A STUDY OF THE RELIABILITY AND VALIDITY OF THE STANDARDIZED EXAMS USED IN GRADE 10 SCIENCE IN A WINNIPEG SCHOOL DIVISION

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Since 1999, the Galileo School Division has required that all students enrolled in grade 10 science write a standardized examination on the content of the course at the end of the semester worth 25% of their final grades. The purpose of this study was to examine the reliability and validity of these grade 10 science standardized exams through secondary analysis of data from four invigilation sessions during the 2006 and 2007 test years.

Alfie Kohn (2000) argues that standardized exams hinder good instruction practices and are inherently biased in their assessment of students’ achievement, while Richard Phelps (2003) argues that standardized exams provide an invaluable form of accountability and are a positive influence by focusing instruction towards the established curriculum standards. These two opposing viewpoints on standardized exams are representative of the current arguments.

The anti-testing group suggest that standardized exams do not promote or measure real learning and rather they encourage rote learning and regurgitation of facts. From their perspective, standardized assessment narrows the curriculum and provides few, if any, benefits for students or teachers. Finally, they argue that standardized exams are very expensive for educational systems that are forced to continually reduce expenditures. The pro-testing community argues standardized testing actually encourages students to learn the mandated curriculum, and, as such, they help teachers become more effective in teaching their students by ensuring that the entire curriculum has been taught. As for costs, the Galileo School Division’s budgets suggest the expenses associated with standardized exams are less than 1% of the division’s entire budget.

In Manitoba, the provincial government mandates that all schools divisions participate in standardized assessments in grades 3, 4, 7, 8, and 12. These examinations “are
intended to provide pertinent information about each student’s knowledge and skills in relation to learning outcomes as set out in provincial curriculum documents” (Manitoba Education, Citizenship and Youth, 2007). Galileo School Division, however, is different from other divisions in the province because, in addition to using the provincially-mandated examinations, it also administers its own standardized examinations in Grade 5 and in each grade from 8 to 12, in English, Social Studies, Mathematics, and the Sciences. Test scores are reported to the students and their parents and are reported to the division for use in developing policies; the results, however, are not reported to the Governments’ Department of Education. The Galileo School Division is the only school division in Manitoba to administer such standardized examinations, mark them at the divisional level, and publish the results for individual schools.

In this study, three questions have been addressed to assess the reliability and validity of the divisional standardized exam administered in grade 10 science:

1. Are the grade 10 science exams in January and June of the same testing year, comparable in purpose and results?

2. Did the change in test development process from the 2006 test year to the 2007 test year affect the quality of the exam and the achievement of students? and

3. Does the difference in the administration and supervision of the exam have an effect on the exam results?

A review of division policies associated with the standardized exams suggest the purpose or intent of the grade 10 science exams during the 2006 and 2007 testing periods did not change. That is, the purpose of standardized exams in the Galileo School Division was:
1. To provide an additional assessment component, on a wider basis than traditional classroom-based assessments, for individual student evaluation.

2. To provide feedback to staff for reference in the continuous improvement of curricula and instructional practices.

3. To provide information to the general public.

4. To ensure adherence to prescribed curricula.

5. To assist the school division in improving the quality of academic standards.

A statistical analysis including KR-20 and KR-21 coefficients, exam means, standard deviations, and degree of difficulty of the items showed test scores in all four testing periods were very similar. Therefore, it was confidently concluded that the SC20F exams from the 2006 and 2007 test periods were similar in purpose and results.

The second question in this study explores the effects, if any, on test scores resulting from the change in the exam development process from 2006 to 2007. In 2006, the test development process included a viewing session of the draft exam for teachers. The viewing session allowed teachers to determine if they covered the science curriculum in their teaching and if the items were congruent with the provincial curriculum. This reviewing process was discontinued in 2007 for apparent security reasons. An analysis, including distributions of difficulty for items at both testing periods, suggested the change in the exam development process from 2006 to 2007 did not affect the quality of the exam or the achievement of the students.

Standardized exams are usually written in a formal setting with direct supervision, such as in a gymnasium or large hall. The invigilation of the grade 10 science exams in the Galileo School Division varied across the five schools. Some schools had their students
write the exam in a large gymnasium and others had them write the exam in classrooms. As a result, the variability in the administration of the exams formed the third question to be addressed in this study: Does the difference in administration and supervision of the exam have an effect on exam results? Secondary data analysis of test scores from the five high schools suggests the invigilation practices did not have an effect on student achievement.

In all respects, the standardized exams in the Galileo School Division are viewed by the teachers, administrators, students, parents, and trustees as being an effective accountability instrument that provides reliable data for developing assessment policies and are valid measurements of grade 10 students’ mastery level of the curriculum.
REFERENCES


