

Young People and Digital Technologies

Danilo Korže¹, Ana Vovk Korže²

1University of Maribor, Faculty of Electrical Engineering and Computer Science

2University of Maribor, Faculty of Arts, International Centre for Ecoremediations

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Abstracts

Modern digital technologies are an integral part of young people's activities around the world. Obtaining information today seems to be very easy, but in fact, digitally acquired information is often one-sided. The value of so gathered information is even more doubtful, because young people are closed inside their opinion groups (and as well inside their information cloud) and so they follow only the narrow spectra of reality. In the paper some advanced techniques will be presented, which enable the virtual life of young people. The role of education, which should usefully integrate these techniques into everyday youth's work, instead of leaving them aside, is stressed as well. An example of such education practice in Slovenia is presented.

Keywords: digital technology, education, student, digital competence, mobile application.

1 Introduction

In 2017 the Common Digital Competence Framework for Educators was published for the first time and is constantly being further developed (Digital Competence Framework for Educators DigCompEdu, 2019). This document contains a list of ICT skills that teachers at all levels of education should be familiar with. The basic approach to teaching with ICT is problem-oriented (learning with challenges). The focus is on the design of the training, whereby students are expected to know the causes and results of their learning in the course of the training. The students should first be given a clear presentation of a problem (individual problem situation), which is then solved using various approaches in connexion with ICT technologies. In the following in Chapter 2 we present the techniques that have been presented in Digital Competence Framework as approaches for pedagogical work with young people. Approaches are also presented in proceedings »IZZIVI in dileme osmišljene uporabe IKT pri pouku« (The challenges and dilemmas of a meaningful use of ICT in the classroom, 2019).

*Corresponding author e-mail: danilo.korze@um.si; ana.vovk@um.si;

2 Education Approaches using Digital Technology

2.1 Research Teaching

Research teaching should be introduced in such a way that students use their practical experience in learning different subjects (communication, working with parents, etc.) and vice versa. Using their own imaginary or imaginary life examples, the students are to discuss various topics, including literature from the World Wide Web. The students should work in pairs or in groups and simulate individual teaching situations. Through exercises, games and the re-experiencing of situations, students can reflect more deeply on the content and approaches to information transfer.

2.2 Collaborative Learning and Online Collaboration

The students should acquire new knowledge together. Most of the time they should work in teams, where the active participation of everyone in the team is important. Each individual is thus individually responsible for the success and progress of his or her team. In the team, students should get to know different subject areas, such as curriculum, learning objectives, teaching methods, teaching forms, teaching content, lesson preparation (direct, thematic, annual), textbook, communication, assessment, etc.; search, research, research of online resources (visual and written); research in databases, text sources, social networks, portals, art archives; fieldwork; collaborative learning. Various techniques will be presented and implemented to enable knowledge acquisition according to social constructivist principles (e.g. snowball, expert collaboration groups).

2.3 Blended Learning

The process should be conducted in a combination of direct/traditional teaching and using support of ICT. ICT equipment should include PCs, laptops, tablets and other mobile devices (including the Bring Your Own Device principle), the Moodle system and the interactive whiteboard.

2.4 Reverse Learning

The possibility of moving work out of the classroom should be exercised with limited access to practical tasks that serve to consolidate the knowledge acquired in the given examples that the students carry out locally and over time. The strategy should also be used as a substitute for classroom work when other deadlines fall short of the planned meeting. A third possibility is for the pupils to pre-process some of the proposed content.

2.5 Igrification

The inclusion of game elements (e.g. confessions in online classrooms, going through game levels, learning by playing virtual games) promotes learning. This also includes the use of mobile gaming applications.

2.6 Analyzing Lessons Learned and Providing Feedback

Teachers should inform pupils about their own activities related to the use of ICT. The feedback on which they should focus should include the key elements of the specificity of the subject, in particular the way ICT is used and constructive assessment by other pupils.

Together they should form "learning communities" in which prospective teachers develop their own competences through mutual feedback.

2.7 Individualization

Also within the higher education process, future teachers should adapt the materials according to their specific needs. The materials should be produced at different levels of complexity and be suitable for examination by the students. The characteristics of the students and their fields of interest should be taken into account. The materials should be coordinated with the lectures, supported by an explanation and additional external materials to support the presentation.

2.8 Virtual Reality (VR) Experience

Future teachers should gain experience with virtual reality (e.g. virtual walks in art history, virtual reality within didactically oriented games).

2.9 Project Approach

Part of the study process for future teachers should be project-based teaching. For the latter, several instruments were studied and used, such as asana (b.d.).

2.10 Learning Outcomes Analytics within Online Classrooms

Online classrooms should also be used by university teachers to analyze the learning outcomes of future teachers, which should also be made explicit. In this way, future teachers will feel the benefits of analytics and use them (probably with already updated tools) in their own classrooms.

2.11 Various Online Resources

Various online resources are a necessary resource both during contact hours and during independent student work. Here are just a few examples of the arts: Web Gallery of Art, Google's search engine for high quality images (such as resolution) to the didactic presentation of visual art works; the World Wide Web for Virtual Walking, searching for Short Educational Movies, and Google Scholar for searching for quality study resources and Portal of i-Textbooks.

2.12 Various web Applications

Web applications should be used for fieldwork, museum visits, city explorations, architectural monuments and virtual games. Specialist tools (such as GeoGebra, Edpuzzle and Google Earth) should also be used.

2.13 Various Mobile Applications

Classic games that can be played with a certain game base and game figures as well as with paper and pencil have become transferable to mobile environments (e.g. Hex) with the development of mobile phone applications (downloadable from Google Play and iStore stores). So instead of playing the classic tutorial games, students should try out the games with the app on their own mobile phones.

2.14 Online Classrooms (e. g. Moodle)

Online classrooms should be used both at the basic level and at the higher level (e.g. the task module or the option module, for the peer evaluation The Workshop module). For the selected modules the Completion Tracking functionality should be used.

2.15 Copyright Tools (Exe for example)

Besides simpler tools, the advanced Exe tool can also be used to create interactive content. The tool allows you to save content in HTML and Scorm format. The interactive content in this tool can also include documents, multimedia elements and especially interactive elements.

2.16 Using Quiz Design Tools

Using quizzes as a tool for testing knowledge in the classroom is an innovative and fun way to test knowledge while encouraging individuals to achieve the best possible results due to the tool's competitive nature. Future teachers should become familiar with the tools in two ways, firstly as participants solving a prepared quiz and secondly as the creators of the quiz. Web-based (e.g. Moodle) as well as mobile tools (e.g. Quizlet, Kahoot and Socrative) are used.

2.17 Using the Infographic Design Tool

Infographics are an important source of information, presented through the combination of image and word, which promotes visual literacy, one of the most important literacy skills of the future. Because of their communication, they are particularly useful for the presentation of certain statistics and other types of data. Students should use free online tools for creating infographics, such as Venngage, to familiarize themselves with them and use them to build their infographics case.

2.18 Social Networks (e.g. closed Facebook groups)

In the Facebook social network, a closed group can be created that includes only the participants of the course. The purpose of the groups is primarily to talk to the students about all the contents that are in any way related to the topic. The students in the group are also informed about various organizational issues related to the execution of lectures and/or exercises.

2.19 Office Tools

There are various ways to integrate Office tools: e.g. the didactically designed use of PowerPoint in teaching is emphasized in the preparation of seminars; MS Word should also be presented in relation to references; Excel as a tool for teaching data processing. These tools are also linked to other tools, e.g. slides with explanations and animations could be converted to video, which is then accessible via the multimedia plugin inside Moodle.

2.20 Smart Board Software

The Smart Board can be used with Smart Notebook software. The software allows you to capture and edit screen images, use a digital pen, and expose areas with important information. In combination with a digital pen, spreadsheets are created that can be captured and stored in a "notebook", which is then sent to the students as teaching aids and notes of the presented learning unit.

2.21 Web Collaboration Tools

Collaborative planning tools such as Trello (social networks like Twitter; remote tools like Skype or Messenger video calls; collaborative learning tools such as Google Drive, collaborative work tools such as Padlet or SharePoint; brainstorming tools such as Mindmapping or Coggle, presentation tools such as Prezi or PowToon.

2.22 Search Engines and Platforms (e.g. Google Scholar)

Since it has been shown that future teachers also lack the knowledge to find the right information, the platforms Google Scholar and ResearchGate are useful.

2.23 I-textbooks

Interactive Slovenian textbooks (I-textbooks), which are available online free of charge and can be used by every teacher and student, are much more user-friendly than traditional textbooks in terms of usability, portability and adaptability of the learning process. It has been noted that their use in schools is not exactly a priority, but on the other hand they are too often not included in the study process in faculties. The use of the i-textbook for both teachers and students is a cornerstone in dealing with e-materials.

3 Selected Examples of Digital Technologies in Education

In the following we present three tools that represent a path to knowledge for young people and at the same time motivate them to learn independently beyond the regular education, whereby we see the greatest value in the use of ICT approaches.

3.1 Video Forwarding Tool

The Edpuzzle Tool (Edpuzzle, 2019) is a tool that can offer students a selected video training clip in a meaningful way. It can be embedded in an LMS (e.g. in the Moodle Online Classroom, Figure 1). Prior to this, the students must be registered in the system as "students". The didactic use of the tool is especially useful when online monitoring of the understanding of the clip is used, as the tool allows the teacher to add questions to the snapshots and store the students' answers in a timely manner, so that feedback to the teacher is always available for each individual student.

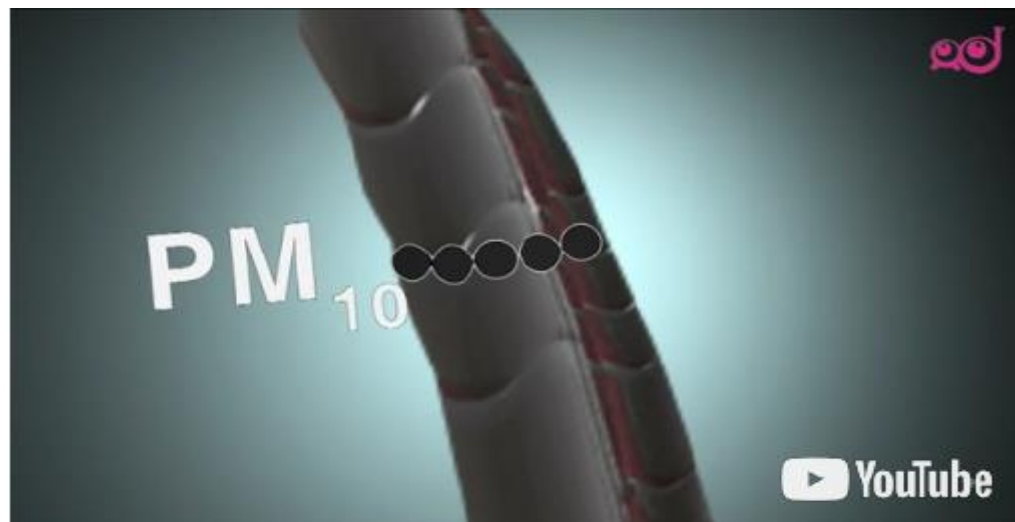


Figure 1: An example of an Edpuzzle screenshot (Source: Golob Nikolaja, 2019).

The video provided by Edpuzzle with the correct didactic processing can also be used to test knowledge, as we can usefully add open and optional questions that are not necessarily directly related to the information in the clip. In this way we can test the knowledge on a specific topic that is necessary for a deeper understanding of the topic of the chosen training clip.

3.2 Using Tablets to Take Notes

The use of tablets in the educational process using application Notability is just one of many similar applications. The use of a tablet allows us to develop some ideas that we need to consider when preparing the lecture. With introductions of tablets we can help the student by marking or signaling important information. Keywords can be colored, underlined or bold, and various symbols can be used to highlight important parts (arrows, circle definitions). A larger amount of information can be divided into smaller sections.

To use the Notability app, a student only needs a tablet and a custom pen. The application includes: - typing (different fonts), - writing with a stylus of different colors and thicknesses, - marking with a marker of different colors and thicknesses, eraser, - copying and pasting sections, - scrolling through notes, - recording sound. The student can edit notes using a pen, a marker, typing, copying and pasting, as well as deleting. The paper templates and a background color could be chosen. After editing the notes, you can delete lines and change the color of the paper to white so that the file is more suitable for copying at the end. An example of making a graph as part of a note is shown in Figure 2.

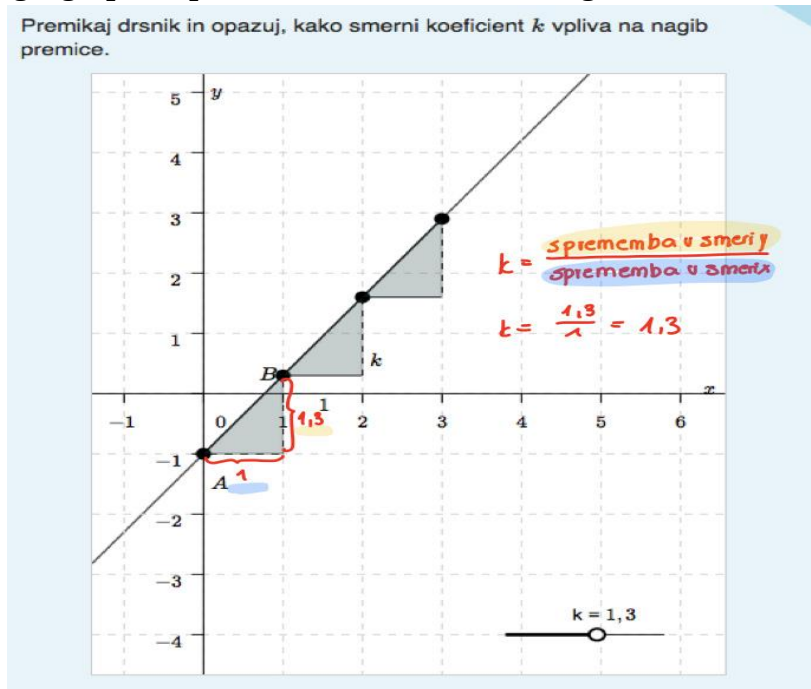


Figure 2: Graphs (Source: Zmazek Blaž, 2019).

We also see a great advantage in the use of tablets and the same application by several students at the same time. During the lectures, it is often the case that the listeners cannot follow the lectures as well as they would like to because of the amount of text used. Many professors also use ready-made presentations, which are one of the simplification options. If

professors would write on whiteboards (or tablets) and also publish notes in online classrooms, they would achieve a similar or even better effect than presentations.

3.3 Mobile Applications in Outdoor Education

Outdoor education is a necessity especially in geography (English Outdoor Council, 2014). In order to make outdoor teaching as interesting, useful and instructive as possible, geographers from the Faculty of Philosophy at the Institute of Geography in Ljubljana have developed mobile geographic applications for field research and education (Krevs, 2017). The applications have various uses, ranging from stimulating user ideas to possible changes in space, which allow field measurements to be taken, field data to be collected, and are a great help in creating local databases (Figure 3). Below are some of the mobile applications for field measurement of tree growth, documentation of rural settlement types, monitoring of invasive species and suggestions for improving settlement equipment.

Mobilne aplikacije za šolo (in prosti čas)

<p>Ovire za gibalno prikrajšane</p>  <p>https://goo.gl/iHpEFB</p>	<p>Lokalna kakovostna hrana</p>  <p>https://goo.gl/BsiB12</p>	<p>Zanimivosti za nedomačine</p>  <p>https://goo.gl/5f4TET</p>
<p>Invazivne vrste</p>  <p>https://goo.gl/Kokcp6</p>	<p>Najlepši razgledi</p>  <p>https://goo.gl/oD19hw</p>	<p>Potovanja in izleti</p>  <p>https://goo.gl/Zz5Bdx</p>

Figure 3: Direct application access (Source: Vovk Korže Ana, 2019).

Podpora terenskemu merjenju prirastkov dreves

- Raziskovalno delo
- Namenjeno majhnemu številu uporabnikov
 - Eden meri prirastke in za vsak slučaj beleži tudi v zvezek
 - Drugi z aplikacijo beleži meritve in njihove položaje



Application 1: Support for fieldwork.

Dokumentiranje primerov tipov podeželskih naselij

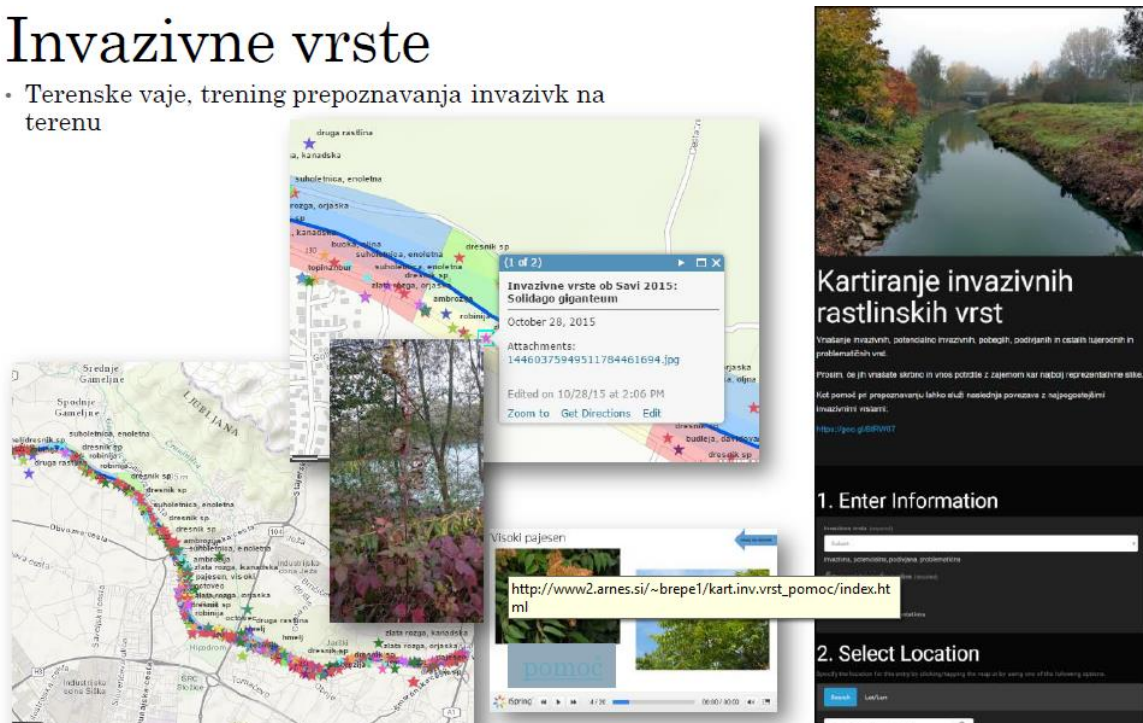
- Terenske vaje, utrjevanje znanja, prepoznavanje pojmov v resnični pokrajini



Application 2: Documenting types of rural settlements.

Invazivne vrste

- Terenske vaje, trening prepoznavanja invazivk na terenu



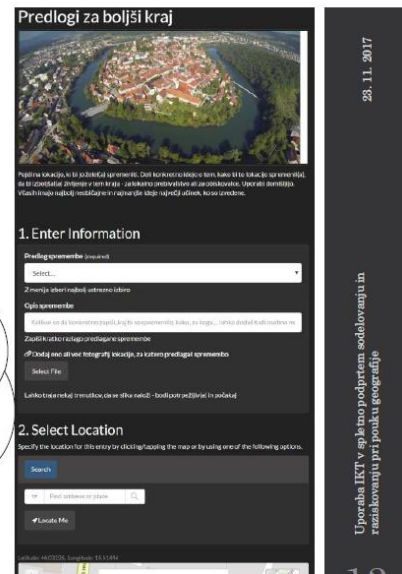
Application 3: Invasive plant species.

Podajanje predlogov za izboljšave krajev – mobilna aplikacija

• Aplikacija: <https://goo.gl/G1ccG6>



Pločnik ni varen za mamó z otroškim vozičkom, invalida ali starejšega, ki se težje giblje. Predlog – razširitev pločnika ali obvezne niše v zidovih za smetnjake



Application 4: Proposals for improvements to places.

Mobile applications are part of outdoor education and are based on innovation and creativity of young people (Kimbro, 2006) and (Maynard, Waters 2007). Innovative and research-based teacher work is today a prerequisite for the qualitative implementation of the educational process. We can conclude that in the broader conception of innovation not only its "end result" but also the innovation process itself becomes important. The use of mobile applications offers a wide range of possibilities for the participation of young people in shaping the living environment, the maintenance of natural resources, the integration of people with disabilities in society and the landscaping of the local environment. There are certainly many opportunities for outdoor teaching in this area, as there are more applications every day and the teacher is expected to choose those that add value to the classroom.

4 Conclusions

ICT approaches in the educational process confirm that pupils become more active and that there is a constant dialog and multidirectional communication, which has a positive effect on the permanent memory (knowledge). When using ICT, we follow the principles of innovative learning, which are reflected in the following findings:

1. all attention is focused on the student and his attention on applied learning
2. learning is a social experience that brings interesting, rich and useful experiences
3. emotions are an important support for learning and are an indication of the experience of content.
4. Awareness of differences in thinking and precognition decreases with the active work of the whole group.
5. The ICT learning environment is familiar to students.
6. Positive feedback in the learning process develops from active student participation.
7. specialization in individual discipline is reduced through active cooperation and interdisciplinary integration

The key to the successful use of ICT technologies is the active approach that is also expected by young people in the education system. The active approach is already a necessity in the 21st century and must be further developed in education.

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