J. DOUGLAS WILLMS

PRE SCHOOL

Benefit from New Skills Assessments

WHEN MY SON ENTERED GRADE 1, his teacher said to me, "I want all children to come to school with shoes that have laces." This is curious, I thought, because last year the kindergarten teacher had wanted all children to wear shoes *without* laces. The Grade 1 teacher picked up on my puzzled look, and added, "By age six, *all* children should be able to tie shoes with laces." She is probably right, as being able to tie your shoes is a practical skill, and, at some point, not having this skill could be socially stigmatizing.

However, I was interested in her comment for another reason. At the time our research team at the University of New Brunswick was developing a skills-based instrument to assess children's early development, so I was preoccupied in thinking about what skills are important for children to master if they are to benefit from regular school instruction. Of course not all children can tie their shoelaces by age six; there is probably a small percentage of children that have mastered the skill by age three, and others that cannot do it until age eight or nine. We do not have data on the relationship between mastery of tying shoelaces and age. However, for the past five years we have examined hundreds of skills that researchers and teachers consider important for children's success at school, and have amassed data from thousands of children on their ability to do tasks related to these skills. The research has received support from the World Bank and Human Resources and Skills Development Canada.

One of the tasks examined is the ability to construct sets of objects. When a child is given ten blocks to work with, can he or she construct a set of four blocks, or a set of nine blocks? The graph (page 37) shows the "age-prevalence curve" for this skill, based on data from over 6,000 children. At age three years, six months, about 14 percent of the children assessed could construct sets of objects. By age four years, ten months, about 50 percent of the children could do it, and by age six over 80 percent had mastered the task. My guess is that the age-prevalence curve for tying shoelaces is similar.

In choosing the items for an early years evaluation we considered the *difficulty* of each task and its *discrimination*. We can think of the task, "constructing sets," to have a *difficulty* level of four years 10 months; this is the age when 50 percent of children can do it. We also want tasks that can discriminate well, gauged by the steepness of the age-prevalence curve. In addition to examining age-prevalence curves for each task, we also use a statistical technique called Item Response Theory, which provides similar information but instead of age considers children's overall ability in a domain to determine a task's difficulty and discrimination.

The task described above – constructing sets of objects – is one of 48 skills assessed with the Early Years Evaluation-Direct Assessment (EYE-DA). The EYE-DA evaluates aspects of early child development in four developmental domains (12 skills per domain) closely related to emerging literacy skills and children's success at school:

1. **Awareness of Self and Environment** – the ability to think and talk about their world and make connections with home and community experiences;

2. **Cognitive Skills** – the ability to solve problems, recognize shapes and patterns, and understand basic mathematical operations;

3. **Language and Communication** – includes *receptive* vocabulary (the words children understand when they hear them spoken), expressive vocabulary (the ability to express thoughts and feelings to others), and emergent literacy skills such as awareness of print and the connection between letters and sounds; and,

4. **Physical Development** – assesses gross motor skills (large movements involving arms, legs, and body) and fine motor skills (smaller movements involving fingers in coordination with sight).

EN BREF Le programme *Early Years Evaluation* (EYE) est destiné à aider les éducateurs à évaluer les habiletés d'enfants de trois à six ans alors qu'ils se préparent à l'école et y font la transition. Administré individuellement, *EYE-Direct Assessment* (EYE-DA) est une mesure de résultats développementaux. Il évalue quatre aspects du développement de la petite enfance qui sont étroitement reliés aux compétences émergentes de littératie : 1) conscience de soi et de l'environnement; 2) compétences cognitives; 3) langue et communication; 4) motricité globale et fine. Les enseignants disposent ainsi de renseignements sur les forces et les faiblesses développementales de chaque enfant, ce qui aide les petits à faire positivement la transition à l'école. Les parents reçoivent un court rapport indiquant les résultats de leur enfant quant à chaque aspect développemental. De nombreux conseils scolaires planifient des activités spéciales pour les enfants repérés comme ayant des difficultés.
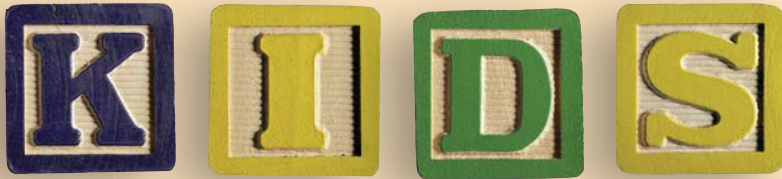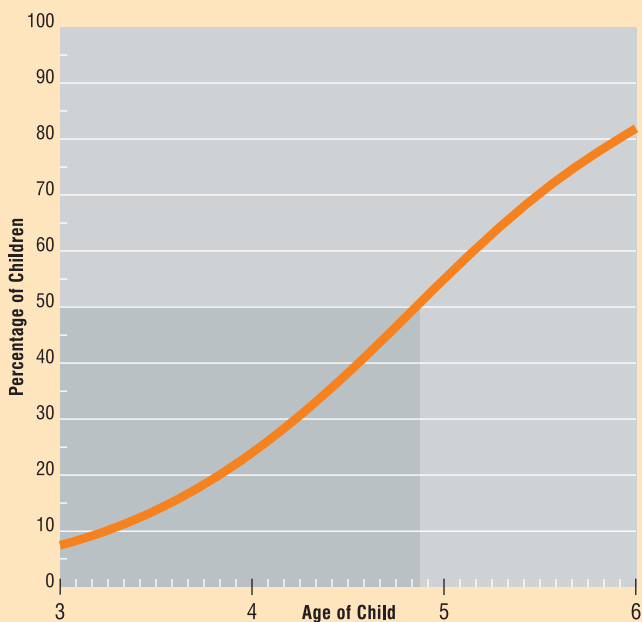
ASSESSORS REGULARLY COMMENT, "CHILDREN LOVE DOING THE EYE!"

AND THAT THE RESULTS OFTEN SERVE AS A DOOR OPENER TO

APPROACH PARENTS OF PRESCHOOLERS WHO HAVE BEEN IDENTIFIED

AS EXPERIENCING DIFFICULTY.

Child can construct sets of objects

The EYE-DA requires about 30 minutes per child and is administered by a trained assessor. In most jurisdictions the assessors are retired kindergarten or preschool teachers who can easily establish rapport with young children. Gross motor items are interspersed throughout the test such that children are up and moving and then sitting to focus on tasks that require thought and concentration. The assessment concludes with fine motor tasks involving printing, using scissors, and drawing. Assessors regularly comment, "Children love doing the EYE!" and that the results often serve as a door opener to approach parents of preschoolers who have been identified as experiencing difficulty. In the province-wide administration of the EYE-DA in New Brunswick, only half of one percent of the children assessed were unable to complete the assessment because of attention problems or an unwillingness to do the assessment.

A complementary assessment, the Early Years Evaluation – Teacher Assessment (EYE-TA), assesses the same domains as the EYE-DA, but also includes a set of questions on children's social skills, behaviour and approaches to learning. These five domains are consistent with the framework for school readiness developed by the National Education Goals Panel, established by the U.S. Congress in 1989.[1]

AN ESSENTIAL FEATURE OF THE EYE-DA AND EYE-TA IS THAT THEY

FOCUS ON THE SKILLS ENABLING CHILDREN TO BENEFIT FROM SCHOOL

INSTRUCTION. THIS DIFFERS FROM THE POPULAR TEACHER PERCEPTION

SCALES IN WHICH TEACHERS RATE CHILDREN'S PERFORMANCE

IN RELATION TO THEIR PEERS.

Scoring the EYE-DA takes into account a child's age at the time of the assessment. Cut-points for each domain were set to identify children that are "experiencing some difficulty" or are "experiencing significant difficulty." After each child is assessed, data are entered into a web-based scoring interface, and within seconds a report depicts the results of the assessment along with a customized letter that can be reviewed with the child's parents. The EYE-TA is also administered and scored online. Teachers provide item-by-item assessments for each child in their class before moving to the next task. Scoring and interpretation for the EYE-TA focuses on skills children need as they approach grade one; thus, the cut-points are based on prescribed standards, rather than an age-based approach as used with the EYE-DA. The teacher receives the class results within seconds of completing the assessment. Individual reports are also prepared that teachers can use to discuss children's progress with parents. The results from the EYE-DA and EYE-TA are summarized for the school district and province, and can be displayed by domain graphically, and on district or community maps.

An essential feature of the EYE-DA and EYE-TA is that they focus on the *skills* enabling children to benefit from school instruction. This differs from the popular teacher perception scales in which teachers rate children's performance in relation to their peers. For example, in a commonly used perception survey teachers are asked, "How would you rate this child's ability to tell a story?" Teachers respond on a three-point scale – very good or good, average, poor or very poor. With this kind of instrument one does not know what reference group a teacher is using when making a relative ranking. Is it the current class of students, or all children the teacher has ever taught? It may even be some hypothetical group of children that the teacher thinks would be representative of children that age. Some teachers make allowances for the child's age in making relative rankings, while others do not, and a rating of "good" for one teacher may be "poor" or "average" for another. Also, teachers' judgments can be affected by their assumptions about the children they are serving. Their beliefs about gender, ethnicity, and socioeconomic background can affect their rankings. This bias

in perceptual data is seldom conscious, and it is very difficult to assess.[2] This is why objective, *skill-based* assessments are essential for identifying students that require extra support and for tracking the progress of a school, community, or province.

The two standard criteria for assessing the quality of an evaluation are reliability and validity. Reliability refers to the consistency of a measurement process. Would an instrument yield similar results if it were administered by different assessors, or on different occasions? Is the measure internally consistent? Are results from different subsets of a test's items correlated? In its administration to over 6,000 pre-kindergarten children in New Brunswick the EYE-DA has proven to be highly reliable, with reliability coefficients for internal consistency ranging from 0.85 to 0.87. Assessments based on the EYE-TA of kindergarten children in Edmonton and Saskatoon and of pre-kindergarten and kindergarten children in Brockville, Ontario, have proven to be highly reliable, with reliability coefficients ranging from 0.87 to 0.96.

The second criterion – that the measure is *valid* – requires one to gather evidence on the fit between the items of the instrument and the underlying theoretical constructs, such as cognitive development or language development. This is called construct validity. Recent thinking about validity also requires one to consider the kinds of decisions made from the assessment; a test is valid only if inferences made from the results are appropriate, meaningful, and useful.[3] This calls for consideration of how results are interpreted and used in the school context. Has the use of EYE increased opportunities for children to learn? Have school districts expanded services to parents and children? How have assessment results been used by parents? How are results used within schools?

The EYE-DA is being used in New Brunswick to assess all four-year-old children before they enter kindergarten. The results provide a leading indicator allowing district staff to discern which children are likely to benefit from early intervention aimed at improving their chances for success at school. Robert Laurie, Director of Assessment and Evaluation for the francophone sector at the Department of Education in New Brunswick, noted, "The Department of Education facilitates the administration of the EYE-DA in its school districts. The school districts then intervene with children and their families to ensure a smooth transition to kindergarten." In some school districts the interventions entail a summer program, with parents and children working with a teacher for one or two half-days per week. In most cases interventions are targeted towards children identified with the EYE-DA as experiencing some difficulty or significant difficulty.

The New Brunswick model is being adopted province-wide in Prince Edward Island. It has been used there in the Chances Smart-Start Program to assess children's growth in skills in a full-year parent-and-child preschool program. Ann Robertson, director of Chances, said, "The dual approach of identifying and developing an individual strategy to support the child's learning needs, along with intervening directly with parents, probably contributes to the positive outcomes."

The EYE-TA is being used in Edmonton to identify children that may require further assessment or are potential

candidates for extra support at school. The data are also used by speech and language therapists and other consultants to offer strategies to classroom teachers that support all children in the classroom. These strategies go beyond emergent literacy skills; they include school and home strategies for fine motor, gross motor, behavioural, communication, and social development. David Hursin, coordinator of kindergarten inclusive developmental services, noted, "The EYE gives you the whole picture of the make-up of the kids in your class. Knowing their strengths and weaknesses early in the year helps you modify programming for the entire class so everyone can be successful."

The EYE can also be used as a population measure to track changes in children's skill development from year to year or to assess the efficacy of large-scale interventions. Human Resources and Skills Development Canada is using the EYE-DA to assess the effects on children's development of an intensive francophone pre-school program. Saskatoon Public Schools has used the EYE-TA to discern whether children improve their skills at a faster pace if they are in a full-day kindergarten rather than a half-day kindergarten. Dr. Scott Tunison, coordinator of research and evaluation for the Saskatoon Public School Division, found that EYE-TA results for most children were consistent with teachers' own perceptions about their students. However, he noted that teachers consider EYE data when making decisions about instructional strategies. Many teachers use the EYE data to take a second look at students that they might not otherwise have noticed or identified as needing extra help.

Most provinces and school districts have adopted some form of assessment for pre-kindergarten and kindergarten children. These evaluations generally produce *reliable* results; trained assessors and teachers can reliably assess children's skill development. However, establishing validity is more difficult. It requires a careful selection of the tasks that fit each of the relevant domains. The most discerning criterion of any assessment, and the question that must be asked, is: Does the evaluation ultimately lead to changes in policy and practice that increase each child's chance of success at school? This requires objective assessment of children's skill development, not subjective perceptions of children's standing in relation to their peers. It also requires a reporting system that yields immediate feedback of how well each child is progressing, individual reports that can be easily interpreted by parents and teachers, and data that can be aggregated to school, district and provincial levels. ▌

J. DOUGLAS WILLMS is a professor and director of the Canadian Research Institute for Social Policy at the University of New Brunswick (UNB) and holds the Canada Research Chair in Human Development.

Notes

1 Shepard, L., Kagan, S.L. & Wurtz, E. (1998). *Principles and Recommendations for Early Childhood Assessments.* Washington, DC: National Education Goals Panel. See also, Rhode Island Kids Count (2005). *Getting Ready: Findings from the National School Readiness Indicators Initiative, A 17-State partnership.*

2 Chambers, J. & Windschitl, P. (2004). Bias in social comparative judgments: The role of non-motivated factors in above-average and comparative-optimism effects. *Psychological Bulletin*, 130, 813-838.

3 Messick, S. (1998). *Consequences of test interpretation and use: the fusion of validity and values in psychological assessment.* Educational Testing Service, Princeton, New Jersey.