held on 15.09.2016.
67 Interview held on 20.09.2016.
68 Interview held on 28.09.2016.
69 Interview held on 07.06.2017.
burden\textsuperscript{70} which is imposed to teachers and school principals due to the legal framework. The administrative burden is the result of the intention to implement systematic approaches within the education system and to, in a way, standardise procedures which were in the past handled in different ways. However, the Ministry representative is aware of the risk that the administrative burden is contra productive for developing an innovative mind, innovative way of thinking. Above all, he stated that “there is an imbalance between the declarative wish to be innovative and the safety and comfort found in the prescribed procedures and legal framework”. The lack of the common system of values and the political consensus on the priorities in education represent strong set of barriers for any significant changes to be successfully implemented within the education system, with the cooperative support by all actors, including school principals, teachers, national agencies, etc. This was stressed by the Ministry representative in a way that the lack of both results in a lack of motivation in human resources within the system (e.g. teachers, school principals, other school personnel) to implement changes and impose values towards students, schools, communities. This leads to the low level of satisfaction on the work place which destimulates innovative mind, innovative management approaches to school governance, innovative teaching practices, etc.

All interviewed stakeholders and school members pointed out the fact that schools which work in two shifts have a significant limitation in organisational and practical terms when it comes to offering students curricular lessons and activities in innovative ways or in organising extra-curricular activities. Even the schools operating in one shift only have investigated their opportunities to a limited extent because the school principals seem to be limited by the lack of the sense of the level of autonomy which would allow them to organise the school activities after the regular teaching hours have finished. The lack of autonomy is also reflected in terms of financial resources – on the one hand as dependency upon the financial resources from the cities, counties or the state which hinder the implementation of ‘after teaching time’ activities. On the other hand, schools lack the autonomy and the ability to ‘earn’ financial resources from the ‘after teaching time’ activities which are being implemented by actors outside the school, but in the school premises. On the other side, it is interesting to note, that the representative of the Zagreb county\textsuperscript{71} from the Department of Education presented the understanding of autonomy in order words. It is true that counties are investing in schools within each of the counties and that is regarded as decentralised financial resources. Since the counties are legally responsible on how the financial resources are spent in schools, as defined by laws regulating The State Treasury\textsuperscript{72}, the schools have to have the approval of the counties if they intend to use the financial resources from the counties allocated to schools (e.g. material costs, investment maintenance). That is also based on the fact that counties are founders of primary and secondary public schools, except in several cases of big cities (e.g. Zagreb, Zadar when the cities are founders of schools). Besides the financial resources allocated from the Ministry of Science and Education (e.g. teachers’ salaries), the schools have the freedom to collect their own financial income from different types of activities (e.g. renting the school’s premises). It seems that the system of financing is rather complex and that school principals need to have a strong background or additional training in these matters in order to understand the opportunities for additional income for schools. In particular when the focus of discussion if investments in innovations in schools.

Another important aspect is insufficient level of same representation of teaching tools for performing practical teaching exercises (e.g. chemistry, biology); to organise group teaching or to deliver experience based teaching and learning.

\textsuperscript{70} This aspect is discussed further in the Workshop Report
\textsuperscript{71} Interview held on 26.05.2017.
\textsuperscript{72} See: \url{http://www.mfin.hr/en/state-treasury}
The representative of the Teacher Education Agency (hereafter: the Agency) pointed out constrains related to organisation and delivery of CPD initiatives which are limited to periods of time in the school year when students are on holidays (i.e. Easter holidays, summer holidays, mid-term holidays). This limits the possibility of offering modular trainings and also the possibility of offering more training topics to all teachers during one school year. When it comes to innovative pedagogies, the primary barrier in terms of teacher education happens at the level of higher education, because new teachers are poorly prepared and acquainted with innovative pedagogies and related concepts. In that sense, the Agency would need much more time to offer longer and well-structured initial teacher education (ITE) and CPD opportunities related to topics of innovative pedagogies. It was pointed out that teachers are afraid to experiment and implement ‘non-traditional teaching methods’ because they are not sure what their outcomes might be, i.e. whether the learning outcomes will be achieved. The ongoing comprehensive curricula reform (since 2015) aims to define learning outcomes in the curricula, but not to formally determine the content of teaching. This would represent a novelty within the system and it seems as the teachers are still not prepared to have a higher level of freedom on the content and the methods of teaching which lead to achieving the prescribed learning outcomes (which are then evaluated and examined on the national level at the time of Matura Exam and other external evaluation exams conducted by the Centre for External Evaluation of Education).

All interviewed stakeholders pointed out the fact that the implementation of innovative pedagogies in the classrooms is not validated and valued by the system. There are insufficient tangible or intangible rewards, even within the system of teacher advancement. On the other side, the county representative stated that the county is rewarding the best teachers, i.e. those whose students are awarded 1st, 2nd and 3rd prize on county level competitions. The reward is financial (500 kn) for teachers and students receive either a financial reward and/or tablets.

A similar situation is present in the context of organising CPD activities for school principals, in particular reflecting the fact that school principals lack skills in leadership, change management and in motivating others in order to be able to foster and motivate for changes in the school setting. Moreover, according to principals interviewed, the system does not support the implementation of innovations at school because it then cannot control what is delivered in the school. On the declarative level and in strategic documents, innovations are fostered in every aspect, but the reality demonstrates a completely different picture and negative relationship towards innovations.

As for the process of innovation, the weakest point is the aspect of monitoring and evaluation of the implementation process and students’ achievements. It was evident from both schools involved in the study that the schools have interest and understand the need to evaluate their performance, either measuring students’ achievements (Primary school Vezice), or performing self-assessment (Primary school Zadarski otoci). Although in case of Primary school Vezice, collaboration and support from higher education institutions was gained, in the case of Primary school Zadarski otoci, there was no such support. The interviewees reflected on this matter in the sense that they would need more support and even instruction on how to perform evaluation and/or self-assessment. The barrier in that sense is also the fact that the National Center for External Evaluation of Education does not perform self-assessment of schools and external evaluation of students’ achievements regularly, and therefore follow-up activities as enablers of learning loops cannot be successfully conducted. If the information were available on regular bases, then monitoring would be enabled and conclusions on further actions for improvement could be made.

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73 Interview held on 22.09.2016.
The workshop participants confirmed and agreed with the barriers that were identified during the field studies. In addition, they identified some additional barriers that were not initially recognised. The fact that some teachers are teaching in more than one school in order to accumulate the maximum number of teaching hours results in a lack of communication with their school colleagues, and inability to develop cooperation as, for example, creation of interdisciplinary projects. The limitations related to time which could be invested in developing and mainstreaming innovative pedagogies and organisational settings were strongly emphasized because teachers are overwhelmed with administration and other formal duties and tasks, as required by the legal framework. This is also related to decreasing level of motivation among teachers to introducing innovations which is additionally influenced by the high amount of teaching content, insufficiently developed system of tangible and intangible rewards, inability to organise and conduct teamwork in the classroom and among teachers within one school, etc. The role of parents was described as a barrier because of the significant level of interference in the school’s everyday work, decision making processes, teaching practices, organisational practices, etc. The final aspect of barriers was linked to students because of the social differences among students and parents not being able to financially support educational needs of their children. Moreover, the teachers are afraid that the students with difficulties in reading and understanding will not be able to follow the teaching lessons, even if delivered in innovative ways.

3.2. Spotting the supporters: what facilitates the school innovation process?

All interviewees significantly pointed out the fact that the schools that stand out and are innovative have achieved that mainly because the school principals were open-minded, supportive, had a vision and goals which were shared with teachers with a common understanding.

All interviewees referred to the fact that there are no pathways set in the educational system that would allow financial rewards for teachers, especially for the good, creative and innovative teachers. That means that the implementation of changes and new approaches and methods in schools (i.e. classrooms) depends mainly on teachers’ enthusiasm, which tends to diminish over time. In addition, new teachers show low level of initiative for implementing innovations in teaching practice – either because they are not aware of innovative approaches (do not possess sufficient knowledge as already elaborated in 3.1), or are afraid to implement them (because no other teacher is implementing them in the school or because financial resources are needed, etc.). However, the supporters in such situations are more experienced teachers which, with their own examples, lead and motivate new and young teachers for changes (e.g. “polygon of practice” in Primary school Zadarski otoci).

The school’s physical surrounding, the novelty of the building and availability of school equipment and teaching tools are supportive factors that enable teachers’ creativity and students’ engagement during teaching time. In addition to that, teacher trainings offered as part of CPD by the Teacher Training Agency are supportive because topics and themes

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74 The Workshop was organised on 18.04.2017. The main objectives of the workshop were the following: to share and disseminate information about the implementation of the research study; to validate the findings of the Croatian case study; to collect different stakeholders’ opinions on the case study findings; to collect different stakeholders’ opinions on the five thematic areas discussed after the presentation of research findings; to promote and support the dialogue between different stakeholders; to provide more pedagogical details on the innovative pedagogy “flipped classroom” that was identified in the primary school Vezice; to investigate whether there is interest among workshop participants for presentations and discussions of topics focused on innovations and improvements in the Croatian education system.
covered trigger changes in teaching habits and provide opportunities for exchange of good practices and learning from other colleagues’ experience.

The National Curriculum Framework presumes a high level of professional competence of teachers and their ability and flexibility to effectively utilise a range of methods, teaching aids/tools and successfully organise education and teaching. This flexibility in implementing different teaching methods and techniques based on the subject and content that needs to be taught allows teachers a certain level of creativity in the construction of their teaching practice. Moreover, new approaches, and even innovative pedagogies, can be “tried out”.

The workshop participants pointed out that the support from the local community is essential for the implementation of project-based activities and for making the learning and teaching meaningful for the community and students. From the inside the schools, the positive school climate was identified as a supportive framework for the implementation of innovative organisational approaches and innovative pedagogies (e.g. support from colleagues and the school principal, good working conditions).

The county representative pointed out an interesting initiative of student cooperatives that is being implemented within the counties, between the counties and even on international level. The cooperatives teach students the values and the culture of work. The items produced are sold on schools’ fairs and the financial resources accumulated are used to cover the costs of other types of activities, e.g. students’ trips to other parts of the country. The cooperatives provide freedom to creation and therefore support innovation in many of its forms.

The Ministry representative (workshop follow-up interview) mentioned that one supporter could be seen as the opportunity of the Ministry to change legal framework/documents more often than it is currently implemented. There are possibilities to change different types of legal documents more than once in a year (documents other than laws). This could be the approach to implement changes faster, but unfortunately this opportunity has not been explored sufficiently. In addition to that, Agency for Education and Teacher Training is responsible for suggesting changes within the system, but this is rarely happening because the Agency is focused on implementing policies. Changes in general and in particular those related to innovations within the system are just a few.

3.3. Reflecting on the transferability of school innovations into the local contexts and their sustainability

The representative of the NGO of primary school principals and the workshop participants described that innovations are mainly transferred by means of the EU, regional and local projects because projects offer possibilities for gathering (e.g. conferences, workshops), exchange of practice and provide financial support. The local media (e.g. newspapers, local web portals, web portal dealing with educational themes, and even radio) is becoming more sensitive to disseminating project results, independently on the level of projects’ operations. This might be because local media are interested to present local events with good messages.

The Agency organises trainings and yearly gatherings for school principals during which principals are given the opportunity to share examples of good practice in innovative organisational approaches, innovative pedagogies, other projects, etc. However, as the school principals pointed out, it is difficult to picture and transfer one practice to other schools due to significant differences among schools in the number of staff (either teachers or professional staff), the number of students, the organisation of teaching in one or two shifts, different level of availability of teaching tools and aids as resources in schools, etc. It can however be motivating for other school principals to try to implement adjusted good examples to their own surrounding.

In addition, the Agency also organises trainings and yearly conferences for subject teachers, which also offer opportunities for ‘technical’ (transfer of skills and tools applications/processes) and ‘informational’ (transfer and exchange of ideas and
solutions) transfer among teachers. These opportunities are provided as lectures, workshops, individual and group work. The transfer of practices between the local and regional schools and their teachers usually happens during particular events which are shared among schools (e.g. Bread Day; Christmas fairs) or when schools are invited to visit each other and to participate in a certain event. The workshop participants reflected on the fact that the support from the local community is also important for strengthening school innovations transfer and sustainability. On the one hand, the community needs to recognise and acknowledge the innovations and on the other it is sometimes involved in the delivery of innovative projects.

The student cooperatives mentioned in 3.2 could also be regarded as opportunities for transferring innovations to other schools within the counties or towards the other counties.

3.4. Policy pointers
Key lessons learned and policy pointers that would suggest practical solutions on how to mainstream innovative pedagogies and school organisation practices include:

- Analysis of the current situation, in technical terms, in schools – since there are significant differences among the schools in terms of available equipment and schools’ premises, it would be necessary to undertake a comprehensive analysis of the current situation in schools in order to enable similar or equal opportunities to schools to develop and implement innovations.

- Reaching national consensus on the importance of education – recent developments within the education system, in particular since 2014 and the intention to implement the comprehensive curricular reform, demonstrate low level of political will to reach the national consensus on the developments within the education system no matter the political composition of the Government. Frequent changes in the Governments lead to inconsistent implementation of changes defined by the Education Strategy. This was also recognised by the European Commission which recommended in 2017\(^{75}\) to accelerate the reform of the education system.

- Returning the financial autonomy back to schools – In accordance with the Decision on the criteria and standards for determining the balance sheet rights for financing minimum financial standards of public needs of primary education in 2016.\(^{76}\), the cities, as primary school founders are obliged to provide funds for:
  1. The material and financial expenditures of primary schools;
  2. The expenses for materials and parts for current investment maintenance and for services for current and investment maintenance;
  3. The expenses for the acquisition of fixed assets and additional investments in nonfinancial assets

However, those funds are not directly transferred to schools, but rather schools have to ask for permission and approval from the city if any expenditure is to be made. This makes the decision-process slow and schools are hindered because they cannot answer immediately to their everyday needs. Since the Decision (establishment of The State Treasury, Ministry of Finance, Croatian Government) was made by the Croatian Government, it can be changed only by the

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\(^{76}\) National Gazette 122/15; National Gazette 33/16
Government, with opinions from the Minister responsible for education and Minister responsible for finances.

- Equal provision of resources within the schools (in terms of human resources – teachers and professional staff; teaching aids and tools as teaching resources; quality of buildings; availability of Wi-Fi in all classrooms, etc.). Although there is a lack of national research that would analyse the current situation in Croatian schools, it is evident from school visits within this study as well as school visits to other schools within other EU related research studies\(^{77}\), provision of teacher trainings organised by Teacher Training Agency\(^{78}\), and teachers’ opinions, that schools do not share the same level of resources, and therefore preconditions for organising and delivering efficient teaching with the same level of students’ achievements is not realistic to expect. This problem is significant because Croatia invests 4.7% GDP in education, which is insufficient to achieve approximately similar conditions. There is a policy document on the National pedagogical standard\(^{79}\) which defines the material, personnel, medical, technical, IT and other conditions for the optimal realisation of the national curriculum and teaching plans and programmes in order to ensure equal conditions of teaching and learning and the development of an integrated education system in Croatia. Nevertheless, the standards described are not visible in all Croatian schools. This inconsistency results in deeper inequalities among schools and, in turn, among students’ achievements. The Croatian Government is responsible for allocation of financial resources through the state budget and therefore decisions on the highest level should be made

- Rearrangement of ITE opportunities in the context of the topics related to innovative pedagogies. Future teachers should be educated on higher education level in topics relevant for innovative pedagogies. It is Faculties’ decision on what will be taught to students and how the curricula is constructed which means that changes on higher education level are needed

- Organisation of regular events, workshops, conferences where teachers can share their practice, but not focused only on the forerunners. Moreover, schools with limited resources and capabilities should be given a voice and should be recognised within the community as those who are trying and to whom the community should be supportive – Currently, the main responsibility within the country for CPD is on Teacher Training Agency and this agency should organise this kind of events more frequently than until now. The capacities of the Agency are limited in both financial and human resources. The decision on whether and how those capacities could be enriched is on the Ministry responsible for education

- Increase in the financial resources for CPD and organisation of modular trainings focused on innovative organisational opportunities and innovative pedagogies, as much as on skills for writing project proposals for EU funding that could support introduction of innovations to schools – organisation of workshops that support experimentation in classrooms;

- Development of the system for validation, evaluation and rewarding of teachers’ work – this is under discussion and in the development process because licencing

\(^{77}\) Research studies for DG EAC and CEDEFOP in which the country expert has participated

\(^{78}\) The country expert has participated in teacher trainings as an expert/trainer

\(^{79}\) National (state) pedagogical standards, MSES (2008)

http://public.mzos.hr/lgs.axd?t=16&id=14548
of teachers and school principals is planned to be put in the framework which would also include system for validation and evaluation. The decision is on the level of Ministry responsible for education

- **Delivery of CPD for school principals (e.g. on leadership; decision making; human resources management)** – The Teacher Training Agency is responsible for CPD of school principals. However, due to the limited resources, CPD is not implemented on regular bases. The currently in development licencing schemes of principals will include obligatory trainings, but it is not known yet on what topics and to what extent.

- **Monitoring vs. control (school inspection)** for the purpose of professional development and advancement of teachers. Currently, the system is based on the control because the only available corrective mechanism is school inspection. Monitoring of teachers’ work should be done by the Teacher Training Agency, but, as elaborated above, the agency does not have sufficient resources for conducting monitoring. Monitoring would enable teachers to receive feedback on the quality of their teaching as the mean to create pathways to CPD. Decision on how the monitoring system should be developed is the responsibility of the Ministry responsible for education.

- **Educating and preparing the parents** for changes in school teaching and organisational practices. This is as much important as the preparation and education of teachers prior to implementation of innovations in schools. Unless parents are informed and prepared on time, the resistance and protective attitudes towards their children can hinder or support the implementation of changes.

- **Establishment of the framework and the network of support to school principals** by creation of legal acts and procedures which would identify and allocate responsibilities to different stakeholders and actors.

- **Lowering the number of administrative requirements** on national level (e.g. reporting to the Ministry of Science and Education; gathering statistical information; reporting on school level) for the school principals, school professional staff and teachers.

- **Creation of frameworks** that support exchange of good practices among the schools (local, regional and national level).
## Annex I: A short review of the field work

<table>
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<tr>
<th>1st Interview programme (with national/regional/local stakeholders)</th>
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<td>Teacher Training Agency, Senior Advisor, former Assistant Director</td>
<td>Ministry of Science and Education; Head of Unit for the support to the System and EU Programmes</td>
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# 2nd Interview programme (with school leaders)

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**Focus group discussion with school community in Primary school “Vežice”**

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<th>Name and surname of facilitator(s):</th>
<th>Marija Pavkov</th>
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| **Participants:** | Geography teacher  
School librarian  
Informatics teachers  
Teacher in lower classes (1.-4. Class)  
Mathematics and physics teacher  
Parents’ representative  
English language teacher |
| **Date of focus group:** | 18.11.2016. |
| **Place of focus group:** | Rijeka |
| **Duration of focus group:** | 90 minutes |
| **Recorded:** | Yes |

**Key topics discussed:** Innovative approaches in school – mainly based on IT, i.e. iPads  
Barriers to implementing IT supported teaching  
Parents – supporters or destroyers of iPad-supported teaching  
Organisational structure, i.e. schedule of teaching hours and its influence on making the IT supported teaching available to all students  
Support and understanding from national stakeholders (ministries, other schools, etc.) – and lack of it and consequences for the school and the educational system

**Additional notes:** The participants were keen to share their practice and were open in describing what supports and what hinders them in incorporating iPads in the school. The teachers were proud of their achievements which they have presented at numerous national and European conferences related to IT and learning. The parents’ representative spoke about the benefits of using iPads for teaching from the parent perspective since majority of students were better motivated to learning even at home.

**Focus group discussion with school community in Primary school “Zadarski otoci”**

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| **Participants:** | School pedagogue  
School librarian  
Special education teacher  
Teacher in lower classes (1.-4. Class), member of the NGO of Glagolitic language Zadar (“Udruga glagoljasa Zadar”)  
Teacher in lower classes (1.-4. Class), member of the NGO of Glagolitic language Zadar (“Udruga glagoljasa Zadar”) |

*July 2017*
| Teacher in lower classes (1.-4. Class)  
| Teacher in lower classes (1.-4. Class)  
| Teacher in lower classes (1.-4. Class)  
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<td>25.11.2016.</td>
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<tr>
<td>Place of focus group:</td>
</tr>
<tr>
<td>Zadar</td>
</tr>
<tr>
<td>Duration of focus group:</td>
</tr>
<tr>
<td>90 minutes</td>
</tr>
<tr>
<td>Recorded:</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Key topics discussed:</td>
</tr>
</tbody>
</table>
| Innovative approaches in school – mainly project based  
| Barriers to implementing innovative pedagogies  
| Barriers originating from the organisational structure of the school (i.e. teaching hours schedule, insufficient number of classrooms) although the school is new  
| Description of project-based learning  
| Teaching and work with students with learning disabilities  |
| Additional notes:  |
| It was interesting to find out that the school has a special class of students with learning disabilities, i.e. different degrees of mental disabilities. Therefore, the school has a special education teacher who supports both the students with disabilities and the teachers who teach them. The school also has a lift which was needed for students with physical disabilities. The participants were also very keen to share their practice in detail. Their stories were supported by photos, project results, etc.  |

### School visit to observe iPad for teaching in Primary school “Vežice”

| Name and surname of visitor(s):  |
| Marija Pavkov  |
| Other participants:  |
| Geography teacher  |
| Date of a visit:  |
| 18.11.2016.  |
| Place of a visit:  |
| Rijeka  |
| Duration of a visit:  |
| 45 minutes  |
| Objects/activities/practices observed:  |
| One teaching lesson in geography supported by IT, i.e. use of iPads, both by the teacher and students  |
| Photos/other visuals attached:  |
| Yes. Pictures Nr. 10-14  |
| Other relevant material attached:  |
| No  |

### School visit to observe teaching special needs students with iPads in Primary school “Zadarski otoci”

| Name and surname of visitor(s):  |
| Marija Pavkov  |
| Other participants  |
| Special education teacher  |
| Date of the visit:  |
| 25.11.2016.  |
| Place of the visit:  |
| Zadar  |
| Duration of the visit:  |
| 45 minutes  |
| Objects/activities/practices observed:  |
| Teaching lesson of Croatian language by using iPads  |
| Photos/other visuals attached:  |
| Yes, Pictures Nr. 17-19  |
| Other relevant material attached:  |
| No  |
### Additional notes:
Due to respect and protection rights of the students with special needs, they were not photographed. The photos were taken only of the classroom.

### The Workshop with schools and other stakeholders

| Name and surname of the workshop facilitator(s): | Marija Pavkov |
| Number of participants and their represented organisations: | Total number of participants: 63  
Represented organisations: 9  
Organisation 1: Education and Teacher Training Agency  
Organisation 2: Petrijanec school  
Organisation 3: University of Zagreb  
Organisation 4: Zadarski otoci primary school  
Organisation 5: International Development Agency  
Organisation 6: NGO “Zora”  
Organisation 7: European Commission (DG EAC)  
Organisation 8: III. primary school Varaždin  
Organisation 9: Primary school Ivan Kukuljevic Sakcinski, Ivanec  
Organisation 10: II. primary school Varaždin  
Organisation 11: Primarz school Izidor Poljak Višnjica  
Organisation 12: Primary school Antun Mihanović, Klanjec  
Organisation 13: Primary school count Janko Drašković  
Organisation 14: Primary school Sveti Martin na Muri  
Organisation 15: Primary school Kneginec Gornji  
Organisation 16: Primary school Bisag  
Organisation 17: Primary school Vidovec  
Organisation 18: I. primary school Varaždin  
Organisation 19: VI. primary school Varaždin  
Organisation 20: VII. primary school Varaždin  
Organisation 21: Primary school Sveti Đurđ  
Organisation 22: V. primary school Varaždin  
Organisation 23: Primary school Strahonince, Čakovec  
Organisation 24: Primary school Domašinec, Dekanovec  
Organisation 25: Primary school Šernovec, Trnovec Bartolevečki  
Organisation 26: Primary school Ivanovec, Čakovec,  
Organisation 27: Primary school Ludbreg  
Organisation 28: Primary school Petar Zrinski, Šenkovac  
Organisation 29: I. Primary school Čakovec  
Organisation 30: Primary school Podrute, Novi Marof  
Organisation 31: Primary school Cestica  
Organisation 32: Primary school Gornji Mihaljevec, Macinec  
Organisation 33: Primary school Podturen  
Organisation 34: Primary school Gustav Krklec  
Organisation 35: Primary school Mursko Središče  
Organisation 36: Koprivinca Secondary school  
Organisation 37: Primary school Tomaša Goričanca school, Mala Subotica  
Organisation 38: Primary school Goričan  
Organisation 39: Primary schooldr. Ivana Novaka |
school, Macinec  
Organisation 40: Primary school Petrijanec  
Organisation 41: Primary school Veliki Bukovec  
Organisation 42: Primary school Antuna i Ivana Kukuljeviča school, Varaždinske Toplice  
Organisation 43: Primary school Nedelišće  
Organisation 44: Primary school Ludbreg  
Follow-up interviews with the Ministry of education and municipalities were conducted

<table>
<thead>
<tr>
<th>Date of the workshop:</th>
<th>18th April 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Place of the workshop:</td>
<td>VI. Primary school, Varazdin, Croatia</td>
</tr>
<tr>
<td>Duration of the workshop:</td>
<td>9:30 – 16:00</td>
</tr>
<tr>
<td>Recorded:</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Key topics discussed:** The topic of the study and research results. Comments and examples of practices in their schools that were similar to those identified during the field study. Thematic areas of cooperation, financing, leadership and school principals, teachers, and evidence and data.
Annex II: Photos from the two schools

Primary School Vežice
Pictures 1.-5. Creative working environment

Picture 6.-7. The teachers’ “living room”
Pictures 8.-9. Learning with iPads in the nature and the school’s garden (Japanese garden)
Pictures 10.-14. Observing geography class teaching with iPads
Primary school Zadarski otoci

Picture 15. IT support for videoconferencing

Picture 16. Open space in front of the classrooms

| Exit-doors of the classrooms | Open space for physical exercises |
Pictures 17.-19. The look inside into the “special class”
Annex III: Results from the research study on the implementation of iPads in the teaching practice of Vežice primary school

<table>
<thead>
<tr>
<th>Teachers</th>
<th>Students</th>
<th>Parents</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Teachers have no difficulty in using tablets;</td>
<td>- Students claim that they facilitate the learning of written and oral assessment;</td>
<td>- Parents notice that their children became more independent in their work - in preparation for the classes, and especially in learning at home;</td>
</tr>
<tr>
<td>- By using tablets, the teachers state that their creativity is coming more to light;</td>
<td>- Students use a number of applications that help them in specific situations (making notes during the class, communication with teachers, communication with other students, on-line tests);</td>
<td>- Notice that children are easier in acquiring provided instructional content;</td>
</tr>
<tr>
<td>- The tablet makes it easier for teachers to teach, but they point out that there is a higher need to invest more time in preparation, as opposed to the 'classical' classes;</td>
<td>- The use of tablets and frequent on-line communication with teachers affects the language competence of students. Students point out how much more attention they are giving to personal, direct communication with teachers, keeping an eye on the accuracy and spelling in the messages that are sent - we can say that it helps them cope with good manners and behaviour;</td>
<td>- Improve the digital competence of their children.</td>
</tr>
<tr>
<td>- With the introduction of tablets, students became more independent in their own work, were more engaged in research themes that interested them, and have explored other learning opportunities;</td>
<td>- Students closely follow the teaching process;</td>
<td></td>
</tr>
<tr>
<td>- Students closely follow the teaching process;</td>
<td>- Teachers assess students to be much more motivated to work, that it is easier to work in groups, and the atmosphere in the classroom is positive;</td>
<td></td>
</tr>
<tr>
<td>- Teachers assess students to be much more motivated to work, that it is easier to work in groups, and the atmosphere in the classroom is positive;</td>
<td>- Teachers point out that the use of tablets facilitates the process of transferring</td>
<td></td>
</tr>
<tr>
<td>- Teachers point out that the use of tablets facilitates the process of transferring</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Information/knowledge to students:
- Teachers estimate that the cooperation with students improves;
- Teachers point out that students carry out their obligations more frequently on time;
- Teachers emphasise the willingness of students to assist educators who are more difficult to cope with new technologies.

Educational Internet content and web applications help them in better understanding the material they are learning:
- Students point out that they feel most comfortable during the teaching process.
- iPads do not constitute a distraction during class.
- Web applications enable to focus on the content of the school subject.
- Students point out that the use of iPads in the classroom does not affect the lack of mutual, direct communication with other students.
- Students have no difficulty in finding relevant information and content-related material.
- Students emphasise that they have no problems with applications in English, but would like to have access to more applications in the Croatian language.
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