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**Fast and Practical Formative Assessment:
Results from Teachers' Use of *LS Test Builder*
by LearningStation, Inc.**



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Thursday, February 7, 2008

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Note: This report was commissioned by LearningStation, Inc. and conducted as a third party analysis by Interactive, Inc. Interactive, Inc. is solely responsible for the analysis, interpretation and reporting of the information.

Fast and Practical Student Assessment: Results from Teachers' Use of *LS Test Builder* by LearningStation, Inc.

1.0 Summary

A recent study documented the ability of teachers to create state standards-aligned reading tests for students in less than four minutes and tests for math and science in half that time using LearningStation's *LS Test Builder*, an e-learning tool that enables standards-aligned formative assessment. Regular users of *LS Test Builder* were able to accomplish the same tasks even more quickly: reading tests took less than three minutes, math tests took two minutes and science tests took less than a minute and a half. All participants were classroom teachers in public or private schools in the state of Kansas and all test items were aligned with Kansas learning standards. The study provided insight into how teachers can use *LS Test Builder* quickly and easily to formatively assess their students' mastery of standards-based material and modify daily instruction to address student needs – all with the speed and specificity that year-end tests are too late and too general to accomplish.

2.0 The Problem

Testing during the school year is a recent advance. Such “interim” or “formative” assessment is a powerful school improvement technique but, in the absence of ways to handle the logistics of mountains of paper and information, the promise exceeds the practice. In the wake of the data emphasis of *No Child Left Behind*, every school in America has far more data than teachers use. The problem is not getting data, it is making the data easy to use. And unless this process is fast and transparent, over-burdened teachers will not use interim or formative assessment.

3.0 The Purpose of the Study

LS Test Builder has been available statewide in Kansas since fall 2005 through a partnership between LearningStation and Kan-ed, the statewide network in Kansas. Between 2005 and 2006, teachers in Kansas increased their use of *LS Test Builder* by 2300%. During the 2006-2007 school year, 100,000 tests were taken online by students using *LS Test Builder*. In the same time period, 22,000 tests were created by teachers and 1,769 teachers created 10 or more tests each.

In order to understand this significant and unprecedented increase in use, LearningStation asked Interactive, Inc., a “gold standard” evaluator listed on the US Department of Education's *Registry of Outcomes Evaluators*, to measure how and how easily teachers were using the product. We tested the ability of

Kansas teachers to use *LS Test Builder* in creating, assigning and sharing standards-based formative assessments in reading, math and science.

4.0 About LS Test Builder

LS Test Builder is an e-learning tool that enables standards-aligned formative assessment and targeted, integrated instruction. *LS Test Builder* provides an intuitive online environment for educators to create and deliver standards-based formative practice tests to prepare their students for state-mandated tests.

LS Test Builder's easy-to-use, teacher-inspired interface allows educators to create tests using custom, district-provided, or state-released practice questions. The pool of items is drawn from nearly nine thousand preloaded standards-aligned test questions for language arts, math, social studies and science in grades three through high school. The product allows teachers to save and share tests with other educators within their schools and districts. Teachers assign tests to students who then log in and complete them in an intuitive online environment. Teachers and administrators at the school or district level can then evaluate student and class performance through a variety of reports. *LS Test Builder* reports also include links to targeted instructional resources, providing teachers with an easy link between assessment results and remediation resources.

5.0 Sample and Study Conditions

We recruited 25 volunteer teachers from Kansas schools both public and private. Some teachers had used *LS Test Builder* before while others had not. Two school principals were also included in the study. Each participant was given a set of three tasks to complete during a telephone interview. Each created three tests, one in language arts, one in science and one in social studies. The tests were created using fourth-, seventh- or tenth-grade test items with the grade level determined by the grade level experience of the participant.

Most studies of education technology use indirect measures; many explore what teachers recall or what they believe. Instead, we measured teachers' use of *LS Test Builder* directly by watching the teachers as they completed their assigned tasks. We launched *LS Test Builder*, a web-based product, on an Interactive, Inc. computer in Virginia and then allowed teachers in Kansas, looking at their own computer monitors, to control the cursor on our screen. To do this, we used Glance™, a simple one-button screen sharing service that lets users show their live computer screen to anyone online [www.glance.net v 2.3.2.59, © 2004-07]. Each teacher was interviewed individually and asked to complete their three assigned tasks while we timed their navigation of the system and made note of their comments. Upon the start of the interview, each teacher was asked if she or he could see *LS Test Builder* on their monitor and if they were able to take

control of the cursor. The only other instructions were, “Please start any time you would like.”

Note Bene: When we began to watch teachers work, those with *LS Test Builder* experience remarked, for example, “Gee, this is much slower than when I use this at school.” It was apparent that the Glance technology noticeably slowed the teachers’ navigation of the product. The results reported here are based on data collected through the web-conferencing capability but have been adjusted by comparing the speed with which teachers completed identical tasks with and without Glance. Seven teachers performed the same tasks without Glance in 56% of the time spent when Glance was used. The results reported have been adjusted to remove the web-conferencing delay.

6.0 Results from Direct Measurement of Teacher Use

We have two measures of time spent completing these tests. The first is the total time spent on each activity the teachers completed in *LS Test Builder*.

- (1) Accessing the product
- (2) Locating the relevant grade level topic and standards-aligned test items
- (3) Reading the relevant test questions or items
- (4) Selecting ten or more questions to include on the test
- (5) Assigning the test to a class of students
- (6) Sharing the test (making it available to other educators within the school or district)

The second measure, test creation and assignment time, includes only the time needed for teachers to create and assign tests to students. (This includes activities one through five in the above list.)

| Reading: Creating Tests with <i>LS Test Builder</i> (N=25; time in minutes) | |
|--|-----------------------------------|
| Total time | Test creation and assignment time |
| 3.46 | 3:11 |

| Math: Creating Tests with <i>LS Test Builder</i> (N=25; time in minutes) | |
|---|-----------------------------------|
| Total time | Test creation and assignment time |
| 2.00 | 1:45 |

| Science: Creating Tests with <i>LS Test Builder</i> (N=25; time in minutes) | |
|--|-----------------------------------|
| Total time | Test creation and assignment time |
| 1.50 | 1:38 |

As evidenced by the times presented above, teachers were able to create standards-aligned reading tests and assign them to students in less than four minutes. Tests for math and for science took half that time.

The three tables above are shown in the order that each teacher performed the test creation task. Note that as teachers created the tests, the average time necessary to construct a test drops by more than half. Because *LS Test Builder* is so easy to use, even novice users became very adept very quickly.

The next table shows timing calculations taken from experienced *LS Test Builder* users. This group was able to get tests created and shared in less than three minutes for reading, two minutes for math, and one minute thirty-nine seconds for science. (For the sake of comparison, the time value for the total group is included in parenthesis next to the time value for the teachers with prior experience.)

| Teachers with prior <i>LS Test Builder</i> experience | |
|--|-----------------------------------|
| Reading: (N=8; time in minutes) | |
| Total time | Test creation and assignment time |
| 2:55 (3:46) | 2:23 (3:11) |
| Math: (N=8; time in minutes) | |
| Total time | Test creation and assignment time |
| 2:00 (2:00) | 1:49 (1:45) |
| Science: (N=8; time in minutes) | |
| Total time | Test creation and assignment time |
| 1:39 (1:50) | 1:23 (1:38) |

7.0 Teachers' Evaluations of *LS Test Builder*

At the end of the teachers' interaction with *LS Test Builder*, we asked them to evaluate *LS Test Builder's* value as a formative assessment tool and to give the product a letter grade. The median teacher gave the product an "A," 4.0 on a 4-point scale. (The mean was 3.47). The most enthusiastic teachers volunteered how easy *LS Test Builder* was to use, especially compared to other systems. For example, one teacher said, "It's simple; it takes out the guess work." Another teacher quipped, "I love it. It makes it easy to choose the right questions." Others loved "how easy it was to find things" and would have given it "above an A" if they could have. Overall, 15 of the 25 interviewed specifically mentioned its ease of use.

LS Test Builder returns student test results instantly to teachers and administrators. With simple, easy access to timely student performance data, teachers are more equipped than ever to refine and target their instruction.

8.0 Results from LearningStation's Customer Satisfaction Research

Interactive, Inc. also analyzed the results of a customer satisfaction survey conducted by LearningStation in December 2007. Eighty-nine percent of the Kansas central office administrators who responded to the survey said that assessment is "very important" to their schools. Fifty-four percent of both administrators and teachers credited LearningStation's suite of products, including *LS Test Builder*, with making a positive impact on student achievement. One central office administrator noted the tool's "Easy connection between assessment needs and re-teaching websites." Two-thirds of the responding Kansas administrators recognized the benefit of gathering and analyzing data online. Forty-five percent of district administrators said LearningStation saves them money.

Three-fourths of the responding Kansas teachers rated assessment as "very important" to their classroom instruction. Forty percent reported using assessment at least weekly if not more frequently. More than 60% of the classroom teacher respondents praised *LS Test Builder* for giving them access to assessment data.

9.0 Discussion

Teachers are practitioners, not analysts. With conventional systems, they do not have the time to create tests and collect data. One state is in the top 10 of UPS customers just by shipping test booklets. That is not fast enough for teachers who have a weekly if not daily need to know how best to proceed instructionally with particular students or groups. Using assessment data to improve instruction will stop at the classroom door unless we find seamless and quick ways to support teachers.

The Broad Foundation has been spending \$100 million a year on school improvement. When the foundation visited prospects for the Broad Prize for Urban Schools, they found that all five of the top candidates had a similar feature: "Teachers thrive when... they have immediate access to data about their students' progress." (Tim DeRoche, "Not Just a Necessary Evil: When Teachers Embrace Standards and Testing", *Education Week*, v 24, n 13, November 24, 2004, p 44) A Texas district's language arts specialist started out skeptical but concluded, "We've allowed the assessments to tell us where kids are, so we can teach to their needs... When teachers see measurable success, they feel good." Or, as a member of a Broad Prize winning district's collective bargaining team concluded, "Some of the teachers who were the loudest resisters have come back to me and said, 'Hey, this thing works.'" All of the districts in the final competition had higher achievement compared with others with similar levels of poverty and all were using interim assessment data to differentiate instruction.

In Wyoming, 85% of district superintendents said they wanted formative assessment data on every child (Wyoming Assessment and Accountability Task Force, May 2004). Still, many teachers resist more testing. They believe that they don't have the time for the laborious business of creating quizzes as frequently as Kansas teachers have begun to do. And, if the items are not aligned to state standards, the tests will be less useful. Like many school improvement techniques, assessment has been promising but not much implemented.

Kansas is clearly different as evidenced last year with 100,000 tests taken online with *LS Test Builder*, 22,000 teacher-made tests created, and 1,769 teachers building more than 10 tests or quizzes each.

About LearningStation, Inc.

LearningStation, a leading provider of customized e-learning tools for K- 12 classrooms, connects administrators, teachers, parents, and students to maximize the digital classroom and improve student achievement. Schools use LearningStation's innovative solutions to evaluate and address individual student needs with *LS Test Builder*, a standards-aligned formative assessment and integrated instruction tool; communicate with students and families through LS Teacher Pages, an easy-to-use Web site creation tool; store and share files simply and securely online with the Education Backpack; and engage students with integrated online content that fits seamlessly into class assignments. LearningStation has been honored by several groups in the learning industry for its significant contributions to the growth of education technology. For more information about LearningStation and its solutions, please visit <http://www.learningstation.com>.

About Interactive, Inc.

The company provides third-party and independent analysis of student and school improvement results for states, school districts, foundations and private organizations. Interactive, Inc.'s managing director, Dale Mann, is a professor emeritus at Teachers College, Columbia University.