

Health Research Gaps in the Marketing and Promotion of Emerging Educational Technologies

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Introduction

The rapid proliferation of apps, handheld screens, and technological devices entering PreK-12 classrooms is unfolding amidst a lack of research establishing effectiveness or assurances of long term safety (American Academy of Pediatrics, 2016; California Medical Association, 2014; OECD, 2015; Sage & Burgio, 2017).

While experts and researchers in the fields of public health, neuroscience, medicine, and child development have published research and issued warnings documenting health hazards of extended use and exposure of various technological devices, public awareness remains slim and agencies charged with protecting children and public health have been silent on the issue (Alster, 2015; BioInitiative Report, 2012; Hardell, 2017; Moskowitz, 2017).

Bandura's social theory of mass communication (2009) includes "media effects" and the role of social modeling in learning. This study integrates Bandura's social cognitive lens with social-ecological perspectives (Bronfenbrenner, 1979; Dahlberg & Krug, 2002) to consider macro-level influences that shape public attention (or lack thereof) on health hazards and risks of extended technology use.

This study explores the extent to which widely disseminated reports promoting emerging educational technologies address health and/or developmental concerns about extended screen use from public health and child development fields. Parallel analyses will also determine the extent to which the reports include language of investments and/or markets within the promotional content.

Research questions:

Q1) Do widely disseminated reports promoting educational technologies include mention of concern about impacts of the technologies on student health and/or development (and if so, to what extent and in what context?)

Q2) To what extent do such reports promoting educational technologies include language indicating attention to investments and/or financial markets?

Methods

This study employs content analyses of publications promoting emerging educational technologies. The methodology draws from Hsieh and Shannon's work (2005) and explores the extent to which a set of widely disseminated reports promoting emerging educational technologies address concerns regarding health and/or developmental hazards of device use. Content from each of the reports was coded for the frequency of use (as rate per 100 pages of words) included in the document. "Health", "development", "investment", and "market" were each analyzed across reports and compared proportionally. The following reports were analyzed:

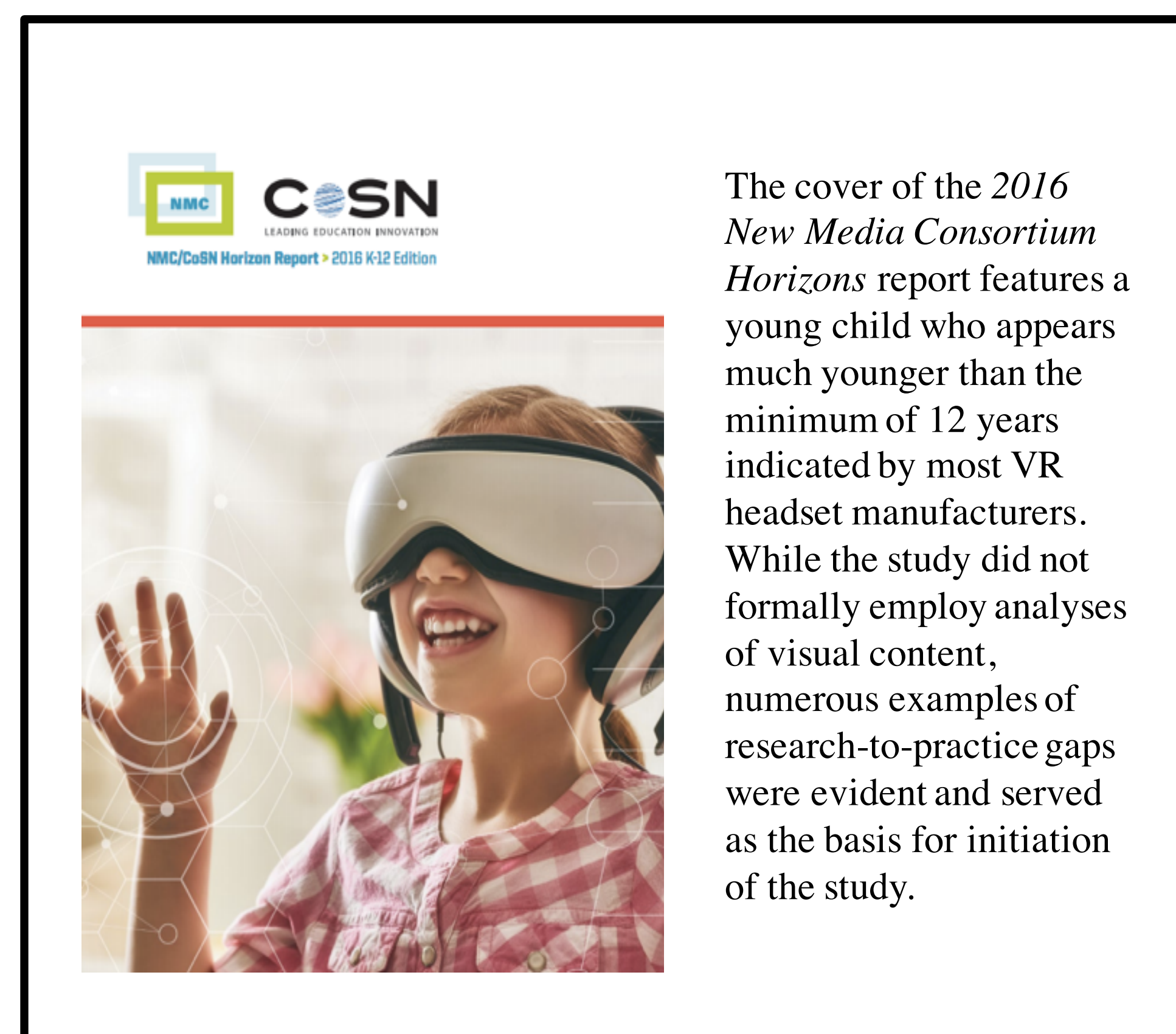
American Revolution, 2.0: How Education Innovation is Going to Revitalize America and Transform the U.S. Economy (Moe, Quazzo, Jiang, & Pampoulov, 2012; Global Silicon Valley Asset Management) 332 pages

Blended Learning: A Wise Giver's Guide to Tech-Supported Teaching (Vanderkam, 2013; Philanthropy Roundtable) 150 pages

New Media Consortium / Consortium for School Networking 2016 Horizon Report, 48 pages

New Media Consortium / Consortium for School Networking 2018 Horizon Report*,* 58 pages

*Note: The 2017 NMC / CoSN Horizons report was initially proposed to be included in the analyses, yet was published in a format that did not readily allow for text analysis comparable to the other reports. Following text conversion of the document, final written paper will also include 2017 NMC report.



Results

Combined across the four reports describing emerging educational technologies (totaling 588 pages of material), content analyses revealed the following findings:

- Zero percent (0%) of the content included language that signified attention or concern about the impacts of screen-based devices or new technologies on student *health*. There were no indications to moderate or monitor screen use nor language suggesting health or safety risks, hazards, or concerns provided in any of the documents.

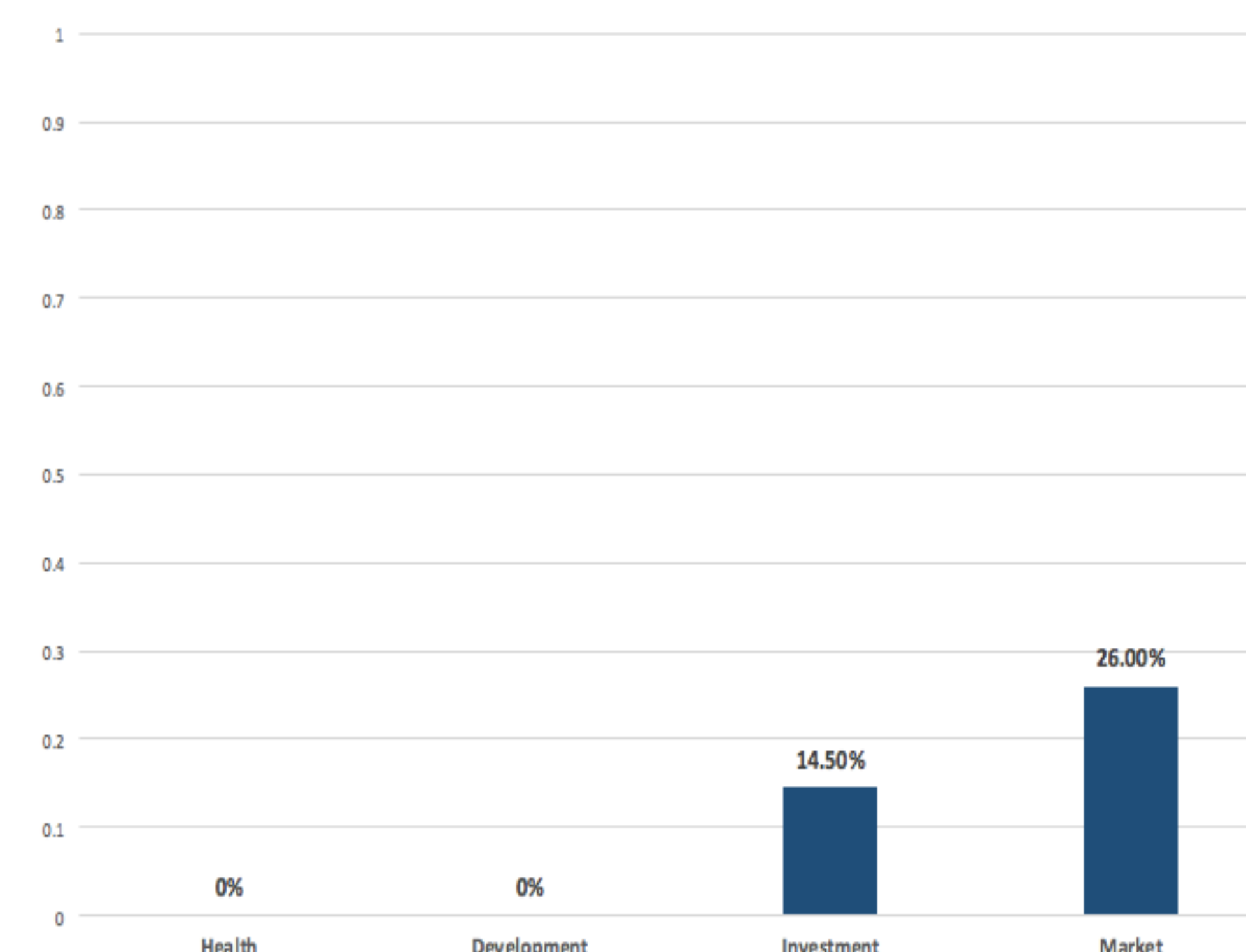
0%

- The term *development* was included at a rate of 42 times per 100 pages analyzed, yet with zero evidence of use that referred in any way to potential harms or unintended impacts on students' social, emotional, academic, physical, or neurological development.

0%

- The word *investment* was mentioned at an average rate of 14.5 times per 100 pages within the documents.
- The term *market* was referred to at an average rate of 26 times per 100 pages.

Frequency of the words "health", "development", "investment", and "market" per 100 pages of reports promoting emerging educational technologies



Conclusions

Content analyses conducted on four widely disseminated reports promoting emerging forms of educational technology, blended and personalized learning programs, and strategies to rapidly scale such programs in schools, revealed 0% attention to health and/or developmental concerns that have been documented in the scientific, education, health, and child development research literatures. In contrast, analyses revealed relatively high rates of finance-related terms such as *investment* and *market* within the reports.

This study reveals health research gaps that exist in materials forecasting educational technologies and underscores the need for comprehensive communications to school leaders and communities in ways that would prioritize student health, human development, and well-being when encouraging adoption of technological devices and programs.

References

Alster, N. (2015). *Captured agency: How the Federal Communications Commission is dominated by the industry it presumably regulates*. Harvard University, Edmond J. Safra, Center for Ethics. Available online at https://ethics.harvard.edu/files/center-for-ethics/files/captureagency_alster.pdf.

American Academy of Pediatrics; Chassiakos, Y.R., Radesky, J., Christakis, D., Moreno, M.A., Cross, C. (2016). *Children and Adolescents and Digital Media*. Council on Communications and Media. Pediatrics. DOI 10.1542/peds.2016-2593. Available online at: <http://pediatrics.aappublications.org/content/early/2016/10/19/peds.2016-2593>.

Bandura, A. (2009). Social cognitive theory of mass communication. In J. Bryant & M. Oliver Bronfenbrenner, U. (1979). *The ecology of human development*. Cambridge, Mass.: Harvard University Press.

Bioinitiative Report (2012). *The Bioinitiative Report 2012: A rationale for biologically-based public exposure standards for electromagnetic fields (ELF and RF)*. Available online at: <http://bioinitiative.info/bioinitiativeReport2012.pdf>. Summary chart also available at: http://www.bioinitiative.org/report/wp-content/uploads/pdfs/BioInitiativeReport-RF-Color_Charts.pdf

California Medical Association (2014). House of Delegates Resolution. Wireless Standards Reevaluation 2014 Resolution 107-14. Passed. Date adopted December 7th, 2014. Resolution available publicly at: <http://sco.lj9K0OZl>.

Dahlberg, L.L., & Krug, E.G. (2002). *Violence – A Global Public Health Problem*. In: E. Krug, L.L. Dahlberg, J.A., Mercy, A.B, Zwi, R. Lozano (eds.) *World Report on Violence Media effects (3rd ed., pp.94-124)*. New York: Routledge.

Hardell, L. 2015. Effects of mobile phones on children's and adolescents' health: A Commentary. *Child Development*. Abstract available online at <http://www.bioinitiative.org/effects-mobile-phones-children-health/>

Hsieh, H.F., & Shannon, S.E. (2005). *Three approaches to qualitative content analysis*. Qualitative Health Research, 15(9), 1277-1288 DOI: 10.1177/104973230527668

Moe, M., Quazzo, D., Jiang, L., & Pampoulov, L. (2012). *American Revolution 2.0: How Education Innovation is Going to Revitalize America and Transform the Economy*. Global Silicon Valley Asset Management.

Moskowitz, J. (2017). *What prevents CDPH (California Department of Public Health) from adopting the cell phone guidance document?* <http://www.saferemr.com/2017/03/cell-phone-safety-guidance-from.html>

New Media Consortium and Consortium for School Networking (2018) Horizon Report. Available online at: <https://library.educause.edu/~media/files/library/2018/8/2018horizonreport.pdf>

New Media Consortium and Consortium for School Networking (2018) Horizon Report. Available online at: <https://library.educause.edu/~media/files/library/2018/8/2018horizonreport.pdf>

OECD. (2015). *Students, computers and learning*. OECD Publishing. Retrieved from http://www.oecd-ilibrary.org/education/students-computers-and-learning_9789264239555.

Sage, C., & Burgio, E. (2017). Electromagnetic fields, pulsed radiofrequency radiation, and epigenetics: How wireless technologies may affect childhood development. *Child Development*. Society for Research on Child Development. Abstract available online at <http://www.bioinitiative.org/how-wireless-technologies-may-affect-childhood-development/>

Vanderkam, (2013). *Blended Learning: A Wise Giver's Guide to Tech-Supported Teaching*. *Philanthropy Roundtable*.