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VIDEO EXPLANATIONS AS A USEFUL DIGITAL SOURCE OF EDUCATION IN THE COVID 19 SITUATION

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Abstract/Izvleček The paper presents the current state of scientific findings on flipped learning during the outbreak of COVID 19 and compares two models, the Chinese and the Slovenian. The portal www.*razlagamo.si* offers asynchronous video explanations that allow the learner to manage time independently and supportive conversations in which students synchronously, in one-to-one conversations communicate with student-teachers and in-service teachers. The quantitative overview of the video explanations is provided. Results will help teachers who use the principles of flipped classroom, and decision-makers who design the educational model for the future.

Video razlage kot uporaben element izobraževanja v COVID 19 situaciji V članku predstavljamo trenutno stanje znanstvenih dognanj o obrnjenem učenju med izbruhom virusa COVID 19 in primerjavo dveh modelov, in sicer kitajskega in slovenskega. Portal www.razlagamo.si ponuja asinhrone video razlage, ki učencem omogočajo samostojno upravljanje s časom, ter podporne pogovore, v katerih učenci sinhrono, v pogovorih s študenti pedagoških smeri in učitelji razrešujejo težave z učno snovjo. Ponudimo tudi kvantitativni pregled video razlag. Prispevek bo v pomoč učiteljem, ki poučujejo po načelih obrnjene učilnice in odločevalcem, ki razmišljajo o modelu izobraževanja v prihodnosti.

Keywords:
flipped classroom, asynchronous learning, digital resources, China, Slovenia

Ključne besede:
Obrnjena učilnica, asinhrono učenje, digitalni viri, Kitajska, Slovenija

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Introduction

The World Health Organization (WHO) declared COVID 19 a global disaster on January 30, 2020 and declared it a pandemic on March 11, 2020. During the pandemic, the impact of e-learning became particularly important. In the emergency, many countries closed schools and switched to emergency remote teaching. Emergency remote teaching (ERT) is defined as a temporary shift from the face-to-face or hybrid mode of instruction to completely digital education, owing to external factors (in our case COVID-19) and where there is no time for preparation. Since it emerges as a response to an emergency, its primary aim is not to develop a robust educational ecosystem but to provide temporary access to instruction, along with instructors to provide support (Hodges et al., 2020). Therefore, ERT is about delivery modes, methods, and media. On the other hand, online learning is a well-known educational form and is planned beforehand. Online learning, sometimes called "e-learning" or distance learning, is a form that happens at a distance rather than within a classroom setting. It was developed to leverage technology and provide students with the opportunity to achieve degrees without the need to be on the premises (Hodges et al., 2020). Emergency remote teaching should be considered a temporary solution to an immediate problem. Teachers should "in these times (and all other times) think about not only the content of their teaching but also the medium they use" (Coeckelbergh, 2020, p. 3). The digital age has arrived and systems, including schools, are not yet ready for it. The scientific community and the EU support the principle of equal opportunities and thus, the development of open educational resources (OER) and also draw attention to the quality of resources. The effectiveness of emergency remote teaching measures is still under discussion (Viner et al., 2020). Despite the best efforts, a great many teaching staff have not previously had to develop the special skills required to create and deliver online learning and are required to upskill very quickly, exacerbating the challenge of sustaining the rate of learning and level of engagement. The COVID-19 outbreak exposed a significant variation in educators' readiness to use technology to support learners at a distance. The gap was noticed in both the international context (Trust & Whalen, 2020) and the Slovenian one (Skubic Ermenc et al., 2020). Owing to the vast number of studies regarding ICT in education, we tried to limit the literature to meta-analyses whenever possible. The research to date does not suggest that the use of ICT has a statistically significant impact on students'

knowledge. Still, there are definite advantages of ICT in developing more autonomous learning (Hatlevik et al., 2018). A meta-analysis conducted by Clark et al. (2016) argued that ICT as a medium could promote productive learning. Means et al. (2009) conducted a meta-analysis study based on more than 100 ICT studies in education. They found that the most substantial positive effect on student knowledge was achieved through a combined teaching method using digital manipulators that promote active learning. Similar findings were provided by a recent meta-analysis, which suggests that the inclusion of ICT in education can have positive effects on administrators, teachers, and students (Baseer Safi, 2019). Researchers in this field continuously stress the importance of quality in e-learning materials. Clark and Mayer (2008) pointed out that content clarity and interactivity are not enough for the quality of e-learning materials and that interactive and dynamic elements can play a constructive or destructive role in the learning process. They can be a useful tool to ensure an active role for the learner, since they present data more clearly and promote in-depth understanding of the content; on the other hand, meaningless interactivity can lead to a loss of learner attention (Lipovec et al., 2017). Although research results in this area are inconsistent, the hypothesis that computers will play the role of cognitive facilitators in the classrooms of the future is widely accepted (Pérez-Sanagustín et al., 2017). During the COVID 19 situation, warnings that emergency remote teaching increases socioeconomic disparities were often raised. The impacts are particularly evident in the early years, which are critical to understanding, among students at risk, where it is difficult to make up for a lost time, and among students from culturally and linguistically diverse backgrounds.

Research findings support this thesis. According to Scherer and Siddiq (2019), the gap in digital literacy caused by socioeconomic status is still smaller than the gap created by socioeconomic status in mathematics achievement (Scherer & Siddiq, 2019). Nevertheless, the Pearson correlation coefficient is 0.214 for digital literacy and socioeconomic status and explains about 17% of the variance within the sample. The same authors report that gender plays no significant role in ICT literacy (Siddiq & Scherer, 2019).

Flipped/inverted classroom

The flipped learning approach has become a popular pedagogy in many educational institutions around the world. During the coronavirus pandemic, flipped learning with premade video learning materials was often used (Lipomi, 2020). Students receive prepared materials, which they study asynchronously, and then clarify any ambiguities in synchronous communication with the teachers. Flipped learning is also recognized as an effective teaching method outside times of crisis (Najafi & Heidari, 2019). Wagner et al. (2020) defined the model of the reversed classroom as a teaching approach in which students first watch a video and then carry out further learning activities in school. The importance of quality video materials is particularly emphasized (Gordon, 2014). In a meta-analysis of 44 independent sources, Wagner et al. (2020) concluded that the flipped learning model for secondary school students is more effective than traditional teaching. The highest positive correlation between flipped learning and achievement was reported for STEM (Science, Technology, Engineering, Mathematics). Van Alten et al. (2019) similarly defined flipped learning or the inverted classroom as an approach in which "students first study teaching resources (e.g., watching online lectures) and then apply the knowledge in the classroom" (van Alten et al., 2019, p.1). Their meta-analysis shows that a well-designed inverted classroom in secondary education is a promising pedagogical approach for the future and has a small positive effect on achievement. Similar results were obtained by Zhu et al. (2019) for the primary school population. Among the main difficulties in using flipped learning is the heavy workload on teachers when creating inverted learning materials and lower activity levels among students when learning outside the classroom (Lo & Hew, 2017). Research on the factors that determine technology acceptance from the teachers' perspective has been conducted for some time (Scherer & Teo, 2019). Teachers' technology acceptance is a complex construct that is influenced by many factors. Roughly speaking, the acceptance of technology cannot be determined only by what schools offer teachers as an aid in the use of technology. A positive attitude towards technology is also determined by the spectrum of teachers' motivation tracks and internal and external beliefs about technology and its use. During the COVID 19 outbreak, the implementation of e-learning was not always smooth and efficient, since schools have limited experience with e-learning, especially when teachers do not understand the principles of remote teaching (Almanthari et al., 2020).

The Chinese experience with education during the COVID 19 lockdown

In March 2020, a handbook was published describing the Chinese experience with providing learning during the outbreak of COVID 19. Huang et al. (2020) describe how the Chinese Ministry launched the "Disrupted classes, undisrupted learning" initiative, which provided emergency remote education to more than 270 million students. The strategies used by teachers varied widely, from group use of videoconferencing systems such as *Zoom* or *MS Teams*, to synchronous, video-supported one-to-one teaching. The handbook also described the diverse materials for the students that the educators in China used. In particular, it emphasized the widespread use of pre-recorded lectures (Huang et al., 2020). Huang et al. recommended open digital learning resources that include a wide range of digital resources, including audio and video simulations, animations, etc. They also listed five criteria for learning resources that must be met in a situation such as COVID 19 (Huang et al., 2020, p. 22):

(a) The relevance of the content: Learning resources must be strongly linked to the learning objectives and content and be sufficiently compelling for students.
(b) Appropriateness of the level of difficulty: The content must be varied in difficulty to avoid cognitive overload of the learners.
(c) Adequacy of the structure: The structure of the learning materials must be concise and rational so as not to "confuse" the learners.
(d) Suitability of the chosen medium: The medium for younger students must be carefully selected to avoid causing visual overload.
(e) Adequacy of resource organization: Various resources (e.g., videos, animations, text, virtual experiments) must be structured and clearly presented from the learner's point of view.

In China, all teachers were given open access to digital textbooks during the COVID 19 crisis. The structure of the organizational forms of online teaching is presented in the handbook, as well. We highlight the section on asynchronous instruction, where it affirms that "teachers must be able to produce learning resources such as videos and design online learning activities" (Huang et al., 2020, p. 28). The authors also note the seven core elements of effective crisis education.

(1) Providing an active internet network that enables all students to (a) learn synchronously via video conferencing, (b) use (view, download) interactive

learning resources (videos, games, etc.), and (c) collaborate with classmates via social networks.

(2) Selecting user-friendly tools with particular care to ensure that students and parents are not burdened with too many applications and platforms.
(3) Schools should require teachers to use the same platforms in a coordinated way.
(4) Providing appropriate interactive digital resources, such as video micro-courses, e-books, simulations, animations, quizzes, and games.
(5) Guiding students in the use of active learning methods, including online communities that allow for regular online socializing to avoid feelings of loneliness and helplessness.
(6) Promoting effective practices that enable diverse teaching strategies, such as discussion, learning by doing, and experiential learning.
(7) Providing fast support services for teachers and students.
(8) Promoting cooperation between all stakeholders (e.g., ministries, research organizations, schools, and parents) (Huang et al., 2020, p. 40).

Razlagamo.si

The website www.razlagamo.si was established in Slovenia in March 2020. The name of the portal is a word game in the Slovenian language, meaning explaining to each other; it emphasizes the collaborative and open sharing nature of the portal. Everyone working in the field of education in Slovenia was facing challenges arising from a new and unknown situation. Three faculties of the University of Maribor which educate student-teachers—the Faculty of Natural sciences and Mathematics, the Faculty of Education, and the Faculty of Arts—have designed a joint educational support point www.razlagamo.si, which is intended to provide mutual assistance in the field of education. The essential elements of the portal are video explanations accompanied by interactive digital textbooks and supportive conversations. In a supportive conversation, the primary and secondary school student asks a question that a volunteer, student-teacher, or teacher answers. In this communication, minor problems are solved individually. There are different types of supportive conversations: sometimes, it is possible to answer a question statically, with text or an image; sometimes it is necessary to record a video as an answer, and other times a synchronous conversation is needed to clarify the question. The conversations take place in the Microsoft Teams application.

The student fills out a simple application form and receives a user name and password for enrolling in the *Razlagamo.si* MS Teams. A quick video guide is available. By clicking on the individual subject, the student is accepted into the team where the discussions are held. The conversations cover more than 100 subjects taught in primary, elementary and secondary school, including courses in music school. The specialized team also offers advice on learning difficulties. Students from all three faculties and various disciplines take part in the conversations, from student teachers of natural sciences, to those from the social sciences and psychologists. At present, about 250 volunteer students and some teachers are involved. Primary and secondary school students are directed to the interactive materials and the collection of video explanations, which provide additional help. This collection of materials and video explanations was created in a way that follows the structure of the validated, freely accessible advanced i-textbooks at www.iucbeniki.si (Pesek et al., 2014) and is therefore in line with the curriculum. The numbers show an increase in the use of Slovenian i-textbooks in Covid, 6x increase in daily visitors.

Video Explanations

Videos are often used in flipped learning, as mentioned before. Nevertheless, a video is also an effective tool in more traditional teaching. A video explanation is a video that follows the principles of the method of explanation. The explanatory method, or the Socratic method, has traditionally been one of the most widely used teaching methods; it is relatively effective in various fields (Overholser, 2018) and approaches to teaching and learning, including e-learning (Liu, 2019). Delić and Bećirović (2016) defined the Socratic method as "pedagogy that helps students to critically reflect on their understanding of a particular issue with guided questions" (Delić & Bećirović, 2016, p. 516–517). In a synchronous use of this method, the teacher usually lets the students think about the answer for some time after the question is asked and then offers some of the expected (correct or incorrect) answers. The Socratic method used in an asynchronous video explanation follows similar principles. Video explanations can additionally use multimedia tools (e.g., videos of natural phenomena, videos of virtual manipulators, virtual versions of experiments or screencasting). Usually, a video explanation contains a combination of these elements. On *Razlagamo.si* there are two types of explanations: (a) explanations for developing concepts and (b) explanations for knowledge consolidation. The video explanations for the development of concepts observe the following guidelines:

The video explanation contains a maximum of two fundamental concepts, and is not longer than 15 minutes; it provides a brief motivation, emphasizes understanding, and consists of summary elements. It should also include an explanation of up to four examples. In the consolidation video explanation, however, the guidelines are as follows: Consolidation is prepared only for fundamental concepts; it should not exceed 10 minutes, and, again, emphasizes understanding. When explaining, the lecturer should use correct terminology, speak in moderate rate, write legibly, and give a guide to materials and objectives in the introduction. During the explanation, the lecturer can also ask questions as if students were present. Video explanations should focus on key concepts of the content; they should include a summary at the end with an overview of the most essential knowledge acquired. Lecturers are encouraged to use innovative approaches and interactive online i-textbooks. When using the ICT tools needed to prepare a video (e.g. recording and editing software), we have not restricted lecturers to any one software. However, we did provide them with technical assistance. The presenters were very inventive and used a variety of tools, from tablets, webcams and mobile phones, to video footage in front of the blackboard. The situation in Slovenian schools was very diverse during lock down. Some schools immediately switched effectively to emergency remote teaching. Teachers prepared interactive materials, taught in video conferences, developed innovative ways of giving feedback and adapted lessons according to the specific needs of students. Some schools did not do so well; they needed more time. However, there was no time during the pandemic. There was no time to train teachers to work with new ICT tools; there was no time for detailed instruction on how to work. That is why the spirit of solidarity came to life. Those teachers who had sufficient skills and knowledge regarding emergency remote teaching helped colleagues. Unfortunately, this assistance is by nature limited to smaller collectives (e.g. schools). There was an urgent need for an environment that would allow sharing to reach ALL teachers and students. Such an environment is Razlagamo.si.

Methodology

The purpose of the research is to answer the following two research questions.

(1) To what extent does *Razlagamo.si* follow the guidelines written in Huang et al. (2020)?
(2) What is the subject distribution of the video explanations on *Razlagamo.si*?

Using social science methodology and the methods of analysis, synthesis and comparison, we compared the Razlagamo.si portal with the guidelines based on the Chinese experience. Comparison is a standard research method with outstanding merit and with widespread application. Comparison as a scientific method refers here to the research approach in which two or more cases are explicitly compared concerning a particular phenomenon or along a specific dimension to investigate parallels and differences between the cases. We are aware of the importance of cultural differences in the use of the comparative method (Smelser, 2013) and list these as one of the study limitations. The type of comparison used is universalizing comparison (Azarian, 2011, p. 18), since the aim is not only to reveal a description of differences and similarities but also to extract insights about the causal relationships responsible for the observed similarities and differences.

In the empirical part of the research, we used a quantitative, non-experimental method of pedagogical research, to answer questions about the subject distribution of the video explanations on *Razlagamo.si*.

Results and discussion

Compliance with Huang et al. (2020) education guidelines in the COVID 19 situation

Table 1 shows the coordination of the website *Razlagamo.si* with the core elements that are recommended for education in the COVID 19 situation (Huang et al., 2020). We use the following indicators: + + for full consistency, + – for partial consistency and – – for no consistency.

Table 1 shows that the common education point, the website *Razlagamo.si*, succeeds in following the Chinese recommendations for education during the COVID 19 crisis. The crucial point is the promotion of effective teaching and learning methods and cooperation with formal institutions outside the University of Maribor.

We believe that over time, there will be improvement in these areas as well since it is expected that *Razlagamo.si* will move from a voluntary movement to a slightly more structured and state-supported form.

Table 1: *Compliance of* Razlagamo.si *with core elements of the Chinese recommendations.*

Core element	**Compliance**	**Explanation**
Providing an active internet network that enables all students to (a) learn synchronously via video conferencing, (b) use (view, download) interactive learning resources (videos, games, etc.), and (c) collaborate with classmates via social networks.	+ +	*Razlagamo.si* Supportive Conversations use MS Teams, which enables synchronous teaching. In the video explanations part of *Razlagamo.si,* Arnes online classrooms enable the use of interactive materials. *Razlagamo.si* is also active on Facebook, Twitter and Instagram, which enables participation on social networks.
Selecting user-friendly tools with particular care to ensure that students and parents are not burdened with too many applications and platforms. Schools should require teachers to use the same platforms in a coordinated way.	+ +	A single common educational point with uniform tools is used.
Providing appropriate interactive digital resources such as video micro-courses, e-books, simulations, animations, quizzes and games.	+ +	Razlagamo.si contains open, free interactive i-textbooks www.iucbeniki.si/
Students should be guided in the use of active learning methods, including online communities that allow for regular online socialising to avoid feelings of loneliness and helplessness.	+ +	An online community is provided in the supporting conversations team *Counseling when having trouble with learning*. The team members are coordinators and students of psychology and pedagogy at the Faculty of Arts, University of Maribor; they support struggling students in learning and are available for students to optimise their learning methods.
Promotion of effective practices that enable diverse teaching strategies, such as discussion, learning by doing, experiential learning, etc.	– –	There is currently no such promotion on the portal.
Providing fast support services for teachers and students.	+ +	The average response time in supporting conversations is less than one hour between day hours (between 8 a.m. and 9 p.m); the average response time to e-mails sent to razlagamo@um.si is less than one day.
Promotion of cooperation between all stakeholders (e.g. ministries, research organisations, schools, parents).	+ –	The joint educational point is supported by all institutions that are responsible for the Slovenian education system and all stakeholders in that arena (Ministy of Education, Science and Sports, National Educational Institute, schools, and parents), but there is little active engagement from formal institutions.

Subject distribution of video explanations

On May 11, 2020, there were 583 video explanations uploaded to *Razlagamo.si*, on Nivember 15 the number is reaching 1000. Table 2 shows the distribution of the number of video explanations in May regarding the education vertical. Some subjects only have placement in the three-year period of elementary school (for example, Natural Sciences is available only for 6th and 7th grade). Table 2 thus displays the number of video explanations in three-year periods (triads) — for elementary school, which lasts 9 years in Slovenia — and separately for high school, which lasts four years in Slovenia. The table does not show 12 video explanations that relate to general learning strategies and cannot be classified in a specific triad or in the high school, since they are useful everywhere.

Table 2: The number of video explanations (VE).

	elementary school			**high school**
	1st triad	**2nd triad**	**3rd triad**	
No. of VE	86	125	260	90

As expected, most video explanations are dedicated to the 3rd triad of elementary school. Our results are consistent with the findings of other research. After reviewing several studies on reverse learning in primary, elementary and secondary school, Lo and Hew (2017) found that inverted classrooms are most common among students between the ages of 13 and 18. Students aged from 12 to 15 years are already sufficiently independent to manage distance learning, but they still need more guidance than high school students. Table 3 shows the distribution of video explanations by subject, taking into account only subjects from the curriculum in elementary and secondary public schools. Therefore, the video explanations for music school (2 VE), general instructions for learning (12 VE) and the international matura in mathematics (34 VE) were not considered. In addition, we have included the elective course Computer Science. Subjects for which there are no video explanations on *Razlagamo.si* (e.g., Slovene, German, History) were not included in Table 2. In mathematics and physics, which have video explanations in both elementary and secondary schools, we have added the number of hours provided in the curriculum. For Mathematics, for example, that is 1378 hours in elementary school and an additional 560 hours in secondary school.

The weighted value of the video explanations was calculated as an average between the number of VE and the number of hours in the curriculum. The resulting value was multiplied by one hundred, and the standardized value was calculated for ease of presentation. Note that the standardized value does not indicate how much of the subject is covered by video explanations, since video explanations overlap in certain subjects (e.g., mathematics). For example, trapezoid video explanations could be prepared by several teachers.

Table 3: The distribution of video explanations, sorted by subject.

Subject	**No. of VE**	**Curricular No. of school hours**	**Standardised value**
Mathematics	389	1878	21
Physics	31	344	9
Science	13	175	7
English	6	656	1
Engineering and technology	6	140	4
Biology	7	116	6
Chemistry	2	134	1
Environment	25	315	8
Society	5	175	3
Music	22	417	5
Visual art	10	487	2
Sport	2	834	0
Geography	4	221.5	2
Science and technology	9	210	4
Computer science	4	105	4

We find that Mathematics has the highest standardized value, followed by Physics, Environmental studies, and Science, while Sports, Chemistry and English have the lowest standardized values. The Slovene is not present. One of the possible reasons for omitting this (very important) subject lies in the analysis of e-textbooks for the Slovene language done by Valh Lopert and Koletnik (2019). The findings indicate an unbalanced representation of different types of tasks, with short answer types in the majority, the task type that is the least popular among students. To answer the last research question, we have grouped the subjects by fields. We used the ARRS classification (Slovenian Research Agency, 2017). This classification consists of natural sciences (mathematics, physics, chemistry, biology, computer science), engineering (science and technology, engineering and technology), social sciences (geography, social studies, environmental studies), and humanities (English). Arts and sports (visual arts, music) have been assigned to their own group, named others.

Environmental studies is a subject that covers both the social sciences and the natural sciences, so we have included it evenly in both areas with half of the number of VE in each. In science and technology, we included three-quarters of the explanations in the natural sciences and one quarter in engineering. Table 4 shows the distribution by field separately for elementary and high school education.

Table 4: VE distribution by field.

		Natural sciences	**Engineering**	**Social sciences**	**Humanities**	**Other**
ES	No. of VE	402.25	8.25	21.5	6	34
	No. of school hours	2297	192.5	554	656	1738
	Standardized value	18	4	4	1	2
HS	No. of VE	63				
	No. of school hours	770				
	Standardized value	8				
Total	No. of VE	465.25	8.25	21.5	6	34
	No. of school hours	3067	192.5	554	656	1738
	Standardized value	15	4	4	1	2

Legend: ES: Elementary School, HS: High School

We find that the standardized value of Natural sciences is by far the highest of all groups. This finding is consistent with a meta-study conducted by Wagner et al. (2020). They discovered that STEM (Science, Technology, Engineering and Mathematics) is more suitable for flipped classroom than other areas. In our study, results are similar for elementary school, as well. Even though Cotič et al. (2019) report increased 4th-grade student interest in science courses when ICT was present, Bulić and Blažević (2020) found no significant differences in 8th-grade student motivation when learning online or participating in modern classroom instruction.

Suggestions for teaching during emergencies and mandatory social distancing

Israeli and English researchers have formulated a proposal to restart the systems (economic, educational, and other systems) that will allow safe implementation even in the case of new waves of virus outbreaks (Alon et al., 2020). The proposal is based on the "weak spot" of the coronavirus, namely the three-day latency period. Current findings show that an average of three days' elapses between infection and the time when a person becomes contagious and can thus spread the virus to others. Therefore, they propose four days of work/school, followed by ten days of work/school from home.

Our proposal to put the school system back into operation will be slightly modified in accordance with organizational optimization. We propose the introduction of "shift teaching" with weekly shifts:

- two groups of students alternate weekly,
- in the week when one group is at home in remote teaching mode, the other group is at school, participating in a classic form of teaching.

This method provides a 9-day quarantine after five days of work at school and thus paints a clear picture of possible infections. The same model is already being used by Austrian schools for this school year (Almanthari et al., 2020). The proposed method is also an ideal way to use the inverted classroom method.

Conclusion

Because of the disruption of the social context in classrooms and schools, student relationships with peers, teachers, school leaders, and other staff have been disrupted—the familiar settings that support learning have been disrupted (Alexander et al., 2020). As the literature has shown, obstacles to e-learning can involve several problems: technology and internet access, the lack of an e-learning and assessment curriculum, and the lack of tools for effective student assessment limit what educators can teach. The motivation for online learning, confidence in the use of e-learning technology, and teachers' attitudes towards online learning all influence how and how much a student will learn.

All these barriers need to be taken into account when faced with an event such as a pandemic that forces teachers and students to immediately adapt to a different way of teaching and learning.

Razlagamo.si provides ALL students (and ALL teachers) with open educational resources (advanced interactive textbooks, Khan-style video explanations and guidelines for cyber-flipped asynchronous conceptual teaching and learning). Not all students can participate in distance learning in real-time (Lowenthal et al., 2020). Students' reasons may be economical (e.g. lack of physical space or technology in families with multiple siblings) or cognitive (e.g. less attention from learners and/or parents and carers need the time to support their children's learning). Razlagamo.si follows an innovative teaching approach (cyber-flipped learning with a high degree of student engagement in the content, collaboration and the creation of teaching and learning communities).

This paper shows that the Slovenian joint educational point Razlagamo.si is largely in line with the recommendations of Chinese researchers on how to ensure quality of learning even during the outbreak of a pandemic such as COVID 19 (Huang et al., 2020). We also note that the principles of inverted classroom teaching can be maintained during a crisis, since the STEM fields are strongly dominant, especially mathematics. Given the exceptional success of the support point and because of the research on the proven value of reverse learning in classroom teaching throughout the educational vertical, we have decided that the point will remain active beyond the end of the crisis. In fact, the Razlagamo.si model is also effective in situations where only a part of the student population is involved in distance learning. The joint educational point will help teachers prepare materials according to flipped learning principles even in a non-crisis situation (e.g., for sick students, student-athletes, or students with distinct status).

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