School and Student Data-Driven Structured Assessment

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Introduction

Data-Driven Assessment

Research shows a relationship of student success through interventions that are based on formative data designed to give feedback to teachers, parents, school leaders, and students. These systems of feedback are structured to provide coherence that allows intervention, assessments, and actuation to take place. School districts, teachers, and students can use quantitative and qualitative data to make changes in teaching policies and learning outcomes (Halverson, 2007; Noyce, Perda, & Traver, 2000).

Most of the data used in formative feedback comes from standardized curriculum that is aligned with criteria based learning outcomes. The measurements obtained from assessments are also standardized and therefore designed to be statistically analyzed (Wagner, 2008).

The structure of a formative feedback system comes from research done on organizational theory by Peter Senge (2006) in that schools are seen as "complex, messy organizations that issue conflicting performance signals". The goal of formative assessment is to bring together this information both quantitative and qualitative for the purpose of intervention (Halverson, 2007). In order to determine the value of the data, schools must provide training in using this data to improve the achievement gaps and provide behavioral as well as academic intervention.(Lane, 2007).

Looped System: Formative assessment involves a looped feedback system that is interdependent on the collect of data, the analysis of data, and the time and space for the users of the data to actuate (design or redesign) instructional and assessment practices in order to improve student learning (Halverson, 2007).

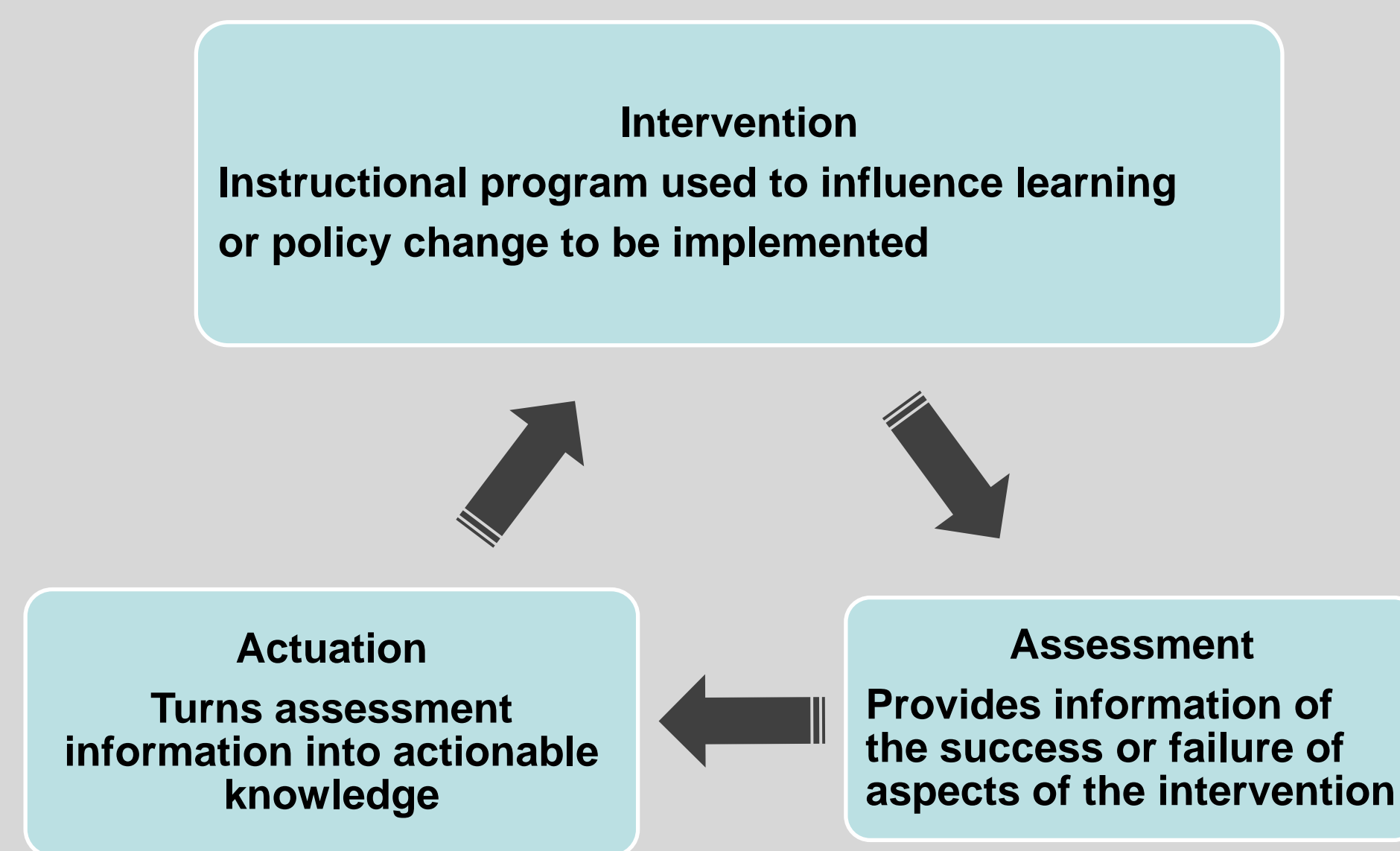Figure1 shows the model of this looped system and the interactive relationship that is established.

Intervention
Instructional program used to influence learning or policy change to be implemented

Actuation
Turns assessment information into actionable knowledge

Assessment
Provides information of the success or failure of aspects of the intervention

Figure 1. Looped System

Creating a Data-Driven School Culture

The Data Driven Instructional Systems School (DDIS)

At times it may be difficult to determine if a school is a DDIS as the student targeted feedback flows easily from teacher to student and from student to teacher. While this may seem natural and effortless, a great deal of training and practice has occurred. This happens when teachers and school leaders are committed to carving out the time it takes for training and to work with the data for each student. Much like an IEP, the formative assessments that are a result of this effort provide information for individual differentiated learning for each students who shows signs that they may be struggling with a subject or one are of a subject. Rather than wait until the end of the year and summative assessments that show that a student may be at risk for failure, formative assessment helps the teacher, parent, and student recognize when and what type of intervention will help the student succeed (Halverson, 2010).

According to Kofman & Senge (2001), Formative assessment helps an organization look at their issues systemically when they become aware that "parts and the whole operate in a circle of self-generation". It is not enough to react to problems when the "whole" of the issue has grown to the point that it takes a major overhaul to fix it. If we could see that the "parts", which we can fix and adjust as we go through the use of data, will ultimately result in the "whole" either functioning at a high level, or it will have been changed, somewhere through the assessment process, into a something that is more adapted to the future. This is what occurs when data is used to intervene in our educational system.

The following 2. describes the steps that a teacher, school, or district within a DDIS model to approach a goal, either as a district or for an individual student/

What information is wanted?	How will information be found?	What will be done with the information?
Current District Goals	Form Data team Conduct inventory of data currently available Assess current technology to perform data analysis (SPSS) Available time by team to collect and interpret data	Does this data show an area that can be improved? Have we used previously collected data to form current policies or learning outcomes? If not, is there a need to determine why this information was not used and how to prevent the waste of time that involves. Present information to interested parties that have a stake in making decisions based on this information
Using the Data	Identify indicators of input, process, and outcome variables related to goal Determine which additional data should be collected, i.e., student portfolios, student attendance, budget information, etc. Analyze and disaggregate data	Establish benchmarks and measure progress toward goals Develop action or school improvement plans through actuation teams Communicate findings
		Figure 2 adapted from Noyce, et al.,2000.

Types of Assessments

Formative vs. Summative

Classroom assessments can vary from anecdotal notes taken observing a student to standardized tests. These options are divided into two categories -- formative assessments and summative assessments.

Formative assessments are on-going assessments, reviews, and observations in that Teachers use in a classroom to improve instructional methods and student feedback throughout the teaching and learning process. As a tool for intervention formative assessment allows for interventions to be adapted as needed in a timely manner. Students can use formative assessments to monitor their own learning. The results of formative assessments are used to modify and validate instruction.

Summative assessments are typically used to evaluate the effectiveness of instructional programs and services at the end of an academic year or at a pre-determined time. The goal of summative assessments is to make a monitor student competency after an instructional phase is complete. For instance the Oregon State Testing, OAKES , is a standardized test that measures a students mastery when compared to other students or benchmarks, Summative evaluations are used to determine if students have mastered specific competencies and to identify instructional areas that need additional attention. They are the assessment used by districts and states to compare their learning outcomes.

Adapted from website: http://fcit.usf.edu/assessment/basic/basica.html

The following table highlights some formative and summative assessments that are common in K12 schools.

Formative – Qualitative or Quantitative	Summative- Primarily Quantitative (Some programs may require additional portfolio such as art, architecture, and performing arts)
Anecdotal Records (portfolios, behavioral referrals, attendance, teacher comments, RTI)	Final Exams
Quizzes and Essays (Chapter, Open Ended Tests)	Statewide Standardized Tests
Diagnostic Tests (Reading, Math Placement	National Tests (MCAT, LSAT, MSAT)
Lab Reports	College Entrance Exams (SAT, ACT)

Technology and DDIS Schools

Technology

An important tool in Formative is the computer software that allows for data capture for each student allowing for individualized interventions based on formative, summative, and demographic assessments. The chart below is a snapshot of a student tracking screen. This is part of the Springfield School program and is used by actuation teams as well as district staff for administrative purposes. This chart is reprinted with permission by Matt Coleman, Director of Secondary Education for Springfield School District.

DDIS Schools and Curriculum

As schools and districts look at new curriculum packages, formative actuation groups are able to help with these decisions. When faced with the need to adopt new curriculum that aligns with state mandates for Common Core Standards, one school district , Silver Falls, used an actuation team to assess its current curriculum with the new stated goals. In order to do so, the use of student data from state tests showed gaps and inconsistancies in student achievement. After determining what were the needed interventions, the teams then turned to the new curriculum programs to find those that best aligned with their needs. They looked at student data from other schools who were using various curriculum packages. After comparing these, they were able to adopt the program that best met the needs of their students and teachers (Noyce, et al., 2000).

Recommendations

The need for formative assessment will increase as schools are increasingly responsible for accountability of student success. It is difficult to plan for intervention if there is not a clear path based on data. The field of Special Education has long been required to collect and use data of students to develop IEPs. Government programs, such as the reauthorization of IDEA (2004) called for whole-school approaches and scientifically based early interventions to reduce the number of children labeled as disabled (Lane, 2007). Through consistent use of formative assessment, consistent actuation teams, and data based early intervention for every student we can reduce the number of students who are failing and placed at-risk of unnecessary labeling. We can do a better job of educating students.

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