The Effect of Internet Access & Usage on Reading and Math Achievement From A Global Perspective

Wesleyan University: Hughes Summer Fellowship

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Introduction

There is ongoing research in education being conducted worldwide in an effort to figure out what factors help students achieve, and what factors hinders their success. As our society becomes technological, the internet has become a topic of debate. While many people view the internet as a resourceful tool that should be ubiquitously utilized by students and teachers, others argue that it can be a harmful distraction in and out of the classroom. According to research conducted by Three-quarters of Advanced Placement (AP) and National Writing Project (NWP) teachers say that the internet and digital search tools have had a "mostly positive" impact on their students' research habits, but 87% say these technologies are creating an "easily distracted generation with short attention spans" and 64% say today's digital technologies "do more to distract students than to help them academically." (Purcess and Lee 2012).

Research Questions

- Are there some forms of internet activity that is more beneficial than others?
- What is the effect of internet technology on academic achievement?

Methods

Sample

This research is conducted using the PISA 2009 survey, which includes student, parent and school questionnaires in 65 countries examining about 470,000 15-year-old students' academic achievement. The sample includes information on the parents' backgrounds, students' habits in schools, school resources, and much more useful information. PISA 2009 is an International, longitudinal study. A limiting factor was that there were more student responses than parent. After list wise deletion, there were 11,975 observations in the sample set.
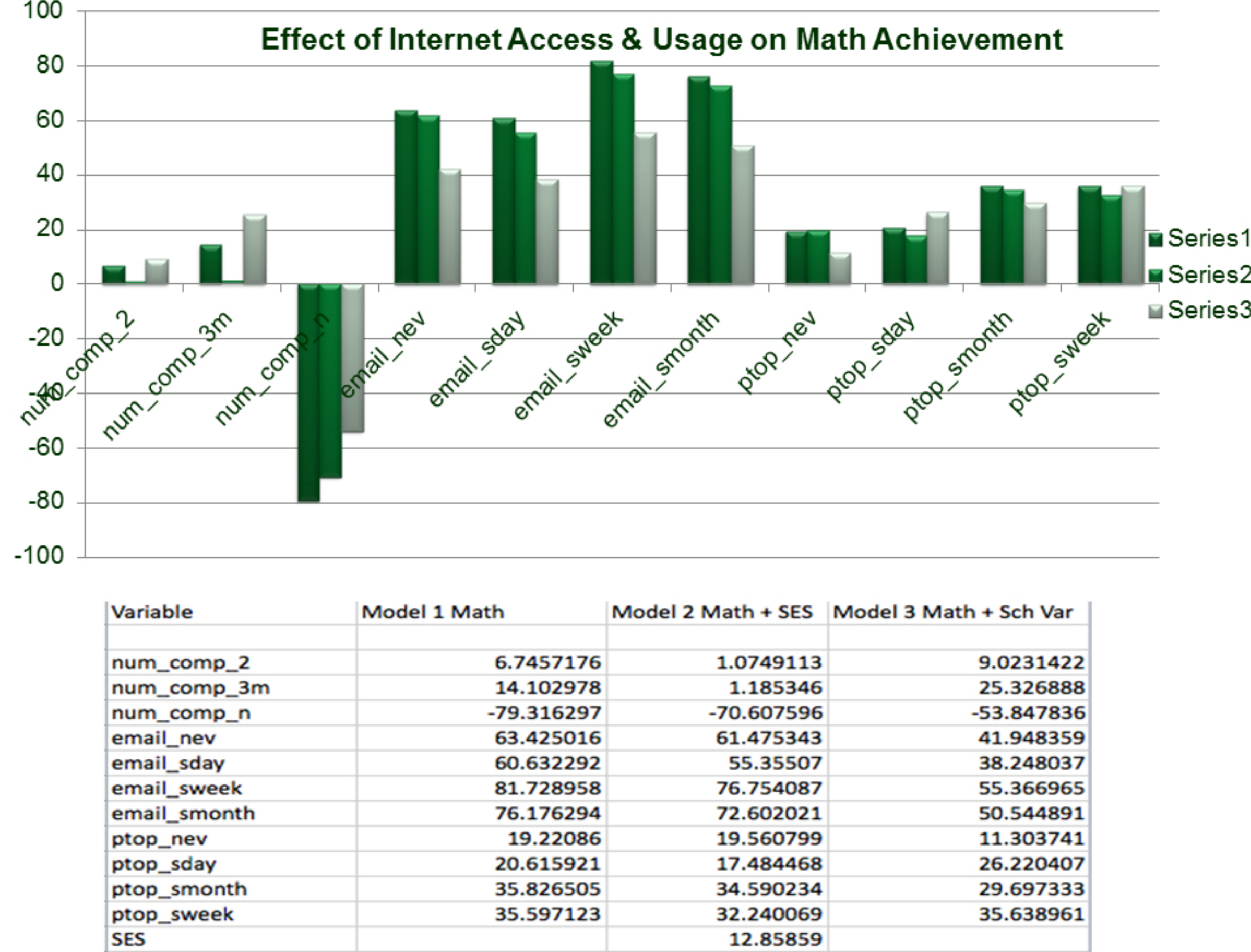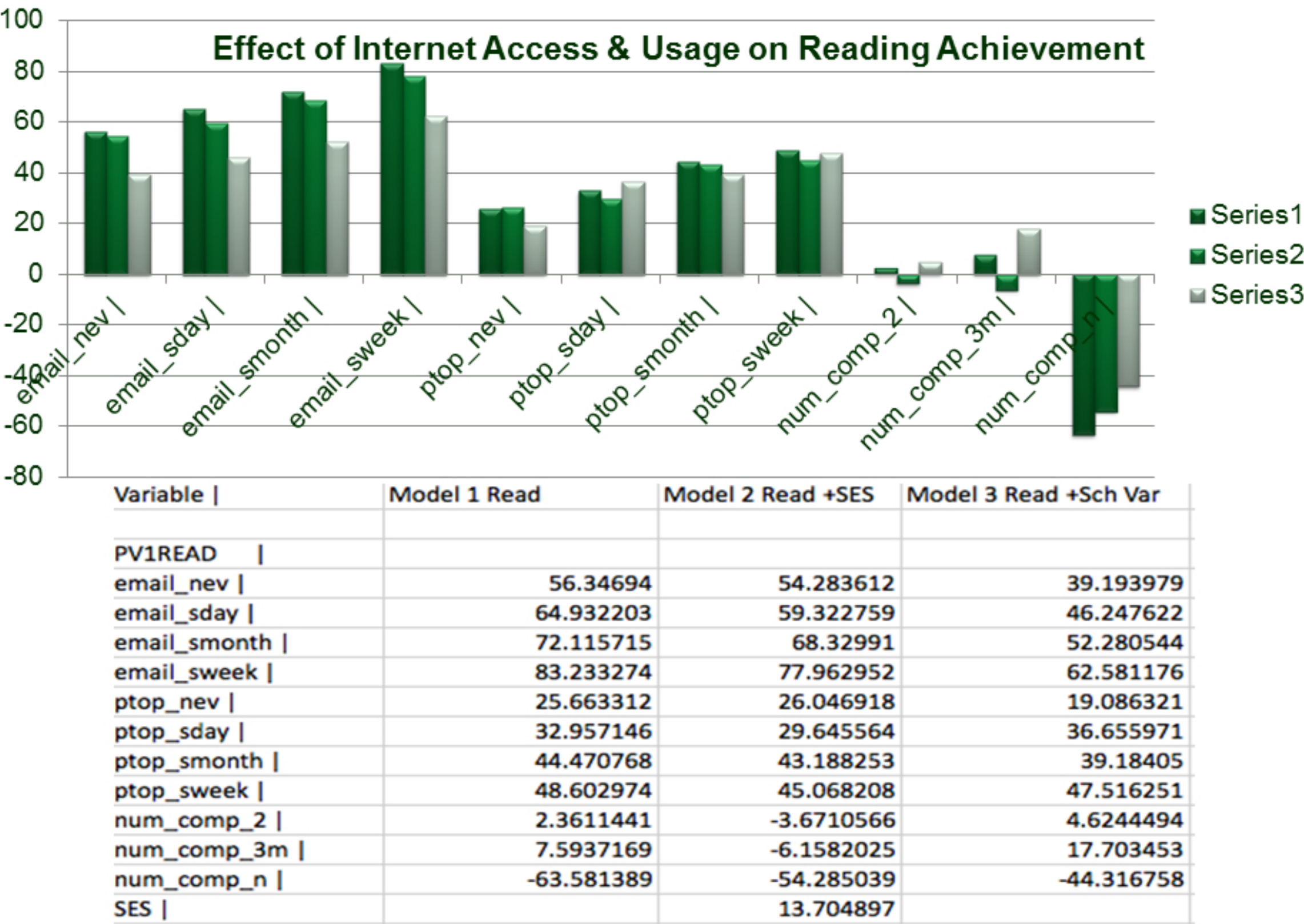
Measures

Questions were answered using multiple choice options involving a rating scale. However, some questions on these questionnaires were yes/no questions.

Approach

This study will start first with an inductive study on each of the individual questions on achievement in the student survey, and then further explore one of those factors in much more detail.

Results

- After running OLS regressions for all variables on the student survey, these variables were among the top ten most significant based off of the beta values.
- According to the results, the factor that accounted for the most negative impact on achievement was having no computers in the home (num_comp_n).

Effect of Internet Access & Usage on Reading Achievement

Variable	Model 1 Read	Model 2 Read +SES	Model 3 Read +Sch Var
PV1READ			
email_nev	56.34694	54.283612	39.193979
email_sday	64.932203	59.322759	46.247622
email_smonth	72.115715	68.32991	52.280544
email_sweek	83.233274	77.962952	62.581176
ptop_nev	25.663312	26.046918	19.086321
ptop_sday	32.957146	29.645564	36.655971
ptop_smonth	44.470768	43.188253	39.18405
ptop_sweek	48.602974	45.068208	47.516251
num_comp_2	2.3611441	-3.6710566	4.6244494
num_comp_3m	7.5937169	-6.1582025	17.703453
num_comp_n	-63.581389	-54.285039	-44.316758
SES		13.704897	

Effect of Internet Access & Usage on Math Achievement

Variable	Model 1 Math	Model 2 Math + SES	Model 3 Math + Sch Var
num_comp_2	6.7457176	1.0749113	9.0231422
num_comp_3m	14.102978	1.185346	25.326888
num_comp_n	-79.316297	-70.607596	-53.847836
email_nev	63.425016	61.475343	41.948359
email_sday	60.632292	55.35507	38.248037
email_sweek	81.728958	76.754087	55.366965
email_smonth	76.176294	72.602021	50.544891
ptop_nev	19.22086	19.560799	11.303741
ptop_sday	20.615921	17.484468	26.220407
ptop_smonth	35.826505	34.590234	29.697333
ptop_sweek	35.597123	32.240069	35.638961
SES		12.85859	

- This data suggests that using the internet to check emai(email_nev, email_sday, email_sweek, email_smonth) and search for particular topics online (ptop_sday, ptop_smonth, ptop_sweek) has a positive impact on achievement in math and reading.

- Series 2 and Series 3 represent the Socio-economic Status (SES) control variable and the School control variable. SES is comprised of: parents' occupation, educational resources at home, wealth, and parents' education. The school variables are made up of: student teacher ratio, school leadership, curriculum, school resources, student behavior, teacher participation, and ability grouping between classes.

Results

- The SES variables (Series 2) and the school variables (Series 3) are used as control variables. These results show that while these controls account for a slight decrease in the coefficients, the difference is not big enough to indicate that Socioeconomic status or the school variables have a significant effect on the internet variables overall.

Discussion

- While many people believe that digital technologies can be distracting, these results suggest that it is even more detrimental to not have a computer at all.
- This data suggests that a top priority for parents and administrators should be to provide every student with internet access as well as additional instruction for digital research.
- Students who communicate via email frequently are more engaged with digital technologies and provides them with a set of comprehension and communication skills that will help them achieve more in both reading and math.
- Additional research can be done to determine if social media has an influence on achievement in addition to Math and Reading.
- It would also be interesting to research difference in achievement between schools and households who block access to entertainment and non-education websites and places that don't.
- Research has been on the unique characteristics of email technology. According to researchers, email communication has the following prominent features: "text-based features; multiple connections and easy transmission; asynchrony and synchrony; easy storage and manipulation; rapidity and cost-efficiency; and relative anonymity." (Tao and Reinking 1996) Further investigation of these features can help us discover what is the most beneficial aspects of email technology.

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