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SYMPOSIUM

THE PLACE OF BROADBAND WITHIN EQUAL EDUCATION OPPORTUNITY

R. GEORGE WRIGHT*

Education is certainly an intrinsic good.[1] On the other hand, "education is not just an intrinsic good . . . but an important instrumental good with positional features."[2] One's education may open access to careers and to leadership roles.[3] Crucially, though, one's access to desirable careers depends not simply on one's education, or on one's educational credentials, but as well on one's education relative to that of other persons.[4] Education as an instrumental good is thus necessarily comparative among persons,[5] and thus, a matter of equality or inequality among such persons.[6] Significant inequalities that are traceable to governmental policies implicate the right to equal protection of the laws under the federal and state constitutions.[7]

How, though, should we characterize the relevant inequalities in the realm of public school education? That is, in the realm of public school education,

* R. George Wright, Lawrence A. Jegen Professor of Law, Indiana University Robert H. McKinney School of Law.

1. Consider Plato on the difference between culture, or the perfection of character, as distinct from training, as noted in 2 WERNER JAEGAR, PAIDEIA: THE IDEALS OF GREEK CULTURE 133-34 (Gilbert Highet trans., 1986) (1943). *See also* IMMANUEL KANT, EDUCATION 11 (Annette Churton trans., D.C. Heath & Co. 1990) (1803) ("Man's duty is to improve himself; to cultivate his mind . . . .").

2. Elizabeth Anderson, *Fair Opportunity in Education: A Democratic Equality Perspective*, 117 ETHICS 595, 595 (2007).

3. *See id.*; Andrew Mason, *Equality of Opportunity and Differences in Social Circumstances*, 54 PHIL. Q. 368, 368 (2004) ("access to the qualifications required for the positions is affected by social and economic institutions, especially those concerned with the provision of primary and secondary education").

4. This will be the case whenever there is significant competition for the more desirable positions and a societal desire to staff such positions with the best qualified candidates.

5. *See supra* notes 2-4.

6. For background, see San Antonio Indep. Sch. Dist. v. Rodriguez, 411 U.S. 1 (1973); Plyer v. Doe, 457 U.S. 202 (1982); Gary B. v. Whitmer, 957 F.3d 616 (6th Cir.), *vacated en banc*, 958 F.3d 1216 (6th Cir. 2020) (mem.); R. George Wright, *Educational Opportunity and the Limits of Legal Obligation*, 30 S. CAL. INTERDISC. L.J. 717 (2021).

7. *See supra* note 6.

inequality of precisely what? At the broadest possible level, we might care about equality or inequality along a number of dimensions. We might, following the exposition of Professor Ronald Dworkin, care about inequalities of government concern for persons;[8] inequalities of success in some realms;[9] inequalities of political and other forms of power and influence;[10] inequalities of basic capacities or capabilities;[11] inequalities of freedom;[12] inequalities of resources;[13] inequalities of subjective or objective welfare, well-being, or fulfilment;[14] or inequalities of wages, incomes, or working conditions in general.[15]

All of these dimensions of inequality have some relation to fully understanding educational inequalities. But the most direct and least generally controversial focus would be on significant inequalities of genuinely meaningful opportunities in the context of public school education.[16]

The idea of fair equality of opportunity has been famously developed by John Rawls.[17] Part of Rawls's understanding of fair equality of opportunity is that "those who are at the same level of talent and ability, and have the same willingness to use them, should have the same prospects of success regardless of their initial place in the social system."[18] But then Rawls qualifies this claim by recognizing that the development of a person's "natural" capacities is affected by social circumstances.[19] In particular, "[e]ven the willingness to make an effort, to try, and so to be deserving in the ordinary sense is itself dependent upon happy family and social circumstances."[20]

Willingness to make an effort should also include the capacity to sustain an

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8. *See* RONALD DWORKIN, SOVEREIGN VIRTUE: THE THEORY AND PRACTICE OF EQUALITY 1-7 (2000).

9. *See id*. at 17-21, 28-42.

10. *See id*. at 184-210.

11. *See id*. at 285-303.

12. *See id*. at 120-25, 299-300.

13. *See id*. at 12-14, 65-71, 122-23, 138-41.

14. *See id*. at 11-12, 16-18, 65, 70, 80, 122, 139-41.

15. *See id*. at 83-92. Professor Amartya Sen lists inequalities of "[l]iberties, rights, utilities, incomes, resources, primary goods, need-fulfillment, etc." AMARTYA SEN, INEQUALITY RE-EXAMINED 25 (1995). Professor Sen elsewhere adds inequalities of wealth. *See id*. at 12. *See also* G.A. Cohen, *Equality of What? On Welfare, Goods, and Capabilities*, 56 LOUVAIN ECON. REV. 357 (1990).

16. *See, e.g.*, DWORKIN, *supra* note 8, at 13, 87, 286, 289, 299; SEN, *supra* note 15, at 12. For a useful survey, see Liam Shields, Anne Newman & Debra Satz, *Equality of Educational Opportunity*, STAN. ENCYCLOPEDIA PHIL. (May 31, 2017), https://plato.stanford.edu/entries/equal-ed-opportunity/ [https://perma.cc/SFX3-27DB]. For a focus on equal opportunity for welfare more broadly, see Richard J. Arneson, *Equality and Equal Opportunity for Welfar*e, 56 PHIL. STUD. 77 (1989).

17. *See* JOHN RAWLS, A THEORY OF JUSTICE 63-64 (rev. ed. 1999).

18. *Id*. at 63.

19. *See id*. at 64.

20. *Id*.

effort; the capacity to choose a reasonable focus for one's efforts; and the ability to steer one's efforts so as to increase the likelihood that one's efforts pay off. All these elements are crucially affected by what Rawls refers to as "happy" family and societal circumstances.[21] Willingness to strive depends on one's judgment that one's efforts will likely matter, or that one's effort is worth its costs.

It may be tempting to try to separate the circumstances in which one finds oneself on the one hand, from one's own efforts, or one's desire and ability to strive in some direction, on the other.[22] We may be tempted to think of one's circumstances as environmental, and perhaps, largely beyond our control.[23] Effort would then be assumed to be within our own control, and thus a matter of one's own autonomous decision.[24] We might then be tempted to conclude that "[e]ffort, . . . being a manifestation of the will, is the most personal or internal factor, and uniquely suitable to be regarded as the individual's personal responsibility."[25]

More realistically, though, we recognize that the degree, direction, and sustainability of one's efforts are largely the result of circumstances under which one has little meaningful control. Thus, we properly recognize that "[d]iscrimination, class, and talent may influence effort."[26] And even what are taken to be one's "natural" talents are doubtless constrained and steered, to one degree or another, by discrimination, class, and other elements of one's environment.[27]

The idea of equal opportunity, especially in basic education, enjoys some public popularity. But anything even approaching meaningful equality of opportunity would require substantial societal change, legal and otherwise. Consider, as T.M. Scanlon puts it, that

> [a] career is not open to a person in the required sense if he or she is not placed in good enough conditions to decide whether to pursue that career or if he or she does not have access to the education required to develop the abilities required for that career . . . .[28]

In particular, many public schools are not such that later college enrollment or a meaningful, sustained, corresponding career are readily within the students' grasp based on their freely made choices.

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21. *See id.*; T.M. SCANLON, WHY DOES INEQUALITY MATTER? 60 (2018) (discussing Rawlsian fair equality of opportunity on this point).

22. *See, e.g.*, John E. Roemer, *Defending Equality of Opportunity*, 86 MONIST 261, 261 (2003) (referring to equal opportunity policies that are "independent of [persons'] circumstances, and sensitive only to their effort").

23. *See id.*

24. *See id.*

25. THOMAS NAGEL, EQUALITY AND PARTIALITY 106 (1991).

26. *Id.* at 105.

27. *Id.*

28. SCANLON, *supra* note 21, at 65. For further analysis of the idea of equality of opportunity in general, see DOUGLAS RAE ET AL., EQUALITIES 64-68 (1981).

But it is also possible to argue that the optimal policy aim should not be reasonable equality of public school opportunity but instead something like a merely adequate, or sufficient, educational opportunity.[29] Or else that law and public policy should somehow prioritize, or give extra policy weight to, the educational opportunities of those who are less well off in that regard.[30]

The problem with such arguments, though, seems clear. The difference between equal educational opportunity and a genuinely adequate or sufficient opportunity is more illusory than real. For some limited purposes, certainly, a non-comparative understanding of a student's opportunity would do nicely. Suppose the context is one of an opportunity for a student to understand why Shakespeare and Cervantes have often been thought of as worthy authors.[31] Most public school students have this opportunity, in at least a formalistic, perhaps trivial sense, if not also in a more robust, more meaningful sense.

But to the extent that any student has this opportunity, that opportunity is not in competition with, or threatened by, some other student's equal, or even greater, opportunity. In fact, one student's opportunity to learn may even enhance the realistic opportunity of another student to learn, as through collaborative research and discussion.

In contrast, though, there are crucial respects in which adequacy, or sufficiency, of educational opportunity inescapably requires a focus on equality and inequality. Equal citizenship, for example, requires some form of equality of the relevant underlying opportunities.[32] In this context, one commentator has understandably sought "to undermine the sharp contrast usually drawn between adequacy and equality" as educational goals.[33]

Perhaps even more important, though, is that there can be no adequate educational opportunity short of equal opportunity in the competitive markets for the more desirable colleges and careers.[34] Suppose a student has limited reliable

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29. The standard technical term for this general family of approaches is "sufficientarianism." For defenses thereof, see, e.g., HARRY G. FRANKFURT, ON INEQUALITY (2015); GEORGE SHER, EQUALITY FOR INEGALITARIANS (2014); Harry Frankfurt, *Equality as a Moral Ideal*, 98 ETHICS 21 (1987); LIAM SHIELDS, JUST ENOUGH: SUFFICIENCY AS A DEMAND OF JUSTICE (2016).

30. The standard technical term here is "prioritarianism," of which the leading exponent is Derek Parfit. *See* Derek Parfit, *Equality and Priority*, 10 RATIO 202 (1997); Derek Parfit, *Another Defense of the Priority View*, 22 UTILITAS 399 (2012). For a brief survey of the major themes of both sufficientarian and prioritarian writers, see R. George Wright, *Equal Protection and the Idea of Equality*, 34 LAW & INEQ. 1 (2016).

31. *See, e.g.*, Ivan Turgenev & Moshe Spiegel, *Hamlet and Don Quixote*, 17 CHI. REV. 92 (1965).

32. *See* Debra Satz, *Equality, Adequacy, and Education for Citizenship*, 117 ETHICS 623, 625 (2007).

33. *Id.*

34. Consider, for example, that the public University of Michigan's undergraduate program does not require, but will consider, a SAT or ACT score; does not require a high school class rank; and in the year 2020-2021 had an acceptance rate of only 18.2 percent. *See University of Michigan—Admission Requirements and Acceptance Rate,* TURITO (Mar. 2, 2022)

access to broadband internet access and to any adequate device. Just to make up a number, let us say that a student might have only ninety percent of the realistic opportunity of someone who is otherwise very similar, but who does have reliable such access, and who has a device that is adequate for school purposes. The first student might conceivably have an adequate educational opportunity in some limited respects. But not, certainly, with respect to broadband access and technology. The first student's educational opportunity may or may not be adequate for purposes of self-realization, though that seems dubious. But clearly, that student inevitably lacks equal opportunity in the context of future competitive employment markets.[35]

Ultimately, meaningful equality of educational opportunity must incorporate and provide for broadband access and appropriate device access. More broadly, meaningful educational opportunity requires material, and not merely formal or procedural, foundations. As the great British writer R.H. Tawney observed, "it is only the presence of a high degree of practical equality which can diffuse and generalize opportunities to rise."[36] Equality of educational opportunity, technologically and otherwise, is inseparable from a more solidaristic, and less unequal, society.

On this understanding, we should compare the current realities of broadband access and use in education with what is needed for genuinely equal opportunity. And when we do so, the comparison should be disturbing. As it turns out, the current inequality of opportunity in the realm of school broadband use has several dimensions.

First, there is the problem of inequality in sheer technical access to broadband internet. It has been well said that "high-speed broadband today is unquestionably an indispensable asset for communities to thrive, or even survive."[37] This is true as well in the narrower context of broadband availability for public school students. In general terms, "[t]he digital divide disproportionately impacts low-income households, as well as Black, Latinx, and Native American students and rural communities."[38] In particular, "students from the poorest broadband

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https://www.turito.com/blog/college-guide/michigan-admission-and-acceptance-rate [https://perma.cc/ZP8N-K6YU].

35. For many competitive positions, computer skills may be a consideration. But even if not, employers have an interest in reducing any necessary training time for new hires and in getting new employees up to speed on office technology. And these considerations are separate from any substantive educational deficiencies, or reduced grades, attributable to limited broadband access.

36. R.H. TAWNEY, EQUALITY 106 (1971 ed.) (1929); *see also id*. at 105-06 ("As though opportunities for talent to rise could be equalized in a society where the circumstances surrounding it from birth are themselves unequal!").

37. Pearson Cost, *A Knife in a Gunfight: Empowering North Carolina Municipalities to Close the Digital Divide*, 23 N.C. J.L. & TECH. 558, 595 (2022).

38. Chris Goodchild et al., *Boosting Broadband Adoption and Remote K-12 Education in Low-Income Households*, BOS. CONSULTING GRP. (May 12, 2021), www.bcg.com/en-us/publications/2021/accelerating-broadband-adoption-for-remote-education-low-income-households

coverage areas are [also] more likely to be socioeconomically disadvantaged."[39]

There are also educationally important differences with respect to internet access devices themselves. As of 2021, twenty-seven percent of low income adults used smartphones as their sole and exclusive means of accessing the internet.[40] That is, such persons did not, for whatever reason, relevantly and meaningfully utilize broadband technology.[41] And perversely, from the standpoint of educational opportunity, device ownership and use patterns are actually trending away from broadband.[42] Census data indicate that "ownership of desktop, laptop, and tablet devices has declined, while smartphone ownership has increased. . . . Researchers found that 25% of Hispanics, 23% of Blacks, and 13% of Whites lacked home broadband but owned a smartphone."[43]

This lack of home broadband for educational purposes has several causes. For many students, there is again a lack of consistent, reliable, high-speed broadband sufficient for educational purposes.[44] But infrastructural issues, including less politically salient issues such as adequate infrastructure maintenance over time,[45] are hardly the entire story.[46]

[https://perma.cc/RNP7-Q2T4].

39. John Cullinan et al., *The Disconnected: COVID-19 and Disparities in Access to Quality Broadband For Higher Education Students*, 18 INT'L. J. EDUC. TECH. IN HIGHER EDUC. 18, 18 (2021).

40. *See* Emily A. Vogels, *Digital Divide Persists Even As Americans with Lower Incomes Make Gains in Tech Adoption*, PEW RSCH. CTR. (June 22, 2021), www.pewresearch.org/fact-tank/2021/06/22/digital-divide-persists [https://perma.cc/JDG2-CXD8] [hereinafter Vogels, *Lower Incomes*]; Emily A. Vogels, *Some Digital Divides Persist Between Rural, Urban and Suburban America*, PEW RSCH. CTR. (Aug. 19, 2021), https://www.pewresearch.org/fact-tank/2021/08/19/some-digital-divides-persist-between-rural-urban-and-suburban-america/ [https://perma.cc/UXU8-VUXW] [hereinafter Vogels, *America*].

41. *See* Vogels, *Lower Incomes*, *supra* note 41; Vogels, *America*, *supra* note 41; Sara Atske & Andrew Perrin, *Home Broadband Adoption, Computer Ownership Vary by Race, Ethnicity in the U.S.*, PEW RSCH. CTR. (July 16, 2021), www.pewresearch.org/fact-tank/2021/07/16/home-broadband-adoption [https://perma.cc/Y68X-NAD4].

42. *See* Tamara Tate & Mark Warschauer, *Equity in Online Learning*, 57 EDUC. PSYCH. 192 (2022).

43. *Id.* at 197-98.

44. *See, e.g.*, Nicol Turner Lee, *Can We Better Define What We Mean by Closing the Digital Divide?*, BROOKINGS (Jan. 11, 2022), www.brookings.edu/blog/techtank/2022/01/11/can-we-better-define-what-we-mean [https://perma.cc/6YM6-EDST] (referring in part to infrastructural broadband availability); *Broadband in Education*, RCRC TOOLBOX (Apr. 7, 2021), https://rcrctoolbox.org/rcrc-issue-briefs/broadband-in-education [https://perma.cc/W7MB-XZ4T] ("lack of broadband infrastructure, limited network availability").

45. *See* Robert D. Atkinson & Doug Brake, *Refining the Biden Broadcast Proposal*, INFO. TECH. & INNOVATION FOUND. (May 12, 2021), https://itif.org/publications/2021/05/12/refining-biden-broadband-proposal/ [https://perma.cc/5UFG-SV4W] (referring to potential "problems of deferred maintenance and under-investment").

46. *See Analysis Shows Why Millions of California Students Lack Broadband*, UCLA CTR. FOR

Instead, equality of educational opportunity in this context often depends less upon the technical availability of broadband access than on its cost and affordability to particular households.[47] It has been said that "[a]ffordability is now the number one barrier to closing the digital divide."[48] More specifically, "roughly one-third of households with children aged 3-18 that did not have access to the internet reported the main reason for their lack of connection was that an internet connection was 'too expensive.'"[49]

Issues of user cost and affordability of home broadband may well affect the reported lack of interest in home broadband access.[50] Apparently, "[r]oughly seven-in-ten non-broadband users (71%) say they would *not* be interested in having broadband at home . . . ."[51] If we choose to take such responses at face value, we might say, with a former Obama Cabinet Secretary, that "[m]y offering you free piano lessons isn't going to get you to play if you're not interested in music."[52]

As well, purported lack of interest in broadband may reflect a concern over the problem of acquiring broadband-related digital literacy skills. Students and their families presumably acquire broadband-related skills from experimentation and self-instruction, from peer interaction, from shared family experience, and from formal school instruction.[53] Not all families, at all income levels, will be

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NEIGHBORHOOD KNOWLEDGE (Apr. 29, 2021), https://knowledge.luskin.ucla.edu/2021/04/29/analysis-shows-why-millions-of-california-students-lack-broadband/ [https://perma.cc/R59Q-J2ZF] ("For the vast majority, the barrier to access was not a lack of internet infrastructure—indicating that the more common obstacle was affordability.").

47. *See id*.

48. *No Home Left Offline: Bridging The Broadband Affordability Gap*, EDUC. SUPERHIGHWAY, at 5, https://www.educationsuperhighway.org/wp-content/uploads/No-Home-Left-Offline-Report_EducationSuperHighway2021.pdf [https://perma.cc/GSA7-2VEF] (last visited Feb. 21, 2023).

49. Bryan Kelley & Lauren Sisneros, *Broadband Access and the Digital Divides*, EDUC. COMM'N STATES, Dec. 2020, at 5, https://www.ecs.org/wp-content/uploads/Broadband_Access_and_the_Digital_Divides-1-1.pdf [https://perma.cc/5BPD-SM6U]; *see also* Reg Leichty, *Online Learning for Rural Students*, NAT'L ASS'N STATE BDS. EDUC., Jan. 2021, at 4, https://nasbe.nyc3.digitaloceanspaces.com/2021/01/Leichty_Jan-2021-Standard.pdf [https://perma.cc/R23C-8WLM] (referring in part to "households' inability to pay for internet access").

50. *See, e.g.*, Andrew Perrin, *Mobile Technology and Home Broadband 2021*, PEW RSCH. CTR. (June 3, 2021), https://www.pewresearch.org/internet/2021/06/03/mobile-technology-and-home-broadband-2021/ [https://perma.cc/LZU7-7XRH].

51. *Id*.

52. Sadé Truiett, *Biden's Broadband Push Demands Rethinking Education*, DEL. BUS. TIMES (Mar. 18, 2022), https://delawarebusinesstimes.com/news/vwpt-truiett-broadband/ [https://perma.cc/V9K4-T2HL].

53. *See* Jeremy Schulz & Laura Robinson, *Distance Learning, Digital Inequality, and COVID-19: Visualizing Learning Channels Among California Public School Students*, 27 FIRST MONDAY 4 (2022).

able to draw equally on one or more of these sources of broadband instruction and familiarization. Purported lack of interest in broadband may thus reflect not only the anticipated additional costs, but understandable concerns about ease of meaningful use.[54]

And finally, there is the portion of non-users of broadband who are not in a position to see the indispensability of broadband, typically, for a contemporary meaningfully equal educational opportunity.[55] It may well be that most students have some degree of competence in using a smartphone or other comparable device, within their budgetary limits. But smartphone use is simply not sufficient for meaningfully equal educational opportunity. The problem is that smartphone-type devices, "with small screens, small keyboards and limited access to peripherals such as printers, [are] not adequate for educational purposes. Education activities require[] something with a 'large-enough' screen and a 'large-enough' keyboard, such as a mid-sized tablet, a Chromebook or a full computer."[56]

Commonly, students who lack reliable and convenient access to some device, realistically at their home, suffer reduced educational opportunity.[57] Concretely, "even with the best-possible broadband in the world, . . . a smartphone is not an optimal way to learn complex subjects."[58] We are thus ironically urged to try to "imagine discerning chemistry equations or writing research papers on a smartphone."[59]

It is reported that nearly "70% of teachers assigned homework that required access to broadband."[60] And nine out of ten high school students are assigned internet or digital homework at least occasionally.[61] Unsurprisingly, students who attempt to rely on a smartphone to do homework assignments are those students

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54. *See, e.g.*, Lee, *supra* note 44, at 3.

55. *See, e.g.*, Leichty, *supra* note 49, at 14 (referring to some families' cost concerns as well as failure to appreciate the educational value, if not the practical necessity, of broadband). As a matter of perspective, consider that it has been said that "75 percent of fifth and eighth graders are non-proficient in 21st century skills." *More Than 75 Percent of Fifth and Eighth Graders Are Non-Proficient in 21st Century Skills, According to a Learning.com Study*, LEARNING.COM (Aug. 22, 2017), www.learning.com/more-than-75-percent [https://perma.cc/E4TK-5VVV]. Such figures doubtless change over time, and according to both the skills assessed and the grading rigor adopted.

56. Rollie Cole, *The Pandemic, Education and Broadband: Lessons From SXSW EDU*, BROADBAND CMTYS., Aug./Sept. 2021, at 23, https://www.bbcmag.com/pub/doc/BBC_Aug21_SXSWedu.pdf [https://perma.cc/G9FZ-L7BW].

57. *See id.*

58. Brandon Genetin et al., *Finding the Missing Dots: An Update on Ohio Broadband Policy*, SWANK PROGRAM RURAL-URB. POL'Y, Apr. 2022, at 27, https://aede.osu.edu/sites/aede/files/publication_files/Broadband_Swank-Polic-Brief_Final%20202204.pdf [https://perma.cc/QE85-JVPL].

59. *Id.*

60. Jinghong Cai, *Digital Homework*, NAT'L SCH. BDS. ASS'N (June 3, 2019), https://www.nsba.org/ASBJ/2019/June/Digital-Homework [https://perma.cc/FL3N-346X].

61. *See id.*

who are least likely to actually submit such homework.[62] Students who are simply not in a position to consistently work on, and submit, substantial homework assignments are therein denied equal educational opportunity.

As it turns out, then, meaningful equality of educational opportunity in the broadband internet context depends on several distinct sets of circumstances. By whatever technological means, reliably maintained and regularly upgraded high speed internet access must be made available as universally as possible. Crucially, that service, at least for educational purposes, must be made available to the students on the same terms as would basic required school textbooks. That is, both textbooks and their twenty-first century digital equivalents must be made available to all students without charge.

Equally important, though, free and equal provision must also be made for the devices that are realistically required by the schools' assignment of digital homework. Equal educational opportunity means that pencil and paper homework assignments must be accompanied by pencil and paper supplies for students who cannot afford such materials. Devices such as tablets with broadband access are doubtless more expensive than traditional stationary. But if public schools in effect insist on broadband-utilizing homework, equal educational opportunity requires universal access to the necessary devices, by one distributive mechanism or another.

Finally, the public schools should, partly through in school student-to-student sessions, ensure that students become reasonably fluent in the sheer operational mechanics of researching, composing, revising, storing, receiving, and sending homework-related materials on their own devices.[63]

Overall then, access to broadband internet and the realistic opportunity to take appropriate advantage thereof are inescapably part of any meaningful equality of educational opportunity. But in closing, it is important to note at least the bare possibility of adverse effects of excessive, or improperly directed, use of general broadband media.[64] Doubtless it is far too early to reach any conclusions as to the nature, scope, severity, and correctability of any possible adverse effects of any pattern of broadband use. A nod to some current concerns is, however, appropriate.

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62. *See* KEITH N. HAMPTON ET AL, QUELLO CTR., BROADBAND AND STUDENT PERFORMANCE GAPS 28 (2020), https://quello.msu.edu/wp-content/uploads/2020/03/Broadband_Gap_Quello_Report_MSU.pdf [https://perma.cc/9BCT-WMQT].

63. Facility with phone-based social media hardly ensures that students will also know how to connect with and utilize the most useful homework-related tutorials and other resources. It is tempting, but misguided, to assume that if students are spending a remarkable number of hours per week on social media, their ability to navigate and profit from the internet in general must be well-developed.

64. For the now classic introduction to the subject, see NICHOLAS CARR, THE SHALLOWS: WHAT THE INTERNET IS DOING TO OUR BRAINS (2010). Even more classically, see KANT, *supra* note 1, at 73-74 ("Distractions must never be allowed, least of all in school, for the result will be a certain propensity in that direction which might soon grow into a habit.").

Thus, there may well be few significant adverse effects that can be attributed to time-limited use of broadband itself. Perhaps not all screens, including those showing ordinary television, movie, or commercial and non-commercial entertainment, have similar effects. And not all screens involve reliance on broadband. Again, sorting out real correlations, let alone causal linkages, of whatever strength or weakness, between broadband use and any personal or social ill effects may be premature at this point.

Still, concern for such matters seems appropriate, given the remarkable amounts of time per day that students devote to one form of screen use or another.[65] There seems to be some evidence that consistently relying on internet, as distinct from book-based, searching for information may change the way one's memory works.[66] Perhaps the greater speed and efficiency of internet as opposed to book researching trades off against the user's reduced retention of the substantive information in memory, as distinct from merely where to find the information again.[67]

More broadly, it has been said that "there is evidence to suggest that children's cognitive development can be damaged by prolonged internet use, including the development of memory skills, attention span, abilities for critical reasoning, language acquisition, reading and learning."[68] According to one study, "higher frequency of Internet use over 3 years in children is linked with decreased verbal intelligence at follow-up, along with impeded maturation of both grey and white matter regions [of the brain]."[69]

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65. *See, e.g.*, Jason M. Nagata et al., *Screen Time Use Among US Adolescents During the COVID-19 Pandemic: Findings From the Adolescent Brain Cognitive Development (ABCD) Study*, 176 JAMA PEDIATRICS 94, 94 (2022). This study indicated that "[a]dolescents reported a mean (SD) of 7.70 (5.74) h/d of screen use, mostly spent on watching or streaming videos, movies, or television shows . . ., multiple-player gaming . . ., and single-player gaming . . . ." *Id*. *See also* Jason M. Nagata et al., *Sociodemographic Correlates of Contemporary Screen Time Use among 9- and 10-Year-Old Children*, 240 J. PEDIATRICS 213 (2022).

66. *See, e.g.*, Guangheng Dong & Marc N. Potenza, *Behavioral and Brain Responses Related to Internet Search and Memory*, 42 EUR. J. NEUROSCIENCE 2546 (2015); Betsy Sparrow, Jenny Liu & Daniel M. Wegner, *Google Effects on Memory: Cognitive Consequences of Having Information at Our Fingertips*, 333 SCI. 776 (2011); Josh A. Firth, John Torous & Joseph Firth, *Exploring the Impact of Internet Use on Memory and Attention Process*, 17 INT'L. J. ENVT. RSCH. & PUB. HEALTH, Dec. 17, 2020.

67. *See* Dong & Potenza, *supra* note 66; Sparrow et al., *supra* note 66; Firth et al., *supra* note 66.

68. GIANLUCA QUAGLIO & SOPHIE MILLAR, EUR. PARLIAMENT, POTENTIALLY NEGATIVE EFFECTS OF INTERNET USE, at i (2020), https://www.europarl.europa.eu/RegData/etudes/IDAN/2020/ 641540/EPRS_IDA(2020)641540_EN.pdf [https://perma.cc/64ZC-8H5K].

69. Joseph Firth et al., *The "Online Brain": How the Internet May Be Changing Our Cognition*, 18 WORLD PSYCHIATRY 119, 126 (2019); *see also* John S. Hutton et al., Associations Between Digital Media Use and Brain Surface Structural Measures in Preschool-Aged Children 11 (2022) (unpublished manuscript), *available at* https://doi.org/10.21203/rs.3.rs-1383387/v1 [https://perma.cc/74RB-BGVJ].

And there is some evidence that reading time may be more conducive to some dimensions of cognitive development than is undifferentiated, or uncontrolled, screen time in general.[70] But it may also be true that staring at movies or dance videos has different effects than, say, participating actively in a live online fitness session.[71] The likelihood of important confounding factors seems, in many cases, to be strong. We understandably have little data as to whether adverse effects of excessive screen use are long-term in nature. The gravity of any possible adverse mental health effects of screen time in general is also unclear.[72] So while realistic access to reliable high speed devices, and to any necessary hardware devices, is essential for meaningful education opportunity, such access and use should be consistent with the best available evidence on cognitive and psychological development.

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70. *See, e.g.*, Gary W. Small, et al., *Brain Health Consequences of Digital Technology Use*, 22 DIALOGUES IN CLINICAL NEUROSCIENCE 179, 181 (2020); Tzipi Horowitz-Kraus & John S. Hutton, *Brain Connectivity in Children Is Increased by the Time They Spend Reading Books and Decreased by the Length of Exposure to Screen-Based Media*, 107 ACTA PÆDIATRICA 685, 689 (2017); Sophie Domingues-Montanari, *Clinical and Psychological Effects of Excessive Screen Time on Children*, 53 J. PEDIATRICS & CHILD HEALTH 333, 333 (2017); Laura Marciano, Anne-Linda Camerini & Rosalba Morese, *The Developing Brain in the Digital Era: A Scoping Review of Structural and Functional Correlates of Screen Time in Adolescence*, 12 FRONTIERS PSYCH. 1, 1 (2021); Katie N. Paulich et al., *Screen Time and Early Adolescent Mental Health, Academic, and Social Outcomes in 9- and 10-Year Old Children: Utilizing the Adolescent Brain Cognitive Development (ABCD) Study*, PLOS ONE, Sept. 8, 2021, at 17, https://doi.org/10.1371/journal.pone.0256591 [https://perma.cc/4HHQ-EFH6] ("Both weekday and weekend total screen time are moderately associated with greater behavioral problems including ADHD, poor academic performance and poor sleep quantity and quality.").

71. *See, e.g.*, Amy Orben, *Digital Diet: A 21st Century Approach to Understanding Digital Technologies and Development*, 31 INFANT & CHILD DEV., Mar. 28, 2021, at 3.

72. *Compare, e.g.*, Amy Orben & Andrew K. Przybylski, *The Association Between Adolescent Well-Being and Digital Technology Use*, 3 NATURE HUM. BEHAV. 173, 173 (2019) (finding only very small adverse effects), *with* Lee Robertson et al., *Associations Between Screen Time and Internalizing Disorder Diagnoses Among 9- and 10-Year-Olds*, 311 J. AFFECTIVE DISORDERS 530, 534 (2022) (finding more substantial associations); *see also* Jean M. Twenge & W. Keith Campbell, *Associations Between Screen Time and Lower Psychological Well-Being Among Children and Adolescents: Evidence From a Population-Based Study*, 12 PREVENTIVE MED. REPS. 271, 281 (2018).