

National Country report for Project “Generation 0101” data research – Croatia

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INTRODUCTION

Erasmus+ project Generation 0101 is strategic partnership between 6 countries: Croatia, Cyprus, Italy, Latvia, Lithuania and Turkey. Main goal of the project is to (1) strengthen position of partners on national and European level and to (2) develop skills of partners regarding fostering policy changes in the area of Digital Agenda, development of curriculums for skills needed in Digital Industry and using digital tools for social inclusion in local communities. In Croatia, project is run by Centre of Technical culture Rijeka and Telecentar.

Telecentar from Zagreb, Croatia, is a non-governmental, non-profit organization formed in 2005 as a coordination centre for the regional network of civil society organizations from Croatia, Serbia, Macedonia and Bosnia and Herzegovina. Recent initiatives of Telecentar include the development of the National Coalition for Digital Jobs – a cross-sectorial partnership of public, private and civil sector organisations called Digital Agenda for Creative Croatia in collaboration with Telecentre Europe and Media and Learning Association. At the same time, it is a project financed by the National Foundation for Civil Society Development in which CTK Rijeka is the Leading organization and Telecentar is a partner. Telecentar is at the moment implementing three EU (EACEA) funded lifelong learning projects: "Uniting Europe through digital empowerment" - networking in the field of digital inclusion (KA3-ICT), "iProfessional" - developing competence framework for media professionals (Erasmus) and "Trans eScouts" - intergenerational ICT learning (Leonardo da Vinci) and has extensive track record in both management and implementation of national and international operations. Telecentar is a member of the international organization Telecentre-Europe AISBL.

Centre of Technical Culture Rijeka (CTC Rijeka) is a non-profit and non-governmental organization established in 1993. The mission of CTC Rijeka is to create stimulating environment for strengthening digital literacy and digital inclusion of all citizens. The mission is accomplished through providing free educations in different fields of digital literacy to children, youth, citizens, elderly people and socially excluded people, strenghteing small CSOs and working on policy implementation and changes. 4 fields of strategic work of CTC Rijeka are: digital literacy, social inclusion, local community development and eco social entrepreneurship. Even though, these four fields are defined separately, each of programmes and projects implemented has at least two fields covered, e.g. developing of digital jobs for citizens with stress on socially excluded people (unemployed youth and women 45+), development of digital skills for employees of social enterprises, etc.

Last few years in Croatia were marked with fast increase of youth unemployment. CTC Rijeka is developing different educational activities aimed at employment of young people aged 16 to 30, advocating policy changes and development of strategies on national level that will foster development of digital industry in Croatia as well as rising awareness among youth about opportunities they have in digital industry.

(1) Self-assessment of digital skills among youth on national level. Overall, 289 youth participated in online survey which was shared trough website of [Telecentar](#) and [CTC Rijeka](#), social networks of [Telecentar](#) and [Centre of Technical Culture Rijeka](#) (Facebook, Twitter), and trough mailing lists and database of CTC Rijeka, Telecentre and other networks organisations are active in ([CEDRA HR](#), [Digitalna agenda za kreativnu Hrvatsku](#), participants of other projects, etc.).

(2) Desk research of National data announced on [Digital agenda Scoreboard](#) trough which is visible level of accomplishment of Digital Agenda Europe 2020 goals in Croatia. Collected data also allows comparison of different EU countries.

(3) Desk research on level of development of supporting environment for accomplishment of Digital agenda goals in Croatia. Supporting environment is defined through activities of different stakeholders (formal institutions and (in)formal groups/initiatives) as well as their interest in digitally developed society and through projects implemented or planned on local and national level. The research was implemented using website [Structural and Investment Funds](#), [Croatian Association of Technical Culture](#), [Digital Croatia](#), as well as by knowledge about important stakeholders on national and local levels and their work.

(4) Focus groups were implemented with several NGOs, Libraries, Associations of technical culture, private and public educational institutions and local authorities and Ministries. At the end, 7 organisations and individuals participated in Focus groups.

Additionally we used [Eurostat](#), [Croatian Bureau of Statistics](#) and [Croatian Employment Service](#) data to conduct a desk research and gather general statistics about employment in Croatia and computer usage among Croatians employees.

DIGITAL AGENDA STRATEGY

The main responsible public body for the implementation of Digital Agenda is Commission for Coordination of Informatization of the public sector by the Ministry of Administration. The Digital Agenda policy and goals are implemented through several national documents and strategies: [Industrial strategy for Croatia 2014-2020](#), [Partnership agreement between the Republic of Croatia and the European Commission for the use of EU structural funds and investment for growth and jobs in the period 2014-2020](#), [Operational Programme 'Efficient Human Resources' 2014-2020](#), [Operational Programme "Competitiveness and Cohesion " 2014-2020](#), [The implementation plan of guarantees for young people](#), [Draft of the Innovation Strategy 2014-2020](#), [Strategy of Government programmes for 2015-2017](#), [Strategy of Science, Education and Sports](#), [Entrepreneurship Development Strategy 2013 - 2020](#), [Broadband strategy in the Republic of Croatia for the period from 2012 to 2015](#), [The Strategic Plan of the Ministry of Administration for the period 2016-2018](#), [Draft of the e-Croatia Strategy](#), [e-Office Programme](#). It can be easily noticed that there are many strategies and documents involving digitalisation as priority, but there is no separate document that define digital needs of Croatia including all sectors and target groups. Diversification clearly indicate that digital development of Croatia is not planned strategically.

Beside strategies, Croatia has consortium for eSkills for jobs campaign, several different institutions and individuals promoting employment in ICT industry among youth. In the consortium, following organisations are included: Croatian Employers' Association, MojPosao.hr, Croatian Employment Service, Croatian independent software exporters, Udruga darovitih informatičara Rijeke, Faculty of Electrical Engineering and Computing, Algebra Ltd., Polytechnic of Zagreb, Microsoft Croatia, Croatian Academic and Research Network - CARNet, Science and Technology park Rijeka - STeP RI, Agency for Science and Higher Education Croatia and Centre of Technical Culture Rijeka.

One of activities lead by NGOs during 2014, was establishment of informal National Coalition for Employment in Digital Industry named "Digital Agenda for Creative Croatia". The aim of Coalition is to foster better strategical definition of Croatian goals in digital literacy and development of digital skills for employment.

MAJOR STAKEHOLDERS FOR ICT SKILLS AND YOUTH EMPLOYABILITY

28 main stakeholders from public, private and civil sector responsible for development of digital skills among youth were defined during desk research. These stakeholders are not only stakeholders, but are defined as most influential in Croatia. Their influence is either in employment, education or awareness rising among youth for employment in ICT industry. Defined stakeholders, grouped by sectors, are:

1. **Public sector:** Ministry of Science, Education and Sport, Ministry of Administration, Croatian Employment Service, Agency for Vocational Education and Training and Adult Education, Education and Teacher Training Agency, Agency for Science and Higher Education, Cities and Municipalities
2. **Private sector:** Algebra Lts., Microsoft Croatia, MojPosao.hr, Perpetuum, Sagena, Inchoo, Aquilonis Ltd. and other micro, small and medium ICT companies as well as Regional Development Agencies'
3. **Educational sector:** College for Applied Computer Engineering "Algebra", Faculty of Electrical Engineering and Computing; Polytechnic of Zagreb, Science and Technology park Rijeka - STeP RI, University of Rijeka, Osijek, Split, Zagreb and Dubrovnik
4. **Non formal education / civil sector:** Croatian independent software exporters, Centre of technical Culture Rijeka, Telecentar, Croatian Employers' Association,
5. **eSkills for jobs** campaign (<http://eskills.hr/>)
6. **National coalition** Digital Agenda for Creative Croatia (<http://digitalna.hr/>) is established in 2015 and is part of the European Grand Coalition for Digital Jobs Initiative. Digital Agenda for Creative Croatia is a multi-stakeholder partnership of organizations and individuals from the civil, public and private sector. Their objective is to facilitate formal and non-formal development of competencies required on the labor market within converging fields of information and communication and new media technologies. The organizations have launched the National coalition *Digital Agenda for Creative Croatia* that will advocate and monitor public policies in the area of the Digital Agenda for Europe at a national and European level. The Coalition will develop strategic documents in order to create conditions for the sustainability of the coalition and sign agreements on cross-sectorial cooperation with organizations from the public, private and civil sectors. The organizations will advocate the adoption of public policies with policymakers in Croatia (Ministries, Management Boards and Commissions).

COUNTRY FIGURES IN ICT SKILLS AND YOUTH EMPLOYABILITY

Croatia's general unemployment rate is quite high; in the last ten years it has ranged from 260,000 to about 350,000 people (general population in 2011 is 4.284.889, work active population in 2015 is 1.295.668). In March 2015 the number has reached 319,211 people of which about 17% (55,109) are young people, aged 15 to 24.

When it comes to ICT skills, 35% of people in Croatia have no digital skills, about 22% have a low level and 24% have basic digital skills (people able to send e-mails, use editing tools, install new devices, etc.). Only 19% of the population has above average digital skills. The digital skills rate of disadvantaged people (aged 55-74, low educated, or unemployed, retired or inactive) in Croatia is amongst the lowest in the EU, 55% of people have no digital skills, about 20% have a low level, 15% have basic and only about 10% of people have above basic digital skills.

The number of persons who have never used the internet is also pretty high – 28%, although more than 60% use it on a weekly basis. The youth's numbers are much higher, almost 93% of young people aged 16 to 24 uses the internet regularly and only 1% of them have never used it.

Among those who are employed in the ICT sector the statistics are not promising at the moment, the percentage of employed ICT specialists is rather low at a 1.69%, while interestingly enough 18% of enterprises are reporting hard to fill vacancies for jobs requiring ICT specialist skills.

Generally, only 41% of employed people use a computer at work. Around 21% of the workforce considers that their skills are insufficient for the labour market while a much higher 49% of the population thinks that they have sufficient ICT skills for the labour market.

YOUTH SURVEY DATA ANALYSIS

289 young people participated in survey of ICT skills among youth, with average age 24. 46% respondents are aged between 19-24, and 44% between 25 and 30. Age group from 16 to 18 was far less represented in this survey (10%). 64% of respondents are females.

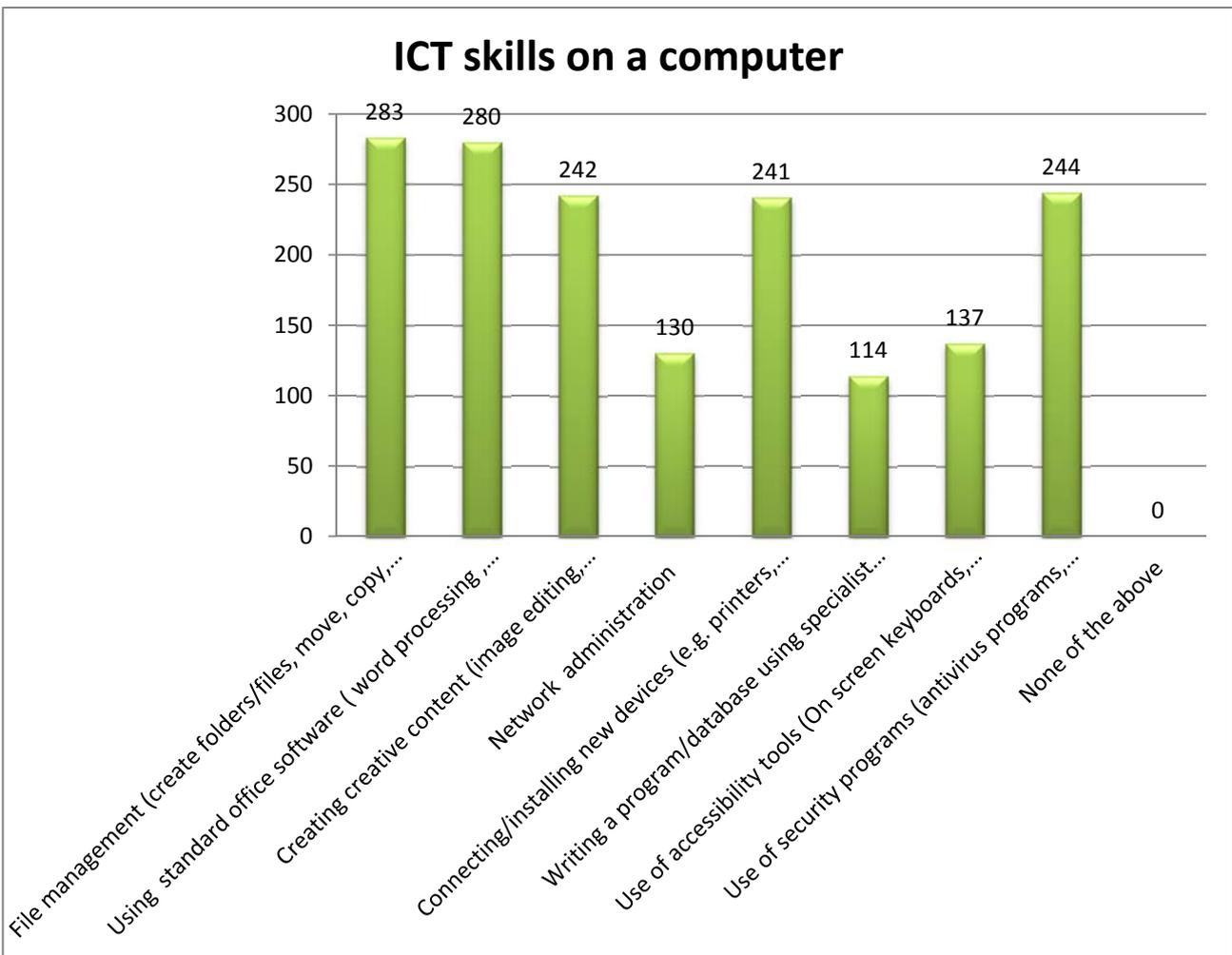
Most of the respondents (49%) declared an advanced level of English, but those with intermediate level are just behind them (44%). It can be concluded that early introduction of English in schools and involvement by the end of secondary education or higher education have positive impact as prerequisite of development of ICT skill.

72% respondent are currently studying. Others aren't studying because of high cost of enrolling and attending education (27.8%) and lack of time (19,4%). It is surprising that only 14 respondents interrupted studying because of financial issues (preference to work instead of studies and the need to work), while 60% of respondents are unemployed. Most of the respondents are unemployed because they can't find job.

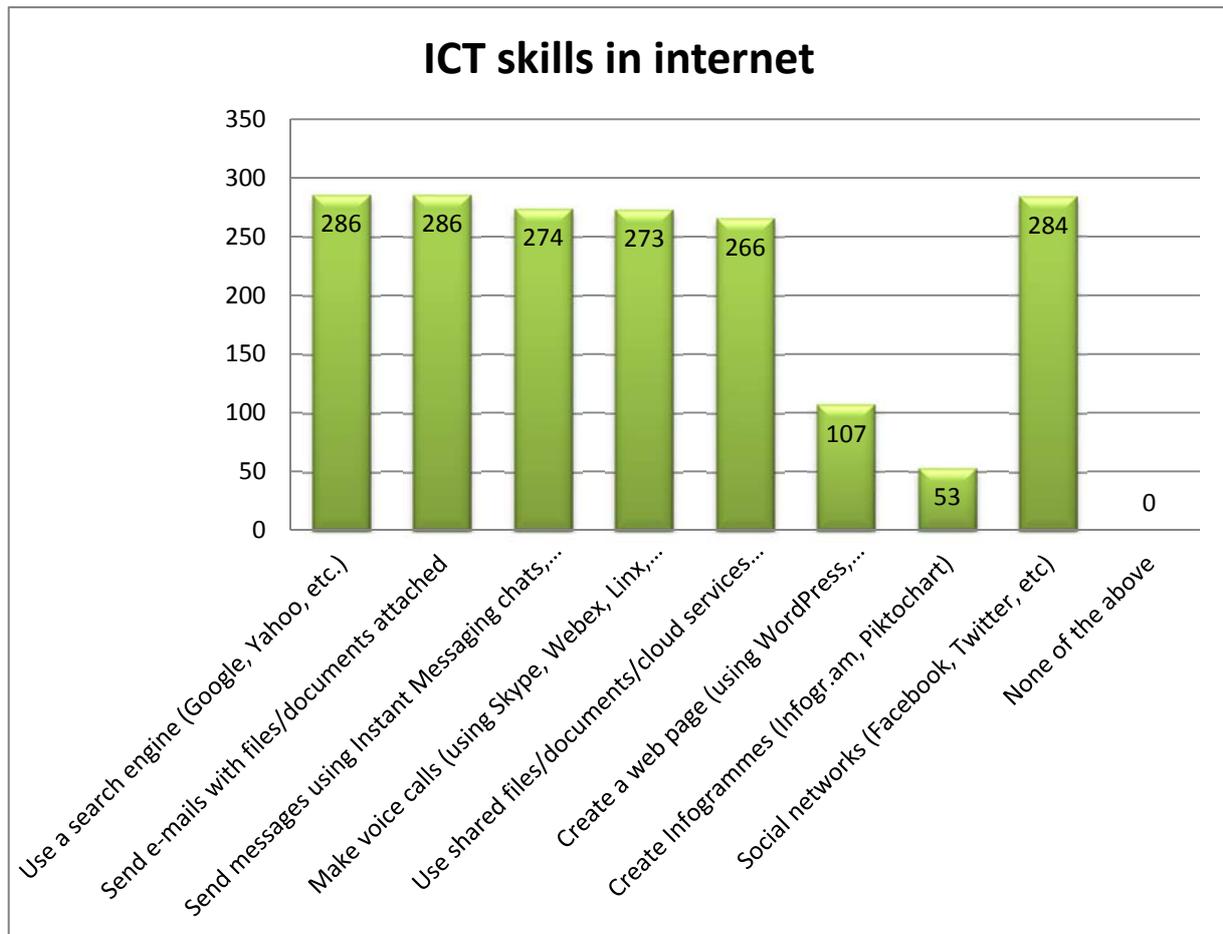
ICT skills of youth

88% of respondents use Computer/Internet on daily basis, while 92% of respondents use mobile devices daily. Therefore, young people in Croatia are regular users of different ICT devices.

When in come to skills needed for working environment (not as ICT specialist) results are also high. Almost all respondents (97,92%) have done some kind of file management on a computer (create folders/files, move, copy, paste ect.). 96.89% respondents used standard office software like word processing, spreadsheets, presentations etc. More than 80% have: created some kind of creative content (83,74%), connected/installed new devices (83,39%) and used security programs (84,43%). Computer skills that need to be more developed and used among subjects of the survey are those needed in digital industry: network administration, writing a program/database using specialist programming languages/coding.



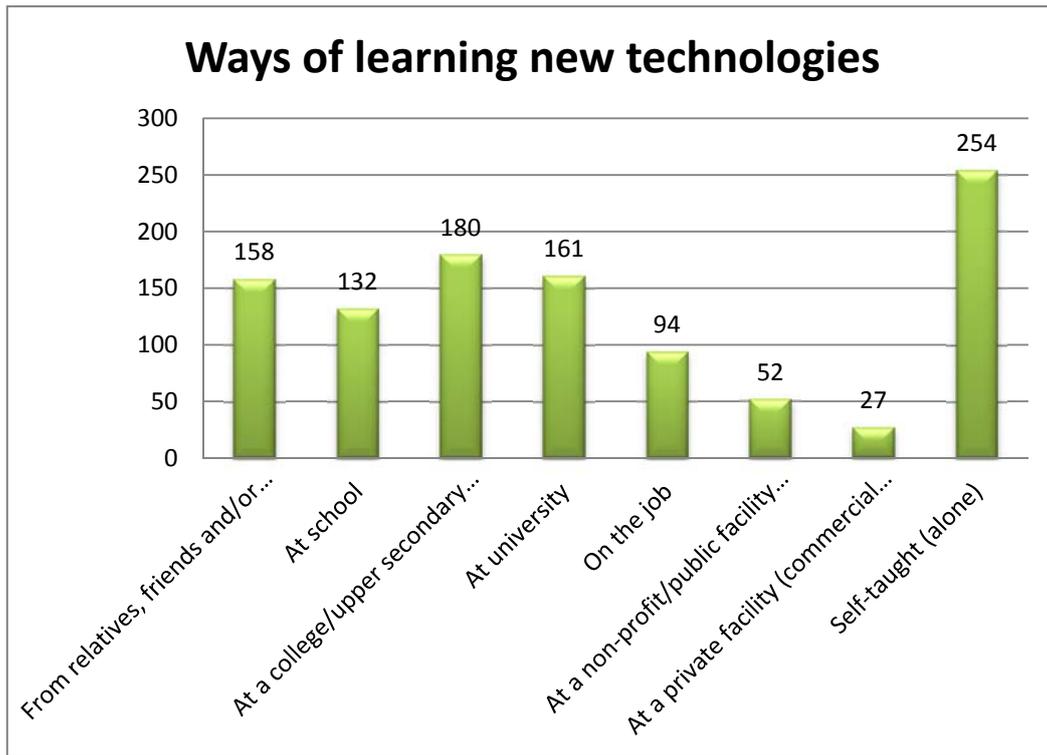
With Internet-related skills percentages are higher and it seems like the target is able to take advantage almost all the online services and tools, with the exception of those that are probably more needed in terms of employability: create a web page (only 37,02%) and infogrammes (only 18,34%).



From the experience in working with young people on development of their ICT skills as well as from responses of business sector it can be concluded that young people overestimate their ICT skills. Only 1,69% of employed people in Croatia are ICT specialists, while 13,80% enterprises are employing ICT specialists and 1,47% of them are reporting hard to fill vacancies for ICT specialists. It can be stated that using some device/programme doesn't mean that person knows how to use it effectively in business environment.

When it comes to educational environment, ICT skills can be developed in various circumstances, from which self-education is most popular (87,89% of respondents), followed by universities (62,28%), family/friends (54,67%) and schools (45,67%). Non-profit organisations and private facilities, which offers only "up to date" ICT education in Croatia are not perceived as relevant.

Even though most of respondents have developed their ICT skills by themselves or from friends/family, 71% of respondents evaluate their ICT skills as sufficient for labour market needs. When it comes to self-evaluation on modules that will be developed in project Generation 0101, respondents find their skills average.



From the partners experience, as well as from results of whole analysis implemented trough project, young' peoples self-evaluation of ICT skill is main reason why it is hard to attract them into different ICT educations. Today, it is very easy to find information you need online, but is it enough for employment in ICT industry? As far as employers are concerned, it is not. They find hard to fill open places, they need to invest in education of young worker lot of time and money and aren't satisfied with skills young people have - from both - ICT specialists as well as workers who need to use basic social networks and programs on computer.

0 = minimum to 5 = maximum

ICT skills in fallowing areas:	Average
E-journalism (creating online journalism content, blogging)	2,97
Web design (graphical and technical design and development of web pages)	2,26
Video development (Recording, formats, editing, storytelling)	2,87
Community web radio (audio editing, uploads, web site management)	2,86
Easy coding (game development)	1,98
Online collaboration (cloud solution/sharing online documents, calendars etc.)	3,49
Mobile app development (app programming, GUI programming)	1,87

MAIN CONCLUSIONS AND RECOMMENDATIONS

From the results of stakeholders analysis, projects analysis, surveys etc., it can be concluded that Digital Agenda goals are recognized in national documents and strategies in Croatia, but: (1) they are diversified among 31 strategies and documents and (2) they are not stated as priority in national, regional and local policies. Therefore, further effort is needed among all recognised stakeholders, if Croatia want to be recognised as digital society.

There are two initiatives in Croatia, that foster cooperation, but none of it had had major impact on rising ICT skills for employability among youth – eSkills for jobs and National coalition Digital Agenda for Creative Croatia. Companies and individuals from eSkills for Jobs and National coalition should work together in order to secure major step forward on policy level but also among youth. Besides, there is also Get Online Week campaign, which up to now had major impact on number of Internet users. Only in 2015. it fostered youth employment in ICT industry.

From the 39 researched projects, it is evident that many organizations are cooperating to raise ICT skills for youth employability. 59% of realized projects are about gaining new ICT skills to make youth more competitive on the labour market and to reduce youth unemployment. In addition, 13% of researched projects are seeking to make changes in existing curricula throughout the whole school system –not only to extend them but also to modernize and improve them. The programs in schools are providing pupils and students only elementary knowledge's and skills in ICT field, so the stakeholders are trying to compensate that by enriching non-formal education with the latest corresponding programs. Nevertheless, they are not recognised by youth as they should be.

Major gap on policy level as well as on project level is in including business sector in planning ICT education among youth. Since formal education is still trying to develop new curricula for ICT education, which will be for all children and youth, gap between developed skills and skills needed by employers should be resolved at least through non formal education and projects.

The importance of development of informal programmes for raising ICT skills among young people is obvious from research results. Croatia's general unemployment rate is quite high and youth unemployment has been a constant problem for the past 10 years. In March 2015, the number has reached 319,211 people of which about 17% (55,109) are young people, aged 15 to 24.

According to youth survey that was carried out in Croatia, young Croatians are aware of importance of digital skills for their employment - 71% of all subjects of the survey evaluate ICT skills as sufficient for labour market needs. It is significant that the percentage of employed ICT specialists is rather low at a 1.69%, while interestingly enough 18% of enterprises are reporting hard to fill vacancies for jobs requiring ICT specialist skills. Although young people use internet/computer/mobile phones on the daily basis it seems like they don't have skills and knowledge that are on demand in labour market.

Since there is great gap between opinions of youth and employers as well as between skills acquired in formal education and needs of employers education develop trough this project should have at least small effect on youth employability in digital industry.

According to youth survey, all respondents have used computer/internet and they have basic ICT skills and knowledge. However, when it comes to more specific skills, like web design or coding, the percentage is not so high. Computer skills that need to be more developed and used among subjects of the survey are: network administration, writing a program/database using specialist programming languages/coding, use of accessibility tools, web page development an infogrammes development.

Partners on the project Generation 0101 have recognized some specific areas that can be useful for participation in labour market. According to youth survey, Croatian youngsters have mediocre knowledge in those areas. When put together with the fact that almost 90% or more of the Croatian respondents use internet and computer on daily basis and that 96,19% are participating on social networks, facts may lead us to conclusion that they use their digital skills and knowledge for fun and leisure activities. In future, there is a need to demystify the specific ICT skills and knowledge as important for their future. There is a need to stress out more specific ICT programmes that are in a correlation to needs of employers.

Recommendations:

Development of Digital Agenda for Croatia will ensure money to invest in development of digital skills of youth. Since there weren't strategy, nor initiative to develop one, during the programming of European social fund, ICT skills weren't recognised as important and there are no funds directly related to development of curricula for digital industry nor for education of ICT specialists. If there was Digital Agenda for Croatia defined, digital skills and digital industry would be one of the special programmes.

There is a need to demystify the non-formal education in Croatia (that is clear from the youth survey where only 17,99% of respondents have gain some ICT knowledge from a non-profit/public facility (association, online centre, job centre, library, etc.), and only 9,34% from a private facility (commercial Internet point, Internet café etc.). We can explain this situation with high price of educations in private facilities, non-certified educational modules in non-profit organizations (youngsters like to get some kind of proof that they have participated in some kind of education), not understanding the importance of ICT skills and knowledge in labour market, etc.

The programmes that young people would be interested in (1) need to be more related to future jobs – less theoretical and more practical, (2) have to give them new knowledge's that they don't think they already have (as ECDL centre we can say that youngsters are not so interested in such kind of education anymore because they think they already know everything, although their knowledge is basic) and (3) learning methods have to be more adjusted to their time and needs. For sure, we have to continue with public campaigns of raising awareness about the importance of digital skills. In addition, there is a need to raise self-awareness about digital skills and knowledge they own. Creators of ICT education, whether they are from formal or non-formal institutions, have to be more connected with employers so they can understand what type of ICT knowledge and skills they need in real sector.

Based on youth survey, more exactly on overall self-evaluation of respondents, their skills and knowledge's in the areas that will be developed through the project Generation 0101 are mediocre. Therefore, we can determine that all proposed areas within the project are relevant, but the most needed are easy coding and mobile application development.

Conclusions:

I. Converging technologies:

Convergence of information and communication technologies and audio-visual technologies is enabling development of new multimedia products and services. Development of coding and multimedia production competencies is recommended in order to seize new market opportunities, like the ones in gaming and mobile applications industry.

II. Training of teachers from formal education system:

Successful implementation of the new ICT curricula in formal education will primarily depend on the quality of teachers. It is recommended that comprehensive training of teachers is developed and delivered prior to introduction of compulsory ICT courses in primary and secondary education. Training of teachers should blend traditional classroom training with computer enhanced learning.

III. Open educational resources:

eLearning resources will be required in a support of curricular reforms of the pre-tertiary formal education in Croatia. It is recommended that open educational resources are developed and maintained concurrently with development of new curricula. New learning methodologies through the massive open online courses (MOOCs) should be explored.

IV. Media and information literacy (MIL):

MIL training facilitates development of key competencies, including communication and problem solving skills, critical thinking, cultural expression, as well as civic, entrepreneurial and digital competencies. It is recommended to develop MIL through cross-curricular and extra-curricular learning projects for all age groups.

V. e-Inclusion:

Lack of e-inclusion policy in Croatia is obstructing development and implementation of sustainable e-inclusion projects and programmes. It is recommended to promote e-Inclusion and digital empowerment as development tools for social innovation within poverty reduction and rural development strategies on a national and local level.

VI. STEAM vs. STEM:

Knowledge society demands innovative business approaches and creativity becomes the main competitive advantage on a global market. It is recommended to recognise these demands and promote art education and cultural projects as creativity boosting tools within the science, technology, engineering and math education paradigm (STEAM).

VII. Employment in digital industry:

Majority of employees in a digital industry work in micro, small and medium size enterprises or belong to the big community of freelancers. In order to facilitate their growth on the EU digital single market, education and training programmes should combine development of creative digital skills with legal (intellectual property rights), financial (fundraising) and e-leadership competencies.

VIII. Digital single market:

New EU digital single market policy is bringing new business opportunities, but also threatening cultural identity of small European nations if not addressed properly. Awareness raising in partnership with public and private media is recommended in order to facilitate informed public debates about the new economic and legal environment.