Marshall Memo 194

A Weekly Round-up of Important Ideas and Research in K-12 Education
July 16, 2007

In This Issue:

Quotes of the Week

"Our results suggest that American educators need to question their long-held assumption that an individualized learning experience is inherently a higher-quality, more effective experience than is a whole-class learning experience."

James Stigler and Harold Stevenson (see item #1)

"While American schools attempt to solve the problems of diversity by segregating children into different groups or different classrooms, and by spending large amounts of regular class time working with individual students, Asian teachers believe that the only way they can cope with the problem is by devising teaching techniques that accommodate the different interests and backgrounds of the children in their classrooms."

James Stigler and Harold Stevenson (*ibid.*)

"Asian teachers are not born great teachers; they and the lessons they develop require careful nurturing and constant refinement."

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"Surely the most immediate and pressing task in educating young students is to create a new type of school environment, one where great lessons are a commonplace occurrence. In order to do this, we must ask how we can institute reforms that will make it possible for American teachers to practice their profession under conditions that are as favorable for their own professional development and for the education of children as those that exist in Asia."

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"Guiding statements are rarely used for anything other than an occasional, symbolic group hug."

Lew Allen (see item #2)

"People will not work hard to implement guiding statements that are simply handed to them, Moses being a notable exception."

Lew Allen (*ibid.*)

1. How Asian Teachers Polish Lessons to Perfection (an oldie but goodie)

In this 1991 *American Educator* article, psychology professors James Stigler and Harold Stevenson compare math teaching in Asian and American elementary schools. "Although there is no overall difference in intelligence," say the authors, "the differences in mathematical achievement of American children and their Asian counterparts are staggering." Comparing math computation and problem solving skills in representative classrooms in Taiwan, Japan, China, and the U.S., they found that American students consistently scored way behind. Why?

Cultural beliefs about effort versus ability, as well as more instructional time, are part of the Asian advantage, acknowledge Stigler and Stevenson. But they believe that a significant part of the achievement gap comes from much more effective lessons in Asian schools. Here are some characteristics of Japanese and Chinese classes:

- Coherent lessons presented in a thoughtful, relaxed, non-authoritarian manner;
- Much more whole-group instruction than in American classrooms – but very little lecturing;
- Students frequently used as sources of information;
- Oriented toward problem-solving rather than rote mastery of facts and procedures;
- Students constantly asked to produce, explain, and evaluate solutions;
- Making use of many types of concrete, everyday materials;
- The teacher as knowledgeable guide rather than prime dispenser of information and arbiter of what is correct.

These lessons "do not come effortlessly or magically," say the authors. "Asian teachers are not born great teachers; they and the lessons they develop require careful nurturing and constant refinement." Here are the researchers' findings on the most important elements:

• *Coherence* – Most Asian teachers' lessons are like a good story, with a beginning, middle, and conclusion and a consistent theme – presenting a problem and seeing it through to its solution – all designed to fit within a 45- or 50-minute class period. Here's a sample Japanese fifth-grade lesson on fractions:

- The teacher walks in carrying a large paper bag full of clinking glass objects and students become increasingly curious as she takes out its contents and puts a variety of containers on her desk: a pitcher, a vase, a beer bottle, a teapot, and two others.

- "I wonder which one would hold the most water?" asks the teacher and accepts guesses from several students. Noting that students guessed differently, she asks, "How can we know who is correct?" The kids are intrigued.
- Students agree that they need to fill the containers with something – water would be easiest – and students are dispatched to fill several buckets. "Now what do we do?" asks the teacher. After more discussion, students decide they can use a drinking cup to measure, and one student warns that they need to be careful to fill it to the same level as they measure the different containers.
- The teacher then breaks the class into six groups, each with one of the glass containers and a drinking cup. Students measure their container and write their findings in their notebooks. The teacher then has each group leader report out and writes the results on the blackboard, charting all six containers' volume in a rough bar graph.
- The teacher then arranges the original containers in volume order and writes the rank order on each, from 1 to 6. She wraps up the lesson by reviewing what they have done. She doesn't give definitions or tell students how to make a graph – all that was obvious as the lesson unfolded.

Well-crafted lessons like this, say Stigler and Stevenson, are the norm in Asian classrooms. Most begin with a practical problem that needs to be solved, and often the entire lesson is devoted to that one problem. Asian teachers also place great emphasis on summarizing and wrapping up the lesson at the end.

Most American math lessons, say the authors, are models of *incoherence*, both in their design and in the number of times they are interrupted. Stigler and Stevenson describe a typical example from a Chicago-area classroom. The teacher gets students' attention and announces that it's band day and several students need to go to the band room. The teacher then asks several other students to go to a corner to work on the day's news report, and then goes over the previous night's homework with the remaining students. He then asks students to do some problems on the blackboard and spends the remainder of the period circulating around the room, working with individual students, occasionally saying "shhh" to students who are talking. Many American teachers, say the authors, try to keep students' attention by shifting frequently from topic to topic. Asian teachers stick to one topic but introduce variety by using different materials, examples, and activities.

• *More teacher-student instruction* – Asian students receive much more direct teaching than American students, whether it occurs in a whole-class lesson, small-group attention, or one-on-one help. "In Taiwan, the teacher was the leader of the child's activity 90 percent of the time, as opposed to 74 percent in Japan, and only 46 percent in the United States," write the authors. Students were working on their own without direct instruction 51 percent of the time in the U.S. and only 9 percent in Taiwan. This is true because American teachers spend much more time working individually with students, which cuts down dramatically on the amount of time they are instructing the whole class or small groups and greatly increases the amount of time students are working on their own.

"Children can learn without a teacher," concede Stigler and Stevenson. "Nevertheless, it seems likely that they could profit from having their teacher as the leader of their activities more than half of the time they are in the classroom. It is the incredibly large amounts of time that American children are left unassisted and the effect that unattended time has on the coherence of the larger lesson that is the problem. When children must work alone for long periods of time without guidance or reaction from the teacher, they begin to lose focus on the purpose of their activity." The researchers noticed that seatwork in American classrooms was rarely discussed, tied into the lesson, or evaluated.

Asian teachers assign less seatwork, but when they do assign it, it's usually in short bursts alternating with group discussion of problems the whole class is working on. "Seatwork is thereby embedded into the lesson," explain the researchers. "After they work individually or in small groups on a problem, Asian students are called upon to present and defend the solutions they came up with. Thus, instruction, practice, and evaluation are tightly interwoven into a coherent whole."

When Asian teachers are instructing the whole class, say Stigler and Stevenson, they are not just lecturing to passive students. "They present interesting problems; they pose provocative questions; they probe and guide. The students work hard, generating multiple approaches to a solution, explaining the rationale behind their methods, and making good use of wrong answers."

• *Making good use of student diversity* – Most American teachers operate on the assumption that it's impossible to differentiate to meet the needs of diverse learners while instructing the whole class. This is why they spend so much time doing small-group and individual work. But this assumption is not shared in the East. "Asian teachers," say Stigler and Stevenson, "are more comfortable in the belief that all children, with proper effort, can take advantage of a uniform educational experience, and so they are able to focus on providing the same high-quality experience to all students. Our results suggest that American educators need to question their long-held assumption that an individualized learning experience is inherently a higher-quality, more effective experience than is a whole-class learning experience."

But don't Asian teachers have an advantage because their classes are more homogeneous, making whole-class instruction easier? Not so, say Stigler and Stevenson. They found similar amounts of academic diversity within Asian and American classrooms. "What impedes teaching," they write, "is the uneven preparation of children for the academic tasks that must be accomplished. It is diversity in children's educational backgrounds, not in their social and cultural backgrounds, that poses the greatest problems in teaching." There are wide achievement gaps within the U.S., but disparities are more pronounced *between* neighborhoods and schools than *within* individual classrooms. Thus, Asian teachers face about the same degree of diversity as they teach; in addition, there is no tracking in Asian elementary schools, students are not grouped by achievement within classrooms, no students are pulled out for special-education services, and classes are significantly larger. Hardly less challenging instructionally!

So how do Asian teachers handle learning differences without tailoring instruction to each student? First, they pose provocative, well-thought-out questions that intrigue students of widely differing backgrounds, and watch as students process these stimuli in different ways. Second, they use a variety of approaches in their teaching – whole-group presentation, working with concrete materials, individual practice, small-group work – so that students who don't get a concept through one approach have a chance to grasp it when another is used. Third, they *use* the diversity within their classrooms, asking students to come up with different solutions to problems. Finally, they use incorrect solutions as teachable moments, and all students learn from these discussions. Stigler and Stevenson conclude: "While American schools attempt to solve the problems of diversity by segregating children into different groups or different classrooms, and by spending large amounts of regular class time working with individual students, Asian teachers believe that the only way they can cope with the problem is by devising teaching techniques that accommodate the different interests and backgrounds of the children in their classrooms."

• *Using real-world problems and objects* – Stigler and Stevenson found that American teachers are much more likely to introduce a math topic with abstract terms. For example, in an introductory lesson on fractions, a U.S. teacher told students the definition of a fraction and then taught them the terms numerator and denominator. "What do we call this?" she asked. "And this?" When she was satisfied that students understood, she spent the rest of the lesson teaching them how to apply the rules to writing fractions.

By contrast, a Japanese teacher directed students' attention to a large beaker and asked them how many liters of juice it contained. Several students made guesses, and the teacher then had students pour the juice into liter beakers with horizontal lines dividing it into thirds. The juice filled one beaker and came up to the first line on the second. This was repeated with a second container with one mark half-way up, and the juice came up to the half-way mark. The teacher said that there had been one and one-out-of-three liters of juice in the first big beaker and one and one-out-of-two liters in the second, and he wrote the fractions on the board. He then asked students to represent two parts out of three, two parts out of five, and so on. Near the end of the lesson, he mentioned the term "fraction" for the first time and taught the names numerator and denominator. He ended by summarizing how fractions can be used to represent the parts of a whole.

• *Open-ended questions* – American teachers, noticed Stigler and Stevenson, tend to ask questions to get an answer – usually a short answer – for example, the correct way to carry out a math procedure. Japanese teachers tend to ask questions to stimulate thought. "A Japanese teacher considers a question to be a poor one if it elicits an immediate answer," say the authors, "for this indicates that students were not challenged to think… One good question can keep a whole class going for a long time; a bad one produces little more than a simple answer." Japanese teachers often talk with their colleagues about how to improve their questions to get students thinking and discussing the material.

• *Consistent concrete materials* – Many American teachers use different hands-on materials to teach math – Popsicle sticks, marbles, Cheerios, M&Ms, checkers, poker chips,

plastic animals – hoping that the variety will keep students engaged. Most Asian students are issued a kit of standard manipulatives that they use throughout the elementary grades. Stigler and Stevenson believe this approach is less confusing to students; by learning addition using the tiles in their kits, for example, they are more likely to be able to learn multiplication using the same tiles. By skillful use of these kits, Asian teachers are able to introduce more advanced concepts to their students at an earlier age.

• *Students constructing multiple solutions* – "Chinese and Japanese teachers rely on students to generate ideas and evaluate the correctness of the ideas," write Stigler and Stevenson. "American teachers generally pose questions that are answerable with a yes or no or with a short phrase" – and they call on students until one comes up with the right answer. "This kind of interchange does not establish the student as a valid source of information," say the authors, "for the final arbiter of the correctness of the student's opinions is still the teacher. The situation is very different in Asian classrooms, where children are likely to be asked to explain their answers and other children are then called upon to evaluate their correctness."

The Asian approach keeps students alert and, more importantly, gives them constant practice in the basic mathematical process of argument and proof. Here's an example: A Taiwanese fifth-grade teacher begins a lesson by drawing a six-sided figure on the board and asking students how they would go about finding the area of a shaded region. Students worked in small groups for several minutes and then a student from each group described their approach. The teacher asked the other groups if each proposed solution could produce the right answer, and then drew another figure on the board and repeated the small-group/large-group process. Only at the end did they work out the actual answers. In her summary, the teacher emphasized the importance of coming up with multiple solutions. "After all," she said, "we face many problems every day in the real world. We have to remember that there is not only one way we can solve each problem."

• *Error analysis, not praise* – "The most frequent form of evaluation used by American teachers was praise," say Stigler and Stevenson, "a technique that was rarely used in either Taiwan or Japan." Asian teachers are much more likely to use students' *errors* as teachable moments. Why not compliment students on correct answers? "Praise serves to cut off discussion and to highlight the teacher's role as the authority," argue the authors. "It also encourages children to be satisfied with their performance rather than informing them about where they need improvement… Discussing errors, on the other hand, encourages argument and justification and involves students in the exciting quest of assessing the strengths and weaknesses of the various alternative solutions that have been proposed."

Stigler and Stevenson were struck by how American and Asian children react to making an error. "For Americans, errors tend to be interpreted as an indication of failure in learning the lesson. For Chinese and Japanese, they are an index of what still needs to be learned. These divergent interpretations result in very different reactions to the display of errors – embarrassment on the part of the American children, calm acceptance by Asian children."

The authors describe a Japanese lesson in which the teacher asked students to solve the problem one-third plus one-half. Students worked individually and then were asked to share their answers. One student said the answer was two fifths (he added the numerators and denominators). Without comment, the teacher called on a second student, who said the answer was "two point one plus three point one, when changed into a fraction is five sixths." Again without comment, the teacher called on a third student, who had figured out how to get the common denominator and had the correct answer. The teacher returned to the first solution and had the class discuss how this could not be correct ("It is strange, isn't it, that you could add a number to one-half and get a number that is smaller than one-half?"), and then worked interactively through the second incorrect answer. "Rather than ignoring the incorrect solutions and concentrating her attention on the correct solution," say the authors, "the teacher capitalized on the errors the children made in order to dispel two common misperceptions about fractions."

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So are all Asian teachers superb and all American teachers mediocre? Not by a long shot. Stigler and Stevenson found some ineffective Asian teaching and some stellar American teaching. "But what has impressed us in our personal observations and in the data from our observational studies," they say, "is how remarkably well most Asian teachers teach. It is the *widespread* excellence of Asian class lessons, the high level of performance of the *average* teacher, that is so stunning." The techniques used by Asian teachers aren't novel or exotic, say the authors. In fact, such techniques are often recommended to American teachers. "What the Japanese and Chinese examples demonstrate so compellingly is that when widely implemented, such practices can produce extraordinary outcomes."

So why are these techniques used so much more widely in Asian classrooms? The authors point to several reasons:

First, they say, "is the Asian belief that the whole-group lesson, if done well, can be made to work for every child. With that assumption, Asian teachers can focus on the perfection of that lesson."

Second, American teachers' working conditions are not conducive to the kind of collegial work that has made Asian teaching so good. Asian schools don't have more students per teacher overall, but larger classes free up more time for teachers to meet and work together every day, correct papers, prepare lessons, work with individual children, and attend staff meetings. Asian teachers usually have their desks in a common area, not in their own classrooms, so they are cheek to jowl with colleagues and conversations and sharing happen much more readily. In addition, Asian teachers work a much longer day – 9.5 hours a day in China and 9.1 hours in Taiwan, versus an average of 7.3 hours in the U.S. Many American teachers put in extra hours in the evening and weekends, but those hours are away from their colleagues, which increases their sense of isolation.

Third, many Americans believe that great teachers are born, not made. "We hear this from both teachers and parents," say Stigler and Stevenson. "They seem to believe that good teaching happens if the teacher has a knack with children, gets along well with them, and keeps

them reasonably attentive and enthusiastic about learning." Partly as a result of this belief, many colleges of education don't prepare teachers to prepare good units and lessons, and most teachers have to learn everything on the job, in isolation from their colleagues. Asian teachers, on the other hand, live in a culture that believes strongly that teaching is a science as well as an art, and they undergo a lengthy period of apprenticeship and mentoring.

Fourth, Asian teachers spend a great deal of time discussing, modeling, and watching expert lessons, which are passed down and adapted from generation to generation. The tradition of "lesson study" is especially well established in Japan.

Finally, because all Asian teachers are teaching a national curriculum within the same time frame during each year, it's much easier for teachers to share ideas on lessons and units.

Stigler and Stevenson conclude with these words, which seem as relevant today as when they were in 1991: "It is easy to blame teachers for the problems confronting American education, and this is something that the American public is prone to do. The accusation is unfair. We cannot blame teachers when we deprive them of adequate training and yet expect that on their own they will become innovative teachers; when we cast them in the roles of surrogate parents, counselors, and psychotherapists and still expect them to be effective teachers; and when we keep them so busy in the classroom that they have little time or opportunity for professional development once they have joined the ranks of the teaching profession.

"Surely the most immediate and pressing task in educating young students is to create a new type of school environment, one where great lessons are a commonplace occurrence. In order to do this, we must ask how we can institute reforms that will make it possible for American teachers to practice their profession under conditions that are as favorable for their own professional development and for the education of children as those that exist in Asia."

"How Asian Teachers Polish Each Lesson to Perfection" by James Stigler and Harold Stevenson in *American Educator*, Spring 1991 (p. 12-20, 43-47), no e-link available. This article became part of *The Learning Gap* by the same authors (Summit Books, 1992).

2. Making the Mission Statement REAL (another oldie but goodie)

Every school has a mission statement, says University of Georgia educator Lew Allen in this thoughtful 2001 *Kappan* article. That's because the literature universally supports the importance of a covenant, vision, mission, guiding statement, philosophy, or set of values to guide the work of teachers, administrators, students, and parents. But Allen has found that very few educators can quote the mission statement of the schools they attended as children, in which they currently work, or that their own children attend. "Guiding statements are rarely used for anything other than an occasional, symbolic group hug," he writes.

What's the problem? Allen and his colleagues have identified five reasons why mission statements are so hard to craft – and even more difficult to bring to life.

• *Problem 1: Mission statements are usually so general that nobody can tell what success looks like*. Slogans like *We want our students to reach their full potential mentally, physically, and socially* or *We seek excellence in all we do* are doomed to be forgotten, says

Allen. "A school can never know if its students are reaching their 'full potential' or if they are seeking more 'excellence' this year than last. Such statements are probably meant to set a tone and to inspire people. Instead, they encourage people to ignore them."

• *Problem 2: Guiding statements seldom link desired results with specific teaching and assessment practices.* "This leaves the statements void of any practical implications for what people actually do on a day-to-day basis," writes Allen. They may clarify beliefs, at least in the beginning, but they don't guide actions. "Over time, this lack of action can lead people to conclude that the statements are much ado about nothing."

• *Problem 3: Mission statements are generally too long and too complicated.* "In an effort to cover all bases," says Allen, "people often include every good thing they want for their students. In doing so, they overwhelm themselves with words, water down what is of bottom-line importance to them, and encourage members of the school community to ignore the entire document."

• *Problem 4: Some schools put a variety of sayings, mottos, and quotes in offices, corridors, and classrooms.* This confuses people about what a school is really committed to doing.

• *Problem 5: Few people in the school are part of writing the mission statement.* "People will not work hard to implement guiding statements that are simply handed to them," says Allen, "Moses being a notable exception."

• *Problem 6: The hectic pace of life in schools is not conducive to reflective, ongoing dialogue.* "Everyone is consumed by the issues of the day," writes Allen, "and there is little time or energy for thinking about visions and missions."

Allen goes on to make a series of recommendations to counteract the cynicism-producing effects of these problems:

• *Recommendation 1: Look at your mission statement line by line and cut out anything that isn't measurable* – anything for which you can't hold yourselves accountable. This includes phrases like "we will create a dynamic educational environment" or "we will provide a quality educational program" or "we will develop and support all human resources."

• *Recommendation 2: Include statements that articulate a theory of action about teaching and learning* – for example, "Students learn best when they apply their learning in real-world situations" or "Students learn best when they ask critical, probing questions on the subject matter" or "Students learn best when they are actively engaged in their own learning." Allen gives examples of statements that would *not* guide action and would therefore tend to be ignored: "We will provide courses that will challenge and enlighten all students" and "Our courses will include instruction and experiences that will enhance reading, writing, speaking, listening, and presentation skills."

• *Recommendation 3: Keep the dialogue going to deepen staff understanding of the mission statement's content.* "Without structures that help people explore what is meant by guiding statements," says Allen, "many will conclude that their own actions already embody the beliefs in the statements and won't give them any further thought… Guiding statements

should be seen as catalysts for deep reflection about beliefs and practices – not as vague reminders to do the right thing."

• *Recommendation 4: Ensure that the mission truly guides action* – including hiring, mentoring, staff development, student assessment, teacher evaluation, and relationships with parents. This doesn't mean that everyone has to do the same things in lockstep – innovation and experimentation should still be encouraged – but all efforts should be informed by the same principles and ideals. "Guiding statements should be provocative and challenging, not prescriptive and limiting," says Allen. "They should spark debate and inform action, not encourage compliance and unquestioned routines."

• *Recommendation 5: Principals should ensure that mission statements inform people's actions, including their own*, which means using mission language frequently and walking the talk.

• *Recommendation 6: Periodically look at data to see if the school's mission is becoming a reality*. "A cycle of learning needs to be put in place," says Allen, "that ensures that people in groups and as individuals (a) translate their school's guiding statements into action, (b) link their actions to the effect they have on student learning, (c) reflect on what they have learned, (d) share what they are learning with the entire school community, and (e) plan their next steps."

[Here are two recently-written vision/mission/core values/theory-of-action statements that largely exemplify the principles put forward in this article:

• *Roxbury Prep in Boston, Mass*: "Roxbury Preparatory Charter School prepares its students to enter, succeed in, and graduate from college. Roxbury Prep is founded on the philosophy that all students are entitled to and can succeed in college preparatory programs when: (1) the curriculum is rigorous, engaging, and well-planned; (2) the school emphasizes student character, community responsibility, and exposure to life's possibilities; and (3) a community network supports students' academic, social, and physical well-being."

• *Village Academies Schools in East Harlem, New York*: "Our mission is to develop students of fine character who graduate from college and make a positive contribution to society. The Village Academy model is based on the premise that the single most essential element of an effective school is talented, passionate educators. Therefore the school's core strategy is to attract the best and brightest teachers and staff, provide them with unparalleled support and broad authority, and hold them accountable for results. Village Academy has designed a ground-breaking system of culture and accountability in which excellent educators thrive and all students excel."]

"From Plaques to Practice: How Schools Can Breathe Life Into Their Guiding Beliefs" by Lew Allen in *Phi Delta Kappan*, December 2001 (p. 289-293), no e-link available

Do you have feedback? Is anything missing?

If you have comments or suggestions, if you saw an article or web item in the last week that you think should have been summarized, or if you would like to suggest additional publications that should be covered by the Marshall Memo, please e-mail: kim.marshall8@verizon.net

About the Marshall Memo

Mission and focus:

This weekly memo is designed to keep principals, teachers, superintendents, and others very well-informed on current research and effective practices in K-12 education. Kim Marshall, drawing on 37 years' experience as a teacher, principal, central office administrator, and writer, lightens the load of busy educators by serving as their "designated reader."

To produce the Marshall Memo, Kim subscribes to 44 carefully-chosen publications (see list to the right), sifts through more than a hundred articles each week, and selects 5-10 that have the greatest potential to improve teaching, leadership, and learning. He then writes a brief summary of each article, pulls out several striking quotes, provides e-links to full articles when available, and e-mails the Memo to subscribers every Monday evening (with occasional breaks; there are about 50 issues a year).

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Publications covered

Those read this week are underlined.

American Educator
American School Board Journal
ASCD, CEC SmartBriefs
Atlantic Monthly
Catalyst Chicago
Chronicle of Higher Education
CommonWealth Magazine
Daily EdNews
Ed. Magazine
EDge
Education Digest
Education Gadfly
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Elementary School Journal
Essential Teacher (TESOL)
Harvard Business Review
Harvard Education Letter
Harvard Educational Review
JESPAR
Journal of Staff Development
Language Learner (NABE)
Middle Ground
Middle School Journal
NASSP Bulletin
New York Times
New Yorker
Newsweek
PEN Weekly NewsBlast
Phi Delta Kappan
Principal
Principal Leadership
Principal's Research Review
Reading Research Quarterly
Reading Today
Rethinking Schools
Review of Educational Research
Teachers College Record
TESOL Quarterly
Theory Into Practice
Tools for Schools