The role of the assessor-student interaction in individual dynamic assessment with low and high achievers

**Introduction**

It has been shown that students who score more poorly relative to other groups on conventional tests of intelligence benefit more from dynamic assessment than do stronger students (Sternberg & Grigorenko, 2001). In other words, performance improved for these students from pre-test to post-test after they experienced a coached dynamic assessment intervention. This intellectual ability to make progress, seen by these authors as developing expertise reflecting underlying capacities is therefore discerned by dynamic assessment, but not by traditional assessment.

**Research Questions**

It seems obvious that poorer students need more help than stronger ones and thus will benefit more from any help that is offered. But what is the nature of the help both groups are given? How is the coaching process carried out with poorer students as opposed to stronger ones? Is it possible to ascertain what types of assessor-student interactions allow poorer students to demonstrate their capacity for developing expertise? Do stronger students demonstrate already developed expertise during assessor-student interactions? Can a continuum between the developing and developed expertise be discerned?

**Study Design**

A qualitative study is proposed in the context of an on-going three-year project entitled “Dynamic Instruction for and Assessment of Developing Expertise in Four Ethnic Groups”, currently being carried out at the Yale University PACE Center. This main project proposes an instructional component compatible with 4th grade math curricula originating with Sternberg’s theory of successful intelligence (Sternberg, 1997; Sternberg & Grigorenko, 2000) where the goal is to develop students’ skills in analytical, creative and practical thinking. Experimental conditions test various ways in which such thinking may be dynamically taught and assessed. The underlying assumption is that these ways of thinking can be viewed not as crystallized abilities, but as continued developing expertise (Sternberg & Grigorenko, 2002) and the corresponding hypothesis is that dynamically measuring developing expertise will reduce or eliminate differences among ethnic groups. The notion of dynamic instruction and assessment is based on Vygotsky’s zone of proximal development. In the case of dynamic instruction, teaching occurs at a level just beyond where children are


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comfortable. In the case of individual dynamic assessment, a mediated learning experience (Feuerstein, 1980) based on scaffolding in the form of a series of prompts, assists children in succeeding in answering each test question, thus contributing to helping them to move from one level of development to another. The number of prompts needed for a child to correctly answer a test question constitutes his or her “score” on the dynamic test. The experimental structure shown below in Figure 1 shows this as “prompted individual assessment.”

![Figure 1 Experimental structure for individual dynamic assessment.](image)

In the qualitative study proposed here, we intend to look more closely at this assessor-child interaction that constitutes the prompted individual assessment. In order to control for assessor differences, one assessor will be filmed during individual dynamic assessment for one class of a particular Manhattan school. The interactions of this assessor with a succession of four individual students (two low achieving and two high achieving) will be filmed during the individual dynamic assessment sessions (pre and post-tests) for three instructional units (geometry, measurement and equivalent fractions) throughout the 2004-2005 school year. The four low and high achieving students will be chosen on the basis of previous test scores where low test scores indicate low achievers and high test scores indicate high achievers. (cf. Table 1).

<table>
<thead>
<tr>
<th>Instructional Unit</th>
<th>Geometry</th>
<th>Measurement</th>
<th>Equivalent Fractions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessor-student pair</td>
<td>4 students</td>
<td>Same 4 students</td>
<td>Same 4 students</td>
</tr>
<tr>
<td>Pre-test</td>
<td>2 low achieving students</td>
<td>2 high achieving students</td>
<td></td>
</tr>
<tr>
<td>Post-test</td>
<td>Same 2 low achieving students</td>
<td>Same 2 high achieving students</td>
<td></td>
</tr>
</tbody>
</table>

20 min per interaction x 4 students x 2 pre-tests and 2 post-tests x 3 instructional units = 8 hours of video data

### Analysis Methods

In light of a theoretical framework encompassing situated and distributed cognition viewed as socio-cultural (Lave & Wenger, 1991; Hutchins, 1995; Vygotsky, 1978), we will analyze 24 individual prompted assessment sessions (cf. Table 1) by applying a qualitative methodological approach that describes how actors co-construct and negotiate their knowledge during dialogue (Baker, 1994; 1996, Lund, 2003).

### Predicted Outcomes

First and foremost, we predict that the low-achieving students taking the dynamically assisted pre and post-tests will obtain higher scores than the students taking the conventional tests. However, according to previous research, we should not see much difference in test scores between the high achieving students, regardless of whether they are tested
conventionally or dynamically. Second, we hope to show the types of assessor-student interactions that allow poorer students to demonstrate their capacity for developing expertise. We predict that this will include the ways in which assessors and low-achieving students may deviate from the prompting script that allow students to successfully complete test questions. Finally, through dialogue extracts, we hope to illustrate developing and developed expertise along a continuum beginning with low achievers and ending with high achievers and thereby uncover differences between how assessor-student interactions guide progression in analytical, practical and creative thinking.

**Potential Interpretations and Implications**

It has been shown that children with low performance ability make little use of simple feedback and therefore need stronger assistance to stimulate their learning (Ivanova, 1973 cited in Guthke & Beckmann, 2000). If we can better understand the ways in which and the extent to which students benefit from dynamic assessment, we can begin to reflect on redesigning coached dynamic assessment sessions for more effectiveness. In other words, performing qualitative analyses on the nature of the assessor-student interaction with both low and high achieving students will shed light on those interactions that favor the developing expertise of low achievers, measured by the nature of the help they need to succeed in answering test questions. Although the optimal organization for feedback information and prompts cannot be prescribed in a general way (Guthke, Beckmann & Dobat, 1997), the particular exchanges that culminate in student success as opposed to those that don’t can be used to refocus and refine the prompting mechanisms that are used in the mathematics curriculum of this particular paradigm of dynamic testing. More particularly, as the practical and creative thinking components of the instruction and assessment will generally not be as familiar to teachers and students (as opposed to the analytical), the qualitative analysis of assessor-student interaction should reveal ways to improve them.

**References**


ABSTRACT

Evaluating a student’s ability to learn rather than what he or she has already learned is at the heart of the dynamic testing concept. Dynamic testing has revealed developing expertise in students that static conventional testing has not. However, low achieving students tend to benefit more from dynamic testing than high achieving students. In other words, the former show more gains from pre to post-tests than the latter when using a dynamic testing paradigm. Although it may seem obvious that poorer students need more help than stronger ones and therefore have more potential to benefit from it, it is less obvious to know what types of assessor-student interactions actually allow poorer students to progress. We propose to look more closely at the assessor-student interaction during prompted individual assessment within a 4th grade math curriculum based on analytical, practical and creative skills and that uses dynamic instruction and assessment. In particular, we propose to qualitatively analyze 24 assessor-student interactions with both low and high achieving students across three mathematical units: measurement, geometry and equivalent fractions. Low and high achievers will be selected based on previous test scores where low achievers had lower test scores than high achievers. Through an analysis of the nature of assessor-student interactions, we hope to shed light on how the prompted individual assessment may be improved for this particular math curriculum. In particular, as the practical and creative thinking components of the instruction and assessment will generally not be as familiar to teachers and students as the analytical components, the qualitative analysis of assessor-student interaction should reveal ways to improve them.