TOWARDS DYNAMIC DIAGNOSTIC ASSESSMENT

Kentucky Center for Mathematics

Purpose

There is a nearly universal awareness among educators regarding the importance of assessment. Testing data drives educational policy, revenue streams, and curriculum development. Ultimately, though, assessment must focus on the determination of student learning needs. The purpose of this document is to clearly describe three distinct types of assessment that one finds in mathematics education, and emphasize the importance of dynamic features (dynamism) in the diagnostic assessment process.

Static Testing

Perhaps most familiar to educators is the static test. This type of assessment involves the presentation of items and recording of responses without any "attempt to intervene in order to change, guide, or improve the child's performance." (Tzuriel, 2000). Sometimes referred to as standardized tests, these assessments are used principally "for c*lassification* and are aimed at providing differential treatment for individuals differing in level and/or pattern of intelligence" (Utley, Haywood, & Masters, 1992). The prolific nature of these tests may be attributed to increased potential for efficiency in terms of cost, time, and data generation; however, these assessments often fall short in measuring true learning potential. This shortfall becomes more pronounced when dealing with disadvantaged social groups and children with learning disabilities. (Tzuriel)

Diagnostic Assessment

As a particular testing variant, diagnostic assessment represents some degree of evolution; however many of these assessments still adhere to a static model of measurement. Stemming from the medical paradigm of symptom-based diagnosis, the general aim of these tests is the identification of conceptual or performance related deficits (Bejar, 1984). While the targeted nature of diagnostic assessment may prove useful in many settings, interpretation of data from such instruments proves problematic as certain aspects of conceptual development, and potentiality related specifically to the individual child go unmeasured.

Dynamic Assessment

Dynamic assessment (DA) is "an assessment of thinking, perception, learning, and problem solving" (Tzuriel, 2000). Relying upon a foundation of social constructivism, DA takes into account both the current individual development of the child and the higher level of "potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978). Quite simply, such assessments measure not only current cognition but provide trajectories for future learning.

The dynamism found in these tests stems from the interaction between the students and the presented task. (Johnsen, 1997). As the assessment progresses, the examiner may "teach specific rules, provide simple or elaborate feedback, prompt the child to verbalize how he or she solved to problem, or all of these." (Johnsen). Thus, the landscape of the assessment is dynamic in that it is constantly reforming to accommodate the individual. Although these assessments are inherently less efficient than static tests, the dividends in responsiveness and richness of data far outweigh logistical constraints. Specifically, such assessments allow examiners to address the following questions: "Did the learner attend to relevant information? Once understanding the task, did the child retrieve related information quickly? Did the child apply prior knowledge to the task? In what ways did the child organize this knowledge? Did the child ask more generalized questions? Did the child solve the problems as a whole rather than as subproblems?" (Johnsen)

Towards Dynamic Diagnostic Assessment

In the measurement of mathematical learning among struggling students, the framework of diagnosis is necessary but insufficient for the holistic assessment of conceptual development. There is great benefit to the incorporation of dynamism into the diagnostic assessment process. Specifically, we find much power in the profound flexibility of such assessments and the manner in which they create a rich portrait of a child's present understanding as well as outline avenues for future development. Ultimately, the incorporation of dynamism into the assessment process finally allows us to fully examine the learning potential of the individual child and what processes will lead to success.

References

Bejar, I. I. (1984). Educational diagnostic assessment. *Journal of Educational Measurement*, *21*, 175-189.

Johnsen, S. K. (1997). Assessment beyond definitions. *Peabody Journal of Education*, *72*(3-4), 136-152.

Tzuriel, D. (2000). Dynamic assessment of young children: educational and intervention perspectives. *Educational Psychology Review*, *12*(4), 385-435.

Utley, C. A., Haywood, H. C., and Masters, J. C. (1992). Policy implications of psychological assessment of minority children. In Haywood, H. C., and Tzuriel, D. (eds.), *Interactive Assessment*. New York, Springer-Verlag, pp. 445–469.

Vygotsky, L. S. (1978). *Mind in Society*. Cambridge, MA, Harvard University Press.