OPEN PRAXIS

INTERNATIONAL
COUNCIL FOR OPEN AND
DISTANCE EDUCATION

Open Education for a Better World: A Mentoring Programme Fostering Design and Reuse of Open Educational Resources for Sustainable Development Goals

Tanja Urbančič
University of Nova Gorica & Jožef Stefan Institute (Slovenia)
tanja.urbancic@ung.si

Anja Polajnar ⓘ & Mitja Jermol
Jožef Stefan Institute (Slovenia)
anja.polajnar@ijs.si & mitja.jermol@ijs.si

Abstract

An international online mentoring programme Open Education for a Better World (OE4BW) has been developed to unlock the potential of open education in achieving the UN Sustainable Development Goals. The programme provides an innovative approach to building Open Educational Resources, connecting developers of educational materials with experts volunteering as mentors. The model of the programme has been carefully designed and tested in two subsequent implementations in years 2018 and 2019. Results have proved the model to be useful for building capacities in open education, while producing concrete educational materials with great potential for social impact. Analysis of results has been used to suggest further improvements needed for enabling the program to be used on an even larger scale. The paper presents the development of the OE4BW model, its main characteristics, implementation results and guidelines for the future.

Keywords: Open Educational Resources (OER), Sustainable Development Goals (SDG), Capacity Building, IT for Education, Online Mentoring

Introduction

All United Nations Member States adopted the 2030 Agenda for Sustainable Development with 17 Sustainable Development Goals (SDGs) presented in Figure 1, from ending poverty to a range of social needs including education, health, equality and job opportunities, while tackling climate change and preserving our environment (Griggs et al., 2013). UNESCO has been entrusted to lead SDG4 –Quality of Education– addressing universal primary and secondary education, early childhood development and universal pre-primary education, equal access to technical/vocational and higher education, relevant skills for decent work, gender equality and inclusion, universal youth literacy, ensuring that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy, as well as education for sustainable development and global citizenship.

Figure 1: Sustainable development goals (United Nations, 2019).

Although access to education is a basic human right and has a crucial role in empowering people on their way towards all the other SDGs, it is far from being ensured to everyone. One of the ways for facing this big challenge is through Open Educational Resources (OER), lowering different sorts of barriers, from economical to cultural, social and political. The term Open Educational Resources was coined at UNESCO's 2002 Forum on Open Courseware as

> "teaching, learning and research materials in any medium –digital or otherwise– that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions" (Chiu, 2016).

OER include free materials and courses at all levels of formal as well as lifelong learning processes. Many benefits they offer have been investigated and reported. For example, Hilton (2016) presents studies on OER with the focus on cost, outcomes, and perceptions. They have shown that OER improve student learning while significantly reducing the cost of their educational resources. Studies have also shown that perceptions of OER by students are generally positive, and the availability, amount of information and easy orientation are the most valuable benefits of OER usage. According to Jena (2009), OER help in fostering on-line co-operation among educators and increase the quality of learning resources. According to Hilton (2016), studies on OER with the focus on cost, outcomes, and perceptions have shown that OER improve student learning while significantly reducing the cost of their educational resources. Studies have also shown that perceptions of OER by students are generally positive, and the availability, amount of information and easy orientation are the most valuable benefits of OER usage.

The relation between OER wand SDGs was highlighted by Rajiv Jhangiani speaking at the United Nations Headquarters (Jhangiani, 2018). He stated that "one incredibly powerful tool that is being effectively deployed across our world right now in service of SDG4 is Open Educational Resources or OER." This can be illustrated by concrete examples, e.g. TIDE project (Lane, 2017) bringing together universities in UK and Myanmar to improve the graduates' employability. More than 500,000 students across Myanmar accessing higher education through distance learning will benefit from these activities. Most of the examples focus on SDG4, while there has been no systematic study or collection of OER for all 17 SDGs from a single entry point so far.

Besides being an alternative to expensive textbooks, many OER explicitly offer a possibility to be changed so as to better suit specific circumstances. As such, they contribute to the affordability and sustainability of education (Urbančič & Orlič, 2016). However, as described in more detail in the next section, there is a lack of opportunities for obtaining knowledge and skills needed to design, implement, use and reuse OER.

To respond concretely to the abovementioned challenges, the authors from the University of Nova Gorica and a UNESCO chair on Open Technologies for Open Educational Resources and Open Learning have developed an innovative model of an online mentoring program, based on a hypothesis

that there is a big not yet explored potential in connecting concrete ideas and needs at one side with know-how about OER development and deployment at the other. This paper presents the developed model and its two subsequent implementations through which the hypothesis has been confirmed.

State-of-the art in capacity building for OER

To investigate the global situation with OER, Commonwealth of Learning (COL) in UNESCO carried out two surveys using two questionnaires, the first one being addressed to governments, and the other one to various stakeholders including Secondary schools, Vocational and technical training institutions, Colleges and universities, Research institutes, Non-governmental organisation and Independent consultants worldwide (Open Educational Resources: Global Report, 2017). 102 countries responded to the first questionnaire, and more than 600 responses were received to the other. The study concludes that the development of open educational resources is regionally very uneven, that despite the promotion of cooperation, it is still largely very individual, and that there is still too much emphasis on educational resources, while little attention is given to the practical implementation. Among the benefits, it points out that OER reduce the cost of learning materials (80.88% of responses), that open licensing allows continuous improvement of quality (74.45% of responses) and that OER help developing countries access to quality materials (77.75% of answers). However, among the Gaps and Challenges, on page 62 the study mentions "Support Capacity Building for the Sustainable Development of Quality Learning Materials", and among the most important conclusions of the study summarized in the Foreword written by Professor Asha Kanwar (page vii) we can read

> "A common concern that runs through both the government and stakeholder surveys is lack of users' capacity to use and integrate OER in teaching and learning. This highlights the need for the continuous capacity building to understand, find and use OER".

With the aim of fostering substantial further steps on a global scale, there was the Ljubljana action plan adopted in 2017 at the Second UNESCO congress on Open Educational Resources (Second World OER Congress, 2017).

As presented in *Policy Approaches to Open Education – Case Studies from 28 EU Member States* (Inamorato dos Santos et al., 2017), in most EU Member States a number of initiatives in the field of open education are under way, but a long way will be needed to achieve the goals. In most Member States, the vision of open education is set rather broadly and goes substantially beyond open educational resources. Nevertheless, in the concrete policies that should implement the vision, the main focus is still largely limited to educational resources and educational content, while dimensions of cooperation, flexibility and transparency in education are not sufficiently covered. In the same study, the authors also emphasize capacity building as one of the main enablers for open education.

The study carried out by Redecker and Punie (2017) establishes a reference framework for the development of digital competences for education providers in Europe. As defined in its introduction, the aim of the study is to help Member States in their efforts to promote the development of digital competences and to promote innovation in education. The framework is intended to support national, regional and local policies and initiatives. The study defines the key competences relevant to the processes of digitalisation of education. It focuses on six areas according to the different aspects of the educators' work: (1) *Professional cooperation* - the use of digital technologies for communication, cooperation and professional development; (2) *Digital resources* - the creation and sharing of digital resources; (3) *Teaching and learning* - design and use of digital technologies for teaching and learning; (4) *Evaluation* - the use of digital technologies and strategies to improve assessment;

(5) *Assistance to learners* - use of digital technologies to increase the inclusion, personalization and active participation of learners; (6) *Enabling the development of learners' digital competences* - to train learners for the creative and responsible use of digital technologies for information, communication, content creation and problem solving.

Developing the OE4BW Model of an Open Online Mentoring Program

The authors have followed the abovementioned reference framework introduced by Redecker and Punie (2017) when deciding to develop a sustainable, affordable model of capacity building for OER. Since there are no formal educational programs dealing holistically and interdisciplinary with open education available at the moment, the goal was to show that the need and motivation for progress in this field has enough potential to start a bottom-up movement, which – carefully guided so as to be in accordance with the top-down visions - can result in a critical mass of people and projects connecting open education and SDGs, justifying future investments into this area.

Since there have been no funds allocated to the presented program so far (except sponsors' donations for travel), we decided to bring together *developers* of OER in various topics related to SDGs and experts in OER, willing to volunteer as *mentors*, highly motivated by the importance of SDGs being approached by as many people as possible through the design, use and reuse of OER.

Mentoring is used as an important resource in professional learning (Tillema & Van der Westhuizen, 2013) and education is one of the fields where it is not only widely used, but also intensively investigated (Anderson & Shannon, 1988; Castanheira, 2016). It can be carried out in different forms, one of them being e-mentoring (Ensher & Murphy, 2007), called also online mentoring. The latter is particularly suitable in contexts like the one in our programme, where mentors and mentees are at different locations and a high level of flexibility is needed for them to cooperate. Benefits, requirements and also limitations of e-mentoring as compared to traditional mentoring are given in more detail by Rowland (2012) with a focus on an organizational setting. Online mentoring is also aligned with the trends in e-learning as presented by Pandey (2018), pointing out, among others, mobile learning, digitisation of instructor-led training and just-in-time performance support for professionals.

The basic idea of focusing on "topics that really matter" has been inspired by the Data Science for Social Good program (Center for Data Science and Public Policy, 2019), but has been put into a more flexible framework, not requiring physical presence for several weeks, and leaving space for an approach as individual as possible, while the results should be available to everyone under an open licence.

Basic idea: Open Education for a Better World (OE4BW) is an international online mentoring program supporting the development and implementation of freely accessible modules and resources for online education on topics with social impact according to the UN Sustainable Development Goals (SDGs). Proposals for the projects of OER development are collected with a global call. Accepted proposals are selected based on (1) their compatibility with SDGs, (2) social impact, (3) maturity of the idea, (4) capacity and commitment of the applicant to make the idea come true. In the continuation, selected applicants are supported on-line for six months by experts in OER design volunteering as mentors. Mentors are invited with a follow-up global call. During the project development, the progress is being regularly followed and advice is given if needed. Developers and mentors communicate online on a weekly (or bi-weekly) basis. There are also two interim checkpoints planned to provide information about the progress to the organizers of the program. At the end of the program, the participants are obliged to prepare a presentation for the final event. They are invited and supported to come to the closing event to attend a workshop on OER design, exchange ideas, meet other OER developers and establish potential future cooperation.

Openness: The program is open to all applicants regardless their professional background, education, origin or any other limiting factor. The scope and the final form of the developed OER

are not prescribed, nor is the platform to be used. This is to encourage participants to find the best solution for their target audience and their specific situation. The only request is the developed educational material to be publicly accessible and to be specified as such by using an appropriate open licence. There is no participation fee.

The OE4BW Model development process had the following steps: (1) designing a model, (2) testing the model through the first implementation, (3) analysing the results of the first implementation and improve the model, (4) testing the improved model with the second implementation, (5) analysing the results of the second implementation and adapting the model to be suitable for a long-term functioning on a global scale. In steps (3) and (5), feed-back was collected with two different questionnaires sent to the developers and to the mentors, respectively. Since the numbers were too small to receive statistically significant results, we complemented the analysis with several in-depth interviews.

We describe the process and the results in more detail in the following sections.

First OE4BW Implementation

The first OE4BW calls for developers and mentors respectively were launched in October 2017. Fourteen developers were chosen out of sixteen to be guided online towards the design and implementation of their openly available educational materials. The call attracted over forty mentors. The response was truly global, as we had developers and mentors from all around the globe, namely from Brazil, Canada, China, Ecuador, Ethiopia, Fiji, France, India, Italy, Kenya, Liberia, Nigeria, Malaysia, Malawi, Mauritius, Netherlands, Nigeria, North Macedonia, Peru, Romania, Slovenia, South Africa, Spain, Taiwan, United Kingdom, United States of America and Uzbekistan. There was no requirement for developed materials to be in English, so we were pleased to receive also a submission in Portuguese.

The proposed projects were in the field of public health, infrastructure, ICT, cultural heritage, education, statistics, comparative literature, language education, multiculturalism and library sciences, reflecting the diversity of developers' expertise and background. The level of developers' education was high. 6 of them had PhD, 7 MSc and 1 BSc. 8 of them came from educational institutions, while the others were from governmental sector, NGO and research institutes.

The application form required from the developers the information related to the maturity of their proposal. 4 were at the level of an idea only, 5 had an idea and the structure of the course, 3 had an idea, the structure and some materials, while 2 had a course already partially developed. We carried out a skype interview with all of them, and although the differences in their capacity for OER were noticeable, all but one explicitly mentioned the lack of capacity for building a broadly visible, ready-to-use open educational material.

The mentors were assigned to the developers based on identified needs in each particular case. After the mentors confirmed the choice, we connected them with their mentees and the project development took place from January to July 2018.

Results of the first implementation

In most of the projects, the initial idea presented in the application evolved into concrete educational materials. The developed materials were very relevant and in compliance with SDGs, covering titles like *Booklets for midwifery developers in Low and Medium Resources Countries* and *Catalyzing Change: Diversity, Equity, and Inclusion in a Global Perspective,* to mention just a few. Descriptions of all projects are available at http://oe4bw.ijs.si/projects/#2018. Results of all projects were presented at the final OE4BW workshop held in Vipava, Slovenia and recordings of all presentations are available at http://videolectures.net/educationdesign2018_vipava/.

In the final session of the workshop, there was a thoroughly prepared and professionally moderated discussion in which all participants exchanged their observations, challenges, suggestions and recommendations and thus contributed to evaluating and further developing the program. Additional feedback was collected with questionnaires and complemented with in-depth interviews with several developers and mentors for a subsequent analysis. The survey was carried out 6 months after the end of the programme. Two versions of questionnaires, one for mentors and one for developers, are presented in Appendix 1. Only the main facts revealed by the survey are presented below, so as to keep the focus on the contribution of the programme to capacity building of developers and on issues most relevant for the development of the programme. Please note that after presenting the results of particular parts of the investigation, a summary and an analysis of the results is given in a separate section, where partial results are compared and connected.

Results of the Questionnaire for Mentors in 2018

Eleven (11) out of twenty-seven (27) participating mentors responded to the questionnaire.

Results show that mentors were mainly satisfied with the program as the average grade was 7,7. They were also satisfied with the choice of their mentee as the average mark was 7,8. The scale was 1 to 10, where 1 represents the lowest mark and 10 represents the highest mark of satisfaction.

On average mentors agreed that their mentee's OER project developed well and raised a reasonable level of maturity. Mentors mainly agreed that technical knowledge of mentees increased during the program. The majority of mentors also agreed that after the program their mentees would be capable of implementing new OER in the future, while this was not the case for most of them at the beginning of the programme.

Most of the mentors strongly agreed that it was rewarding to help a project for social benefit. Almost all of the respondents (90.9%) applied as mentors also for OE4BW 2019. All respondents stated they would recommend participation to their colleagues and friends.

Results of the Questionnaire for Developers in 2018

Seven (7) responses out of fourteen (14) participating developers were received.

The developers were mainly satisfied with the program as the average grade was 8,4. They were also mainly satisfied with the choice of their mentor as the average satisfaction mark was 8,14.

The majority of developers agreed that their technical knowledge increased during the OE4BW program. The majority strongly agreed that they felt more capable of implementing new OERs in the future after the OE4BW program (see Figure 3).

The majority of respondents (86%) had the opportunity to use what they learned from time to time and in their everyday work. All respondents recommended participation to their colleagues or friends.

Improvements introduced into the model for the second implementation

We carefully investigated the results of the survey and combined them with more concrete individual feedback provided at the closing event by developers and mentors. In particular, we investigated the cases were the outcome was not as expected. It turned out that in these cases, mentors were prepared to contribute more, but there was an issue of poor time-management or –in one case– even misunderstanding of the goals at the side of developers. We identified that we should have mechanisms for earlier detection of problems and for better expectation management. Consequently, we introduced some changes into the model of the program, complementing it in several aspects as follows:

Managing scaling-up through hubs: During the first implementation of the programme, the importance of programme coordinators being in touch with all development teams (developers with their mentors) has revealed. As also for programme coordinators this was a voluntary work on top of their regular duties, this was at the edge of our capacities and it would not be feasible to follow a higher number of teams with a sufficient attention to deal with time management issues and early detection of problems. Therefore, as the biggest novelty in the programme, hubs were introduced to enable a larger number of development teams being involved. Experts with experience in OER development and deployment were chosen to act as hub coordinators. They contributed to the promotion of the OE4BW program in their regional and professional "ecosystems". When project development phase was in place, they regularly followed the progress. That way, it was easier to detect problems in time and to provide advice when needed. Based on the number of received applications, three hubs were established, one covering Africa and Europe, one covering Asia and Oceania, and one covering North and South America. Hubs were responsible for well-defined organisational tasks, while following the methodology developed by the initiators, and closely cooperating with them. Projects were allocated to hubs by the program initiators. Experience shows the advantages of international teams of authors and mentors, thus territorial principle was not the main criterion when choosing projects for hubs. After the hubs confirmed the projects allocated to them, they followed the steps of well-defined methodology through which they made sure that the developers and mentors were informed with the rules of the program. Also, they were checking the progress of each project regularly, provided additional information to developers and mentors if needed, informed the program initiators about the progress of the projects and communicated with them in the case of unpredicted problems.

Allocating mentors to projects: In the first implementation, the matching between developers and mentors was done based on the contents and needs of the projects only, while after experiencing some serious practical difficulties due to very different time zones, in the second implementation also this was taken into account. Still, we tried to keep the teams as international as possible, as there was a clear message from the first implementation, that having teams with members from different cultural environments was an added value. Consequently, teams were not always composed of a developer and a mentor coming from the regions belonging to the same hub. In addition, while in the first implementation each project had two mentors, in the second implementation we decided to start with one mentor for a project, and added an additional one only if there was an explicit need to do so. This was due to the fact that in the first implementation, some mentors were not satisfied with their role in a bigger team, where due to regional or topical proximity of the other mentor, they were not able to contribute as much as they expected.

Time management and implementation of OER: There was more focus on actually implementing OER, not just designing it. Having realized in the first implementation that the call was too open in a sense of expected results, this time we were more explicit about that. Since time management was a big problem in the first round of the program, we insisted on a more regular check points in order to detect problems in time and to help the developers to plan their work more realistically.

The call for second implementation was launched in October 2018. We received 40 submissions from candidate developers and fifty (50) submissions from potential mentors. 35 project applications were accepted to the program and allocated to the hubs. The countries from where applications on developers and mentors came, were the following: Bangladesh, Brazil, Canada, Fiji, France, Lebanon, India, Indonesia, Ireland, Italy, Malaysia, Mauritius, Netherlands, Nigeria, North Macedonia, Peru, Slovenia, South Africa, Sudan, Switzerland, United Kingdom, United States of America. Out of 35 accepted developers, there were 22 with PhD, 12 with MSc and 1 with BA. Again, there was a huge diversity in the field of their professional background, the prevailing one being education and pedagogy. The distribution of the initial capacity was slightly better, since 6 were at the level of an idea only, 17 had an idea and the structure of the course, 8 had an idea, the structure and some

materials, while 3 had a course already partially developed. Comparison of partially aggregated data about the capacities is visualized in Figure 3.

Results of the second implementation

In the second round, the percentage of projects finished with actually implemented online courses was much higher then in the first round. Many of them were even tested by up to hundred online learners already during the time planned for the implementation, so in their final presentations, developers reported also about the experience of the users of their online courses developed within OE4BW program.

Again, most of the developed projects finished with perfect examples of relevant OER prepared to empower broad audience for the implementation of SDGs, such as *Playwriting for Children: A Participative and Creative Approach, Supporting Refugees and Immigrant Students in Higher Education,* and many others. The reader is kindly invited to find more inspirational and instructive examples on the website http://oe4bw.ijs.si/projects/#2019 where all the projects are described.

Again, we collected feedback with questionnairs and interviews. In the continuation, we summarize the findings most important for the evaluation of the programme contribution and its further progress.

Results of the Questionnaire for Mentors in 2019

Thirty-two (32) out of forty (40) participating mentors responded to the questionnaire.

Their average grade of satisfaction with the programme was 7,75. They were also mainly satisfied with the choice of their mentee, the average satisfaction mark being 7,9.

Similarly to the results of the first round questionnaire, mentors agreed to a great extent that OER projects in the OE4BW programme developed well and raised a reasonable level of maturity. Mentors also mainly agreed that technical knowledge of mentees increased. The majority of mentors stated that after the program their mentees would be capable of implementing new OER in the future.

The majority agreed that it was rewarding to see the progress of their mentee and to help a project for social benefit. Almost all would like to apply as mentors for OE4BW program in 2020 and a quarter of them would like to contribute as a hub coordinator in the next round.

Mentors suggested to improve the OE4BW program by introducing more explicit guidelines, requirements, quality assurance and standards as well as an introduction webinar or kick-off meeting for the participants. Further, an interactive website as well as an OE4BW repository enabling communication with other participants was recommended.

Results of the Questionnaire for Developers in 2019

Thirty-one (31) responses out of thirty-five (35) developers were received.

The developers were mainly satisfied as the average grade was 8,6. They were mainly satisfied with the choice of their mentors, the average satisfaction mark was 8,12.

The majority of developers agreed that their technical knowledge increased and the majority agreed or strongly agreed that they felt more capable of implementing new OER in the future after the OE4BW program.

The majority would like to participate in OE4BW program in 2020 and have already recommended participation to their colleagues or friends.

Developers suggested to upgrade the OE4BW program by organising a community-building workshop or webinar at the beginning of the program and by establishing a virtual community to enable virtual meetings with all participants.

Analysis of results

As shown in the Figure 2, there was a big increase in the number of projects being developed in 2019 as compared with the first round in 2018.
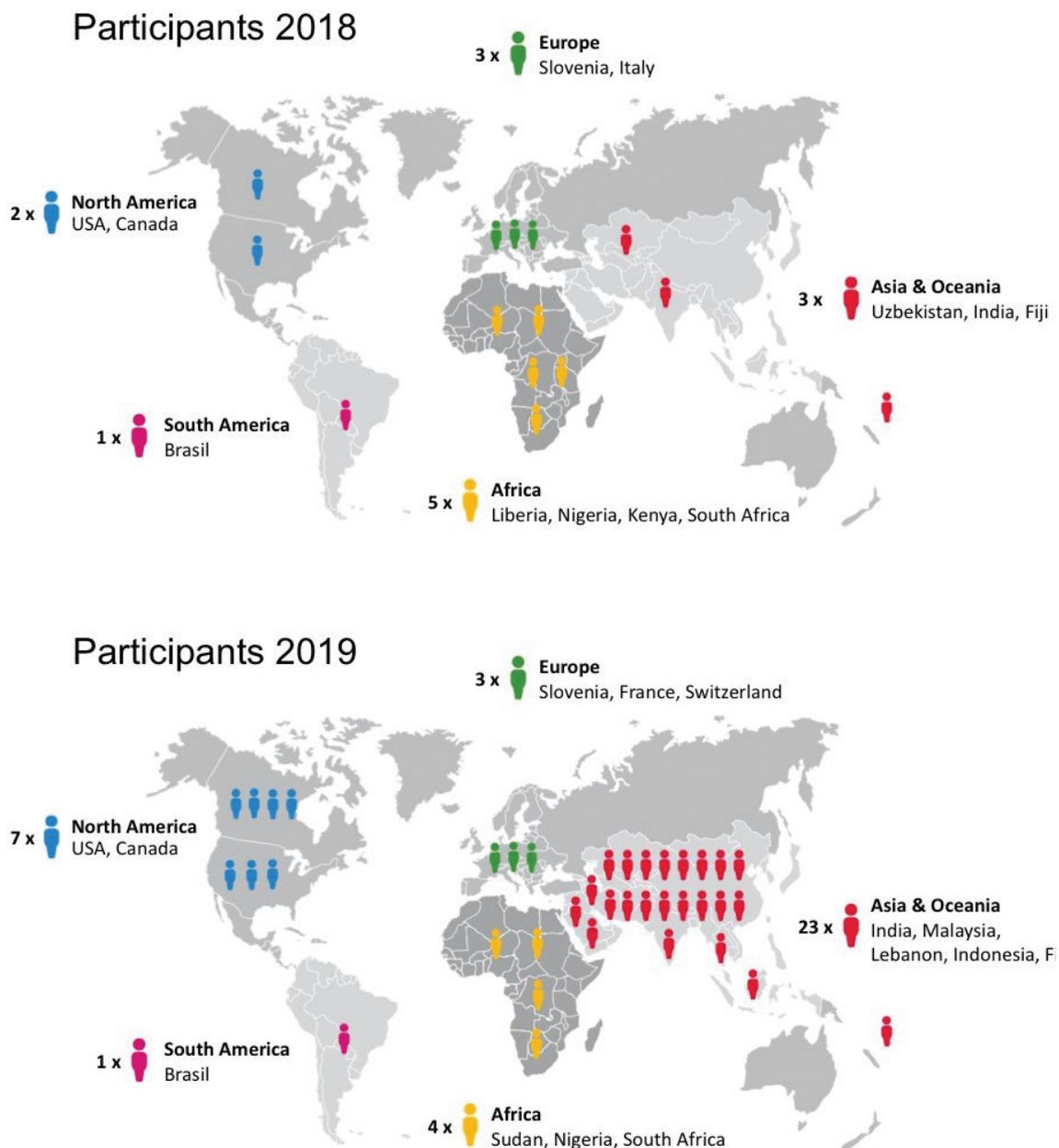

Figure 2: Number and regional distribution of developed projects showing the spread of the program in two subsequent years.

When investigating the continuity between the first and second round of the project, we have found very different scenarios:

- some of the developers from the first OE4BW implementation were developers also in the second OE4BW implementation;

- some of the developers from the first OE4BW implementation became mentors in the second OE4BW implementation;
- one developer and two mentors from the first OE4BW implementation became hub coordinators in the second OE4BW implementation;
- a good proportion of mentors from the first implementation applied to be a mentor also in the second implementation, although it was not possible to include all of them due to their specific professional profile and no projects in the respective field this year;
- one developer from the first OE4BW did not apply in the second implementation, but later we were informed that she asked her mentor from the first implementation to help her as she continued with the project (which the mentor accepted). Since this was outside OE4BW, it is not reflected in Figure 2.
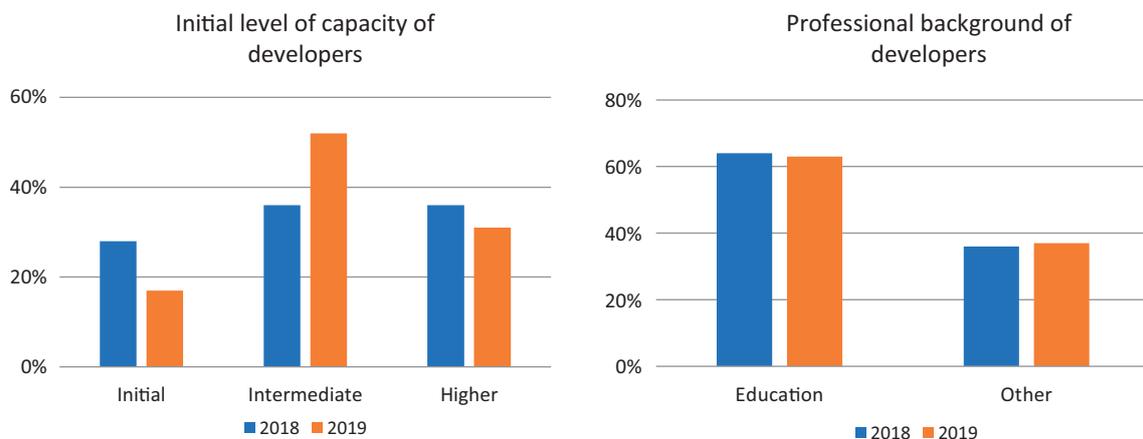
Figure 3: Initial OER capacities of developers and their professional background in 2018 and 2019.

Initial level of the capacity of the developers in 2018 round was estimated based on the maturity level of their proposal in their applications. Out of 14 developers, 28% were at an initial state (idea only), 36% were at an intermediate state (idea and structure), and 36% at a higher state (idea, structure and materials). Out of 35 accepted developers in 2019, 17% stated were at an initial state (idea), 52% at an intermediate state (idea and structure) and 31% had idea, structure and materials. According to the application forms in both years, the majority of the developers (64% in 2018 and 63% in 2019 respectively) were engaged in education activities (teaching at University, College, Campus). 36% in 2018 and 37% in 2019 were working for governmental organisations, companies or were self-employed.
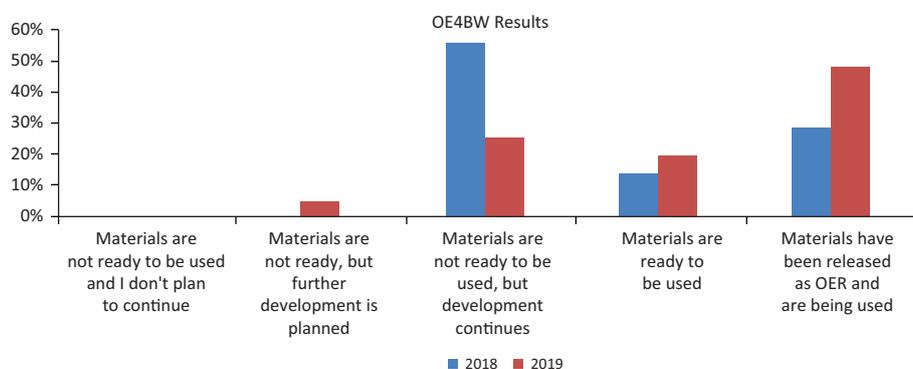

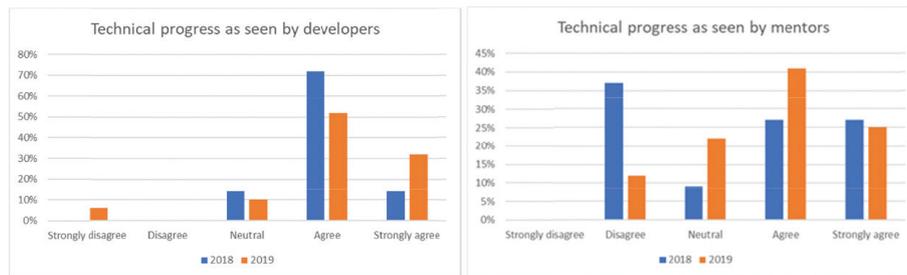**Figure 4: Results of OER development in 2018 and 2019 implementations of OE4BW programme.**

Figure 5: Benefits by OE4BW mentoring program for developers' professional development as seen by the developers and by mentors.

Conclusion and guidelines for the future

The paper addresses the problem of building capacity to use, reuse and deploy OER and presents the OE4BW model of online mentoring as one of the ways for improvement in this area. In this programme, professionals of different background are guided by volunteering mentors as they upgrade their skills needed to design, implement and deploy OER by actually implementing their OER in a very personalized process of learning-by-doing. Through the two implementations, one in 2018 and one in 2019 respectively, the model of the programme has evolved and the progress in terms of increased technical knowledge of participants was evident. Nevertheless, further research will be needed to investigate and evaluate the impact that the OE4BW programme will have on teaching and learning for the participants of the programme, and to check its potential wider impact on the online mentoring in professional development in general.

The level of satisfaction was high by both, developers and mentors, but on average, as seen from the survey, developers were slightly more satisfied than mentors. While we will continue to offer the best possible opportunities to developers, this is an indication that more attention should be given also to the mentors' point-of-view. In particular, in an open question asking for suggestions for improvements, mentors suggested to introduce more explicit guidelines, requirements, quality assurance and standards as well as an introduction webinar or kick-off meeting for the participants. Further, an interactive website as well as an OE4BW repository enabling communication with other participants was recommended. Similarly, the developers suggested the OE4BW program to be enhanced by organising a community-building workshop or webinar at the beginning of the program and by establishing a virtual community to enable virtual meetings with all participants.

We strongly agree with the abovementioned suggestions provided by OE4BW participants and will take them into account for the forthcoming rounds. This will definitely increase efficiency, since developers will be better prepared when they start working with mentors, and their time together will be better spent on more specific and advanced topics. In the next implementation, we will introduce an introductory online tutorial to be accomplished by all the applicants to the OE4BW program. There will be a tutorial for developers, providing basics of the open education design and answers to frequently asked questions before they enter the process. An Instructional Design Pack and more technical guidance as well as timeline with defined roles and expectations for all participating in the program might also be useful for developers joining the program. On the other hand, we intend to prepare also a short online tutorial with accumulated experience that might help new mentors entering the program, especially if they are just making their first steps towards

helping the others after becoming an experienced developer. Another idea is a webinar briefing for all the on-going projects together instead of individual consultations. Also, we might consider certification and digital credentials for achievements in the OE4BW program.

In the future, there might be hubs organized on regional, national or topical principles (eg. Particular SDGs). A topical structure might bring a new quality, namely closer collaboration between developers within the hub, maybe also their projects to be merged or composed into bigger modules or collections of materials.

Let us conclude with the observation that participation in the OE4BW has brought not just very relevant OER for SDGs, but also a lot of personal satisfaction to everyone included. We are rewarded by seeing the results and we appreciate the opportunity to be "a part of this journey to openness", as expressed by one of the mentors. We believe that firm foundations have been built for many more to join us in the future.

Acknowledgements

References

Anderson, E.A., & Shannon, A.L. (1988). Toward a conceptualisation of mentoring. *Journal of Teacher Education,* January-February, 38–42.

Castanheira, P. (2016). Mentoring for educators' professional learning and development. *International Journal of Mentoring and Coaching in Education, 5*(4), 334–346. https://doi.org/10.1108/IJMCE-10-2015-0030

Center for Data Science and Public Policy (2019). *Data Science for Social Good*. University of Chicago. Retrieved from https://dssg.uchicago.edu/

Chiu, M.-H. (2016). *Science Education Research and Practice in Asia: Challenges and Opportunities.* Springer: Berlin.

Ensher, E.A., & Murphy, S.E. (2007). E-mentoring: Next generation research strategies and suggestions. In B.R. Ragins and K.E. Kram (Eds), *The handbook of mentoring at work: Theory, research and practice* (pp. 299–322). Thousand Oaks, CA: Sage.

Griggs D., Stafford-Smith M., Gaffney O., Rockström J., Öhman M.C., Shyamsundar P., … Noble I. (2013). Sustainable development goals for people and planet. *Nature, 495*, 305–307. https://doi.org/10.1038/495305a

Hilton, J. (2016). Open educational resources and college textbook choices: A review of research on efficacy and perceptions. In *Educational Technology Research and Development. 64*(4): 573–590. https://doi.org/10.1007/s11423-016-9434-9

Inamorato dos Santos, A., Nascimbeni, F., Bacsich, P., Atenas, J., Aceto, S. Burgos, D., & Punie, Y. (2017). *Policy Approaches to Open Education – Case Studies from 28 EU Member States (OpenEdu Policies)*. Publications Office of the European Union: Luxembourg. Retrieved from http://publications.jrc.ec.europa.eu/repository/bitstream/JRC107713/jrc107713_jrc107713_policy_approaches_to_open_education.pdf

Jena Sitansu, S. (2009). *OER for Distance Learning: Means to Knowledge Empowerment For Developing Nations*. Retrieved from https://wikieducator.org/images/9/90/PID_188.pdf

Jhangiani, R. (2018). Open Educational Practices in Service of the Sustainable Development Goals. Retrieved from http://thatpsychprof.com/open-educational-practices-in-service-of-the-sustainable-development-goals/

Lane, A. (2017). Open education and the sustainable development goals: Making change happen. *Journal of Learning for Development, 3*, 275–286. Retrieved from http://jl4d.org/index.php/ejl4d/article/view/266

Open Educational Resources: Global Report (2017). Commonwealth of Learning: Burnaby. Retrieved from http://oasis.col.org/bitstream/handle/11599/2788/2017_COL_OER-Global-Report.pdf?sequence=1&isAllowed=y (10 July 2019).

Pandey, A. (2018). *E-learning Trends and Predictions for 2018*, EI Design [online] https://elearningindustry.com/free-ebooks/elearning-trends-and-predictions-for-2018

Redecker, C., & Punie, Y. (2017). *European Framework for the Digital Competence of Educators: DigCompEdu*. Publications Office of the European Union: Luxembourg. http://dx.doi.org/10.2760/159770, JRC107466

Rowland, K.N. (2012). E-Mentoring: An Innovative Twist to Traditional Mentoring. *Journal of Technology Management and Innovation, 7*(1), 228–237.

Second World OER Congress (2017). *Ljubljana OER Action Plan*. Retrieved from https://en.unesco.org/sites/default/files/ljubljana_oer_action_plan_2017.pdf

Tillema, H., & Van der Westhuizen, G. (2013) Mentoring conversations and student teacher learning. *South African Journal of Higher Education, 27*(5), 1305–1323

Urbančič, T. & Orlič, D. (2016). Opening up Education: Towards affordable and sustainable solutions. In Gulsun Eby, T. Volkan Yuzer, and Simber Atay (Ed.) *Developing successful strategies for global policies and cyber transparency in E-learning* (pp. 133–144). Hershey: Information Science Reference.

Appendix 1

OE4BW FOLLOW UP QUESTIONNAIRE FOR MENTORS

1. On a scale of 1–10, how satisfied were you with your participation in the OE4BW mentoring program? (Optional: Comments _____)
2. On a scale of 1–10, how satisfied were you with the choice of your mentee? (Optional: Comments _____)
3. How would you describe the communication with your mentee? (choose 1 answer)
   a. We communicated regularly, with a reasonable frequency.
   b. The mentee wanted us to communicate very often. I think he/she should be more independent.
   c. The mentee didn't contact me as much as expected. I would like him/her to be more proactive.
   d. Other (please specify): _____
4. How would you describe the cooperation with your hub coordinator? (choose as many answers as you want)
   a. We communicated regularly, with a reasonable frequency.
   b. The mentee wanted us to communicate very often. I think he/she should be more independent.
   c. I think there was a lot of communication with hub coordinator and might be possible to reduce it in the future.
   d. Other (please specify): _____
5. How would you describe the progress of your mentee?
   a. His/her OER project in the OE4BW developed well and raised a reasonable level of maturity

Strongly agree	Agree	Neutral	Disagree	Strongly disagree

   b. His/her technical knowledge increased

Strongly agree	Agree	Neutral	Disagree	Strongly disagree

   c. After the program he/she should be more capable of implementing new OER in the future

Strongly agree	Agree	Neutral	Disagree	Strongly disagree

   d. Other comments (optional): _____
6. How would you describe connections established during the program? (choose as many answers as relevant)
   a. I believe I will stay in contact with my mentee, we might continue with the project or cooperate in another way.
   b. I would like to stay in contact with my hub coordinator and OE4BW organizers, we might establish new ways of cooperation.
   c. I would like to be connected to the whole OE4BW community to exchange information and ideas about potential cooperation.
   d. I don't have any opinion on this, I will seek contacts if needed in the future.
   e. Other comments (optional)_____

7. How would you describe your experience with OE4BW in more detail?
    a. It took more of my time than expected.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree

    b. It was rewarding to see the progress of the mentee.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree

    c. It was rewarding to help to a project for social benefit.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree

8. Will you like to participate in OE4BW 2020?
    a. Yes, I would like to be a mentor.
    b. Yes, I would like to contribute as a hub coordinator for projects from certain region or a certain topic.
    c. No, I don't believe I will participate.
    d. I don't know yet.

9. If you will not participate in OE4BW next year, what is the reason?
    a. I would like to, but can not due to time constraints or other personal reasons.
    b. I was disappointed last year.
    c. Other (please specify): _____

10. Would you recommend participation to your colleagues or friends?
    a. Yes, I actually did.
    b. Yes, I would.
    c. No.

11. Given your experience, how would you improve the OE4BW mentoring program?
    _____

12. How would you describe the existing opportunities to learn about Open Education?
    a. There are enough opportunities.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree

    b. I think that open on-line courses are sufficient to get this knowledge.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree

    c. I think that shorter certified courses are needed.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree

d. I think a Master's program is needed.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree

13. In the field of open education, I would like to get more knowledge about (choose as many answers as you want)
   a. Open education strategies and policies
   b. Effective didactical practices in open education
   c. Technologies for open education
   d. Business and organizational models of open education
   e. Production of educational materials
   f. Open education in industry and business (related to Human Resource Management)
   g. Other (please specify): _____

OE4BW FOLLOW UP QUESTIONNAIRE FOR DEVELOPERS

1. On a scale of 1–10, how satisfied were you with your participation in the OE4BW mentoring program? (Optional: Comments _____)
2. On a scale of 1–10, how satisfied were you with the choice of your mentors and the help you received from them? (Optional: Comments _____)
3. Did you achieve what you expected?
   a. I implemented my idea for OER as planned
   b. I partially implemented my idea for OER
   c. I did not achieve what I expected
4. What happened with the results of your project?
   a. Materials have been released as OER and are being used.
   b. Materials are ready to be used.
   c. Materials are not ready to be used, but development continues
   d. Materials are not ready, but further development is planned.
   e. Materials are not ready to be used and I don't plan to continue
5. What did you benefit from OE4BW program?
   a. My technical knowledge increased
   b. After the program I feel more capable of implementing new OER in the future

Strongly agree	Agree	Neutral	Disagree	Strongly disagree

6. How would you describe the communication with your mentor? (choose 1 answer)
   a. We communicated regularly, with a reasonable frequency.
   b. I would like us to communicate more.
   c. I think there was a lot of communication with the mentor and might be possible to reduce in the future
   d. Other (please specify): _____
7. How would you describe communication with your hub coordinator?
   a.   We communicated regularly, with a reasonable frequency.
   b. I would like us to communicate more.

   c. I think there was a lot of communication with the mentor and might be possible to reduce in the future
   d. Other (please specify): _____

8. How would you describe connections established during the program (choose as many answers as relevant)
   a. I believe that I will stay in contact with my mentor, we might continue with the project or cooperate in another way.
   b. I would like to stay in contact with my hub coordinator and OE4BW organizers, we might establish new ways of cooperation.
   c. I would like to be connected with the whole OE4BW community to exchange information and ideas about potential cooperation.
   d. I don't have any opinion on this, I will seek contact if needed in the future.
   e. Other:_____

9. What are your expectations regarding what you have learned in the OE4BW program?
   a. I will use what I have learned in my everyday work.
   b. I will use what I have learned from time to time.
   c. I don't see direct application of what I have learned at the moment, but it might be relevant in the future.
   d. I see no potential of using what I have learned.

10. Would you like to participate in OE4BW 2020?
   a. Yes, I would like to continue as a developer in this program.
   b. Yes, I would like to continue as a mentor.
   c. Yes, I would like to contribute as a hub coordinator for project from a certain region or a certain topic.
   d. No, I don't believe I will participate.
   e. I don't know yet.

11. If you will not apply / have not applied for OE4BW 2020, what is the reason?
   a. I would like to, but can not due to time constraints or other personal reasons.
   b. I was disappointed last year.
   c. Other (please specify): _____

12. Would you recommend participation to your colleagues or friends?
   a. Yes, I actually did.
   b. Yes, I would.
   c. No.

13. Given your experience, how would you improve the OE4BW mentoring program?
   _____

14. How would you describe the existing opportunities to learn about Open Education?
   a. Yes, I would like to get a Master's degree in Open Education.
   b. Yes, I'm interested in shorter, but certified life-long-learning courses.
   c. No, I already have formally recognized qualifications in open education.
   d. No, I only want to get knowledge, but I don't need certificates.
   e. No, it is not relevant for me.

15. In the field of open education, I would like to get more knowledge about (choose as many answers as you want)
   a. Open education strategies and policies
   b. Effective didactical practices in open education

    c. Technologies for open education
    d. Business and organizational models of open education
    e. Production of educational materials
    f. Open education in industry and business (related to Human Resource Management)
    g. Other (please specify): _____