

# GATEWAY TO MASTERY®

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## Feels Like Learning!

Using Continuous Improvement for Content Mastery



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## Four Disciplines

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**System Mastery™**  
**Knowledge Mastery™**  
**Performance Mastery™**  
**Culture Mastery™**

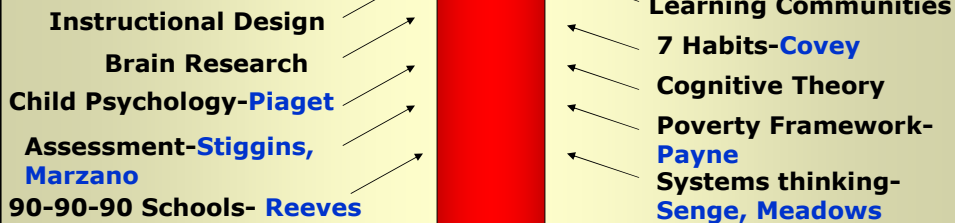
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# GATEWAY TO MASTERY®

Classroom Practicality and Effectiveness



Quality - Deming

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## What is Quality?

A different way to organize efforts  
which allows people to

Approach Tasks With Enthusiasm  
&  
Participate In Improvement

Myron Tribus

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“Continuous Improvement is constant, gradual and incremental improvement. It is un-dramatic, involves small steps, is a group effort, focuses on processes, and is driven by people.”

University of Washington

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## Continuous Improvement Requires

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- Systems thinking
- A change of management mindset
- Processes for continuous improvement

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# Styles of Management

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- Personality
- Power
- Knowledge

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# Styles of Management

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## **Personality**

Manager is well liked or feared

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# Styles of Management

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## Power

Control

Offer only extrinsic rewards

Fear

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# Styles of Management

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- Personality
  - Power
- ➔
- Blame  
People

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# Deming Believed

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96% of the problems are **system** problems  
4% are **people** problems.

# Styles of Management

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- Personality → Blame People
- Power → Blame People
- Knowledge → Blame System

# Styles of Management

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## **Knowledge**

- Profound Knowledge is the foundation
- Teams agree upon an Aim - work together to achieve it
- Data used to continually improve processes
- Root causes are researched and eliminated

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# A Manager Should...

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- Drive out fear
- Remove system barriers

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# Change in Relationship

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- People work within a system
- Managers work on the system, to improve it continuously - with the people's help.

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## Relationships

System	Manager	People
School District	Superintendent	Administrators Classified
School	Principal	Teachers Classified
Classroom	Teachers	Students

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# Barriers in Learning Systems

**No Systems Thinking**

**Poor Psychology**

**Teach-Test-Forget**

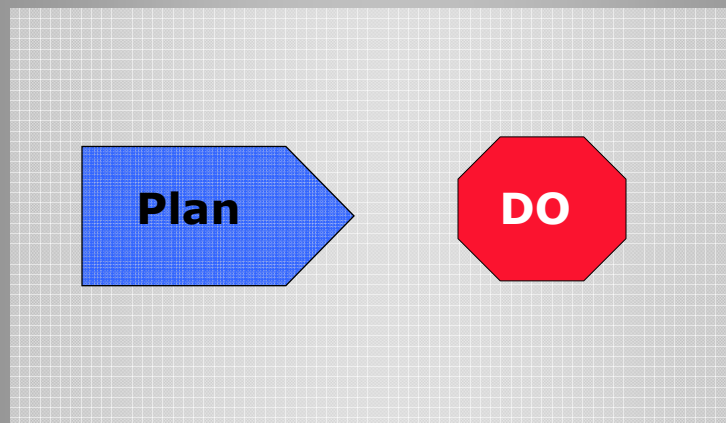
**No Coaching**

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## Linear Thinking



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“We trained hard, but it seems that every time we were beginning to form up into teams, we would be reorganized. I was to learn later in life that we tend to meet any new situation by reorganizing; and a wonderful method it can be for creating the illusion of progress while producing confusion, inefficiency and demoralization.”

**Petronius Arbiter, 210 B.C.**

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## Linear Thinking

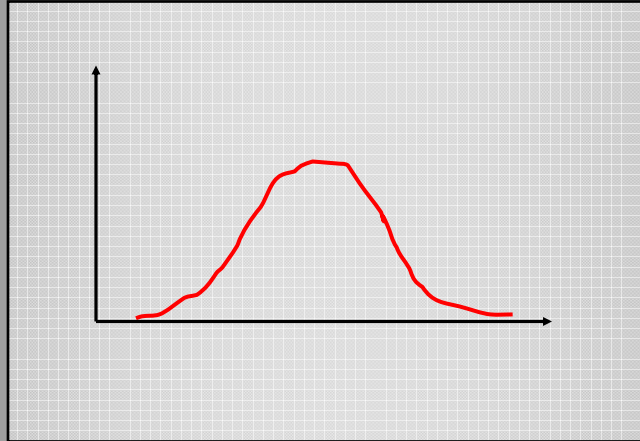


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# Program Validity



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Experience is **Not**  
the Best Teacher...

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**Continually testing theories!**

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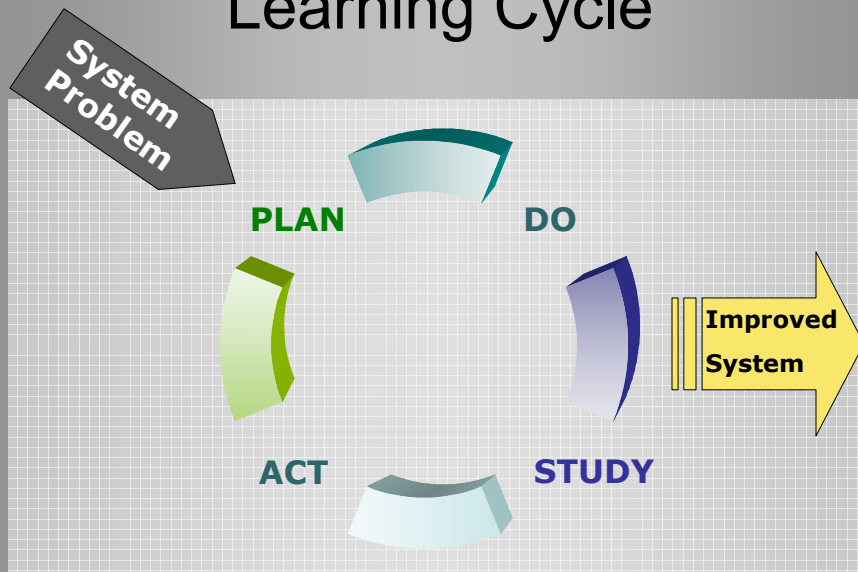
“If you do not have a theory to provide a framework to understand your experience, you do not accumulate 30 years of experience, you merely repeat one year 30 times.”

**Myron Tribus**

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## Learning Cycle



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# Needed Data Collection

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- **Process data** - continually collected to adjust teaching, learning and culture.

**“How are we doing?”**

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## Principles of Collecting Data - Graph, Graph, Graph



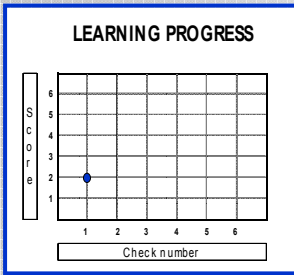
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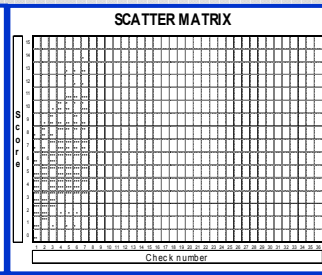
26

# Three Basic Graphs

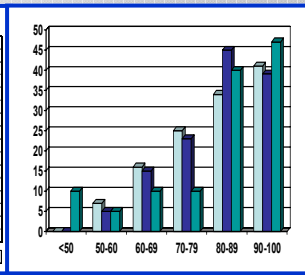
**Run Chart**  
Student & Class



**Scatter Diagram**  
(and modifications of)



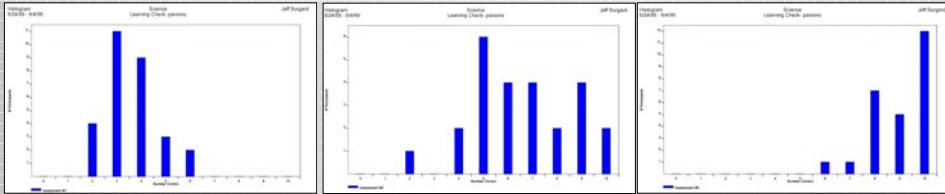
**Bar Chart**  
(and modifications of)



# Purpose - Gain Insight



# A Different "Boy" to Validate



**Beginning** - most should know little

**Middle** - the bell curve

**End** - most should know a lot

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## Assessment Should...

- Help students learn more quickly, more thoroughly and remember longer
- Inform about progress
- Guide instruction and activities
- Provide data for accountability

**Pekin Public School District 108 • Pekin, IL**

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# Assessment

- Assessment **of** learning provides evidence of achievement
- Assessment **for** learning serves to help students learn more

Richard Stiggins

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## Deming Suggested

## Knowledge Mastery™

- |   |   |
|---|---|
| <ul style="list-style-type: none"><li>• Provide students the essential knowledge for the entire year</li><li>• Check student progress weekly on the random square root</li><li>• Students monitor their progress<br/>Teachers monitor class progress</li><li>• Checks are not graded, they are feedback to better manage learning</li></ul> | <ul style="list-style-type: none"><li>• Knowledge Map™ - a list of essential knowledge</li><li>• Learning Check™</li><li>• Class and individual Learning Progress Charts (run charts) and Scatter Diagram</li><li>• A Learning Check™ is never graded. It provides insight into learning progress</li></ul> |
|---|---|

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# Styles of Management

## Knowledge

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## Knowledge Map™ for Chemistry

### **General knowledge**

1. An observation is a record of what you see
2. An inference is a conclusion based on what you observe
3. A hypothesis is a prediction based upon prior knowledge
4. The scientific method has the following steps: Purpose, Hypothesis, Experiment, Conclusion

### **Thermal Energy**

5. Heat is the energy that makes molecules move
6. Cold is the absence of heat
7. Objects expand as they heated and contract when they are cooled
8. Temperature is measurement of the average speed of the molecules
9. Heat energy is transferred in three ways: Convection, conduction and radiation
10. Convection is the process where warm liquids or gasses rise and the cooler ones fall
11. Conduction is the transfer of heat energy from direct contact

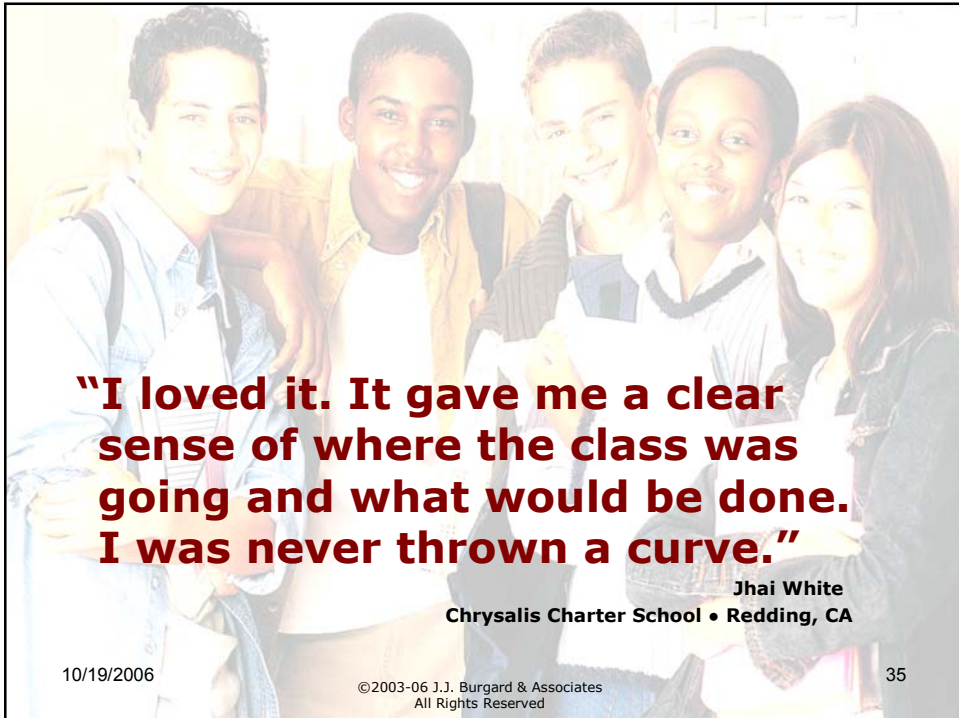
### **Matter**

12. All matter has the following characteristics: mass (*the amount of matter*), weight, volume (*the amount of space it takes up*), and density (*the mass divided by the volume*)
13. Matter can be identified by its physical properties such as color, shape and texture. They are the things that we can see, feel or hear
14. Chemical properties of matter are the ways in which a substance reacts with another substance
15. A physical change has occurred when there is a change in the physical properties

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**“I loved it. It gave me a clear sense of where the class was going and what would be done. I was never thrown a curve.”**

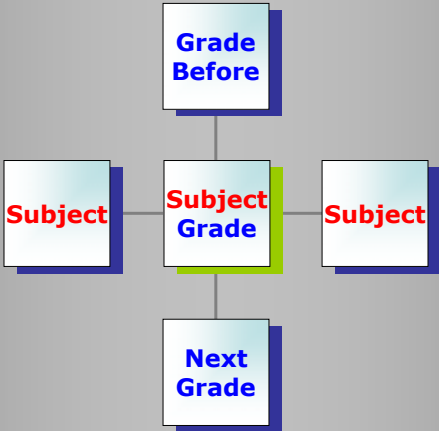
**Jhai White**  
**Chrysalis Charter School • Redding, CA**

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# Alignment



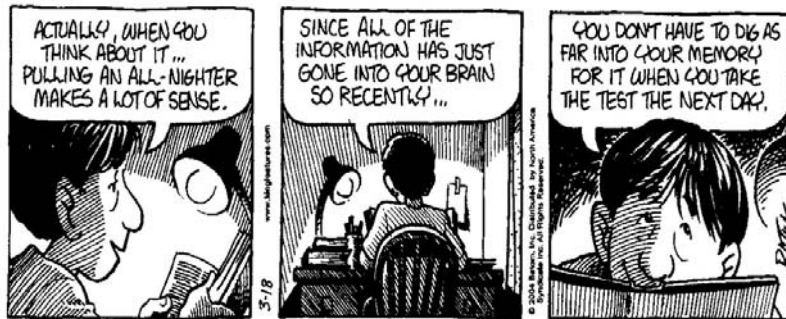
```
graph TD; A[Grade Before] --- B[Subject Grade]; B --- C[Subject]; B --- D[Subject]; B --- E[Next Grade]
```

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# Eliminate Cramming



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“Cramming does not provide meaningful information that remains in the brain as neural networks to which connections can be added...”

**Marilee Springer – *Learning and Memory***

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# Cognitive Theory

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- “What” before “How” and “Why”
- Timing is not important
- Learning occurs in “chunking events”
- Expert vs. Novice – size of chunks

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“...kept all the topics in suspension.  
...the mind/spirit lives for these connections.  
...there is something perverse in a system  
that interferes with connection making.”

**Paul Krafel**  
**Chrysalis Charter School • Redding, CA**

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# Styles of Management

## Knowledge

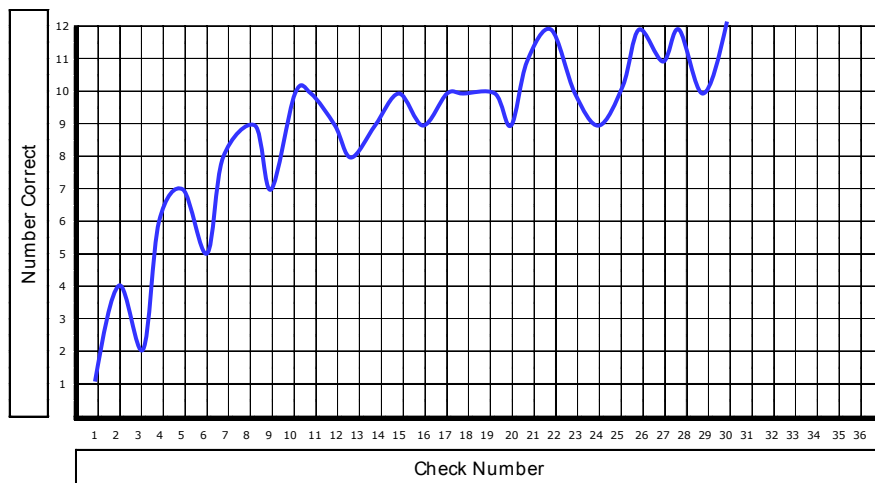
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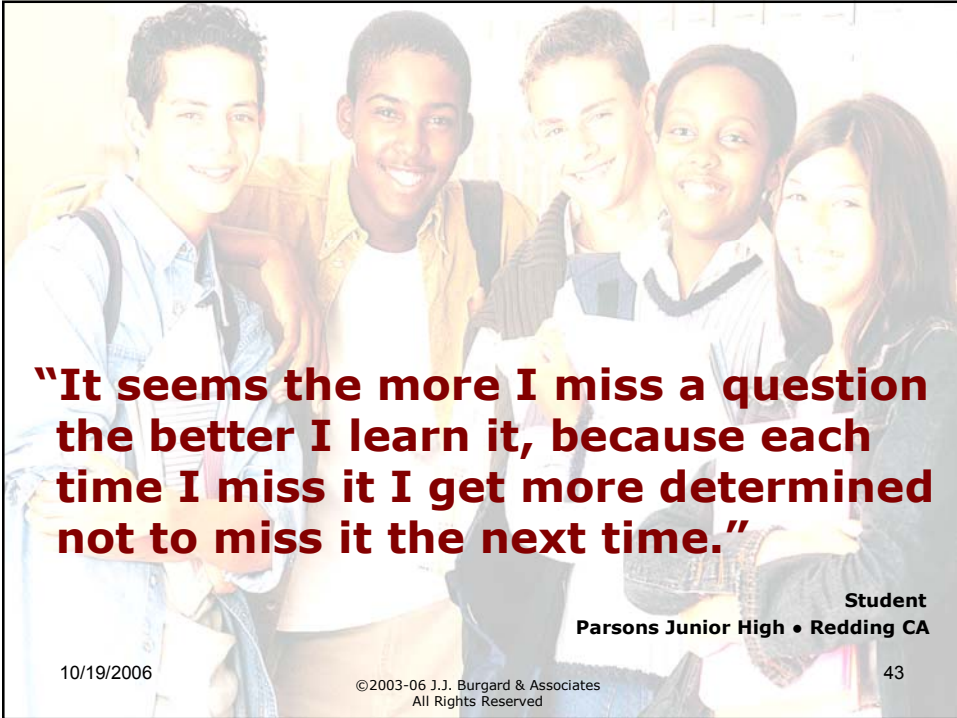
# Learning Progress



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**“It seems the more I miss a question the better I learn it, because each time I miss it I get more determined not to miss it the next time.”**

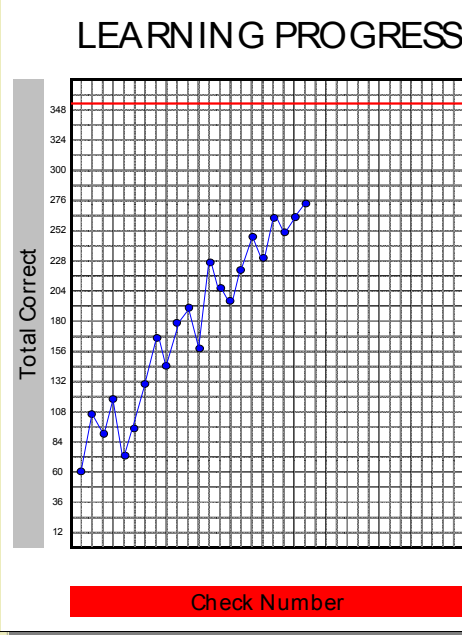
**Student  
Parsons Junior High • Redding CA**

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### LEARNING PROGRESS



Check Number	Total Correct
1	60
2	96
3	84
4	108
5	72
6	120
7	168
8	144
9	192
10	156
11	216
12	180
13	240
14	204
15	264
16	228
17	288
18	252
19	300
20	264
21	312
22	276
23	324
24	288
25	336
26	300
27	348

Check Number

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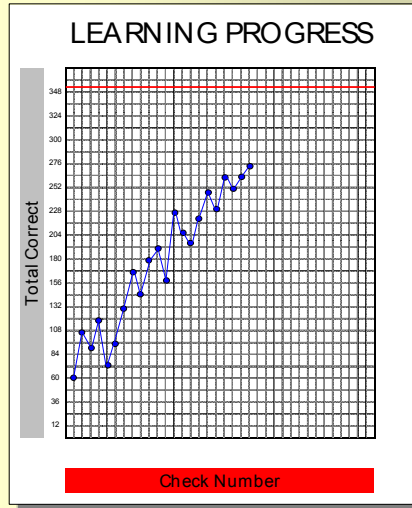
44

# Monitoring Whole Class Data

77% of the year completed

Class consistently scores above 85%

**Class Confidence is High!**

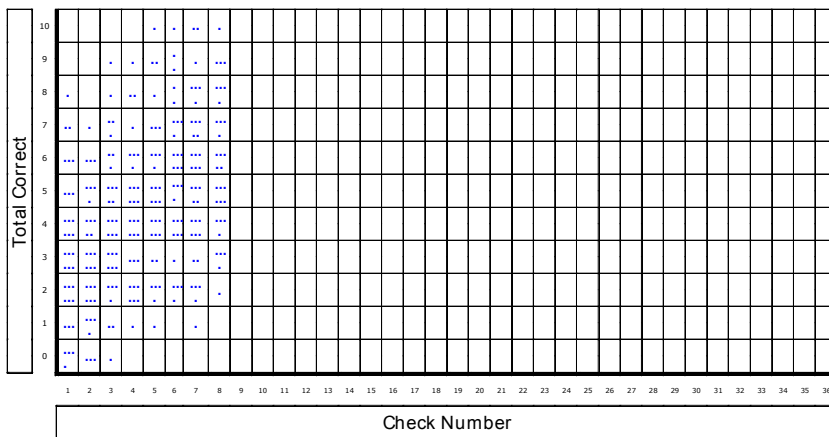


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# Scatter Matrix



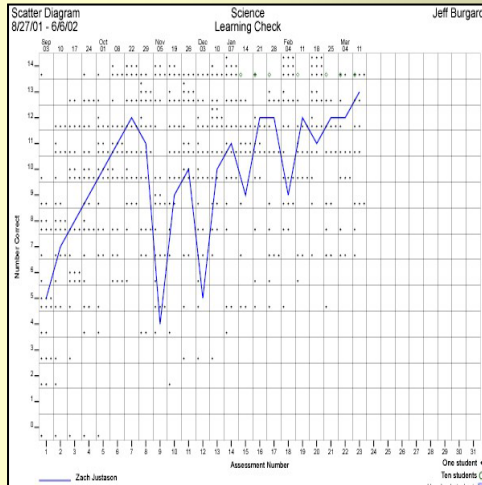
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# Individual/Class Comparison

Compares  
without  
ranking

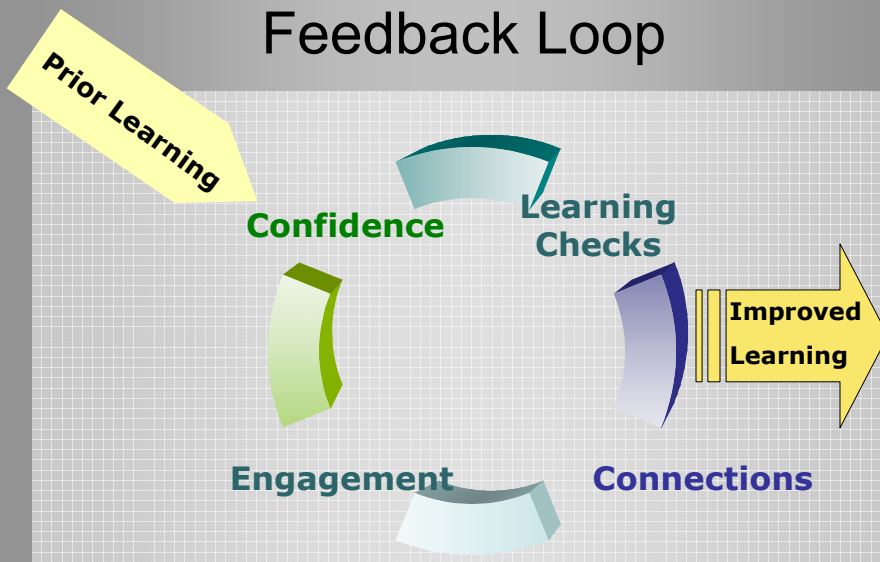


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# Learning Check™ Feedback Loop



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“Teaching is negotiable – learning is not!”

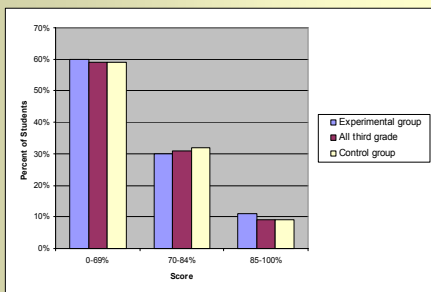
Dr. Lee Jenkins

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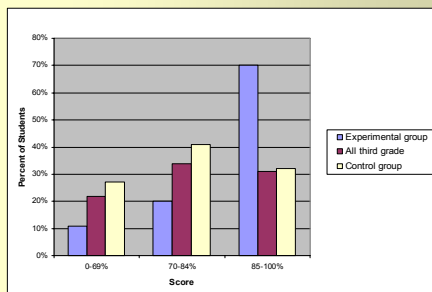
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## 3<sup>rd</sup> Grade Comparison Study

East Elementary – Jenks, Oklahoma



Pre-test



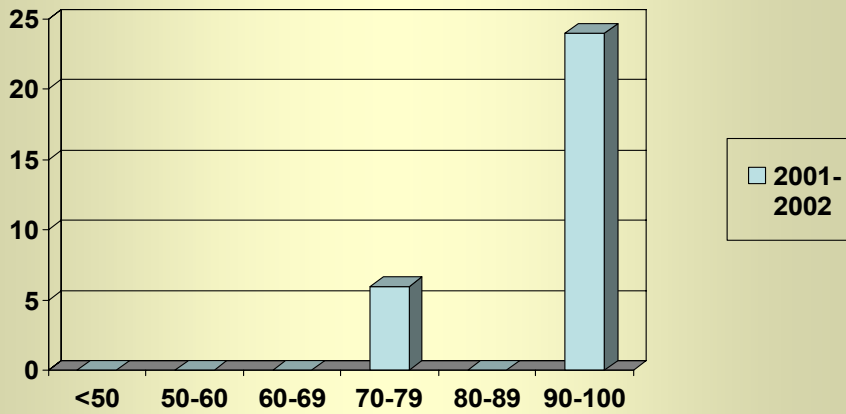
Post-test

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# 8<sup>th</sup> Grade History

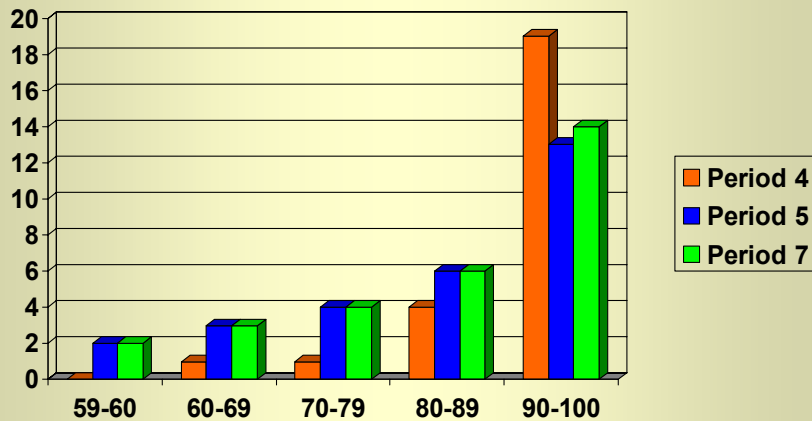


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# High School History

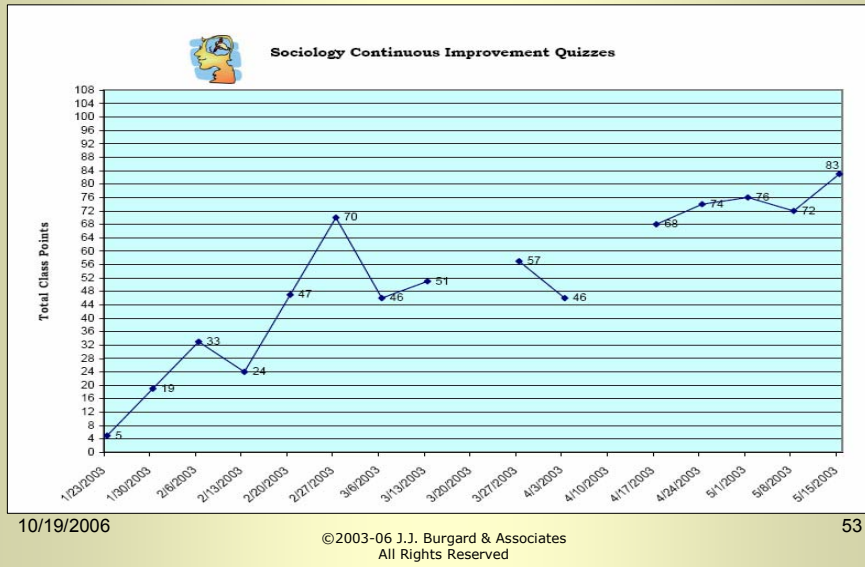


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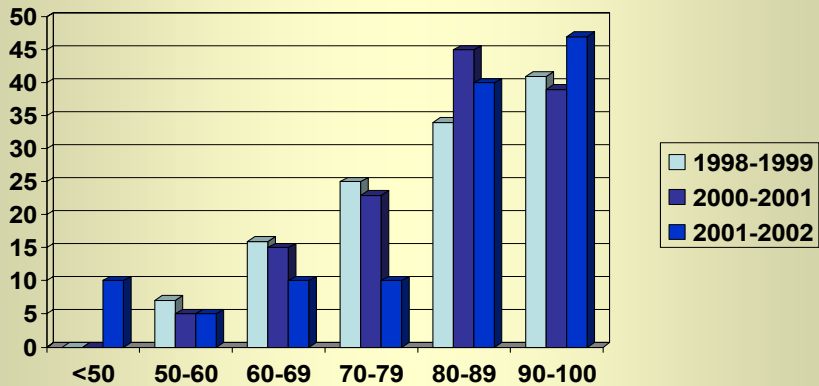
# University Sociology



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# Consistent Results

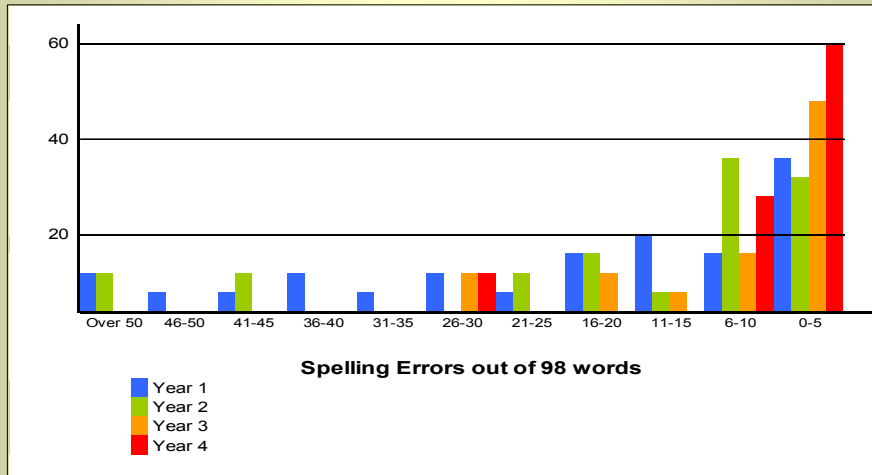


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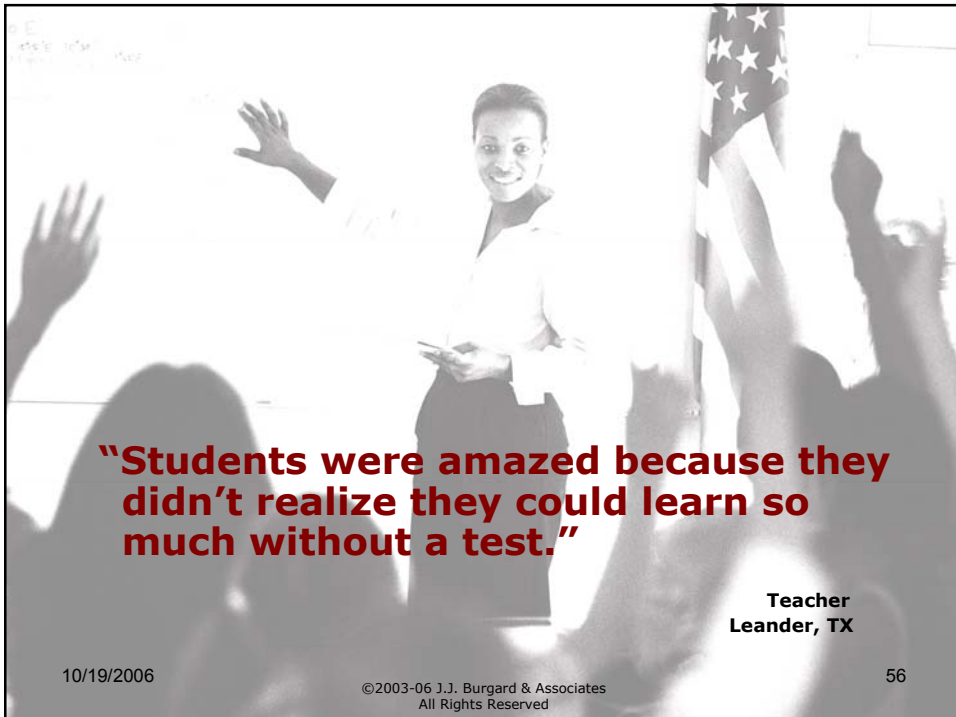
# Better Every Year



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**“Students were amazed because they didn’t realize they could learn so much without a test.”**

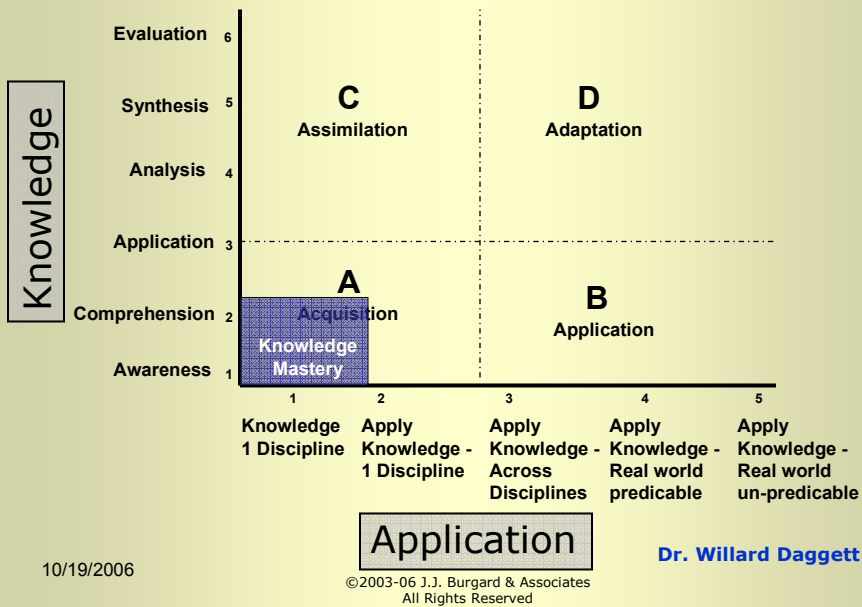
**Teacher  
Leander, TX**

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# Rigor/Relevance Framework



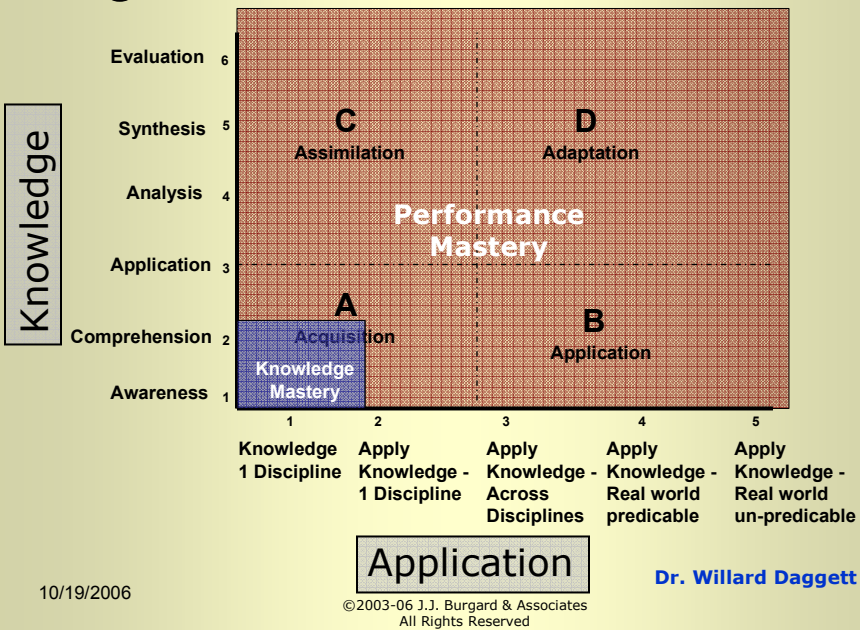
“In World Geography class composed of mostly low achievers and/or students who have a difficult time with the English language, the teacher decided to use the Knowledge Mastery™ process to help his students pass the mandatory district assessment. His students *blew the roof off* of the test. Now some in the department think the teacher must have cheated, while others are calling for a tougher test – even though their students performed the same as they always had. It has begun a discussion in the district about the usefulness of a test that is simply recall.”

**Matt Saferite**  
 Assistant Principal • Rogers, AR

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# Rigor/Relevance Framework



## Performance Assessments

- **Evaluated by Rubric:** Not only looks at the completed task, but also how the task was accomplished.

**How well?**

- **Evaluated without a Rubric:** Assessments that are timed, or focus on the number completed.

**How many? How Fast?**

# Performance with Rubrics

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- Math:** problem solving
- Language Arts:** writing, speaking, etc..
- Science:** Lab reports, problem solving, reports, projects, etc..
- Literature:** reading responses, projects, etc...
- Art:** projects etc...
- Social Studies:** reports problem solving, projects, speeches etc...
- Foreign Language:** speaking, writing etc...
- Music:** performance

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# Performance without Rubrics

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- |   |   |
|---|---|
| <b>P.E:</b><br>Running times<br># of repetitions<br># of pounds | <b>Language Arts:</b><br>Words per minute<br>Daily oral language<br>Comprehension |
| <b>Math:</b><br>Timed drills<br>Number if errors                | <b>Typing:</b><br>Speed   |

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# Improving Performance Students

with

1. Eliminate subjectivity
2. Practice self-assessment
3. Utilize assessment data/PDSA

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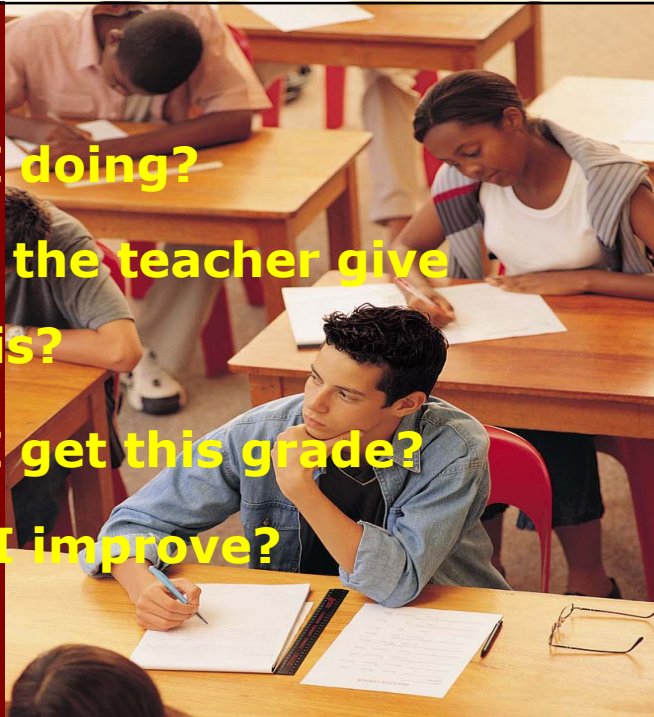
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**-How am I doing?**

**-What will the teacher give me on this?**

**-Why did I get this grade?**

**-How can I improve?**



# Styles of Management

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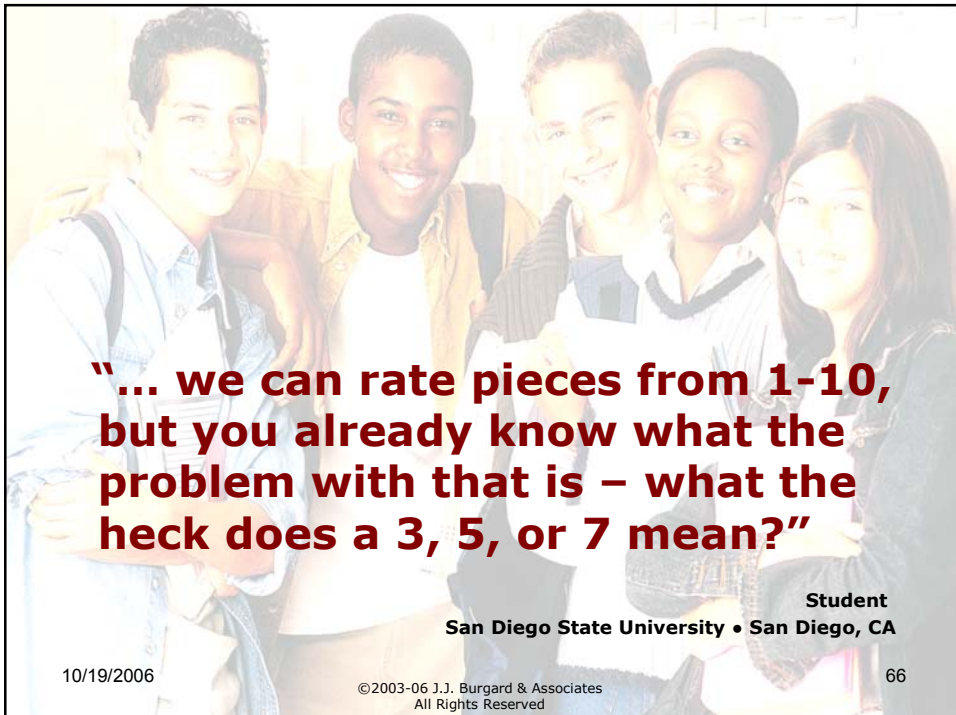
## **Knowledge**

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“Students must be invited to participate in determining the criteria by which their work will be judged, and then play a role in weighing their work against those criteria.”

**Alfie Kohn**

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## Operational Definitions

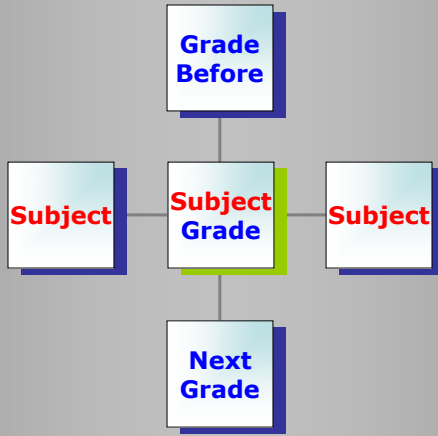
- **Correct-** Mostly correct- 75% or more correct.  
Mostly incorrect- less than 75% correct.
- **Complete-** A little incomplete- less than 25% missing.  
Very incomplete- more than 25% missing.
- **Supportive Visual-** A clear understandable drawing, picture, graph, table that helps clarify the answer.
- **Superior Support-** Support (Reports only) Use and quote other resources give them credit (Bibliography).
- **Professional Appearance-** Smooth edges, typed or written neatly, named and dated, no rips, tears or folds, understandable. Visually organized, no doodling, color where appropriate, paragraph form where appropriate. No neon paper, appropriate font, original artwork.
- **Grammar and Spelling Errors-** 3 or more until Winter Break - 2 after Winter Break.
- **Proper Form-** What ever the form in the directions.
- **Follow Directions-** Self explanatory.

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# Alignment



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## Evaluation Form

Name:  
Date:  
Turn-in # 1 2 3 4

**Self**

<input type="checkbox"/>	<input type="checkbox"/>

Score:

**Peer**

<input type="checkbox"/>	<input type="checkbox"/>

Score:

---

**Teacher**

<input type="checkbox"/>	<input type="checkbox"/>

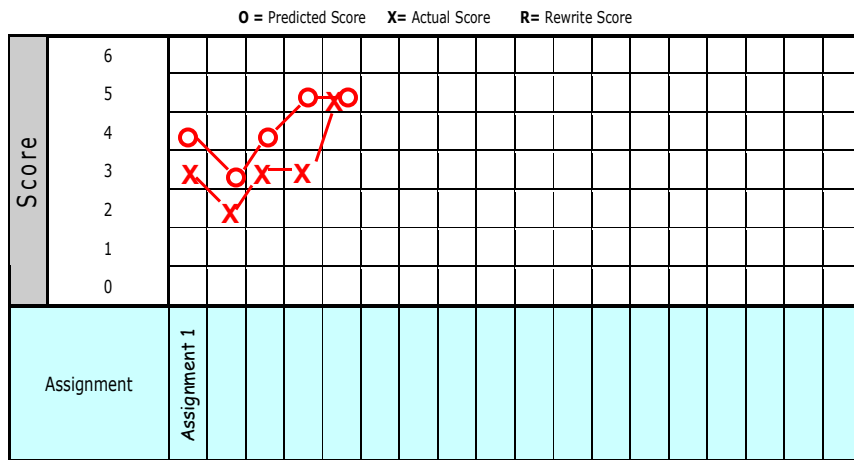
Score:

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# Performance Progress



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## Styles of Management

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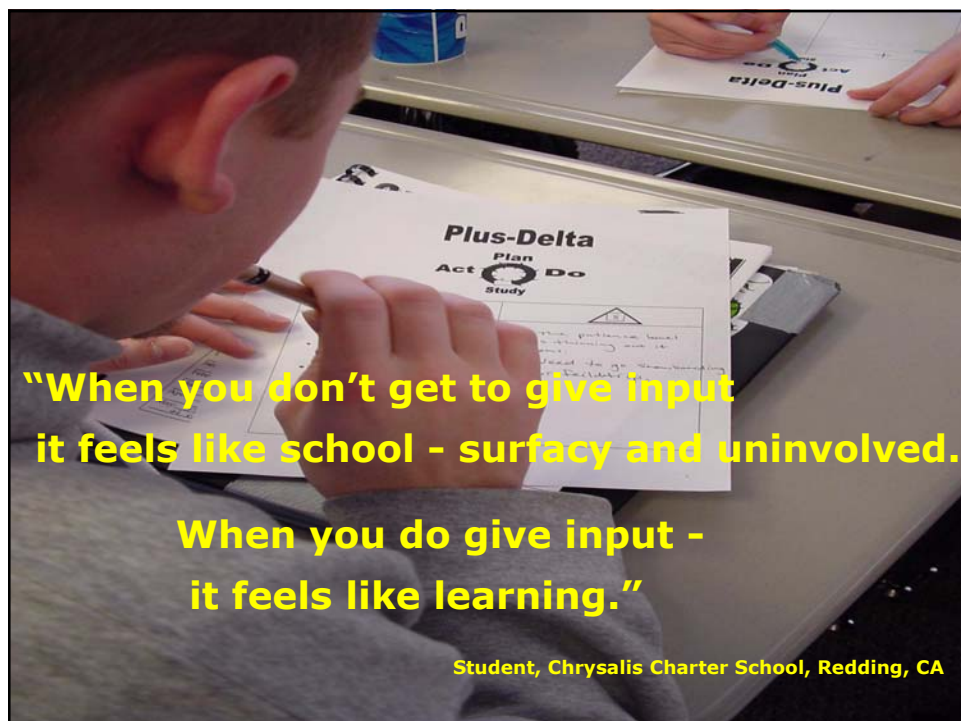
A young boy with short dark hair, wearing a light green t-shirt, is sitting at a wooden desk in a classroom. He is smiling broadly at the camera. In front of him are papers and a pen. Other students are visible in the background, slightly out of focus.

**-Here is my improvement!**

**-I should get...**

**-That's what I thought!**

**-I know what to do!**



"A leader is best when people barely know he exists...when his work is done, his aim fulfilled, the people will say, 'we did this ourselves.'"

Lao Tse

10/19/2006

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## Resources

**J. J. Burgard & Associates: 866.630.6995**

[www.gatewaytomastery.com](http://www.gatewaytomastery.com) • [improve@jjburgard.com](mailto:improve@jjburgard.com)

**GATEWAY TO MASTERY® Summer Institute**  
June and July 2007

**"Continuous Improvement Series"** from ASQ

**Continuous Improvement in the Science Classroom**, Jeff Burgard

**Improving Student Learning**, Lee Jenkins

**American Society for Quality** • 800-248-1946 • [www.amazon.com](http://www.amazon.com)

**Dice: The Game Station** • [www.gamestation.net](http://www.gamestation.net)

Phone: 866-600-3684, Fax: 270-259-0042

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