

## Student Performance in Virtual Schooling: Looking Beyond the Numbers

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### Why Study Student Performance?

- “VHS was serving a fairly narrow range of students, those who were academically advanced and college bound” (Espinoza, Dove, Zucker & Kozma, 1999, p. 48)
- “Only students with a high need to control and structure their own learning may choose distance formats freely” (Roblyer & Elbaum, 2000, p. 61)

### Why Study Student Performance?

- Typical online student was an A or B student (Mills, 2003)
- 45% of K-12 students who participated in e-learning opportunities were “either advanced placement or academically advanced” students (Watkins, 2005, p. 37)

### Why Study Student Performance?

- There was “a small positive effect in favor of distance education” (Cavanaugh, 2001, p. 73) in her meta-analysis that included over 900 participants from 1980 to 1998.
- A small negative effect size in their meta-analysis of an additional 14 studies representing over 7500 students from 1999 to 2004 (Cavanaugh, Gillan, Kromrey, Hess & Blomeyer, 2004).

### Why Study Student Performance?

- Lack of retention of lower performing students in the virtual school sample meant that it was “not reflective of the total population of students” (Ballas & Belyk, 2000, p. 28)
- Speculated that their own positive results in favor of virtual school students were due to the fact that many of the low-achieving students had dropped out prior to the assessment (McLeod, Hughes, Brown, Choi & Maeda, 2005)

### Why Study Student Performance?

- Many comparative studies are flawed because of their failure to account for variables such as early drop-outs, voluntary testing, and tests designed to favor distance education students (Rice, 2006)

## Newfoundland and Labrador

- area of the island is 43,359 square miles, while Labrador covers 112,826 square miles
- population of 508,955 in 2006 (down from 551,795 in 1996)
- 81,458 students in 2006 (down from 118,273 in 1996)
- 287 schools in 2006 (down from 432 in 1996)
- average school size 220 pupils



## Distance Education

- began in September 1988 using an audio-graphics system
- offer Advanced Math 1201 to 36 students from 13 rural schools
- 11 courses with 898 course enrollments representing a total of 703 students in 77 different rural schools by 1999-2000



## Centre for Distance Learning and Innovation

- created in 2000 and offered its first courses during the 2001-02 school year
- developed a number of non-highly-academic courses, such as Art Technologies 1201, Communications Technology 2104/3104, and World Geography 3202



## Previous Analysis – Overall

	Public Exam	Final Course Average
Web delivered rural	61.7 (n = 826)	69.3 (n = 3,452)
Web delivered urban	65.7 (n = 11)	66.3 (n = 81)
Web delivered total	61.8 (n = 837)	69.2 (n = 3533)
Classroom delivered rural	62.3 (n = 15,384)	68.5 (n = 90,190)
Classroom delivered urban	63.1 (n = 23,080)	67.7 (n = 115,029)
Classroom delivered total	62.8 (n = 38464)	68.1 (n = 205219)
# of missing cases	1,029 (2.6%)	5,650 (2.6%)
Total # of cases	40,330	214,402

## Methodology

- took previous data and added the most recent year (i.e., 2001-06)
- add variable for subject area
- compared student performance by subject area by location by delivery method



## Student Performance - Course Marks

	Rural Web	Urban Web	Rural Classroom	Urban Classroom
English Language Arts	67.98 (n=250) 67.81 (n=256)	65.19 (n=16) 66.52 (n=33610)	66.91 (n=15,040) 66.52 (n=33610)	66.20 (n=18,570) 66.52 (n=33610)
Fine Arts	73.00 (n=460) 72.84 (n=436)	61.67 (n=6) 61.67 (n=6)	74.98 (n=4,243) 74.98 (n=4,243)	71.97 (n=6,338) 71.97 (n=6,338)
French	71.72 (n=485) 71.69 (n=494)	70.11 (n=9) 70.11 (n=9)	71.60 (n=7,096) 71.60 (n=7,096)	72.74 (n=7,582) 72.74 (n=7,582)
General Studies	76.00 (n=36) 76.00 (n=36)	0.0 (n=0) 0.0 (n=0)	70.81 (n=2,366) 70.81 (n=2,366)	70.28 (n=2,503) 70.28 (n=2,503)
Mathematics	69.95 (n=1,500) 69.95 (n=1,500)	72.97 (n=37) 72.97 (n=37)	66.33 (n=32,882) 66.33 (n=32,882)	65.21 (n=48,480) 65.21 (n=48,480)
Sciences	64.86 (n=1,299) 64.80 (n=1,345)	65.11 (n=46) 65.11 (n=46)	67.13 (n=27,595) 67.13 (n=27,595)	68.19 (n=38,147) 68.19 (n=38,147)
Social Studies	65.47 (n=318) 65.60 (n=322)	73.80 (n=5) 73.80 (n=5)	70.62 (n=21,309) 70.62 (n=21,309)	70.56 (n=20,518) 70.56 (n=20,518)
Technology	73.64 (n=322) 73.64 (n=322)	73.80 (n=10) 73.80 (n=10)	72.54 (n=8,302) 72.54 (n=8,302)	70.83 (n=6,898) 70.83 (n=6,898)
Total	68.89 (n=4,650) 68.89 (n=4,650)	67.86 (n=129) 67.86 (n=129)	68.50 (n=118,833) 68.50 (n=118,833)	67.85 (n=148,990) 67.85 (n=148,990)

### Student Performance - Final Exam

	Rural Web	Urban Web	Rural Classroom	Urban Classroom
English Language Arts	59.12 (n=33)	35.00 (n=1)	59.69 (n=3,750)	62.35 (n=4,868)
	58.41 (n=34)		61.19 (n=8,618)	
French	67.90 (n=203)	65.00 (n=2)	66.79 (n=2,123)	70.62 (n=2,252)
	67.87 (n=205)		68.76 (n=4,375)	
Mathematics	63.41 (n=409)	62.67 (n=9)	61.95 (n=7,563)	61.86 (n=12,230)
	63.39 (n=418)		61.90 (n=19,793)	
Sciences	59.12 (n=505)	62.47 (n=15)	60.05 (n=5,803)	62.39 (n=8,607)
	59.22 (n=520)		61.45 (n=14,410)	
Social Studies	62.41 (n=56)	69.75 (n=4)	63.72 (n=4,771)	62.49 (n=5,804)
	62.90 (n=60)		63.04 (n=10,575)	
<b>Total</b>	<b>62.20</b> (n=1,206)	<b>62.74</b> (n=31)	<b>61.92</b> (n=24,010)	<b>62.76</b> (n=33,761)

### Discussion

- earlier study of only AP students in NL found rural web-based students performed better, but were smallest group and had the lowest retention rates
- consistent mathematics findings with other VS researchers



### Basic Question Remains?

- Are virtual school students who take the assessment are more academically motivated and naturally higher achieving students than their classroom counterparts?



### Conclusions

- The data in this study indicated that there continued to be no difference in student performance based upon geographic location or method of course delivery
- Students in the web-based classes performed better than those in the classroom in mathematics
- Students in the classroom performed better than those in web-based classes in science and social studies

### Future Research

- determine whether or not there is student selectivity within the population of students involved in the CDLI
- studies that address the reasons for high school student achievement in distance education
- effect of high percentage of synchronous instruction

### Questions and Contact

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