Powerful Predictors of Each Child's Future

Beginning the fall of grade 4, student scores are returned with predictions of expected performance as 5^{th} and 6^{th} graders. The predictions use a multiple regression model with two independent variables predicting the outcome. For example, when the a fourth grade student receives ITBS scores in the fall, these two predictions can be made

b_1 Grade 3 + b_2 Grade 4 + c = Grade 5

b_1 Grade 3 + b_2 Grade 4 + c = Grade 6

for all eight subtests (vocabulary, reading, capitalization, punctuation, written expression, math concepts, problems, computation), plus total language and total math. The b_1 and b_2 are the coefficients for the grade 3 and 4 scores respectively and the c is a constant. These are determined by a least-squares solution for predicting where the prediction plane would be within the three-dimensional space created by the three variables.

The results shown in the table below gathered from 2006 to 2011 for students in grades 3 to 8 in four widely separated school districts in Illinois. To demonstrate the amount of cohort variation in the sample, the data for just this first prediction (grades 3 and 4 predicting 5) required each student in the sample have a test score for each of those three grades. So each district provided these four cohorts:

2006, 2007, 2008
2007, 2008, 2009
2008, 2009, 2010
2009, 2010, 2011

Thus each sample contained four cohorts from three districts for a total of twelve different cohorts. The table shows there were 567 students in the 3, 4, 5 prediction and 410 students in the 3, 4, 6 prediction.

The tables shows the sample size, multiple regression, and standard error of measurement for Reading, Written Expression, and Math Concepts.

The median multiple R in:

Reading is about 0.80
Written Expression about 0.75
Math about .80 but greater than 0.85 for the upper grades

Subtest	Pred.1	Pred.2	Predict-ed	Sample Size	Mult. R	SEM
Reading	3	4	5	567	0.78	17.47
Reading	3	4	6	410	0.80	18.38
Reading	4	5	6	575	0.80	18.23
Reading	4	5	7	421	0.78	20.27
Reading	5	6	7	594	0.83	18.90
Reading	5	6	8	343	0.82	18.53
Reading	6	7	8	429	0.86	16.44
Written Expr.	3	4	5	551	0.70	25.53
Written Expr.	3	4	6	401	0.68	29.84
Written Expr.	4	5	6	564	0.72	27.95
Written Expr.	4	5	7	307	0.68	28.70
Written Expr.	5	6	7	422	0.77	25.72
Written Expr.	5	6	8	274	0.79	24.17
Written Expr.	6	7	8	353	0.81	23.20
Math	3	4	5	566	0.78	15.89
Math	3	4	6	412	0.76	17.09
Math	4	5	6	575	0.82	15.59
Math	4	5	7	420	0.76	17.79
Math	5	6	7	592	0.79	17.47
Math	5	6	8	343	0.85	15.89
Math	6	7	8	428	0.88	14.00

Both the ISLIP (individual improvement plan) and GSPIP (group performance improvement plan) report a composite score. The language composite consists of reading, capitalization, punctuation, and written expression. The math composite consists of the three math scores, concepts, problems, and computation. When Form E is available, math will have only the math and computation tests.

Here are multiple correlations, standard error of measurement, and sample size for the composites.

Subtest	Pred.1	Pred.2	Predict-ed	Sample Size	Mult. R	SEM
Language Total	3	4	5	547	0.86	15.08
Language Total	3	4	6	399	0.82	18.76
Language Total	4	5	6	562	0.87	15.81
Language Total	4	5	7	307	0.83	18.63
Language Total	5	6	7	420	0.90	15.61
Language Total	5	6	8	272	0.89	15.87
Language Total	6	7	8	350	0.90	14.62

Math Total	3	4	5	562	0.86	11.57
Math Total	3	4	6	409	0.84	13.72
Math Total	4	5	6	574	0.88	12.48
Math Total	4	5	7	419	0.87	12.30
Math Total	5	6	7	591	0.87	13.01
Math Total	5	6	8	342	0.87	13.68
Math Total	6	7				

14-17	21-27	Traditional
12-16	17-24	Liberal
1-	1-	Open

Many times, the author has been in meetings involving school board members and parents to stress the importance of early intervention and remediation. Usually, after a polite pause, at least one person expresses what many are quietly thinking:

Pi of fsqb n vdi buf oupo up uf tut dpsf t voumi hi t di ppm Cfgpsf i hi school, I think the kids should just relax and have t pn f gvo t i u bmm m i fbsu every one of those people could understand the implications of the hard data in this report. Follow this line of empirical results:

> In the fall of 6th grade, when most students are still 11-years-old, the 8th grade EXPLORE composite score can be predicted from grade 5 and grade 6 results with a multiple correlation of 0.85.
> The standard error of measurement is 1.5. That means:
>
> - 80% of 11-year-old students who have a predicted EXPLORE of 13 will be in the range 11 to 15 as 8th graders That means their ACT scores will be out of the range of Highly Selective, Selective, and Traditional colleges and universities. By high school, it is already too late.
> - 80% of students who have a predicted EXPLORE of 15 will be in the range 13 to 17 as 8th graders That means their ACT scores will be out of the range of Highly Selective and Selective colleges and universities.
> - 80% of students who have a predicted EXPLORE of 18 will be in the range 16 to 20 as 8th graders That means their ACT scores will be out of the range of Highly Selective colleges and universities.
>
> Go back a little further:
>
> - In the fall of 4th grade, when most students are still 9-years-old, the multiple correlation with entering 6th grade performance in language is 0.82.
> - In the fall of 4th grade, when most students are still 9-years-old, the multiple correlation with entering 6th grade performance in math is 0.84.

The argument, Mf b f f n bmpof i f dbo n bl f uvq o i hi t di ppm t dangerous. High schools do not teach reading or written expressions or K-8 math. High schools are not designed to have remediation programs.

Unfortunately, for those students who are not pressed to achieve, the data are so very clear on this point. If a student is ever going to maximize his or her own highest possible performance level, the intervention must start early. The fall of grade 3 is i f sf f bdi t uvef out vo r vf f ssps qbuf sot ef ougf e c u i f CT n vtucf addressed.

g pv rmuui f n ep i buui f f bmb t epof
u i f mmbmb t hfu i buui f bmb t hpu

That quote is stolen from a talk by Rev. Jesse Jackson.

Those inevitable results do not have to happen. But the change will only occur through planned interventions. Chance is not on the side of those locked in the middle range of national percentile rank standings. The academic purpose of a school system should be to help each individual reach the highest possible excellence level that her or his personal capabilities will allow. Only by aggressively attacking identified errors as early as fall of third grade can this happen.

The ACT and College Boards are the primary two college-entrance measures taken by high school students. The ACT iPass sequence contains EXPLORE (grade 8), PLAN (grade 10), and the ACT. ACT research over the past twenty years has shown a very strong predictive relationship from EXPLORE to PLAN to ACT. My research with four school districts over the past six years has shown that EXPLORE can be accurately predicted from standardized test (*Iowa Tests of Basic Skills*) results as early as fifth grade.

B T ebub dpoof duoh F MP SF t dpsf t up B t dpsf t boe dpmmf hf bddf qubodf range is shown below:

EXPLORE score range	Expected ACT range	College Type Accepting Students in this Range
20-25	29-36	Highly Selective
16-20	25-30	Selective
14-17	21-27	Traditional
12-16	17-24	Liberal
1-	1-	Open

If Mia is to reach her maximum performance level, she cannot drift from grades 1 to 8 and, before the winter holidays at age 14, be very disappointed to find her predicted ACT score is between 21 and 23. State universities like Michigan and Illinois will not find that score range attractive. For selective colleges, that score range needed to be in u i f i hi 31 t ps b up sbt f i f smf f mqspn 32up 3 up 3 up 3 c t f ops fbs pvm

be very difficult. Why? High schools do not teach remediation. High schools teach subject matter in courses like Geometry, Physics, and World History. Eighth grade performance level is critical.

Mia, and none of her classmates, should be allowed to drift through grades 1 to 8. To reach the highest possible performance level consistent with personal capabilities, a very visible and focused press for achievement must be in place as early as grade 3. As soon as possible, Mia needs to learn that she is and can be responsible for correcting all the mistakes she brings with her into the new grade level.

Here is how the Individual Student Improvement Performance Plan (ISLIP) guides Mia from grade 3 to grade 8 in this goal to maximize her eighth grade performance level.

Each fall, Mia takes a good standardized test such as the Iowa Tests of Basic Skills. Her ISLIP report arrives by mid-October, giving her time to quickly correct all the error baggage gspn uif qbtu if dbssfe oup uif of hsbef spn uif sfqpsu if

- mhbsot if sqsftfouboe qbtuqfsgpsn bodf i tups ui if sdvssfou performance compared to the prior year and as trend lines for all the years she has been tested in this school.
- mhbsos her predicted, expected performance level the next year and following year

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