



Asian Journal of Distance Education

A reconceptualization of learning space as schools reopen amid and after COVID-19 pandemic

Michael B. Cahapay

Abstract: As educational systems begin to resume operations amid and after the Coronavirus Disease 2019 (COVID-19) crisis, there is a complicated imagination of how learning will take place in what kind of space. Drawing ideas from the experiences of selected countries as well as relevant theory, this article attempts to reconceptualize learning space as schools reopen in this new age. The discussion shows that physical distancing measures and emergency remote teaching are the two powerful forces that reconceptualize the learning space. The theory of transactional distance, with its three factors of dialogue, structure, and autonomy, further provides a better understanding. This paper recommends that shared efforts among governments, educational systems, and researchers should be placed to fully realize the benefits of education in this new age as far as reconceptualized learning space is concerned.

Keywords: learning space, physical distancing measures, emergency remote teaching, COVID-19

Introduction

On May 11, 2020, after over two months of lockdowns in the attempt to contain the spread of COVID-19 infection, several countries were observed to have begun easing their restriction measures (Secon et al., 2020). This stage was followed by the expression of different governments around the world to reopen schools after months of enforced closures. However, such a move comes with careful placement of various measures to keep the learners safe amid the uncertainties about the end of the COVID-19 crisis (World Economic Forum, 2020).

As a response to the apprehensions to reopen schools, the UNESCO (2020a) posed three urgent questions relating to time, condition, and process to guide educational systems in their attempts to reopen schools. As each country differ in their situations, it urged educational systems to ponder on the following questions: When can schools reopen? What conditions should be addressed? How can states organize schools on a practical level? Contemplating on these questions, a concern that worries educators is how learning will take place in what kind of space. This concern poses to reconceptualize the notions of a learning space.

Space, in the context of learning and education, is a broad concept. It is traditionally referred to as the physical spaces to which learning takes place (Cook, 2010). Within this definition, learning space includes formal such as classrooms and laboratories to informal spaces such as libraries and the campus as a whole (Painter et al., 2013). With the rapid technological development, learning space has been further defined as virtual spaces from which learning occurs (Wu, 2018). Within this reconsideration, learning space radically covers from fonts on the screen that resemble the printed volumes of learning materials to models of online classrooms (Warger et al., 2009).

An emerging body of studies has been conducted to explore different learning spaces (Brand & Kinash, 2010; Ellis & Goodyear, 2016; Greenhow & Belbas, 2007; Lee, 2017; Lievonen & Kinnunen, 2014; Kumar & Bhatt, 2014; McNeil & Borg, 2018; Petersen & Gorman, 2014; Talbert & Mor-Avi, 2019;



Warshauer & Matuchniak, 2010; Wilson & Randall, 2012; Zeivots & Schucks, 2018) mostly from the point of view before the COVID-19 global outbreak.

However, with the new age amid and after the COVID-19 pandemic, learning space becomes a more complex idea. As several countries reopened schools, education scholars saw how physical distancing practices are inevitably redesigning physical learning spaces (Melnick, et al., 2020). Furthermore, there are current global discussions on a range of remote practices collectively termed as emergency remote education, suggesting the emergence of remote learning spaces (Bozkurt et al., 2020). These changes motivate the reconsideration of how learning will take place in what kind of space. Thus, there is a timely need to carefully think about the concept of learning space anew.

Considering the background established, this article attempts to reconceptualize learning space as schools reopen amid and after the COVID-19 pandemic. It draws ideas from the emerging experiences of different countries around the world as well as relevant theory.

A Reconceptualization of Learning Space amid and after COVID-19 Pandemic

This paper tries to lead educators to doors that open transformative opportunities for how learning space in this new era can be reconceptualized. Through the review of current experiences of different countries, the discussion revolves around physical distancing measures and emergency remote teaching as two powerful forces. A grounding to the theory of transactional distance further supports how the reconceptualized learning spaces can be better understood.

Minding the physical distancing measures

With the changing time in the COVID-19 period, physical learning spaces have to be redefined through physical distancing required to prevent any possibility of virus transmission in schools. Studies of past disease outbreaks illustrate that enforced school closures can prevent disease transmission in the context of physical distancing measures (Viner et al., 2020). Physical distancing, also known as social distancing, has three dimensions: “stay at least six feet from other people”, “do not gather in groups”, and “stay out of crowded places” (Centers for Disease Control and Prevention, 2020). Each country is adopting approaches to meet physical distancing in schools, significantly reshaping the physical learning space for learners.

In China, where COVID-19 originated, schools reopened with a reduced number of learners in classes and shortened school days after months of attempts to contain the virus. For example, in Beijing and most cities, classes are limited to 20 students instead of the regular 30 students. The schools also close at 3:30 in the afternoon (Yang et al., 2020). A practice that is also changing the physical learning space for children is the wearing of creative winged hats that give children cues to keep a meter away from their peers (Katz, 2020). In the USA, which is now the global epicenter of the disease in terms of the number of cases, schools are advised to put physical partitions and guides, such as tape markers on floors and visual signs on the prominent areas (Dobrzyn & Iwasinski, 2020).

Denmark has a similar experience as the first country in Europe to reopen its schools. Its guidelines show how physical spaces are modified. Aside from reduced class sizes, schools have maximized spaces like playgrounds and gyms (Kingsley, 2020; Hunter & Jaber, 2020). With most school buildings shut down, teachers are bringing learners in the lower grades outside and on the playground instead of the blackboard (Chiacu, 2020). Learners in the higher grades would stay in their homerooms as teachers exchange, except in science classes, which would remain to be conducted in laboratories (Melnick et al., 2020).

Taiwan, in contrast, has not set specific class sizes. Schools keep students in a homeroom class with an advisory teacher. On the other hand, teachers of specific subjects move between the classes. Empirical research works indicate that, during the H1N1 outbreak, this strategy to physical distancing, combined with classroom suspension, contained the spread of disease and reduced social disruption (Yen et al., 2020) Aside from sustaining stable homerooms, desks are also spaced out and sometimes guarded by dividers (Melnick et al., 2020).

Moreover, in Singapore, changed physical spaces limit the movement of the learners. Typical class sizes remained at about 30 students, but classrooms are big, allowing learners to be spaced one to two meters apart. In early grade levels, learners are seated together in permanent groups. In intermediate grade levels, learners are seated in rows usually observed when taking tests (Peng & Ling, 2020). However, this may appear to be a problem in countries like the Philippines where stakeholders have expressed concerns about overcrowded schools with 40 to 50 students in a small classroom (Quismorio & Luci-Atienza, 2020).

On the other hand, in some territories in Australia, the time element plays a role in the new physical learning spaces. Classes were reopened but only allowing students to attend one day a week on a staggered basis (Chiacu, 2020). Austria also adopted a related stagger student attendance. In a sample model, one group of students will attend from Monday to Tuesday in a week, then on Wednesday to Friday the next week (Melnick et al., 2020). Similarly, in Hongkong, the education ministry has expressed that if schools reopen, students will be attending only half a day of classes. It will further be implemented in periods, with learners at the higher grades initially going back to schools (Ho-Him, 2020).

Shifting to emergency remote teaching

Another discussion offering solution as schools reopen amid the COVID-19 pandemic is the migration of classes to a range of educational practices collectively called emergency remote teaching. However, unlike distance education, home education, and online education which are anchored on theoretical and practical assumptions, it is about “surviving in a time of crisis with all resources available, including offline and online” (Bozkurt et al., 2020, p. 2). As elaborated, it “is rather a temporary solution” (Bozkurt & Sharma, 2020) and “being delivered in these pressing circumstances” (Hodges et al., 2020) formally called emergency remote teaching. This emerging practice opens alternative learning spaces typically not in the physical classrooms nor in distance education, home education, or online education which are different. These spaces range from complete virtual learning spaces to blended learning spaces.

Before the schools reopened in China, it was reported that as enforced closures of classes were implemented, an emergency remote teaching was adopted through complete virtual learning space using high technologies. It was done through a variety of online courses and electronic textbooks (Patrinos & Shmis, 2020). Such a space is also seen to be most likely adopted in places with developed online learning systems but is currently devastated by high COVID-19 infections. In some large districts in the USA, authorities have already indicated that they may not be able to open schools and instructional implementation may have to continue exclusively virtual and mostly online learning space (Domenech, 2020).

While it is generally thought that emergency remote teaching will likely redesign a complete virtual learning space using high technologies in countries with high capabilities, the experience of Germany is different. Kerres (2020) reported that while the country is a world leader in the production of high technologies, the COVID-19 crisis revealed technological gaps in its educational systems. As many teachers have quickly turned to emergency remote teaching amid the COVID-19 crisis, there is a high propensity towards going back to largely physical learning space considering the strong preference of the nation to traditional classroom instruction. Echoing the contemplations of Jandric (2020), the adoption of online education will likely motivate numerous research after the crisis.

On the other hand, with contrastingly limited resources in countries like Bhutan, schools are trying hard to use emergency remote teaching, bringing learners to a combined online and offline virtual learning space. A major source for internet access in the country is through cellular phones. Some schools have employed online tools such as Google classrooms and social media applications such as WeChat or WhatsApp to augment education from home. Teachers also give book chapters that may be read offline in this approach (Drukpa, 2020). A similar form of combined online and offline virtual learning space but using low technologies is being observed in Afghanistan. Omar (2020) reported that students learn lessons via radio and television. Its education ministry said it is adopting the approach to ensure continuity of education for students while they study at home. For example, math subjects are delivered on television and language subjects via radio.

Furthermore, in other countries like Morocco, Spain, and South Africa, where there are limited or no educational television programs, a broadcast of recorded lessons in simulated classrooms takes an efficient approach, making way for emergency remote teaching and creating a combined online and offline virtual learning space using low technologies. Supplementary materials like text messages and print materials like workbooks, written homework, or newspaper activities are also encouraged (Zacharia & Twinomugisha, 2020). Other countries like Estonia, Romania, and Serbia are also pursuing a combination of television broadcasts with on-demand video lessons. In these learning spaces, lessons are broadcast live to reach those pupils who have limited or no internet access with supplementary free digital versions (Dordevic, 2020).

Lastly, with its advanced technologies and decreased COVID-19 cases, Korea is shifting from emergency remote education to a new normal practice called blended learning. It is an approach that combines physical learning space and virtual learning space. As of the moment, classes are held both online and offline for most schools to reduce the number of students in physical classrooms. Depending on grade and class, it is recommended that about a third of the student population of a school go to modified physical learning space in schools while the remaining cohort learns from home through various remote modalities (Hyun-Ju, 2020).

Towards understanding a reconceptualized learning space

The reconceptualized learning space, whether physical or virtual, as a result of the various responses to the COVID-19 crisis, can be further understood through the theory of transactional distance of Moore (1997). Though framed in formal distance education, the theory posits three important factors: dialogue, structure, and autonomy. These factors should be considered in further gaining insights from the reconceptualization of learning space and the nature of interactions that transpire between the teachers and learners in such a learning space.

The dialogue factor accounts for all types of interactions between the teachers and learners within the context of instructional implementation and outcome evaluation (Giossos et al., 2009). Within the current COVID-19 context of changed physical learning space and virtual learning space, the dialogue may be hindered by the physical distance measures, thus challenging the quality of both instruction and outcome of such instruction. It is cogently important then to advise that instead of frequency of dialogue, the quality within the reshaped learning spaces should be primarily considered.

On the other hand, the structure factor covers comprehensive components of instruction as far as objectives, topics, strategies, and assessments are concerned. It also includes the ability of the instruction to address the individual needs of the learners (Zhang, 2003). Considering the current modified physical learning space and virtual learning space characterized by staggered and decreased time as a response to prevent COVID-19 infection, there is a propensity among educators to simplify or reduce components of the scope of instruction. There is a caveat that when doing so, the principles of significance, relevance, and utility should be highly noted.

Last but not the least, the autonomy factor refers to the sense of independence and interconnection experienced by the learners as they participate in the educational process (Falloon, 2011). It is evident in the emerging physical learning space and virtual learning space amid the COVID-19 crisis that autonomy is largely reshaped as interactions are confined within restricted spaces. This situation demands careful arrangement of physical learning space and virtual learning space to consider how the sense of direction, autonomy, and community may be promoted among the learners while accounting for their safety at the same time.

Conclusion

The unique context of the COVID-19 crisis and the obligation for learner safety are continually reconceptualizing the learning space as schools begin to reopen worldwide. Through the review of global experiences, it is revealed that physical distancing measures and emergency remote teaching are the two powerful forces in the reconceptualization of learning space. It is further shown that the theory of transactional distance, with its three factors of dialogue, structure, and autonomy, provides a better understanding of the reconceptualized learning space.

Such conclusions present several significant implications in education. For one, the learning space, whether physical or virtual, is specifically taking more spaces. The physical spaces such as playgrounds becoming classrooms, which is only exalted in progressive discussions in the past, are now becoming a reality. The results of emergency remote teaching have also created virtual spaces that range from complete to blended, from online to offline. Another is the learning space, both physical and virtual, conveys hidden messages of individualism, compliance, and inequality. For instance, there are criticisms as to how virtual modalities leave behind disadvantaged students, revealing gaps in education. Teaching approaches that require close interactions may not also be encouraged particularly in physical learning space while these approaches are being replicated in the virtual learning space. These implications have an impact on the overall instruction and learner outcomes as a result of such instruction.

Given these implications, time calls for concerted efforts among governments, educational systems, and researchers. It is suggested that the governments should address key issues such as class size and internet connectivity which are essential elements of the reconceptualized learning space. Furthermore, there is an imperative for educational systems to train their teachers and learners, as well as parents, in the new modalities of instruction to fully realize the benefits of the reconceptualized learning space. This historical moment also challenges researchers, thus poses for the need to conduct studies that explore educational directions as far as reconceptualized learning space is concerned.

References

- Bozkurt, A., Jung, I., Xiao, J., Vladimirschi, V., Schuwer, R., Egorov, G., Lambert, S. R., Al-Freih, M., Pete, J., Olcott, Jr., D. Rodes, V., Aranciaga, I., Bali, M., Alvarez, Jr., A. V., Roberts, J., Pazurek, A., Raffaghelli, J. E., Panagiotou, N., de Co tlogon, P., Shahadu, S., Brown, M., Asino, T. I. Tumwesige, J., Ram rez Reyes, T., Barrios Ipenza, E., Ossiannilsson, E., Bond, M., Belhamel, K., Irvine, V., Sharma, R. C., Adam, T., Janssen, B., Sklyarova, T., Olcott, N. Ambrosino, A., Lazou, C., Mocquet, B., Mano, M., & Paskevicius, M. (2020). A global outlook to the interruption of education due to COVID-19 pandemic: Navigating in a time of uncertainty and crisis. *Asian Journal of Distance Education*, 15(1), 1-126. <https://doi.org/10.5281/zenodo.3878572>
- Bozkurt, A., & Sharma, R. C. (2020). Emergency remote teaching in a time of global crisis due to CoronaVirus pandemic. *Asian Journal of Distance Education*, 15(1), i-vi. <https://doi.org/10.5281/zenodo.3778083>

- Brand, J. & Kinash, S. (2010). Pedagogy: A quasi-experimental and ethnographic pilot test of the ipad in a blended mobile learning environment. In C. H. Steel, M. J. Keppel, P. Gerbic & S. Housego (Eds.), *Proceedings Ascilite Sydney Curriculum, Technology & Transformation for an Unknown Future* (pp. 147-151). Brisbane, Australia: The University of Queensland.
- Centers for Disease Control and Prevention (2020). Keeping your distance to slow the spread. Retrieved from <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/social-distancing.html>
- Chiacu, D. (2020, May 13). Told he's not the 'end-all,' Fauci agrees but says, 'I'm a scientist'. *Reuters*. Retrieved from <https://www.reuters.com/article/us-health-coronavirus-usa-fauci/told-hes-not-the-end-all-fauci-agrees-but-says-im-a-scientist-idUSKBN22O2O0>
- Cook, D.J. (2010). Learning setting-generalized activity models for smart spaces. *IEEE Intelligent Systems*, 27(1). <https://doi.org/10.1109/mis.2010.112>
- Cranston, J. (2020, May 26). After coronavirus closures, reopening schools demands collaboration. *The Conversation*. Retrieved from <https://theconversation.com/after-coronavirus-closures-reopening-schools-demands-collaboration-137964>
- Deliso, M. (2020, May 17). How schools around the world are reopening during the coronavirus pandemic. *ABC News*. Retrieved from <https://abcnews.go.com/International/schools-world-reopening-coronavirus-pandemic/story?id=70641371>
- Dobrzyn, E. & Iwasinski, A. (2020, May 21). Here's what schools could look like when they reopen as the COVID-19 pandemic continues. *ClickOrlando.com*. Retrieved from <https://www.clickorlando.com/news/local/2020/05/21/health-experts-release-guidelines-on-reopening-schools-during-ongoing-covid-19-pandemic/>
- Domenech, D.A., Hansen, M., Hough, H.J., & Vegas, E. (2020, June 03). Reopening schools amid COVID-19 pandemic: Your questions, our answers. *Brookings*. Retrieved from <https://www.brookings.edu/blog/brown-center-chalkboard/2020/06/03/reopening-schools-amid-the-covid-19-pandemic-your-questions-our-answers/>
- Dordevic, N. (2020, March 20). Education and culture in CEE move online as schools close and public gatherings stop. *Emerging Europe*. Retrieved from <https://emerging-europe.com/news/education-and-culture-in-cee-move-online-as-schools-close-and-public-gatherings-stop/>
- Drukpa, U. (2020, May 09). Govt to decide soon on reopening schools but students will not be assessed on online learning: PM. *The Bhutanese*. Retrieved from <https://thebhutanese.bt/govt-to-decide-soon-on-reopening-schools-but-students-will-not-be-assessed-on-online-learning-pm/>
- Ellis, R., & Goodyear, P. (2016). Context and implications document for: Models of learning space: integrating research on space, place and learning in higher education. *Review of Education*, 4(2), 192-194. <https://doi.org/10.1002/rev3.3056>
- Falloon, G. (2011). Making the connection: Moore's theory of transactional distance and its relevance to the use of a virtual classroom in postgraduate online teacher education. *Journal of Research on Technology in Education*, 43(3), 187-209. <https://doi.org/10.1080/15391523.2011.10782569>
- Giossos, Y., Koutsouba, M., Lionarakis, A., & Skavantzios, K. (2009). Reconsidering Moore's transactional distance theory. *European Journal of Open Distance and ELearning*, 2009(2), 1-6. Retrieved from <http://www.eurodl.org/?article=374>
- Greenhow, C. and Belbas, B. (2007). Using activity-oriented design methods to study collaborative knowledge building in e-learning courses within higher education. *International Journal of Computer-Supported Collaborative Learning*, 2(4), 363-391. <https://doi.org/10.1007/s11412-007-9023-3>
- Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond A. (2020, May 27). The difference between emergency remote teaching and online learning. *EDUCAUSE Review*. Retrieved from <https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning>
- Ho-Him, C. (2020, April 18). Coronavirus: Hong Kong students might return to half-day classes before summer break, education chief says. *South China Morning Post*. Retrieved from <https://ph.news.yahoo.com/coronavirus-hong-kong-students-might-095807486.html>

- Jandrić, P. (2020). Postdigital research in the time of Covid-19. *Postdigital Science and Education*, 2(2), 233– 238. <https://doi.org/10.1007/s42438-020-00113-8>.
- Hunter, M. & Jaber, Z. (2020, April 26). Touch a shadow, 'You're it!': New routines as Denmark returns to school after coronavirus lockdown. *NBC News*. <https://www.nbcnews.com/news/world/touch-shadow-you-re-it-new-routines-denmark-returns-school-n1192611>.
- Hyun-Ju, O. (2020, June 09). COVID-19 speeds up revolution in education. *The Korea Herald*. Retrieved from <http://www.koreaherald.com/view.php?ud=20200609000954>
- Katz, L. (2020). Kids in China head back to school wearing social-distancing hats. *CNET*. Retrieved from <https://www.cnet.com/news/kids-in-china-head-back-to-school-wearing-social-distancing-hats/>
- Kerres, M. (2020). Against all odds: Education in Germany coping with Covid-19. *Postdigital Science and Education*. <https://doi.org/10.1007/s42438-020-00130-7>
- Kingsley, P. (2020, April 17). In Denmark, the rarest of sights: Classrooms full of students. *New York Times*. <https://www.nytimes.com/2020/04/17/world/europe/denmark-schools-coronavirus.html>
- Kumar A. & Bhatt, R.K. (2014). A study of using informal learning spaces at Indian Institute of Technology, Delhi. *Library Philosophy and Practice*, 1-17. Retrieved from <http://digitalcommons.unl.edu/libphilprac/1239>
- Lee, J.W.Y. (2017). *Learning spaces around the university: Factors that affect the preferences for a space*. Proceedings of the 3rd International Conference on Higher Education Advances. <http://dx.doi.org/10.4995/HEAd17.2017.5218>
- Lievonen, M. & Kinnunen, P. (2014). *Main features of an ideal learning space: A user-based description*. Proceedings of the 6th Annual Architectural Research Symposium in Finland (pp. 237-244).
- McNeil, J., & Borg, M. (2018). Learning spaces and pedagogy: Towards the development of a shared understanding. *Innovations in Education and Teaching International*, 55(2) 228-238. <https://doi.org/10.1080/14703297.2017.1333917>
- Melnick, H., Darling-Hammond, L., Leung, M., Yun, C., Schachner, A., Plasencia, S., & Ondrasek, N. (2020, May 15). Reopening schools in the context of COVID-19: Health and safety guidelines from other countries. *Learning Policy Institute*. Retrieved from <https://learningpolicyinstitute.org/product/reopening-schools-covid-19-brief>
- Moore, M. (1997). Theory of transactional distance. In D. Keegan (Ed.), *Theoretical principles of distance education* (pp. 22–38). New York: Routledge.
- Omar (2020, April 21). Afghan students move to remote classes to fill gap caused by coronavirus. *Salaam Times*. Retrieved from https://afghanistan.asia-news.com/en_GB/articles/cnmi_st/features/2020/04/21/feature-01
- Painter, S., Fournier, J., Grape, C., Grummon, P., Morelli, J., Whitmer, S., & Cevetello J. (2013). *research on learning space design: Present state, future directions* (Report). Michigan: Society for College and University Planning.
- Patrinos, H.A., & Shmis, T. (2020). Can technology help mitigate the impact of COVID-19 on education systems in Europe and Central Asia? [Blog post]. Retrieved from <https://blogs.worldbank.org/europeandcentralasia/can-technology-help-mitigate-impact-covid-19-education-systems-europe-and>
- Peng, T. C., & Ling, L. E. (2020, April). *Singapore's education efforts against the global pandemic* [Memo]. Compiled from published media including The Straits Times, Channel News Asia, and the Singapore Ministry of Education's official Facebook page.
- Petersen, C. I., & Gorman, K. S. (2014). Strategies to address common challenges when teaching in an active learning classroom. *New Directions for Teaching and Learning*, 137, 63-70. <https://doi.org/10.1002/tl.20086>
- Quismorio, E. & Luci-Atienza, C. (2020, May 24). Solons: No vaccine, no class opening. *Manila Bulletin*. Retrieved from <https://news.mb.com.ph/2020/05/24/solons-no-vaccine-no-class-opening/>

- Secon, H., Woodward, W., & Mosher, D. (2020, May 23). A comprehensive timeline of the new coronavirus pandemic, from China's first case to the present. *Business Insider*. Retrieved from www.businessinsider.com/coronavirus-pandemic-timeline-history-major-events-2020-3
- Talbert, R. & Mor-Avi, A. (2019). A space for learning: An analysis of research on active learning spaces. *Heliyon*, 5(12), e02967. <https://doi.org/10.1016/j.heliyon.2019.e02967>
- UNESCO (2020a). Reopening schools: How to get education back on track after COVID-19. Retrieved from <http://www.iiep.unesco.org/en/reopening-schools-how-get-education-back-track-after-covid-19-13424>
- UNESCO (2020b). Preparing the reopening of schools. Retrieved from <https://en.unesco.org/news/back-school-preparing-and-managing-reopening-schools>
- Viner, R. M., Russell, S. J., Croker, H., Packer, J., Ward, J., Stansfield, C., Mytton, O., Boell, C., & Booy, R. (2020). School closure and management practices during coronavirus outbreaks including COVID-19: A rapid systematic review. *The Lancet Child & Adolescent Health*, 4(5), 397–404. <https://doi.org/10.2139/ssrn.3556648>
- Warger, T. & Dobbin, G. (2009). *Learning environments: Where space, technology, and culture converge*. ELI Paper 1. Boulder, CO: Educause.
- Warshauer, M. and Matuchniak, T. (2010). New technology and digital worlds: Analyzing evidence of equity in access, use, and outcomes. *Review of Research in Education*, 34(1), 179-225. <https://doi.org/10.3102/0091732x09349791>
- Wilson, G., & Randall, M. (2012). The implementation and evaluation of a new learning space: a pilot study. *Research in Learning Technology*, 20(2), 1-17. <http://dx.doi.org/10.3402/rlt.v20i0.14431>
- World Economic Forum (2020). *COVID-19: These countries show us what education looks like after lockdown*. Retrieved from <https://www.weforum.org/agenda/2020/05/schools-education-lockdowns-coronavirus-covid19/>
- Wu, Y. (2018). Online learning space and wisdom teaching. *MATEC Web of Conferences*, 176, 02026. <https://doi.org/10.1051/mateconf/201817602026>
- Yang Y., Liu, N. & Liu, Q. (2020, May 01). Back to school in China: 'We treat them like it's kindergarten'. *Financial Times*. Retrieved from <https://www.ft.com/content/854a885b-65e1-4a16-9698-8c8bebeb7876>
- Yen, M. Y., Chiu, A. W., Schwartz, J., King, C.-C., Lin, Y. E., Chang, S.-C., Armstrong, D., & Hsueh, P.-R. (2014). From SARS in 2003 to H1N1 in 2009: Lessons learned from Taiwan in preparation for the next pandemic. *Journal of Hospital Infections*, 87(4), 185–193. <https://doi.org/10.1016/j.jhin.2014.05.005>
- Zacharia, S. & Twinomugisha, A. (2020, April 24). Educational television during COVID-19: How to start and what to consider. *World Bank Blogs*. Retrieved from <https://blogs.worldbank.org/education/educational-television-during-covid-19-how-start-and-what-consider>
- Zeivots, S., & Schuck, S. (2018). Needs and expectations of a new learning space: Research students' perspectives. *Australasian Journal of Educational Technology*, 34(6), 27–40. <https://doi.org/10.14742/ajet.4516>
- Zhang, A. (2003). *Transactional distance in web-based college learning environments: Towards measurement and theory construction* (Ph.D. dissertation). Richmond: Virginia Commonwealth University.

About the Author

Michael B. Cahapay; mbcahapay@up.edu.ph; Mindanao State University, Philippines; <https://orcid.org/0000-0002-0588-0022>

Suggested citation:

Cahapay, M. B. (2020). A reconceptualization of learning space as schools reopen amid and after COVID-19 pandemic. *Asian Journal of Distance Education*, 15(1), 269-276. <https://doi.org/10.5281/zenodo.3892969>