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Research Brief

Mastery Learning

Questions: What is mastery learning? How can we motivate students without grades? What are examples of schools that have moved in this direction?

Summary of Findings:

In this era of high stakes testing, accountability, and preparing students for higher education and the world of work, schools are pressured to assure that all students learn and achieve at high levels. Today's students, referred to as the Millennials, learn dissimilarly from previous generations. Yet it often appears that they are expected to learn in the same ways as their predecessors (Davis & Sorrell, 1995). Given these demands, schools are searching for programs that will help students meet new academic targets.

Once again schools are considering an instructional program first introduced nearly 70 years ago---mastery or standardized learning. Its premise is that "…students achieve the same level of content mastery but at different time intervals…before they are allowed to progress to the next (level)" (Davis & Sorrell, 1995). Expectations remain the same for all students but the time required to meet those expectations may vary.

What is Mastery Learning?

Mastery learning differs from traditional curricular programs. The emphasis is on assuring that every student achieves or "masters" the curriculum and only moves ahead once demonstrating an acceptable level of performance. It is anchored in the work of Benjamin Bloom (1976, 1981) and often associated with the emphasis on standards-based curriculum.

Guskey and Bailey (2001) report that mastery learning curricula are characterized by the following:

- Curriculum is developed into a series of units and taught to students.
- Students complete a formative assessment that may include a variety of strategies such as quizzes, compositions, reports, or performance events.
- Students not at mastery get another opportunity by participating in additional instruction, and time to learn the content.
- Students who demonstrate mastery participate in enrichment activities to broaden and extend their learning.

The Johnson City (NY) Public Schools implemented a mastery learning program for more than fourteen years. External evaluators found positive impact on student learning when compared to other districts with a similar demographic profile (Desmond, 1996).

A list of the benefits of a mastery learning program are available at http://www.sbsadams50.org/Benefits.html.

Implementation Issues

As with any instructional program, some common implementation issues emerge when considering mastery learning. They include grading and college admission.

Grading in a Mastery Learning School – Perhaps the issue of greatest concern is how to grade students in a mastery learning environment. Teachers fear that students will not be motivated to do well. Most teachers set mastery at the level of an "A" or at least a "B." Students are given multiple

opportunities using varied assessments to meet mastery. Schools implementing a mastery learning model found that students were motivated by success.

The evidence is that mastery learning can be subverted in schools where students compete for grades, receive additional points for attendance or effort, are rewarded with high grades for initial learning, but not mastery, or receive partial credit for second or third opportunities (Guskey & Bailey, 2001).

Successful grading systems in mastery learning are:

- criterion referenced;
- clear about learning expectations and targets;
- assign lowest grades to initial mastery and highest grades to complete mastery;
- provide high grades for satisfactorily completing enrichment projects that go beyond initial learning;
- often use a "Mastery vs. Non-Mastery" or "Pass vs. Incomplete or Not Pass" grading scale.

Graduation and College Admission – Teachers, students and parents are often concerned about college admission in a mastery learning program. There is no evidence that students are at a disadvantage. Most colleges and universities use multiple assessments including the high school transcript, class rank, written essays, ACT or SAT scores, and a review of extra-curricular activities. Adams County School District 50 (CO) found that admissions officers take these factors into account not just grade point average.

In Adams 50 the district decided that the grading scale will be converted into traditional transcripts with Carnegie units and a listing of upper level courses. Based on the experience of other school districts with a mastery learning system, their students have not had difficulty being admitted to colleges or universities. The districts report that they have a higher number of students being admitted to college than under traditional systems.

Effectiveness of Mastery Learning Programs

Several meta-analyses of mastery learning programs (Guskey & Gates, 1986; Guskey & Pigott, 1988; Kulik, Kulik & Banger-Downs, 1990) examined the impact on student achievement, retention, student affect and teacher issues. They found that achievement results were positive. "Students in mastery learning programs at all levels showed increased gains in achievement over those in traditional instruction programs" (Davis & Sorrell, 1995). Students also retained what they learned longer and required less remediation over time. Further, students developed more positive attitudes about learning and their ability to learn. Finally, teachers implementing mastery learning developed more positive attitudes about teaching, held higher expectations for students and took more responsibility for meeting learning outcomes.

Kulik, Kulik and Bangert-Downs (1990) found a positive relationship between student attitudes toward instruction and content of mastery learning programs. The benefits from mastery learning were found to be enduring, not short term. After several weeks of instruction students continued to have higher mastery scores than those of students in traditional classes. The data found that low aptitude students had greater gains than high aptitude students.

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In the Chugach School District in Alaska, composite scores on standardized achievement tests increased from the 28th percentile to the 71st percentile in five years. There was a 43 point increase in reading and a 24 point increase in mathematics.

Key Planning and Implementation Issues

- All stakeholders should have input into the plan
- Determine the target goals
- Program should be guided by shared values
- Outcomes should be identified first
- Evidence of acceptable mastery must be developed
- Monitoring systems must be determined
- It is recommended that this program be implemented all at once, not phased in
- Students are expected to develop the same basic skills and move forward when they have achieved mastery
- Students are not given letter grades
- Students graduate when they have met mastery in all of the applicable areas
- The diploma indicates the strengths of each student
- Each student is on an ILP (Individualized Learning Plan)
- There are a variety of assessments used such as observations, interviews, video/audio tapes, projects, tests, experiential performances and portfolios

Implications for Implementation

- Monitoring of student performance on standards
- As students move through the curriculum, once they master a curricular unit it may mean that students will work more individually
- If implemented in a larger school, teachers could specialize so they do not need to cover numerous levels and a myriad of content
- Plans must be in place to support students when they do not initially master the content
- Some personnel are concerned about how colleges and universities will view students who complete a mastery learning program.

Districts Implementing Mastery Learning

Few districts have implemented a mastery learning program. However, several have adopted the approach in select classes or grade levels. These districts have launched mastery learning initiatives.

Adams County School District 50, Colorado – This district of nearly 10,000 students began their "Standards-Based" program in August 2009. Complete details about their program, grading, college admission and other implementation issues is available at www.sbsadams50.org.

Chugach School District, Alaska – This small, rural Alaska district has had a mastery learning program for several years. Details about the district are available at www.chugachschools.com.

Sweetwater Unified School District, Chula Vista, California – This district has adopted a strategic goal to begin a mastery learning approach. They are currently developing systems for implementing the approach. Details are available at www.suhsd.k12.ca.us/index.asp.

Denali Borough School District, Alaska – This is another small Alaska district that has a mastery learning approach. Information about the district can be obtained at www.dbsd.org.

Online Resources:

- Berliner, D. C. (1990). What's all the fuss about instructional time? Retrieved online from http://courses.ed.asu.edu/berliner/readings/fuss/fuss.htm
  The varied ways in which students are engaged in learning and the different types of time spent in that pursuit is explored in this article.

- Davis, D. & Sorrell, J. (1995). Mastery learning in public schools. Retrieved online from http://chiron.valdosta.edu/whuitt/files/mastlear.html
  This site provides a description of mastery learning and extensive evaluation data mastery learning programs.

- Evaluating a Mastery Learning High School. Retrieved online from http://eric.ed.gov/ERICWebPortal/custom/portlets/recordDetails/detailmini.jsp?_nfpb=true&_&ERICExtSearch_SearchValue_0=ED293812&ERICExtSearch_SearchType_0=no&accno=ED293812
  This site provides information about assessing a mastery learning program.

- Mastery Learning Annotated Bibliography. Retrieved online from http://www.jimschools.com/articles/mastery_learning_annotated_bibliography.htm.
  This site provides a useful set of references on mastery learning.

- Chugach School District, AK. Standards-based system. Retrieved online from http://www.chugachschools.com/standards_based_system/index.html
  This site provides links to this district's standards-based system that include narratives, descriptions and videos on its different components.

- Denali Peak Handbook, 2008-2009. Retrieved online from http://denali.ak.schoolwebpages.com/education/components/docmgr/default.php?sectiondetailid=2001&fileitem=826&catfilter=163&PHPSESSID=5776cf87baad9b6a37ca1ce9a4ed2264
  This handbook sets out all of the guidelines for this home school program where students can either follow a standards-based or traditional program.

- Meyer, J. P. (2008, December 21). Adams 50 skips grades, lets kids be the pacesetters. Retrieved online from http://www.denverpost.com/news/ci_11280071
  This article provides an overview of the plan to switch to standards based assessment in one district in CO.

- Re-Inventing Schools Coalition. (RISC). Retrieved online from http://www.reinventingschools.org/
  Home site that includes informative videos about shared vision, leadership, standards-based design, and continuous improvement.

- Rubenstein, G. (2007). How to: Get a whole community on board for school reform. Retrieved online from http://www.edutopia.org/how-to-community-school-reform
  Components of standardized learning programs are provided in this piece.

- Rubenstein, G. (2007). Northern lights: These schools literally leave no child behind. Retrieved online from http://www.edutopia.org/chugach-school-district-reform
  This article provides general information on the standards-based program in the Chugach School District.

- State of Washington K-12 accountability for student achievement in the next decade. (2006). Retrieved online from http://www.wasa-oly.org/Content/NavigationMenu/ABOUTWASA/News/WhitePapers/accountability_sep06.pdf
  Questions to consider when setting up standards and accountability for schools are briefly described in this piece.

Print Resources

The following print materials provide additional information about mastery learning.

Gentile, J. R. & Lalley, J. P. (2003). *Standards and mastery learning: Aligning teaching and assessment so all children can learn*. Thousand Oaks, CA: Corwin.

Guskey, T. & Bailey, J. (2001). *Developing grading and reporting systems for student learning. Thousand Oaks, CA: Corwin.*

Desmond, Cheryl (1996). *Shaping the Culture of Schooling: The Rise of Outcome-Based Education*. Albany, NY: State University of New York Press.

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