E D M O N T O N P U B L I C S C H O O L S

May 23, 2000

TO: Board of Trustees

FROM: E. Dosdall, Superintendent of Schools

SUBJECT: Prior Level of Achievement Test Results

ORIGINATOR: G. Reynolds, Department Head

RESOURCE STAFF: Anne Mulgrew, Lorie Welk

INFORMATION

Introduction

In February 2000, Alberta Learning released a new form of analysis for language arts and mathematics achievement test data. The purpose of this analysis was to help school staff answer the question "Have we made a difference in the achievement of our students?" The process involved using individual student scores achieved on the 1996 grade 3 achievement tests to predict scores on the 1999 grade 6 achievement tests, and using individual student scores achieved on the 1996 grade 6 achievement tests to predict scores on the 1999 grade 9 achievement tests.

Methodology

The analysis undertaken was a multi-step process referred to as regression analysis. First, the scores for students who wrote the 1999 grade 6 and grade 9 Mathematics and Language Arts Achievement tests were matched with the scores for these same students on the corresponding grade 3 and grade 6 achievement tests written in 1996. The two scores for each student were then plotted on a scatterplot, and a computer program was applied to determine a line of best fit. From this line of best fit, a formula was derived that allowed for the prediction of a grade 6 score based on an actual grade 3 score, or the prediction of a grade 9 score based on an actual grade 6 score.

Secondly, predicted scores were calculated for all grade 6 students based on their actual grade 3 scores, and predicted scores were calculated for all grade 9 students based on their actual grade 6 scores. Finally, the average of the scores achieved in 1999 and the average of the predicted scores were calculated for each school and each jurisdiction. The achieved average score was statistically compared to the predicted average score to determine whether the achieved results were higher than predicted, the same as predicted, or lower than predicted.

Alberta Learning completed the analysis in two ways: one set of results included only those students whose registration information indicated that they were enrolled in the same school for at least one full school year. A second set of results included only those students whose

registration information indicated that they were enrolled in the same school for at least two years. These controls were put in place to reduce the effect of student transiency and because of a belief that a school should have more influence on the achievement of students who have been receiving instruction in the school for a longer period of time.

School Results

Results were examined to determine whether individual schools were performing as predicted, higher than predicted, or lower than predicted. In order to minimize the effects of transiency, only the data based on students who had been enrolled in the school for at least two full years was used. The table below provides a summary for district schools.

Table 1
Number Of District Schools Whose Performance Was Significantly Different From Expectation Based on Prior Level of Achievement Data

Achievement Test	School Results Significantly Higher than Expected	School Results Not Different from Expected	School Results Significantly Lower than Expected
Grade 6 Language Arts	31	100	23
Grade 6 Mathematics	49	94	11
Grade 9 Language Arts	19	28	6
Grade 9 Mathematics	19	23	11

The data in Table 1 shows that more district schools achieved results that were higher than predicted than schools achieving results that were lower than predicted. This is particularly evident for grade 6 mathematics where more than four times as many schools achieved above expectation than below expectation. It is interesting to note that schools achieving significantly higher than expected came from all geographic areas of the city.

District Results

At a district level, the achieved results were significantly higher than predicted for all four comparisons that were done. Table 2 provides district data.

Table 2
District Actual and Predicted Achievement Test Results

Achievement Test	Number of Students	Predicted Average	Actual Average	Difference between Actual and Predicted
Grade 6 Language Arts	3987	67.5	68.3	0.8 (+)
Grade 6 Mathematics	3806	69.3	72.1	2.8 (+)
Grade 9 Language Arts	4171	67.7	68.8	1.1 (+)
Grade 9 Mathematics	3968	63.0	65.6	2.6 (+)

(+) indicates results are significantly higher than predicted

Comparison of Four Urban Boards

When comparing the district to the other large urban boards in terms of percentages of students meeting standards, Edmonton Public typically ranks third or fourth. Calgary Catholic ranks first in terms of percentages of students meeting standards on all of the grades 3, 6, and 9 achievement tests. However, when looking at how district students achieve relative to their predicted achievement, the picture is somewhat different. The following two tables show the difference between the achieved average and predicted average for the four large urban boards.

Table 3
Prior Level of Achievement Analysis For The Four Urban Boards:
Difference Between Achieved Average And Predicted Average For Grade 6
(Data based on Two-Year Enrolment)

Jurisdiction	Grade 6 Language Arts	Language Arts Rank	Grade 6 Mathematics	Mathematics Rank
Calgary Catholic	2.3 (+)	1	2.4 (+)	2
Calgary Public	0.5 (+)	3	-0.4 (-)	4
Edmonton Catholic	0.2 (=)	4	-0.2 (=)	3
Edmonton Public	0.8 (+)	2	2.8 (+)	1

( ) Indicates if difference is significantly higher (+), not different from (=), or significantly lower (-) than predicted

Table 4
Prior Level of Achievement Analysis For The Four Urban Boards:
Difference Between Achieved Average And Predicted Average For Grade 9
(Data based on Two-Year Enrolment)

Jurisdiction	Grade 9 Language Arts	Language Arts Rank	Grade 9 Mathematics	Mathematics Rank
Calgary Catholic	0.4 (+)	2	-1.5 (-)	4
Calgary Public	0.1(=)	3	2.2 (+)	3
Edmonton Catholic	-0.3 (=)	4	3.0 (+)	1
Edmonton Public	1.1 (+)	1	2.6 (+)	2

( ) Indicates if difference is significantly higher (+), not different from (=), or significantly lower (-) than predicted

In terms of the difference between achieved average and predicted average, Edmonton Public ranked first for grade 6 mathematics and grade 9 language arts, and second for grade 6 language arts and grade 9 mathematics. Edmonton Public was the only jurisdiction of these four to have a positive significant difference between actual average and predicted average for all four comparisons that were undertaken. This preliminary data is an indicator for the district that the focus on student achievement is having a positive impact, and is contributing to school and student success.

AM:am