

WESTSIDE HIGH SCHOOL 2001-2006



NCA Final Documentation Report January 17, 2006

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Westside High School

Mission Statement

In its quest to be the best high school in the United States, Westside's mission is to ensure that all students reach for their potential, compete successfully in a changing world and develop respect for themselves, other people and the environment.

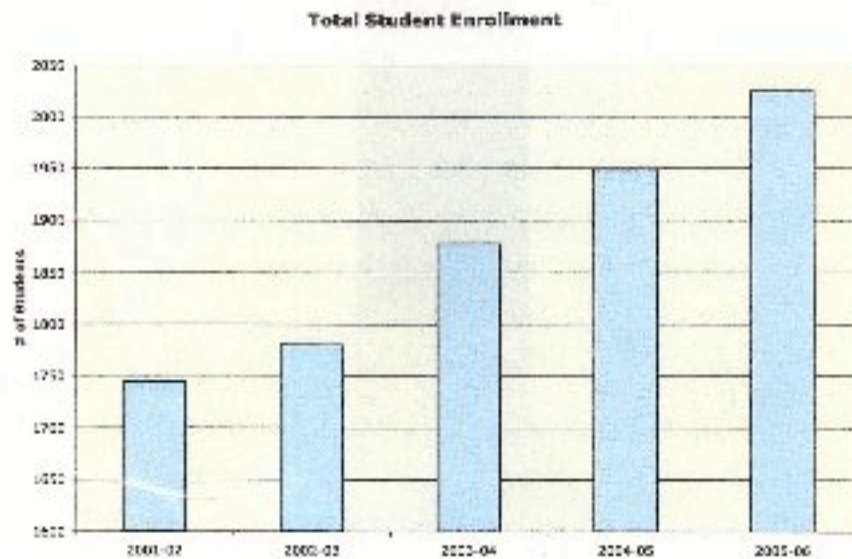
Description of Westside High School

Westside High School uses several unique programs to foster academic excellence. Students access a rich array of honors and AP courses, broad elective offerings, and a 4-year guidance curriculum. WHS utilizes modular scheduling to deliver instruction in a way that enhances student learning and facilitates completion of up to one additional semester of course work by graduation. WHS has a graduation rate of 97% and approximately 90% of all students complete ACT's recommended core curriculum. More than 80% of Westside graduates attend college. The focus on outcome based learning led to the development of district curriculum standards that have been approved by the State Board of Education. Designated twice as "Best in the State" by Redbook and as a "World Class" school by NASSP, this 1983 and 1996 Blue Ribbon winner was also declared among the top 100 high schools in the nation by Offspring magazine in 2000. WHS is Nebraska's only public high school to offer laptops for all students.

WESTSIDE HIGH SCHOOL PROFILE UPDATE

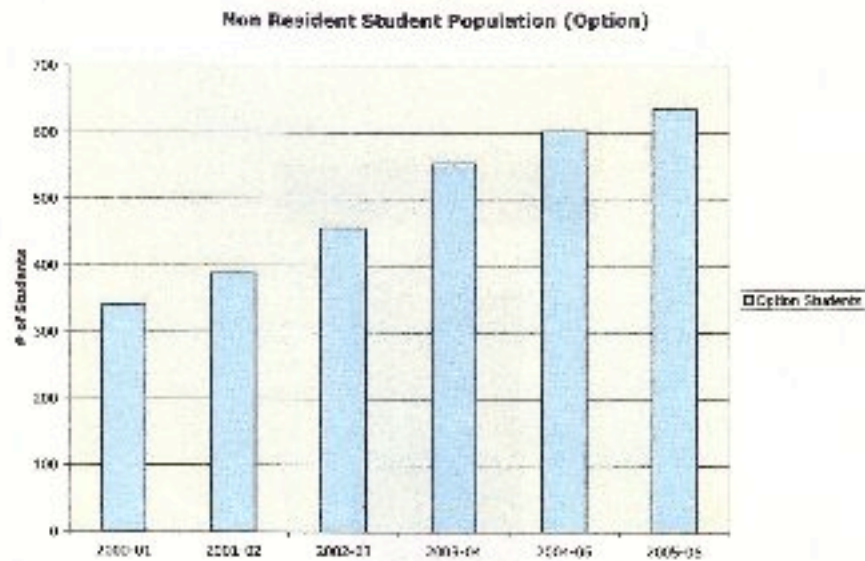
In the years following the submission of the 2002-2003 Westside High School Profile, much of the data included under Unique Local Insights, Follow Up of Former Students, and Existing Student, Instructional, and Community Data has remained constant. For example, a high percentage of Westside students continue to enter college (80.7%); average daily attendance is strong (95.59%); the percentage of students receiving free and reduced lunch is unchanged (11.99%); graduation rates remain stable (98.21%); students still score extremely well on state assessments in language arts and mathematics; and Westside's ACT scores, currently (24.2), are at an all time high and have stayed well above the national average. However, some of the demographics have changed, and those changes have had some impact on the implementation of our NCA critical thinking goal. The significant demographic changes are shown in the following graphs:

TOTAL FALL ENROLLMENT - WESTSIDE HIGH SCHOOL - 2001 - 2005



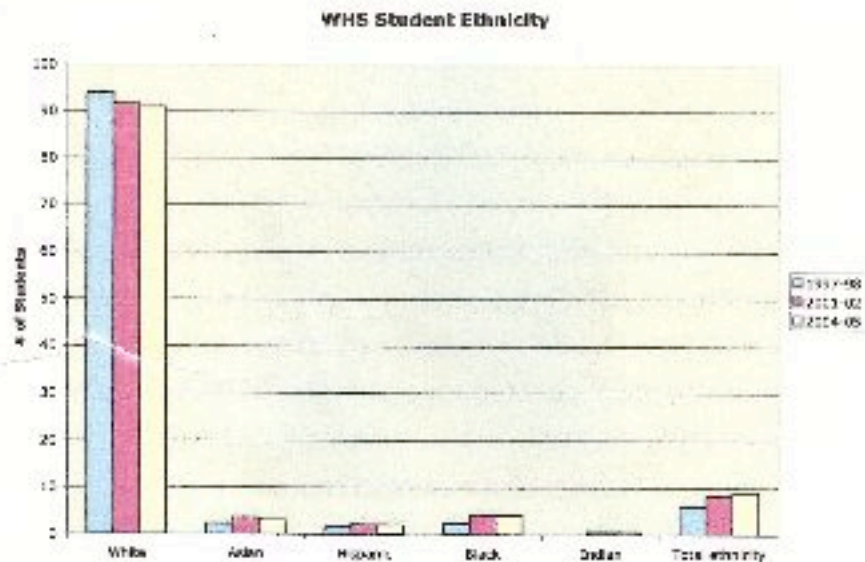
This data indicates a steady increase in enrollment over the past five years. As a result, the number of staff at the high school has also increased, and the facility is scheduled more heavily.

NON-RESIDENT PERCENTAGE (OPTION) 2000 – 2005



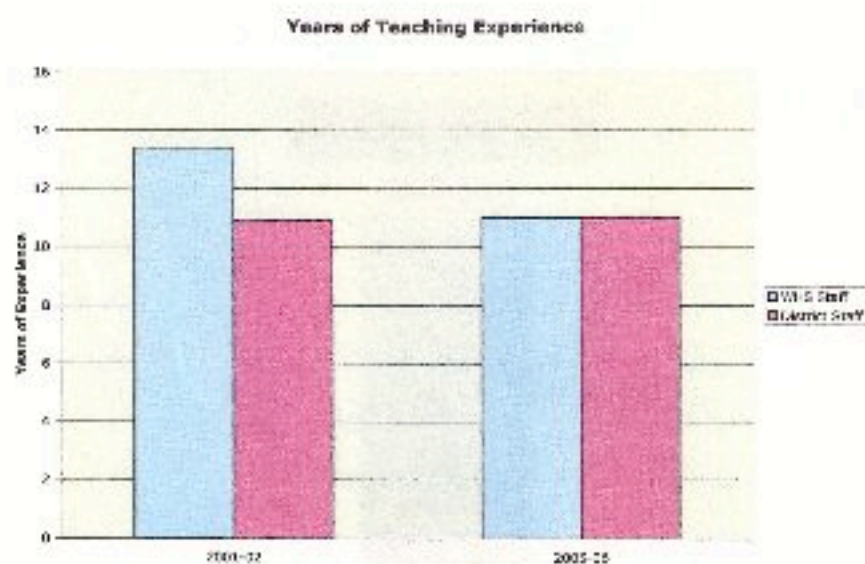
This graph illustrates the trend for more students from other school districts to opt in to the Westside district. This trend certainly reflects the positive reputation of the high school. One possible negative impact of adding increased numbers of students from other school districts is that some of those students have not had the benefit of working through Westside's K-12 curriculum and are therefore at somewhat of a disadvantage when they enter the high school.

WHS ETHNICITY TREND 1997 – 2005



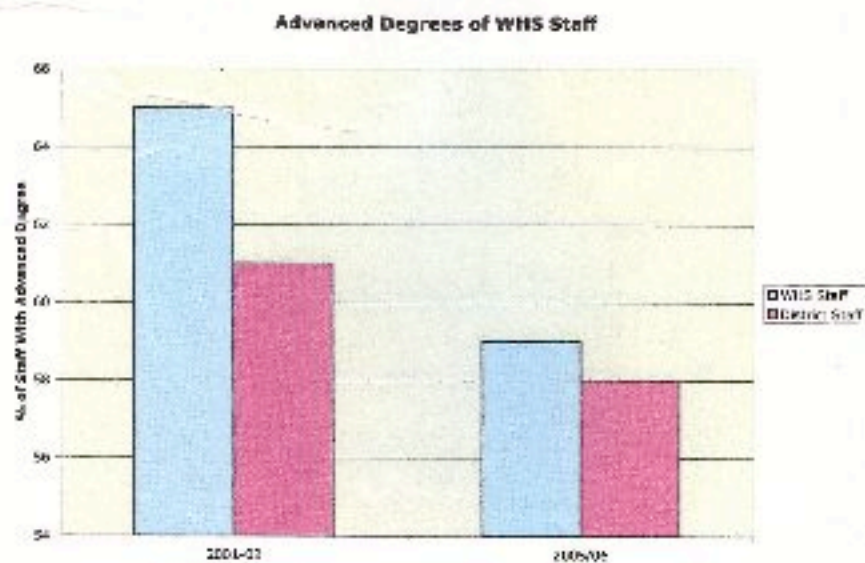
The ethnicity data indicates a slight increase in our overall minority population, up from 6% in 1998 to 9% in 04-05.

YEARS OF TEACHING EXPERIENCE 2001-05



The Westside High School staff is less experienced in 2005-06 (11 years of experience) than they were in 2001-02 (13.4 years of experience). This is due to the number of retiring teachers who were replaced by less experienced teachers.

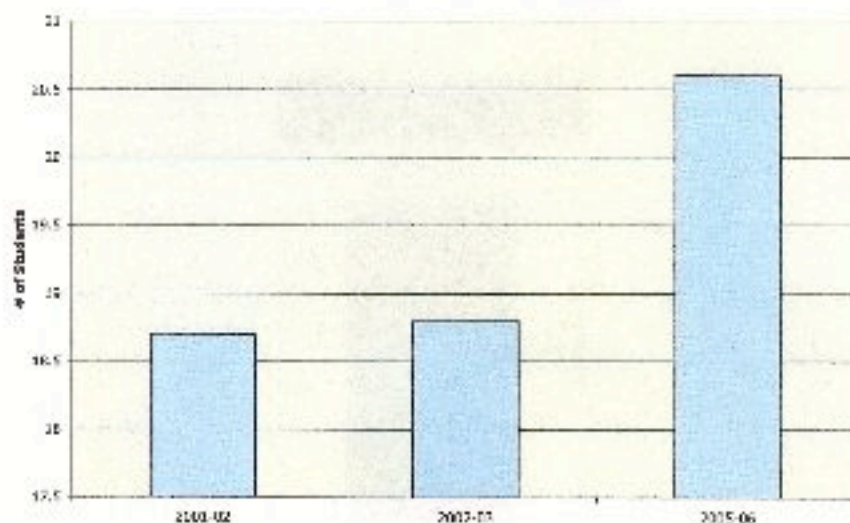
ADVANCED DEGREES OF WHS STAFF 2001-05



The percent of teachers holding at least a master's degree has decreased from 65% in 2001-02 to 61% in 2005-06. As shown in the previous graph, "Years of Teaching Experience," recent staff turnover has resulted in the hiring of newer teachers who do not yet have advanced degrees.

AVERAGE COUNT PER SECTION (2001, 2002, 2005)

Average Student Counts per Class



These results parallel the rise in overall enrollment as previously mentioned. Average class size has increased by slightly over 10% in the past five years.

In summary, demographic changes at Westside High School over the past five years have had implications for the implementation of our NCA critical thinking goal. First, because of staff turnover, initial staff development was necessary for new staff that were completely unfamiliar with the model of teaching critical thinking adopted by Westside High School. Bringing these new teachers up to speed with the rest of the faculty meant that more experienced staff had to allocate their time to instruct these newly hired teachers. Second, on-going support for the new staff also became necessary as these new teachers worked at implementing the critical thinking model. This, too, required more experienced staff to spend their time mentoring non-tenured staff. Third, the increase in option enrollment meant that many of these new students had not had the benefit of previous critical thinking instruction at Westside Middle School. Therefore, in order to catch up with their peers, extra instruction was needed. Fourth, the increase in class size has added to the workload of most teachers, which would, of course, bring an added challenge to the teaching of critical thinking. However, one strength of Westside High School's staff is their willingness and flexibility to learn and fine-tune their own skills, to adjust the curriculum, and to spend added time and energy to meet these new challenges.

NCA Committee Members

Suzanne Morin-Alternative School Director	2001-05
Maria Neesman- Alternative School Director	2005-06
Scott Persigbel-Business	2001-06
Doug Pierson-Scheduling	2001-06
Nancy Mitchell-English	2001-06
Gregg Ratliff-Engineering Technology	2001-06
Sandy Wang-Family and Consumer Studies	2001-06
Roger Groth-Fine Arts	2001-06
Mitzi Delman-Foreign Language	2001-06
Dick Lundquist-Guidance	2001-05
Elaine Willits- Guidance	2005-06
Gary Salerno-Math	2001-06
Kathy Lake-Media	2001-06
Physical Education-Doug Krecklow/Sally Shepherd	2001-06
Science-Brenda Zabel	2001-06
Social Studies-Tom Carman	2001-06
Special Education-Jenny Brockman	2001-06

Administrative Team:

Principal-John Crook	2001-06
Vice Principal-Patricia Hutchings	2001-06
Assistant Principal: Maryanne Ricketts	2001-06
Assistant Principal: Kent Kingston	2001-04
Assistant Principal: Jeff Wagner	2004-06

External Peer Review Team (2001-02)

Martha Bruckner
Millard Public Schools
Stroh Administrative Center
5606 South 147th Street
Omaha, NE 68137

Neal Grandgenette
University of Nebraska at Omaha
107 Kayser Hall
Omaha, NE 68132

Tom Hayes
Supervisor, Gifted Programs (retired)
Lincoln Public Schools
5901 "O" Street
Lincoln, NE 68501

NCA TIMELINE WESTSIDE HIGH SCHOOL

October 2001:

PLAN Pre Test Administered.

August 2002:

Overview of NCA process for building leaders: timeline, goal-setting, profile
Building advisory team begin work on assembling data for profile
Initial timeline for goal completion proposed by advisory team

September 2002:

Graduate follow-up data submitted for profile binder
Advisory group analyzes quality of profile data and determines its 'next steps'
Advisory group explores the role of the Steering Committee
Assistant Superintendent presents results of Harris Interactive Study to full faculty
Profile data for 'Differentiated Staffing' compiled
Advisory group establishes role of Steering Committee
Advisory team determines profile information still needed and who should collect it
Profile data for 'Existing school data: Instructional Data' compiled
Advisory group wants consultation with Pat Geary before Steering Committee gets profile

October 2002:

Revised timeline developed for the establishment of learner goals
Advisory subgroup prepares agendas for initial meetings of Steering Committee, all-school and department meetings
Advisory group attended two-day NCA "Data Retreat" at ESU/3 on 10/1 and 10/2
Agenda for first Steering Committee meeting finalized
Initial Steering Committee meeting: briefed on preliminary activities and future timeline
Faculty mtg: profile info. distributed, 5-yr process reviewed incl. capacity instrument results
Department meetings held to discuss profile and provide suggestions to steering committee
Steering committee met to reflect on goal topics based on staff input
Advisory group consulted with Pat Geary regarding the establishment of baseline data.
Advisory group discussed triangulation of data in regard to normative and perceptual data
Advisory group prepares 'Existing Community' and 'Instructional' data for profile.
Advisory group discussed 'implications' and 'local insights'
Advisory group met with Dr. Findley to discuss goal proposal. Suggestion to address critical thinking through writing activities
Plan Pre-Test administered

November 2002:

Summary document for Profile written
Steering Committee reviewed ideas from dept. meetings; proposes initial goal statement
Advisory group discusses status of goal statement and possible assessment strategies
Advisory group discussed baseline information and how to disaggregate groups
Steering committee discusses external visitation team needs for April

December 2002:

Administrative team reviews timeline, action plan, interventions, Critical Thinking Test, student performance, training, proficiencies, portfolio data, and who should be assessed

January 2003:

Administrative team reviews process & discusses being a pilot group for International Critical Thinking test. Dr. Findley to check on this possibility
Administrative team discusses possible trip by selected staff members to attend the International Critical Thinking Conference hosted by Dr. Richard Paul in San Francisco during the upcoming summer
Advisory group discusses release of the final Profile document to the steering committee
Subgroup of Advisory group work on development of final intervention statements on reading, writing, and questioning skills
Department heads receive Action Plans prior to giving input to full steering committee
Administrative and Advisory groups first discussed the use of the International Critical Thinking test as the Pre and Post test for our interventions
School Improvement Action plan forms for reading writing interventions created

February-March 2003:

Administrative team meets to discuss progress on timeline
Collaboration Day activities have staff review their outcomes and proficiencies
Preparing for the External Team visitation in April
Dept. Heads meet with Dr. Marylyn Bates on questioning skills in relation to CT

April-May 2003:

Advisory group discussed need to search for best critical-thinking practices
NCA External Team visit: April 2nd and 3rd
Administrative review of visitation team report
Visitation report shared with steering committee
Discussed need for emphasis on student activities in interventions
Staff selected to attend Dr. Richard Paul's inservice on Critical Thinking

June-July 2003:

Advisory group prepared a revised timeline
Selected staff members attended Dr. Paul's two-day workshop on Critical Thinking
WHS and WMS advisory groups meet again with Dr. Paul to select prompts for CT

August-September 2003:

Opening workshop (2 days): All secondary staff receive initial training w/Dr. Paul
Advisory group discusses baseline data
Development of surveys for teacher feedback of Dr. Paul's critical thinking ideas
Advisory group discusses how to incorporate CT ideas into goal activities
Advisory group discusses the use of Collaboration Days and Growth Plans for CT ideas
September Collaboration Day: All departments review NCA goals and related issues
Departments and teams evaluate their curriculum, outcomes, and proficiencies in order to brainstorm ways to implement Critical Thinking strategies into their lessons
International Critical Thinking Pre-Test administered
Capacity Index administered

October-November 2003:

Advisory group consults with Pat Geary who reviewed our process & plans. He gave his recommendations for collecting baseline data
Curriculum Teams work to develop understanding of Dr. Paul's philosophy & methods
November Collaboration day: teachers continue to work on implementation strategies
Teachers are directed to develop growth plans that will meaningfully address curriculum issues related to the implementation of critical thinking strategies
The classroom supervision process addresses critical thinking implementation

January-February 2004:

Report to Dr. Findley re: goal, evaluation, successes, questions and concerns
Subgroup of Advisory group met with Drs. Crook and Findley to discuss North Central meeting and power point slides on CT for Dr. Findley
Collaboration Day: staff continues individual/Team work on CT strategies
Revise School Improvement Action Plan statements to reflect progress made to date
Teachers continue to implement CT strategies according to their growth plans
State Writing Pre-Test administered

March-April 2004:

Advisory group discusses ideas needed for Board Report on CT
Development of Power Point slides for Board Report on CT in March
Advisory group receives feedback from Tom Hayes on assessments and baseline data
Board Report regarding progress on North Central activities in relation to CT
Report to Dr. Crook re: triangulation of data
Advisory group discussed pre/post testing; triangulation of data; rubric development; staff awareness
Teachers continue to implement CT strategies according to their growth plans
The classroom supervision process addresses critical thinking implementation

May-July 2004:

Agenda set for DH meeting to establish student activities for each intervention
Initial work by departments on prioritizing student activities for each intervention
Feedback received from all departments re: prioritization of student activities
Final draft of reading/writing/questioning strategies established
Rubrics for scoring CT prompts developed by WHS and WMS core staff during summer
Building administrators and core department leaders attend 3 day Int'l Critical Thinking Conference in Palo Alto, CA

August-September 2004:

Administrative meeting to review new rubrics
Administrative and advisory group agreed that it would be best if each staff member had two growth plans for the coming year. One would deal with critical thinking and the other would deal with laptop technology. It was decided to pursue this course of action to hold staff accountable for more meaningful intervention strategies
New scoring rubrics were presented to staff. The rubrics were then posted to the high school conference page on teachers' laptops

October-November 2004:

Collaboration day activities include having teams continue to develop activities that support the meaningful implementation of the Elements and the Standards into their respective course(s)

Teachers continue to implement CT strategies according to their growth plans
Instructional Supervision continues to monitor critical thinking implementation
PLAN Post-Test administered

January-February 2005:

Administrative meeting to review where we stand in relation to timeline and assessments
Collaboration day provides for interdepartmental sharing of classroom activities that teachers have been implementing in relation to critical thinking
Teachers continue to implement CT strategies according to their growth plans
State Writing Post Test Administered

March-May 2005:

Board report on Critical Thinking emphasizing:
-Review of North Central Process with all teachers
Action Plans
-Individual teacher growth plans
-Focus of classroom observations
-Collaboration days last 2 years dedicated to CT
-Ongoing emphasis

April Collaboration Day: Teamwork on critical thinking
Teachers continue to implement CT strategies according to their growth plans
The classroom supervision process addresses critical thinking implementation

July 2005:

Advisory group met with Andy Rikli to review:
-components of Exit (Doc) Report and who would be responsible for its parts
-timeline and format for re-administering the capacity instrument
-data sources
-final visitation of the External Evaluation Team

August-November 2005:

Administrative group met with Andy Rikli to determine our progress toward the final doc report and to establish our next steps for closing out the cycle
Teachers were once again charged with developing growth plans that relate to CT
The International Critical Thinking Test was given as a post test to our 9th and 12th graders
A blind sample of 200 pre and 200 post tests of the International Critical Thinking Exam were double graded according to the scoring rubric developed over the last two summers
International Critical Thinking Post Test administered
Capacity Index administered

Goal Selection Process

Our entire teaching staff was involved in the process of the selection of our school-wide critical thinking goal. Our administrative team believed that this process was important both in the ownership of the goal and the potential for student learning. In the fall of 2000, we began by asking the department chairs to discuss with their teams the topic of school improvement. Each department was given the charge of deciding, through a consensus model within their department, the one "most important" need their teachers felt would improve student learning. Every teacher was provided data profile information including the Harris Interactive Survey, Graduate Surveys, state assessments, and standardized tests for their review and input at their department meetings. The department chairs (steering committee) then reviewed and discussed what had been submitted from each of the curriculum departments.

The 2001-02 average percentile of the science reasoning subtest on the PLAN Test was at a seven year low (78%) and down five percentage points from the previous year (83%). The science reasoning test was identified as a possible area of concern because the other subtests of the PLAN Test and the composite ACT scores remained fairly constant over the same time frame. Another interesting area that was looked at was student engagement in inquiry-based learning. The staff was surveyed and 63% of staff responded that they have students engaged in inquiry-based learning less than 50% of the time. Other learning areas the survey pointed to as having more than 60% of staff using less than 50% of the time were problem-solving approaches and knowledge-building discussions. There were no glaring deficiencies in any particular academic area so the following sources were used to select the goal:

1. Science reasoning part of the PLAN test
2. Teacher survey of high-level activities
3. Implications from WHS departments meetings

Specific suggested topics that may improve overall student achievement and increase higher-level thinking included critical reading, writing, and critical thinking. There was a belief among the steering group that we could expect more from our students by demanding more in-depth thinking. The initial thinking of the steering committee was that critical thinking could include writing, reading and questioning (see Action Plans). After considerable discussion reviewing the needs for improvement, the steering committee landed on critical thinking knowing full well the tremendous undertaking we were about to pursue.

In order to appropriately pursue the goal of critical thinking we needed to learn more about this concept. Through our research we settled on the work of Dr. Richard Paul, Director of Research and Professional Development at the Foundation for Critical Thinking. Dr. Paul provided the curriculum pieces of the critical thinking elements and standards that became our springboard for the incorporation of critical thinking into all curricular areas.

INTERVENTIONS

From the early beginnings of our current NCA program, our staff developed a goal and related activities that would challenge our students to become improved thinkers in all of their classes. Through considerable staff input (as described in the 'goal selection process' above), it was decided that 'thinking' in its purest sense and 'critical thinking' in particular would be best served through reading, writing, and questioning activities. Consequently, they became the foundation for our interventions that address this goal. It should be understood that as time evolved, the questioning intervention became closely intertwined with each of the other two. As such, the reader should understand that the activities that are listed in our 'questioning' intervention cannot really be separated from the activities found in our other interventions. The questioning intervention essentially took on a "hand-in-glove" relationship with the reading and writing interventions. During our current cycle, each department has taken measures to implement the following interventions in a manner that was both consistent with the intended purpose, and was meaningful within the context of its curriculum.

1. All students will increase their use of critical thinking through reading.
2. All students will increase their use of critical thinking through writing.
3. All students will increase their critical thinking skills in response to higher-order questions.

Reading:

In the seven year period from 1995 to 2002, reading scores on the 10th grade ACT-Plan tests fell 7% to 13% lower than scores in Math or Science/Reasoning during the same period, indicating a potential area for improvement.

Staff survey data indicated that reading requirements for academic classes varied from 10% of staff requiring no reading in their classes to 54% who required two or more hours of reading per week. Considering that research by Donohue (1999) indicated that there is a positive correlation between the amount of academic reading and the scores received on reading tests, we believed our varied survey data indicated an additional reason for improving reading skills. Thus, reading was targeted as a vehicle for the improvement of Critical Thinking. The following list of activities for staff and students was developed in relation to reading.

Teachers will:

- review Bloom's taxonomy
- review the best practice/research of reading in content areas
- have a common understanding (definition) of what critical thinking skills are

- incorporate critical thinking activities into their lesson design
- integrate critical reading activities into their lesson design
- receive training on teaching critical reading in the content areas
- take the International Critical Thinking Test (so that they were better able to align curriculum with students needs).

Students will:

- apply the SEXI model to explicate a thesis of a given reading
- analyze a fiction and/or a non-fiction reading or graphically represented assignment using the 'elements' of thought
- evaluate a fiction and/or a non-fiction reading or graphically represented assignment by using the 'standards' of critical thinking
- demonstrate pre-reading strategies and post-questioning strategies with a given reading

Writing:

Research by Calkins, et al. indicates a positive correlation between the frequency of writing in academic courses and the increased scores in these areas. This is particularly true when a critical component of these writing activities involve reasoning and thinking.

In addition to this research, our staff survey data indicated that a majority (53%) had students write a paragraph or more only one hour or less per week. Since we believe that writing may be one way to increase students' critical thinking abilities by enabling them to reflect, analyze, and reconstruct data in meaningful ways, it appeared to us that more of an emphasis on writing in the content area was an appropriate intervention to improve critical thinking ability.

Departmental, administrative, and steering committee meetings were held to determine the appropriate activities necessary to implement the intervention. After considerable discussion among staff members, the following list of activities for staff and students was developed in relation to writing.

Teachers will:

- review Bloom's taxonomy
- review the best practice/research of writing in content areas
- receive training on teaching critical writing in the content areas
- integrate critical writing activities into their lesson design
- take the International Critical Thinking test (so that they are better able to align curriculum with students needs)

Students will use writing in all content areas to:

- improve understanding by stating, elaborating, exemplifying, and illustrating key concepts
- apply the elements of thought to analyze the logic of key concepts
- apply the standards of critical thinking to evaluate key concepts

Questioning:

As the implementation cycle progressed, discussions revealed that questioning was every bit a part of the other two interventions as much as it was a stand alone item. This strategy was addressed through the following activities that are natural components of both reading and writing. All students will increase their use of critical thinking by:

1. responding appropriately to higher-order questions through oral and written means.
2. creating higher-order questions in both oral and written work.

Staff Development:

Dr. Marilyn Bates worked with our instructional leadership team reviewing and connecting the concepts of classroom objectives to levels of thinking. Several staff members attended a reading seminar by Chris Tovani in Denver that addressed reading strategies including pre and post reading activities. Building leadership teams received initial instruction by Dr. Richard Paul on the elements and standards of critical thinking in a two-day summer workshop in 2003.

All staff received an intensive overview of critical thinking strategies by Dr. Richard Paul in his opening workshop on the elements and standards of critical thinking in the fall of 2003. Building leadership teams attended the International Critical Thinking Conference in Palo Alto, CA during the summer of 2004. This conference was presented by Drs. Richard Paul and Linda Elders, founders of the Critical Thinking Institute.

Collaboration day activities included the opportunity for interdepartmental sharing of strategies to improve Critical Thinking through the use of the elements and standards in each of our interventions. Department and curriculum teams continue to develop strategies for integrating concepts of critical thinking into their daily classroom activities.

Following their training, teachers were charged with developing growth plans that addressed the key ideas of critical thinking in their curriculum. They were also held accountable through the teacher evaluation process.

Students were given direct instruction in their classes regarding the elements and standards of Critical Thinking as proposed by Dr. Richard Paul. This instruction would cross the domains of reading, writing, and higher-order questioning.

Examples of classroom activities that cross multiple disciplines:

Students engage in close and guided reading of articles or sections of textbooks and respond by establishing their understanding through the use of SEXI-writing or by analyzing its content through the application of the elements and/or standards of critical thinking.

Lab reports, analysis of current newspaper articles, student critiques of their own and others' creative works, and the self-reflection that is part of a student's Future Plan are all examples of ways that students are applying the elements and standards of critical thinking in their reading and writing activities.

Problem-solving and scientific investigations are examples of curriculum activities that engage students in reflective thought and application of the higher-order questioning associated with critical thinking.

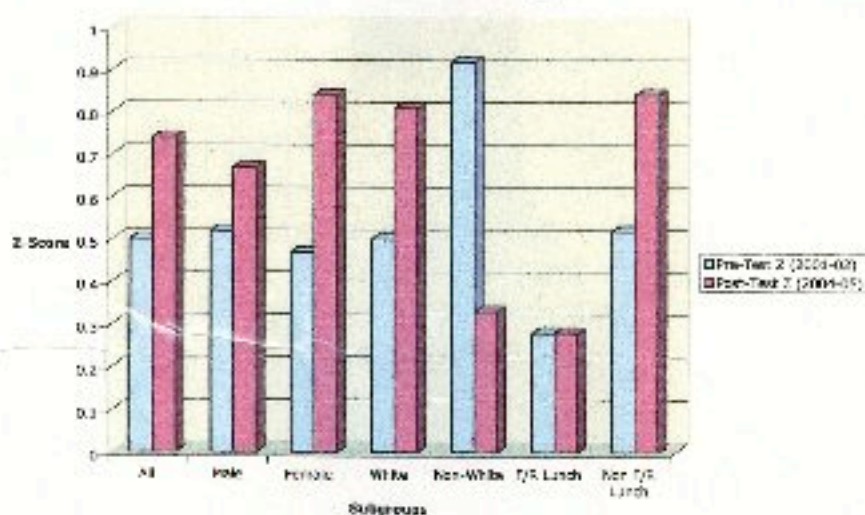
Data Sources Used to Determine Student Growth

PLAN: The PLAN test is a norm-referenced test written and published by ACT. All Westside students participate in the PLAN test in October during their 10th grade year. The PLAN consists of four subtests including English, reading, mathematics, and science reasoning and is selected-response in format. Student scores are used not only to compare the performance of Westside students to students across the country but also to predict performance on the ACT college entrance exam.

The Science Reasoning subtest was chosen as a measure of critical thinking due to the content and nature of questions found in the instrument. A random sample was selected by choosing every fourth student from an alphabetical list. The pretest scores are from the class of 2001-02 and the posttest scores are from the class of 2004-05.

Subgroup	Pre Test Z Score (n)	Post Test Z Score (n)	Effect Size	Comments
All	.50 (104)	.74 (116)	.24	Much better
Male	.52 (47)	.67 (54)	.15	Better enough to mention
Female	.47 (57)	.84 (62)	.37	Substantially better
White	.50 (99)	.81 (106)	.31	Substantially better
Non White	.92 (5)	.33 (10)	-.59	Substantially worse
Free/Red	.28 (10)	.28 (16)	0	No Change
Non Free/Red	.52 (94)	.84 (100)	.32	Substantially better

PLAN Test - Science Reasoning Subtest



Analysis:

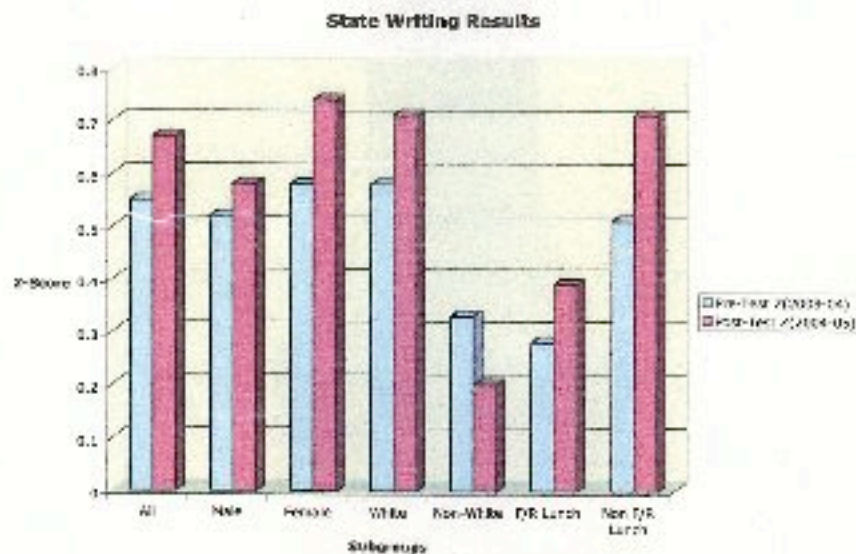
The posttest scores overall were statistically much better as the Z scores were higher on the posttest for five of the seven subgroups. The only subgroup that declined was the Non-White subgroup, which was substantially worse with the Z score falling from .92 to .33. This group also had the fewest participants in each test. The female, white and non-free or reduced lunch subgroups all performed substantially better on the posttest. The free and reduced lunch subgroup was the lowest scoring subgroup on each test and showed no change with a Z score of .28 on each test.

Nebraska Statewide Writing Assessment: The Nebraska Statewide Writing Assessment is given annually to all 11th grade students across the State. Students are typically tested during the last week of January and first week of February. The test is administered during two consecutive 40 minute periods.

Eleventh grade students write in the persuasive mode, and their papers are double-scored by trained raters from across the state using a holistic rubric. The scores range from zero (lowest possible score) to eight (highest possible), and a score of 4.33 or higher is considered 'Proficient.' Student, building, district, and State scores are typically released to the public in the fall after all assessments have been administered and scored.

The Nebraska Statewide Writing Assessment was chosen as a measure of critical thinking since one of the three goals in Westside High School's action plan dealt with critical thinking as it pertains to student writing.

Subgroup	Pre Test Z-Score(n)	Post Test Z-Score(n)	Effect Size	Comments
All	.55 (464)	.67 (450)	.12	Better enough to mention
Male	.52 (215)	.58 (240)	.06	Not enough to mention
Female	.58 (249)	.74 (210)	.16	Better enough to mention
White	.58 (415)	.71 (407)	.13	Better enough to mention
Non White	.33 (49)	.20 (43)	-.13	Worse enough to mention
Free/Red	.28 (44)	.39 (58)	.11	Better enough to mention
Non Free/Red	.51 (420)	.71 (392)	.20	Better enough to mention



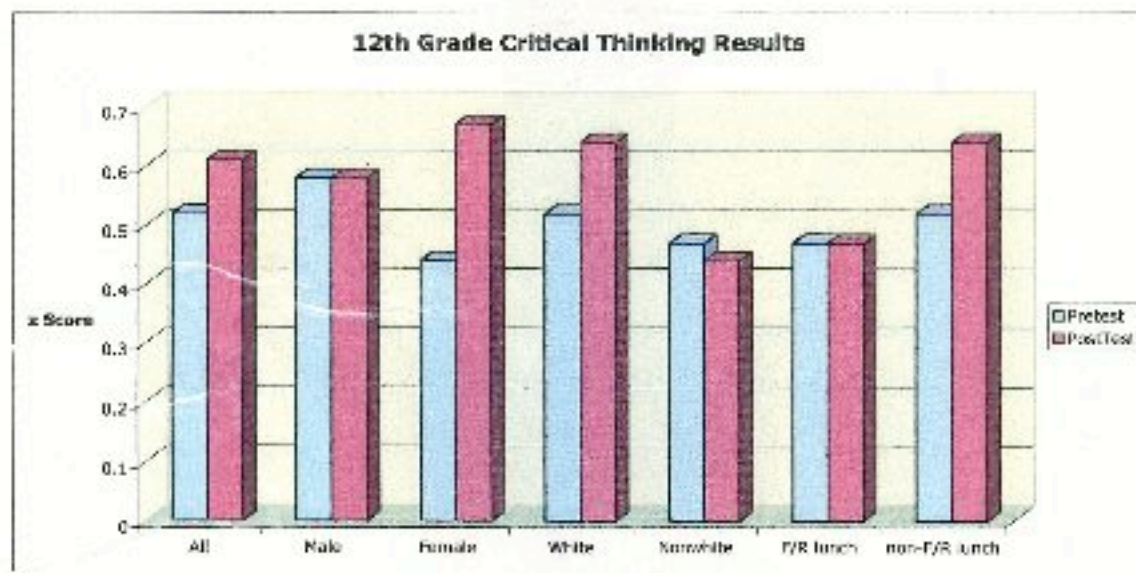
Analysis:

The posttest scores overall were statistically much better as the Z scores were higher on the posttest for six of the seven subgroups. The only sub group that declined was the non-white subgroup, which was worse enough to mention with the Z score falling from .33 to .20. This group also had the fewest participants in each test. The female, white and non-free or reduced lunch and the free or reduced subgroups all performed statistically better enough to mention on the posttest. Although the male subgroup did improve there was not enough statistical improvement to mention.

Critical Thinking Assessment: The International Critical Thinking Assessment is designed to measure students' critical thinking skills as defined by Dr. Richard Paul. The assessment consists of two parts. The first part requires students to respond to a series of questions pertaining to articles they have been given to read. The second part requires that students write an evaluation of an article using standards to evaluate the quality of the author's thinking. The eight standards are purpose, question, information, inferences, concepts, assumptions, implications, and point of view.

Each student paper is double-scored by trained district raters using an analytical rubric. Scores are not expressed as a percent of students hitting a cut-score, but instead as a raw score. The Critical Thinking Assessment was chosen as a measure of critical thinking due to its content and close alignment with the critical thinking goal.

Subgroup	Pre Test Z Score (n)	Post Test Z Score (n)	Effect Size	Comments
All	.52 (100)	.61 (116)	.09	Not enough to mention
Male	.58 (50)	.58 (54)	0	Not enough to mention
Female	.44 (50)	.67 (62)	.23	Much better
White	.52 (88)	.64 (106)	.12	Better enough to mention
Non White	.47 (12)	.44 (10)	-.03	Not enough to mention
Free/Red	.47 (12)	.47 (16)	0	Not enough to mention
Non Free/Red	.52 (88)	.64 (100)	.12	Better enough to mention



Analysis

The posttest scores were the same or higher in six out of seven subgroups with the female subgroup "much better" going from a z score of .44 on the pretest to .67 on the posttest. The white and non-free or reduced lunch subgroups scored better enough to mention. The only subgroup that declined was the non-white subgroup that fell from a z score of .47 on the pretest to a .44 on the posttest. This decline was not statistically enough of a decline to mention.

Summary of Results

The results, or more specifically the improvements, were somewhat surprising because of the complexity of the concept and the fact that there was very little information or examples available in many of the content areas such as art, music, foreign language and physical education. The increase in student performance in other assessment measures such as the PLAN test and State Writing Assessment were also somewhat surprising since those assessments are loosely linked with the concept of critical thinking. Another interesting observation is that in all three assessments females made significantly more gains than the male subgroup, although this does represent a nationwide trend.

The staff felt the biggest gain on the goal was having the terminology and application of Critical Thinking embedded into the school culture. With a concept as philosophical as Critical Thinking it took time and energy from students and staff to understand the terminology and make it operational within the classroom. The practical application of critical thinking has increased through all curricular areas and there is definitely a greater school-wide awareness of critical thinking skills.

The gains in each area were encouraging to see. There is no one best way to measure critical thinking, but the assessment, higher order questioning, and the consistent use of the elements and standards show that the students have become better thinkers.

While there were many strategies that different departments tailored to better match their content areas, there were several strategies and interventions that all departments agreed generated success. Those strategies that were commonly agreed to have shown the most success were:

1. Application of Critical Thinking in Every Subject

No course was exempt from including critical thinking activities. Core subject areas such as English, social studies, science and math found the critical thinking model an easier fit with their curriculum. Never the less, teachers of content areas containing a majority of elective courses made an honest effort to apply the model to each of those courses too. For example, guidance classes added a culminating critical thinking activity to their existing curriculum; art and music used the critical thinking rubric to assess student responses; family and consumer studies required students to respond critically to essay questions; business courses incorporated student self-assessment using the critical thinking elements; and foreign language had the students use the "SEXI Model" to more clearly articulate grammatical structures.

2. Individual Growth Plans for Staff

These personal plans were developed by teachers in cooperation with their evaluators and included both formative and summative activities that were developed to help students become more proficient at thinking critically. All teachers included at least one goal regarding critical thinking in their plan.

3. Common Terminology

Using the Richard Paul terminology across the curriculum helped students become familiar with the types of questions they would encounter in reading, writing and questioning activities. This common vocabulary enabled students to generalize the critical thinking model to all subject areas.

4. Consistent Form of Assessment

Although each department addressed student responses in a slightly different fashion, depending on the nature of the task, most teachers used a common rubric at least some of the time in their content area. This rubric was developed by our English department for use across the curriculum, which helped students to have a clearer view of the target.

5. Frequent Use of the “SEXI Model”

Sometimes referred to as the Richard Paul “SEEI Strategy”, this method of questioning helped students analyze text, respond to discussion questions, and write responses on a much deeper level. The acronym “SEXI” stands for “state, elaborate, exemplify, and illustrate” and is the students’ cue to think more deeply as opposed to giving short, low level answers. This model was widely used, and although it was somewhat difficult for students to use at first, students became proficient at thinking more analytically.

6. Opportunities for Staff to Discuss Teaching Methods and Concerns

Numerous opportunities were provided for staff to collaborate in departments and in teams. This sharing of ideas, assignments, and problems with the implementation of critical thinking was vital to refining the instructional process. Many teams actually practiced responding to articles to be assigned to students in upcoming classes, thus making sure that teachers were consistent in the responses they were looking for. Without this time to plan and discuss, teachers simply wouldn’t have been able to take the philosophical constructs underpinning the Richard Paul Model and convert them to practical, effective teaching strategies.

7. Task Analyzing the Teaching of Elements and Standards

At the outset, many teachers attempted to teach, and therefore assess, all of the elements or standards at once. This proved too difficult for most students and was quickly changed to breaking the content into smaller chunks, focusing only on the most important elements/standards for the content area. In addition, students needed more instruction to understand the elements and standards before they could apply them in the content area.

As with the implementation of any new concept in education there are unintended consequences which surface and, in this case, were extremely positive. For instance, foreign language teachers found themselves applying higher order questions with greater emphasis and frequency, i.e. “What are the bodies of water that border France?” was now followed by, “What impact do you think this geography has on the life of the people there?” Also several foreign language teachers found that following Richard Paul’s advice to “think like a speaker of your target language” served as a spring board to develop an immersion based delivery in teaching foreign language. In science, not only did teachers incorporate critical thinking in daily activities, but they also made students apply the model to their culminating course proficiencies. In senior project a paper that formerly lacked structure now requires students to use the elements of thought in their final reflection paper.

The universal commitment to a single goal was positive and built cohesiveness among the staff. One of the biggest implications of continuing with this goal is finding more ways to integrate the elements and standards of critical thinking within every classroom. This will require ongoing professional development, discussions and examples of critical thinking activities for returning staff as well as new staff. The staff is beginning to have some "experts" in critical thinking who will be needed to continue stretching other staff members to try new methods of incorporating critical thinking. The only way to continue improving is by investigating and experimenting with new ways to use critical thinking.

Westside Middle School also had a goal of increasing critical thinking so the students coming to the high school should have the basic understanding of the concept that can be broadened and refined at the high school. It would be a positive development for content areas to consider other critical thinking models that apply to their specific disciplines for future work. The more we use critical thinking the more it will become natural for students and institutionalized at Westside High School.

Clearly the data indicates that on the different assessments neither the non-white or free/reduced lunch subgroups scored as high as the other subgroups, although improvement may have been shown. There were no particular subgroups that statistically showed a decrease on the critical thinking post-test, although there were two subgroups that performed the same (male and free/reduced lunch) and one (non-white) that scored slightly lower. The non-white subgroup also fell in all three assessments from the pre-test to the post-test.

One of the factors that could attribute to some of the subgroups not scoring statistically better was the small sample size for a particular subgroup. In the PLAN and Critical Thinking assessments the sample size was never more than 12, which could make the scores statistically invalid. One or two students scoring exceptionally high, or exceptionally low, would inflate the impact of those scores of the subgroup as a whole.

The inconsistent approach among a large staff may have limited the exposure of some students to the critical thinking strategies. Also affecting the frequency of the use of the model would be the teacher's perception that critical thinking is too often artificial and separate from the content. Critical thinking needs to be a means to an end. It needs to be an integral part of the curriculum, woven throughout lessons, not something that is simply added on top of the curriculum.

There could have been some teachers, and therefore some students, who did not consistently use the critical thinking model in their class. As new staff were hired they were expected to use critical thinking in their classroom, much the same way the veteran staff did, but their experience may have limited the activities, content, and frequency of use of critical thinking. Some of the difficulties in implementing the goal were the highly intellectual nature of the goal itself and the newness of starting from scratch. There may have been a need for more staff development and training in the use of critical thinking at the onset of the goal and throughout the five-year process.

Below is a list of suggestions and recommendations that may improve the critical thinking of our students:

- Disaggregate the data to determine which elements and standards showed the most and the least amount of improvement.
- Include other models and strategies for teaching critical thinking. Other assessments that align more closely with critical thinking could be used.

- Critical thinking should be taught more frequently. By incorporating CT into every facet of the curriculum, all teachers and students would become fluent in the language and process of critical thinking. One question, one comment, one attempt everyday would be helpful.
- We need to find out what strategies may be more helpful and what type of support is needed to allow specific subgroups the opportunity to post gains in the assessments.
- Teachers need to continue to have time provided to share what they are successfully implementing in their classes with other teachers. Cross-curricular meetings would be especially helpful.

In summary, the gains made in critical thinking were statistically small, but the goal will have a great impact on our students as they continue to implement critical thinking as part of their educational experience. The staff have shown that critical thinking is something they believe in, something that makes a difference in student learning and something that has become embedded in the culture of Westside High School. There is certainly room for improvement and for continuing the efforts to make each student a critical thinker. The foundation is there, the terminology and understanding is there, and with a continued emphasis critical thinking will be there. The goal selected at the start of this cycle was lofty, unique and a challenge for students and staff alike. Everyone has grown from this goal and critical thinking will continue to be an influence in the classrooms at Westside High School.

Westside High School

12/19/2005

	Stage 1: Emerging	Stage 2: Developing	Stage 3: Increasing	Stage 4: Exceeding	Your Score	Max Score
SIP					17	20
IS					8	8
PS					27	28
VL					20	20
RA					4	4

SIP School Improvement Plan

IS Information System

PS Process of Schooling

VL Vision, Leadership-Governance, and School Community

RA Resources and Allocation

Stage 1: Emerging Capacity for Improvement

A school or system has implemented the improvement plan and is able to document enhanced student performance for at least one goal.

Stage 2: Developing the Capacity for Improvement

A school or system has implemented its improvement plan and is able to document enhanced student performance for some of the student performance goals.

Stage 3: Increasing the Capacity for Improvement

A school or system has implemented the improvement plan and is able to document enhanced student performance for all of the student performance goals. The school demonstrates continued growth relative to the NCA Standard.

Stage 4: Exemplary Capacity for Improvement

Stage 4 is an exemplary level of achievement. The school or system has implemented its improvement plan and credentials individual students in academics, career awareness, and employability skills.

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12/19/2005

A Test of Critical Thinking

Part 1: Analyzing an Article

Directions: On the paper provided, answer the following questions about the article you read. You may make notes on the article as you read. Before you begin, you may want to read the rubric by which your answers will be evaluated. Please write your name and the date at the top of your answer sheet.

1. What is the **main purpose** of the article? In other words, what do you think the author is trying to accomplish?
2. What key **question** does the article address? In other words, what question is the author trying to resolve?
3. What is the **most important information** in the article? Identify facts, experiences, and/or data the author uses to support his or her ideas.
4. What are the **main inferences** in the article? In other words, what important conclusions does the author come to and present in the article?
5. What **key concept(s)** is presented in this article, and what is the author's interpretation of each concept(s)?
6. What **assumption(s)** does the author make? In other words, what is the author taking for granted? Assumptions are generalizations the author does not think he or she has to defend; therefore, they are unstated.
7. a.) What **logical implications** are likely if people follow the author's line of reasoning?
b.) What **logical implications** are likely if people do **not** follow the author's line of reasoning?
8. What is the **author's point of view**? In other words, what is the author looking at and how is he or she seeing it? Through whose eyes is the author viewing the topic?

A Test of Critical Thinking

Part 2: Assessing an Article

Directions: Think about the article you read and the answers you gave for part 1 of this test. Choose from among the standards listed below to evaluate the author's thinking. You need not use all of the standards, but you should address any that are important to the article. Please label each paragraph with the standard you are addressing. Use examples from the article to support your evaluation. .

Before you begin, you may want to read the rubric by which your answers will be evaluated. Write your name on each sheet of paper you use.

Note: Remember you are evaluating the author's thinking, NOT the quality of the author's writing.

Standards for Assessing Quality Thinking

- **Clarity** For example, does the author state clearly what he or she means? Does he or she use examples or illustrations that help clarify? How do you know?
- **Accuracy** For example, is the information provided correct? Can the information be verified and/or tested? How do you know?
- **Precision** For example, is the author sufficiently specific in providing details? Does he or she need to be more specific? How do you know?
- **Relevance** For example, does the author stay focused on the purpose or question he or she is trying to address? Is the information presented connected to the purpose or question? How do you know?
- **Depth** For example, does the author recognize the complexity of the problem or does he or she treat it superficially? Are the main points of the issue addressed? How do you know?
- **Breadth** For example, does the author look at this issue from more than one perspective? Should he or she consider another point of view(s)? Does he or she need to look at the issue in other ways? How do you know?
- **Logic** For example, do the conclusions follow from the evidence presented? Are there any problems with the reasoning where something does not seem to make sense? How do you know?
- **Significance** For example, is what the article says significant, or is the subject dealt with in a trivial manner? Is this the most important aspect of the problem to consider? How do you know?
- **Fairness** For example, is the subject dealt with in a fair manner? Does the author consider view points that he or she may not agree with? If so, how does he or she respond to them? How do you know?

A Test of Critical Thinking – Scoring Rubric for Part 1

ELEMENT	4—Advanced	3—Proficient	2—Progressing	1—Beginning
1. Purpose (the author's aim or objective)	clearly and specifically describes the author's intent and topic (goal)	generally describes the author's intent and topic (goal)	partially identifies or misidentifies the author's intent AND/OR focuses on a relevant sub point	blank none responsive
2. Question (big question the author addresses)	question reveals a clear and precise understanding of the primary purpose	question reveals a general understanding of the primary purpose	question reveals a limited understanding of the primary purpose	blank none responsive
3. Information (data, facts, experiences, or observations)	identifies more than one piece of information relevant to primary purpose	identifies mostly relevant information, but may identify some irrelevant information OR identifies one relevant piece of information	identifies mostly irrelevant information, but may identify some relevant information	blank none responsive
4. Inferences (conclusions the author comes to and presents)	identifies more than one explicitly stated inference/conclusion/generalization relevant to primary goal(s)	identifies one explicitly stated inference/conclusion/generalization relevant to primary goal(s)	states unclear or incorrect inferences/conclusions/generalizations	blank none responsive
5. Concepts (theories, ideas, principles, or rules)	labels more than one concept presented in the article AND correctly explains the author's interpretation of the concept	identifies one concept (main idea) presented in the article AND correctly explains the author's interpretation of the concept	identifies one concept presented in the article but without explanation OR misidentifies a concept	blank none responsive
6. Assumptions (unstated generalizations)	identifies more than one key generalization the author takes for granted	identifies one key generalization the author takes for granted	states irrelevant or incorrect generalizations	blank none responsive
7. Implications (possible consequences)	clearly and precisely states possible consequences of following AND not following the author's line of reasoning	generally states possible consequences of following OR not following the author's line of reasoning	states illogical or impossible consequences	blank none responsive
8. Point of View (the author's frame of reference)	identifies the author's position on the topic AND explains the frame of reference through which author is looking	identifies the author's position on the topic AND attempts to explain the frame of reference through which author is looking	partially identifies or misidentifies the author's position on the topic	blank none identified

Created Sept 2005

A Test of Critical Thinking - Scoring Rubric for Part 2

Advanced (4)

- Uses relevant standards
- Demonstrates a clear and insightful evaluation of the author's thinking
- Deals with both strengths and weaknesses of the author's thinking
- Supports at least one strength and one weakness with strong evidence

Proficient (3)

- Uses relevant standards
- Demonstrates a general, less insightful evaluation of the author's thinking
- Attempts to deal with both strengths and weaknesses of the author's thinking.
- Supports at least one strength and one weakness with evidence.

Progressing (2)

- Fails to use standards relevant to the author's thinking
- Demonstrates a poor evaluation of the author's thinking
- Deals with either a strength(s) or a weakness(es) but not both
- Supports one point with evidence

Beginning (1)

- Blank
- Fails to apply standards to the author's thinking.
- Fails to provide evidence to support standards
- Makes indefensible assertions

A Test of Critical Thinking – Score Sheet

Student ID# _____

Scorer ID# _____

Part 1

Reader #1	Reader #2	Re-score	Overall Score
1. Purpose _____	1. Purpose _____	1. _____	1. _____
2. Question _____	2. Question _____	2. _____	2. _____
3. Information _____	3. Information _____	3. _____	3. _____
4. Inferences _____	4. Inferences _____	4. _____	4. _____
5. Concepts _____	5. Concepts _____	5. _____	5. _____
6. Assumptions _____	6. Assumptions _____	6. _____	6. _____
7. Implications _____	7. Implications _____	7. _____	7. _____
8. Point of View _____	8. Point of View _____	8. _____	8. _____
Total Points: _____	Total Points: _____	Total _____	Reader #1 + Reader #2 = Total _____

Part 2

Reader #1 _____	Reader #2 _____	Re-score _____	
			<p style="text-align: center;"><u>Overall Score</u></p> <p>Reader #1 + Reader #2 = _____</p>

Final Score

Overall Score from Part 1 _____	+		=	<div style="border: 2px solid black; width: 80px; height: 40px; margin: 0 auto;"></div>
Overall Score from Part 2 (x 2) _____				

SCHOOL IMPROVEMENT ACTION PLAN

Name of School

Goal: All students will increase their use of critical thinking in all curricular areas.

<p>Support Data (from the Profile): PLAN Test ACT-Reading (Comprehension State Standards in Language Arts: -reading a variety of materials -reading for meaning Student engagement in higher-order thinking.</p>	<p>Standardized Assessments:</p> <ul style="list-style-type: none"> • PLAN Test • ACT • International Critical Thinking Test 	<p>Local Assessments:</p> <p>State Standards in Language Arts Assessments Reading Minimum Competency Exam Student engagement in higher-order thinking.</p>
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Intervention:
 All students will increase their use of critical thinking through reading.

Activities to implement the intervention:	Person(s) Responsible:	Timeline		Resources	Staff Development Activities
		Beg	End		
<p>All Students will:</p> <p>1. Apply the following model to evaluate a thesis of a given reading: State the main point Elaborate further Examples (student generated) Illustrate (analogies, metaphors, diagrams);</p> <p>2. Analyze a fiction and/or non-fiction reading or graphically represented assignment using the Elements of Thought: Purpose Question Inference Key Concepts Inferences Assumptions Conclusions Point-of-View</p> <p>3. Evaluate a fiction and/or nonfiction or graphically represented assignment by using the Standards of Critical Thinking: Clarity, Accuracy, Precision, Relevance, Depth, Breadth, Logic, Fitness, Significance.</p> <p>4. Demonstrate pre-reading & post-questioning strategies with a given reading.</p>	<p>D. Heads/Teachers</p> <p>D. Heads/Teachers</p> <p>D. Heads/Teachers</p>	<p>03-04</p> <p>03-04</p> <p>03-04</p>	<p>05-06</p> <p>05-06</p> <p>05-06</p>		

(Rev. 2-19-04)
 Reviewed: 2-2-05

SCHOOL IMPROVEMENT ACTION PLAN

Westside High School

Goal: All students will increase their use of critical thinking in all curricular areas.					
Support Data (from the Promix): State Writing Assessment Student engagement in higher-order thinking	Standardized Assessments: • International Critical Thinking Test	Local Assessments: State Writing Assessment Course Proficiencies validating writing skills (student portfolio) Student engagement in critical thinking. Semester exam writing component.			
Intervention: All students will increase their use of critical thinking through writing.					
Activities to implement the intervention:	Person(s) Responsible:	Timeline		Resources	Staff Development Activities
		Begin	End		
<ul style="list-style-type: none"> Teachers will review all levels of Bloom's taxonomy, (concretely) Teachers will review the best practice/research of writing in the content areas. (ongoing) Teachers will receive training on teaching (critical) writing in the content areas. Teachers will integrate (critical) writing activities into their lesson designs. All certified staff will take the International Critical Thinking test. Students will use writing to improve understanding by writing, elaborating, exemplifying, and illustrating key concepts. Students will use writing to apply the elements of thought to analyze the logic of key concepts. Students will use writing to apply the standards of Critical Thinking to evaluate key concepts. 	Steering committee SLD cadre SLD cadre D.Hendri/T.Lenkins Depl. Hewitt D.Hendri/Teachers D. Housh/Teachers	4/1/03 Fall ' 03 Fall '03 Fall '03 Fall '03 Fall '03	03-04 05-06 05-06 05-06 05-06	Marilyn Bares Staff Development Staff Development Staff Development	(Rpt 2-19-04) Revised: 2-2-05

SCHOOL IMPROVEMENT ACTION PLAN

Name of School

Goal: All students will increase their use of critical thinking in all curricular areas.

Support Data (from the Profile): Student engagement in higher-order thinking.	Standardized Assessments: • International Critical Thinking Test	Local Assessments: Course Proficiencies validating Problem-Solving (student portfolio) Student engagement in higher-order thinking.
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Intervention:

All students will increase their critical thinking skills in response to higher-order questions.

Research/Best Practice Sources:

Linda Elder, Richard Paul (Soucena St. Univ.)

Activities to Implement the Intervention:	Person(s) Responsible:	Timeline		Resources	Staff Development Activities
		Beg	End		
<p>All students will increase Critical Thinking by:</p> <ol style="list-style-type: none"> 1. Responding appropriately to higher-order questions through oral and written means. 2. Creating higher-order questions in both oral and written work. 	<p>D.Hessels/teachers</p>	<p>03-04</p>	<p>05-06</p>		<p>Staff Development</p>
<p>(Rev: 2-19-04) Reviewed: 2-2-05</p>					