School Improvement Action Plan – Goal One
SY 09-10

PART I: OVERVIEW
Lester Middle School

Date: 25 November 2009

Goal Statement: All students will improve critical thinking skills across the curriculum.

Essence of the goal: Ability to analyze, synthesize and evaluate situations to determine reasonableness of solution(s) across the curriculum.

Targeted Subgroup: Read 180 students: We will identify Read 180 students who tested in the Bottom National Quarter on the *TerraNova* Multiple Assessment -- Reading Subtest Spring 07.

Triangulation of Data:
Top Two *TerraNova* National Quarters
(Subtests: Reading, Language Arts, Math, Science, Social Studies - 2006)
Bottom *TerraNova* National Quarters
(Subtests: Reading, Language Arts, Math, Science, Social Studies - 2006)
Algebra End-of-Year Assessment
Balanced Assessment of Mathematics (BAM)
Lester Middle School Problem Solving 1 Assessment
Lester Middle School Problem Solving 2 Assessment

System-wide Assessment(s)
Name: ***TerraNova* Multiple Assessment, Math and Science subtests**
Indicator of success: There is a meaningful increase in the percentage of students scoring in the Top Two National Quarters and a meaningful decrease in the percentage of students scoring in the Bottom National Quarter as measured by the *TerraNova* Multiple Assessment.
Name: ***7th grade Science Criterion-referenced test (online)***
Indicator of success: There is a meaningful increase in the percentage of students performing At or Above the Standard on the Science Criterion-Referenced Test, Grade 7 (online).

Local Assessment(s)
Name: ***Exemplars 9 -12 Assessment*, Tools and Strategies subtests**
Indicator of success: There is a meaningful increase in the percentage of students performing At the Standard or higher on the Exemplars local assessment (Grades 6-8).

Local Assessment(s) – Targeted Subgroup
Name: ***Exemplars 9 -12 Assessment*, Tools and Strategies subtests**
Indicator of success: There is a meaningful increase in the percentage of targeted subgroup students performing At the Standard or higher on the Exemplars local assessment (Grades 6-8)

Interventions and their descriptions applicable to ALL Students

Intervention Reflective Thinking	**Brief Description:** Reflective Thinking provides middle level students with the skills to mentally process learning experiences, identify what they learned, modify their understanding based on new information and experiences, and transfer their learning to other situations.

Interventions and their descriptions applicable to the Targeted Subgroup

Intervention Reflective Thinking	**Brief Description:** Reflective Thinking provides middle level students with the skills to mentally process learning experiences, identify what they learned, modify their understanding based on new information and experiences, and transfer their learning to other situations.

Interventions Implementation Timeline

Interventions	Resources	POC
1. Reflective Thinking	Use of SharePoint, student server, classroom journal	Goal 1 Committee Judy Kayir

Part II

Lester Middle School
Results-Based Staff Development Plan
Intervention: Reflective Thinking

Development Outcome	Teacher Indicators	Student Outcome
Teachers will be able to model what Reflective Thinking looks like in the classroom.	Use Monitoring sheets showing students' Reflective Thinking through SharePoint and Reflecting on Curriculum Standards (ROCS) and journals.	Students will be able to Reflect on an assignment and through questioning will be able to decide what went right or wrong with that assignment.

Effective Staff Development Steps	***Implementation Activities***	***Person/Group Responsible (SI; Tech; etc.)***	***Documented Eviden of Each Step***	***Resources Needed***	***Timeline Date/Time***
Knowledge *What Reflective Thinking is.*	Implementation of the process of Reflective Thinking	Goal 1 chair, staff development committee, and ROCS committee	Sign-in sheet to workshop	Skilled teachers, PowerPoint lessons and video lessons, reflection template in planners	Within first quarter of school
Model/Demonstrate *Staff Development and CSI meetings.*	Facilitators model Reflective Thinking	Goal 1 chair and staff development committee	Pictures taken at in-serv to display on the Lester web site	Camera, sample Reflections displayed on (Common) K drive	Within first quarter of school
Low Risk Practice with Feedback	Facilitators model Reflective Thinking	Goal 1 chair and staff development committee	Sample Reflections sav to display on the Lester website	Sample Reflections	Within first quarter of school
On-the-Job Practice with Feedback	Following modeled lessons, teacher practices classroom groups and receives feedback from departments.	Goal 1 chair, department chair and individual teachers	Completion of CSI Monitoring Documents Student work samples ROCS teacher	CSI monitoring document student work samples ROCS teacher	First, second, third, fourth Quarter monthly staff and CSI meetings
Follow-up for Current Staff *Collaborative meetings*	Team/Staff meetings to discuss how things are going	Goal 1 chair and team liaison	Completion of CSI Monitoring documents Student work samples	Staff and CSI meetings and trainings with student work samples	Faculty meetings monthly CSI meetings; team meetings
Long-Term Maintenance Plan for New Staff *Continued Staff Development*	New staff members are Paired with Goal 1 Committee to observe strategies and have opportunities to practice with feed-back.	Goal 1 chair, Staff development Committee, mentor teachers, CSI chair	Training, in-service, PowerPoint presentatior and video lessons	Staff training PowerPoint presentations and video lessons on K drive; use as refresher course	New Teacher orientation with Mentor teacher

PART III: RESULTS-BASED STAFF DEVELOPMENT PLAN

PART THREE: MONITORING PLAN

Lester Middle School Monitoring Plan
Goal 1 – All students will improve critical thinking across the curriculum.

Date	Intervention	Monitoring Process	Person/Group Responsible
First Quarter	Reflections		
First 2 weeks of school		-Math teachers will hand out, explain expectations, and ensure the students permanently place rubrics in their planners.	Math teachers
No later than last week of each quarter		-Once each quarter, teachers will provide the Monitoring Committee with examples of high, medium, and low student work, using the Reflections rubric to score the assignments. Then they will place the data on the spread sheet of the group students they are monitoring.	All teachers
1st Tuesday of each month		-Teams will discuss issues, concerns, and progress with classroom implementation of Reflections. Minutes submitted to Goal 1 Chair for review at SILT meetings.	All teams
3rd Tuesday of each month		-Administrators and team leaders discuss successes and concerns of student work and teacher implementation. Minutes submitted to Goal 1 Chair.	Admin and all team leaders
Throughout the school year		-Teachers will display student work in classrooms and hallways.	All teams
1st Thursday of each month		-Results from team meeting will be shared at SILT meeting.	CSI Chair, Admin, Team Leaders
First week of the following quarter		-Complete, compile and organize data	Monitoring Committee, Goal 1 Chair, CSI Chair

Lester Middle School Monitoring Plan
Goal 1 – All students will improve *critical thinking* across the curriculum.

Date	Intervention	Monitoring Process	Person/Group Responsible
2nd Quarter	Reflections	-Follow up as indicated by monitoring tools and team discussions	Monitoring Committee, Goal 1 Chair, CSI Chair
No later than last week of each quarter		-Once each quarter, teachers will provide the Monitoring Committee with examples of high, medium, and low student work, using the Reflections rubric to score the assignments. Then place the data on the spread sheet of the group students they are monitoring.	All teachers
1st Tuesday of each month		-Teams will discuss issues, concerns, and progress with classroom implementation of Reflections. Minutes submitted to Goal 1Chair for review at SILT meetings.	All teams
3rd Tuesday of each month		-Administrators and team leaders discuss successes and concerns of student work and teacher implementation. Minutes submitted to Goal 1 Chair.	Admin and all team leaders
Throughout the school year		-Teachers will display student work in classrooms and hallways.	All teams
1st Thursday of each month		-Results from team meeting will be shared at SILT meeting.	CSI Chair, Admin, Team Leaders
Jan. 7th, 2010		Mid year exemplar test will be given	All seminar teachers
First week of the following quarter		-Complete, compile and organize data	Monitoring Committee, Goal 1 Chair, CSI Chair

Lester Middle School Monitoring Plan
Goal 1 – All students will improve *critical thinking* across the curriculum.

Date	Intervention	Monitoring Process	Person/Group Responsible
3rd Quarter	Reflections	-Follow up as indicated by monitoring tools and team discussions	Monitoring Committee, Goal 1 Chair, CSI Chair
No later than last week of each quarter		-Once each quarter, teachers will provide the Monitoring Committee with examples of high, medium, and low student work, using the Reflections rubric to score the assignments. Then place the data on the spread sheet of the group students they are monitoring.	All teachers
1st Tuesday of each month		-Teams will discuss issues, concerns, and progress with classroom implementation of Reflections. Minutes submitted to Goal 1 Chair for review at SILT meetings.	All teams
3rd Tuesday of each month		-Administrators and team leaders discuss successes and concerns of student work and teacher implementation. Minutes submitted to Goal 1 Chair.	Admin and all team leaders
Throughout the school year		-Teachers will display student work in classrooms and hallways.	All teams
1st Thursday of each month		-Results from team meeting will be shared at SILT meeting.	CSI Chair, Admin, Team Leaders
First week of the following quarter		-Complete, compile and organize data	Monitoring Committee, Goal 1 Chair, CSI Chair

Lester Middle School Monitoring Plan
Goal 1 – All students will improve *critical thinking* across the curriculum.

Date	Intervention	Monitoring Process	Person/Group Responsible
4th Quarter	Reflections	-Follow up as indicated by monitoring tools and team discussions	Monitoring Committee, Goal 1 Chair, CSI Chair
No later than last week of each quarter		-Once each quarter, teachers will provide the Monitoring Committee with examples of high, medium, and low student work, using the Reflections rubric to score the assignments. Then place the data on the spread sheet of the group students they are monitoring.	All teachers
1st Tuesday of each month		-Teams will discuss issues, concerns, and progress with classroom implementation of Reflections. Minutes submitted to Goal 1 Chair for review at SILT meetings.	All teams
3rd Tuesday of each month		-Administrators and team leaders discuss successes and concerns of student work and teacher implementation. Minutes submitted to Goal 1 Chair.	Admin and all team leaders
Throughout the school year		-Teachers will display student work in classrooms and hallways.	All teams
1st Thursday of each month		-Results from team meeting will be shared at SILT meeting.	CSI Chair, Admin, Team Leaders
First week of the following quarter		-Complete, compile and organize data	Monitoring Committee, Goal 1 Chair, CSI Chair

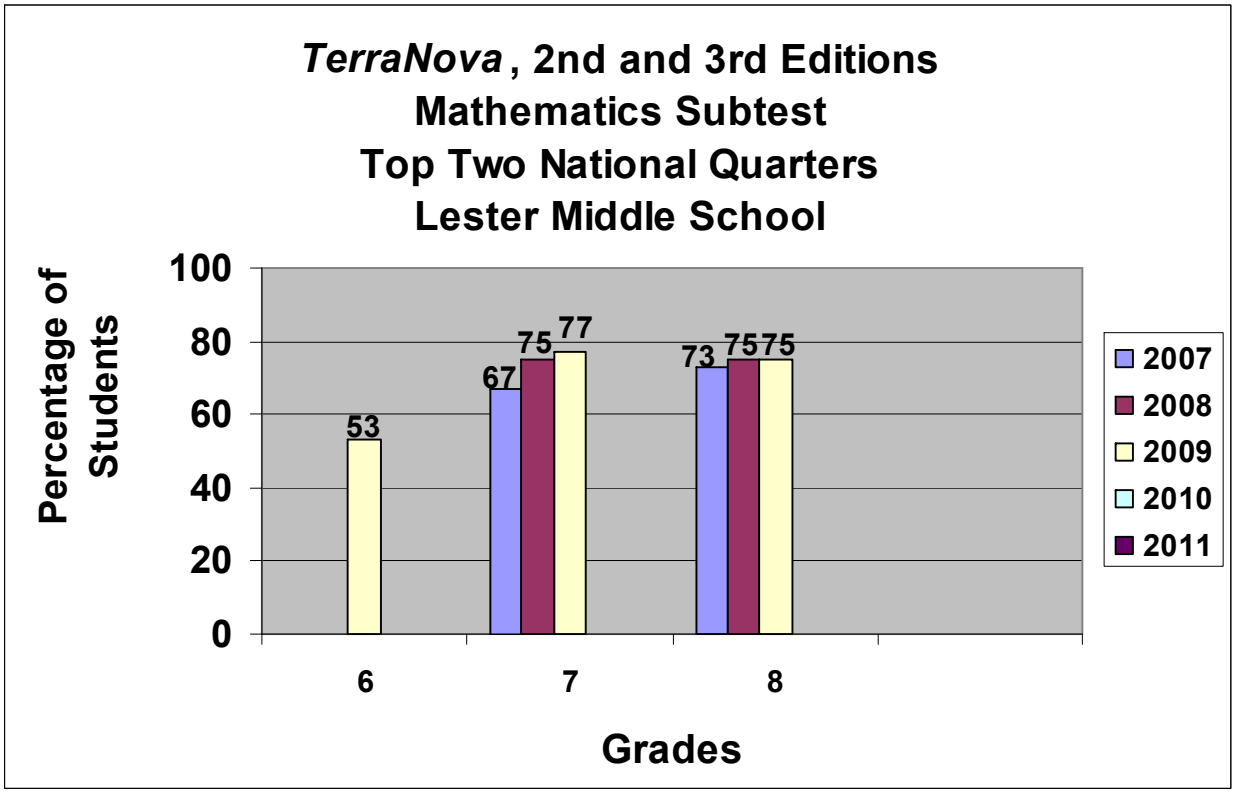
PART IV: STATUS REPORT

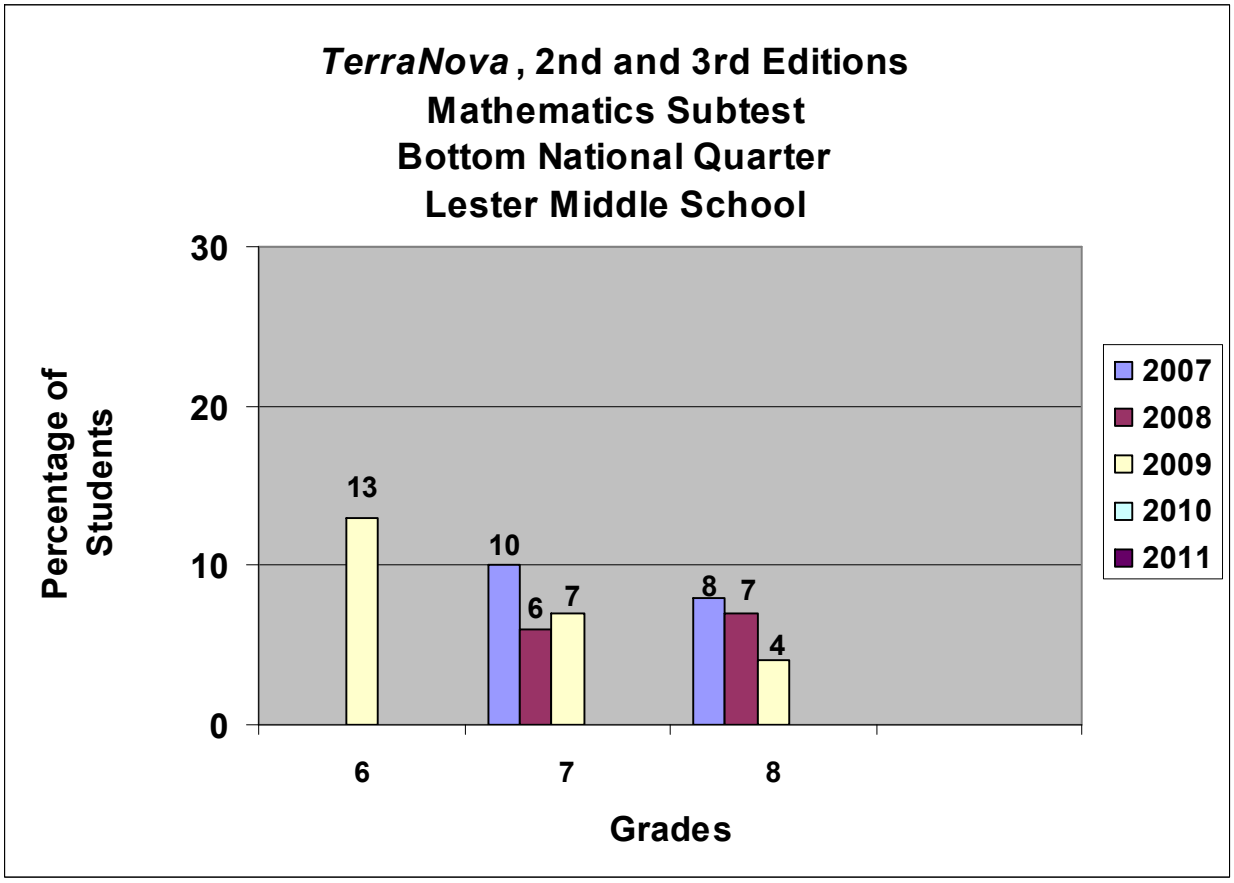
Goal Statement: **All students will improve critical thinking skills, across the curriculum**

DATA ANALYSIS PROCEDURES

Baseline data and data collected at the end of each year of the school improvement cycle were disaggregated by grade level (and targeted subgroup) and were analyzed. Using NCA Data Analysis software, data were converted to standard scores (z-scores) and analyzed.

1. A standard score difference of .3 or greater is a substantial improvement and a difference of -.3 or greater is a substantial decline in student performance.
2. A standard score difference of .2 to .3 is quite good and a negative difference of -.2 to -.3 is a quite bad.
3. A standard score difference of .1 to .2 is enough to mention and a difference of -.1 to -.2 is enough to mention.
4. A standard score difference of -.1 to .1 is not enough to mention.


TerraNova, 2nd and 3rd Editions
Mathematics Subtest
Top Two National Quarters
Lester Middle School
Percentage of Students
100
80
60
40
20
0
53
67
75
77
73
75
75
6
7
8
Grades
2007
2008
2009
2010
2011


TerraNova, 2nd and 3rd Editions
Mathematics Subtest
Bottom National Quarter
Lester Middle School
Percentage of Students
30
20
10
0
13
10
6
7
8
7
4
6
7
8
Grades
2007
2008
2009
2010
2011

Indicator of Success: There is a meaningful increase in the percentage of students scoring in the Top Two National Quarters and a meaningful decrease in the percentage of students scoring in the Bottom National Quarter as measured by the *TerraNova* Multiple Assessment.

Note: The graphs above displays student results from different versions of the *TerraNova* Multiple Assessment, Mathematics Subtest. Prior to 2009, the *TerraNova*, 2nd Edition was used. Beginning in spring 2009, the *TerraNova*, 3rd Edition was used. Z-score comparisons will be computed for student performance data beginning in 2010, comparing student performance to that of 2009.

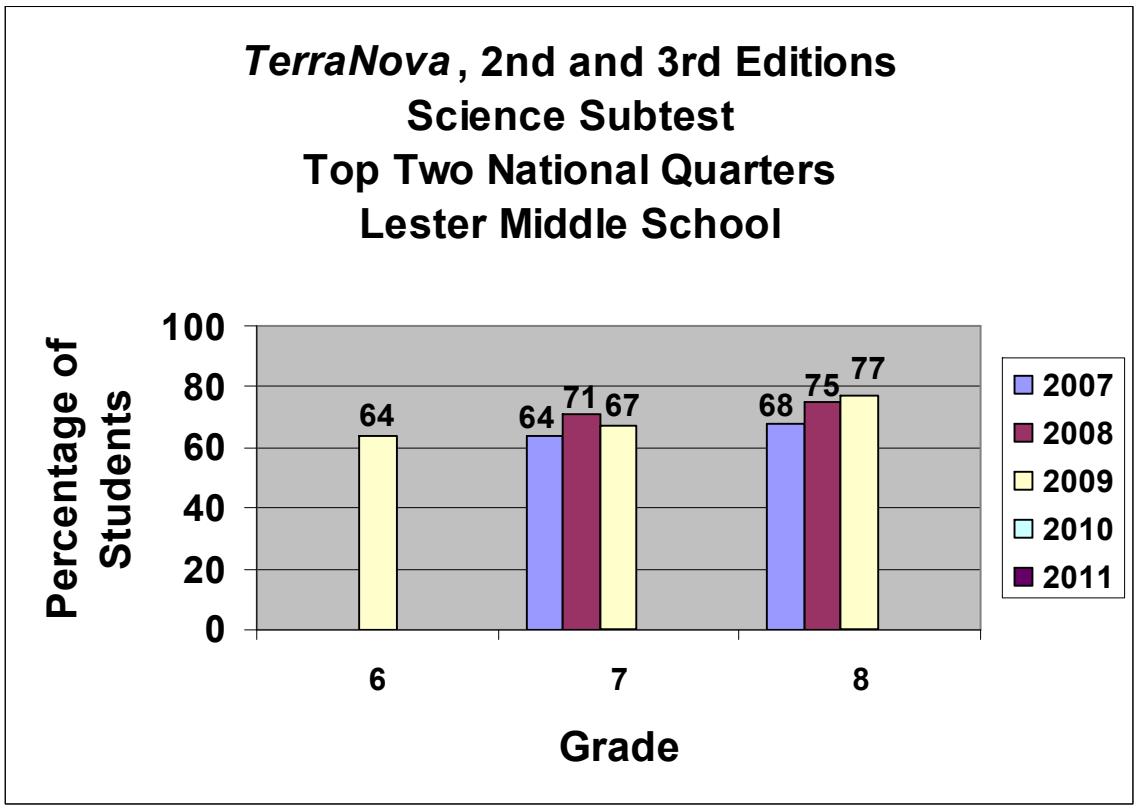
Findings:

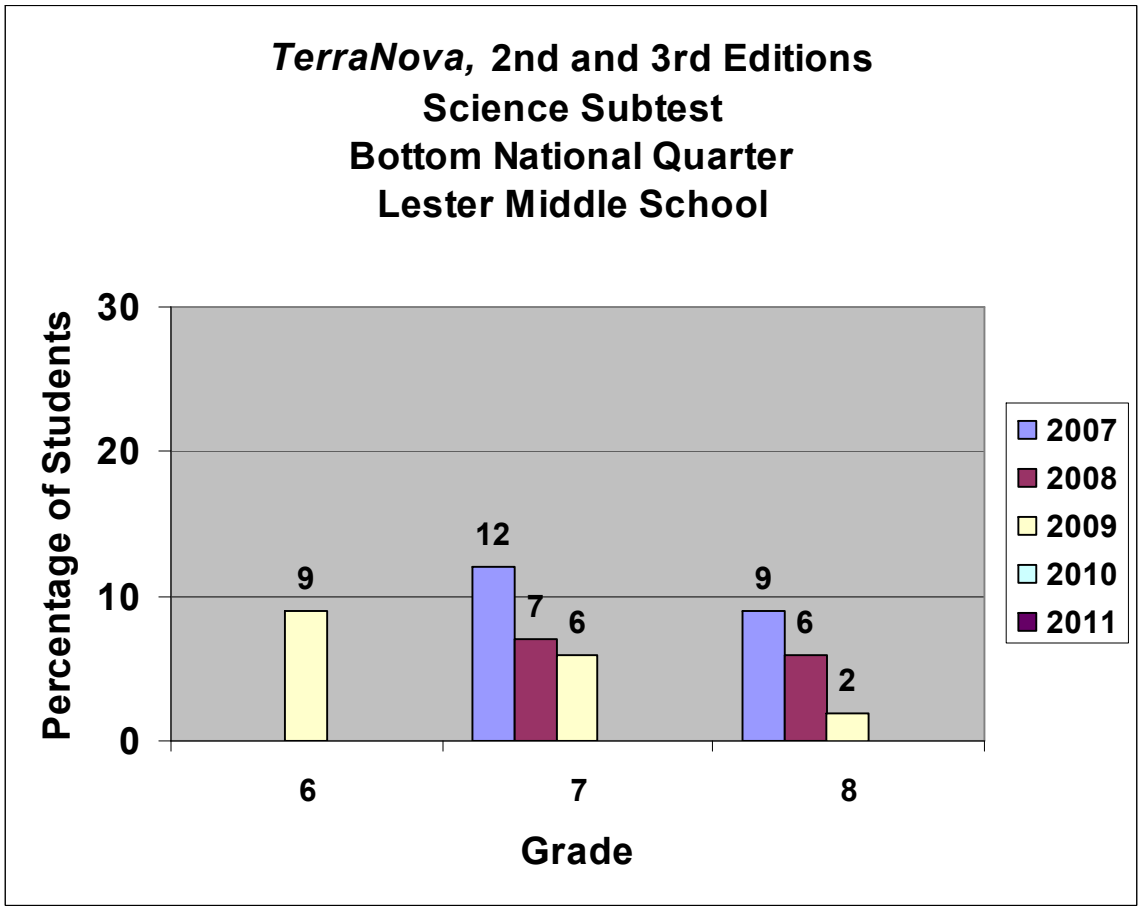
Top Two National Quarters

1. The difference in performance at the 6th grade is ___ compared to baseline year. (Z= ___)
2. The difference in performance at the 7th grade is ___ compared to baseline year. (Z= ___)
3. The difference in performance at the 8th grade is ___ compared to baseline year. (Z = ___)

Bottom National Quarter

1. The difference in performance at the 6th grade is ___ compared to baseline year. (Z= ___)
2. The difference in performance at the 7th grade is ___ compared to baseline year. (Z= ___)
3. The difference in performance at the 8th grade is ___ compared to baseline year. (Z= ___)


TerraNova, 2nd and 3rd Editions
Science Subtest
Top Two National Quarters
Lester Middle School
Percentage of Students
100
80
60
40
20
0
64
64
71
67
68
75
77
6
7
8
Grade
2007
2008
2009
2010
2011


TerraNova, 2nd and 3rd Editions
Science Subtest
Bottom National Quarter
Lester Middle School
Percentage of Students
30
20
10
0
9
12
7
6
9
6
2
6
7
8
Grade
2007
2008
2009
2010
2011

Indicator of Success: There is a meaningful increase in the percentage of students scoring in the Top Two National Quarters and a meaningful decrease in the percentage of students scoring in the Bottom National Quarter as measured by the *TerraNova* Multiple Assessment, Science Subtest.

Note: The graphs above displays student results from different versions of the *TerraNova* Multiple Assessment, Mathematics Subtest. Prior to 2009, the *TerraNova*, 2nd Edition was used. Beginning in spring 2009, the *TerraNova*, 3rd Edition was used. Z-score comparisons will be computed for student performance data beginning in 2010, comparing student performance to that of 2009.

Findings:

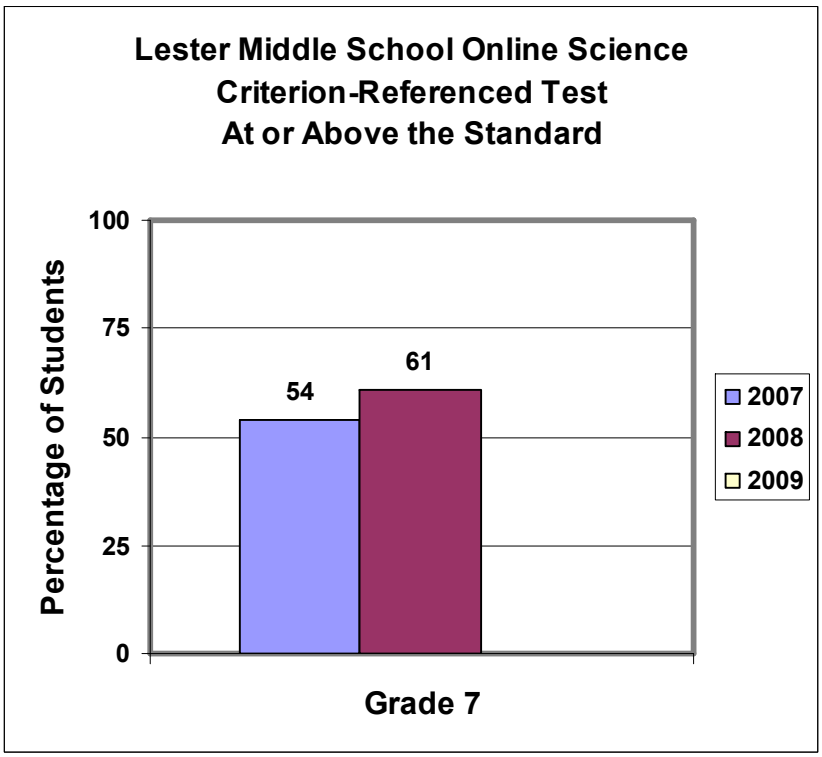
Top Two National Quarters

1. The difference in performance at the 6th grade is ___ compared to baseline year. (Z= ___)
2. The difference in performance at the 7th grade is ___ compared to baseline year. (Z= ___)
3. The difference in performance at the 8th grade is ___ compared to baseline year. (Z = ___)

Bottom National Quarter

1. The difference in performance at the 6th grade is ___ compared to baseline year. (Z= ___)
2. The difference in performance at the 7th grade is ___ compared to baseline year. (Z= ___)
3. The difference in performance at the 8th grade is ___ compared to baseline year. (Z= ___)

DATA DISPLAY: Grade Science Criterion-referenced test, Grade 7, online



Indicator of success: There is a meaningful increase in the percentage of students performing at or above the standard on the Online Science Criterion-Referenced test, Grade 7.

Findings: (z-score analysis)

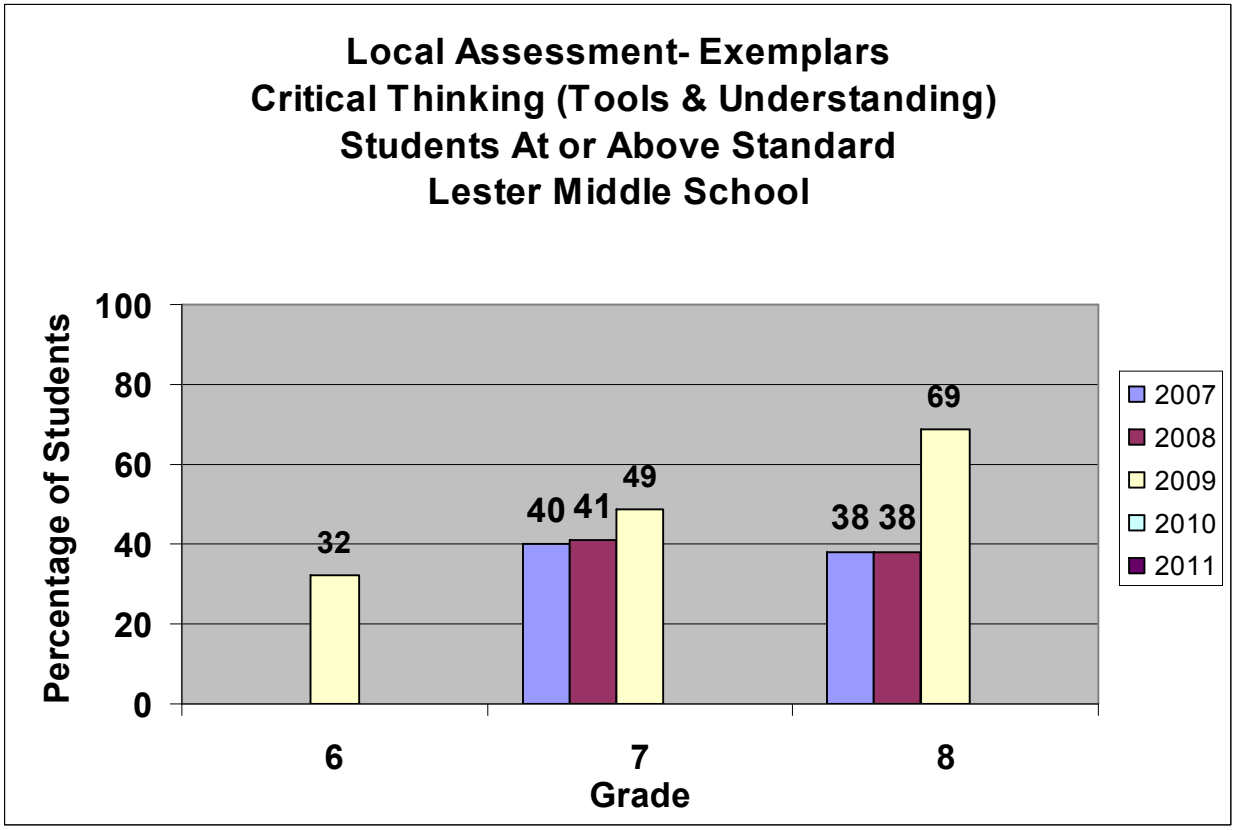
1. The difference in performance at the 7th grade is better by enough to mention compared to the baseline year.

(Z= .18)

(Results are not reported for targeted subgroup on this instrument due to the fact that school results are received only at grade level aggregation.)

Note: Due to the decision by DoDEA to discontinue use of this assessment, no results will be available beyond the 2008 administration of the Online Science Criterion-Referenced Test.

DATA DISPLAY: **Exemplars 9 -12 Assessment, Tools and Strategies Subtests**

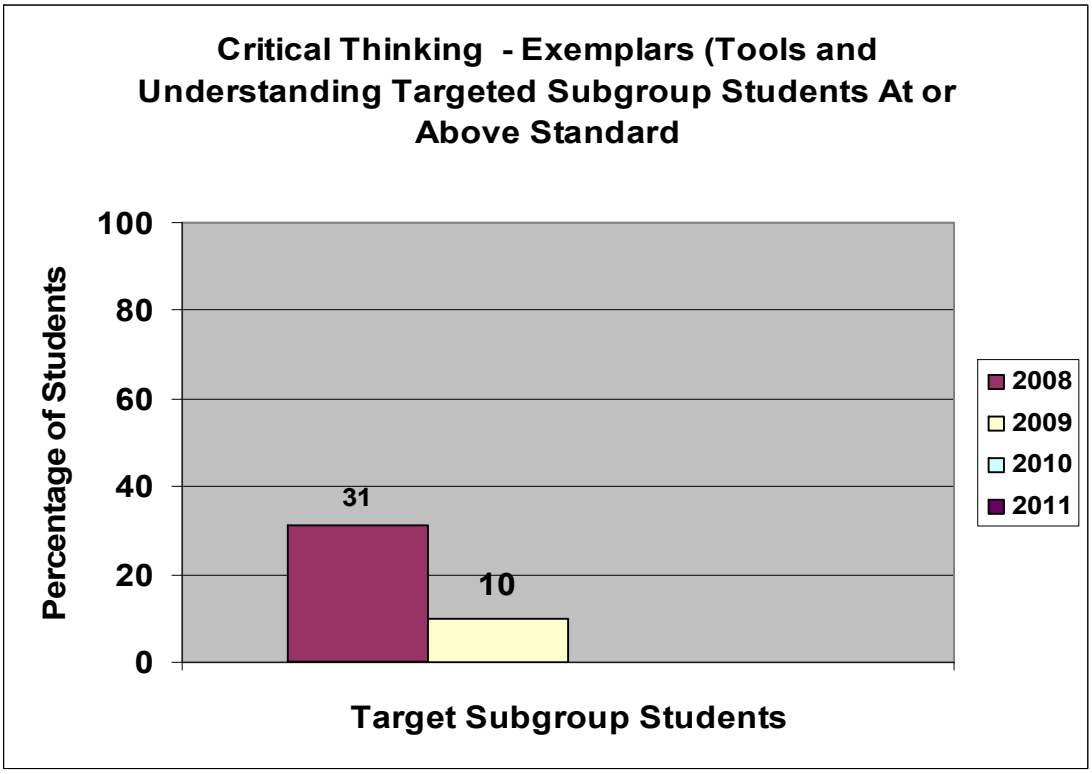


Indicator of success There is a meaningful increase in the percentage of students performing At the Standard or higher on the Exemplars local assessment (Grades 7 and 8).

Findings: (z-score analysis)

1. The difference in performance at the 7th grade is much better compared to baseline year. (Z= .22)
2. The difference in performance at the 8th grade substantially better compared to baseline year. (Z= .81)

DATA DISPLAY: **Targeted Subgroup Exemplars Critical Thinking Assessment (Tools and Strategies Subtests)**



***Note: Due to the small population of the sub group any interpretation change in student performance should be made with caution.**

Indicator of success There is a meaningful increase in the percentage of targeted subgroup students performing At the Standard or higher on the Exemplars local assessment

Findings: (z-score analysis)

1. The difference in performance of the target sub-group is substantially worse compared to baseline year. (Z= -.78)

ANALYSIS

Summary of student performance for *TerraNova* Multiple Assessment, Math Subtest

Prior to 2009, the *TerraNova*, 2nd Edition was used. Beginning in spring 2009, the *TerraNova*, 3rd Edition was used. Z-score comparisons will be computed for student performance data beginning in 2010, comparing student performance to that of 2009. However, it should be noted that 2009 test results indicate both 7th and 8th grade met the expectations of the indicator of success of performance levels in top two and bottom national quarters. Sixth grade performance was well below expectations.

Summary of student performance for *TerraNova* Multiple Assessment, Science Subtest

Prior to 2009, the *TerraNova*, 2nd Edition was used. Beginning in spring 2009, the *TerraNova*, 3rd Edition was used. Z-score comparisons will be computed for student performance data beginning in 2010, comparing student performance to that of 2009. However, it should be noted that 2009 test results indicate 8th grade met the expectations of the indicator of success of performance levels in top two and bottom national quarters. Sixth grade performance was well below expectations, and 7th grade performance is close to expectations for percentage of students in top two national quarters, and met the expectation for performance in the bottom national quarter.

Summary of student performance (z-score differences) for Assessment Two (Science Criterion referenced test, Grade 7, online)

The spring 2009 assessment administration was the baseline year for sixth graders taking this assessment. The difference in performance at the 7th grade is better by enough to mention compared to the baseline year. (Z= .18) (Results are not reported for targeted subgroup on this instrument due to the fact that school results are received only at grade level aggregation.)

Summary of student performance (z-score differences) for Assessment Three (Exemplars, 9-12, Tools and Strategies Subtests)

The difference in performance at the 7th grade is much better compared to baseline year. (Z= .22) The difference in performance at the 8th grade substantially better compared to baseline year. (Z= .81) The difference in performance of the target sub-group is substantially worse compared to the baseline year. (Z= -.78)

Summary of student performance (z-score differences) for Assessment Four (Targeted Subgroup - Exemplars, 9-12, Tools and Strategies Subtests)

The difference in performance of the target subgroup is substantially worse compared to the baseline year. (Z= -.78)

Impact of each intervention on student performance:

Although we are unable to do comparative analysis between baseline and current year TerraNova results, we are seeing favorable performance by our seventh and eighth grade students, particularly in the mathematics subtest. Sixth grade performance on both math and science subtests are an ongoing concern. This was the first year our sixth grade students were with us and exposed to our Reflections intervention. Seventh grade performance on the online criterion-referenced assessment indicated favorable gains, which may be attributed to our reflection intervention. Exemplar

assessment results indicate our seventh and eighth graders have shown positive gains during the two years of implementation of our intervention.

Action Needed: (How will the School Improvement Plan be modified in light of these assessment results?
Lester Middle School faculty will continue improve the monitoring of our interventions by adding a quarterly focus to the essence of the intervention, and by adding formative assessments to provide data on the impact of the intervention. We are hopeful that this timely assessment data will provide important information to guide instructional decisions and increase the impact of the interventions.

Which intervention(s) will continue? Why?
Reflective Thinking will continue as Intervention for Goal 1, as we are seeing a positive impact on student performance. We are hopeful that our focused professional development and monitoring process will help us to continue to improve student performance.

Which intervention(s) will be modified? How?
There will be a quarterly focus for the intervention, and assessment results will guide any instructional review.

Which intervention(s) will be discontinued? Why?
We have no plans to discontinue the intervention at this time due to the positive gains shown in student performance.

PART V: DOCUMENTATION REPORT

(A documentation report will be developed when you have baseline data and at least two consecutive years of meaningful increases in student performance on this goal, and the school has made the decision that they have met this goal.) To facilitate the completion of this report, please complete the first 2 items of the executive summary.

Selection of Goals: Critical Thinking

In School year 06-07, Lester Middle School faculty, community members and parents met to determine appropriate goals for Lester Middle School for the next school improvement cycle. After reviewing test scores and holding small group discussions, the faculty and community established Critical Thinking as one of Lester Middle School's school improvement goals. Test scores from the *TerraNova* supported this choice. The group reached consensus that a concentration on this goal would enhance and improve the education of the students at Lester Middle School. Therefore, the School Improvement Goal 1 was determined to be Critical Thinking.

Selection of Interventions: Reflective Thinking

SIP subcommittees of teachers and parents were established for each student performance goal during Year 1 of the School Improvement Cycle. Each subcommittee identified a set of research-based interventions supporting the goal that could be implemented school-wide in all curricular areas. SIP subcommittees were also developed for School Home Community Partnerships and Data and Analysis in order to support the implementation of the school improvement goal. The school and community reached consensus on interventions to be included in the School Improvement Plan by using research based interventions for Reflective Thinking.

ADDENDUM 1: DoDEA CURRICULAR STANDARDS RELATED TO THE GOAL

Grade 6: Science
S1d: Applies appropriate tools and techniques to systematically collect, record, analyze, and interpret data.

Grade 6: Math
M9a: Recognize and use connections among mathematical ideas.

Grade 6: Language Arts
E1a: The student reads at least twenty-five books or book equivalents each year. The quality and complexity of materials to be read is based on the lexile level of grade 6 (800L-1050L).

E3d: The student makes informed judgments about television, radio, and film productions.

Grade 6: Ancient and Medieval Civilizations
SK1d: Infer information from captions, cartoons, photographs, etc.

Grade 6: Band
MU5: The student reflects upon and assesses the characteristics and merits in performances of their music and the music of others.

Grade 6: Host Nation
1: The student will use the host nation language in familiar situations to enhance oral communication skills and vocabulary development.

Grade 6: Visual Arts
VA7a: The Student selects elements of art and principles of design to create works of art using technology.

Grade 6: Humanities
E5a: The student responds to non-fiction, fiction, poetry, and drama using, interpretive, critical, evaluative processes.

Grade 6: Computer Technology
PT3a: Communicate ideas to justify position, persuade and convince others, and responsibly challenge existing procedures and policies.

Grade 6: Computer Technology
PT3b: Use technology to communicate information and ideas in ways that are appropriate to the purpose and audience through spoken, written, and graphic or visual means of expression.

Grade 7: Science

S1d: Applies appropriate tools and techniques to systematically collect, record, analyze and interpret data.

Grade 7: Math
M9a: Recognize and use connections among mathematical ideas.

Grade 7: Language Arts
E3d: The student makes informed judgments about television, radio, and film productions.

Grade 7: World Geography
1c: Infer information from advertisements, news articles, cartoons, captions, photographs, etc.

Grade 7: Foreign Language
FL2d: The student demonstrates written communication in the target language for a variety of needs.

Grade 7: Applied Tech
E1b3: Draws the text together to compare and contrast themes, characters and ideas.

Grade 7: Family Consumer Science
PT2f: Engage in higher order thinking and will apply problem-solving strategies in purposeful ways, both in situations where the problem and desirable solutions are clearly evident and in situations requiring a creative approach to achieve an outcome.

Grade 7: Band
MU5: The student reflects upon and assesses the characteristics and merits in performances of their music and the music of others.

Grade 7: ESL
3.3 Actively and skillfully conceptualizing, applying, analyzing, synthesizing, and evaluating information to reach an answer or conclusion.

Grade 7: Visual Arts
VA7a: The student uses technological tools to access a variety of information and resource materials relating to the visual arts.

Grade 7: Humanities

E5a: The student responds to non-fiction, fiction, poetry, and drama using, interpretive, critical, evaluative processes

Grade 7: Computer Technology
PT3a: Communicate ideas to justify position, persuade and convince others, and responsibly challenge existing procedures and policies.

PT3b: Use technology to communicate information and ideas in ways that are appropriate to the purpose and audience through spoken, written, and graphic or visual means of expression.

Grade 7: Health

HE6c: Analyze signs and symptoms of major sexually transmitted diseases such as HIV/AIDs and know where to get help.

Grade 8: Science
S1g: Communicates scientific procedures, explanations, and conclusions using appropriate scientific language and writing, and mathematics.

Grade 8: Math
M9: Understand how mathematical ideas interconnect and build on one another to produce a coherent whole.

Grade 8: Language Arts
E1c: The student reads and comprehends informational materials to develop understanding and expertise and produces written or oral work.

Grade 8: Social Studies
Sk1b: Interpret data and create graphic displays (charts, graphs, diagrams, graphic organizers and time-lines) using technology.

Grade 8: Physical Education
PE1b.1: Recognizes developmental progression towards skill proficiency in selected partially modified sports and activities.

Grade 8: Foreign Language
FL2d: The student demonstrates written communication in the target language for a variety of needs.

Grade 8: Applied Technology
E1b3: Draws the text together to compare and contrast themes, characters and ideas.

Grade 8: Family Consumer Science
PT2f: Engage in higher order thinking and will apply problem-solving strategies in purposeful ways, both in situations where the problem and desirable solutions are clearly evident and in situations requiring a creative approach to achieve an outcome.

Grade 8: Humanities

E5a: The student responds to non-fiction, fiction, poetry, and drama using, interpretive, critical, evaluative processes.

Grade 8: Band
MU5: The student reflects upon and assesses the characteristics and merits in performances of their music and the music of others.

Grade 8: ESL
3.3: Actively and skillfully conceptualizing, applying, analyzing, synthesizing, and evaluating information to reach an answer or conclusion.

Grade 8: Visual Arts

VA7a: The student uses technological tools to access a variety of information and resource materials relating to the visual arts.

Grade 8: Humanities

E5a: The student responds to non-fiction, fiction, poetry, and drama using, interpretive, critical, evaluative processes.

Grade 8: Computer Technology

PT3a: Communicate ideas to justify position, persuade and convince others, and responsibly challenge existing procedures and policies.

PT3b: Use technology to communicate information and ideas in ways that are appropriate to the purpose and audience through spoken, written, and graphic or visual means of expression.

Grade 8: Health

HE6c: Analyze signs and symptoms of major sexually transmitted diseases such as HIV/AIDs and know where to get help.

ADDENDUM 2: Research Related to the Interventions Selected

Intervention: Reflective Thinking

Supporting Research:

Reflective Thinking, John Dewey and PBL
by Bernard C. Hollister

"We all acknowledge, in words at least, that ability to think is highly important; it is regarded as the distinguishing power that marks man from the lower animals. But since our ordinary notions of how and why thinking is important are vague, it is worth while to state explicitly the values possessed by reflective thought. In the first place, it emancipates us from merely impulsive and merely routine activity. Put in positive terms, thinking enables us to direct our activities with foresight and to plan according to ends-in-view, or to come into command of what is now distant and lacking. By putting the consequences of different ways and lines of action before the mind, it enables us to know what we are about when we act. It converts act ion that is merely appetitive, blind and impulsive into intelligent action." (p. 212, **John Dewey on Education**).

In the traditional school, the teacher used to generate discussion and frequently the amount of discussion was the hallmark of a good classroom. Questioning by the teacher was meant to elicit opinions and judgments, such as: "What do you think of that idea, John?" Or, "What's your opinion, Mary?" Perhaps this type of classroom has a causal link to today's talk radio where everyone seems to have an opinion without much thinking. In other classrooms following the old model, questioning was more about eliciting the knowledge a student had about a topic or an idea. Hence, the teacher used such questions as: "What happened in 1776?"

In educational research today there is significant literature concerning reflective thinking in teaching and learning. In other words, we are attempting to make our students more reflective in their thinking rather than just encouraging them to give an opinion. The former is no easy task but it is a goal that most teachers would like to emulate and there are many ways to motivate students to engage in reflective thinking, such as thinking logs. Another approach which takes some work and actual reflection on the part of the teacher is reflective questioning or carefully thinking and crafting questions which will cause students to be more reflective in their own thinking, speaking, and writing.

Regardless of the current research on reflective thinking, it seems amazing indeed to turn to a thinker, John Dewey, who began to contribute to our understanding of thinking, learning, and teaching more than 100 years ago.

Reflective thinking demands attention to both terms “reflection” and “thinking” so let’s examine these in relationship one to the other. With Problem Based Learning and its connection to reflective thinking and practice, we are seeking to ground learning in a more authentic environment than exists in the traditional classroom. Sometimes we need to take Thoreau at his word: “Simplify, simplify, simplify.” No less a thinker than Dewey tells us:

“To discover what is really simple and to act upon the discovery is an exceedingly difficult task. After the artificial and complex is once institutionally established and ingrained in custom and routine, it is easier to walk in the paths that have been beaten than it is, after taking a new point of view, to work out what is practically involved in the new point of view.” (p. 30, **John Dewey on Education**).

Like Robert Frost’s poem “The Road Not Taken”, the well-worn path in education is the easier to follow. The less-traveled path of which we write is the more difficult and the more rewarding. The Problem Based Learning path seeks to create tension, dissonance, counter-intuitive or counter factual situations which call upon learners not to just engage in creative brainstorming but to engage in rigorous and reflective thinking about what they are learning and how they are learning it. Let us listen to the master John Dewey when he wrote:

“In any case positive habits are being formed (in school): if not habits of careful looking into things, then habits of hasty, heedless, impatient glancing over the surface; if not habits of consecutively following up the suggestions that occur, then habits of haphazard, grasshopper-like guessing; if not habits of suspending judgment till inferences have been tested by the examination of evidence, then habits of credulity alternating with flippant incredulity, belief or unbelief being based, in either case, upon whim, emotion, or accidental circumstances.” (p. 66 **How We Think**).

How often have we been buffeted by the winds of change in education, the *au courant* technique, the quick fix, the glib generalizer? How guilty as charged are we by Dewey’s admonition to shun “habits of hasty, heedless glancing over the surface?” What of this

"haphazard grass-hopper-like guessing?" Can we possibly be indicted on this charge, too?

One area where PBL must take the clear lead is in the depth of thinking that can and must occur with our learners. It is this pursuit of intellectual engagement which distinguishes PBL from just another technique and makes it a rigorous methodology. Dewey would seem to agree with us about the value of PBL. For example, when we talk about meeting the problem or creating a "fuzzy" situation to hook the learners; Dewey wrote the following in 1909:

"In cases of striking novelty or unusual perplexity, the difficulty, however, is likely to present itself at first as a shock, as emotional disturbance, as a more or less vague feeling of the unexpected, of something queer, strange, funny, or disconcerting. In such instances, there are necessary observations deliberately calculated to bring to light just what is the trouble or to make clear the specific character of the problem. In large measure, the existence or non-existence of this step makes the difference between reflection proper or safeguarded critical inference and uncontrolled thinking." (p.74, **How We Think**).

What the teacher/coach in PBL must do is to model reflective inquiry and reflective thinking so learners come to value them. This approach is preferable to being Mr. Gradgrind of Dickens' Hard Times. Gradgrind as a teacher sought to fill up the little pitchers--his pupils--with facts. Dickens put it another way when he compared Gradgrind to a cannon loaded with facts, ready to blow his charges clean out of childhood with his knowledge. Dewey again:

"Facts, whether narrow or extensive, and conclusions suggested by them, whether many or few, do not constitute, even when combined, reflective thought. The suggestions must be organized; they must be arranged with reference to one another and with reference to the facts on which they depend for proof." (p.39, **How We Think**).

Reflective thinking and inquiry in a PBL context give learners existential power over themselves and creates true life-long learners, unlike the Gradgrinds who become pedants. Dewey goes even further with his claims for reflective thinking--for it gives us true freedom. To Dewey, freedom is not just at the ballot box or a phrase in a 4th of

July oration, nor is freedom to be defined in economic terms. For him, freedom is about the ability to think and, therefore, to be in charge of ones destiny. He said:

"Genuine freedom, in short, is intellectual; it rests in the trained power of thought , in ability to 'turn things over' to look at matters deliberately, to judge whether the amount and kind of evidence requisite for decision is at hand, and if not, to tell where and how to seek such evidence. (pp. 66-67, **How We Think**).

Reflective thinking and inquiry can set us free from the limitations placed upon us by stereotypes, whether of social class, race, gender or even the parochialism of our own time and space. The PBL coach has an almost sacred trust to foster, encourage, and preserve reflective inquiry for these are the habits of mind which truly set us free and lay claim to a democratic society. Indeed, the bedrock of a truly democratic society must be based on the spirit of inquiry and reflective thought. In PBL we must seek not the superficial and we must insist on the rigor which comes with inquiry. John Dewey expressed the teacher's role thus:

"His (the teacher's) problem is to protect the spirit of inquiry to keep it from becoming blase from overexcitement, wooden from routine, fossilized through dogmatic instruction or dissipated by random exercise upon trivial things." (p.34, **How We Think**).

And: "Such a teacher will have no difficulty in seeing that the real problem of intellectual education is the transformation of natural powers into expert, tested powers: the transformation or more or less casual curiosity and sporadic suggestion into attitudes of alert, cautious, and thorough inquiry." (p. 62, **How We Think**).

PBL teachers like to say that problems worth rigorous intellectual exploration can be found almost anywhere and Dewey agrees:

"Accordingly any subject from Greek to cooking, and from drawing to mathematics is intellectual, if intellectual at all, not in its structure, but in its function--in its power to start and direct significant inquiry and reflection." (p. 39, **How We Think**).

Think for a minute of an in-depth problem in cooking and how to make it intellectually challenging and worthy of reflective thinking for our learners. Problem possibilities with intellectual depth are what separate the superficial from the type of problem of which Dewey writes and in which we believe. What might seem like a cute and facile idea for

a one-day lesson can be converted into an in-depth problem. Transferring the problem idea to an actual rich and intellectual experience for the learner is critical. What is an ideal thinking situation in the classroom for Dewey? He answers us again from 1909 with a relevance that is stunning to behold for PBL.

"That the situation should be of such a nature as to arouse thinking means of course that it should suggest something to do which is not either routine or capricious-- something, in other words, presenting what is new (and hence uncertain or problematic) and yet sufficiently connected with existing habits to call out an effective response... The most significant question which can be asked, accordingly, about any situation or experience proposed to induce learning is what **quality of problem** it involves? (boldface is mine)." (p.154, **Democracy and Education**).

In PBL we worry about just how big a problem might be to lead to reflective thinking and practice. Obviously, we don't want a problem which is so overwhelming and complex that the learner can't engage it. Dewey has advice for us on this point, too:

"A large part of the art of instruction lies in making the difficulty of new problems large enough to challenge thought, and small enough so that, in addition to the confusion naturally attending the novel elements, there shall be luminous familiar spots from which helpful suggestions may spring." (p. 57, **Democracy and Education**).

Dewey is famous for his statement "Thinking is Doing" and here is still one more Deweyian link to PBL because true PBL exemplifies "Thinking is Doing." From the Know/Need to Know Board, the first problem statement, the drafting of the problem statement, the research, and the presentation-- this is the essence of PBL, i.e. thinking is doing. Dewey said on a number of occasions that adults were engaged in real work and real thinking and children were not:

"In the case of children, the choice is so peculiarly exposed to arbitrary factors, to mere school traditions, to waves of pedagogical fad and fancy, to fluctuating social cross currents, that sometimes, in sheer disgust at the inadequacy of results, a reaction occurs to the total neglect of overt activity as an education; factor, and a recourse to purely theoretical subjects and methods." (pp, 41-42, **How We Think)**

And in Democracy and Education, he elaborates: "There must be more actual material, more stuff, more appliances, and more opportunities for doing things....And where children are engaged in doing things and what arises in the course of their doing, it is found, even with comparatively indifferent modes of instruction, that children's inquiries are spontaneous and numerous, and the proposals of solution advanced, varied, and ingenious." (p.156, **Democracy and Education**).

In the rigor of Problem Based Learning and the tools we employ, we seek not to explore the superficial or the obvious; we strive not for the facile land of opinion, judgment, or passion. We seek the deeper road of challenging our learners to question, reflect, think, engage in analyses and syntheses, to test and validate their ideas and hypotheses, to engage their hunches as intellectual risk taking and from this will come freedom.

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