Exploring Creativity and ICT Across Educational Systems:

Creativity and Maker Spaces

Creativity in Teacher Education

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CREATION/
CREATIVE PRODUCTION
AS A COGNITIVE PROCESS

Jan Slavík et al. (2013)
DIY in Action

- Transitions in society and a swift evolution in digital technologies (DT) are reflected in school education, and how the educational system adopts it.
- **Young people frequently publish their digital outcomes and artefacts on social networks, and visualize their ideas, procedures, and thinking through photos, videos, and animations.**
- These activities are not integrated into school assessment, and their teachers very often do not understand these learning processes. But these creative activities give evidence about learning processes and progress. This corresponds to **the concept of DIY (Do-It-Yourself).**
LEARNING OF YOUNG PEOPLE WITH TECHNOLOGY and DIY

• In 90th, the idea of DIY penetrated into Fine Art, Arts and Crafts and into digital technology, it starts to dominate in a curriculum content, it gives educators and learners an opportunity to create, share and learn through collaboration (in virtual space).

• “Online adolescent youth have a good time and enjoy new opportunities to create, to remix and share digital contents”.

(Lenhart, Madden, 2005, s. 1)
LEARNING OF YOUNG PEOPLE WITH TECHNOLOGY and DIY

Students’ initiative of creativity (Czech Republic)

ROBOTICS:
- Ondřej Staněk

SCRATCH: Activities for pupils and teachers how to learn SCRATCH (national songs, storytelling), Literacy from Scratch
- Hana Šaldová (ICT student teacher)

Textbook of Mathematics for his schoolmates (Matika pro spolužáky, Online problems to be solved)
- Marek Liška, Marek Fanderlich (age 18)

This textbook differs from whatever similar on the Czech book market. It is not scholarly textbook full of mathematical definitions, axioms or proofs. The textbook struggles in a natural student vocabulary to explain some mathematical phenomena or situations
And to show a meaning and importance of Math for life.

Mgr. Leoš Bilek, učitel G
The significant aspect of DIY is a process of creation (or production) which is appropriate, and obvious, and natural for students in their usage of digital technology, and which aims to support their learning broadly (Jocson, 2012, p. 299).

In DIY activities in schools, pupils can apply knowledge and skills from different subjects, discover inter-disciplinary contexts (Sancho-Gil, J. M. et al., 2015) and organize their work, and manage their own learning.
The idea DIYLab has been implemented in school education (with pupils aged in 6-16) and in teacher education.

EU project Do It Yourself in Education: Expanding digital competence to foster student agency and collaborative learning (2014-16)

http://diylab.eu/
http://hub.diylab.eu

Spain, Finland, the Czech Republic

DIY based on the idea “Building new tools and paths to help all of us learn” (Kamenetz et al., 2011)

The DIY idea forms an integral part of:

- ICT teacher education at Faculty of Education (Charles University)
- Pedagogy at Faculty of Arts, Faculty of Pedagogy (Universitat de Barcelona)

217 DIYLab objects publishes on the HUB
DIYLab in Practice

Main aim:

• To contribute to *digital literacy development*
• To implement DIY philosophy into (school) teaching practice and learning (to interconnect *after-school creativity with curriculum, to bring students ideas to school*)
• To establish and develop *DIYLAB* (hub) to support network collaboration based on a cloud technology (at schools and out of school) on experiments with various types of technology

*The most important outcomes is not an artefact as such but visualisation and description of a process how the artefact was produced, how the problem was solved, how we learned to do it.*
DIYLab in Practice

**SCHOOL:**
- Collaboration
- Curriculum
- Interdisciplinary relations
- Students discover how to solve problems

**INTERESTS, CURIOSITY**
- Ideas
- Problems
- What I enjoy doing

**ACTER-SCHOOL ACTIVITIES**
- Ideas
- Problems
- What I like to do

**PROCESS**
- How I learn to do it

**THROUGH DT**
- Process description, „manual“ how to do it
TASK 1: TO RESEARCH WHAT STUDENTS LIKE TO DO (OUT OF SCHOOL)?

METHODS: focus groups with pupils, parents, teachers, student teachers

RESULTS:

- *Ideas for activities to be implemented to school education*
- *Young people – digital natives (teachers not yet)*
- *Connectivity, life style, DT as a commonplace part of life and learning*
- *A virtual environment offers a space for unlimited differences and ways how to differ from others.*
- *ICT student teachers focus primarily on technology, how technology works, what technology allow and permit, not on content, on details, on design a new product, ...*
TASK 2: TO DESIGN DIYLAB ACTIVITIES

6 requirements:

1. Cooperation and collaboration of all who is involved into DIY activity (including teachers)
2. Inquiry Based Learning
3. Cross-curricular dimensions
4. Digital Literacy improvement
5. Curriculum
6. Autonomous/ Self-regulated learning
## TASK 3: TO IMPLEMENT DIYLAB ACTIVITIES

<table>
<thead>
<tr>
<th>DIY activity</th>
<th>Departments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>How I am becoming a teacher</strong></td>
<td>IT + Art</td>
</tr>
<tr>
<td>Collection of examples of problems which human cannot solve without using computer (tomography, ...)</td>
<td>IT</td>
</tr>
<tr>
<td><strong>Bird house</strong></td>
<td>Biology + IT</td>
</tr>
<tr>
<td><strong>Little Dances in Scratch</strong></td>
<td>IT</td>
</tr>
<tr>
<td><strong>Animated stories</strong></td>
<td>IT</td>
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<tr>
<td><strong>Digital objects for IWB</strong></td>
<td>IT</td>
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<tr>
<td><strong>Tablets in classroom teaching</strong></td>
<td>IT</td>
</tr>
<tr>
<td><strong>Wiki of teaching activities</strong></td>
<td>IT</td>
</tr>
<tr>
<td><strong>Digital teaching objects</strong></td>
<td>IT</td>
</tr>
<tr>
<td><strong>Robot project</strong></td>
<td>IT</td>
</tr>
</tbody>
</table>

[DIYHUB](hub.diylab.eu)
HOW I AM BECOMING A TEACHER

Aim:
To understand factors and effects which contribute and participate in a process of how I am becoming a teacher (city, people, environment, ...)

Target group:
Teacher students of Primary Education (Year 4)
ICT Student teachers (MA, 1 Year)

Problem:
To create animation based on a set of photos which show a process of my changes how I am becoming a teacher.

Procedure:
2 Weeks collect photos (about 100 photos)
4 weeks of photo analysis; mindmaps; tags; main ideas; storytelling; scenarios; auto-reflection
1 week – learning to use SW for animation
2 weeks – animation development
1 week – English subtitles, music

Typology of outcome:
Animation (GIF Animator, WeVideo) + self-reflection
Aim:

To understand importance of computer technology for life, practice, science, art etc. and progress in society development

Target group:

ICT students (MA, 1Year)

Problem:

To elaborate an example of problems which human cannot solve without using computer.

Procedure:

To find an example and describe it, explain it.
## DIYLab in Practice with Student Teachers

**COLLECTION OF EXAMPLES WHICH HUMAN CANNOT SOLVE WITHOUT COMPUTERS**

<table>
<thead>
<tr>
<th>Branch/ Field/ Domain</th>
<th>Specialization/Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS and Telecommunication</td>
<td>GPS, Internet, Video-conferencing</td>
</tr>
<tr>
<td>Transport</td>
<td>GPS</td>
</tr>
<tr>
<td>Physics</td>
<td>Astronomy, Meteorology, Distributed calculations/computing, Simulations</td>
</tr>
<tr>
<td>Medicine</td>
<td>Robotics in surgery, Tomography, Sequestrotomy for DNA, Hearing defect, Cybernetic Leksell gamma knife</td>
</tr>
<tr>
<td>Technology</td>
<td>Technology Motion Capture</td>
</tr>
<tr>
<td>Manufacture</td>
<td>Bar code</td>
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</tbody>
</table>
DIYLab in Practice with Student Teachers

ANIMATED STORIES

- Milan Žemlička: O chytrém Jeníkovi
- Miloslav Khas: Story about a little car
WELCOME ON

http://diy1ab.eu/

http://hub.diy1ab.eu/
RESOURCES


RESOURCES


