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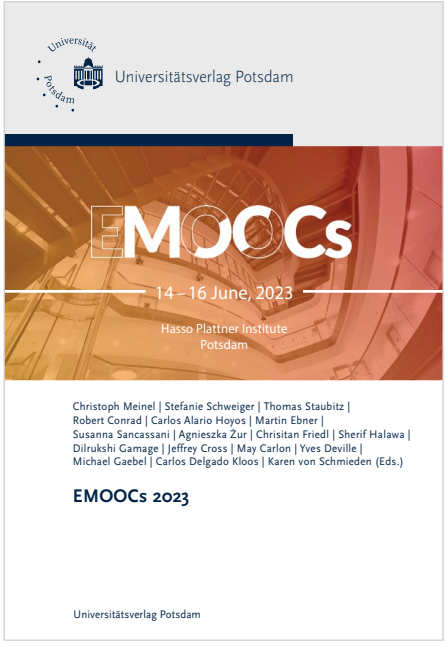

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xMOOCs

A Modality for Mass Reach During the Pandemic for the World Health Organization

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The World Health Organization designed OpenWHO.org to provide an inclusive and accessible online environment to equip learners across the globe with critical up-to-date information and to be able to effectively protect themselves in health emergencies. The platform thus focuses on the eXtended Massive Open Online Course (xMOOC) modality – content-focused and expert-driven, one-to-many modelled, and self-paced for scalable learning. In this paper, we describe how OpenWHO utilized xMOOCs to reach mass audiences during the COVID-19 pandemic; the paper specifically examines the accessibility, language inclusivity and adaptability of hosted xMOOCs. As of February 2023, OpenWHO had 7.5 million enrolments across 200 xMOOCs on health emergency, epidemic, pandemic and other public health topics available across 65 languages, including 46 courses targeted for the COVID-19 pandemic. Our results suggest that the xMOOC modality allowed OpenWHO to expand learning during the pandemic to previously underrepresented groups, including women, participants ages 70 and older, and learners younger than age 20. The OpenWHO use case shows that xMOOCs should be considered when there is a need for massive knowledge transfer in health emergency situations, yet the approach should be context-specific according to the type of health emergency, targeted population and region. Our evidence also supports previous calls to put intervention elements that contribute to removing barriers to access at the core of learning and health information dissemination. Equity must be the fundamental principle and organizing criteria for public health work.

1 Introduction

The World Health Organization (WHO) launched its OpenWHO.org learning platform in June 2017 in anticipation of the massive knowledge transfer needs of the next

pandemic. The platform was designed to reach learners across the globe with critical learning to protect themselves and their communities using a variety of features to maximize access. Courses are self-paced and provided free of charge, with options for low-bandwidth and offline access through a mobile application, and available in multiple formats and languages to connect with as many learners as possible.

OpenWHO has made effective use of its self-paced learning platform and successfully adapted materials for offline capacity-building activities, often in remote areas where connectivity may be problematic or unavailable. This has required harnessing new technology, and scaling up course production, formats, dissemination channels and languages. It has also required improving the user experience and usability of the materials on the learning platform while maintaining access for both those who do not have sufficient connectivity to high-bandwidth internet along with those who can easily join.

Massive Open Online Courses (MOOCs) have existed for more than a decade and have provided completely new ways of learning. While online learning does not necessarily need to take place at a distance, in this context it will refer to distance, non-personalized, dispersed online learning.

The benefits of online learning, particularly during a pandemic when all other opportunities are limited, are indisputable [14]. However, in some contexts online-learning approaches may be not feasible or may have limited reach due to barriers such as a low level of digital literacy and technical capacity, poor or no internet access, and other similar obstacles that could be related to digital devices. In some contexts, there is a preference to learn in a group setting or use materials independently outside the platform premise. In these situations, it is key to have alternative means of digitalized materials for information dissemination that are shared through learning organizers, individuals or organizations. There is a need to transform digitalized learning materials into offline or alternative versions accessible to audiences who need them in a particular format.

The constant change related to health information and advice is a driver for audiences to join and re-join learning to refresh their knowledge, especially in the case of novel infectious diseases. The pandemic response required millions of people, especially frontline responders, to access lifesaving information to protect themselves and help others. Fast-tracking the development and delivery of learning and information dissemination materials during an emergency is necessary and issues of access are to be highlighted.

Finset et al. [4] summarized that a global pandemic situation requires a broad, interdisciplinary response in which "professionals in the fields of communication, education, and health behavior change need to take responsibility for carefully evaluating what is known and insights currently emerging". Open media and materials of the internet have the power to enable wide dissemination, but also

pose risks such as misinformation. Recent research has highlighted the need to leverage health communication to help fight the COVID-19 infodemic [8, 12] in which the role of the authorities is to lead in conceptualizing and contextualizing the health information. According to Paakkari et al. [11], COVID-19 has shown that health literacy could help people to understand science and make related choices and decisions.

The approach of OpenWHO is that of asynchronous information and learning dissemination in which learning occurs in online educational environments without teacher and student interaction and only in self-paced formats without learners interacting at the same time [15, 2]. While the studies and literature often refer to degree-building MOOCs, xMOOCs (eXtended MOOCs) are freely accessible without cost and disseminated openly, not as part of a degree program or graded learning program; in the case of OpenWHO, the courses are aimed at continuous education for those who are already professionals, or anyone interested in the public health information provided.

OpenWHO focuses on xMOOCs that are content-focused and expert-driven, from one-to-many models, for scalable learning [1]. xMOOCs have a strong focus on the content transmission and acquisition features. They utilize the instructivist approach where expert instruction plays a major role and courses have automated assessment. In xMOOCs, learners can take and complete the courses without any participatory elements. The xMOOC format is not limited, however, and could include opportunities for networking, such as discussion forums and joint task completion. Mazoue et al. [7] suggested that the xMOOCs can optimize learning through highly defined and composed online content materials that are accompanied by assessments.

Impact and learning outcomes of asynchronous learning are not largely weighed in current xMOOC research. Most research into online education is related to topics, content resources, inputs and student views. Attention is mostly put on designer, employer and client and their views [6, 3].

The COVID-19 pandemic hit at a time when internet penetration and use of internet-based solutions via various gadgets was higher than ever before. Evidence deriving from the Organization for Economic Co-operation and Development (OECD) [10] states that web searches on training online were four times higher in March-April 2020. The number of enrollments in online courses on degree-producing platforms such as Coursera, edX and FutureLearn reached 180 million by 2020, with one third of all learners who ever joined a MOOC platform doing so in 2020. Learning and education were among the principally disrupted sectors during the COVID-19 pandemic, but at the same time, the online means provided a continued manner of staying active and learning for those who had connectivity and means to connect [16].

This paper reports on OpenWHO's experience of utilizing the xMOOC modality to reach mass audiences during the COVID-19 pandemic.

2 Self-Paced Learning for the Pandemic

2.1 Key OpenWHO milestones

OpenWHO, launched in June 2017, initially hosed courses and materials supporting preparedness and response interventions for disease outbreaks occurring at that time: Ebola (in the Democratic Republic of the Congo), Pneumonic plague (in Madagascar) and Diphtheria (in Cox Bazar, Bangladesh). During the first year, there were 49,000 enrolments.

After the "Introduction to COVID-19" course became available on the platform in January 2020, the enrollment rate started to increase drastically, with the course reaching 232,890 enrolments in the first three months [21]. The course was translated in 13 languages, allowing participants to access learning materials in their native languages in a timely manner. All in all, about a half of learners (53 %) enrolled in the "Introduction to COVID-19" course were new learners to the OpenWHO platform and in the first ten weeks following the pandemic declaration, learners used the learning platform most in countries with the highest COVID-19 cases [20]. The introductory COVID-19 course has continued to be the most popular course on the platform, growing to more than 1 million enrolments across 45 languages. In total, OpenWHO hosted 7.5 million enrollments in 200 xMOOCs on public health topics across 65 languages as of February 2023, including 46 courses targeted to the COVID-19 pandemic (Figure 1).

2.2 OpenWHO xMOOCs: accessibility, language inclusivity and adaptability

The OpenWHO learning platform reaches a diverse global audience: Learners hail from all countries of the world and every age group, with nearly $\frac{2}{3}$ of learners between the ages of 20 and 39 (65.2 %). The platform serves slightly more women (51.7 %) than men (48.2 %), and is most used by learners who identify as students (38.7 %) and health care professionals (24.7 %). On average, OpenWHO learners participate in two courses each, with a course completion rate of 53.9 %. In total, more than 4 million course certificates have been awarded to OpenWHO learners.

It is crucial for the OpenWHO platform as a health emergency learning solution to address persistent knowledge needs and gaps, as well as reach underserved

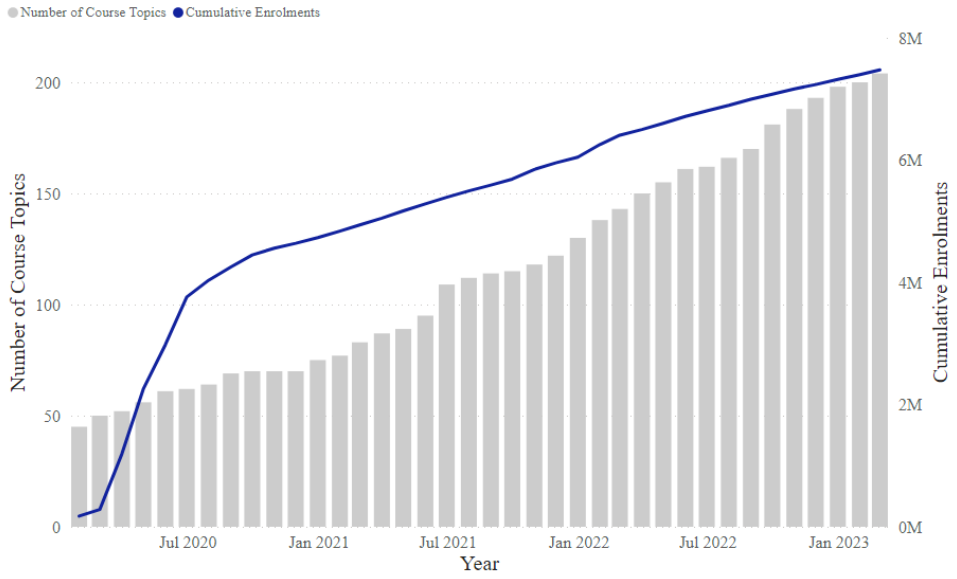

Figure 1: Growth in courses and enrolments on the OpenWHO platform during the COVID-19 pandemic

groups and contexts. To do so, OpenWHO prioritized the accessibility, language inclusivity and adaptability of hosted xMOOCs.

All course materials are available for participants 24/7 in different formats (e.g. videos, downloadable documents, slides, quizzes and learning exercises). According to survey results, learners found the self-paced and flexible nature of the courses to be useful [5]. OpenWHO also prioritizes free multi-use formats so materials can be adapted to local and offline contexts, creating a multiplier effect. Countries worldwide have described using these materials for training fieldworkers, local dissemination, use in social networks, microlearning, adaptation to university courses, precision group targeting and hybrid models [19]. As a result, the knowledge disseminated via local networks could have profound reach, leading to even higher overall knowledge coverage.

Moreover, OpenWHO aims to provide language inclusivity by facilitating timely access to life-saving knowledge for participants in their native languages. Currently, courses are available in 65 languages to enhance learning uptake and retention, including the official languages of every WHO region, 19 of the 20 most-spoken languages worldwide and the official languages of 44 out of 46 of the least-developed countries. OpenWHO continues to invest in language inclusivity,

translating courses into as many languages as feasible. A total of 15.7 million words have been translated to strengthen equitable access to public health knowledge, with a focus on languages spoken by vulnerable or underserved populations in low- and middle-income countries.

To support learning tailored to country contexts, OpenWHO initiated a feature during the COVID-19 pandemic that enables WHO Country Offices to collaborate with the global platform to launch country-specific learning channels. The channels provide learners with access to OpenWHO courses in their country's national languages or for their unique context through a single link, centralizing relevant country resources under one hub. Known as the Serving Countries portal, this feature currently hosts 15 country-specific channels with courses that address various aspects of the COVID-19 pandemic as well as public health more broadly.

As a result of these efforts, the COVID-19 xMOOCs hosted by OpenWHO expanded learning to previously underrepresented groups, such as women, participants ages 70 and older, and learners younger than age 20. It was also observed that participation shifted toward low-and middle-income countries, which contribute nearly $\frac{2}{3}$ of learners compared to $\frac{1}{2}$ before the pandemic. When population is taken into consideration, small island states bring the highest proportion of learners, representing 16 out of the 20 top countries, territories and areas (Figure 2).

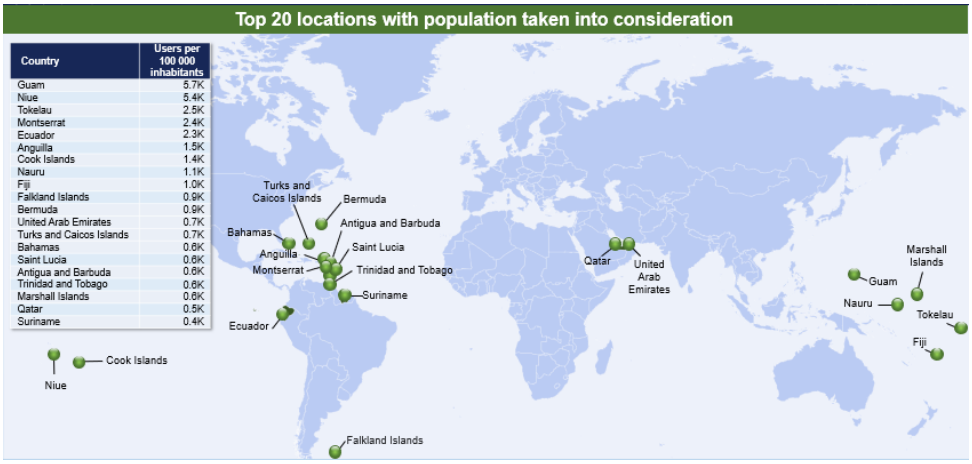

Figure 2: OpenWHO per capita enrolments

WHO plans to continue to utilize self-paced MOOCs beyond epidemic and pandemic contexts to support the learning response in fragile, conflict-affected and

vulnerable settings, for which access is often particularly compromised or limited. Approximately 7 % of OpenWHO learners are currently from the 37 countries and territories on the World Bank's fiscal 2023 list of fragile and conflict-affected situations [17]. These learners are primarily from younger age groups, with 49 % aged 20–29 and 33 % aged 30–39 (Figure 3). 19 % of learners from fragile and conflict-affected countries are students, 14 % are healthcare professionals, 10 % are volunteers and 10 % are from health ministries. The most popular courses for fragile and conflict-affected contexts based on the number of enrollments are those targeted to the COVID-19 pandemic, followed by courses on cholera, WHO's Incident Management System for emergencies, antimicrobial stewardship, mpox and Ebola. OpenWHO also hosts a Ukraine-specific learning channel that offers 24 different courses in Ukrainian to help strengthen public health during the ongoing emergency, and has produced courses aimed at key humanitarian issues including food insecurity and water, sanitation and hygiene.

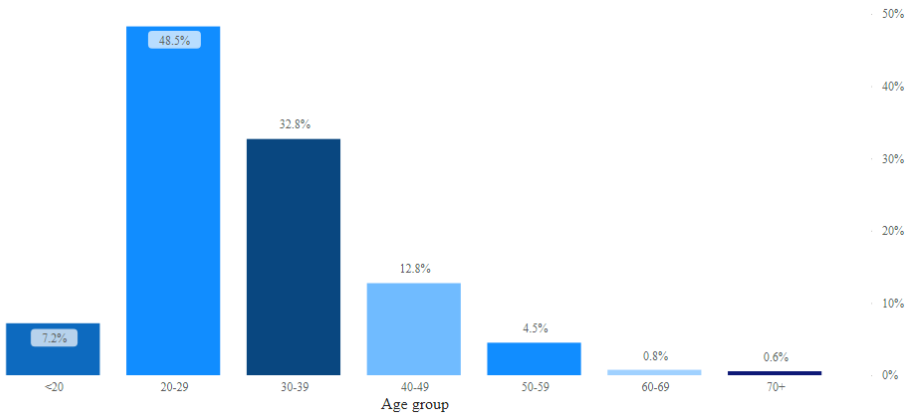

Figure 3: Age distribution of OpenWHO learners in fragile and conflict-affected countries

3 Conclusion

All in all, the COVID-19 pandemic has shown that learning to protect the health of oneself and others is important and required in emergencies. Access to up-to-date guidance can be facilitated through asynchronous learning delivery. Based on these

findings, it can be seen that xMOOCs, with their one-directional and instructor-led approaches, can work for the purpose of mass dissemination as a critical first knowledge component.

Even though xMOOCs have been criticized as top-down and authoritarian, they may serve the purpose for instant, rapid, fast and frequent information dissemination [13]. It is recognized that more targeted, interactive learning programs with peer-learning and intense moderation work through cMOOCs. They are suited for audiences that demand small audience sizes that are manageable. xMOOCs are naturally considered for other types of learning outcomes where digitalized learning journeys need to be addressed for large audiences and immediate knowledge needs. While more personalized, skills-building and behavior-change learning is required through cMOOCs, and those moderated and interactive sessions and synchronous formats are needed, there is an equal need for the asynchronous, xMOOC modality. The massive scale learning response is well placed to begin with the self-paced asynchronous and instructivist delivery of health information as the science emerges and evolves.

The OpenWHO pandemic learning response can serve as an example of applying the xMOOC approach to inform the body of knowledge on how public health information dissemination in asynchronous online learning formats can best meet the requirements of populations in need of health information in a public health emergency. In addition to reaching underserved populations, the OpenWHO case notably suggests that xMOOCs can motivate learners in spite of their self-directed nature and produce high course completion rates. The findings support the position that asynchronous, one-directional information dissemination has a valid place in the online learning offering, especially in sudden-onset emergencies that touch the whole world, such as the COVID-19 pandemic.

As described by previous research, xMOOCs should be recognized as a suitable MOOC type to disseminate knowledge on a massive scale, such as in a public health emergency. The instructivist [1, 9] and prescriptive [22] learning methods that are expert-driven suit information dissemination for mass audiences in emergencies. Despite the critique on instructivist and prescriptive learning, they do fulfill a purpose when real-time emergency learning is required at scale, and do so better than other modalities. This controlled and structured content is key for sudden onset events, where reliable and expert-driven information needs to be widely disseminated, especially in the era of the infodemics. They may be particularly effective for multiplying the reach of critical knowledge in fragile and hard-to-reach settings, given the low-bandwidth and offline modalities available for this type of learning. Yet, further research should carefully address issues of effectiveness and efficiency of xMOOC utilization across different emergency contexts and populations.

Our work also adds to the empirical information available on xMOOC providers of self-paced, asynchronous learning, the scope to which this work is limited. It adds to the body of evidence for health information dissemination in emergency learning contexts. It also provides applicable and practical approaches to learning through online platforms in sudden-onset events, in which one-directional learning transfer ensures rigid and robust information flow from experts and authorities to the public and larger audiences.

Adjusting materials for health information dissemination supports ownership and allows validation of the dissemination to health professionals and communities, which in turn will minimize misinformation and lead to better learning outcomes. Organizations offering emergency-related or other health information dissemination through learning could use such approaches in designing and delivering learning conducive to multiplication. The providers of similar learning and health information dissemination can draw from these findings and key considerations to respond to rapidly changing information needs.

Finally, we argue that constant pursuit of equitable access to knowledge is required for policymakers, planners and organizations with public outreach functions. Scientifically based health information dissemination needs to be established by organizations mandated to respond to any public health threat in a fast and scalable way. Elements that contribute to removing barriers to access, including language, must be at the core of learning and health information dissemination intervention of this scale. Equity must be the underlying principle and organizing criteria for public health work. Without equity in access to sources of trusted information, there cannot be adequate access to health and better health outcomes, including in public health emergencies where there is a critical need to quickly protect individuals and populations.

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References

[1] T. Beaven, M. Hauck, A. Comas-Quinn, T. Lewis, and B. de los Arcos. "MOOCs: Striking the right balance between facilitation and self-determination". In: *Journal of Online Learning and Teaching* 10 (1 2014), pages 31–43.

[2] V. B. Carr. "Asynchronous learning". In: *Encyclopedia of the Sciences of Learning*. Edited by N. M. Seel. Springer, 2012. DOI: 10.1007/978-1-4419-1428-6_984.

[3] A. Esfijani. "Measuring quality in online education: A meta-synthesis". In: *American Journal of Distance Education* 32 (1 2018), pages 57–73. DOI: 10.1080/08923647.2018.1417658.

[4] A. Finset, H. Bosworth, P. Butow, P. Gulbrandsen, R. Hulsman, A. Pieterse, R. Street, R. Tschoetschel, and J. van Weert. "Effective health communication – a key factor in fighting the COVID-19 pandemic". In: *Patient Education and Counseling* 103 (5 2020), pages 873–876. DOI: 10.1016/j.pec.2020.03.027.

[5] S. Goldin, S. Y. J. Kong, A. Tokar, H. Utunen, N. Ndiaye, J. Bahl, R. Appuhamy, and A. Moen. "Learning from a massive open online COVID-19 vaccination training experience". In: *JMIR Public Health and Surveillance* 7 (12 2021), e33455. DOI: 10.2196/33455.

[6] F. Martin, T. Sun, and C. Westine. "A systematic review of research on online teaching and learning from 2009 to 2018". In: *Computers & Education* 159 (2020), page 104009. DOI: 10.1016/j.compedu.2020.104009.

[7] J. Mazoue. "The MOOC Model: Challenging Traditional Education". In: *Educause Review* 1 (2 2013), pages 161–74.

[8] N. Mheidly and J. Fares. "Leveraging media and health communication strategies to overcome the COVID-19 infodemic". In: *Journal of Public Health Policy* 41 (4 2020), pages 410–420. DOI: 10.1057/s41271-020-00247-w.

[9] M. Onyesolu, V. Nwasor, O. Ositanwosu, and O. I. Iwegbuna. "Pedagogy: Instructivism to socio-constructivism through virtual reality". In: *International Journal of Advanced Computer Science and Applications* 4 (9 2013). DOI: 10.14569/IJACSA.2013.040907.

[10] Organisation for Economic Co-operation and Development (OECD). *The potential of online learning for adults: Early lessons from the COVID-19 crisis*. Technical report. 2020.

[11] L. Paakkari and O. Okan. "COVID-19: Health literacy is an underestimated problem". In: *Lancet Public Health* 5 (5 2020), e249–250.

[12] B. Reddy and A. Gupta. "Importance of effective communication during COVID-19 infodemic". In: *Journal of Family Medicine and Primary Care* 9 (8 2020), page 3793. DOI: 10.4103/jfmpc.jfmpc_719_20.

[13] J. Riehemann, J. H. Hellmann, and R. Jucks. "Your words matter! Relevance of individual participation in xMOOCs". In: *Active Learning in Higher Education* 22 (1 2021), pages 23–36. DOI: 10.1016/j.tele.2017.09.012.

[14] N. A. Teymori and M. A. Fardin. "COVID-19 and Educational Challenges: A Review of the Benefits of Online Education". In: *Annals of Military and Health Sciences Research* 18 (3 2020), e105778. DOI: 10.5812/amh.105778.

[15] The OpenWHO. *WHO's interactive, web-based, knowledge-transfer platform offering online courses to improve the response to health emergencies*. 2022.

[16] The United Nations Education, Science and Culture Organization (UNESCO). *Policy brief: Education during COVID-19 and beyond*. Technical report. 2020.

[17] The World Bank. *Brief: Classification of Fragile and Conflict-Affected Situations*. 2022.

[18] H. Utunen. "Health Information Dissemination During Pandemics and Epidemics. Key requirements for online learning platforms and materials". PhD thesis. Tampere University Dissertations, 2023.

[19] H. Utunen, M. Attias, R. George, G. O'Connell, and A. Tokar. "Learning multiplier effect of OpenWHO.org: use of online learning materials beyond the platform". In: *Weekly Epidemiological Record* 1/2 (2022), pages 1–7.

[20] H. Utunen, R. George, N. Ndiaye, A. Tokar, M. Attias, and G. Gamhewage. "Delivering WHO's life-saving information in real-time during a pandemic through an online learning platform: evidence from global use". In: *ICIMTH: Studies in Health Technology and Informatics* 281 (2021), pages 969–973. DOI: 10.3233/SHTI210322.

[21] H. Utunen, N. Ndiaye, C. Piroux, R. George, M. Attias, and G. Gamhewage. "Global Reach of an Online COVID-19 Course in Multiple Languages on OpenWHO in the First Quarter of 2020. Analysis of Platform Use Data". In: *Journal of Medical Internet Research* 22 (4 2020), e19076. DOI: 10.2196/19076.

[22] R. Williams, R. Karousou, and J. Mackness. "Emergent learning and learning ecologies in Web 2.0". In: *The International Review of Research in Open and Distributed Learning* 12 (3 2011), pages 39–59. DOI: 10.19173/irrodl.v12i3.883.