DEVELOPING CRITICAL THINKING THROUGH THE ARTS

by
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**Declaration Concerning Thesis Presented for the Degree of
DOCTOR OF EDUCATION**

I, Mark L. Eutsler,

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Solemnly and sincerely declare, in relation to the Ph.D. thesis entitled:**

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(a) That work was done by me, personally
(b) The material has not previously been accepted for any other degree or diploma

Signature:_____   _____ Date:_ 10 October 2017

ACKNOWLEDGMENTS

It's a great privilege to have conducted this research and prepare this dissertation involving a triune of topics—God, the arts, and critical thinking.
Knowing that we are created in God's image and, as followers of Jesus, have the mind of Christ and are part of the priesthood of all believers, it is excited to tout the benefits of honing critical thinking.

Linking critical thinking with the arts broaches a unique relationship, symbiotic in essence. When one considers to what degrees the arts drive critical thinking and vice versus one is instantly transported to a realm where the interrelatedness of all genres and subject areas come forth in intradisciplinary, interdisciplinary, multidisciplinary, and transdisciplinary ways.

Thanks to those mentors in my life (known and unknown—in the spirit realm—to me) who have helped me achieve a way of thinking that has caused me to explore Developing Critical Thinking Through The Arts.

ABSTRACT

From a Christian worldview, scripture teaches that critical thinking is an integral part of human existence. It lays out thought, deliberation, and modeling,

The Bible states that a prudent person gives thought to direction and that having zeal without knowledge is not good. It also notes that one should only believe those who model God. Paul, Elder, and Bartell assert that intensive arts training, can prepare students for life and work by developing in them the general skills and attitudes, the habits of heart and mind they need to prevail in postmodern society no matter what career they chose. They continue that intensive arts training in high school increases, not decreases, options.

Indiana's declining SAT scores prompted the publisher of a statewide magazine covering the literary, performing, and visual arts to take action and create a program to use the magazine as a supplemental resource for students. It was believed that such a supplemental resource could enhance critical thinking and writing skills and help raise SAT scores. Arts Indiana, Inc., a not-for-profit organization, provided the organizational, editorial, and curricular structure that launched the *Arts Indiana Magazine in the Classroom* program and sought sponsors to cover its costs.

It was believed that by integrating—in a multi-disciplinary approach— directly into Indiana classrooms, the program could enhance critical thinking skills.

This study showed the ways in which a supplemental resource is used affects teachers' perceptions student critical thinking improvement. It revealed similarities and differences among use between grade levels and subject areas. It revealed the similarities and differences of use among teachers who used an accompanying teacher/student guide and those who did not. This study's literature review showed the value that various kinds of arts instruction and arts integration provided to the critical thinking skills development of students.

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INTRODUCTION

Background Information

Indiana's declining SAT scores prompted the publisher of a statewide magazine covering the literary, performing, and visual arts to take action and create a program to use the magazine as a supplemental resource for students. It was believed that such a supplemental resource could enhance critical thinking, which would contribute to helping raise SAT scores. Arts Indiana, Inc., a not-for-profit organization, provided the organizational, editorial, and curricular structure that launched the *Arts Indiana Magazine in the Classroom* program and sought sponsors to cover its costs.

It was believed that by integrating arts—in a multi-disciplinary approach—directly into Indiana classrooms, the program could enhance critical thinking skills.

From its 1990 beginning, Arts Indiana compiled information about its program from the teachers who used it. Annually, participating public and private school teachers completed Agreement, Program Information, and Evaluation forms, which collected information about how the program was used and asked for information about outputs from its use.

During 1990 and 1991, Arts Indiana, Inc. created, organized, and administered a pilot program for *Arts Indiana in the Classroom* (later called *Arts Indiana Magazine in the Classroom*) in four schools chosen for their diversity: public and private, junior and senior high schools, art magnet and general curriculum, urban and rural areas of the state.

The pilot program followed three years of development, including questionnaires sent to Indiana humanities teachers and a workshop for selected teachers at the Indianapolis-Marion County Public Library in the summer of 1989. The enthusiasm with which the pilot program was adopted by teachers and students encouraged Arts Indiana, Inc. to expand the program to reach 40 schools during its second year. Arts Indiana, Inc. raised $10,000 through special events and received an additional $5,000 each from PSIEnergy Foundation (now Cinergy Foundation) and Ball Foundation in 1991-92. Based on need and an increased number of sponsors, the program was expanded to include 80 schools during 1992-93 and 100 during 1993-94.

Each month during the school year participating teachers received a classroom set of *Arts Indiana Magazine* and, under separate mailing, *Highlights*, the teachers' guide (later called *Teaching Arts Now!!!*) with questions for written and oral discussion, suggestions for activities, and a vocabulary list, prepared by an Educational Outreach Committee of Indiana teachers and writers. It was designed to promote critical thinking across the high school curriculum. Discussion activities examined cultural life as well as issues important to the arts—economic and legal concerns of artists, government funding of the arts, cultural diversity. Experience activities included trips within the state to experience museums, theaters, symphonies, dance, and other cultural endeavors.

Originally designed for one class of 25 students in each school, the program was often utilized by several teachers and many more students. Arts Indiana found that 25 of its issues could be utilized by 100 students and used as a resource by the entire faculty at each school. Students took the magazines home—sometimes to share reading assignments with parents.

Michele Knecht, a Yorktown Middle School visual arts teacher noted:

I have been borrowing Arts *Indiana Magazine* from the Enrichment Coordinator, Bonnie McClain, in our school. I have often used it in the 8th grade art classes for the past year and have found its contents very useful in relaying current events, issues, and information. This year I will be teaching an Advanced Art elective which will be offered to 8th grade students.

We read and discuss articles in class. We often pose the question "What is Art?" and ask ourselves why certain artist's works can or cannot be justified as art. Students have started to think about why artists make the decisions they do. They have begun to think of art as more than just paper, pencil, and paint. *Arts Indiana Magazine* has definitely broadened their horizons (Arts Indiana 1996, 33).

Philip Miller, a Columbus East High School visual arts teacher, reflected:

Arts Indiana Magazines are given to the Arts and the Performing Arts Department to maximize usage. Students read and write critical summaries of articles in each issue for credit on their grade. Each edition is a new opportunity. Students select their own article. (Certain subjects regarding museums such as the IMA [Indianapolis Museum of Art] are required before field trips.)

Conversations with and between students, references to specific articles, opinions against or for certain points of view, and comparison of written critiques demonstrate that students' critical thinking and writing skills developed because of their participation in this program. Even the advertisements encourage students to check out new discoveries they read about each month. Students talk about what they read and discuss issues in art and use this magazine in other classes (Arts Indiana 1996, 33).

During the school year, Educational Outreach Committee members visited classrooms and met with teachers and students. An honorarium was given to the teacher who made the most creative use of the program and to the student who wrote the best essay demonstrating critical thinking. At the end of the academic year teachers completed and returned evaluation forms designed to facilitate continued refinement of the program. In September 1992 the first annual teachers' workshop was held to refine the program and continue its evaluation with the recommendations of participating teachers.

Arts Indiana in the Classroom was found especially useful to teachers who use an interdisciplinary approach to the curriculum. It was used in English, history, and humanities history classes as well as a geography class taught from a cultural focus.

Signature School teacher Vella Goebel, used the resource in a Western Civilization class reported:

> The course content is drawn from the humanities: literature, history, philosophy, art, music, and drama. Students study what we think of as "the big picture" of Western culture. Although we have excellent textbooks, they do not fully meet our needs. As a result, we have found *Arts Indiana Magazine* to fill a void in our curriculum, showing students that there *is* culture in Indiana (Arts Indiana 1996, 32).

Mary Malloy, a Penn High School creative writing teacher, got the idea to invite Indianapolis resident novelist Barbara Shoup to her class based on a review of Shoup's book, *Wish You Were Here*. During her presentation she told students "to be a writer one must know where you are, know where you are from, and see the stuff of stories wherever you go (Arts Indiana 1996, 32)." Because of this Malloy said that *Arts Indiana Magazine* help student acquire pride in where they are from.

A similar view from Anne Dowhie, Central High School, visual arts teacher:

> This year the magazine was of particular value to my students because it provided a look at what is going on in the arts in our state at a time when my students were studying art history. The contrasts and connections that can be made between the art of the past and the present provide a valuable point of view. The perspectives and controversies discussed in *Arts Indiana Magazine* provide a more realistic view of the art world and the problems inherent in it. (Arts Indiana 1996, 32).

Teachers who commented that their students studied the ads and the design of the magazine as well as the content of the articles also used it in studio art classes. The diversity of this kind of use is illustrated in comments from Carolyn Lelek, Valparaiso High School graphics and computer graphics teacher:

Arts Indiana Magazine in the Classroom has been helpful to my teaching in at least three ways: First, in a specific article that my computer graphics class used about computer graphic artists in Indiana that I used as the structure for a lesson.

Second, the graphics in the advertising have been the basis for lessons in logos, in typestyle, and in business card design. They also are ideal for many other commercial and computer art applications. We have cut apart and pasted parts of *Arts Indiana Magazine* in searches for different categories of graphic elements: typestyles, pictorial or symbolic logo, graphic logo, and type layout examples.

Finally, *Arts Indiana Magazine* has proved very helpful to me in reinforcing a "Hoosier" identity in my students. Here in Northwest Indiana, we are deluged with Chicago-based information, and it is very helpful to have such a high quality representative of the arts in Indiana in the classroom (Arts Indiana 1996, 34).

Christopher Roe, Indiana Academy for Science, Mathematics and Humanities,

taught Contemporary American Literature and Expository Writing using the program.

He used it with other supplemental resources:

I began the unit by bringing in copies of *Arts Indiana Magazine* and some of my own art books. I asked the students to select a work from one of the magazines or books and describe why they like or disliked it. This began our discussion of aesthetics. Next, we read some of the articles in *Arts Indiana Magazine*, which added multiple perspectives and generated discussion and some hot debate (Arts Indiana 1996, 34).

In 1994 a program manager was hired and wrote the curriculum with the advice of

the Educational Outreach Committee.

Most teachers used the magazine as a basis for discussion, either orally or in

writing using the *Highlights* as a guide. Students were encouraged to think abstractly:

how does a piece of art—literary, visual, or performing—make one feel? Students were

asked to describe and/or interpret their feelings and to analyze and write critiques on

topics relating specifically to the arts or to the larger issues brought to them through the

arts. Students involved in these discussions or assignments were able to relate universal

issues to their community and their lives (Arts Indiana 1994, 8-9).

Ball State University Professor Dr. Thomas Spoerner, used the program in his

Introduction to Art Education class:

> The art education curriculum at Ball State is strongly based on the philosophy of Discipline Based Arts Education (DBAE). Our students are strong in production, but need better ideas for teaching art history, art criticism, and aesthetics. *Arts Indiana Magazine* provides excellent material for these areas (Arts Indiana 1996, 34).

From the start Arts Indiana garnered state level support:

> It is with pleasure that I endorse and support the educational program offered by the staff of Arts Indiana, especially *Arts Indiana in the Classroom*: *Highlights*. In addition to providing questions to develop students' skills in art criticism, art history, and aesthetics, its program can help open doors to integrating the arts with all subjects. Additionally, Arts Indiana can be instrumental in introducing students to the artistic richness of the state.
>
> I am impressed not only with the quality of the magazine but by the staff's continual search for creative, innovating ways to expand the program and its services to students and teachers. I encourage you to use the excellent instructional tool, and to spread the word to others about the valuable resources.
>
> N. Carlotta Parr
> Fine Arts Consultant
> Indiana Department of Education (Arts Indiana 1994, 10)

Support was also received from the Indiana Superintendent of Public Instruction:

May 1995

To Whom It May Concern:

> I want to congratulate you and all those involved in providing *Arts Indiana Magazine in the Classroom* for the students in our Indiana schools. The arts build creativity and self-expression and are essential to the total development of children.
>
> The project looks at the arts through in interdisciplinary lens. It is the only magazine in the country covering the literary, performing, and visual arts of the state. The magazine supports the development of students' critical thinking skills and raises the awareness of the power of visual images to communicate.
>
> There are students who find it difficult to put their feelings into works, but who can express themselves through a visual art, music, drama, and movement. We need to offer them methods by which they can communicate their feelings.

Most students are inspired by art, history, and other cultures, and the magazine program, in some instances, is the only vehicle for transmitting information about music, painting, sculpture, poetry, literature, photography, film, video, and computer generated art to a student population outside of Indianapolis.

Good sources and ideas are always welcome in the classroom and appreciated by teachers. *Arts Indiana Magazine in the Classroom* is an excellent instructional tool and a valuable source of classroom enrichment.

Sincerely,

Dr. Sullen Reed
Superintendent of Public Instruction (Arts Indiana 1995, 26)

The program's was also valued by the state's largest school district:

January 30, 1995

To Whom It May Concern:

On behalf of the Indiana Public Schools, I am writing to express our support for the grant being submitted to the National Endowment for the Arts by Arts Indiana, Inc. I am the Instructional specialist for Art in the Indianapolis Public Schools, and I feel the funding for this proposal will offer our students in grades six through twelve such exceptional opportunities for increased educational and creative growth and development.

Since the passage of Goals 2000: Educate America Act, the arts are increasingly emerging as a focal point for interdisciplinary and cross-curricular educational experiences. In an effort to address these educational experiences in the Indianapolis Public Schools, it is the proposal of Arts Indiana that *Arts Indiana Magazine in the Classroom* be made available for instructional and curricular enhancement within the middle and high schools in our district.

This educational program seeks to improve much needed critical and creative thinking and writing skills, while at the same time, furthering the appreciation for the arts created and displayed within the State of Indiana. It should also be noted that Arts Indiana is perhaps the only magazine through America that publishes statewide coverage on literary, performing, and visual arts achievements.

As a member of the Curriculum and Instruction Division, I am pleased to offer our support for what we feel is an exciting and contemporary interdisciplinary arts program of significant benefit to the students in the Indianapolis Public Schools.

Respectfully,

Constance B. Palmer,

Instructional Specialist for Art, Curriculum and Instruction Division
Indianapolis Public Schools (Arts Indiana 1995, 27)

The perception of helping with critical thinking was noted by Central Catholic

High School's Cecilia Johnson, who taught Art Exploration, Computer Graphics,

Painting, Ceramics, and Drawing classes with the program:

> Thank you for supporting the arts and the fostering of critical thinking skills in high school students. Your magazine is a tremendous help in looking at, art production, but art history, art criticism, and aesthetics (the four components of discipline-based art education). It is sometimes hard for teachers to move from art production to talking and thinking about art, and *Arts Indiana Magazine* facilitates this pedagogical shift (Arts Indiana 1996, 34).

Indianapolis Public Schools also participated by creating:

Vision Statement for *Arts Indiana Magazine in the Classroom*:

> *Arts Indiana Magazine in the Classroom* program represents a public-private partnership made up of schoolteachers, students, *Arts Indiana Magazine* staff members, and sponsoring agencies or individual patrons. Together, they support a pioneering effort in Indiana to make art the focal point for the development of critical writing and thinking skills for Indiana students.

> While sustaining its focus, this interdisciplinary arts education enrichment tool also introduces students to the manner in which messages are transmitted, their impact on thinking, and how the presentation of information affects their prejudices and opinions.

> The growth of this essentially grass roots program has taken place by word of mouth from one teacher to another. The program has grown from a pilot program used in four schools in 1990 to serving 3,000 students in 109 classrooms around the state.

> Past evaluations have demonstrated that using *Arts Indiana Magazine* as an interdisciplinary tool improves thinking and writing skills of students who normally fall far below accepted levels in formalized teaching situations as well as enriching regular classroom curriculum. We feel the application of the program as an enrichment tool could have a measurable effect on Indianapolis Public School students where the program is currently used in only five IPS schools. We also think the utilization of the program as stated in the proposal would heighten the awareness of IPS students to their own potential in the arts and elsewhere.

> Ann M. Stack, CEO and Publisher, Arts Indiana, Inc.

Duncan Pritchett, Interim, Superintendent, Indianapolis Public Schools
Helen Ferrulli, Program Director, *Arts Indiana Magazine in the Classroom* (Arts
    Indiana 1995, 28)

The seemingly ubiquitous use of Arts Indiana was evident in Linda Brookshire's

application. She taught Indiana University-South Bend English Methods, Reading

Methods, and Summer Writing Workshop classes using the program as well as in South

Bend Community School Corporation inservices:

> *Arts Indiana Magazine* is put to much use in the course of a semester/year.
> First, I used it with undergrad/pre-service teachers at the university as part of their
> English Methods coursework. Next, I use it in workshops with teachers as an
> indication of how they might use a writing/reading approach to the curriculum,
> make art-language connections, use a thematic approach to tie language, social
> studies, etc. together. And then finally, the issues are distributed to other teachers
> in the system to use in their classrooms with students who may eventually keep
> them (Arts Indiana 1996, 33).

Mary L. Dawald, Northridge Middle School art, photography, and computer

graphics teacher emphasized the importance of the resource being provided by sponsors:

"Last year our library received no funds or periodicals. If we did not receive your

magazine we would have nothing (Arts Indiana 1996, 33).

Arts Indiana was committed to furnishing the accessibility to the arts through

means that are visually and intellectually stimulating. It promoted the communication of

culture and knowledge to inspire informed participation and dialogue about the arts in

Indiana. Its education program was an extension of that philosophy.

It used the up-to-date magazine content to encourage critical thinking and writing

in the classroom while it provided the opportunity to explore interdisciplinary subject

matter as well. Promoted mostly through word of mouth, the program expanded to an

increased enrollment of 100 schools in 1993-94.

A collaboration, support of the program came in part from corporations, other not-for-profit institutions, and individuals whose vision results from an appreciation for the arts and a recognition of the importance of critical thinking to the future of Indiana and society at large (Arts Indiana 1994, 4-5). The Indiana Arts Commission and Arts Council of Indiana also provided public funding for the program.

Arts Indiana Magazine in the Classroom's staff and advisors created:

Pedagogical Justifications for the Use of *Arts Indiana in the Classroom*

The role of the arts in Indiana secondary schools has diminished since the decision to consider the arts as only one of several electives rather than a high school graduation requirement. Schools continue to make the decision not to hire arts specialists because such expenditures cannot be justified lacking the requirement of art for graduation.

In an impoverished learning environment, arts curriculum becomes the responsibility of the classroom teacher. The interdisciplinary approach of the magazine in the program makes it easy for teachers to incorporate *Arts Indiana Magazine* into any course. The magazine also offers much needed information as an arts and literary resource. In addition, the "Highlights" study guide assists teachers whose training in the arts has not changed despite the desire of many school faculty to integrate the arts, as part of the humanities, into classroom studies.

Outside of journalism courses, very few other educational vehicles introduce students to the manner in which messages are transmitted, their impact on their thinking or how the presentation of information fashions ideas. For example, the interview format, which uses a primary source, the person, for data can be a much more effective tool for communicating ideas than interpreting or reporting facts. In the *Highlights* student guide students are encouraged to think critically about these concepts as well as write about them.

During the school year students become acquainted and discuss issues that affect the arts such as the debate over censorship and funding for the arts, changes in directorship of the National Endowments, artist's support of causes such as AIDS and aesthetic and ethical problems in the translation of information from one art from into another. Basing the program on up to date facts in a monthly magazine keeps students current in discussion and writing about the arts.

Knowledge of arts events and contemporary Indiana artists also expands students' appreciation for the arts of their own state and contributes to their growing awareness of performances, exhibitions, and other arts-related events in their communities. Countless reviews and features such as articles on the paintings

of Indiana born rock star John Mellencamp, the Indianapolis White River Grain Silo controversy, and the young and talented Indianapolis photographer Carl Pope have significant appeal to students while providing substantial coverage of contemporary Indiana culture.

More importantly, *Arts Indiana Magazine in the Classroom* and its study guide contribute to the "principal means of understanding human experiences and of transmitting human values" the Getty Center for Education in the Arts has defined as the purpose of arts education's programs. More than a simple reporting of arts events, the combination of magazine and study guide lead students to consider a commitment to an artistic vocation and the spiritual value of art. Student awareness is increased in understanding the experience of being an artist and producing art along with a consideration of artistic achievement in the long history of mankind. Discussing issues such as the public role of the university, the meaning of being a writer, musician, poet, dancer, or the relationship of contemporary life to cultural endeavors often lead to the formulation and assertion of values.

One of the most significant assertions of the late 20th century educational theory has been Howard Gardner's recognition that strategies from the past focusing on only one type of learning skill is limiting students. Gardner's "Project Zero" paradigm provided a model for non-linear-based knowledge. His definitions of the different kinds of learning skills utilized by a culture, nurture the construction of meaning. The *Arts Indiana Magazine in the Classroom* combination of study guide and magazine demonstrates how and why the different art forms relate, raising students' awareness of the inter-relatedness of other subject matter also. Rather than underscoring simple factual answers, the program assists students in evaluating, analyzing, and making independent critical judgments on the information presented to them in the magazine and asserting them in written or oral discussion.

Arts Indiana Magazine in the Classroom uses art forms as a gateway to understanding the challenges and issues facing diverse populations. To foster understanding students have been asked to compare the political content of poetry of African-American poets with that of Latin American painters. They have also been asked to contrast the legacy of European classical music and African-American music. Features emphasizing the marginalization of the artistic production of "minority" communities are confronted in the study guide with census facts announcing the Caucasian cultures will be the minority by 2010. Although focused on the arts of Indiana, *Arts Indiana Magazine in the Classroom* is one of the few forums that offer students the opportunity to understand how these issues relate to the broader environment (Arts Indiana 1995, 10-11).

By the program's fifth anniversary, the program was gaining national attention.

From the U.S. Secretary of Education:

April 1996

President Clinton has stated the he is committed to keeping the arts "flourishing in every community and every neighborhood," so that we may "fire the imaginations of children all over America." Studying fine arts motivates students to explore cultural differences, enhances their creativity, encourages self-discipline and persistence, helps them to succeed in other academic disciplines, and eventually prepares them for the workplace.

I also regard artistic expression as important for students in the development of our society as a whole. To the rest of the world, we seem to be a nation consumed by a passion for expression, be it through music, film, theater, or dance; arts in education elevates and gives structure to that passion for expression and connection. That is why we made a special effort to include the arts in the Administration's education reform program, "Goals 2000: Educate America Act," which was signed into law in March 1994. The program, which supports the creation of world-class voluntary standards that challenge all students, will enable the Federal government to provide information to educators and students so they will know what world-class standards are, what they have to do to reach them, and how much progress they are making. In our society and in education, the use of the arts can be learning tool to broaden young people's view of society. Initiatives like yours can serve as important catalysts for fostering school reform, education excellence, and understanding of the arts community-wide.

Congratulations on your fifth anniversary, and best wishes.

Richard W. Riley, Secretary of Education
United States Department of Education
600 Independence Ave., S.W.
Washington, DC 20202-0100 (Arts Indiana 1996, 29)

From the Office of Elementary and Secondary Education:

March 13, 1996

I read your Arts Indiana Magazine in the accompanying year-end report with amazement and pleasure. The ability you have shown to involve people at all levels throughout the state, the way you work directly in the schools, and the professional quality of all that I saw: for all these things you have my personal congratulations.

Sincerely,

Mary Jean LeTendre, Director
Compensatory Education Programs
United States Department of Education
Office of Elementary and Secondary Education

400 Maryland Ave., S.W.
Washington, DC 20202 (Arts Indiana 1996, 30)

The Indiana Governor echoed the Federal accolades:

April 10, 1996

It is through the arts that we define ourselves in a society. Indiana is fortunate to have this magazine and its clear expression of the importance and diversity of the arts and the role the arts play in the lives of Indiana citizens.

Most people are inspired by art, music, literature, theater and this magazine has helped to foster creativity, critical thinking and writing while familiarizing our young people and their teachers with the arts in their local communities and in Indiana. I hope that we can continue to benefit from this excellent publication. Again, thank you for bringing good ideas and sources to the classrooms of our state.

Sincerely,

Evan Bayh, Governor
Office of the Governor
Indianapolis, IN 46204-2797 (Arts Indiana 1996, 31)

The interdisciplinary approach to *Arts Indiana Magazine in the Classroom* made it convenient for teachers to use the program across the curriculum. It was easily adapted to teachers' individual style, the curriculum, and the level of education and accomplishment of each student.

Arts Now!!! teacher/student guide was introduced in the fall of 1995. It contained questions, which promoted critical thinking: description, analysis, interpretation, and judgment. Those questions were easily adapted and integrated into four universally accepted methods of teacher: the communication of information, discussion, coaching, and the "what if" style of self-discovery.

The magazine held itself out to be a "one-of-a-kind resource" for in-depth information about the literary, performing, and visual arts in contemporary Indiana (Arts Indiana 1996, 12).

During the 1995-1996 academic year teachers using the program were interviewed about how they used it. The interviews were taped and verbatim transcripts made and are contained on more than 1,000 pages. Teachers often described and provided samples of lesson plans, student work, and other samples of how they used the program. These descriptions and copies of the samples were included in and with the transcripts.

Prior to this study there had been no analysis of this information. The program's on going assessment was done through "evaluations and anecdotal information provided by participating teachers (Arts Indiana 1996, 12)." Information was collected to "keep in touch" with the program users and to gather success stories and testimonials to attract sponsors. (Corporate, individual, and government-entity sponsors underwrote expenses and the program was provided at no monetary cost to teachers.)

This study gathered evidence from the Agreement, Program Information, and Evaluation forms along with anecdotal evidence contained in the transcripts to judge the impact that an arts-based supplemental resource has on teachers' perception of curriculum integration, instructional materials development, classroom learning activity selections, and student critical thinking improvement.

The program garnered four national awards in four years—1995-1998. It received three consecutive Community Action Network awards—recognizing media for finding solutions to social problems—and an "America Goes Back to School" citation from U.S. Secretary of Education Richard Riley.

Arts Indiana Magazine in the Classroom was last offered during the 2000-2001 school year when the necessary philanthropic support for the organization could no longer support it.

This study gathered evidence from the information submitted to Arts Indiana by the following teachers:

Table 1. Arts Indiana Participating Teachers Whose Information Submitted to Arts Indiana Was Used in This Study.

No.	Teacher Last Name	Teacher First Name	Subject Area	School/Organization Name	School Community	School County
1	Antonelli	Kay	Visual Arts	Logansport Community HS	Logansport	Cass
2	Armstrong	Tony	Language Arts	North Central HS	Indianapolis	Marion
3	Ashcarft	Ellen	Library	Robert Frost ES	Indianapolis	Marion
4	Barker	Sondra	Visual Arts	Attica Jr./Sr. HS	Attica	Fountain
5	Barrett	Jo	Performing Arts	Yorktown MS	Yorktown	Delaware
6	Beattie	Barbara	Visual Arts	Park Tudor School	Indianapolis	Marion
7	Behnke	Joyce	Visual Arts	Michigan City Jr. HS	Michigan City	LaPorte
8	Bennett	Don	Special Education	Northwestern Jr. HS	Kokomo	Howard
9	Bennett	Karen	Language Arts	Ben Davis HS	Indianapolis	Marion
10	Birk	Samantha	Adult Education	Fort Wayne Museum of Art	Fort Wayne	Allen
11	Black-Libby	Twila	Visual Arts	Vincennes Lincoln HS	Vincennes	Knox
12	Boltin	Elaine	Visual Arts	Christ the King School	Indianapolis	Marion
13	Bower	Rhonda	Language Arts	Central HS	Monroe	Adams
14	Brewer	Eleanor	Visual Arts	Southmont HS	Crawfordsville	Montgomery
15	Brookshire	Linda	Business Education and District Inservice	Indiana University at South Bend and South Bend Community School Corp. (dual assignment)	South Bend	St. Joseph
16	Brown	Debra	Elementary	Robert Frost ES	Indianapolis	Marion
17	Burrell	Diane	Visual Arts	Daleville Jr./Sr. HS	Daleville	Delaware
18	Byrne	Martha	Performing Arts	Lawrence North HS	Indianapolis	Marion
19	Cambridge	Barbara	Language Arts	Indiana University-Purdue University at Indianapolis	Indianapolis	Marion
20	Cancilla	Joe	Language Arts	Brebeuf Jesuit Preparatory School	Indianapolis	Marion
21	Chappell	Paula	Visual Arts	Rossville Consolidated	Rossville	Clinton

				School		
22	Chary	Diane	Language Arts	River Forest Jr./Sr. HS	Hobart	Lake
23	Chilman	Karen	Visual Arts	William H. English MS	Scottsburg	Scott
24	Christman	David	Performing Arts	Harmony School	Bloomington	Monroe
25	Clark	Ron	Language Arts	Highland HS	Anderson	Madison
26	Clay	Kay	Visual Arts	Emmerich Manual HS	Indianapolis	Marion
27	Cole	Carolyn	Visual Arts	Weisser Park School	Fort Wayne	Allen
28	Collier	Katy	Visual Arts	Westfield Washington HS	Westfield	Hamilton
29	Craig	Carolyn	Visual Arts	Southwestern HS	Shelbyville	Shelby
30	Cupp	Mike	Language Arts	North Central HS	Indianapolis	Marion
31	Davis	Nikki	Language Arts	Westfield Washington HS	Westfield	Hamilton
32	Davis	Susan	Language Arts	Arsenal Technical HS	Indianapolis	Marion
33	Dawald	Mary Lou	Visual Arts	Northridge MS	Crawfordsville	Montgomery
34	Dougherty	Wendy	Visual Arts	Northview MS	Indianapolis	Marion
35	Dowhie	Anne	Visual Arts	Central HS	Evansville	Vanderburgh
36	Drake	Cheryn	Language Arts	Valparaiso HS	Valparaiso	Porter
37	Elrod	Vickie	Visual Arts	Anderson HS	Anderson	Madison
38	Evans	Claudia	Language Arts	H.L. Harshman MS	Indianapolis	Marion
39	Fedroff	Greg	Language Arts	Decatur MS	Indianapolis	Marion
40	Ferguson	Cathy	Visual Arts	Tipton HS	Tipton	Tipton
41	Flanigan	Judy	Visual Arts	Connersville Jr. HS	Connersville	Fayette
42	Foley	Michael	Language Arts	Washington HS	South Bend	St. Joseph
43	Foster	Clyde	Visual Arts	Warren Central HS	Indianapolis	Marion
44	Freer	Raymond	Visual Arts	Anderson University	Anderson	Madison
45	Goebel	Vella	Language Arts	Signature School	Evansville	Vanderburgh
46	Greer	Louis	Visual Arts	Hanover Central HS	Cedar Lake	Lake
47	Grogg	Julia	Visual Arts	Bellmont HS	Decatur	Adams
48	Handley	Elizabeth	Visual Arts	Connersville Jr. HS	Connersville	Fayette
49	Hankins	Jana	Visual Arts	Wainwright MS	Lafayette	Tippecanoe
50	Hanson	Marilyn	Visual Arts	Valparaiso HS	Valparaiso	Porter
51	Headen	Sarah	Visual Arts	Switzerland County Jr./Sr. HS	Vevay	Switzerland
52	Helbing	Kathleen	Social Studies	Roncalli HS	Indianapolis	Marion
53	Henry	Jamie	Visual Arts	Lawrence Central HS	Indianapolis	Marion
54	Higdon	Susan	Visual Arts	Floyd Central Jr. HS	Floyds Knobs	Floyd
55	Houser	Aleta	Language Arts	Arsenal Technical HS	Indianapolis	Marion
56	Houston	Kathy	Visual Arts	Shortridge MS	Indianapolis	Marion
57	Hudson (Adamiak)	Sandra	Language Arts	Pendleton Heights HS	Pendleton	Madison
58	Hunter	Kay	Visual Arts	Covington HS	Covington	Fountain

59	Hunter	Vicki	Language Arts	Paul Hadley MS	Mooresville	Morgan
60	Hurt	Larry	Visual Arts	Ben Davis HS	Indianapolis	Marion
61	Johnson	Cecilia	Visual Arts	Central Catholic HS	Lafayette	Tippecanoe
62	Jones	Rick	Performing Arts	Center Grove HS	Greenwood	Johnson
63	Komosa	Gloria	Visual Arts	River Forest Jr./Sr. HS	Hobart	Lake
64	Kawasaki	Kuniko	Visual Arts	Anderson HS	Anderson	Madison
65	Knecht	Michele	Visual Arts	Yorktown MS	Yorktown	Delaware
66	Kopenec	Donald	Language Arts	Donald E. Gavit HS	Hammond	Lake
67	Lake	Beth	Language Arts	Franklin County HS	Brookville	Franklin
68	Lamie	LuAnn	Visual Arts	Jefferson HS	Lafayette	Tippecanoe
69	Landaw	Susan	Language Arts	North Central HS	Indianapolis	Marion
70	LaPrees	John	Visual Arts	Broad Ripple HS	Indianapolis	Marion
71	Lausch	Carolyn	Language Arts	Brebeuf Preparatory School	Indianapolis	Marion
72	Lelek	Carolyn	Visual Arts	Valparaiso HS	Valparaiso	Porter
73	Leonard	Karen	Language Arts	North Central HS	Indianapolis	Marion
74	Lile	Michael	Visual Arts	Ben Davis HS	Indianapolis	Marion
75	Litts	Glen	Visual Arts	New Augusta Public Academy	Indianapolis	Marion
76	Lovejoy	Kim Brian	Language Arts	Indiana University-Purdue University at Indianapolis	Indianapolis	Marion
77	Lowenstine	Jane	Visual Arts	Portage HS	Portage	Porter
78	MacIsaac	Alicia	Visual Arts	Northridge MS	Crawfordsville	Montgomery
79	Marshall	John	Performing Arts	Pike HS	Indianapolis	Marion
80	Mathias	Harold	Visual Arts	Daleville Jr./Sr. HS	Daleville	Delaware
81	Mautz	Nancy	Social Studies	Signature School	Evansville	Vanderburgh
82	McCabe	Cynthia	Visual Arts	Seeger Jr./Sr. HS	Lebanon	Warren
83	McCormick	Sheila	Visual Arts	Crawfordsville HS	Crawfordsville	Montgomery
84	McCracken	Shawn	Visual Arts	Rossville Consolidated School	Rossville	Clinton
85	Middleton	Teresa	Language Arts	Ben Davis HS	Indianapolis	Marion
86	Miller	Philip	Visual Arts	Columbus East HS	Columbus	Bartholomew
87	Mitchells	Lynn	Visual Arts	Michigan City Jr. HS	Michigan City	LaPorte
88	Moehring	Susan	Visual Arts	Delta HS	Muncie	Delaware
89	Morehouse	Vivian	Visual Arts	Southport MS	Indianapolis	Marion
90	Newland	Tony	Elementary	Maplewood ES	Indianapolis	Marion
91	Nicolini (Malloy)	Mary	Language Arts	Penn HS	Mishawaka	St. Joseph
92	Nolan	Melissa	Visual Arts	Pike HS	Indianapolis	Marion
93	Nugent	Sheryl	Mathematics	Edison Jr. HS	Lake Station	Lake
94	Oldenburg	Linda	Visual Arts	Merrillville HS	Merrillville	Lake
95	Overmeyer	Mary	Visual Arts	Paul Harding HS	Fort Wayne	Allen
96	Parmer	Angie	Visual Arts	Shelbyville Senior HS	Shelbyville	Shelby
97	Pecen	Carolyn	Language	Kokomo HS	Kokomo	Howard

				Arts		
98	Petty	Susan	Visual Arts	Evansville Day School	Evansville	Vanderburgh
99	Pierce	Rodger	Visual Arts	Avon MS	Indianapolis	Marion
100	Porterfield	Marianita	Visual Arts	Roosevelt HS	Gary	Lake
101	Prince	Eileen	Visual Arts	Sycamore School	Indianapolis	Marion
102	Purtee	Mary Jo	Language Arts	Knightstown HS	Knightstown	Henry
103	Richards	Lance	Language Arts	Lanesville HS	Lanesville	Harrison
104	Roe	Christopher	Language Arts	Indiana Academy for Science, Mathematics and Humanities	Muncie	Delaware
105	Rudd	Gary	Visual Arts	Fort Wayne Museum of Art	Fort Wayne	Allen
106	Ryan	Craig	Visual Arts	Noblesville HS	Noblesville	Hamilton
107	Schap	Shari	Language Arts	Central Catholic HS	Lafayette	Tippecanoe
108	Schein	Allison	Visual Arts	Westfield Washington HS	Westfield	Hamilton
109	Scott	Susan	Visual Arts	Connersville HS	Connersville	Fayette
110	Seward	David	Visual Arts	Pike HS	Indianapolis	Marion
111	Shadle	Deborah	Visual Arts	Blackford HS	Hartford City	Blackford
112	Shake	Nancy	Visual Arts	Center Grove HS	Greenwood	Johnson
113	Shannon	Sally	Elementary	North Grove ES	Greenwood	Johnson
114	Shartzer	Karen	Performing Arts	White Lick ES	Brownsburg	Hendricks
115	Sinclair	Christi	Language Arts	Ben Davis HS	Indianapolis	Marion
116	Slattery	Jan		Anderson HS	Anderson	Madison
117	Snearly	Patty	Visual Arts	Frankfort MS (Frontier HS—later assignment)	Frankfort (Chalmers—later assignment)	Clinton (White—later assignment)
118	Southworth	Rosemarie	Elementary	Robert Frost ES	Indianapolis	Marion
119	Spangler	Joe	Adult	Marion County Community Corrections Center	Indianapolis	Marion
120	Spoerner	Thomas	Visual Arts	Ball State University,	Muncie	Delaware
121	Steill	Laurel	Language Arts	Columbia City HS	Columbia City	Whitley
122	Sundheimer	Jet	Visual Arts	Western HS	Russiaville	Howard
123	Swayze	Kathleen	Performing Arts	Westlane MS	Indianapolis	Marion
124	Szymanski	Cynthia	Library	Indiana University Northwest	Gary	Lake
125	Teuschler	Julia	Gifted and Talented	Brookville MS	Brookville	Franklin
126	Treischman	Janet	Visual Arts	Marian College	Indianapolis	Marion
127	Uebelhor	Curtis	Visual Arts	Perry Heights MS	Evansville	Vanderburgh
128	VanDuyne	Ann	Elementary	Washington ES	Warsaw	Kosciusko
129	Walker	Judith	Visual Arts	Shortridge MS	Indianapolis	Marion
130	Wallace	Karen	Visual Arts	Floyd Central HS	Floyds Knobs	Floyd
131	Webb	Cynthia	Language Arts	Paoli HS	Paoli	Orange

132	Weigold	Laura	Visual Arts	Pierceton ES, Pierceton and South Whitley ES (dual assignment)	Pierceton and South Whitley (dual assignment)	Kosciusko and Whitley (dual assignment)
133	Weyer	Sandra	Language Arts	Washington HS	South Bend	St. Joseph
134	Williams	Carole	Visual Arts and Language Arts (dual assignment)	Shawe Memorial HS	Madison	Jefferson
135	Wilson	Corrie	Visual Arts	Broad Ripple HS	Indianapolis	Marion
136	Wilson	Jennifer	Visual Arts	Waldron Jr./Sr. HS	Waldron	Shelby
137	Windsor	LeAnn	Visual Arts	Daleville Jr./Sr. HS	Daleville	Delaware
138	Winhusen	Joe	Visual Arts	Broad Ripple HS	Indianapolis	Marion
139	Wright	Vicki	Elementary	Canterbury School	Fort Wayne	Allen
140	Young	Dorothy	Visual Arts	Shortirdge MS	Indianapolis	Marion
131	Yovanovich	Andrea	Audiology	Vernon HS, Fortville	Fortville	Hancock
142	Zehr	Brian	Language Arts	Edison Jr. HS	Lake Station	Lake

Statement of the Problem

Indiana's declining SAT scores prompted the publisher of a statewide magazine covering the literary, performing, and visual arts to take action by creating a program to use the magazine as a supplemental resource for students. It was believed that such a supplemental resource could enhance critical thinking, which would contribute to helping raise SAT scores. Arts Indiana, Inc., a not-for-profit organization, provided the organizational, editorial, and curricular structure that started the *Arts Indiana Magazine in the Classroom* program and partnered with sponsors to cover its costs.

A goal of the classroom program's objectives was to enhance critical thinking skills by integrating the arts directly into Indiana classrooms in a multi-disciplinary approach.

Purpose of the Study

This study showed the ways in which a supplemental resource is used affects teachers' perceptions of student critical thinking improvement. It revealed similarities and differences among use between grade levels and subject areas. It revealed the similarities and differences of use among teachers who used an accompanying teacher/student guide and those who did not. This study's literature review showed the value that various kinds of arts intraction provided to the critical thinking skills development of students.

Research Problem

There is less arts accessibility and availability in private schools, many of which are faith-based and operate as Christian ministries or extensions of parish ministries.

According to demographics from Dunn & Bradstreet there are nearly two arts teachers per public school in the United States. Private Catholic schools have the equivalent of 0.87 teacher per school and private non-Catholic schools have the equivalent of 0.53 teacher per school. These figures combine music, visual art, and dance teachers serving in these schools (Dunn & Bradstreet 2004).

This study, through its literature review, demonstrated the value of arts interaction particularly through instruction and integration to the critical thinking skills development of students. This study, through its qualitative analysis of the *Arts Indiana Magazine in the Classroom* program, demonstrated that an arts-based supplemental resource has an impact upon teachers' perceptions in the area of student critical thinking improvement.

The Bible is filled with the arts—from architecture to music to poetry. To have access to the arts sequestered in Christian schools is denying students a dimension of education that can be directly related to scripture.

This research supported an alternative way in which to introduce more arts instruction and integrate more arts subject matter in private schools, particularly faith-based schools with a Christian orientation.

The arts are emblematic of God's creative nature that He instilled into man. It was a passion for J.S. Bach to celebrate this nature that made him identify each composition—including those written on secular themes—as "for the glory of God alone (Kalas 2001, 94)

This study demonstrated that the arts can be (and should be) offered in their school even when funding choices exclude optimal staffing and by using an arts-based supplemental resource, every teachers can become an arts specialist; something that should be of interest to private school administrators, teachers, and parents.

Arts Indiana reported that it was the only publication that covered the literary, performing, and visual arts in one state (Arts Indiana 1996). Similar publications, *Arts New England* and *New Art Examiner*, provided regional and national coverage. Therefore, the *Arts Indiana Magazine in the Classroom* program connected teachers and students through its supplemental curriculum resource with the literary, performing, and visual arts of Indiana. *Arts New England* and *New Art Examiner* did not have educational outreach programs.

The uniqueness of *Arts Indiana* contributes to the uniqueness of any study of its educational outreach program. Beyond that, most research of arts in education has focused on integration causing outcomes and not connections having impact.

Some integration studies have been broad—dealing with all arts students in a given population having greater self-esteem—and other have been more specific—piano instruction raising math ability.

Impact on self-esteem has been evidenced in studies that revealed arts students were less disruptive (National Center for Education Statistics 1992) and that the self-concept of at-risk students involved in the arts increased over non-arts at-risk students (Barry 1992).

Impact of the arts on mental ability was demonstrated by pattern recognition and mental representation scores that improved significantly for students given piano instruction during a three-year period (Costa-Giomi 1998, April). There is also data finding significant improvements in the spatial temporal IQ scores of arts participants contrasted with non-arts participants (Rauscher et al 1994, 1997, 1-8; Gromko and Poorman 1998, 171-181; Rauscher and Zupan 1999). "The relationship between music and spatial reasoning was so strong that simply listening to music can make a difference (Campbell 2001)."

A Los Angeles County study concluded the more arts work a high school student took; generally speaking, the higher his or her SAT scores were (Watanabe 1989, 1-2). SAT evidence included students with coursework or experience in music performance scored 57 points higher on verbal and 41 points higher on math and students in music

appreciation score 63 points higher on verbal and 44 points higher on math "than did students with no art participation (the College Entrance Examination Board 2001).

A study of the results of balancing the arts with other learning areas in the curriculum showed that where 25percent of more of the curriculum is devoted to arts courses, students acquire academically superior abilities (Perrin 1994).

Physician and Biologist Lewis Thomas, who studied the undergraduate majors of medical school applicants, found that 66 percent of music majors who applied to medical school were admitted, the highest percentage of any group. By comparison, 4 percent of biochemistry majors were admitted (Miller and Coen 1994, 459-461).

Students who were given an enriched, sequential, skill-building music program showed marked improvement in reading and math skills (Gardiner et al. 1996, 284). Arts programs that included reading also increased reading abilities among students who had been reading at below-grade levels (G. McGuire 1984, 835-839). Students experiencing a music curriculum demonstrated improvement in accuracy and fluency for auditory temporal tasks, an increase in auditory visual integration skills, and higher phonemic awareness scores (Bowles 2003, 5).

A study of 237-second grade children who used piano keyboard training with newly designed math software demonstrated improvement in math skills. The group scored 27 percent higher on proportional math and fractions tests than children who used only the math software (Graziano, Peterson, and Shaw 1999). It also included an analysis of 25,000 secondary school students (part of the National Education Longitudinal Survey) who showed consistent high levels of involvement in the arts throughout the

middle school and high school years also showed "significantly higher levels of

mathematics proficiency by grade 12 (Catterall, Chapleau, and Iwanaga 1999).

Arts Indiana was part of a study of 22 programs offering supplemental resources

conducted in collaboration between Lincoln Center Institute, the Aesthetic Education

Institutes, and Harvard Project Zero (Simmons 1996, 4). This studied focused on

program offerings and delivery and not on curriculum impact or learning activity

selection.

In light of so many curricular infusions of the arts in which outcomes are

measured, the research problem, according to the perceptions of teachers who signed up

to use *Arts Indiana*, is: how did their use affect student critical thinking improvement?

Initial Research Question

According to the perceptions of teachers who signed up to use a monthly arts-based supplemental resource, *Arts Indiana*, how did their use develop student critical thinking?

Subsidiary Questions

1. Comparing teachers who used the *Arts Indiana* Teacher/Student Guides with those who did not in both the arts and non-arts subject areas, what were the similarities and differences in perceptions of critical thinking development?
2. Comparing teachers who used the *Arts Indiana* Teacher/Student Guides with those who did not in three broad grade levels (elementary, middle, and secondary), what were the similarities and differences in perceptions of critical thinking development?
3. Comparing teachers who used the *Arts Indiana* Teacher/Student Guides with those who did not, what were the similarities and differences in their perceptions of critical thinking development?
4. According to teachers' self-reports, how did their use of *Arts Indiana* affect critical thinking development?

Assumptions, Limitations, Delimitations

Assumptions

The study assumes that teachers were honest and forthcoming with their comments about the resource and their use and implementation of it in the interviews and written annual evaluations as contained in the transcribed interviews. It is important to note that since this resource was provided at no cost to the teacher, school, or school district that some teachers might "tell the provider what he or she wanted to hear" in order to avoid what might be a perceived penalty of losing the resource if comments were negative.

There is a lot of variety in the teacher interview transcripts. While similar questions were asked, often teachers would address the topics they had on their agenda. The transcripts reveal that teachers were allowed to finish their conversations and guided back to original questions.

Limitations

A major limitation of this study is the age of its data. Since *Arts Indiana Magazine in the Classroom* operated 1990-1991 through 2000-2001, the data ranges from 16 to 27 years old. The researcher believes that there is a timelessness to the data as this study sought to determine, according to the perceptions of teachers who signed up to use the program, how their use affected student critical thinking improvement.

The study showed these perceptions gathered from 11 years of data. During this period Arts Indiana compiled anecdotal evidence from teachers, students, sponsors,

administrators, and government leaders. It also documented raw data of teachers, schools, subject areas, etc.

Throughout this period, there was no analysis the program's information. However, these were the data and facts from this period. This study sought to perform such an analysis.

Another limitation of this study is that it does not weight or rank the uses of the resource. It does not distinguish between rural/urban school settings. It does not identify school districts as resource rich or resource poor. The study does not consider a teacher's years of experience, years of using the program or amount of specialized training in curriculum development. It assumes teachers are resource seeking, not resource passive.

For purposes of this study a notation on the program evaluation form, a comment in an interview transcript, or an attribution in an annual report will be deemed as evidence of resource usage. A limitation is the lack of evidence to determine why certain usages might have occurred or not occurred in successive or consecutive years.

Delimitations

Delimitations include that a majority of users, 91, were secondary grade level teachers and 51 users from other grade levels. Another delimitation is that 82 teachers were visual and performing arts teachers and 60 taught in other disciplines or subject areas.

Delimitations also include that the Arts Indiana program was discontinued at the end of the 2000-2001 school year and that no scholarly data was published about it after the collection of teacher interviews during the 1996-1997 school year. This study's literature review built a case for the necessity of critical thinking as a basic literacy for

humanity as God's creation. It assumes Arts Indiana's place in that body of knowledge

from its inclusion in a study of 22 programs offering supplemental resources conducted

in collaboration between Lincoln Center Institute, the Aesthetic Education Institutes, and

Harvard Project Zero (Simmons 1996, 4) and from the findings of this study.

This study is delimited by its focus on the use of the Teacher/Student Guide as an

influence for student created writing and drawing and teacher use of the Teacher/Student

Guide's effect on teachers' perceptions of student critical thinking improvement.

The *Arts Indiana Magazine in the Classroom* program was used in elementary,

middle, secondary, university classrooms, adult, and school district inservice training

between the 1990-1991 and 2000-2001 school years. The study uses program documents

(agreement, information and evaluation), interview transcripts, and annual reports of the

classroom program; not an instrument specifically designed to measure the resource's

effect.

Definition of Terms

To explore critical thinking it is useful to have common ground on the meaning of

common terms associated with it:

1. Arts—cultural expressions in literary, performing, and visual genres.
2. Arts-Based Resource—information about and experiences in the literary, performing, and visual genres that assists in instructional delivery.
3. Arts Teachers—teachers of music, visual arts, and dance subjects.
4. Causal-Comparative Method—a type of research that seeks to discover possible causes and effects of a behavior pattern or personal characteristics by comparing individuals in whom it is present with individuals in whom it is absent or present to a lesser degree.
5. Connection—an equal and mutually beneficial link between two or more subject areas.
6. Critical Listening—A mode of monitoring how we are listening so as to maximize our accurate understanding of what another person is saying.

7. Critical Person—One who has mastered a range of intellectual skills and abilities. Critical Reading: an active, intellectually engaged process in which the reader participates in an inner dialogue with the writer.
8. Critical Thinking—Disciplined, self-directed thinking which exemplifies the perfections of thinking appropriate to a particular mode or domain of thinking. Thinking that displays mastery of intellectual skills and abilities. The art of thinking about your thinking while you are thinking in order to make your thinking better: more clear, more accurate, or more defensible.
9. Critical Writing—To express in language ideas arranged in relationships to each other.
10. Critique—An objective judging, analysis, or evaluation of something.
11. Cultural Association—Undisciplined thinking often reflects affiliations, personal and social, absorbed or uncritically formed.
12. Cultural Assumption—Unassessed (often implicit) belief adopted by virtue of upbringing in a society.
13. Culture—the fabric that unites individuals and objects within groups, points of references for those groups, and a conduit through which meaning is derived.
14. Curriculum—an organized plan of delivering instruction based on a rationale and including aims, goals, objectives, strategies, methods, learning activities, and evaluation techniques.
15. Interaction—dialogue between subject areas.
16. Interconnection—a reciprocal linkage.
17. Interdisciplinary—the linkage of two or more academic areas that are traditionally considered distinct.
18. Integration—the infusion of one subject area with others through linkages that enhance instruction and achieve curriculum objectives.
19. Instruction—the engagement of teacher(s) and student(s) through facilitation of activities and information that imparts learning and achieves curriculum goals.
20. Intradisciplinary—linkages within one academic subject.
21. Multidisciplinary—that which can be used in more than one subject area
22. Perception of Cause and Effect— opinion that a particular ting caused a specific effect (distinct from cause-effect where a causal relationship is proven)
23. Private School—a school that is not directly supported by public funds and that may or may not be faith-based and may or may not have a Christian orientation.
24. Resource—that which aids in the delivery of instruction.
25. Standard (theory) —a belief that for students to achieve at a high level, there must be high national criteria in all disciplines that hold schools and students accountable to meet those standards.
26. Talent—A common perception is that intensive arts training is only for the gifted
27. Standard (theory) –a belief that for students to achieve at a high level, there must be high national criteria in all disciplines that hold schools and students accountable to meet those standards.
28. Talent—A common perception is that intensive arts training is only for the gifted
29. Supplemental Resource—ancillary material that is used to aid the delivery of instruction.

CHAPTER II

FOCUSED LITERATURE REVIEW

Introduction

The intellectual roots of critical thinking are as ancient as its etymology, traceable, ultimately, to the teaching practice and vision of Socrates 2,500 years ago who discovered by a method of probing questioning that people could not rationally justify their confident claims to knowledge. Confused meanings, inadequate evidence, or self-contradictory beliefs often lurked beneath smooth but largely empty rhetoric. Socrates established the fact that one cannot depend upon those in "authority" to have sound knowledge and insight. He demonstrated that persons may have power and high position and yet be deeply confused and irrational. He established the importance of asking deep questions that probe profoundly into thinking before we accept ideas as worthy of belief (Paul, et al, 1997).

Intensive arts training, far from being impractical and elitist, can prepare students for life and work by developing in them the general skills and attitudes, the habits of heart and mind they need to prevail in postmodern society no matter what career they chose. Intensive arts training in high school increases, not decreases, options. If you want a motivated, organized, hardworking, flexible, smart, creative worker, able to work well alone or in groups, hire a young violinist.

There is a pressing need to develop networks of educators, parents, politicians, and business people who see the need for truly fundamental reform. That reform must be

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advanced simultaneously on many levels, for it is not going to result from action on one level alone. Because it must go to the roots of things, because it must be substantial, because it involves deep understandings, it must be incremental, evolutionary, and long-term. Everyone with the insight to see the problem comprehensively should act within the sphere of his or her greatest influence. There is a role for everyone concerned to exercise influence for the better: for parents, for public citizens, for business people, for civic leaders, for superintendents, for teachers, for college professors, and ... yes, even for those in state educational bureaucracies.

Critical thinking is ancient, but until now its practice was for the elite minority, for the few. But the few, in possession of superior power of disciplined thought, used it as one might only expect, to advance the interests of the few. We can never expect the few to become the long-term benevolent caretakers of the many.

The many must become privy to the superior intellectual abilities, discipline, and traits of the traditional privileged few. Progressively, the power and accessibility of critical thinking will become more and more apparent to more and more people, particularly to those who have had limited access to the educational opportunities available to the fortunate few.

The only question is how long and how painful the process will be and what we shall sacrifice of the public good in the meanwhile. How many of our citizens will live lives unemployed and unemployable in the post-industrial age?

We must sooner or later abandon the traditional attempt to teach our fellow citizens what to think. Such efforts cannot prepare us for the real world we must, in fact, face. We must concentrate instead on teaching ourselves how to think, thus freeing us to

think for ourselves, critically, fairmindedly, and deeply. We have no choice, not in the long haul, not in the face of the irrepressible logic of accelerating change and increasing complexity (Willsen, 1995).

There are a number of barriers to the development of thinking including the lack of insight into critical thinking on the part of teachers and faculty. But at a deeper level, perhaps the single most significant barrier is the native egocentrism of human thought. This is an important question because it is egocentrism that keeps us from seeking and finding flaws in our thinking. It is egocentrism that leads to intellectual arrogance, or the tendency to think we know more than we do. It is egocentrism that leads to human selfishness and close-mindedness. Therefore as we teach students to think within disciplines, we also need to teach students how the mind normally functions – that it functions to get what it wants, to validate its views, and justify its behavior (Shaughnessy, 2002).

Critical Thinking in Scriptures

Among examples of critical thinking included in the Bible:

- A simple man believes anything, but a prudent man gives thought to his steps. (Pr 14:15)

- It is not good to have zeal without knowledge, nor to be hasty and miss the way. (Pr 19:2)

- Do not believe me unless I do what my Father does. (Jn 10:37)

- Now the Bereans were of more noble character than the Thessalonians, for they received the message with great eagerness and examined the Scriptures every day to see if what Paul said was true. (Acts 17:11)

- Test everything. Hold on to the good. (1 Thes 5:21)

- Dear friends, do not believe every spirit, but test the spirits to see whether they are from God, because many false prophets have gone out into the world. (1 Jn 4:1)

- As his custom was, Paul went into the synagogue, and on three Sabbath days he reasoned with them from the Scriptures, explaining and proving that the Christ had to suffer and rise from the dead. "This Jesus I am proclaiming to you is the Christ," he said. Some of the Jews were persuaded and joined Paul and Silas, as did a large number of God-fearing Greeks and not a few prominent women. (Acts 17:2-4)

- For he vigorously refuted the Jews in public debate, proving from the Scriptures that Jesus was the Christ. (Acts 18:28)

- Then Jesus said to them, "How is it that they say the Christ is the Son of David? David himself declares in the Book of Psalms:

- "'The Lord said to my Lord:

  "Sit at my right hand

  until I make your enemies

  a footstool for your feet."'

- David calls him 'Lord.' How then can he be his son?" (Lk 20:41-44)

(http://www.rationalchristianity.net/unknown_verses.html#crit)

- (Proverbs 14:15) A simple man believes anything, but a prudent man gives thought to his steps.

- (Proverbs 19:2) It is not good to have zeal without knowledge, nor to be hasty and miss the way.

- (John 10:37) Do not believe me unless I do what my Father does.

- (1 Thessalonians 5:21) Test everything. Hold on to the good.

- (1 John 4:1) Dear friends, do not believe every spirit, but test the spirits to see whether they are from God, because many false prophets have gone out into the world.

- (Acts 18:28) For HE vigorously refuted the Jews in public debate, proving from the scriptures that Jesus was the Christ.

- (Ephesians 5:21) Submit to one another out of reverence for Christ (Patterson).

We are all bombarded with truth claims. To really determine what is true and what is false requires that you test everything in light of the only source of ultimate truth—God's Word.

By what standard do we test all things? The Bible. Bt what if the Bible doesn't directly address the issue:

Whenever a truth claim is presented, you have to determine whether you will accept it as true or reject it as false. Here is a framework that you can use, as well as teach to others, to evaluate those claims. When you hear a claim, stop and ASK some questions:

- What is this person's *Authority* to make such a claim?

- From what *Starting point* is this person looking at the world?

- How do they *Know* what they claim to know?

- Is the person credible?

- Is the foundation Biblical?

- Is the claim confirmable?

(Patterson, 2014)

Attributes of Critical Thinking

Critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action. In its exemplary form, it is based on universal intellectual values that transcend subject matter divisions: clarity, accuracy, precision, consistency, relevance, sound evidence, good reasons, depth, breadth, and fairness (Scriven and Paul, 1987).

Universal intellectual standards are standards that must be applied to thinking whenever one is interested in checking the quality of reasoning about a problem, issue, or situation. To think critically entails having command of such standards. To help students learn them, teachers should pose questions which probe student thinking, questions which hold students accountable for their thinking, questions which, through consistent use by the teacher in the classroom, become internalized by students as questions they need to ask themselves.

The ultimate goal, then, is for these questions to become infused in the thinking of students, forming part of their inner voice, which then guides them to better and better

reasoning. While there are a number of universal standards, the following are the most significant:

- Clarity: Could you elaborate further on that point? Could you express that point in another way? Could you give me an illustration? Could you give me an example?

  Clarity is the gateway standard. If a statement is unclear, we cannot determine whether it is accurate or relevant. In fact, we cannot tell anything about it because we don't yet know what it is saying. For example, the question, "What can be done about the education system in America?" is unclear. In order to address the question adequately, we would need to have a clearer understanding of what the person asking the question is considering the "problem" to be. A clearer question might be "What can educators do to ensure that students learn the skills and abilities which help them function successfully on the job and in their daily decision-making?"

- Accuracy: Is that really true? How could we check that? How could we find out if that is true? A statement can be clear but not accurate, as in "Most dogs are over 300 pounds in weight."

- Precision: Could you give more details? Could you be more specific?

  A statement can be both clear and accurate, but not precise, as in "Jack is overweight." (We don't know how overweight Jack is, one pound or 500 pounds.)

- Relevance: How is that connected to the question? How does that bear on the issue?

  A statement can be clear, accurate, and precise, but not relevant to the question at

issue. For example, students often think that the amount of effort they put into a course should be used in raising their grade in a course. Often, however, the "effort" does not measure the quality of student learning, and *when this is so*, effort is irrelevant to their appropriate grade.

- Depth: How does your answer address the complexities in the question? How are you taking into account the problems in the question? Is that dealing with the most significant factors? A statement can be clear, accurate, precise, and relevant, but superficial (that is, lack depth). For example, the statement "Just say No" which is often used to discourage children and teens fro using drugs, is clear, accurate, precise, and relevant. Nevertheless, it lacks depth because it treats an extremely complex issue, the pervasive problem of drug use among young people, superficially. It fails to deal with the complexities of the issue.

- Breadth: Do we need to consider another point of view? Is there another way to look at this question? What would this look like from a conservative standpoint? What would this look like from the point of view of...? A line of reasoning may be clear accurate, precise, relevant, and deep, but lack breadth (as in an argument from either the conservative or liberal standpoint which gets deeply into an issue, but only recognizes the insights of one side of the question.)

- Logic: Does this really make sense? Does that follow from what you said? How does that follow? But before you implied this and now you are saying that; how can both be true?

  When we think, we bring a variety of thoughts together into some order. When the combination of thoughts are mutually supporting and make sense in

combination, the thinking is "logical." When the combination is not mutually supporting, is contradictory in some sense, or does not "make sense," the combination is not logical (Elder & Paul, 2010).

Education is good just so far as it produces well-developed critical faculty. A teacher of any subject who insists on accuracy and a rational control of all processes and methods, and who holds everything open to unlimited verification and revision is cultivating that method as a habit in the pupils. Those educated in it cannot be stampeded. They are slow to believe. They can hold things as possible or probable in all degrees, without certainty and without pain. They can wait for evidence and weigh evidence...They can resist appeals to their dearest prejudices. Education in the critical faculty is the only education of which it can be truly said that it makes good citizens (Sumner, 1940).

To be skilled in critical thinking is to be able to take one's thinking apart systematically, to analyze each part, assess it for quality and then improve it. The first step in this process is understanding the parts of thinking, or elements of reasoning.

These elements are: purpose, question, information, inference, assumption, point of view, concepts, and implications. They are present in the mind whenever we reason. To take command of our thinking, we need to formulate both our purpose and the question at issue clearly. We need to use information in our thinking that is both relevant to the question we are dealing with, and accurate. We need to make logical inferences based on sound assumptions. We need to understand our own point of view and fully consider other relevant viewpoints. We need to use concepts justifiably and follow out the implications of decisions we are considering.

Paul and Elder focus on two of the elements of reasoning: inferences and assumptions. Learning to distinguish inferences from assumptions in an important intellectual skill. Many confuse the two elements.

A review of the meanings:

- Inference: An inference is a step of the mind, an intellectual act by which one concludes that something is true in light of something else's being true, or seeming to be true. If you come at me with a knife in your hand, I probably would infer that you mean to do me harm. Inferences can be accurate or inaccurate, logical or illogical, justified or unjustified.

- Assumption: An assumption is something we take for granted or presuppose. Usually it is something we previously learned and do not question. It is part of our system of beliefs. We assume our beliefs to be true and use them to interpret the world about us. If we believe that it is dangerous to walk late at night in big cities and we are staying in Chicago, we will infer that it is dangerous to go for a walk late at night. We take for granted our belief that it is dangerous to walk late at night in big cities. If our belief is a sound one, our assumption is sound. If our belief is not sound, our assumption is not sound. Beliefs, and hence assumptions, can be unjustified or justified, depending upon whether we do or do not have good reasons for them. Consider this example: "I heard a scratch at the door. I got up to let the cat in." My inference was based on the assumption (my prior belief) that only the cat makes that noise, and that he makes it only when he wants to be let in.

We humans naturally and regularly use our beliefs as assumptions and make inferences based on those assumptions. We must do so to make sense of where we are, what we are about, and what is happening. Assumptions and inferences permeate our lives precisely because we cannot act without them. We make judgments, form interpretations, and come to conclusions based on the beliefs we have formed (Paul & Elder, 1997).

Such beliefs can be informed by considering that which:

- is insightful; discerning; perceptive;

- is sensitive to linguistic, structural, cultural and psychological nuances and complexities;

- entertains challenging ideas; grounds meaning in acute perceptions of textual and cultural complexities.

The are expanded in a six-point "Scoring Guide" that is to be used in distinguishing student reading into the following categories:

- Exemplary Reading Performance (Six Points)

- Discerning Reading Performance (Five Points)

- Thoughtful Reading Performance (Four Points)

- Literal Reading Performance (Three Points)

- Limited Reading Performance (Two Points)

- Minimal Reading Performance (One Point)

However, these general descriptors are of very little use. For example, consider the words "discerning" and "thoughtful." It is not obvious that one is better off being "discerning" than being "thoughtful." It is also not obvious why "literal" is above

"limited." It is certainly not clear why the lowest score is "minimal" reading. What ever happened to just plain "poor" reading? Has it disappeared or is it one of many forms of "minimal" reading.

To be more helpful, these are amplified, for example in characterizations of this first category one should be prepared to notice and assess whether or not the student is:

- filling in gaps

- drawing meaning

- entertaining ideas

- raising questions

- taking exception

- agreeing; disagreeing

- exploring possibilities

- developing connections

- making connections

- drawing on evidence

- objecting to text features

- considering the authority of the author

- considering the quality of the author's sources

- suggesting ways of rewriting the text

- embracing the ideological position of a text

- resisting the ideological position of a text

- revising their understanding as they read

- carrying on an internal dialogue

Critical thinking is not to be devoured in a single sitting nor yet at two or three workshops. It is a powerful concept to be savored and reflected upon. It is an idea to live and grow with. It focuses upon that part of our minds that enables us to think things through, to learn from experience, to acquire and retain knowledge. It is like a mirror to the mind, enabling us to take ownership of the instruments that drive our learning. Not only to think, but to think about how we are thinking, is the key to our development as learners and knowers.

How do I know this? What is this based upon? What does this imply and presuppose? What explains this, connects to it, leads from it? How am I viewing it? Should I view it differently?

Short-term reform can do no more than foster surface change. Deep change takes time, patience, perseverance, understanding, and commitment. This is not easy in a world saturated with glossy, superficial, quick-fixes, a world plagued by a short attention span. Nevertheless it is possible to create a long-term professional development program that focuses on the progressive improvement of instruction and learning (Paul and Elder, 1997).

This can only happen when those designing professional development have a substantive concept of critical thinking. Only then will they be able to guide faculty toward a long-term approach. Only then will they be able to provide convincing examples in each of the disciplines. Only then will they see the connection between thinking and learning, between understanding content and thinking it through, between intellectual discipline and education. Only then will the "learning college" become what it aims, all along, to be (Paul, 2004).

Westfall and others noted that Einstein commented that his schooling required "the obedience of a corpse." The effect of the regimented school was a clear-cut reaction by Einstein; he learned "to question and doubt." He concluded: "…youth is intentionally being deceived by the state through lies."

He showed no signs of being a genius, and as an adult denied that his mind was extraordinary: "I have no particular talent. I am merely extremely inquisitive." He failed his entrance examination to the Zurich Polytechnic. When he finally passed, "the examinations so constrained his mind that, when he had graduated, he did not want to think about scientific problems for a year."

His final exam was so non-distinguished that afterward he was refused a post as an assistant (the lowest grade of postgraduate job).

Exam-taking, then, was not his forte. Questioning deeply and thinking critically was. Einstein had the basic critical thinking ability to cut problems down to size: "one of his greatest intellectual gifts, in small matters as well as great, was to strip off the irrelevant frills from a problem."

When we consider the work of Einstein, we find, not the unfathomable, genius mind. Rather we find thinkers who placed deep and fundamental questions at the heart of their work and pursued them passionately. Would that we had students who did the same (Westfall, 1993)

The Role of Socratic Questioning in Thinking, Teaching, & Learning sets forth Systems and Contexts For Thought:

Recognize that all thought has three possible functions: to express a subjective preference, to establish an objective fact (within a well-defined system), or to come up with the best of competing answers (generated by competing systems). Assume that you do not fully understand thinking until you know which of the three is involved. (Is the question calling for a subjective or personal choice? If so, let's make that choice in terms of our personal preferences. If not, then, is there a way to come up with one correct answer to this question (a definite system in which to find the answer)? Or, finally, are we dealing with a question that would be answered differently within different points of view? If the latter, what is the best answer to the question, all things considered?

Recognize that all thought has emerged within a human context. Assume that you do not fully understand the thought until you understand the context which has given rise to it. (Tell us more about the situation that has given rise to this problem. What was going on in this situation?) (The Role of Socratic Questioning in Thinking, Teaching, & Learning).

Paul and Elder observe that many pseudo critical thinking approaches present all judgments as falling into two exclusive and exhaustive categories: fact and opinion. Actually, the kind of judgment most important to educated people and the kind we most want to foster falls into a third, very important, and now almost totally ignored category, that of reasoned judgment.

A judge in a court of law is expected to engage in reasoned judgment; that is, the judge is expected not only to render a judgment, but also to base that judgment on sound, relevant evidence and valid legal reasoning.

A judge is not expected to base his judgments on his subjective preferences, on his personal opinions, as such. You might put it this way, judgment based on sound reasoning goes beyond, and is never to be equated with, fact alone or mere opinion alone. Facts are typically used in reasoning, but good reasoning does more than state facts. Furthermore, a position that is well-reasoned is not to be described as simply "opinion." Of course, we sometimes call the judge's verdict an "opinion," but we not only expect, we demand that it be based on relevant and sound reasoning.

Here's a somewhat different way to put this same point. It is essential when thinking critically to clearly distinguish three different kinds of questions:

- Those with one right answer (factual questions fall into this category). What is the boiling point of lead?

- Those with better or worse answers (well-reasoned or poorly reasoned answers). How can we best address the most basic and significant economic problems of the nation today?

- Those with as many answers as there are different human preferences (a category in which mere opinion does rule). Which would you prefer, a vacation in the mountains or one at the seashore?

Only the third kind of question is a matter of sheer opinion. The second kind is a matter of reasoned judgment - we can rationally evaluate answers to the question (using universal intellectual standards such as clarity, depth, consistency and so forth).

When questions that require better or worse answers are treated as matters of opinion, pseudo critical thinking occurs. Students come, then, to uncritically assume that everyone's "opinion" is of equal value. Their capacity to appreciate the importance of

intellectual standards diminishes, and we can expect to hear questions such as these: What if I don't like these standards? Why shouldn't I use my own standards? Don't I have a right to my own opinion? What if I'm just an emotional person? What if I like to follow my intuition? What if I don't believe in being "rational?" They then fail to see the difference between offering legitimate reasons and evidence in support of a view and simply asserting the view as true. The failure to teach students to recognize, value, and respect good reasoning is one of the most significant failings of education today (Paul, R. and Elder, L., October 1996).

The Role of Questions in Teaching, Thinking and Learning sets forth that ff we want thinking we must stimulate it with questions that lead students to further questions. We must overcome what previous schooling has done to the thinking of students. We must resuscitate minds that are largely dead when we receive them. We must give our students what might be called "artificial cogitation" (the intellectual equivalent of artificial respiration). (The Role of Questions in Teaching, Thinking and Learning)

Paul argues that ethics ought to be taught in school, but only in conjunction with critical thinking. Without critical thinking at the heart of ethical instruction, indoctrination rather than ethical insight results. Moral principles do not apply themselves, they require a thinking mind to assess facts and interpret situations. Moral agents inevitably bring their perspectives into play in making moral judgments and this, together with the natural tendency of the human mind to self-deception when its interests are involved, is the fundamental impediment to the right use of ethical principles.

Paul spells out the implications of this view for the teaching of ethics in literature, science, history, and civics. He provides a taxonomy of moral reasoning skills and

describes an appropriate long term staff development strategy to foster ethics across the curriculum (Paul, 1993).

Paul also finds that many are tempted to separate affective and moral dimensions of learning from cognitive dimensions. They argue that the cognitive and affective are obviously separate since many intelligent, well-educated people lack moral insight or sensitivity and many less intelligent, poorly educated, or uneducated people are morally good. By distinguishing "strong" and "weak" senses of the terms 'critical thinking', 'moral integrity', and 'citizenship' Paul suggests a novel answer to this objection.

Critical thinking, understood as skills alone separate from values, is often used to rationalize prejudice and vested interest. Moral integrity and responsible citizenship, understood merely as "good heartedness", are themselves susceptible to manipulation by propaganda. The human mind, whatever its conscious good will, is subject to powerful, self-deceptive, unconscious egocentricity of mind. The full development of each characteristic — critical thought, moral integrity, and responsible citizenship — in its strong sense requires and develops the others, in a parallel strong sense. The three are developed together only in an atmosphere, which encourages the intellectual virtues: intellectual courage, intellectual empathy, intellectual good faith or integrity, intellectual perseverance, intellectual fair-mindedness, and faith in reason. The intellectual virtues themselves are interdependent (Paul, 1993).

Critical Thinking is a systematic way to form and shape one's thinking. It functions purposefully and exactingly. It is thought that is disciplined, comprehensive, based on intellectual standards, and, as a result, well-reasoned.

Critical Thinking is distinguishable from other thinking because the thinker is thinking with the awareness of the systematic nature of high quality thought, and is continuously checking up on himself or herself, striving to improve the quality of thinking. As with any system, critical thinking is not just a random series of characteristics or components. All of its components - its elements, principles, standards and values - form an integrated, working network that can be applied effectively not only to academic learning, but to learning in every dimension of living.

Critical thinking's most fundamental concern is excellence of thought. Critical thinking is based on two assumptions: first, that the quality of our thinking affects the quality of our lives, and second, that everyone can learn how to continually improve the quality of his or her thinking (Critical Thinking: Identifying the Targets, www.criticalthinking.org).

It is impossible to reason without using some set of facts, data, or experiences as a constituent part of one's thinking. Finding trustworthy sources of information and refining one's own experience critically are important goals of critical thinkers. We must be vigilant about the sources of information we use. We must be analytically critical of the use we make of our own experience. Experience may be the best teacher, but biased experience supports bias, distorted experience supports distortion, self-deluded experience supports self-delusion. We, therefore, must not think of our experience as sacred in any way but, instead, as one important dimension of thought that must, like all others, be critically analyzed and assessed.

The mind can take in information in three distinctive ways: (1) by internalizing inert information, (2) by forming activated ignorance, and (3) by achieving activated

knowledge (Paul and Elder, Thinking: Distinguishing Between Inert Information, Activated Ignorance, Activated Knowledge).

The ideal of critical thinking is a central one in Russell's philosophy, though this is not yet generally recognized in the literature on critical thinking. For Russell, the ideal is embedded in the fabric of philosophy, science, liberalism and rationality, and this paper reconstructs Russell's account, which is scattered throughout numerous papers and books. It appears that he has developed a rich conception, involving a complex set of skills, dispositions and attitudes, which together delineate a virtue which has both intellectual and moral aspects. It is a view which is rooted in Russell's epistemological conviction that knowledge is difficult but not impossible to attain, and in his ethical conviction that freedom and independence in inquiry are vital. Russell's account anticipates many of the insights to be found in the recent critical thinking literature, and his views on critical thinking are of enormous importance in understanding the nature of educational aims. Moreover, it is argued that Russell manages to avoid many of the objections which have been raised against recent accounts. With respect to impartiality, thinking for oneself, the importance of feelings and relational skills, the connection with action, and the problem of generalizability, Russell shows a deep understanding of problems and issues which have been at the forefront of recent debate (Russell on Critical Thinking).

Differentiating Critical Thinking from Non-Critical Thinking

Virtually all informed commentators agree that schooling today does not foster the "higher order thinking skills and abilities" which represent the "basics" of the future. America 2000, President Bush's education initiative, seeks to bring schooling in line with

changing global and economic conditions, to engender sweeping educational reform in what are now admittedly largely static institutions, systems highly resistant to substantial change. America 2000 raises the following vital question: "How can we reverse the pervasive emphasis in education on lower rather than on higher order learning, on recall rather than on reasoning, on students merely 'reproducing' rather than 'producing' knowledge?"

The state of research regarding this problem was summarized by Mary Kennedy in an article appearing in the *Kappan*:

- national assessments in virtually every subject indicate that, although our students can perform basic skills pretty well, they are not doing well on thinking and reasoning. American students can compute, but they cannot reason

- American students can write complete and correct sentences, but they cannot prepare arguments

- in international comparisons, American students are falling behind … particularly in those areas that require higher order thinking

- American students are not doing well at thinking, reasoning, analyzing, predicting, estimating, or problem solving.

In linking the program to the established mode of instruction Kennedy summarized that teachers are highly likely to teach in the way they themselves were taught. If your elementary teacher presented mathematics to you as a set of procedural rules with no substantive rationale, then you are likely to think that this is what mathematics is and that this is how mathematics should be studied. And you are likely to teach it in this way. If you studied writing as a set of grammatical rules rather than as a

way to organize your thoughts and to communicate ideas to others, then this is what you will think writing is, and you will probably teach it so by the time we complete our undergraduate education, we have observed teachers for up to 3,060 days.

Though not as commonly realized, this problem of the dominance of lower order learning is as serious in post-secondary as it is in primary and secondary education. In both undergraduate and graduate programs students are typically enrolled in content heavy courses taught by professors who feel a greater obligation to cover subject matter through lecture than to generate thought-provoking activities or assignments that may seriously reduce what they can cover or significantly add to their work load, or both (Paul, 1993).

The Center For Critical Thinking found a significant gap between what instructors think they know about critical thinking and what classroom practices actually reveal (about what they know). Much of that gap is traceable to inadvertent intellectual arrogance.

As critical thinking is introduced to teachers, we must anticipate and respond to problems that may result when teachers misteach what they mislearn about critical thinking, either to students or to colleagues. For this reason, the advice and assistance of a critical thinking expert throughout the process is necessary.

Another potential danger in creating an effective staff development program is the appearance of those heading up the program as an "elite group." The rest of the teachers then define themselves as in opposition. Therefore, the program should be, from the beginning, as inclusive as possible. It must encourage and challenge, but not threaten or invalidate (Elder, A Professional Development Model for K-12 Schools).

Thinking Gets Us Into Trouble Because We Often:

- jump to conclusions

- fail to think-through implications

- lose track of their goal

- are unrealistic

- focus on the trivial

- fail to notice contradictions

- accept inaccurate information

- ask vague questions

- give vague answers

- ask loaded questions

- ask irrelevant questions

- confuse questions of different types

- answer questions we are not competent to answer

- come to conclusions based on inaccurate or irrelevant information

- ignore information that does not support our view

- make inferences not justified by our experience

- distort data and state it inaccurately

- fail to notice the inferences we make

- come to unreasonable conclusions

- fail to notice our assumptions

- often make unjustified assumptions

- miss key ideas

- use irrelevant ideas

- form confused ideas

- form superficial concepts

- misuse words

- ignore relevant viewpoints

- cannot see issues from points of view other than our own

- confuse issues of different types

- are unaware of our prejudices

- think narrowly

- think imprecisely

- think illogically

- think one-sidedly

- think simplistically

- think hypocritically

- think superficially

- think ethnocentrically

- think egocentrically

- think irrationally

- do poor problem solving

- make poor decisions

- are poor communicators

- have little insight into our own ignorance (Paul 1993)

There is not simply good and bad thinking in the world, both easily recognized as such. There is also bad thinking that appears to be good and therefore wrongfully, sometimes disastrously, is used as the basis of very important decisions. Very often this "bad thinking" is defended and "rationalized" in a highly sophisticated fashion. However flawed, it successfully counterfeits good thinking and otherwise intelligent people are taken in. Such thinking is found in every dimension of human life and in every dimension it does harm; in every dimension it works against human well-being. Very often it is generated in a structural way, as a likely or probable by-product of how we have arranged and ordered things. This is illustrated in the American educational establishment.

The manner in which it is structured and operates makes likely the continuous generation of more bad, albeit highly sophisticated, thinking: pseudo-critical thinking, in short. However, because the educational bureaucracy is a powerful shaping force in education, bad thinking at the bureaucratic level leads directly to bad teaching at the classroom level.

Paul illustrates this destructive pattern using the California Department of Education (as his model of educational bureaucracy at work) and the new California State Reading and Writing Assessment instrument (as the resultant bad practice). He argues that this poorly designed assessment tool leads directly to bad teaching practices and the exacerbation of a profound problem in instruction: the failure to teach students to reason well in every subject they study. If the educational bureaucracy doesn't understand what reasoning is and how to assess it in reading and writing, argues Paul, is it likely that higher order reading and writing will be taught? No, he claims. And thus the educational bureaucracy creates a deep and serious problem in education.

When deeply flawed thinking is embedded in teaching, then the development of thought and knowledge in the student is retarded or arrested as

- most people recognize that there is something incoherent about saying that one is well educated but thinks poorly.

- many educators have been miseducated. Many are poor reasoners. Many confuse issues and questions, are easily diverted from the relevant to the irrelevant.

Pseudo critical thinking is revealed in educational assessment when the assessment theory or practice — or the approaches to teaching, thinking, or knowledge that follow from it — fails to take into account fundamental conditions for the pursuit or justification of knowledge because

- though all of us think, and think continually, we have not been educated to analyze our thinking and assess it.

It might be helpful to remember that all critical thinking abilities have three parts: a process, an object, and a standard. Here are various critical thinking abilities, which can serve as examples. As you read them see if you can identify the intellectual standard in each.

- the ability to evaluate information for its relevance

- the ability to accurately identify assumptions

- the ability to construct plausible inferences

- the ability to identify relevant points of view

- the ability to distinguish significant from insignificant information

When questions that require better or worse answers are treated as matters of opinion, pseudo-critical thinking occurs.

Genuine knowledge is attained only when the information we possess is not only correct but, additionally, we know that it is and why it is.

One can learn to be cunning rather than clever, smooth rather than clear, convincing, rather than rationally persuasive, articulate rather than accurate.

The test, in fact, leads the teachers in the direction of malpractice, that is, into the systematic misassessment of reading and writing, leading the students in turn to become inaccurate, imprecise, and undisciplined readers and writers.

It must be underscored that the mere construction of meaning, as such, is not a significant achievement, since it is done as much by an Archie Bunker as by an Einstein.

Employers are not looking for a flashy, individualized response to a piece of writing, but rather a solid grasp of the meaning intended by the author. This is a fundamental premise of written communication.

Most people have no notion of what it means to take charge of their lives. They don't realize that the quality of their lives depends on the quality of their thinking. We all engage in numerous dysfunctional practices to avoid facing problems in our thinking. Consider the following and ask how many of these dysfunctional ways of thinking you engage in:

- Surround yourself with people who think like you.

- Then no one will criticize you.

- Don't question your relationships. You then can avoid dealing with problems within them.

- If critiqued by a friend or lover, look sad and dejected and say, "I thought you were my friend!" or "I thought you loved me!"

- When you do something unreasonable, always be ready with an excuse. Then you won't have to take responsibility. If you can't think of an excuse, look sorry and say, "I can't help how I am!"

- Focus on the negative side of life. Then you can make yourself miserable and blame it on others.

- Blame others for your mistakes. Then you won't have to feel responsible for your mistakes. Nor will you have to do anything about them.

- Verbally attack those who criticize you. Then you don't have to bother listening to what they say.

- Go along with the groups you are in. Then you won't have to figure out anything for yourself.

- Act out when you don't get what you want. If questioned, look indignant and say, "I'm just an emotional person. At least I don't keep my feelings bottled up!"

- Focus on getting what you want. If questioned, say, "If I don't look out for number one, who will?"

As you see, the list is almost laughable. And so it would be if these irrational ways of thinking didn't lead to problems in life. But they do. And often. Only when we are faced with the absurdity of dysfunctional thinking, and can see it at work in our lives, do we have a chance to alter it (Elder and Paul, Becoming a Critic Of Your Thinking).

Paul determines what remains is to put what we know into action: at the school and district level to facilitate long-term teacher development around higher-order thinking, at the state and national level to provide for long-term assessment of district,

state, and national performance. The project will take generations and perhaps in some sense will never end.

After all, when will we have developed our thinking far enough, when will we have enough intellectual integrity, enough intellectual courage, enough intellectual perseverance, enough intellectual skill and ability, enough fairmindedness, enough reasonability?

One thing is painfully clear. We already have more than enough rote memorization and uninspired didactic teaching, more than enough passivity and indifference, cynicism and defeatism, complacency and ineptness. The ball is in our court. Let's take up the challenge together and make, with our students, a new and better world (Paul, How to Prepare Students for a Rapidly Changing World).

Critical thinking is clearly an honorific phrase in the minds of most teacher educators such that they feel obliged to claim both familiarity with it and commitment to it in their teaching, despite the fact that few have had any in-depth exposure to the research on the concept and most have only a vague understanding of what it is and what is involved in bringing it successfully into instruction. Critical thinking is commonly confused with active involvement in learning (forgetting that active involvement alone is quite compatible with active "mislearning"). A vague appeal to words from Bloom's Taxonomy (analysis, synthesis, evaluation) is often taken to be demonstrative of knowledge of critical thinking.

It is clear that virtually all departments represented in the study uncritically assume that instruction in critical thinking takes place--without any effort to verify this assumption. In fact, we found no evidence in these interviews of any systematic efforts

that have been made to assess instruction for critical thinking within any of the schools of education studied. What is more, there is little understanding of how to assess it--should schools of education desire to do it. Most disturbingly, since the overwhelming majority assume that the faculty already understand and emphasize critical thinking in their classes, any "in-house" assessment would doubtless be perceived as a pointless "political" process to be carried out with a minimum of effort (but with a clear sense of how to achieve the politically correct answer). In other words, since professors in schools of education assume that they understand critical thinking and how to teach for it, and that they are already successful in teaching their students both, it follows that it will be exceedingly difficult to produce substantial changes in teacher certification programs in these areas.

It is also clear from the results of the study that we are very far from a state of affairs in which critical thinking is a hallmark of instruction in teacher preparation programs. Present instruction is likely to produce teachers who, on the one hand, are confident that they not only understand critical thinking but also know how to teach for it, but who, in point of fact, understand neither. Many will equate critical thinking with mere active involvement or "cooperative learning." Others will believe that some acquaintance with the terms of Bloom's Taxonomy or Howard Gardner's theory of multiple intellegences is equivalent to understanding critical thinking. Some will equate it with an emphasis on learning styles or with concept maps or some other tool or facet or dimension of learning.

Others will equate the whole of critical thinking with some component part of it. Some will therefore emphasize multiple points of view (and take that to be the whole of

it). Some will emphasize recognizing one's assumptions. Some will emphasize questioning information sources. Some will emphasize analyzing concepts. But very few will have a comprehensive sense of the whole or a realistic idea of how to cultivate it while teaching the content of a subject or discipline.

Using the criteria of the California State Universities and Colleges as an alternative reference point, it is clear that, based on the information we have gathered, the overwhelming number of those certified to teach have little understanding of how to teach so that students will understand

- the relationship of language to logic

- (have) the ability to analyze, criticize, and advocate ideas, to reason inductively and deductively, and to reach factual or judgmental conclusions based on sound inferences drawn from unambiguous statements of knowledge or belief

- (acquire) the ability to distinguish fact from judgment, belief from knowledge, and skills in elementary inductive and deductive processes, including an understanding of the formal and informal fallacies of language and thought."

Finally, given the information gathered in this study, it is highly likely that most of those certified to teach have, given present instruction, little understanding of what reasoning is, what assumptions are, what inferences are, what implications are, or what it is to reason with intellectual discipline within a subject field (historically, biologically, psychologically, etc.).

It appears likely that we are now certifying teachers who not only have little understanding of critical thinking nor how to teach for it but also wrongly and confidently think they do. The end result is that California classrooms are places in which both

teachers and students lack explicit knowledge of how to reason in a disciplined way about serious subjects and questions. In the absence of that understanding, one can expect a drifting toward intellectual relativism (i.e., toward the view that all answers sincerely believed and defended are equally good since, as far as they can see, there is no final way to intellectually assess competing answers other than by degree of active involvement in their defense). Subjectivity of response, subjectivity of grading, intellectual undisciplined answers will in all likelihood be unconsciously encouraged. Open-mindedness will be confused with the willingness to accept everyone's answer to a complex question as equally "right" (for them).

Given the facts revealed in Paul, Elder, and Bartell study, it is unlikely that students preparing to teach are being instructed in the basic structures of reasoning. Students studying history, biology, and mathematics will not recognize that historians, biologists, and mathematicians equally make assumptions, develop specialized concepts, reason to conclusions, make interpretations of data, trace implications and consequences, define problems, concerns, and issues, and think within a disciplinary frame of reference or point of view. Students studying English, Physics, and Chemistry will not recognize that thinking clearly, accurately, and precisely; thinking deeply, broadly, and logically; are equally important intellectual criteria in every subject. Students will continue to lack any insight into the fact that moral issues and problems require as much disciplined reasoning and clarity of definition as does reasoning in any other domain. Students will graduate, in short, without any plausible semblance of intellectual perspective and discipline.

If we are interested in teachers certified in California having a reasonable grounding in the rudiments of critical thinking based on a rich, substantive concept of it, or at least a minimalist, baseline concept, then we have a major task facing us, not the least of which is persuading the majority of the faculty that they do not already know what they confidently assume that they do know (Paul, et al, Study of 38 Public Universities and 28 Private Universities To Determine Faculty Emphasis on Critical Thinking In Instruction).

Any theory which we develop of the human mind must make intelligible how it is that minds could create such multiply complex phenomena as poems, novels, plays, dances, paintings, religions, social systems, families, cultures, traditions--and do such diverse things as interpret, experience, plan, question, formulate agendas, laugh, argue, guess, assess, assume, clarify, make inferences, judge, project, model, dramatize, fantasize, and theorize. All of these creations and all of these activities of minds are closely inter-involved with our emotional lives. There is great distance from accounting for these products, or their "emotional" connections, by the use of the data of brain research (Goleman, 1995).

In a study commissioned by the United States Department of Education, Office of Educational Research and Improvement of the National Center for Education Statistics, Paul and Nosich, identified a model for the national assessment of higher order thinking.

It delineates the problem of lower order learning, summarizes the state of research into critical thinking and educational reform, and explains the five-part structure of the paper. The first main section of the paper states and explicates 21 criteria for higher order thinking assessment. The second section makes the case for how a "rich, substantive

concept of critical thinking" meets those criteria. In making this case, Paul and Nosich spell out the dangers of a non-substantive concept of critical thinking. The third section of the paper spells out four domains of critical thinking: elements of thought, abilities, affective dimensions, and intellectual standards. The fourth section of the paper makes substantive recommendations regarding how to assess the various domains of critical thinking, the test strategies that may be used, the value of the proposed strategy for the reform of education, and the suggested implementation of the proposal.

Poor thinking is costing far too much in waste, inefficiency and human suffering. The world is filled with the products of lousy thinking: politicians who are unclear, news that is inaccurate, TV programs that are superficial. Narrow self-serving thinking parades about as eloquence in the public interest. On a daily basis, the English language is transformed from a powerful and precise tool for thought into a garble of jargon, slang and bastardized speech. Everyday, lust is confused with love, schooling with education, belief with knowledge, arrogance with self-confidence. With knee-jerk consistency we try to solve complex problems using Band-Aid approaches. Instead of courageously seeking fresh ways to see things, we retreat into our own prejudiced perspectives. The point? We are a society without intellectual discipline and standards. No wonder educators have followed suit.

Students deserve a fighting chance to succeed in a troubled and troubling world. But they will not succeed without hard-headed discipline, without standards they can use everyday in powerful and effective ways. It is common sense, practical standards for the reasoning mind that our educational community has virtually ignored. Because of this, many of our students—have no doubt—cannot think their way out of a paper bag. From

time immemorial, sloppy thinkers have unwittingly paid the price of shoddy, confused, inaccurate, illogical, irrelevant, self-serving, stereotypical, irresponsible, shallow thinking. Enough is enough. Let's bring the standards of intellectual discipline back into the classroom. They are our inheritance from the best thinkers of the past. They are the best gift we can give to the thinkers of the future (Elder, The New Standards).

In short, active or cooperative learning is not enough. Such learning must be disciplined throughout by careful application of the intellectual standards that keep the best thinking on track. It must target and check the crucial structures in thinking. Spontaneous, interested student thinking does not naturally involve appropriate standards. In fact, most students (and people in general, for that matter) are drawn to use standards for assessing thinking which are both egocentric and sociocentric. Most people agree with only that which agrees with what they already believe (egocentric) and that which agrees with what those around them believe (sociocentric). These "natural" tendencies can be overcome only over time and only when appropriate intellectual standards are carefully cultivated.

Elder believes it's time to bring active, collaborative learning into the classroom-time long overdue but only if we ensure that sound critical thinking is the vehicle of that collaboration, only if students assess their collaborative byproducts rigorously, effectively, critically (Elder, Collaborative Learning).

Improving Critical Thinking Abilities

There is nothing more practical than sound thinking. No matter what your circumstance or goals, no matter where you are, or what problems you face, you are

better off if your thinking is skilled. As a manager, leader, employee, citizen, lover, friend, parent---in every realm and situation of your life, good thinking pays off. Poor thinking, in turn, inevitably causes problems, wastes time and energy, engenders frustration and pain.

Critical thinking is the disciplined art of ensuring that you use the best thinking you are capable of in any set of circumstances. The general goal of thinking is to "figure out the lay of the land" in any situation we are in. We all have multiple choices to make. We need the best information to make the best choices.

- What is really going on in this or that situation?

- Are they trying to take advantage of me?

- Does so-and-so really care about me?

- Am I deceiving myself when I believe that…?

- What are the likely consequences of failing to …?

- If I want to do …, what is the best way to prepare for it? How can I be more successful in doing…?

- Is this my biggest problem, or do I need to focus my attention on something else?

Successfully responding to such questions is the daily work of thinking. However, to maximize the quality of your thinking, you must learn how to become an effective "critic" of your thinking. And to become an effective critic of your thinking, you have to make learning about thinking a priority.

Ask yourself these--rather unusual--questions:

- What have you learned about how you think?

- Did you ever study your thinking?

- What do you know about how the mind processes information?

- What do you really know about how to analyze, evaluate, or reconstruct your thinking?

- Where does your thinking come from?

- How much of it is of "good" quality? How much of it is of "poor" quality?

- How much of your thinking is vague, muddled, inconsistent, inaccurate, illogical, or superficial?

- Are you, in any real sense, in control of your thinking? Do you know how to test it?

- Do you have any conscious standards for determining when you are thinking well and when you are thinking poorly?

- Have you ever discovered a significant problem in your thinking and then changed it by a conscious act of will?

- If anyone asked you to teach them what you have learned, thus far in your life, about thinking, would you really have any idea what that was or how you learned it?

For most, the only honest answers to these questions run along the lines of: "Well, I suppose I really don't know much about my thinking or about thinking in general. I suppose in my life I have more or less taken my thinking for granted. I don't really know how it works. I have never really studied it. I don't know how I test it, or even if I do test it. It just happens in my mind automatically."

It is important to realize that serious study of thinking, serious thinking about thinking, is rare. It is not a subject in most colleges. It is seldom found in the thinking of

our culture. But if you focus your attention for a moment on the role that thinking is playing in your life, you may come to recognize that, in fact, everything you do, or want, or feel is influenced by your thinking. And if you become persuaded of that, you will be surprised that humans show so little interest in thinking.

To make significant gains in the quality of your thinking you will have to engage in a kind of work that most humans find unpleasant, if not painful--intellectual work. Yet once this thinking is done and we move our thinking to a higher level of quality, it is not hard to keep our thinking at that level. Still, there is the price you have to pay to step up to the next level. One doesn't become a skillful critic of thinking over night, any more than one becomes a skillful basketball player or musician over night. To become better at thinking, you must be willing to put the work into thinking that skilled improvement always requires.

This means you must be willing to practice special "acts" of thinking that are initially at least uncomfortable, and sometimes challenging and difficult. You have to learn to do with your mind "moves" analogous to what accomplished athletes learn to do (through practice and feedback) with their bodies. Improvement in thinking, in other words, is similar to improvement in other domains of performance where progress is a product of sound theory, commitment, hard work, and practice.

Consider the following key ideas, which, when applied, result in a mind practicing skilled thinking. These ideas represent just a few of the many ways in which disciplined thinkers actively apply theory of mind to the mind by the mind in order to think better. In these examples, we focus on the significance of thinking clearly, sticking to the point (thinking with relevance), questioning deeply, and striving to be more

reasonable. For each example, we provide a brief overview of the idea and its importance in thinking, along with strategies for applying it in life. Realize that the following ideas are immersed in a cluster of ideas within critical thinking. Though we chose these particular ideas, many others could have instead been chosen. There is no magic in these specific ideas. In short, it is important that you understand these as a sampling of all the possible ways in which the mind can work to discipline itself, to think at a higher level of quality, to function better in the world.

.   Clarify your thinking

Be on the look-out for vague, fuzzy, formless, blurred thinking. Try to figure out the real meaning of what people are saying. Look on the surface. Look beneath the surface. Try to figure out the real meaning of important news stories. Explain your understanding of an issue to someone else to help clarify it in your own mind. Practice summarizing in your own words what others say. Then ask them if you understood them correctly. You should neither agree nor disagree with what anyone says until you (clearly) understand them.

Our own thinking usually seems clear to us, even when it is not. But vague, ambiguous, muddled, deceptive, or misleading thinking are significant problems in human life. If we are to develop as thinkers, we must learn the art of clarifying thinking, of pinning it down, spelling it out, and giving it a specific meaning. Here's what you can do to begin. When people explain things to you, summarize in your own words what you think they said. When you cannot do this to their satisfaction, you don't really understand what they said. When they cannot summarize what you have said to your satisfaction, they don't really understand what you said. Try it. See what happens.

Strategies for clarifying your thinking:

- State one point at a time.

- Elaborate on what you mean.

- Give examples that connect your thoughts to life experiences.

- Use analogies and metaphors to help people connect your ideas to a variety of things they already understand (for example, critical thinking is like an onion. There are many layers to it. Just when you think you have it basically figured out, you realize there is another layer, and then another, and another and another and on and on).

Here is one format you can use:

- I think …(state your main point)

- In other words…(elaborate your main point)

- For example…(give an example of your main point)

- To give you an analogy…(give an illustration of your main point)

- To clarify other people's thinking, consider asking the following:

- Can you restate your point in other words? I didn't understand you.

- Can you give an example?

- Let me tell you what I understand you to be saying. Did I understand you correctly?

<div align="center">Stick to the Point</div>

Be on the look out for fragmented thinking, thinking that leaps about with no logical connections. Start noticing when you or others fail to stay focused on what is relevant. Focus on finding what will aid you in truly solving a problem. When someone

brings up a point (however true) that doesn't seem pertinent to the issue at hand, ask: "How is what you are saying relevant to the issue?" When you are working through a problem, make sure you stay focused on what sheds light on, and thus helps address the problem. Don't allow your mind to wander to unrelated matters. Don't allow others to stray from the main issue. Frequently ask: "What is the central question? Is this or that relevant to it? How?"

When thinking is relevant, it is focused on the main task at hand. It selects what is germane, pertinent, related. It is on the alert for everything that connects to the issue. It sets aside what is immaterial, inappropriate, extraneous, and beside the point. What is relevant directly bears upon (helps solve) the problem you are trying to solve. When thinking drifts away from what is relevant, it needs to be brought back to what truly makes a difference. Undisciplined thinking is often guided by associations (this reminds me of that, that reminds me of this other thing) rather than what is logically connected ("If a and b are true, then c must also be true"). Disciplined thinking intervenes when thoughts wander from what is pertinent and germane and concentrates the mind on the things that help it figure out what it needs to figure out.

Ask these questions to make sure thinking is focused on what is relevant:

- Am I focused on the main problem or task?

- How is this connected? How is that?

- Does my information directly relate to the problem or task?

- Where do I need to focus my attention?

- Are we being diverted to unrelated matters?

- Am I failing to consider relevant viewpoints?

- How is your point relevant to the issue we are addressing?

- What facts are actually going to help us answer the question? What considerations should be set aside?

- Does this truly bear on the question? How does it connect?

Question Questions

Be on the look out for questions. The ones we ask. The ones we fail to ask. Look on the surface. Look beneath the surface. Listen to how people question, when they question, when they fail to question. Look closely at the questions asked. What questions do you ask, should you ask? Examine the extent to which you are a questioner, or simply one who accepts the definitions of situations given by others.

Most people are not skilled questioners. Most accept the world as it is presented to them. And when they do question, their questions are often superficial or "loaded." Their questions do not help them solve their problems or make better decisions. Good thinkers routinely ask questions in order to understand and effectively deal with the world around them. They question the status quo. They know that things are often different from the way they are presented. Their questions penetrate images, masks, fronts, and propaganda. Their questions make real problems explicit and discipline their thinking through those problems. If you become a student of questions, you can learn to ask powerful questions that lead to a deeper and more fulfilling life. Your questions become more basic, essential, and deep.

Strategies for formulating more powerful questions:

- Whenever you don't understand something, ask a question of clarification.

- Whenever you are dealing with a complex problem, formulate the question you are trying to answer in several different ways (being as precise as you can) until you hit upon the way that best addresses the problem at hand.

- Whenever you plan to discuss an important issue or problem, write out in advance the most significant questions you think need to be addressed in the discussion. Be ready to change the main question, but once made clear, help those in the discussion stick to the question, making sure the dialogue builds toward an answer that makes sense.

  Questions you can ask to discipline your thinking:

- What precise question are we trying to answer?

- Is that the best question to ask in this situation?

- Is there a more important question we should be addressing?

- Does this question capture the real issue we are facing?

- Is there a question we should answer before we attempt to answer this question?

- What information do we need to answer the question?

- What conclusions seem justified in light of the facts?

- What is our point of view? Do we need to consider another?

- Is there another way to look at the question?

- What are some related questions we need to consider?

- What type of question is this: an economic question, a political question, a legal question, etc.?

<div align="center">Be Reasonable</div>

Be on the lookout for reasonable and unreasonable behaviors — yours and others. Look on the surface. Look beneath the surface. Listen to what people say. Look closely at what they do. Notice when you are unwilling to listen to the views of others, when you simply see yourself as right and others as wrong. Ask yourself at those moments whether their views might have any merit. See if you can break through your defensiveness to hear what they are saying. Notice unreasonableness in others. Identify times when people use language that makes them appear reasonable, though their behavior proves them to be otherwise. Try to figure out why you, or others, are being unreasonable. Might you have a vested interested in not being open-minded? Might they?

One of the hallmarks of a critical thinker is the disposition to change one's mind when given good reason to change. Good thinkers want to change their thinking when they discover better thinking. They can be moved by reason. Yet, comparatively few people are reasonable. Few are willing to change their minds once set. Few are willing to suspend their beliefs to fully hear the views of those with which they disagree. How would you rate yourself?

Strategies for becoming more reasonable:

- Say aloud: "I'm not perfect. I make mistakes. I'm often wrong." See if you have the courage to admit this during a disagreement: "Of course, I may be wrong. You may be right."

- Practice saying in your own mind, "I may be wrong. I often am. I'm willing to change my mind when given good reasons." Then look for opportunities to make changes in your thinking.

- Ask yourself, "When was the last time I changed my mind because someone gave me better reasons for his (her) views than I had for mine?" To what extent are you open to new ways of looking at things? To what extent can you objectively judge information that refutes what you already think?

    Realize that you are being close-minded if you:

    a. are unwilling to listen to someone's reasons

    b. are irritated by the reasons people give you

    c. become defensive during a discussion.

After you catch yourself being close-minded, analyze what was going on in your mind by completing these statements:

a. I realize I was being close-minded in this situation because….

b. The thinking I was trying to hold onto is….

c. Thinking that is potentially better is….

d. This thinking is better because….

In closing, let me remind you that the ideas in this article are a very few of the many ways in which critical thinkers bring intellectual discipline to bear upon their thinking. The best thinkers are those who understand the development of thinking as a process occurring throughout many years of practice in thinking. They recognize the importance of learning about the mind, about thoughts, feelings and desires and how these functions of the mind interrelate. They are adept at taking thinking apart, and then assessing the parts when analyzed. In short, they study the mind, and they apply what they learn about the mind to their own thinking in their own lives.

The extent to which any of us develops as a thinker is directly determined by the amount of time we dedicate to our development, the quality of the intellectual practice we engage in, and the depth, or lack thereof, of our commitment to becoming more reasonable, rational, successful persons (Elder and Paul, 2004).

There is a pressing need to develop networks of educators, parents, politicians, and business people who see the need for truly fundamental reform. That reform must be advanced simultaneously on many levels, for it is not going to result from action on one level alone. Because it must go to the roots of things, because it must be substantial, because it involves deep understandings, it must be incremental, evolutionary, and long-term. Everyone with the insight to see the problem comprehensively should act within the sphere of his or her greatest influence. There is a role for everyone concerned to exercise influence for the better: for parents, for public citizens, for business people, for civic leaders, for superintendents, for teachers, for college professors, and ... yes, even for those in state educational bureaucracies.

Let us consider each briefly in turn.

<u>What can parents do</u>?

Insightful parents can make the case for an emphasis on intellectual discipline and reasoning in the school curriculum. They can ask whether there is any long-term in-service in critical thinking and reasoning. They can ask what intellectual standards the students are being taught and how they are being taught them. They can make the case to other parents. They can write letters to the local papers. They can organize groups of parents who petition the school board. And most important they can develop a home environment in which the reasonability and intellectual discipline of their children is

fostered, in which both they and their children routinely ask and give good reasons in support of their decisions and reason together about issues of importance not only to the family but to the broader society as well.

What can citizens do?

Insightful public citizens can make the case for an emphasis on intellectual discipline and reasoning in the school curriculum in virtue of the need to develop voters who will help the country maintain a democratic form of government. They, too, can go to the local school board and ask whether there is any long-term in-service in critical thinking and reasoning. They, too, can make the case to parents and other citizens. They can contact civic groups. They can write letters to the local papers. They can organize groups of interested citizens to petition the school board.

What can business people do?

Insightful business people can use the respect that their success commands to exercise influence, alone or in concert with others, over educational decisions about what to teach and how to teach it. Since their success will be increasingly dependent upon their bringing critical thinking into the inner workings of their own businesses, on workers learning how to continually relearn and improve in their performances and in the systems they use, they will have ready access to models and paradigms that can be used to illuminate what should be happening in the classroom. Increasingly, cutting-edge businesses are moving away from an emphasis on hierarchy to an emphasis on group problem solving. Since critical thinking is essential to effective group problem solving, progressive business people will be able to talk intelligibly with educators and other citizens about how problem solving structures function in business and how parallel

classroom problem solving groups might be set up. And, certainly, there are any number of civic groups that business people with insight might address on the problem of educational reform, putting emphasis, of course, on the missing foundation: the failure of teachers to learn how to think critically themselves and to teach for that thinking in their instruction, the failure to focus education, in other words, on "carefully-reasoned" problem solving. Finally, insightful business people can form alliances with insightful educators, to create symbiotic, reflective, mutually useful dialogues on what each group can learn from the other and how each can profit by working together.

What can civic leaders do?

Insightful civic leaders can draw public attention to the need for intellectual discipline and reasoning in instruction. They can articulate publicly the key links to developing responsible citizens, moral persons, and workers on the cutting edge of development. They can use their access to a more public forum by focusing the discussion of educational reform on the historical problem of the educational bureaucracy and its tendency to generate pseudo reform. They can create a public awareness of the importance of reasoning, critical thinking, and problem solving. They can help organize civic groups. They can use their superior access to other persons of leadership and influence to facilitate significant pressure on the educational bureaucracies. They can make contact with insightful and responsible politicians who are in a position to facilitate appropriate legislation.

What can superintendents do?

Insightful superintendents can make the case for an emphasis on intellectual discipline and reasoning in the school curriculum to the school board, administration

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members, teachers, and parents. They can ensure that there is long-term in-service in critical thinking and reasoning. They can ensure that students are being taught intellectual standards in depth. They can create incentives to teachers motivated to move in this direction. They can make the case to civic groups. Most importantly they can model reasonability and help create an atmosphere conducive to making the school a network of communities of inquiry.

What can teachers do?

Insightful teachers can make the case for an emphasis on intellectual discipline and reasoning in the school curriculum. They can request and help design long-term in-service in critical thinking and reasoning. They can bring intellectual standards into the classroom. They can make the case to parents. They can work with other teachers to foster a school environment in which reasonability and intellectual discipline are accepted school norms. Most importantly, they can routinely ask for and give good reasons in the classroom. They can foster student reasoning in history, science, math, and so forth. They can ensure that students must regularly assess their own work using intellectual standards.

What can college professors do?

Insightful college professors can make the case for an emphasis on intellectual discipline and reasoning in the college curriculum. They can request and help design long-term faculty development in critical thinking and reasoning. They can bring intellectual standards into the classroom. They can do research on the significance of critical thinking and reasoning in their discipline. They can work with schools and departments of education to ensure that those studying to become teachers take classes

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that require reasoning and disciplined thought. They can articulate the need for prospective teachers to learn how to design assignments that require reasoning and critical thinking. Most importantly, they can routinely foster reasoning in their own classrooms and ensure that their students must regularly assess their own work using intellectual standards.

What can those in statewide bureaucracies do?

Insightful members of statewide bureaucracies (who recognize the systemic ways that educational bureaucracies have fostered pseudo reforms and constructed ill-designed assessments) can play a number of significant roles. They can inform themselves and others they work with of the fundamental changes that are being made in businesses adopting structures contrary to those of traditional bureaucratic organization. They can foster movement toward problem-solving teams. They can raise broader and deeper issues. They can recommend hiring people with broader vision and more developed reasoning abilities. They can help to work against narrow specialization. At the same time, they can argue for more appropriate use of experts, so that those who lack expertise in a subject will not become, for example, principal designers in tests or assessment instruments in that subject. They can argue for the construction of assessment instruments that assess reasoning in every subject area and so help to integrate emphases across subject areas.

There are two essential dimensions of thinking that students need to master in order to learn how to upgrade their thinking. They need to be able to identify the "parts" of their thinking, and they need to be able to assess their use of these parts of thinking , as follows:

- All reasoning has a purpose.

- All reasoning is an attempt to figure something out, to settle some question, to solve some problem.

- All reasoning is based on assumptions.

- All reasoning is done from some point of view.

- All reasoning is based on data, information, and evidence.

- All reasoning is expressed through, and shaped by, concepts and ideas.

- All reasoning contains inferences by which we draw conclusions and give meaning to data.

- All reasoning leads somewhere, has implications and consequences (Paul and Elder, 1997).

An exemplary reading performance is insightful, discerning and perceptive as the reader constructs and reflects on meaning in a text. Readers at this level are sensitive to linguistic, structural, cultural, and psychological nuances and complexities. They fill in gaps in a text, making plausible assumptions about unstated causes or motivations, or drawing meaning from subtle cues. They differentiate between literal and figurative meanings. They recognize real or seeming contradictions, exploring possibilities for their resolution or tolerating ambiguities.

They demonstrate their understanding of the whole work as well as an awareness of how the parts work together to create the whole.

Readers achieving score point six develop connections with and among texts. They connect their understanding of the text not only to their own ideas, experience, and knowledge, but to their history as participants in a culture or larger community, often

making connections to other texts or other works of art. Exceptional readers draw on evidence from the text to generate, validate, expand, and reflect on their own ideas.

These readers take risks. They entertain challenging ideas and explore multiple possibilities of meaning as they read, grounding these meanings in their acute perceptions of textual and cultural complexities. They often revise their understanding of a text as they re-read and as additional information or insight becomes available to them. They sometimes articulate a newly developed level of understanding.

Readers demonstrating a score point six performance challenge the text. They carry on an internal dialogue with the writer, raising questions, taking exception, agreeing, disagreeing, appreciating or objecting to text features. They may test the validity of the author's ideas, information, and/or logic by considering the authority of the author and the nature and quality of the author's source(s). They frequently suggest ways of rewriting the text, speculating about the ideology or cultural or historical biases that seem to inform a text, sometimes recognizing and embracing and sometimes resisting the ideological position that a text seems to construct for its reader.

The grade four writing assessment is designed to reflect a variety of purposes for which children write:

- Expressive writing ("This is what I see, think, and feel ...")

- Persuasive writing ("This is what I believe and why I think you should believe it ...");

- Narrative writing ("This is what happened ..."); and

- Informational writing ("This is what I know and how I know it ...").

It is not that the reasons are arranged in a sophisticated pattern, but that they are good reasons.

No assessment of intellectual work, nor foundation for teaching, should be based on an approach in which intellectual standards are confused and erroneous, confusing recall with knowledge, subjective preference with reasoned judgment, irrational with rational persuasion.

Underneath all of this is a question of values. We are obliged to educate our students, not simply to shape them.

One of the most significant facts about the California language arts test fiasco is that it is not a fluke. But of course, neither is it a plot to undermine education. The situation is worse than either.

Large-scale bureaucratization entails, or at least makes highly probable, a high degree of narrow specialization — and specialization tends to bring fragmentation, narrowness of vision, politicization, and self-deception in its wake. The fragmentation and narrowness of vision makes it difficult to effect fundamental changes because the parts do not work together in a rational way and no one sees clearly that this is so, since each element in the structure becomes an end in itself, to itself.

It is almost impossible for the most pressing problems of education to become "issues" in educational bureaucracies because the focus is inevitably on the political, the narrow, the fragmented part or parts. With each part serving itself as an ultimate end — including those on the top — the whole is left to take care of itself. No one is left responsible for it.

The executive wing is also focused on itself and typically is satisfied with or driven to manufacture an illusion of serving the announced or official goals and ends. Meanwhile, the politicization and self-deception helps hide those realities most unpleasant to think about, and to have to face, and consequently those realities most in need of change.

This includes, of course, the most significant one today: the fact that modern American bureaucratic schooling is a system that preserves at its heart a mode of instruction that is a hold-over from the 19th Century and whose consistent effect is a superficial one. Most students in most classes most of the time are not actively engaged in learning what is worth learning. Most students are, on their side, not taking their education seriously. On the teaching side, they are not given challenging instruction. They are not engaged in genuine intellectual work. They are not developing intellectual standards or discipline. And, most assuredly, they are not learning to reason scientifically, mathematically, geographically, economically, sociologically, or morally.

On the shoddy foundation of didactic instruction and passive, lower order learning, the rhetoric of high goals and ideals, the propaganda of the schools, is overlaid. Modern educational bureaucracy has developed

The result is that the most fundamental problem in education today — that students are not learning to reason well — is not only ignored, it is intensified. Fairmindedness**:** Having a consciousness of the need to treat all viewpoints alike, without reference to one's own feelings or vested interests, or the feelings or vested interests of

one's friends, community or nation; implies adherence to intellectual standards without reference to one's own advantage or the advantage of one's group (Valuable Intellectual Virtuals June 1996).

To assess a student response, whether written or oral, in structured discussion of content or in critical response to reading assignments, by how clearly or completely it states a position, is to assess it on the basis of a standard of reasoning. Similarly, assessing student work by how logically and consistently it defends its position, by how flexible and fair the student is in articulating other points of view, by how significant and realistic the student's purpose is, by how precisely and deeply the student articulates the question at issue - each of these is an evaluation based on standards of reasoning (Paul and Elder, 1996).

There are many ways to teach content so that students progress as thinkers. However if we are to do so, we must explicitly focus on the mind intellectually and grasp the stages that students must progress through. We and our students must recognize that we all develop incrementally as thinkers, and that the progress of any one of us is directly dependent on our level of intellectual knowledge and commitment. Put another way, if I am to develop my critical thinking ability I must both "discover" my thinking and must intellectually take charge of it. To do this I must make a deep commitment to this end.

Why is this so important? Precisely because the human mind, left to its own, pursues that which is immediately easy, that which is comfortable, and that which serves its selfish interests. At the same time, it naturally resists that which is difficult to understand, that which involves complexity, that which requires entering the thinking and predicaments of others.

For these reasons, it is crucial that we as teachers and educators discover our own "thinking," the thinking we do in the classroom and outside the classroom, the thinking that gets us into trouble and the thinking that enables us to grow. As educators we must treat thinking--quality thinking--as our highest priority. It is the fundamental determinant of the quality of our lives. It is the fundamental determinant of the quality of the lives of our students. We are at some stage in our development as thinkers. Our students are at some stage in the development of theirs. When we learn together as developing thinkers, when we all of us seek to raise our thinking to the next level, and then to the next after that, everyone benefits, and schooling then becomes what it was meant to be, a place to discover the power of lifelong learning. This should be a central goal for all our students--irrespective of their favored mode of intelligence or learning style. It is in all of our interest to accept the challenge: to begin, to practice, to advance as thinkers (Elder and Paul, 1996).

If we want thinking we must stimulate it with questions that lead students to further questions. We must overcome what previous schooling has done to the thinking of students. We must resuscitate minds that are largely dead when we receive them. We must give our students what might be called "artificial cogitation" (the intellectual equivalent of artificial respiration). (Basic Theory and Instructional Structures)

When we are teaching well, students go beneath the surface. They learn how to identify and evaluate concepts based in natural languages, on the one hand, and those implicit in social rituals and taboos, on the other. They become articulate about what concepts are and how they shape our experience. They can, then, identify key concepts implicit in a communication. They begin to practice taking charge of their ideas and

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therefore of the life-decisions that those ideas shape and control. Crazy and superficial ideas exist in our society because crazy and superficial thinking has created them. They exist for mass consumption in movies, on television, in the highly marketed "news," and in the double speak of the ideological world of "law and order." They do damage everyday to the lives of people.

The challenge to teaching with this end in view is a significant one. It is one we must pursue with a keen sense of the long-term nature of the project and of its importance in the lives of students. We may begin in modest ways for example, with the proper use of the dictionary or how to identify the mores and taboos of one's peer group ---but begin we must, for the quality of the thinking of the students of today determines the quality of the world they shall create tomorrow (Paul and Elder, 2011).

K-12 leadership, to be successful in this important endeavor must be local, unflappable, and long-suffering. It needs to meet the problem head-on, and probably take a lot of flack (from those most anti-intellectual) for a long-term staff development plan of a sort very different from the usual: one that routinely challenges teachers intellectually. (Note that such Inservice is very likely to be labeled by many teachers as "too theoretical," "too abstract," and "impractical")

Closing with a poignant thought from the past, Paul asks us to imagine for a moment that you and I are suddenly thrust back in time to a small Dublin church in 1852. From the pulpit we hear the clear ringing voice of the great 19th Century educator, John Henry Cardinal Newman, admonishing us with all his characteristic vigor and incisiveness:

"Do not say, the people must be educated, when, after all, you only mean, amused, refreshed, soothed, put into good spirits and good humour, or kept from vicious excesses. I do not say that such amusements, such occupations of mind, are not a great gain; but they are not education... Education is a high word; it is the preparation for knowledge, and it is the imparting of knowledge in proportion to that preparation. We require intellectual eyes to know withal, as bodily eyes for sight. We need both objects and organs intellectual; we cannot gain them without setting about it; we cannot gain them in our sleep, and by haphazard (Paul, 1996)."

"What we can be sure of is that the persuasiveness of the argument for critical thinking will only grow year by year, day by day -- for the logic of the argument is simply the only prudent response to the accelerating change, to the increasing complexity of our world. No gimmick, no crafty substitute, can be found for the cultivation of quality thinking. The quality of our lives can only become more and more obviously the product of the quality of the thinking we use to create them (Elder, July 2000, p16)...Our students deserve at least a fighting chance to compete, to rise to the challenge of the day (Elder, July 2000, p5)."

The Arts—Critical Thinking Catalyst, Developer, Enhancer

Music, the visual arts, and dance can be used to develop critical thinking, which includes the ability to use logic and reasoning in problem solving. Critical thinking is an active, purposeful, organized, and cognitive process that research has shown can be explicitly taught. The skills required for critical thinking support higher learning, which necessitates the ability to see connections between concepts and topics, and to generalize

understanding between disciplines. There are various methodologies available to teach

critical thinking.

Multiple routines can be applied to the process of teaching critical thinking skills. For

example, presenting the student with a copy of Romare Bearden's painting, "The Piano

Lesson," then asking the student to describe his or her interpretation, followed by

listening to Jelly Roll Morton's "Jungle Blues" then asking the student to make a collage

from items of his or her choice to further represent that interpretation or even any other

choice of subject, provides a basis for eliciting critical thought.

Thinking routines are an excellent pre-writing exercise. They provide students

with a concrete focus for their writing and scaffold students' idea development. Using

these routines provides experiential focus prior to the writing process. It also supports

risk taking as students develop the ability to make observations and to draw conclusions.

A thinking routine, seeing/thinking/questioning, also can be used with the visual

arts. In this process, instructors ask students to describe what they see, then proceed to

answer such questions as: What does it make you think about? What questions do you

have? What does it make you want to explain? Thinking routines can be used across

topical areas in music, artwork, and topic/text.

Music also can be approached using two different thinking routines, Hearing/

Thinking/ Questioning and Hearing/Thinking/Visualization. In Hearing/

Thinking/Questioning, the instructor asks students to describe what they hear. From

there, they share what it makes them think about and what questions they have. In

Hearing/Thinking/Visualization, students describe explicitly what they hear; describe

what the music makes them think about, and create a visualization of what they heard or

interpreted through color, value, and texture. Color has values of light and dark and helps to create the mood of a design. Bright, warm colors give a feeling of warmth or energy; cool colors give a feeling of peace and calm; while very dark colors can convey sadness. Value indicates how much light and dark is in a design, and makes some elements of a design more dominant than others. Texture refers to how the surface looks and feels, and can be presented through rubbings or through points, lines, and shapes. The following techniques are helpful as well:

- Ask questions with multiple answers; encourage students to question, relate, evaluate

- Consistently offer and encourage students to seek alternative ways of responding to structured activities

- Connect across the curriculum to science and social studies, for example, ask what important events may have happened in the past

- Choose real objects and experiences over worksheets in developing understanding whenever possible

Additionally, reasoning routines can be applied to the visual arts. The instructor should support the student's ability to see connections between concepts, topics, and the artwork and to develop and express his or her understanding. This method can be used with works of art as well as with topics in the curriculum that invite explanation or are open to interpretation. Students learn to develop thoughtful interpretations of an artwork or topic by being encouraged to support their reasoning with evidence.

These processes can be adapted for visual, kinesthetic, and auditory learners. For the visual learner, use illustrations and visual arts as pathways to learning. Wordless

picture books and tests with strong illustrations can be used to develop thinking skills

with students of any age. Students demonstrate understanding through graphic organizers

or other visual representations.

Kinesthetic learners can enhance their understanding through the use of rhythm

instruments, and through the use of tableau, using their body to extend meaning. The

movement activities can support extensions and interpretations of text and other art

forms.

Auditory learners can use music to support understanding of basic literary elements. For

instance, song lyrics, prepared or original, along with short text, can help students

develop thinking skills. Students also can be encouraged to use assistive technology such

as books on tape and electronic readers. (Mackey and Schwartz, 2007)

Many organizations provide free access Interactive Art Web Sites for Students:

Visual Arts

- Albright Knox Art Gallery,

  http://www.albrightknox.org/artgames/index_launched.html

- Denver Art Museum, http://www.wackykids.org/welcome.htm

- Metropolitan Museum of Art, http://www.metmuseum.org/explore/index.asp

- Hirshhorn, http://hirshhorn.si.edu/education/interactive.html

- Minneapolis Institute of Arts, http://www.artsconnected.org

- Museum of Modern Art - Destination Modern Art,

  http://www.moma.org/education,

  http://www.moma.org/education/multimedia.html

- National Gallery of Art-NGA Kids, http://www.nga.gov/kids.html

- Odyssey Online, http://carlos.emory.edu/ODYSSEY/index.html

- Sanford Artedventures, http://www.alifetimeofcolor.com/play/id2/

- Tate Gallery, http://tate.org.uk/learning/learnonline

Music

- Arts Alive http://artsalive.ca/en/mus/activitiesgames/

- Chicago Field Museum http://www.fieldmuseum.org/sounds/chooser.html

- Dallas Symphony Orchestra http://www.dsokids.com/2001/rooms/games.html

- Mattatuck Museum http://mattatuckmuseum.org/games/temp/intro.html

- New York Philharmonic Game Room http://nyphilkids.org/games/main.phtml?

- PBS Kids Jazz http://pbskids.org/jazz/

- Ricci Adam's Music Theory http://www.musictheory.net/ (Tishman)

Consider, for example, that in cities such as Dallas and Washington the arts magnet high schools, even those that do not require an audition for entrance, when compared to other high schools in the district, have consistently high retention rates, low absenteeism and among the greatest number of graduates going on to further training after graduation. The reason for this is that these schools are able to engage students by capitalizing the student's own passion and desire to learn. Students in these schools want to go to school and to stay in school. They want to learn what the adults have to teach. Without that motivation, that "wanting," engaging students in their own education is difficult. The arts provide the motivation. The school builds on it to educate.

Intensive arts training, far from being impractical and elitist, can prepare students for life and work by developing in them the general skills and attitudes, the habits of heart and mind they need to prevail in postmodern society no matter what career they

chose. Intensive arts training in high school increases, not decreases, options. If you want a motivated, organized, hardworking, flexible, smart, creative worker, able to work well alone or in groups, hire a young violinist.

Further, the philosophy and process of arts training, a far older system of education then that of American schools, also mirrors the motion of many current educational reform movements and addresses recent educational concerns such as: the need for standards; the concepts of student as worker, teacher as coach of the Coalition of Essential Schools movement; the development of character; coping with diverse learning styles; meaningful assessment; and the importance of responding to multiculturalism in schools.

How are students educated through the arts? How will arts training help develop in them the skills and attitudes they need to flourish in the next millennia? Here are some observations from the field.

Ownership of the work is a driving force in arts training. The student has chosen this path and knows he or she will stand or fall based on his or her own effort. He or she challenges himself or herself to succeed at a task he or she has set. He or she takes his work seriously and knows that true motivation comes from within. He or she understands that he or she must sustain himself or her herself when the going gets rough. He or she understands that hard work and discipline are required if he or she is to succeed. If it takes six hours of practice a day that is what he or she does. He or she is the keeper of his or her own vision.

Students in the arts develop the capacity to *integrate many aspects of the self* and translate that integrated self into action. They learn by doing, truly active learning. It is

impossible for a student to learn to play the piano by watching her or his teacher. She or he learns to play by playing and her or him "doing" involves her or his body, her or his mind, and her or his spirit. Further, she or he has to put herself or himself out in the world, to perform, in order to progress and that takes courage and a willingness to risk. You can't cheat in the arts. You can't send someone else to play your recital.

Arts students are able to *use failure to learn.* A pianist must make mistakes if she or he is to improve. Error is an indication of where the work is. Going too fast in a passage means "slow down," not "you are a failure." Schools have often not looked at failure as a teaching tool, yet it is the most powerful corrective in life if it is used as a part of learning, not as a punishment. These students also have to be critical thinkers and judges of their performance. Ongoing assessment, by the student as well as the teacher, is a part of learning in the arts.

Arts training develops in students an understanding that *learning is an ongoing process,* and therefore, unlike the Thanksgiving turkey, one is never "done." The goal is not to find the right answer; rather it is to ask the next, best question. Students often speak of having "had" history after a course. The study of the violin does not end at graduation.

Arts students have *high ideals* and strive for excellence, admiring and wishing to emulate their teachers. They have the gift of heroes and *role models* such as Yo Yo Ma and Meryl Streep, while Madonna consistently tops the charts of people most admired by teenagers. Such positive and respectful engagement with adults is something all adolescents long for and need, no matter how many studs they may have in their noses and ears. This faith in accomplished adults helps young people be eager to grow and join the adult world.

Passion is a concept that is very real to young artists. They are deeply focused and intense about what they do and what they believe. They are sometimes skeptical, but seldom cynical. They believe that their lives and work matter and that caring deeply about your work is essential.

The capacity to *persist over time* in order to reach a goal is developed in intensive arts training. Training in ballet, for example, begins as early as five years old. A young dancer knows she or he has to work for years to develop enough skill and technique to support her or his own artistry. Success is not a matter of a lucky break or a quick fix as the media would have young people believe. Respect for hard work and a self-motivated capacity to stick to the task are qualities needed in the working world.

Young artists have the gift of a *positive sense of identity* based on what they do, not who their family is or what clique they hang out with. The young dancer is a dancer, and she or he belongs to the world of dancers, one that includes her, Suzanne Farrell and Barishnykov. Arts training develops in students an understanding that her work is taken seriously by herself and her teachers, something that seldom happens to adolescents these days. Her self-esteem and self-confidence comes from accomplishment.

Young artists are *big thinkers.* They work with their whole selves, and they are able to see the whole of a piece, a concept, a piece of work, as well as the details.

Arts students learn to *work well with others.* The high level of responsiveness, sensitivity to others, and coordinated interaction is very clear in a theater piece or a string quartet. All members of an ensemble know that the success of the whole depends on the productivity of each member. Age, sex, country of origin, or ethnic group doesn't matter; the quality of the work does. This aspect of art training is mirrored in the recent interest

in cooperative learning in the classroom as an effective way for heterogeneous groups of students to learn.

In this context it is interesting to note that educators who have studied schooling in Japan, often cited as an example of the efficacy of rote learning, have suggested that the most important skill Japanese children learn in school is how to work together for the success of the group. This ability has allowed Japan to emerge as an economic power in the world and is certainly a crucial attribute for a postmodern, internationalist culture where the capacity to work together for common goals is a necessity (Perrin, Education Through Arts in Secondary Schools).

In 1992 the US Department of Labor published a document called "What Work Requires at School for Workers in the Year 2000." It identified three categories. "Basic Skills" incorporates skills such as reading, writing, mathematics, and speaking. The second category, "Thinking Skills" includes creative thinking, the ability to problem-solve and make decisions, the capacity to reason and "see things in the mind's eye" (which I take to mean imagination), and knowing how to learn. Finally, under "Personal Qualities" they are seeking workers who are responsible, sociable able to work with others--have a sense of self-esteem, and integrity, are honest, and skilled at self-management (US Department of Labor, 1992).

The Interdisciplinary Circle

Relevance: How is that connected to the question? How does that bear on the issue? A statement can be clear, accurate, and precise, but not relevant to the question at issue. For example, students often think that the amount of effort they put into a course

should be used in raising their grade in a course. Often, however, "effort" does not measure the quality of student learning, and when that is so, effort is irrelevant to their appropriate grade.

Depth: How does your answer address the complexities in the question? How are you taking into account the problems in the question? Is that dealing with the most significant factors (Paul and Elder, 1996)?

Ask questions with multiple answers; encourage students to question, relate, evaluate:

- Consistently offer and encourage students to seek alternative ways of responding to structured activities

- Connect across the curriculum to science and social studies, for example, ask what important events may have happened in the past

- Choose real objects and experiences over worksheets in developing understanding whenever possible such as diversity, multiculturalism, gender issues, and critical thinking.

Multiculturalism, for example, emphasizes the importance of respecting all cultures and their unique traditions. An emphasis on gender issues, on the other hand, focuses on the degree to which women have been exploited and oppressed. Of course, approaches to diversity sometimes conflict. For instance, the exploitation and oppression of women usually occurs with the blessing of this or that cultural tradition. What, then, are we to do when it is part of a cultural tradition to oppress some given group? To "respect" the culture seems irreconcilable with critiquing its "oppression. How are we to reconcile these contradictory emphases in two different "diversity" movements? This can

only be done through critical thinking. A critical thinking approach reconciles appropriate multicultural thinking on the one hand with fair-minded feminist thinking on the other.

With critical thinking at the foundation of instruction, neither multiculturalism nor feminism are treated as exceptions to the evaluative force of critical thought. With respect to multiculturalism there is an emphasis on the critical assessment of cultural traditions (not all cultural traditions are to be respected simply because they are cultural traditions). With respect to gender issues, not all "feminist" thinking is on the same level of quality. There are contradictions between different brands of feminism-- radical feminism vs. traditional feminism for example. There are also different levels of understanding and insight among different feminist thinkers. In short, merely because one thinks within a feminist or a multicultural point of view does not guarantee that the reasoning one does is clear, accurate, precise, relevant, deep, open-minded, logical and fair.

In the approach I am recommending, students would learn to recognize when a multicultural or feminist perspective is relevant to the issue at hand. They might be assigned tasks requiring them to empathize with both cultural and feminist perspectives and to critically assess thinking within both perspectives. These ends not only integrate the emphasis on cultural and feminist perspectives with historical issues, social issues, ethical issues, political issues, and personal perspectives, they also introduce a necessary emphasis on reading, writing, and speaking skills essential to reasoning through these issues (Elder 2004).

Paul develops the notion that all human action presupposes the use of humanly created logical systems that model, abridge, and summarize the features of the world about us, and that abstract inferential systems, and the reasoning they make possible, are

as natural to us as a species as swimming is to a dolphin or flying is to a bird. As Paul puts it, we are continually "making inferences within a system we have created — about what is going on in our lives."

Unfortunately, according to Paul, to reason well we must do more than simply engage in it. We must become aware of that engagement and use our knowledge of the nature of that engagement to improve it. Paul compares the good reasoner to the good ballet dancer, the good chess and tennis players. All three must explicitly study the principles and practice the moves involved (with explicit standards of performance in mind).

Having suggested what good reasoning requires, Paul presents evidence to show that most students are not good at it. What is more, he presents evidence to suggest that most teachers are not good at it either — at least not at assessing it when students are called upon to use it in their work. One of the major reasons, combining with ignorance of what reasoning requires, is a systematic confusion between intelligent subjectivity (wit, articulateness, cleverness without substance), and reasoned objectivity (careful, disciplined, reasoning about an issue), between subjective opinion (however "bright"), and reasoned judgment (however mundane).

Paul documents this problem with an analysis of a major mistake in a California Department of Education statewide assessment of reasoned evaluation in writing. He follows up this documentation of a mistake on the part of testing experts with the same mistake made by teachers. He then briefly explicates a model for the analysis and assessment of reasoning (based on the logic of the question at issue) complete with a series of samples of student reasoning, all duly analyzed for the reader.

Paul concludes the paper with a brief argument to the effect that "the logical structures implicit in an educated person's mind are highly systematized." In contrast he argues:

"When the logical structures by which a mind figures out the world are confused, a jumble, a hodgepodge, a mere conglomeration, then that figuring out is radically defective.... Then the mind begins it knows not where, takes things for granted without analysis or questioning, leaps to conclusions without sufficient evidence... meanders without a consciousness of its point of view.... Then the mind wanders into its own prejudices and biases, its own egocentricity and socio-centricity. Then the mind is not able to discipline itself by a close analysis of the question at issue and ignores the demands that the logic of that question puts on it and us as rational, logic-creating, logic-using animals."

Intellectual Standards That Apply to Thinking in Every Subject

Thinking that is:

- Clear vs Unclear

- Precise vs Imprecise

- Specific vs Vague

- Accurate vs Inaccurate

- Relevant vs Irrelevant

- Plausible vs Implausible

- Consistent vs Inconsistent

- Logical vs Illogical

- Deep vs Superficial

- Broad vs Narrow

- Complete vs Incomplete

- Significant vs Trivial

- Adequate (for purpose) vs Inadequate

- Fair vs Biased or One-Sided

Effective readers connect with, reflect on, and challenge the text. Readers do not need to show evidence of all the performances listed here. The discerning and insightful reader may display a broad spectrum of reading behaviors or may investigate a few selected behaviors in great depth. The exemplary reader may show variety, complexity, breadth, and/or depth. Through their writing and graphics, these readers show convincing evidence of their ability to construct meaning. They may:

- Experiment with ideas; think divergently; take risks; express opinions (e.g., speculate, hypothesize, explore alternative scenarios; raise questions; make predictions; think metaphorically).

- Explore multiple possibilities of meaning; see cultural and/or psychological nuances and complexities in the text.

- Fill in gaps; use clues and evidence in the passage to draw conclusions; make plausible interpretations of ideas, facts, concepts, and/or arguments.

- Recognize and deal with ambiguities in the text.

- Revise, reshape and/or deepen early interpretations.

- Evaluate; examine the degree of fit between the author's ideas or information and the reader's prior knowledge or experience.

- Challenge the text(s) by agreeing or disagreeing, arguing, endorsing, questioning, and or wondering.

- Demonstrate understanding of the work as a whole.

- Show sensitivity to the structure of the text(s): how the parts work together; how characters and/or other elements of the work(s) change.

- Show aesthetic appreciation of the text(s); see linguistic and structural complexities.

- Allude to and/or retell specific passages(s) to validate and/or expand ideas.

- Make connections between the text(s) and their own ideas, experiences, and knowledge.

- Demonstrate emotional engagement with the text(s)

- Retell, summarize, and/or paraphrase with purpose.

- Reflect on the meaning(s) of the text(s), including larger or more universal significance; express a major understanding about or insight into a subject, an aspect of self, or of life in general.

The ICAT Exam and Education

Education is a high word. It is not socialization. It is not training. It is not indoctrination. It is the internalization of the life of reason within a domain of purposes and problems. It is the cultivation of a variety of modes of thought. It is the development of the power of knowledge. We are educated only when we are able to think within multiple fields and have the ability to learn to think in others. It would be odd to say that a person was well educated but not able to figure out the purposes, the questions, the information, the key concepts, the point of view, and so forth of their own thinking and

that of others. In a like manner, it would be odd to say of persons that they reasoned well, except for their tendency to be unclear, inaccurate, imprecise, irrelevant, superficial, narrow-minded, illogical, trivial, and unfair. The ICAT Critical Thinking Essay Exam focuses on what is the substantive core of education.

Music Department

Students successfully completing a major in Music will demonstrate a range of musical thinking skills and abilities. Their work at the end of the program will be clear, precise, and well-reasoned and well-performed. They will demonstrate in their musical thinking and performance, command of the key musical terms and distinctions, the ability to identify and solve fundamental musical problems. Their work will demonstrate a mind in charge of its own musical ideas, assumptions, inferences, and intellectual processes, as well as musical performance. They will demonstrate the ability to analyze musical questions and issues clearly and precisely, formulate musical information accurately, distinguish the relevant from irrelevant, recognize key questionable musical assumptions, use key musical concepts effectively, use musical language in keeping with established professional usage, identify relevant competing musical points of view, and reason carefully from clearly stated musical premises, as well as sensitivity to important musical implications and consequences. They will demonstrate excellent musical reasoning, problem-solving, and performance.

Physical Education

Students successfully completing a major in Physical Education will demonstrate a range of physically-based thinking skills and abilities. Their work at the end of the program will be clear, precise, well-reasoned and well-performed. They will demonstrate

in their thinking and performance, command of the key physical and sport terms and distinctions, the ability to identify and solve fundamental problems. inherent in physical education and performance. Their work will demonstrate a mind in charge of its own ideas, assumptions, inferences, and intellectual processes as they are integral to physical performance. They will demonstrate the ability to analyze questions and issues clearly and precisely, formulate information accurately, distinguish the relevant from irrelevant, recognize key questionable assumptions, use key concepts effectively, use physical education language in keeping with established professional usage, identify relevant competing points of view in physical education, and reason carefully from clearly stated premises, as well as sensitivity to important implications and consequences. They will demonstrate excellent reasoning , problem-solving, and performance in a variety of domains of physical education (International Center for the Assessment of Higher Order Thinking)

Beyond Critical Thought—Strategic Thinking

Critical thinking isn't just an academic skill, it's a skill used by highly successful business leaders every day to solve problems, ask questions, and make decisions.

Critical Thinking Correlation Studies

Researchers found that adults who scored higher on an assessment of critical thinking reported fewer negative life outcomes associated with poor decision making (deBruin, Parker, & Fischhoff, 2007). Negative life outcomes studied included, for example, quitting a job after a week, having a driver's license revoked, having utilities shut off due to late payment, and paying more than $500 to fix a car owned for less than

half a year. Study results, reported in the Journal of Personality and Social Psychology, were based on responses from 360 adults living in the greater Pittsburgh metropolitan area.

Creativity and Critical Thinking

A study in the journal Intelligence found that people higher in fluid reasoning, a concept closely linked to critical thinking, outperform others in producing creative ideas, and are better able to benefit from strategies that promote creative thinking (Nusbaum & Silvia, 2011). The study evaluated responses to various questionnaires and creativity tasks for 414 students at the University of North Carolina at Greensboro. Based on the findings, the authors believe that creative idea generation may be heavily influenced by various factors related to fluid reasoning and critical thinking, such as working memory, the ability to focus on relevant aspects of the problem, and abstract thinking ability.

Number of Patents

Researchers at Vanderbilt University found that cognitive ability predicted creativity, including number of patents produced, for employees with STEM (science, engineering, technology, and mathematics) degrees tracked over more than two decades (Park, Lubinski, & Benbow, 2008). The study, reported in Psychological Science, tracked 1,586 students with STEM degrees. Results showed that odds were between 4 to 5 times greater that students who scored among the highest 25% in cognitive ability, would go on to produce patents, relative to students scoring among the lowest 25% in cognitive ability. The authors interpret the findings as evidence that cognitive ability plays an essential role in innovation, and emphasize its importance for solving the scientific and technological problems that the world faces in the 21st century.

Teacher Beliefs About Creativity

Teacher beliefs about the nature of creativity may sometimes neglect the important role of crit ical thinking, according a study published by Penn State researchers in Educational Research Review (Andiliou & Murphy, 2010). The study's author note that researchers generally agree that creativity involves both the ability to generate original or novel ideas and the ability to use critical thinking and knowledge to judge appropriateness of ideas in terms of task requirements. The K-12 teachers studied on the other hand, tended to emphasize the original or novel component of creativity, and were seemingly unaware of the creativity component involving judging the appropriateness of creative outcomes. Teachers also tended to limit creative thinking to literary and artistic tasks rather than other domains (e.g., thinking of alternative causes or consequences, in the field of history). The authors suggest that altering teachers' beliefs about the meaning of creativity may help them better see that fostering creativity is compatible with core educational objectives and that creativity is not limited to gifted students or artistic domains.

Job Performance and Critical Thinking/Cognitive Ability and Role of Critical

Thinking in Evidence-Based Practice

Nurse educators with high scores on an assessment of critical thinking dispositions were the most likely to implement research knowledge into their daily practice, as reported in the journal Nurse Education in Practice (Profetto-McGrath, Bulmer Smith, Hugo, Patel, & Dussault, 2009). The study focused on 287 Nurse Educators across a western Canadian province. Nurse educators are registered nurses in leadership roles with a specific and formal role educating nursing students, clients,

patients, or employees. Critical thinking dispositions such as inquisitiveness (eagerness to acquire new knowledge) and confidence (trusting one's reasoning skills) were among those with the strongest link to implementing research findings into practice. As the authors note, having nurses with the critical thinking dispositions necessary to integrate research into practice will help meet the desired standard in healthcare today, evidence-based practice (EBP), and ultimately make a significant contribution to overall patient and systems outcomes.

Performance and Leadership Effectiveness

As reported in a recent review article in the journal Current Directions in Psychological Science, the vast body of accumulated knowledge about cognitive ability tests is clear: "They are among the strongest and most consistent predictors of performance across academic and work settings (Kuncel & Hezlett, 2010)." For example, as noted by the authors, scores on cognitive ability tests, which include critical thinking tests, are strongly related to success in both civilian and military jobs, and predict outcomes in all jobs including overall job performance, leadership effectiveness, and assessments of creativity. The power of these tests, the authors conclude, is that they predict both what an individual can do right now, as well the extent to which an individual is likely to learn and develop in the future.

Problem Behaviors

Cognitive ability predicts negative on-the-job actions and outcomes for police officers, such as excessive use of force, racially offensive conduct, number of citizen complaints, and at-fault car accidents, according to a study published in the Journal of Applied Psychology (Dilchet, Ones, Davis, & Rostow, 2007). The authors propose that

cognitive ability, which is highly related to critical thinking, has its effects by leading a

person to think about possible consequences and outcomes before engaging in problem

behaviors. The research focused on 1,799 police officers who were hired and studied for

approximately 2 years.

Biased Decision Making

People with high scores on a critical thinking assessment are less likely to show

biases in thinking common to many people, based on a study published in the Journal of

Educational Psychology (West, Toplak, & Stanovich, 2008). The study of 793

undergraduate students at a state university, found that students who scored high on a

critical thinking assessment, made fewer errors associated with biased thinking in areas

such as probabilistic and causal reasoning. The authors note that these biases "relate to

important real-world decisions in domains such as personal finance, employment, health,

and public policy," further highlighting the importance of critical thinking and its

potential impact on decision quality in multiple areas.

Critical Thinking and the Work Environment: A Better Practice Environment

According to a recent study in the Journal of Nursing Scholarship, encouraging

and supporting the development and use of critical thinking dispositions among nurse

managers can create a practice environment that's conducive to staff RNs' job satisfaction

and retention (Zori, Nosek, & Musil, 2010). The study found that staff RNs' perceptions

of their work environment were consistently more favorable when their managers' critical

thinking was high. The study investigated work environments for 132 RNs, across 12

teams within a 490-bed, non-profit, tertiary care hospital located in the northeastern

United States. Staff RNs' perceptions of the work environment were based on five

dimensions, including participation in hospital affairs, staffing and resource adequacy, nursing foundations for quality care, nurse manager ability and support, and collegial nurse-physician collaborations. Perceptions of the work environment for staff RNs were consistently more favorable when the nurse managers showed higher critical thinking scores on four critical thinking dispositions, including analyticity (demanding application of reasoning and evidence), systematicity (having an organized approach to problem-solving), open-mindedness (tolerance to divergent views), and confidence (trusting one's reasoning skills). The authors believed that these dispositions enable managers to effectively perform a range of behaviors related to positive staff perceptions, such as providing staff with guidance, support, and respect, and implementing fair processes.

Critical Thinking Across the Globe: *A Worldwide Need*

A recent study of 72 high school teachers in Hong Kong found that they believe critical thinking is an essential skill that should be part of the curriculum, but that more training is needed on how to teach critical thinking (Stapleton, 2011). The study, published in Thinking Skills and Creativity, also found that many teachers were confused about the meaning of critical thinking, for example whether it was composed of skills (e.g., providing logical support) and/or dispositions (e.g., having diverse perspectives), and suggested that more concrete definitions of critical thinking were needed. The article also cited government polices from a range of countries showing that the concern about deficient critical thinking skills "is not confined to any one country or region, but appears to span education systems around the world."

Development of Critical Thinking: Training for Improvement

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Critical thinking instruction is feasible and effective, and can help "bridge the considerable divide that separates those who are more advantaged from those whose life histories compromise their exposure to…critical thought" concludes new research reported in Thinking Skills and Creativity (Marin & Halpern, 2011). Researchers found that among high school students, large gains in critical thinking could be achieved by teaching specific critical thinking concepts, and using practice with varied examples of the concepts to facilitate application of learning to new situations. This approach, which the researchers called "explicit instruction," produced substantial and better gains in critical thinking than an alternative approach called "imbedded instruction," where students were led to think critically about specific course content. The research tracked the progress of 178 high school students in low income schools in Southern California.

<u>Fostering Critical Thinking Among Middle Eastern Nurses</u>

Research supports the success of a program designed to foster use of critical thinking strategies among Middle Eastern nurses (Simpson & Courtney, 2008). The research reported in the International Journal of Nursing Practice, found that strategies such as use of critical thinking questions designed to induce critical thought (What would happen if?; Why is…important?), debate, and roleplays, helped transform learners from being passive or rote to having inquiring minds. Both nurse educators and students provided very positive feedback on the program. For example, one nurse educator reported that as a consequence of learning to develop critical thinking questions, the nurses "are more diligent in asking questions and more confident in their practice." The study's authors called for the development and integration of additional critical thinking programs nationwide.

Improving Critical Thinking Among Nurses Through Simulation

Researchers found that providing nursing students with more practice scenarios using a human patient simulator increased their critical thinking skills (Sullivan-Mann, Perron, & Fellner, 2009, reported in Newborn and Infant Nursing Reviews). The experiment, focused on 53 nursing students at a Midwestern US College, showed a greater increase in critical thinking scores for students assigned to receive 5 human patient scenarios, versus a group assigned to receive only 2. The authors conclude that the impact of human patient simulation on critical thinking demonstrates "the importance of continuing to offer simulation as an active learning strategy in nursing curricula."

Impact of Nurse Education on Critical Thinking

Master's in Nursing programs positively impact students' critical thinking skills, according to a study reported in the Journal of Advanced Nursing focused on 332 nursing students in Ireland (Drennan, 2014). The study found higher scores on the Watson-Glaser, a measure of critical thinking, for nursing students who had graduated from, as compared to students just beginning, a Master's in Nursing program. The author concludes that "development of the critical thinking skills essential for managing the complexities of the healthcare environment" is "best served by programs that allow time for discussion, debate, reflection, and engagement."

Critical Thinking for Teams and Online Problem Solving

Teams that "tag" their ideas before sharing them online have deeper, more focused online discussions characterized by high levels of critical thinking, according to a study published in Interactive Learning Environment (Schellens, Van Keer, de Wever, & Valcke, 2009). In the study, teams where members tagged their ideas by briefly labeling

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how the ideas contributed to the discussion (e.g., defining the problem; identifying solutions) surpassed a control group that didn't tag ideas, in achieved depth of critical thinking. The authors of the study, which focused on 35 third-year university students, believed that the tagging required students to step back and reflect upon the ongoing discussion and how to contribute, optimizing their contributions and the discussion's overall quality.

http://www.thinkwatson.com/resources/critical-thinking-studies

Summary

Pseudo critical thinking is more or less inevitable in the educational bureaucracies, given the way we have traditionally arranged and ordered things. This is illustrated, as we have seen, in the way the American educational establishment goes about designing assessment. Unfortunately, faulty assessment leads to faulty teaching, which leads to more faulty thinking in society, in business, in politics, and in everyday social life. The California Department of Education is a model case of American educational bureaucracy at work and the new California reading and writing assessment instrument is the typical resultant bad practice. Good thinking is now a fundamental human need. And though it will take generations to fully evolve from a society in which pseudo critical thinking is dominant to one in which sound, fair-minded, ethically-informed reasoning is dominant, every step in that direction will reduce the amount of suffering and injustice that exists and increase, by degrees, human well being and quality of life. It is our intellectual and moral responsibility to make some contribution to this evolution. Though we are only at the beginnings of this evolution, the irresistible

dynamic of accelerating change and intensifying complexity will eventually force it upon us. I hope we learn our lessons sooner rather than later, that the price of waste and unnecessary human misery may be as little as possible.

What remains is to put what we know into action: at the school and district level to facilitate long-term teacher development around higher-order thinking, at the state and national level to provide for long-term assessment of district, state, and national performance. The project will take generations and perhaps in some sense will never end.

After all, when will we have developed our thinking far enough, when will we have enough intellectual integrity, enough intellectual courage, enough intellectual perseverance, enough intellectual skill and ability, enough fair-mindedness, enough reasonability?

One thing is painfully clear. We already have more than enough rote memorization and uninspired didactic teaching, more than enough passivity and indifference, cynicism and defeatism, complacency and ineptness. The ball is in our court. Let's take up the challenge together and make, with our students, a new and better world (Shaughnessy, 2002).

The most important area of education reform at this point in our history should be on rethinking "education" so that students learn the intellectual skills, abilities, and dispositions vital to living a productive and ethical life. Students need these skills to reason through the content in class, to interrelate important ideas within and between subjects, and apply content to life's problems. At present, students leave our elementary schools, middle schools, high schools, colleges and graduate schools without the

intellectual abilities essential to the educated person. For the most part, for example, students have not learned to:

- Raise vital questions and problems;

- Gather and assess relevant information;

- Use abstract ideas to interpret information effectively;

- Come to well-reasoned conclusions and solutions, testing them against relevant criteria or standards;

- Think open-mindedly within alternative systems of thought, recognizing and assessing their assumptions, implications, and practical consequences.

Students are not learning what it means to reason through content, to actively bring it into their thinking in a meaningful and productive way.

This type of reform can occur only when the development of reasoning abilities and dispositions are placed at the very foundation of teacher preparation programs and therefore of schooling (An Interview with Linda Elder).

CHAPTER III

RESEARCH METHOD

Description of Research Design

Since the data were primarily documentary in nature (written feedback) and narrative in form (interview transcripts) the historical method (Leedy 1993, 76) was used to create a causal-comparative study (Gall, Borg, and Gall 1996, 383-385).

Instrumentation

Instrumentation included responses from teachers who completed the following forms:

1. Agreement

2. Program Information

3. Evaluation

These forms captured data regarding the setting in which the program was used (community, school district, school, discipline, classes, grade levels), how the program was used and shared (student interactions and sharing with other faculty/community members), and ranking and reflection combination questions to assess to what degree the program met the teachers' and their students' needs or not.

Arts Indiana Magazine in the Classroom 1996-97 Agreement

This agreement confirms my commitment to serve as a participating teacher in the *Arts Indiana Magazine in the Classroom* program. I agree to send a note of appreciation to my sponsor, to implement the program, and to return the evaluation by the date requested.

Name _____ **Department(s)** _____

School Name _____

Courses, Grade Levels, Student Count & Semester in which you anticipate magazines will be used (please use an extra sheet if necessary):

Course 1: _____ Grade Level(s) _____

Number of students anticipated _____ Semester _____

Course 2: _____ Grade Level(s) _____

Number of students anticipated _____ Semester _____

Course 3: _____ Grade Level(s) _____

Number of students anticipated _____ Semester _____

School District _____

County _____

School Street Address _____

City _____ State _____ Zip + 4 _____

School Phone _____ School FAX _____

School e-mail _____

Home address _____

City _____ State _____ Zip + 4 _____

Home Phone _____ Home FAX _____

Home e-mail _____

Signature _____

continued on other side

Fig. 1 *Arts Indiana Magazine in the Classroom* 1996-97 Agreement Form

Program Information

Estimated total number of magazines you will need for your class(es) _#1_____

Do you receive magazines directly ( ) or from someone else? ( )
#2
If from someone else, whom? _____

We encourage you to "recycle" magazines. Do you? Yes ( ) No ( ). If so, how?
Please check all that apply:
( ) Save for archive;   ( ) Give to students;   ( ) Give to librarian;
( ) Give to other teacher(s); ( ) Give to people in my community; ( ) Give to
administrators;
( ) Give to other teacher(s) to use in their classroom, if so, please list their name(s):

_____

( ) Distribute in other ways :

_____

To help us better prepare **Arts Indiana Magazine in the Classroom** to meet your needs, please
place a check beside the following effective methods which could be used in or for your classes:

_#3___ Read the magazine before handing out to students
_#4___ Read/review *Arts Now!!!* Prior to student magazine use
_#5___ Use at least part of *Arts Now!!!* As a teaching methods supplement
_#6___ Use the magazine on at least a monthly basis
_#7___ Introduce the magazine in an interesting way in an ongoing manner
_#8___ Give students home/class time for reading the magazine
_#9___ Use the magazine as part of course in class
#10___ Students read articles #11_ Students redo ads #12__ Students redo cover
#13___ Students study visuals in the magazine #14_ Students make collages from
magazine
#15__ A written assignment is assigned using the magazine
#16__ A class discussion occurs from magazine usage
#17__ Credit is given for student visits to items featured in the magazine
#18__ A form for student-initiated trips has been generated and is provided to students
#19__ Back issues of the magazine are available in a "resource library" for students
#20__ Engage in field trips related to items in the magazine
#21__ Hang covers/collages in classroom or hallway
#22__ Display written work in an appropriate area
#23__ Create display depicting semester/year-long magazine/student relationship
#24__ Students generate a thank you to sponsor annually
#25__ Attend round tables, panel discussions, and workshops sponsored by the magazine
#26__ Complete annual agreement and evaluation in a timely manner

#27__ Other: _____

Fig. 2 *Arts Indiana Magazine in the Classroom* 1996-97 Program Information Form

Please return by **April 1, 1996, to**: *Arts Indiana Magazine in the Classroom*, 47 S. Pennsylvania St., Suite 701, Indianapolis, IN 46204-3622, 317-632-7894. A business reply mail envelope is enclosed for your convenience. Or, FAX the completed form to 317-632-7966. Thank you.

Arts Indiana Magazine in the Classroom 1995-96 Evaluation

1. **In what subject area(s) and grade level(s) are the students who use *Arts Indiana Magazine in the Classroom*?**

   Subject Area(s) _____ Grade Level(s) _____

2. **Approximately how many students participate in the program?** _____

3. ***Arts Indiana Magazine* suits my interdisciplinary needs:**

   Rarely   Sometimes   Often   Frequently

   Please elaborate: _____

   _____

   _____

   _____

4. **I have linked the ideas in *Arts Indiana Magazine* to math or science:**

   Rarely   Sometimes   Often   Frequently

   Please elaborate: _____

   _____

   _____

   _____

5. **The articles lead to discussion with teachers from other disciplines:**

   Rarely   Sometimes   Often   Frequently

   Please cite the articles: _____

   _____

   _____

   _____

Please continue on other side.

Fig. 3 *Arts Indiana Magazine in the Classroom* 1995-96 Evaluation Form (Page 1)

6. These kinds of articles stimulate my students to discuss the materials in the magazine with one another:

_____

_____

_____

_____

_____

7. What kind of writing assignments or art exercises are based on the articles in *Arts Indiana Magazine*? How are the assignments used?

_____

_____

_____

_____

_____

8. The *Arts Now!!!* teacher/student guide & *Teacher Spotlight* supplement is useful:

Rarely   Sometimes   Often   Frequently

Please elaborate and include suggestions for improvement: _____

_____

_____

_____

_____

Please continue on next page.

Fig. 4 *Arts Indiana Magazine in the Classroom* 1995-96 Evaluation Form (Page 2)

9. The visual format of *Arts Indiana Magazine* attracts my students' attention:

Rarely   Sometimes   Often   Frequently

Please elaborate: _____

_____

_____

_____

_____

_____

_____

10. I focus my students' attention to how visual images in art, advertising, television, magazines, and film affect their thinking:

Rarely   Sometimes   Often   Frequently

How do they respond? _____

_____

_____

_____

_____

_____

_____

11. How many of your students take the magazine home for careful scrutiny?

0-25%   26-50%   51-75%   76-100%

Please continue on other side.

Fig. 5 *Arts Indiana Magazine in the Classroom* 1995-96 Evaluation Form (Page 3)

12. **If critical thinking is defined as** *evaluating, analyzing, making comparisons and judgments about quality and value,* **then the critical thinking skills of my students have improved as a result of this program:**

Not Significantly   Marginally   Somewhat   Significantly

Please note the ways: _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Teacher: _____ **School:**
_____

Please return by April 1, 1996, to: *Arts Indiana Magazine in the Classroom*, 47 S. Pennsylvania St., Suite 701, Indianapolis, IN 46204-3622, 317-632-7894. A business reply mail envelope is enclosed for your convenience. Or, FAX the completed form to 317-632-7966. Thank you.

Fig. 6 *Arts Indiana Magazine in the Classroom* 1995-96 Evaluation Form (Page 4)

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

Recording

Arts Indiana, Inc., made available the Agreement, Program Information, and

Evaluation forms completed by teachers (1995-96, 1996-97, and 1997-98 school years),

program annual reports (1995-96, 1996-97, and 1997-98 school years), and teacher

interview transcripts (1995-96).

Data was considered in the areas of Teacher Behaviors, Student Activities,

Teacher Program Evaluation, and Teacher Creativity.

Parenthetical numbers refer to the Program Information form on page 123.

A yes/no determination of the following Teacher Behaviors (Evidence from

Information Form and Interview Transcripts) will be made:

1. Reads magazine before handing out to students (Program Information #3)
2. Reads/reviews teacher/student guide (Program Information #4)
3. Uses teacher/student guide as supplement (Program Information #5)
4. Uses magazine monthly (Program Information #6)
5. Uses magazine as part of course (Program Information #9)
6. Magazines recycled or archived (Program Information #2, #19)
7. Display student work (#21, #22, #23)

A yes/no determination of the following Student Activities (Evidence from

Information Form and Interview Transcripts) will be made:

1. Reading/studying assignments from the magazine (Program Information #8, #10, #13)
2. Creates writing, drawing, etc. (Program Information #11, #12, #14, #15)
3. Class discussion occurs from magazine usage (Program Information #16)
4. Magazine Prompted Visits/Trips (Program Information #17, #18, 20)

5. Thanks sponsor(s) (Program Information #24)

Degrees of the following Teacher Program Evaluation will be recorded:

1. Degree of interdisciplinary usefulness (1=Rarely, 2=Sometimes 3=Often, 4=Frequently)
2. Degree of Math/Science linkage (1=Rarely, 2=Sometimes 3=Often, 4=Frequently)
3. Frequency as discussion starter with teachers from other disciplines (1=Rarely, 2=Sometimes 3=Often, 4=Frequently)
4. Degree of usefulness of teacher/student guides (1=Rarely, 2=Sometimes 3=Often, 4=Frequently)
5. Frequency that visual format attracts usage (1=Rarely, 2=Sometimes 3=Often, 4=Frequently)
6. Frequency that magazine focus holds attention (1=Rarely, 2=Sometimes 3=Often, 4=Frequently)
7. Percentage of time that magazine is given careful scrutiny (1=0-25%, 2+26-50%, 3=51%-75%, 4=76-100%)
8. Degree of student critical thinking improvement (1, 2, 3, 4)

The following exhibit contains highlighted sections of a sample Program

Information form from which data was collected. Other forms include the Agreement

and Evaluation that teachers who used the supplemental resource completed:

Fig. 6 *Arts Indiana Magazine in the Classroom* 1996-97 Program Information Form

Processing

The data was recorded on charts (Leedy 1980) prepared for the study from which

tables depicting raw numbers and percentages (Rudestam & Newton 96-100) were

reported with narrative explanations (VandeCreek, Bender, and Jordan 1994, 53-57)

Examples of the charts used:

Table 2—Arts Indiana Curriculum Study Teacher Course
Use/Student Outcome Measurement

	Performing/Visual Arts Teachers (71 teachers)		Non-Arts Teachers (45 teachers)	
	Yes	No	Yes	No
Used in Course Content Statements				
Student Outcome Metrics Statements				

Table 3—Arts Indiana Curriculum Study Teacher Use of Guide
Effect on Student Created Writing and Drawing Occurrences by
Grade Level

	Secondary Grade Level Teachers (73 teachers)		Middle Grade Level Teachers (34 teachers)		Elementary Grade Level Teachers (9 teachers)	
	Yes	No	Yes	No	Yes	No
Used Teacher/Student Guide as Supplement (From Program Information)						
Created writing, drawing, etc. (From Program Information)						

Table 4—Arts Indiana Curriculum Study Teacher Use of Guide Effect on Evaluation of Critical Thinking

Teachers Using Arts Indiana (116 teachers)							
	Yes				No		
Used Teacher/Student Guide as Supplement (From Program Information)							
	Not Significantly	Somewhat	Marginally	Significantly	Not Significantly	Somewhat	Marginally	Significantly
Degree of critical thinking improvement (From Teacher Program Evaluation (from Evaluation)							

Compilation of Program Evaluation responses from teachers yielded this

auxiliary data:

<u>How are magazines "recycled"?</u>

70%   Give to students

61%   Give to other teachers

59%   Save for archive

33%   Give to librarian

25%   Give to other teachers for use in their classrooms

19%   Give to people in the community

14%   Give to administrators

 3%   Distribute in other ways

<u>*Arts Indiana Magazine* meets my interdisciplinary needs:</u>

 2%   Rarely
34%   Sometimes
30%   Often
 5%   Frequently

<u>I have linked the ideas in *Arts Indiana Magazine* to math or science:</u>

49%   Rarely
15%   Sometimes
 1%   Often
 0%   Frequently

<u>The articles lead to discussion with teachers from other disciplines:</u>

26%   Rarely
34%   Sometimes
 4%   Often
 1%   Frequently

<u>The *Arts Now!!!* and *Teaching Arts Now* materials were useful:</u>

 6%   Rarely
25%   Sometimes
20%   Often

10%   Frequently

The visual format of *Arts Indiana Magazine* attracted my students' attention:

 2%   Rarely
10%   Sometimes
36%   Often
20%   Frequently

I focused my students' attention to how visual images in art, advertising, television, magazines, and film affect their thinking:

 6%   Rarely
25%   Sometimes
21%   Often
14%   Frequently

How many of your students took the magazine home for careful scrutiny?

37%   0-25%
13%   26-50%
 7%   51-75%
12%   76-100%

If critical thinking is defined as *evaluating, analyzing, making comparisons and judgments about quality and value*, then the critical thinking of my students have improve as a result of this program:

 6%   Not significantly
14%   Marginally
37%   Somewhat
 5%   Significantly

What following effective methods could be used in your classroom?

83%   Read the magazine before handing out to students

70%   Give students home/class time for reading the magazine

67%   Read/review *Arts Now!!!* prior to student magazine use

65%   Use the magazine on at least a monthly basis

63%   Facilitate a class discussion occurring from magazine usage

61%   Use at least part of *Arts Now!!!* as a teaching methods supplement

60%   Use the magazine as part of course in class

57%   Assign a written assignment using the magazine

56%   Have students study visuals in the magazine

54%   Introduce the magazine in an interesting way in an ongoing manner

54%   Have back issues of the magazine available as a "resource library" for students

51%   Have students read articles

49%   Complete the annual agreement and evaluation in a timely manner

34%   Have students generate a thank you to their sponsor(s)

33%   Hang covers or collages in classrooms or hallways

24%   Display written work

24%   Give credit for student visits to places mentioned in the magazine

23%   Attend roundtables, panel discussions, and workshops sponsored by the magazine

23%   Engage in field trips related to places mentioned in the magazine

19%   Have students make collages from the magazine

17%   Have generated a form to report on student-initiated field trips

17%   Have students redo ads

9%   Create displays depicting the students semester or year-long relationship to the magazine

9%   Have students redo covers

3%   Use other effective methods

The data collected is as follows:

Table 5—Arts Indiana Curriculum Study **Teacher Course Use/Student Outcome Measurement**

	Performing/Visual Arts Teachers (71 teachers)		**Non-Arts Teachers** (45 teachers)	
	Yes	**No**	**Yes**	**No**
Used in Course Content Statements	69%	31%	67%	33%
Student Outcome Metrics Statements	81%	19%	88%	12%

Table 6—Arts Indiana Curriculum Study Teacher **Use of Guide Effect on Student Created Writing and Drawing Occurrences by Grade Level**

	Secondary Grade Level Teachers (73 teachers)		**Middle Grade Level Teachers** (34 teachers)		**Elementary Grade Level Teachers** (9 teachers**)**	
	Yes	**No**	**Yes**	**No**	**Yes**	**No**
Used Teacher/Student Guide as Supplement (From Program Information)	67%	33%	50%	50%	0%	100%
Created writing, drawing, etc. (From Program Information)	84%	16%	61%	39%	33%	67%

Table 7—Arts Indiana Curriculum Study Teacher **Use of Guide Effect on Evaluation of Critical Thinking**

	Teachers Using Arts Indiana (116 teachers)							
	Yes				**No**			
Used Teacher/Student Guide as Supplement (From Program Information)	69%				31%			
	Not Significantly	Somewhat	Marginally	Significantly	Not Significantly	Somewhat	Marginally	Significantly
Degree of critical thinking improvement (From Teacher Program Evaluation (from Evaluation)	0%	1%	12%	87%	46%	12%	18%	24%

Analysis

Data suggests very little difference (2 percentage points) among arts teachers and non-arts teachers relative to using the teacher/student guides as a supplement. There is also very little difference between those groups of teachers in student-created writing and drawing (7 percentage points). This suggests a unifying factor in the program that this study did not explore.

There is greater variation between teachers who used the guides and those who did not. Among the two-thirds of the teachers who used the guides, 87 percent found significant degree of critical thinking improvement. Those not using the guide found 46 percent (the highest amount) had not significantly exhibited a degree of critical thinking improvement. This suggests the importance of using the guides.

There were 67 percent of the secondary grade level teachers using the guides who evaluated that 84 percent of students created writing and drawing resulting from the program. Exactly half of the middle grade level teacher used the guides and 61 percent evaluated student writing and drawing resulting from the program. None of the elementary grade level teachers used the guide and 33 percent of them attributed student created writing and drawing to the program. This suggests the program is more suited towards secondary level teachers and student and using the guides increasing student created writing and drawing.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

Data was consistent among arts and non-arts teachers as to the use of the *Arts Magazine in the Classroom* teaching guide. More than two-thirds of arts teachers (69 per cent) and more than two thirds of non-arts teachers (67 percent) believed that the use of the guide had an effect on student created writing and drawing occurrences.

Data was more demarcated when comparing and contrasting grade levels. More than two thirds of secondary grade level teachers (67 percent) believed that the use of the guide had an effect on student created writing and drawing occurrences while only half of middle grade level teachers (50 percent) and none (0 percent) of elementary grade level teachers believed so.

Of the teachers who used the guide (69 percent), 87 percent of that group believes their students demonstrated a significant degree of critical thinking improvement. That is a contrast with the teachers who did not use the guide (31 percent) among whom 46 percent believe the degree of critical thinking improvement was not significant.

That is further contrasted by the next highest percentage (24 percent) of the teachers who did not use the guide that believed students experienced a significant improvement in their degree of critical thinking.

None of the teachers who used the guide (0 percent) indicated the degree of critical thinking improvement was not significantly impacted.

Conclusions

This study provides evidence that the *Arts Indiana Magazine in the Classroom* program (magazine and teaching guide) have greatest impact at the secondary grade level.

Anecdotal evidence from interviews suggest teachers using the resource are resource seeking. As such, among those using the program 63 percent are secondary grade level teachers, 29 percent are middle grade level teachers, and 9 percent are elementary grade level teachers.

Use of the teaching guide drops dramatically by grade level (67 percent to 50 percent to 0 percent among secondary, middle, and elementary grade level teachers respectively).

This study also produced evidence that using the guide has an impact on the degree of critical thinking improvement by students as evaluated by their teachers. A majority of the teachers using the guide evaluated that students demonstrated a significant degree of critical thinking improvement while nearly half (46 percent) of those who did not use the guide evaluated that degree of critical thinking improvement was not significantly impacted.

This student suggests that use of the teaching guide as having an effect on student created writing and drawing occurrences is the virtually the same among arts and non-arts teachers:

<u>Arts Teachers</u>—69 percent used guide and 81 percent reported effect on student created writing and drawing occurrences

<u>Non-Arts Teachers</u>—67 percent used guide and 88 percent reported effect on student created writing and drawing occurrences

Recommendations

The consistency among teaching disciplines (arts and non-arts) in the use of the teaching guide and the differences among grade levels (secondary, middle, and elementary) suggest a deeper study could explore what are the unifying elements among disciplines and the factors causing differences among grade levels.

Further study could analyze data in each of the 23 areas of Teacher Behavior, Student Assigned Activities, Teacher Program Evaluation, and Teacher Creativity will be analyzed by the following comparisons:

1. Interdisciplinary (Performing/Visual Arts, Language Arts, Miscellaneous [Adult Education, District Inservice, Elementary, Library, Math, Special Education])
2. Grade Level (Elementary School, Middle School, High School, University, Adult)
3. Among All Elementary Teachers
4. Among All Middle School Teachers
5. Among Teaches of Middle School Performing and Visual Arts
6. Among Teachers of Middle School Language Arts
7. Among Teachers of Miscellaneous Middle School Disciplines
8. Among All High School Teachers
9. Among Teachers of High School Performing and Visual Arts
10. Among Teachers of High School Language Arts
11. Among Teachers of Miscellaneous High School Disciplines
12. Among Teachers of University Disciplines
13. Among Adult Education Teachers
14. Among Teachers of Same Disciplines at Same Grade Level

Analysis could include determining percentages of teachers for whom evidence of an occurrence in each of the 23 areas is present as well as a total of the number of areas within the four categories included occurrences including brief descriptions of Teacher Creativity in the Curriculum Integration, Curriculum Materials, and Learning Activities.

The final reporting could reveal whether Teacher Behaviors, Student Activities, Teacher Program Evaluations may have influenced Teacher Creativity.

A deeper exploration of anecdotal evidence of Teacher Creativity could also gathered from the Evaluation Form (Questions #6 and #7), Interview Transcripts, and Annual Reports with examples documented and clustered (Boyatzis 1998, 140-143) in four categories:

1. Curriculum Integration: To what degree were integrated into non-arts courses or non-arts activities were integrated into arts courses.
2. Curriculum Materials: The design of original curriculum and instructional materials that were developed as a result of using the magazine or its guides.
3. Learning Activities: The kinds of original learning activities that were inspired or prompted by the magazine and/or its guides.
4. Critical Thinking Skills: Degree of critical thinking improvement as assessed by teachers using the program.

Further examination could also explore whether evidences of teacher creativity corresponding to the segmentation of the arts and arts education exist suggested by review and categorization of current scholarship:

1. Link to Christian Education
2. Steward of Culture
3. Channel to Self Esteem
4. Impact on Capacity to Learn and Ability to Achieve
5. Compatibility to Multiple Intelligences and Multiple Literacies
6. Link with Aesthetics

7. Fostering Creative and Critical Thinking and Writing Skills
8. Multidisciplinary and Integration Effects
9. As Academic Subject
10. Co-Usage of Supplemental Resources
11. Lifelong Affects
12. As Economic Driver

This study closely explored the impact of the arts on critical thinking. Current scholarly studies indicate that arts students achieve more in several subject and social areas than non-arts students.

This suggests an even broader examination of interdisciplinary education is in order. To what degree to other subject areas and student activities have on student performance overall?

Is graded and somewhat isolated subject area education the best approach and most relevant or is it maintaining what we are used to because we have never thought of different models?

Findings from this study suggest there may be more evidence awaiting discovery that could help frame new ways of education delivery.

WORKS CITED

Andiliou, A. & Murphy, P. K. (2010). Examining variations among researchers' and teachers' conceptualizations of creativity: A review and synthesis of contemporary research, *Educational Research Review*, 4(3), 201-219.

Arts Indiana, Inc. 1994. *Arts Indiana Magazine in the Classroom Year End Report 1993-94*. Indianapolis: Arts Indiana Magazine in the Classroom. Arts Indiana, Inc.

———. 1995. *Arts Indiana Magazine in the Classroom Year End Report 1994-95*. Indianapolis: Arts Indiana Magazine in the Classroom. Arts Indiana, Inc.

———. 1996. *Arts Indiana Magazine in the Classroom Year End Report 1995-96*. Indianapolis: Arts Indiana Magazine in the Classroom. Arts Indiana, Inc.

Barry, N.H. 1992. *Project ARISE: Meeting the needs of disadvantaged students through the arts*. Auburn, AL: Auburn University. Auburn University.

"Basic Theory and Instruction Structures," *The Role of Questions in Teaching, Thinking, and Learning In Critical Thinking Handbook*.

Bowles, Shirley M. 2003. Tune Up the Mind: The Effect of Orchestrating Music as a Reading Intervention. Ph.D. diss., Indiana University of Pennsylvania, Indiana, PA.

Catterall, James S., Richard Chapleau, and John Iwanaga. 1999. *Involvement in the Arts and Human Development: General Involvement and Intensive Involvement in Music and Theater Arts*. Los Angeles, CA: The Imagination Project at UCLA Graduate School of Education and Information Studies.

Clark, Ronald. *A. Einstein: The Life and Times*, NY: Avon Books, 1984.

College Entrance Examination Board. 2001. *College-Bound Seniors National Report: Profile of SAT Program Test Takers*. Princeton, NJ: The College Entrance Examination Board. The College Entrance Examination Board.

Costa, Arthur L. 1988. Teaching For Intelligence: Recognizing and encouraging skillful thinking and behavior. *In Context*: 1-8, Winter 1988. Journal online. Available from http://www.context.org/ICLIB/IC18/Costa.htm. Internet, accessed 26 January 2005.

"Critical Thinking: Distinguishing Between Inferences and Assumptions," *Critical Thinking: Tools for Taking Charge of Your Learning and Your Life*.

Critical Thinking: Identifying the Targets, www.criticalthinking.org.

"Critical Thinking in the Bible."
	http://www.rationalchristianity.net/unknown_verses.html#crit.

 "Critical Thinking, Moral Integrity, and Citizenship: Teaching for the Intellectual
	Virtues," *Critical Thinking: What Every Student Needs to Survive in A Changing
	World*. Dillon Beach, CA: Foundation For Critical Thinking).

Dilchert, S., Ones, D., Davis, R.D., and Rostow C.D. (2007). "Cognitive Ability Predicts
	Objectively Measure Counterproductive Work Behaviors." *Journal of Applied
	Psychology*, 92 (3), 616-627.

Drennan, J. "Critical thinking as an outcome of a Master's degree in Nursing
	programme." *International Journal of Nursing Studies* 51 (2014) 177–180.

Dunn & Bradstreet. 2004. "Market Data Retrieval." Online. Market Data Retrieval. Cited
	24 March 2004. Available from
	<http://www.mdrorders.com/scripts/cgiip.exe/WService=mdr/editOrder.w>.

Elder, Linda. Collaborative Learning: Collaborative Mislearning—Can Your Students
	Tell the Difference? Can You? *Education Week*, 19 March 1997.

———. "Critical Thinking and Emotional Intelligence." *Inquiry: Critical Thinking
	Across the Disciplines*, Winter 1996 Vol. XVI, No. 2

———. "Diversity: Making Sense of It Through Critical Thinking."
	www.criticalthinking.org.

———. "A Professional Development Model for K-12 Schools: Critical Thinking as the
	Key to Substantive Learning."

———. "The New Standards: The Case for Intellectual Discipline in the Classroom."
	Community College Times, 11 March 1997 Vol. 9, No. 5.

———. Why Critical Thinking is Essential To the Community College Mission And
	Why It Will Be Difficult to Achieve. July 2000.

Elder, L. and Paul, R. (2004). Adapted from *The Thinker's Guide to the Art of Strategic
	Thinking: 25 Weeks to Better Thinking and Better Living*.

———. "Becoming a Critic Of Your Thinking," *Critical Thinking: Tools for Taking
	Charge of Your Learning and Your Life*.

———. (1996). *Critical Thinking Development: A Stage Theory*. www.criticalthinking.org.

———. *Universal Intellectual Standards*.

Foundation for Critical Thinking. *Critical Thinking: How to Prepare Students for A Rapidly Changing World*.

———. *Valuable Intellectual Virtues* (June 1996). www.criticalthinking.org.

Gall, Meredith B., Walter R. Borg, and Joyce P. Gall. 1996. *Educational Research: An Introduction*. White Plains, NY: Longman Group.

Gardiner, M.F., A. Fox, D. Jeffrey, and F. Knowles. 1996. Learning improved by arts training. *Nature*, 23 May.

Goleman, D. (1995). *Emotional Intelligence*. New York: Bantam Books.

Graziano, May, Matthew Peterson, and Gordon Shaw. 1999. Enhanced learning of proportional math through music training and spatial-temporal training. *Neurological Research* 21 (March).

Gromko, J.E and A.S. Pooerman. 1998. The effect of music training on preschooler's spatial-temporal task performance. *Journal of Research in Music Education* 46.

International Center for the Assessment of Higher Order Thinking. International Critical Thinking Essay Test.

Kalas, J. Ellsworth. 2001. *If Experience Is Such A Good Teacher Why Do I Keep Repeating the Course?* Nashville, TN: Dimensions For Living.

Kuncel, Nathan R. and Sarah A. Hezlett. "Fact and Fiction in Cognitive Ability Testing for Admissions and Hiring Decisions." *Current Directions in Psychological Science* 2010 19:339.

Leedy, Paul D. 1980. *Practical Research: Planning and Design*. New York: Macmillan

Mackey, Susan, and Rose Ann Schwartz. "Developing Critical Thinking Through The Arts." *Vision on Learning Differences*. Fall/Winter 2007, Vol. 6. No. 1.

Marina, Lisa M. and Diane F. Halpern. "Pedagogy for developing critical thinking in adolescents: Explicit instruction produces greatest gains." *Thinking Skills and Creativity*, 6 (2011) 1–13.

McGuire, G., 1984. How arts instruction affects reading and language: theory and research. *Reading Teacher* 37, no. 9: 835-839.Miller, Allen, and Dorita Coen. 1994. The Case for Music in the Schools. *Phil Delta Kappan* 75, no. 6 (February): 459-461.

National Center for Education Statistics. 1992. *National Education Longitudinal Study*. Washington, D.C.: National Data Resource Center. National Center for Education Statistics, NELS: 88 (second follow-up).

Nusbaum, E. C., & Silvia, P. J. (2011a). "Are intelligence and creativity really so different? Fluid intelligence, executive processes, and strategy use in divergent thinking." *Intelligence*, 39, 36–45.

Park, Gregory, David Lubinski, and Camilla Benbow. "Differences Among People Who Have Commensurate Degrees Matter for Scientific Creativity" *Research Report Ability*, Vol. 19, No. 10.

Parker, Andrew M., Wandi Bruine de Bruin, and Baruch Fischoff. "Maximizers versus satisficers: Decision-making styles, competence, and outcomes." *Judgment and Decision Making*, December 2007, Vol. 2, No. 6, pp. 342–350.

Patterson, Roger. *Critical Thinking Questions*, 3 January 2014.

Paul, R. (1993) "Ethics Without Indoctrination." *How to Prepare Students for a rapidly Changing World*. 1993.

———. (1996). Intellectual Foundations: The Key Missing Piece in School Restructuring. www.criticalthinking.org.

———. "The State of Critical Thinking Today: The Need for a Substantive Concept of Critical Thinking As the Organizer in Developing Blueprints for Institutional Change." Fall 2004. www.criticalthinking.org.

———. (1993). "Why Students and Teachers Don't Reason Well," *Critical Thinking: What Every Student Needs to Survive in A Rapidly Changing World*. Dillon Beach, CA: Foundation For Critical Thinking.

Paul, R., and Elder, L. The Analysis and Assessment of Thinking, (April 1997). Foundation For Critical Thinking, www.criticalthinking.org.

———. A Critical Mind is a Questioning Mind, (May 1996). Foundation For Critical Thinking, www.criticalthinking.org.

———. "Critical Thinking." *Journal of Developmental Education*, 23.2 (Winter 1999): 34.

———. (October 2010). Foundation For Critical Thinking, www.criticalthinking.org.

———. "Study of 38 Public Universities and 28 Private Universities To Determine Faculty Emphasis on Critical Thinking In Instruction." *The Problem of Lower Order Learning*.

———. "Thinking: Distinguishing Between Inert Information, Activated Ignorance, Activated Knowledge," *Critical Thinking: Tools for Taking Charge of Your Learning and Your Life*.

———. "Thinking With Concepts," *Critical Thinking: Tools for Taking Charge of Your Learning and Your Life*. Pearson, 2011.

———. (June 1996). Using Intellectual Standards to Assess Student Reasoning. Foundation For Critical Thinking, www.criticalthinking.org.

———. Three Categories of Questions: Crucial Distinctions (October 1996). Foundation For Critical Thinking, www.criticalthinking.org.

Paul, Richard, with Nosich, Gerald M. (1993). A Model for the National Assessment of Higher Order Thinking. *Critical Thinking: What Every Student Needs to Survive in A Rapidly Changing World*. Dillon Beach, CA: Foundation For Critical Thinking).

Perrin, Stephanie. 1994. Education in the Arts is an Education for Life. *Phi Delta Kappan* (February).

———. 1997. "Education Through the Arts in Secondary Schools." New Horizons for Learning.

Profetto-McGrath J, Smith KB, Hugo K, Patel A, Dussault B. "Nurse educators' critical thinking dispositions and research utilization." *Nurse Education Practice*, 2009 May;9(3):199-208.

Rauscher, F.H., and M.A. Zupan. 1999. Classroom keyboard instruction improves kindergarten children's spatial-temporal performance: A field study. *Early Childhood Research*,

The Role of Socratic Questioning in Thinking, Teaching, & Learning, www.criticalthinking.org.

Rudestam, Kjell Eirk, and Rae R. Newton. 1992. *Surviving Your Dissertation: A Comprehensive Guide to Content and Process*. Newbury Park: Sage.

Russell, Bertrand. The Role of Questions in Teaching, Thinking and Learning—In Critical Thinking Handbook. Mount St. Vincent University.

Schellens, T., Van Keer, H., De Wever, B., and M. Valcke. "Tagging thinking types in asynchronous discussion groups: Effects on critical thinking. Interactive Learning Environments, 17 (1), 77-94.

Scriven, Michael, and Richard Paul. Critical Thinking as Defined by the National Council for Excellence in Critical Thinking. 8th Annual Conference on Critical Thinking and Education Reform. Summer 1987.

Shaughnessy, Michael F. (2002). An Interview with Linda Elder About Using Critical Thinking Concepts and Tools. Eastern New Mexico University.

———. (2002). The Miniature Guide to The Human Mind. 2002.

Simmons, III, Seymour. 1996. Project Report: Arts in Education Suvey Study. New York: Lincoln Center Institute. Photocopied.

Simpson, E., and Courtney, M. "Implementation and evaluation of critical thinking strategies to enhance critical thinking skills in Middle Eastern nurses." International Journal of Nursing Practice. 2008 Dec;14(6):449-54. doi: 10.1111/j.1440-172X.2008.00719.x.

Stapleton, P. (2011). A survey of attitudes towards critical thinking among Hong Kong secondary school teachers: Implications for policy change. *Thinking Skills and Creativity*, 6, 14-23.

Sullivan-Mann, Perron, & Angela N. Fellner. "The Effects of Simulation on Nursing Students' Critical Thinking Scores: A Quantitative Study." *Newborn and Infant Nursing Review*. 2009.

Sumner, W. G. (1940). *Folkways: A Study of the Sociological Importance of Usages, Manners, Customs, Mores, and Morals*. New York: Ginn and Co., 632, 633.

US Department of Labor. *What Work Requires at School for Workers in the Year 2000*. 1992.

VandeCreek, Larry, Hilary Bender, and Merele R. Jordan. 1994. *Research in Pastoral Care and Counseling: Quantitative and Qualitative Approaches*. Decatur: GA.

Watanabe, Jane Y. 1989. *SAT Scores Found to Correlate with Arts Study*. Los Angeles: Los Angeles County Office of Education, Department of Curriculum Programs and Instructional Technologies. Los Angeles County Office of Education.

West, Richard F., Topiak, Maggie E., and Stanovich, Keith E. Heuristics and Biases as Measures of Critical Thinking: Associations with Cognitive Ability and Thinking Dispositions. *Journal of Educational Psychology*, November 2008, Vol. 100, No. 4, p930-941.

Westfall, Richard. *Newton: the Life of Isaac Newton*, NY: Cambridge University Press, 1993.

Willsen, Jane. "Accelerating Change, the Complexity of Problems, and the Quality of Our Thinking." 1995.

Zori. S., Nosek, L.J., and Musil, C.M. Critical thinking of nurse manager related to staff RNs' perceptions of the practice environment. Journal of Nursing Scholarship. September 2010, 1;42(3):305-13. doi: 10.1111/j.1547-5069.2010.01354.x.

APPENDIX A

CONSENT FORM

Arts Indiana provided multiple years of Agreement, Program Information, and Evaluation forms completed by teachers (1995-96, 1996-97, and 1997-98 school years), program annual reports (1995-96, 1996-97, and 1997-98 school years), and teacher interview transcripts (1995-96).

The forms completed by the teachers (Agreement, Program Information, and Evaluation) notified teachers that their responses were subject to use by Arts Indiana, Inc. Many teachers' comments are contained in the organization's annual reports.

Likewise, protocol for teacher interviews included notifying them that information they provided would be used for further research, operations, and to secure funding as Arts Indiana, Inc., was a not-for-profit organization. Those interviews were captured on audio recording and transcripts and interviewer notes made of each.

APPENDIX B

STYLE MANUAL STATEMENT

A Manual For Writers of Research Paper, Theses, and Dissertation by Kate L.

Turabian facilitated by StyleEase software was used in this dissertation.

APPENDIX C

REALIABILITY AND VALIDTY DATA FOR MEASURES USED

Arts Indiana provided multiple years of Agreement, Program Information, and Evaluation forms completed by teachers (1995-96, 1996-97, and 1997-98 school years), program annual reports (1995-96, 1996-97, and 1997-98 school years), and teacher interview transcripts (1995-96).

Having several years of data from several sources was essentials in providing consistent and accurate information on which this study is based on which its analysis and conclusions are drawn.

APPENDIX D

MEASURES USED AND INSTRUCTIONS FOR THEIR USE

As this is an historical study of the Arts Indiana Magazine in the Classroom program, there were no measures designed specifically for this study.

At the end of each academic year and in preparation for continuing in the program for the next academic year, teachers completed Agreement, Program Information, and Evaluation forms. Examples of these forms are contained in the body of this study including the instructions to teachers for completing them.

APPENDIX E

SCORING SYSTEMS FOR MEASURES

This study limited itself to the secondary, middle, and elementary grade levels using the *Arts Indiana Magazine in the Classroom* program.

Within these groups were 116 teachers. Simple percentages of arts/non-arts teachers and secondary/middle/elementary grade levels were used in presenting data from the program information studied.

AUTHOR NOTE

I further appreciate the students, parents, teachers, and administrators who used and were impacted by *Arts Indiana Magazine in the Classroom*.

I am also indebted to colleagues at Arts Indiana, Inc., who made the organization strong, mission-oriented, and true to its values at all times.

It continues to be a model for the bringing together of divergency, creating environments of inclusivity, and forging synergistic literacies.

NOTES

Here's hoping that true transdisciplinary education will take root and produce harvests of inspired, creative, and critical thinkers who will be all that God created them to be.