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ABSTRACT

During the next school year, South Brunswick (New Jersey) High School will offer an interdisciplinary course developed by six teachers under a grant from the Federal Government and the local Board of Education. The objectives of the two-year development project were: (1) to allow staff to explore alternatives to traditional secondary school programs and to collect data for decision making; (2) to increase sustained instructional time for studies which do not fit well into 45-minute segments; and (3) to provide every student with at least one interdisciplinary course which integrates math, science, social studies, and English around major themes drawn from the American experience. The course which evolved from these objectives, entitled "Journeys," is organized around three major concepts: Identity, Freedom, and Change. The vehicle for the study of these concepts will be American cultural pluralism, which will lead seniors through an examination of what it means to be an American as the 21st century dawns. This report on the project is organized in three parts: (1) status of the project in terms of its original objectives; (2) working papers for the interdisciplinary course; and (3) description of development process. (JD)

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ED 298115

Final Report

"A Core Program for the 90's: Changing Patterns for Instruction"

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Submitted to:

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P 0.30 545

The South Brunswick grant entitled "A Core Program for the 90's: Changing Patterns of Instruction" was based on an application for a 2 year project. The federal government supported the project in its first year and the local Board of Education supported it for the second year. The project will continue to be supported by the Board of Education.

During the next school year, South Brunswick High School will offer the interdisciplinary course developed under this grant and now entitled "Journeys", for the first time. In the summer of 1989, the team who developed the course will review the course results of the first year, revise as necessary and train more teachers to deliver it. In addition, the study of instructional time allocations begun under the grant continues and changes are supported by Board funds for teachers to revise their courses once time parameters have been set.

This report on our progress is organized in three parts.

- I. Status of the project in terms of its original objectives
- II. Working papers for the interdisciplinary course
- III. Description of process

I. Status by Objective

The status of the project in terms of its objectives is outlined below:

Objective 1: To increase teacher's awareness of the need for changes in the secondary school program and to provide a setting where the best of the staff can safely explore alternatives and collect data to use for decision-making.

The entire high school staff met with Dr. Clinton Bunke from the University of Indiana for an introduction to trends which will affect schools in the future. Dr. Bunke then spent the day with teachers who were interested in a more in-depth look at the subject and an evening with the advisory council for this grant on the same subject. Further, he spent a day with administrators and supervisors who wanted to look at the importance of the trends in terms of organizational decisions.

The results of the several days with Dr. Bunke is that 12 staff members identified themselves as interested in designing an interdisciplinary course. All twelve were interviewed by the project advisory board and six (6) were selected for the task. The six (6) represented the following disciplines: English Literature, history, art, math and science.

These six teachers began by combing the literature for existing interdisciplinary courses. They began to cross the traditional lines established by school departments and attend workshops in area beyond their own disciplines. For example, four of the humanities teachers attended a science issue workshop and the science teacher went to a workshop on literature and art at a local col-

lege. Through the process, the teachers began to build a small network of people beyond South Brunswick who were interested in interdisciplinary studies.

Unfortunately, most of what they found were humanities based programs. There was little in these courses that had to do with issues in science and technology and nothing that included mathematics statistical studies as a part of the program. Many of the projects had been funded in part by the National Endowment for the Humanities and the people working on them felt that they were funded to present a humanities point of view and could not include science or technology as part of that vision. Others felt that it was too difficult to present science issues or use statistical methodologies because they could not tap the proper faculty to deliver such a program.

The six teachers from South Brunswick however, remained committed to the full interdisciplinary approach. They were supported in their search by the administration and, by mail, by Dr. Bunke. Gradually they began to build a set of concepts that could be used in an interdisciplinary course. Though these concepts are appropriate for a lifetime study, they provided the framework for looking at what should be taught - what ideas are at the core of high school education.

The work of the team was explained to the staff at regular intervals. The social studies department became more interested and in the second year of the project a second social studies teacher was added to the team as was a music teacher.

Objective 2: To increase sustained instructional time for a student to pursue those studies which do not fit well into 45 minute segments. This should permit students to work in depth, to accomplish more and to enjoy the content of the course more.

The administrators and a committee of representatives from each of the departments of the high school began a study of time divisions in the school. This is a value laden discussion in every school and the South Brunswick discussion was long and arduous. The representatives continually returned to their departments for direction and soon the entire staff was engaged in discussion of issues related to the use of time in the schools. Two important decisions were made by the committee. One, if the current practice of having all courses for 45 minutes a day for a year continued, it would be impossible to build an elective program that permitted either in-depth continuation in courses of interest or introductory courses beyond the college and/or state requirements. Thus, the committee has sanctioned a semester elective system that includes courses in advanced computer science, statistics and dramatic literature as well as introductory courses in music theory and art appreciation. These courses are being developed this summer with Board of Education funds and will be offered to students during the next enrollment period.

Second, the committee recommended double periods and double credit for courses that cannot be properly taught in single class units. They have begun with the advanced sciences and students who signed up for these courses this past year are required to participate for 90 minutes. Similarly, the new interdisciplinary course supported by this grant will be taught for 90 minutes (2 periods).

This is just the beginning of the time study. All courses are still being examined and the high school staff is looking at the use of time both over the year and during the day. The issues

related to how time should be used has an impact on teacher job security (fewer periods for a longer time each day mean that there is need for fewer teachers) and on student's ability to control their own education. (Time for electives has become more and more scarce as requirements increase). The grant however, has opened the conversation about what is important for the future, what is important for the student and how we can accomplish those things in the traditional high school. The changes already made in the type of scheduling done at the high school will help to enlighten further discussion of the issues.

Objective 3: To provide every student with at least one interdisciplinary course which integrates math, science, social studies and English around major themes drawn from the American experience. Students will understand the interrelationships among the disciplines and report that the core course helps them to achieve in their other courses.

The development of the interdisciplinary course and the process of establishing a way to deliver it has been exciting and frustrating. The exploration of possibilities opened so many doors and presented so many alternatives that, for a while, it appeared that we could not reach closure. The team of teachers designing the course immersed themselves immediately in cultural studies and enjoyed their own reading and investigation so thoroughly that they had major difficulty in limiting their topic. The most compelling vehicle for study was the great centers of civilization. Each of the great cities of the world provided examples of the universal nature of important ideas and provided concrete examples of interdisciplinary work. However, the content grew so rapidly that the team could not hold it constant and the concepts began to get lost in the overwhelming questions of what should be taught.

With the help of Dr. Bunke, the team finally developed a set of seven concept statements organized under three major headings: Identity, Freedom and Change. After hundreds of hours of discussion, the teachers decided that the vehicle for study of these concepts would be American pluralism. That is, the concepts would be applied to Contemporary American life with emphasis on the blending of world cultures that characterize the current American experience.

This decision was based on the cultural diversity of the South Brunswick student population which is currently close to 20% oriental (Chinese, Japanese and Indian predominantly), about 10% black and 10% first generation European (including a fair number of students from Eastern European countries such as Poland). Students could be asked to look to their past and their future and apply the ideas and methodologies supplied by the various disciplines to their own experience.

The name of the new course "Journeys" reflects the decision to lead seniors through an examination of what it means to be an American as the 21st century dawns. The title indicates that the student will enter into his or her journey both as an individual and as a member of multiple groups. Students will be asked to examine their own cultural roots and those of others and consider how these factors affect them and American society. They will be asked to look at the society itself, considering the age old questions related to freedom and authority as they apply to the age of technology. Finally they will be asked to consider the nature of change and the confrontation with the unknown that will inevitably

characterize their journey. They will be asked to look at change and to develop strategies for dealing with uncertainty both as an individual and as a member of the various groups to which they will belong.

Once having outlined the course, the difficulties of implementing it in a traditional high school became real. The questions were (in no order): how much credit would be offered for this course, what subject area would the credit be related to, how could we afford to have experts from the relevant disciplines assigned to the course all year, how will it fit into the schedule, who will supervise it if it crosses the disciplines, how can we put vocational students and advanced placement students together into a conceptual course, what level of abstraction is necessary if ideas are to be central to the course? Does cross-disciplinary courses mean that students will use accumulated knowledge and skills or does it mean they will learn new skills, or both?

The answers to these questions led to a full discussion of what schools are and how they work. The working decisions are as follows:

1. The course will carry 10 credits and will be taught every day for 2 regular high school periods to seniors. For the first year at least it will be voluntary (an alternative to traditional required course). Over 65 students signed up for the course for next year. They range from business and vocational students to advanced placement science students. The class was cut to 45 students on a random basis.
2. Credits will be awarded for Social Studies and English.

3. Two teachers, one from the English department and one from Social Studies will be assigned to the course full time. They are the organizing teachers and will be responsible for planning the flow of instruction and delivering the regular instruction.
4. A "visiting professor " concept will be established. The science teacher, math teacher, art teacher, and music teacher who worked on the original team have prepared segments of the "Journeys" course which they will carry into the class at scheduled times during the year. The times will be flexible depending on the need for expertise. (For example, the music teacher will come in weekly, the science teacher will come in for several days quarterly, etc.) These teachers will be relieved from their duty period at the high school in order to work with the course. If they need substitutes, these will be forthcoming.
5. The interdisciplinary nature of the course involves two aspects. First, students will be asked to deal with ideas as they have been expressed by artists, scientists, mathematicians, and musicians as well as writers and social scientists. In addition, students will be asked to express their ideas using procedures learned in the various disciplines. For example, they will be taught to make self-portraits, they will compose music, they will do a statistical study and develop a data base.

6. The course is being designed as a course for all seniors. It includes choices for students so they can work at the level of abstraction with which they feel comfortable. We believe the ideas are accessible to all students at some level.

II. Working Papers for Interdisciplinary Course

The team of teachers designing the interdisciplinary course generated massive amounts of paper. There are activities, projects and bibliographies connected to each content area and each concept. The two teachers who have been selected as the organizers of the interdisciplinary course have all the materials in hand. It is their task to put together the final outline and decide where the "visiting professors" will enter the class and add the expertise necessary to maintain the interdisciplinary nature of the program.

I have attached to this report the working outline of the interdisciplinary course, "Journeys". The statement is followed by a further break down of the concepts. These two documents serve as the base for the course. Clearly there is more than a year's work in the concept statements. The organizing teachers must pick and choose on the basis of what they know of their students.

During this pilot year, both the organizing teachers and the "visiting professors" will keep logs of their experience, noting particularly what materials and strategies were successful with students. They will also use a pre and post test instrument that is being developed which will ask students to apply their knowledge of major thinking skills - i.e. classifying, predicting, generalizing, hypothesis building, summarizing and using evidence - to a variety of content situations. For example, the test which is being constructed in conjunction with another school district requires students to name the skill they are using when confronted with the problem of predicting what will come next in a literature selection, predicting what is likely to happen in science investigation, and predicting the probable results in an election etc. They also will be asked to solve the problem. Our hypothesis is that students in the interdisciplinary class will be able to name the skill (metacognition) in more content areas than other students and to use their skills to answer the questions more accurately in all content areas than other students. This test will be completed and tested for reliability and validity by August of this year.

Finally, I have attached some examples of the working bibliography for the course. The annotations permit teachers to connect materials with concepts and content. However, the teachers do not read in depth out of their own field. The bibliography serves as evidence of need for a "visiting professor" concept. Each of the teachers has managed to integrate the concepts for himself or herself. However, helping young people to do the same requires a grasp of the discipline that eludes teachers who have spent their lives working in a single discipline.

INTERDISCIPLINARY COURSE

JOURNEYS

I. OVERALL PURPOSE

The purpose of this course is to help students better understand themselves and others as individuals and as part of existence.

Identity

To understand that personal identity is affected by total environment, experiences, and place in history.

Freedom

To understand that freedom is affected by sense of identity, total environment, experiences, and place in history.

- II. The course will have a conceptual base that will help students deal with big ideas. The concepts are inter-related and cannot be isolated from the purpose statements but will be dealt with specifically under each broad heading to make planning easier, the team has assigned a major heading to each concept.

The course will address the following concepts:

1. Freedom is defined by purpose and parameter and is usually expressed in terms of what cannot be done.
(Freedom)
2. The existence of Authority depends on the willingness or desire of some people to take it on and the willingness or desire of others to submit to it. (Freedom)
3. Conflicts arise when parameters are unclear, unfocused or unacceptable. (Freedom)
4. People are affected by the following influences:
(Identity)
 - self
 - family
 - community
 - state
 - international community
 - humanity
 - natural environment
 - social class
 - natural law
 - biological factors (ex.: race, gender, genetic background)
 - physical factors

5. People and their cultures are a product of time and place. (Change)
6. The explanation of the unknown can be approached through the logical process or through the imagination. (Change)
7. Human expression is basic to culture. (Applied to all 3 areas)

III. Outcomes

Students will be able to:

- make connections with other times and places
- understand and acknowledge differences
- see the inter-relationship of subject matter and ideas
- recognize cultural interdependence
- solve problems, using various skills and ideas
- effectively deal with change
- examine the world critically
- identify commonalities
- recognize interdependence in the natural environment
- recognize interrelationships between humans and their environment

IV. Vehicles

We will address these goals by studying the cultures associated with the students currently in the South Brunswick schools, looking to their roots and their future as citizens of the 21st century.

V. Characteristics of the Course

1. Students will work in a different time frame from the traditional 50 minute class.
2. Students will have some input and choice about subject matter and/or activities.
3. Teachers will give students some responsibility for their own learning. Students will have practice in asking questions, making decisions and solving problems.
4. The class will be heterogeneous.
5. Students will have some learning experiences outside the classroom.
6. Student assignments will not all be traditional. Journals will be kept, and there will probably be a culminating assignment that may be of a creative nature or related to community participation.

7. Learning will be open-ended and there will not be a single set of right answers to learn.
8. Students will participate in the design of the course.
9. Students will have the ability to apply the processes they learned in science, math, social sciences, literature, art as well as make connections among the ideas of these content bases.

FURTHER DEFINITION OF THE CONCEPTS

Concept #1 Freedom is defined by purpose and parameter and is usually expressed in terms of what cannot be done

Sample sub-learnings

- various definitions of freedom
- examples of freedom that cross cultures, geography, and time
- an understanding of relativity and perception
- various expressions of freedom
art, music, literature, public policy, etc.
- how positives can be stated as negatives and vice versa
- implications for future freedoms

Sample objectives

Students will be able to :

- show an understanding of how various cultures have perceived freedom by comparing their written public policies
- demonstrate knowledge of some of the various ways freedom has been expressed by listing five pieces of music that have freedom as their subject
- demonstrate an understanding of some definitions of freedoms by summarizing results of a school survey

Concept #2 The existence of authority depends on the willingness or desire of some people to take it on and the willingness or others to submit to it

Sample sub-learnings

- definitions of: authority, leaders, followers, submission
- characteristics of leaders and followers
- cost/benefit analysis of responsibility and control vs lack of responsibility and lack of control
- understanding the use of force by authority:
political, physical, mental (persuasion)
- the pros and cons of being a leader or a follower
- submission for gain (survival to money)
- historical examples of authority figures
- present-day examples and the impact on the future
- voluntary vs involuntary submission

Sample objectives

Students will be able to:

- define authority
- demonstrate an understanding of the impact of authority figures by citing examples from history
- show an understanding of the differences between leaders and followers by creating a piece of artwork to represent each

Concept #3 Conflicts arise when parameters are unclear, unfocused, or unacceptable.

Sample sub-learnings

- definitions of conflict
- historical examples of conflict with a range of types and degree
- examples of conflict caused by:
 - parameters that lack clarity
 - parameters that are unfocused
 - parameters that are unacceptable
- examples of present day conflicts and their root causes
- implications of future conflicts
- conflicts caused by clashes between cultures
- definition of parameter

Sample objectives

Students will be able to :

- show an understanding of the causes of conflict by researching and presenting the root causes of a present-day conflict
- demonstrate knowledge of unclear parameters causing conflict by citing situations where an unclear law led to conflicting interpretations

Concept #4 People are affected by the following influences:

self	international community
family	humanity
community	natural environment
state	natural law
social class	biological factors
	physical factors

Sample sub-learnings

- idea of self-concept/self-exploration
- tolerance
- influence of external environment
- influence of heredity
- commonality of human beings/diversity of human beings
- basic physical laws
- psychology of family
- reasons for social classes
- the perception of others - religions, nations, races, etc.
- identity
- religions
- interdependence
- the influence of one person

Concept #5 People and their cultures are a product of time and place

Sample sub-learnings

- concept of change over time
- links between culture and natural environments
- comparative cultures
- commonalities between cultures
- impact of history on a culture
- definition of tradition
- factors affecting traditions
- cultures composed of sub-cultures
- definition of culture
- how change occurs

Sample objectives

Students will be able to:

- show an understanding of the influence of natural environment on culture by comparing like and unlike geographical areas and their cultures
- demonstrate an ability to define tradition by listing and explaining one important tradition from each of five different cultures

Concept #6 The explanation of the unknown can be approached through logical process or through the imagination

Sample sub-learnings

- reasons for religion
- process of science
- classical logic
- definition of logic
- basis of creativity
- methods of problem-solving
- comparative explanations from science and religions
- inductive/deductive reasoning
- superstitions
- comparitive religious ideas

Sample objectives

Students will be able to:

- define science
- demonstrate an understanding of how science and a religion can explain a phenomena differently by describing the evolution vs creationism conflict
- show an understanding of logical process by approaching the same problem both inductively and deductively

Concept #7 *Human*
~~Artistic~~ expression is basic to culture

Integrate

Sample sub-learnings

- reasons for expression
- basis of creativity
- definition of art
- types of artistic expression
- biogenetic similarities in artistic expression
- importance of medium
- comparative styles and types of expression between cultures
- influence of the environment on artistic expression

Sample objectives

Students will be able to :

- define art
- show an understanding of the different reasons for artistic expression by listing some of them
- demonstrate an ability to compare styles of artistic expression by evaluating and identifying a piece of art with a certain culture

Literature

Bibliography

Frank, Anne, The Diary of Anne Frank

The diary kept by a Dutch Jew who spent her adolescence hiding in an apartment, with her family and others, from the Nazis. Illustrates physical captivity and mental and emotional freedom.

Concept #1

Joyce, James, Portrait of the Artist as a Young Man. New York: The Viking Press, 1944.

A fictionalized autobiography of an artist, a creative thinker, growing up in Catholic Ireland. The authority of the church is shown in all aspects of his life.

Concept #2

Eisin, Jonathan, The Forgotten Festival, Altamont, Death of Innocence in the Woodstock Nation, New York: Avon, 1970. A multiple view of a youth culture.

Van Gogh's Journals

Keats' Letters

Confessional poets including Anne Sexton & Sylvia Plath

Films:

"Moulin Rouge", biography of Toulouse-Lautrec

"Lust for Life", biography of Van Gogh

"Zelig", A Woody Allen film in which a man searches through his many identities

Angelou, Maya, I Know Why the Caged Bird Sings. New York: Bantam Books, 1970.

An autobiographical account about growing up Black in different family settings. It focuses on incidents in the life of a child and an emerging young woman; it takes place in Stamps, Arkansas, St. Louis, and San Francisco.

Kin Caid, Jamaica, Annie John.

A fictionalized autobiography about growing up in the Caribbean and the separation between mother and daughter that must take place.

Rivera, Edward, Family Installments: Growing up Hispanic. New York: Penguin Books, 1982.

An autobiographical description of what it's like to be poor and Puerto Rican in New York. There is a strong sense of pride and solidarity with the Puerto Rican people.

Friday, Nancy, My Mother, Myself.

How many different types of women have been affected by their mothers at different stages in their lives.

Poetry:

- Kaufman, Shirley, "Mother & Daughters"
Mathis, Cleopatra, "For Maria"
Roethke, Theodore, "My Papas Watery"
Sexton, Anne, "My Daughter, My Stringbean"
Wakowski, Diane. "Thanking My Mother for Piano Lessons"

Film:

"The Graduate"

Concept #7

Gwaltney, John Langston. Drylongso. New York: Vintage Books, 1981. A collection of brief life histories, based on interviews in the community where Gwaltney, a Black anthropologist, grew up.

Terkel, Studs, Working. New York: Pantheon Books, 1972. A collection of interviews with Americans about their jobs. There are over 150 interviews with people as diverse as their occupations.

Poetry:

Cullen, Counter, "Incident"

Concept #4

Morris, Jan, Conundrum.

An autobiographical account of a male writer who had a sex change and became a female writer.

Gould, Stephen, Jay, The Mismeasure of Man. New York: W. W. Norton & Company, 1981. Debunking of biological determinism; discussion of social and economic differences between races, sexes, and classes.

Concept #4

Kingston, Maxine Hong, The Woman Warrior. New York: Knopf, 1976. A Chinese American's depiction of her maternal forebears in China and America. Kingston writes about growing up first generation in San Francisco's Chinatown.

Rodriguez, Richard, Hunger for Memory. Bantam Books. An autobiographical account of a Mexican American's struggle to "make it" out of the narrow Chicano world of California. A tale of adopting the new language and culture and the expense of the world.

Schulman, Alix Kates, Memoirs of an Ex Prom Queen.

A humorous description about what it was like to be a bright, popular young woman growing up in the city in the fifties.

Toth, Susan Allen, A Small-Town Girlhood. New York: Ballantine Books, 1978.

The evocation of small-town life in the Midwest, growing up in Ames, Iowa, in the fifties.

Weisel, Elie, Night. New York: Avon Books, 1958.

A memoir of a Hungarian boy, born in 1928, who grew up to become a prize-winning writer and proponent of peace. An account of his deportation with his family to Auschwitz when he was still a boy, and then to Buchenwald, where his parents and younger sister dies.

Baker, Russell, Growing Up. New York: Congdor and Weed. Inc., 1982.

A memoir by the Pulitzer Prize-winning columnist of the New York Times who grew up in the mountains of Virginia during the Depression and who began his career in journalism in 1947.

Emechit, Buchi, The Joys Of Motherhood. New York: George Braziller, 1979.

The story of a Nigerian village girls who moves to Lagos and has a family in which we not only see an Ibo family's efforts to survive and adapt to changing values, but in which we also see Nigeria as it tries to catch up with the twentieth century.

Kin Caid, Jamaica, Annie John.

A fictionalized autobiography about growing up in the Carribean and the separation between mother and daughter that must take place.

Concept #5

Gregor, Arthur S., Life Styles, An Introduction to Cultural Anthropology. 1978: Charles Scribner's Sons, N.Y., N.Y.

A readable anthropology text for high school students.

Ntabgoka, Jerimah, My Goodnight Book. 1978: East African Publishing House, Nairobi, Kenya.

A delightful childrens book that can be compared to childrens books from other cultures.

Poetry:

Rexroth, Kenneth, One Hundred More Poems From the Chines, Love and the Turning Year. 1970: A New Directions Book, N.Y., N.Y.

The subject matter and form of Chinese poetry can be compared to poetry from other cultures.

Concept #5

Potok, Chaim, The Chosen. New York: Knopf.

The conflicts of a Hasidic boy, growing up in New York, with his family traditions and belief system.

McCarty, Mary, A Catholic Girlhood.

There are several books about growing up Catholic.

Concept #6

Emecheta, Buchi, The Joys of Motherhood. 1979: George Braziller,
N.Y., N.Y.

The protagonist moves from a village culture to the city within Western Africa and her freedom is affected by this shift.

Concept #1

Kafka, The Metamorphosis.

Gregor's family structure changes because of the power they get by having a "gigantic insect" in the family.

Concept #2

Film:

"The Deerhunter"

3 friends go off to the Viet Nam War from a small Pennsylvania factory town, and everything changes.

Concept #5

Math

Bibliography

Mathematics Dictionary, James and James

Formal definitions are provided for the student with some math background.

Men of Mathematics, ET Bell

Provides a historical perspective of the development of mathematics.

Mathematical Snapshots, Steinhaus, Hugo

Relates mathematics to art work including patterns, perspective and sequences.

The Great Mathematicians, NYU Press

Provides a historical perspective of the development of mathematics through mathematicians.

Dictionary of the History of Ideas, Wiener, Philip P.

Excellent reference source for mathematical concepts and ideas. Index provides student with hundreds of mathematical avenues to pursue.

Exploring Mathematics on Your Own, Johnson, Donovan

Ideal for the motivated math student to enrich his/her exposure to a variety of mathematical concepts.

Of Men and Numbers, Jane Muir

Historical perspectives of the development of mathematics.

Mathematical Discourses: The Heart of Mathematical Science,
Newsom, Carroll Vincent

Discussion of mathematical concepts that may interest the student who has a desire for math.

Dictionary of Subjects and Symbols in Art, James Halls

A cross reference guide that provides the art researcher historic background information.

Dictionary of Science and Technology, T.C. Collocott

Provides researcher useful reference to further investigate science and technology fields of their choice.

Science

Bibliography

Galileo, A Play by Berthold Brecht

A good example of the interaction of freedoms defined by institution, society and the individual ... and their impact on scientific thought and progress. Conflict due to unacceptable parameters.

Concept #1, #2, #3

The Achievement of Galileo, edited by James Brophy and Henry Paolucci, College and University Press, 1962 New Haven, Conn.

Concept #1, #2, #3

Science and Literature, edited by John J. Cadden and Patrick R. Brostowz., D.C. Heath and Co., Boston 1964

This source is full of readings that illustrate how the "parameters" changed by scientific research have affected English and American authors. Also, much on conflict due to science.

Included is a list of possible theme topics and a wonderful bibliography of works that illustrate the inter-relation of science and literature or mathematics and literature.

Concept #1, #2, #3

The Art of Breathing, Nancy Zi, Bantam Books 1986

This book can be used as an example of how an individual can expand their performance by expanding their perception of what their potential is. Once again, by expanding the personal boundaries that they have set for themselves, their freedom to reach a higher potential can be realized.

Concept #1

Conceptual Blockbusting 3rd Ed., James L. Adams, Addison-Wesley 1986

This book looks at the mental boundaries and blocks that prevent us from being good problem solvers and creative thinkers. It is very similar to #4 but centers on mental parameters and freedoms rather than physiology ones.

Concept #1, #3

The Cosmic Dancers, Amit Goswami, Harper and Row 1983

This source is similar to #3, but in a more narrow context. Goswami looks at the scientific laws which writers use and which ones they break. The entire book is a wonderful example of this concept related to the writer's identity.

Concept #1

The Day the Universe Changed by James Burke, Little, Brown and Co. 1985.

Also a video series on PBS

This book and video series hits the nail right on the head. The basis of the author's work is that our identity and self-perception change as we discover more about the world we live in. Some of our freedoms expand during this process while others are lost.

Concept #1, #2, #3

The Discoverers by Daniel J. Boorstin, Random House 1983.

This book is very similar to #7 but covers a much broader scope and so does not tie in as perfectly as #7 does. Its greatest asset is that it brings examples from Beijing, Jerusalem, Africa, The Soviet Union and London.

Concept #1, #2, #3

Finite and Infinite Games by James P. Carse, The Free Press
McMillan, Inc., New York 1986

A view of the individual as a player involved in two classes of games; finite games or infinite games. The description of what makes any life involvement one type of game or the other involves the rules of parameters we set for each games.

Concept #1, #2, #3

Knocking At The Gate Of Life, Edward C. Chang, Rodale Press 1985

This book ties in exercise, Chinese philosophy and the individual's perspectives on what can and what cannot be done with the body; again looking at what our freedoms are based upon the parameters our own perceptions set.

Concept #1

Metamagical Themas, Douglas R. Hofstadter, Basic Books Inc.,
New York, N.Y.

This is probably above most students, but some of the essays directly relate to this concept and identity.

Concept #1

The Alphabet Effect, by Robert K. Logan, Through Quality Paper
Back Books 1986

This book discusses how the phonetic alphabet has been a parameter on our freedom of thought and our self-perception. A good comparison of these ideas in Eastern and Western civilization.

Concept #1

The Tao of Physics, by Fritjof, Carra, Bantam Books, N.Y. 1984

The Dancing Wuli Masters, by Gary Zukav, Bantam Books, N.Y. 1979

Both of these provide excellent examples of how our own identity, philosophy and view of the world change as our understanding of universal of physical parameters change.

Concept #1

Time- Frame Series, Time-Life Books 1987

This series is a good general reference that looks at how individual and cultural identity have changed as our world perception has expanded over time. The role of various authority figures is well represented across time and culture. Historical conflicts can be seen to support #3 as they are caused by unclear, unfocused or unacceptable parameters.

Concept #1, #2, #3

Day One, by Peter Wyden, Simon and Schuster, N.Y. 1984

The Making of the Atomic Bomb, by Richard Rhodes, Simon and Schuster, N.Y. 1986

These books provide excellent background on the Manhattan Project.

Concept #1, #2, #3

The River That Flows Uphill, by William H. Calvin, Sierra Club Books, S.F. 1986

This is a fascinating book with a number of applicable essays.

Concept #1, #3

War, by Gwynne Dyer, Crown Publishers 1985

This book looks at the reasons we war and its past, present and future consequences.

Concept #1, #2, #3

Waiting for an Army to Die, by Fred A. Wilcox, Vintage Books Random House, N.Y. 1983

This book covers the history and effects of the use of agent orange. It can be used as resource example to illustrate all three concepts as they tie-in with identity.

Art

Bibliography

New Brunswick

New Brunswick & Middlesex County

The Hub & The Wheel, by Bary Karasik, Windsor Publications
Northridge, California

Pictorial guide of the development of Middlesex County &
New Brunswick.

Chronicles of New Brunswick, N.J. 1667-1931 by John P. Wull

Thatcher-Anderson Co. Publisher & Printers,

New Brunswick, N.J. 1931

Many stories and historical information about the role
of New Brunswick in becoming a city.

Drawing on the Artist Within by Betty Edwards, Simon & Schuster,
N.Y. 1986

This book continues Betty Edward's philosophy from Drawing
on the Right Side of the Brain.

Art Synetics by Nicholas Roukes, Davis Publications, Inc.
Worcester, Mass. 1982

Excellent source of projects that force an unusual
justaposition of ideas.

Primitive Art adapted by Michael Batterberry & Ariane Ruskin,
McGraw Hill Book Co.

Excellent overview of many African tribes & their beliefs
& art. Includes many pictures and examples. Used for
background information.

The Horizon Book of the Arts of Russia by Thomas Froncek, American
Heritage Publishing Co., Inc., N.Y.

Excellent guide to the evolution of Russian Art with many
pictures and examples of the various styles. Used for
background information.

The Horizon Book of the Arts of China, American Heritage
Publishing Co., Inc., N.Y.

Excellent guide to the evolution of Chinese Art with many
pictures and examples of the various styles. Used for
background information.

The Temple of Jerusalem by Joan Comay

Traces the significance and development of the original
Temple in Jerusalem.

Jewish Art by Cecil Roth, McGraw-Hill Book Co., Inc.

Good overviews of the findings of original Jewish art
and how they are used today.

Our Religion and Our Neighbors by Milton G. Miller & Sylvin D.

Schwartzman, Union of American Hebrew

Congregations, N.Y.

Good text for easily reviewing the basic beliefs and
philosophies of many religions.

Art From Many Hands by Jo Miles Schuman Davis Publishers.
Project ideas from many cultures. Interdisciplinary
approach.

The New Games Book, The Headlands Press, Inc., Tiburon, California
A great source of games that involve everyone and allow the
participants to change the rules. Good for getting groups
to interact and learn which people take on leadership roles.

BIBLIOGRAPHY

This book accompanies a film series that was shown on Channel 13 and is an outstanding discussion of many aspects of Chinese culture.

A. Clayre, The Heart of the Dragon. Boston: Houghton Mifflin Co., 1985.

The following books relate to Chinese culture and are suitable for students as well as for reference material for adults:

1. F.M. Bunge and R.S. Shinn (ed), China: A Country Study, Washington, D.C. American Univ. 1981
2. M. Sullivan, The Arts of China, Berkeley: University of California Press, 1979.
3. R. Terrill (ed), The China Difference, N.Y. Harper & Row, 1972.
4. R. Terrill, 800,000,000 The Real China, N.Y. Dell, 1971.

The following books relate to Chinese history and are suitable for students as well as for reference material for adults:

1. J.M. Bertram, First Act in China, N.Y. Viking Press, 1938.
2. L. Hellerman and A. Stein (ed) China: Readings on the Middle Kingdom, N.Y. Washington Square Press, 1971.
3. R. Payne, Mao Tse-Tung, Ruler of Red China, N.Y.: Schuman, 1950.
4. E. Snow, Red Star over China, N.Y. Modern Library, 1938.
5. A.L. Strong, One-Fifth of Mankind, N.Y. Modern Age Books, 1938.

III. Process

The section of this report summarizing the status of objectives shows that this grant has made a major impact on South Brunswick High School. Raising the awareness of the staff about new educational issues and changing the use of time in the high school are on-going matters generated by the grant. The development of an interdisciplinary course however, was specific requiring a final product. It has not been as easy as it sounded on paper. The time line as shown on the next page was used throughout the project and the goal of offering a new interdisciplinary course in September 1988 will be achieved.

The difficulty is that the development time was essentially two years, not one, and the project will require commitment of monies from the local Board of Education and from the district's block grant to achieve that goal. The good news is that these funds will be available from Board monies during this summer so that the project can be completed.

I believe that two factors were responsible for the acceptance of this particular aim. First, the management committee for the grant (MC on the time line) took their task seriously and tied themselves to success. The committee represented the high school and elementary teaching staff, the district administration, high school parents who were activists within the school, present and past Board members and students. The committee developed the criteria for selection of the team of six teachers who would develop the new course and set up the procedures for selection. Members of the committee did the interviewing themselves and the recommendations were made to the full committee. A copy of the application for team members follows the proposed time line and reflects the committee's conviction that this is a South Brunswick project supported by the federal government but essentially local in scope.

Second, the team of six teachers who were selected to do the work were excited about interdisciplinary issues. Essentially, they were people who already integrated their own experience. Never once did they question the importance of the project or why we were doing it. They continued their work far beyond the estimated hours and were willing to communicate to staff and community the importance of interdisciplinary study.

The difficulties arose from the teachers' own enthusiasm. They found it extraordinarily difficult to limit their scope and agree on concepts and content. The more they read or heard, the more expansive they became. Dr. Bunke finally forced the acceptance of the three major constructs and that served as an organizing design. In some sense these were arbitrary selections as were the concept statement that finally gave meaning to them. The team however, spent hours discussing whether the concepts were indeed "core" to all high school students. They decided that students should not leave high school without examining their own identity and beginning to grasp the paradoxes and problems of freedom and change in the dawning century.

Proposed Time Line

	<u>Who</u>	<u>Date</u>
a. Determine the "givens" for the new course including purpose statements for students.	MC	October 8, 1986
b. Determine how many other courses should be developed.	MC	October 8, 1986
c. Determine criteria for teacher - developers.	MC	October 8, 1986
d. Determine process for selection of teacher - developers.	MC	October 8, 1986
e. Determine hours for work	MC	October 8, 1986
f. Prepare and distribute applications-forms to staff.	Ad.	October 30, 1986
g. Choose teacher - developers	---	November 15, 1986
h. Design a Framework for the "core" course.	MC & T-D	December 2 or December 3, 1986
i. Determine any characteristics of the course that are critical.	MC & T-D	December 2 or December 3, 1986
j. Present to full faculty the framework and characteristics of the course (special meeting w/Inst'l Council to review process).	T-D & H.S. Ad.	January, 1987
k. Complete the design for all the courses covered by the grant.	T-D	April 3, 1986 or April 4, 1986
l. Present design to MC.	T-D	May 5 or 6, 1987
m. Look at implementation problems. Determine implementation procedures for 1988-1989.	MC	May 5 or 6, 1987
n. Add content and resources to to course outline.	T-D	May-August, 1987
o. Clear obstacles to implementation.	H.S. Ad.	August-December, 1987
p. Present completed courses to MC.	T-D	August, 1987
q. Present completed courses to Bd. of Ed.	T-D	September, 1987

Proposed Time Line (p.2)

- | | | | |
|--------------------|--|--------------------------------------|-----------------|
| r. | Field test portions of the course within the framework of existing appropriate courses (Science and Society, US History II). | T-D | Sept.-Dec. 1987 |
| s. | Offer all new courses in course selection book in February 1988. | H.S. | February, 1988 |
| *t. | Review field test, revise. | Teachers who will deliver the course | June-Aug., 1988 |
| *u. | Review w/MC | T-D | August, 1988 |
| *v | Teach | | September, 1988 |
| * NO GRANT SUPPORT | | | |

**Application Form
Course Development**

This form must be returned by 4:00 P.M., November 17 to:
Willa Spicer
Board Office

South Brunswick is looking for a team of 6 teachers from diverse content areas to work between now and September 1987 on developing an interdisciplinary course for South Brunswick High School seniors. Although all the work time will be independently scheduled over the 10 month period, we anticipate at least 150 hours and will pay \$2,000 to each of the developers. The payment schedule will be determined after identification of the team.

This project is supported by a grant from the federal government. In order to help you understand the project, the purpose statement from the grant application is attached to this application. In addition, the management committee for the project developed a list of considerations about the course. These are included also.

The management committee has established the following criteria for selection of teachers:

- a. Strength in their area of specialization
- b. Recognition by colleagues as a quality educator
- c. Breadth of interest areas of learning and in fields beyond their area of specialization
- d. Respect for students
- e. Sensitivity about all levels of student learners
- f. Experience working with a variety of students (grade levels, course levels, interests, etc.)
- g. Interest in the project and the concerns of the management council.

The following procedures will govern the selection process:

1. Application completed and returned by Monday, November 17.
2. Interview by representative members of the management council.
3. The management council sub-committee members who interview the candidates will make the selections on the basis of the criteria stated above and the added criteria of providing diversity within the working team.

The developers of this course will get maximum help from the system and the management committee. Consultant help will be available and we will help you identify places where such courses are already being taught. Arrangements can be made to meet with experts in appropriate fields. If you have any questions about the project or the application call Willa.

Application Form
Return to Willa Spicer by Monday, November 17

Name _____ Content Area _____

1. Education

a. College _____ Major _____ Minor _____

b. Graduate Courses (Descriptive titles are as good as course titles)

Content Area Courses: _____ Where: _____

Education Courses: _____ Where: _____

c. Seminars or Special Programs:

2. Experience

a. Teaching:

Types of Courses taught	Grade Level	Where
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b. Curriculum development experience

c. Committees or Projects for educational or other types of organizations and agencies.

d. Other pertinent experiences

3. Please describe briefly why this project interests you.

4. Use this space to note any ideas about the course that you hold currently. We know these are spontaneous ideas and should only be considered as tentative first thoughts.

The limitation of the content was even more difficult, particularly because New Jersey had just passed legislation requiring a world history or world cultures course as a high school graduation requirement. There is no way to give the reader a sense of the meetings where appropriate content was discussed. However, the decision to begin with the American base and move with the students back into the cultures of their origin was again enlightened by the question of what is core.

The seniors coming into this course will have had two years of American history and three years of English, mostly using books written by American authors. The team decided that this background should be used and extended by the new course and the existing cultural diversity provides a vehicle. We do not yet know if we will receive state approval for using the new course as the world cultures requirement. The hope is that we will.

The logistics problems related to the delivery of the course would characterize any high school. The teachers pushed for what they needed. (They said they needed four teachers assigned to every section for the year). Fortunately, the administration worked well with the team and had been fully apprised throughout the development process. Together we worked out the essential social studies - English combination, determined an acceptable class size and developed the "visiting professor" concept, making the course cost effective.

Clearly, this work would have failed if the team had worked in a vacuum. The administrative support was critical for implementation of the course. Administrators had to permit changes in the traditional delivery of instruction. The new goal is to work at the content and delivery of the course so we can extend it to every senior. This pressure will continue and success is dependent on continual two-way information between the teachers, the rest of the school staff and administration. If the state allows the course to stand in lieu of the world cultures, the extension will be easier.

The process used to open the discussion about the use of time at the high school was also successful but also fraught with problems. At first the staff just did not take it seriously. The departments sent their youngest members to the committee because they figured nothing much could be done. When the representatives took recommendations for semester courses back to the departments, the antennae suddenly went up and several committee members changed. Increased electives meant increased competition for students and questions of job security began to surface.

In addition, the committee recommended double periods for several courses and semester grading systems for basic courses so that failing students could start again at mid-year. These recommendations require additional work for individual teachers and more department level decisions. The committee became more and more controversial but eventually their recommendations were approved by both the staff and the Board of Education.

The work on time will continue. New issues keep surfacing and the door, once opened, is being kept open by both teachers and administration. Time is by far the most important issue in a school and the overall affects of the dialogue may be felt for many years.

The evaluation processes for the new course are still being considered. Fortunately, the grant came at the same time that we were already engaged in finding ways to measure critical thinking skills and one of the goals questions from that study application of critical thinking skills across the disciplines. The interdisciplinary course is the perfect vehicle to observe differences in these skills.