7. References

the day really link therein, including 1 1 1 1 1 1 1

- ANDREWS, M., PRITCHETT, L., & WOOLCOCK, M. (2017). Building state capability: Evidence, analysis, action. Oxford, UK: Oxford University Press.
- ANGRIST, J. D., & LAVY, V. (1999). Using Maimonides' rule to estimate the effect of class size on scholastic achievement. *The Quarterly Journal of Economics*, 114(2), 533-575.
- ARAYA, R., ARIAS ORTIZ, E., BOTTAN, N. L., & CRISTIA, J. P. (2019). Does gamification in education work?: Experimental evidence from Chile. (IDB Working Paper No. IDB-WP-982). Inter-American Development Bank. Washington, DC.
- ASER. (2019). Annual status of education report (ASER) 2018. Retrieved from: http://www.asercentre.org/Keywords/p/337.html

References

- BANDO, R., GALLEGO, F. A., GERTLER, P., & ROMERO, D. (2016). Books or laptops? The costeffectiveness of shifted from printed to digital delivery of educational content. *Economics of Education Review*, 61, 162-173.
- BANERJEE, A. V., BANERJI, R., BERRY, J., DUFLO, E., KANNAN, H., MUKERJI, S., ... WALTON, M. (2017). From proof to concept to scalable policies: Challenges and solutions, with an application. *Journal of Economic Perspectives*, *31*(4), 73-102.
- BANERJEE, A. V., COLE, S., DUFLO, E., & LINDEN, L. (2007). Remedying education: Evidence from two randomized experiments in India. *The Quarterly Journal of Economics*, 122, 1235-1264. doi:10.1162/qjec.122.3.1235
- BANERJEE, A. V., & DUFLO, E. (2011). Top of the class. In Poor economics: A radical rethinking of the way to fight global poverty. Philadelphia, PA: Public Affairs.

- BANERJI, R., BERRY, J., & SHOTLAND, M. (2015). The impact of mother literacy and participation programs on child learning: Evidence from a randomized evaluation in India. Unpublished manuscript. Abdul Latif Jameel Poverty Action Lab (J-PAL). Cambridge, MA.
- BARRERA-OSORIO, F., & LINDEN, L. (2009). The use and misuse of computers in education: Evidence from a randomized experiment in Colombia. (Impact Evaluation Series No. 29). The World Bank. Washington, DC.
- BEG, S. A., LUCAS, A. M., HALIM, W., & SAIF, U. (2020). Beyond the basics: Improving postprimary content delivery through classroom technology. (NBER Working Paper No. 25704). National Bureau of Economic Research (NBER). Should be Cambridge, MA.
- BERLINSKI, S., BUSSO, M., DINKELMAN, T., & MARTINEZ, C. (2017). Reducing parent-school information gaps and improving education outcomes: Evidence from high frequency text messaging in Chile. Unpublished manuscript. Inter-American Development Bank (IDB). Washington, DC.
- BEUERMANN, D. W., CRISTIA, J., CRUZ-AGUAYO, Y., CUETO, S., & MALAMUD, O. (2015). Home computers and child outcomes: Short-term impacts from a randomized experiment in Peru. American Economic Journal: Applied Economics, 7(2), 53-80.
- BIETENBECK, J., PIOPIUNIK, M., & WIEDERHOLD, S. (2018). Africa's skill tragedy: Does teachers' lack of knowledge lead to low student performance? Journal of Human Resources, 53(3), 553-578.
- BOLD, T., FILMER, D. P., MARTIN, G., MOLINA, E., STACY, B., ROCKMORE, C., SVENSSON, J., WANE, W. (2017). Enrollment without learning: Teacher effort, knowledge, and skill in primary schools in Africa. *Journal of Economic Perspectives*, 31(4), 185-204.

BRUNS, B., COSTA, L., & CUNHA, N. (2018). Through the looking glass: Can classroom observation and coaching improve teacher performance in Brazil? *Economics of Education Review*, 64(1), 214-250.

- BÜCHEL, K., JAKOB, M., KÜHNHANSS, C., STEFFEN, D., & BRUNETTI, A. (2020). The relative effectiveness of teachers and learning software: Evidence from a field experiment in El Salvador. (Universität Bern Discussion Papers). Universität Bern, Faculty of Business, Economics, and Social Sciences, Department of Economics. Bern, Switzerland.
- BULMAN, G., & FAIRLIE, R. W. (2016). Technology and education: Computers, software, and the Internet. (NBER Working Paper No. 22237). National Bureau of Economic Research (NBER). Cambridge, MA.
- CABEZAS, V., CUESTA, J. I., & GALLEGO, F. A. (2011). Effects of short-term tutoring on cognitive and non-cognitive skills: Evidence from a randomized evaluation in Chile. Unpublished manuscript. Abdul Latif Jameel Poverty Action Lab (J-PAL). Santiago, Chile.
- CHAUDHURY, N., HAMMER, J., KREMER, M., MURALIDHARAN, K., & ROGERS, F. H. (2006). Missing in action: Teacher and health worker absence in developing countries. *The Journal of Economic Perspectives*, 20(1), 91-116.
- CHEMIN, M., & OLEDAN, J. (2020). Does online tutoring work? Evidence from a crosscultural tutoring experiment between Canada and Kenya. McGill University. Montreal, Quebec.
- CHIPLUNKAR, G., DHAR, D., & NAGESH, R. (2020). Too little, too late: Improving post-primary learning outcomes in India. Unpublished manuscript. University of Oxford. Oxford, UK.

- **CHRISTENSEN, C. M., HORN, M. B., & JOHNSON, C. M. (2011).** Disrupting class: How disruptive innovation will change the way the world learns. New York, NY: McGraw Hill.
- CIFUENTES, E., & GANIMIAN, A. J. (2018). Tecnologías en educación: ¿Cómo pueden mejorar el aprendizaje? Lecciones para América Latina y el Caribe. Abdul Latif Jameel Poverty Action Lab (J-PAL) & Proyecto Educar 2050. Buenos Aires, Argentina.
- CILLIERS, J., FLEISCH, B., PRINSLOO, C., & TAYLOR, S. (2018). How to improve teaching practice? Experimental comparison of centralized training and in-classroom coaching. Georgetown University. Washington, DC.
- сонем, р. к., & BALL, р. L. (1999). Instruction, capacity, and improvement. (CPRE Research Report Series). Consortium for Policy Research in Education, University of Pennsylvania, Graduate School of Education. Philadelphia, PA.
- сомм, к. м. (2017). Identifying effective education interventions in Sub-Saharan Africa: A meta-analysis of rigorous impact evaluations. *Review of Educational Research, 87*(5), 863-898.
- CRISTIA, J., IBARRARÁN, P., CUETO, S., SANTIAGO, A., & SEVERÍN, E. (2017). Technology and child development: Evidence from the One Laptop per Child program. American Economic Journal: Applied Economics, 9(3), 295-320.
- DE BARROS, A. (2020). Do students benefit from blended instruction? Experimental evidence from public schools in India. Unpublished manuscript. Harvard Graduate School of Education (HGSE). Cambridge, MA.
- DE HOOP, T., RING, H., SIWACH, G., DIAS, P., TEMBO, G., ROTHBARD, V., & TOUNGUI, A. (2020). Impact of e-learning technology and activity-based learning on learning outcomes: Experimental evidence from community schools in rural Zambia. American Institutes for Research (AIR). Washington, DC.

[67]

DUFLO, E. (2001). Schooling and labor market consequences of school construction in Indonesia: Evidence from an unusual policy experiment. *American Economic Review*, *91*, 795-813. doi:10.1257/aer.91.4.795

DUFLO, E., DUPAS, P., & KREMER, M. (2011). Peer effects, teacher incentives, and the impact of tracking: Evidence from a randomized evaluation in Kenya. American Economic Review, 101(5), 1739-1774. doi:10.1257/aer.101.5.1739

References

- DUFLO, E., DUPAS, P., & KREMER, M. (2015). School governance, teacher incentives, and pupil-teacher ratios: Experimental evidence from Kenyan primary schools. Journal of Public Economics, 123, 92–110. doi:10.1016/j.jpubeco.2014.11.008
- DUFLO, E., HANNA, R., & RYAN, S. P. (2012). Incentives work: Getting teachers to come to school. The American Economic Review, 102, 1241-1278. doi:10.1257/aer.102.4.1241
- ESCUETA, M., NICKOW, A. J., OREOPOULOS, P., & QUAN, V. (FORTHCOMING). Upgrading education with technology: Insights from experimental research. *Journal of Economic Literature*.
- EVANS, D. K. & YUAN, F. (2020). How big are effect sizes in international education studies? (CGD Working Paper No. 545). Washington, DC: Center for Global Development (CGD).
- FABREGAS, R. (2019). Broadcasting human capital? The long term effects of Mexico's telesecundarias. Unpublished manuscript. LBJ School of Public Affairs, University of Texas at Austin. Austin, TX.
- FERMAN, B., FINAMOR, L., & LIMA, L. (2019). Are public schools ready to integrate math classes with Khan Academy? (MPRA Paper No. 94736). Munich Personal RePEc Archive (MPRA). Munich, Bavaria.

FRAILLON, J., AINLEY, J., SCHULTZ, W., FRIEDMAN, T., & DUCKWORTH, D. (2020). Preparing for life in a digital world: IEA International Computer and Information Literacy Study 2018 International Report. International Association for the Evaluation of Educational Achievement (IEA). Amsterdam, the Netherlands.

GANIMIAN, A. J., & MURNANE, R. J. (2016). Improving educational outcomes in developing countries: Lessons from rigorous evaluations. *Review of Educational Research*, 86(3), 719-755.

HUANG, W., MO, D., SHI, Y., ZHANG, L., BOSWELL, M., & ROZELLE, S. (2014). Computer technology in education: Evidence from a pooled study of computer assisted learning programs among rural students in China. (REAP Working Paper No. 278). Rural Education Action Program (REAP). Stanford, CA.

- IEA. (2015). PIRLS 2016: Assessment framework. Boston, MA: TIMSS & PIRLS International Study Center. Lynch School of Education, Boston College & International Association for the Evaluation of Educational Achievement (IEA).
- JOHNSTON, J., & KSOLL, C. (2017). Effectiveness of interactive satellite-transmitted instruction: Experimental evidence from Ghanaian primary schools. (CEPA Working Paper No. 17-08). Center for Education Policy Analysis (CEPA). Stanford, CA.
- KANE, T. J., & STAIGER, D. O. (2012). Gathering feedback for teachers: Combining highquality observations with student surveys and achievement gains. Retrieved from Seattle, WA: https://eric.ed.gov/?id=ED540960
- KREMER, M., BRANNEN, C., & GLENNERSTER, R. (2013). The challenge of education and learning in the developing world. *Science*, *340*, 297-300. doi:10.1126/ science.1235350

LAI, F., LUO, R., ZHANG, L., HUANG, X., & ROZELLE, S. (2015). Does computer-assisted learning improve learning outcomes? Evidence from a randomized experiment in migrant schools in Beijing. *Economics of Education Review*, 47, 34-48. doi:10.1016/j.econedurev.2015.03.005

- LAI, F., ZHANG, L., HU, X., QU, Q., SHI, Y., QIAO, Y., ... ROZELLE, S. (2013). Computer assisted learning as extracurricular tutor? Evidence from a randomised experiment in rural boarding schools in Shaanxi. *Journal of development effectiveness*, 5(2), 208-231. doi:10.1080/19439342.2013.780089
- LAI, F., ZHANG, L., QU, Q., HU, X., SHI, Y., BOSWELL, M., & ROZELLE, S. (2012). Does computerassisted learning improve learning outcomes? Evidence from a randomized experiment in public schools in rural minority areas in Qinghai, China. (REAP working paper No. 237). Rural Education Action Program (REAP). Stanford, CA.
- LINDEN, L. L. (2008). Complement or substitute? The effect of technology on student achievement in India. Unpublished manuscript. Abdul Latif Jameel Poverty Action Lab (J-PAL). Cambridge, MA.
- MA, Y., FAIRLIE, R. W., LOYALKA, P., & ROZELLE, S. (2020). Isolating the "tech" from edtech: Experimental evidence on computer assisted learning in China. (SIEPR Working Paper No. 20-009). Institute for Economic Policy Research (SIEPR), Stanford University. Stanford, CA.
- MALAMUD, O., & POP-ELECHES, C. (2011). Home computer use and the development of human capital. *The Quarterly Journal of Economics*, 126, 987-1027. doi:10.1093/qje/qjr008
- MARCUS, J. (2020). How technology is changing the future of higher education. *New York Times.* Retrieved from https://www.nytimes.com/2020/02/20/ education/learning/education-technology.html?searchResultPosition=6

MCEWAN, P. J. (2014). Improving learning in primary schools of developing countries: A meta-analysis of randomized experiments. *Review of Educational Research*, *XX*, 1-42. doi:10.3102/0034654314553127

METZLER, J., & WOESSMANN, L. (2012). The impact of teacher subject knowledge on student achievement: Evidence from within-teacher within-student variation. Journal of Development Economics, 99(2), 486-496.

MO, D., BAI, Y., SHI, Y., ABBEY, C., ZHANG, L., ROZELLE, S., & LOYALKA, P. (2020). Institutions, implementation, and program effectiveness: Evidence from a randomized evaluation of computer-assisted learning in rural China. *Journal of Development Economics*, 146, 102487.

MO, D., SWINNEN, J., ZHANG, L., YI, H., QU, Q., BOSWELL, M., & ROZELLE, S. (2013). Can oneto-one computing narrow the digital divide and the educational gap in China? The case of Beijing migrant schools. *World Development, 46*, 14-29. doi:10.1016/j.worlddev.2012.12.019

MO, D., ZHANG, L., LUO, R., QU, Q., HUANG, W., WANG, J., . . . ROZELLE, S. (2014). Integrating computer-assisted learning into a regular curriculum: Evidence from a randomised experiment in rural schools in Shaanxi. *Journal of development effectiveness*, 6, 300-323. doi:10.1080/19439342.2014.911770

MO, D., ZHANG, L., WANG, J., HUANG, W., SHI, Y., BOSWELL, M., & ROZELLE, S. (2015). Persistence of learning gains from computer assisted learning: Experimental evidence from China. *Journal of Computer Assisted Learning*, *31*, 562-581.

MULLIS, I. V. S., MARTIN, M. O., FOY, P., & HOOPER, M. (2016). TIMSS 2015 international results in mathematics. Retrieved from Boston College, TIMSS & PIRLS International Study Center website: http://timssandpirls.bc.edu/timss2015/ international-results/ MURALIDHARAN, κ. (2017). Field experiments in education in developing countries. In A. V. Banerjee & E. Duflo (Eds.), *Handbook of field experiments (Vol. 1*): North Holland.

MURALIDHARAN, K., DAS, J., HOLLA, A., & MOHPAL, A. (2017). The fiscal cost of weak governance: Evidence from teacher absence in India. *Journal of Public Economics*, 145(C), 116-135.

MURALIDHARAN, K., ROMERO, M., & WÜTHRICH, K. (2019). Factorial designs, model selection, and (incorrect) inference in randomized experiments. (NBER Working Paper No. 26562). National Bureau of Economic Research (NBER). Cambridge, MA.

MURALIDHARAN, К., & SINGH, А. (2019). Improving school productivity through computeraided instruction: Experimental evidence from Rajasthan. Unpublished manuscript. University of California, San Diego. San Diego, CA.

MURALIDHARAN, K., SINGH, A., & GANIMIAN, A. J. (2019). Disrupting education? Experimental evidence on technology-aided instruction in India. *American Economic Review*, 109(4), 1426-1460.

MURALIDHARAN, K., & ZIELENIAK, Y. (2014). Chasing the syllabus: Measuring learning trajectories in developing countries with longitudinal data and item response theory. Unpublished manuscript. University of California, San Diego. San Diego, CA.

MURNANE, R. J., & WILLETT, J. B. (2011). Substantive Lessons and New Questions. In Methods Matter: Improving Causal Inference in Educational and Social Science Research. New York, NY: Oxford University Press.

NAIK, G., CHITRE, C., BHALLA, M., & RAJAN, J. (2019). Impact of use of technology on student learning outcomes: Evidence from a large-scale experiment in India. Indian Institute of Management Bangalore (IIMB). Bangalore, Karnataka.

[72]

NASLUND-HADLEY, E., PARKER, S. W., & HERNANDEZ-AGRAMONTE, J. M. (2014). Fostering early math comprehension: Experimental evidence from Paraguay. *Global Education Review, 1,* 135-154.

NAVARRO-SOLA, L. (2019). Secondary school expansion through televised lessons: The labor market returns of the Mexican Telesecundaria. Unpublished manuscript. Northwestern University. Evanston, IL.

- **OECD.** (2005). Are students ready for a technology-rich world? What PISA studies tell us. Paris, France: Organization for Economic Cooperation and Development (OECD).
- **OECD. (2014).** TALIS 2013 results: An international perspective on teaching and learning. Paris, France: Organization for Economic Cooperation and Development (OECD).
- **OECD. (2019).** *PISA 2018 results: What students know and can do (Volume I).* Paris, France: Organization for Economic Cooperation and Development (OECD).
- OVIDE, S. (2020). Using tech to teach—smartly. New York Times. Retrieved from https:// www.nytimes.com/2020/05/15/technology/coronavirus-distance-learning. html
- PITCHFORD, N. J. (2015). Development of early mathematical skills with a tablet intervention: a randomized control trial in Malawi. *Frontiers in Psychology*, 6(485). doi:10.3389/fpsyg.2015.00485
- **PRITCHETT, L. (2013).** The rebirth of education: From 19th-century schooling to 21stcentury learning. Washington, DC: Brookings Institution Press for Center for Global Development.

- **PRITCHETT, L., & BEATTY, A. (2015).** Slow down, you're going too fast: Matching curricula to student skill levels. *International Journal of Educational Development, 40,* 276-288.
- ROBERTSON, A. (2018). OLPC's \$100 laptop was going to change the world—Then it all went wrong. *The Verge*. Retrieved from https://www.theverge. com/2018/4/16/17233946/olpcs-100-laptop-education-where-is-it-now
- SABARWAL, S., EVANS, D. K., & MARSHAK, A. (2014). The permanent textbook hypothesis: School inputs and student outcomes in Sierra Leone. (Policy Research Working Paper No. 7021). The World Bank. Washington, DC.
- SANTIBAÑEZ, L. (2006). Why we should care if teachers get A's: Teacher test scores and student achievement in Mexico. *Economics of Education Review, 25*(5), 510-520.
- SEO, H. K. (2017). Do school electrification and provision of digital media deliver educational benefits? (IGC Working Paper No. E-40308-TZA-2). International Growth Centre (IGC). London, UK.
- SNILSTVEIT, B., STEVENSON, J., PHILLIPS, D., VOJTKOVA, M., GALLAGHER, E., SCHMIDT, T., ... EYERS, J. (2015). Interventions for improving learning outcomes and access to education in low- and middle-income countries: A systematic review. International Initiative for Impact Evaluation (3ie). London, UK.
- TAUSON, M., & STANNARD, L. (2018). Edtech for learning in emergencies and displaced settings. Save the Children UK. London, UK.
- UNESCO. (2019). Global education report 2019. Migration, displacement, and education: Building bridges, not walls. Paris, France: United Nations Educational, Scientific, and Cultural Organization (UNESCO).

URQUIOLA, M., & VEGAS, E. (2005). Arbitrary variation in teacher salaries. In E. Vegas (Ed.), *Incentives to improve teaching: Lessons from Latin America*. Washington, DC: The World Bank.

WEISE, κ. (2020). Remote learning comes to America as coronavirus shuts schools. New York Times. Retrieved from https://www.nytimes.com/ interactive/2020/03/10/us/covid-19-seattle-washington-home-schoolingremote.html?searchResultPosition=4

world bank. (2018). World development report 2018: Learning to realize education's promise. Washington, DC: The World Bank.

References