

Creating an Achievement and Diagnostic Profile

By Tanya Braybrook

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Introduction and History

Using a profile assessment tool is an effective strategy for regularly assessing students' achievement of the curricular objectives. It provides the teacher with a diagnostic and achievement profile for each student. This information is helpful in guiding classroom instruction as well as reporting to students and parents. As a paper-pencil form of assessment, it is a strategy that can be used with any curriculum, at any level. Keep in mind that it is *one* way of collecting information about students' progress that gets them actively involved in the assessment process.

As a student teacher, I was placed in a Grade 5 classroom where the teacher was using this form of assessment. This experience provided me with an opportunity to see this kind of assessment in action and quickly showed me the value of this strategy. After teaching in my own classroom for a couple of years, I was ready to modify what I saw in that classroom to my Grade 2 level.

Early in my career, I quickly became frustrated with the traditional unit test approach to assessment. I found that students often did well on a test at the end of a focused unit, but struggled later when they were asked to review the concepts or apply them in problem-solving situations. For this reason, I felt that using a profile approach would allow for the review and application of all concepts, on a regular basis. I found this has led to a higher level of concept retention. Colleagues became aware of this strategy I was using and encouraged me to start sharing it with others by speaking at conferences.

How to Develop a Profile Assessment Tool

I. *Divide the math curriculum into 8-20 major categories.*

The goal is to have as many of the objectives fit into the categories as possible.

Example: Grade 4 categories based on the 2006 Western and Northern Canadian Protocol

1. Represent numbers
2. Place value
3. Add & subtract
4. Multiply & divide
5. Fractions
6. Decimals
7. Patterns
8. Equations
9. Time
10. Calendar
11. Measurement
12. Geometry
13. Graphing & Data Analysis
14. Problem Solving (or multi-skills)

(Objectives that involve using a calculator, creating 3-D solids, collecting data, etc. are difficult to assess using this paper-pencil strategy. These types of objectives will have to be assessed using a different strategy.)

II. *Test students using one question from each category, on a regular basis.*

Every test has the same number of questions that you divided the curriculum into. Each question *always* corresponds with the same category. Using the Grade 4 example above, question #1 will always be "represent numbers", #12 will always be "geometry."

It is strongly recommended that this process be started as early in the year as possible. By starting this type of routine testing early, students become familiar and comfortable with the procedure and test anxiety will be diminished.

“On a regular basis” is open to interpretation. It is recommended that about two tests a month be completed. For example, this could be done by giving a test every other Monday or every day two on an eight day rotating cycle.

It is *crucial* that early in the year, questions be based on previous grade level objectives. This needs to happen for the following three reasons.

- a. Current grade level objectives have not yet been taught.
- b. The teacher must determine a baseline to see if previous grade level objectives have been mastered.
- c. The teacher wants the students to feel successful.

As current grade level objectives are taught, they can then be assessed by changing the questions being asked in that category. Up until that point, the questions should remain at the previous grade level. This means that most tests will be a combination of questions based on both previous and current grade level objectives.

III. *Students complete the test.*

It is strongly recommended that students understand this is a *math* test, NOT a reading test. Questions should be read to students if they are not able to read it themselves because assessing math skills is the focus. Therefore, at the primary level, the teacher will probably want to read the whole test to the class, question by question. Students in other grades should be encouraged to ask an adult to read the question if they can't.

IV. *Teacher marks the test.*

It is important that the test be marked in a systematic way so that students can understand it. One method is to use a check mark if it is correct, circle the question number if it is wrong or use $\frac{1}{2}$ if they got some parts right and some wrong.

V. *Students receive their test back and graph their results.*

Every student will have a graph similar to the one on the following page.

The categories that the curriculum was divided into go down the left side of the graph. (Remember, categories and the order in which they appear should be the same as what was on the test.)

Students record the date of the test and their total score in the appropriate box. Then, for each question, they record how they did, in a systematic way. One method is to have students color in the box if they got the question correct, put an X if they got it wrong and color in half the box if they got half a mark.

This testing session is now complete. It will regularly be repeated, using the same process.

Interpreting the Results Graph

Looking down the individual columns, you get an achievement profile: that is, how the student did on each test. This information does not have significant, formative implications. Rather, it could be used for summative assessment purposes.

Looking across each row, a diagnostic profile begins to emerge. After a few tests, areas of strength and weakness will become apparent. If a row is consistently colored in, the concept is a strength. If a row has many X's or boxes that are half colored in, that concept is weaker. This is where this form of testing is most valuable. This information has implications for teaching, remediation and enrichment.

GRADE 4: AN ACHIEVEMENT AND DIAGNOSTIC PROFILE

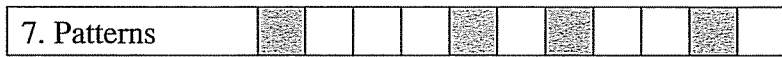
Student Name: _____

Date									
Number Correct									
1. Represent Numbers									
2. Place Value									
3. Add and Subtract									
4. Multiply and Divide									
5. Fractions									
6. Decimals									
7. Patterns									
8. Equations									
9. Time									
10. Calendar									
11. Measurement									
12. Geometry									
13. Graphing and Data Analysis									
14. Problem Solving									

Look at the following examples of completed student graphs and their possible explanations.



This student appears to have a good understanding of place value, missing only a couple of questions.



This student appears to have a lot of difficulty with the patterns concept. There is no consistency to his/her achievement.



This student seems to have done OK early on but demonstrates less understanding as the questions have gotten progressively more difficult and as new content has been introduced.



This student seems to have had trouble initially, but has begun to demonstrate a better understanding of this concept.

Advantages of Using a Profile Assessment Tool

- It provides regular assessment and review of all the major concepts of the math curriculum.
- Diagnostic information regarding a student's strengths and weaknesses provides direction for classroom instruction.
- Students are directly involved in the assessment process.
- It is a visual way of showing a student's progress, making it a great tool to share with parents at interview and report card time.
- It can also be used to analyze a teacher's strengths and weaknesses in his/her teaching of the various parts of the curriculum.

Links to Assessment FOR Learning Research

So how does using a profile assessment tool tie in with the current research on assessment for learning?

Self-assessment is an important component that can be used with a profile assessment tool. One way to do this is by attaching pictures to each question, such as



or a numbering system. After completing a question, students can self-assess according to how they think they did on that question. This will provide both the student and teacher with insight into how the student felt about his/her ability on each question. Another option is to have students complete a checklist after the test is marked. They can analyze their mistakes to determine if any errors made were due to carelessness (a simple mistake) or gaps in understanding (I need help).

Good testing practice should be frequent testing practice. By having the students complete a profile test about twice a month, information is collected throughout the term. This gives the results a higher level of validity and enables the teacher to use the information to guide instruction and give a more accurate picture of each student's growth.

Research is saying that students need to be actively involved in the assessment process and that test results must be reported to students so they can identify their own strengths and weaknesses. This is achieved when using a profile assessment tool as students routinely graph the results of their test and "see" their strengths and weaknesses on the graph.

Summary

When used in conjunction with other assessment strategies, a profile assessment tool is a student, teacher and parent friendly way of demonstrating student achievement of the math curriculum's objectives. Teachers should be reminded that this strategy is just *one* way of collecting information about students. Other assessment strategies must be used to ensure results are valid. For more information about using a profile assessment tool, visit www.mathprofile.com.

Bibliography

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