

## Good practices: Remote schooling / Digital education in the context of the COVID-19 crisis

### General Information

Country / Region of nominating institution	Croatia
Nominating institution dealing with the good practice	University of Zagreb University Computing Centre - SRCE
Consent for publication (YES / NO)	Yes
Contact data for further possible cooperation (mail / phone)	<a href="mailto:ceu@srce.hr">ceu@srce.hr</a>
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### Area of concern

After the outbreak of the COVID-19 crisis, new and creative approaches in education systems had to be found to deal with the situation. Despite the negative consequences, this led to a variety of innovative educational measures useful also for the future.

In this context, we are looking for best practices in the following areas:

- Equal access to education / disadvantaged groups
- Ensuring learning outcomes
- Teacher education and training
- Digital pedagogical resources and online learning platforms
- Funding processes / innovative solutions

Please tick the level of education and implementation that the good practice deals with in the chart below:

Level/type of education		Level of implementation	
Early childhood education	<input type="checkbox"/>	Institutional	<input checked="" type="checkbox"/>
School education	<input type="checkbox"/>	Local	<input type="checkbox"/>
Higher education	<input checked="" type="checkbox"/>	Regional	<input type="checkbox"/>
Vocational education and training	<input type="checkbox"/>	National	<input checked="" type="checkbox"/>
Adult education	<input type="checkbox"/>		

## Description of the good practice

### Title of the good practice

E-learning platform for Higher Education Institutions - Merlin

**Short introduction of the situation** (who are the recipients/attendees, what means to educate were used, what financial resources were used, etc.) and **the remote schooling / digital education issue** that was dealt with (ca. 100 words)

The central unit at national level which provides assistance in implementing e-learning in higher education in Croatia is the E-learning Centre at the SRCE. The focus of the E-learning Centre is to provide accessible and sustainable support to higher education institutions, teachers and students in using and applying new technologies in teaching and learning. In order to achieve that the E-learning Centre ensures and provides a generally accessible e-learning platform and ensures joint/centralized resources required for the application of e-learning. The E-learning platform Merlin (<https://merlin.srce.hr>) is based on the open-source system Moodle and it is developed, maintained and administered by the E-learning Centre team. It enables a reliable and free-of-charge virtual learning environment (VLE) for higher education institutions, teaching staff and students. Merlin is connected to the Information System of Higher Education Institutions (ISVU), the e-portfolio system (Mahara) and the webinar system (Adobe Connect). At the moment 89 higher education institutions use the e-learning platform, and 71 of them use Merlin as their official e-learning platform.

At the beginning of March 2020 there were 14,518 e-courses on Merlin. When lockdown started on March 16<sup>th</sup>, in two weeks the number of e-courses increased to 21,377. At the end of the 2019/2020 academic year there were 23,628 e-courses on Merlin, with 9,406 teachers and 86,109 students participating. Merlin has worked without difficulties all the time, with peaks in the number of concurrent users as well, about 3,000 users online at the same time. As all teaching and learning has moved online, teachers used more activities on Merlin (e.g. forums, chats, exams and assignments) and they put more materials online (the number of files by the end of March exceeded the total number of files uploaded on the Merlin system in the 2018/2019 academic year). A significant increase in teachers' need of support and assistance in teaching in the online environment has accompanied such a large number of e-courses. A number of teachers had not had any experience in the use of Merlin, so they needed extensive support. Therefore, in March and April a huge number of consultations were held by phone or online and lasted for about 30-45 minutes as teachers did not know anything about e-learning, Merlin or how to prepare teaching in online environment. Alongside helpdesk and consultations, online courses, manuals, animations and quick helps were available. However, the majority of teachers preferred the phone and e-mail as a way of getting support. Students as well had a difficult time and needed support to get around in a virtual environment. The E-learning Centre successfully provided support to all teachers and students who asked for it.

**Measures taken / resolution found / output** of the practice (ca. 150 words)

A significant increase in the number of e-courses as well as teachers and students attending resulted in an increase in the number of activities performed on the Merlin e-learning platform. Prior to the pandemic, the e-learning platform was used by a maximum of 1,135 concurrent users (as opposed to 470 users on average before the pandemic), while during the pandemic this number rose to 3,099 concurrent users (as opposed to 1,539 users on average before the pandemic). In addition, the use of Merlin has changed during the pandemic and the need for student evaluation has significantly increased through online exams, assignments and a number of other activities.

In order to ensure the smooth work of all users, especially when performing the exams, it was necessary to make changes to the existing infrastructure of the e-learning platform Merlin. The e-learning platform servers have been upgraded with additional computing resources, with some services separated onto additional servers. Of course, all this required intensive refinements in the configurations of key services on the servers in order for Merlin to work under such a large and sudden increase in the number of users.

**Challenges encountered** during the implementation of the remote schooling / digital education action (ca. 50 words)

As lockdown came quite suddenly, and the number of courses and users increased significantly in a very short period, it was a challenge to adapt the architecture of the e-learning platform Merlin to enable uninterrupted work for users. This required real-time monitoring and configuration of the service, all in a way that did not affect the users' current activities. The clustered infrastructure environment of Merlin helped significantly in this case. Merlin is a Moodle installation with a number of higher education institutions and in this way it is unique.

As support to teachers needed restructuring, the E-learning Centre team worked long hours and more people were on the phone providing support. At that time additional materials were developed to help teachers get around the virtual environment, and support was provided especially on how to perform online exams. All materials are published on the E-learning Centre web pages.

**Transferability:** How can the good practice be applied to similar situations in different regions/institutions? (ca. 50 words)

We have successfully established an e-learning platform that has allowed all users to work without any serious outages even at the beginning of the pandemic, and which is used by thousands of teachers and students every day. We are open in sharing our experience, and we also actively monitor and listen to other experiences in using Moodle on international level, since in that way we can provide an up-to-date modern platform fit for all teachers. The experiences of SRCE can help other institutions in planning and establishing an e-learning platform based on Moodle for a large number of users.