

2001

Alternate Curriculum in Reading For Grade 4

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Alternate Curriculum in Reading For Grade 4

Abstract

Academically gifted students are in every classroom. They have a right to be challenged all day, every day. Most curriculum is aimed at the average student, leaving gifted students bored and unchallenged. It is the school's responsibility to meet the needs of these academically gifted students. By differentiating content, process, product and learning environment, teachers can enrich, challenge and better meet the needs of all students. Our district is in the process of creating alternate units for our elementary language arts program. The sixth grade is complete and a team is working on the fifth grade units. Two other teachers and I are working on the fourth grade units for our master's project. They are tied to the mainstream curriculum and are differentiated in content, process, and product.

Alternate Curriculum in Reading
For
Grade 4

A Graduate Project
Submitted to the
Division of Education of the Gifted
Department of Curriculum and Instruction
In Partial Fulfillment
Of the Requirements for the Degree
Master of Arts in Education of the Gifted
University of Northern Iowa

By Carolyn M. Wiezorek
March 2001

This Project by Carolyn M. Wiezorek
titled Alternate Curriculum in Reading for Grade 4

has been approved as meeting the research requirement for the Degree of Master of Arts in Education.

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Abstract

Academically gifted students are in every classroom. They have a right to be challenged all day, every day. Most curriculum is aimed at the average student, leaving gifted students bored and unchallenged. It is the school's responsibility to meet the needs of these academically gifted students. By differentiating content, process, product and learning environment, teachers can enrich, challenge and better meet the needs of all students. Our district is in the process of creating alternate units for our elementary language arts program. The sixth grade is complete and a team is working on the fifth grade units. Two other teachers and I are working on the fourth grade units for our master's project. They are tied to the mainstream curriculum and are differentiated in content, process, and product.

I. INTRODUCTION TO THE PROBLEM

Our school district has a need to provide more challenging language arts curriculum for gifted learners. In her book, Teaching Gifted Kids in the Regular Classroom, Winebrenner (1992) asks, "Of all the students you are teaching in a given class, which group do you think will probably learn the least this year?" She goes on to say, "It is the most able, rather than the least able, who will learn less new material than any other group" (p.1). With this in mind, our district hopes to develop more challenging curriculum for our gifted learners. According to Van Tassel-Baska (1994), interventions for students at the elementary level from the standpoint of a rich curriculum base would include an individualized reading program that would allow students to read above their tested or assessed grade level. Some of our students have already mastered the content of the Macmillan/McGraw-Hill Spotlight on Literacy reading program. Last year a team of teachers and Gifted and Talented facilitators developed a

more challenging alternate curriculum for our sixth grade programs. Another team is working on fifth grade units this year. The need exists at all grade levels and the process of developing curriculum is both slow and costly. Fellow classmates Julie Schmit, Cheryl Werner, and I decided it would be practical and beneficial, for us and our district, to develop the fourth grade units for our district as our research projects. Schmit is a fourth-grade classroom teacher and Werner and I work with students in kindergarten through sixth grade as G/T facilitators.

Though not in use for long, the sixth grade units are proving to better meet the needs of our gifted students. It is our hope that the units we create will be comprehensive, defensible, differentiated, and help us meet the needs of our fourth grade students.

II. METHODOLOGY

After discussing the need for alternate curriculum for our fourth grade reading program, Schmit, Werner, and I approached our District G/T Facilitator, Dorothy Gibbs, and our director of curriculum, John Burgart. Both agreed that it was a great idea. Next, we shared our idea with Dr. Barbara O'Donnell (Assistant Professor, Department of Curriculum and Instruction at the University of Northern Iowa) who endorsed the project. Our units would be designed to compliment the six units of mainstream curriculum. Each of us took two units and began researching and developing them.

We met with Gibbs again (personal communication, Monday, October 23, 2000). She gave us the fourth grade scope and sequence that we might make some interdisciplinary ties. She also provided us with the Talented and Gifted program guidelines to follow. Our units should be built upon a theme or topic from the Spotlight anthology and have broad, underlying concepts with complexity and significance to society. They should have a strong writing component, build research skills, and

utilize technology. Gibbs required a product for public performance or presentation, use of non-print media, and activities that foster higher level thinking skills. Over the course of the year, students should be exposed to a wide variety of genres including fiction, non-fiction, poetry, drama, myths and legends, and biography.

The units were to be designed so students could work with minimal assistance. They were to be long enough to occupy the student productively for a period of six weeks, but flexible enough to be shortened if necessary. Core components from the sixth grade units were to be included for continuity. They are the forward, contract, research organizer, work log, and evaluation rubric.

We discussed using the Dubuque Community School District Benchmark Standards (June, 2000). These two units addressed several of the Benchmark Standards. In the area of Language Arts:

- Students will participate in discussions as effective listeners.
- Students will use reading strategies to understand printed materials.
- Students will infer ideas from printed materials.
- Students will interpret and critically analyze literary works and media.

- Students will read literature to understand themselves and others.
- Students will read and acquire information.
- Students will read to satisfy interests.
- Students will produce types of writing appropriate to specific purposes and audiences.
- Students will demonstrate a working knowledge of the writing process.
- Students will use technology to communicate effectively in a variety of ways.
- Students will participate in discussions as speakers.
- Students will prepare, deliver, and evaluate oral presentations appropriate to specific purposes and audiences.

District Standard Benchmarks (June, 2000) addressed in Guidance and Counseling were:

- Students will take pride in work and in achievement
- Students will demonstrate the ability to work independently and cooperatively to achieve school success.
- Students will demonstrate good work habits.

- Students will develop an awareness of personal skills, abilities and interests.

Standard Benchmarks addressed in Multicultural Gender Fair/Global Education (June, 2000) were:

- Students will identify different viewpoints in either a fictional or non-fictional event.

Technology Across the Curriculum Standard Benchmarks (June, 2000) addressed may vary depending on the products students choose, but may include:

- Students will create documents using word processing and desktop publishing programs with graphics integrated.
- Students will use audio and video recording and playback equipment to communicate ideas.
- Students will use electronic databases, encyclopedias, catalogs, almanacs, and indexes to locate information.
- Students will use a variety of search strategies to locate specific information from electronic resources.
- Students will use the Internet to initiate and carry out an informational search with assistance.

- Students will demonstrate appropriate and safe handling and operation of classroom equipment.
- Students will follow copyright laws as they apply to copying, citing, and distributing print and electronic information.
- Students will respect network users by following established acceptable use policies, guidelines, and protocols.

In the area of Social Studies, the follow Standard Benchmarks (June, 2000) were addressed:

- Students will identifying and use various sources for learning about the past.
- Students will compare and contrast stories or accounts of past events, people, places and situations and identify how they assist in an understanding of the past.
- Students will work independently and cooperatively to accomplish a goal.

Individual students may address more District Standard Benchmarks as they research, develop products, and share information.

Along with Gibbs' requirements and the district standards, we considered ways to differentiate within our

units. We referred to VanTassel-Baska (1994) for information on planning units, "The following emphases reflect a general philosophy of language arts curriculum for such students that can guide the process of curriculum development:

- Address the intellectual needs of high-ability students through selecting rich and rigorous reading materials.
- Foster critical and creative thinking.
- Incorporate whole-language, literature-based materials that emphasize the critical connection between reading and writing.
- Enhance the growth of metacognitive awareness and control.
- Encourage active learning.
- Heighten students' awareness and appreciation of cultural diversity.
- Use collaborative learning techniques.
- Explore interdisciplinary applications by connecting literature to art, music, social studies, and other relevant areas of study.
- Foster independence.

- Encourage the exploration of issues of significance, using a variety of research techniques. (p.146)

We also studied Tomlinson's (1995) equalizer tool for planning differentiated lessons.

Designing differentiated instruction is similar to using the equalizer buttons on a stereo or CD player. You can slide the buttons across several different continuums to get the best combination of sounds for each musical piece. In a differentiated classroom, adjusting the 'buttons' appropriately for various students' needs equalizes their chances of being stimulated and challenged by the materials, activities, and products in your classroom. (p.41)

In order for students to participate in these alternate units, they will have to demonstrate mastery of the mainstream curriculum. The students are given a pretest at the beginning of each unit. If they score 90% or better, they work with the alternate curriculum. For students who are on the borderline, the teacher's discretion is used. Renzulli (1977) defined giftedness as having three components: above average ability, task commitment, and creativity. Even within a given population of gifted students, there is a range of ability, task

commitment, and creativity, as well as need. It was our hope to plan lessons that would better meet the needs of all students working with our units.

We divided up the units and discussed themes, concepts, and ideas. We analyzed the existing curriculum and considered where each genre might best fit. We also discussed how we might incorporate our district requirements without too much overlap. It was important that we communicate with each other so that we would have well-rounded, comprehensive, defensible curriculum.

III. THE PROJECT

Unit #1 Make a Wish

I started with "Make a Wish" the first unit in the fourth grade anthology. I read the teacher's manual and studied the unit overview. I decided to put a twist on the wishes theme. The theme of my alternate unit would be "Making Wishes Happen: People Bring on Their Own Good Fortunes". I would concentrate on three main concepts: a) people can overcome obstacles and accomplish great things; b) people take risks for the hope of a better future; c) through the study of immigrants we are encouraged to persevere through our struggles.

Next I looked for books and other information that would build upon the theme and reinforce the key concepts. I found several "Dear America" books based on immigration. I liked them because the language use was precise, complex, and varied. They inspire contemplative behavior and give the students a taste of the historical fiction genre. I decided to allow the students a choice of six books based on immigration. The students were also given the option of choosing another historical fiction based on immigration.

This would be the anchor activity. "Use an 'anchor activity' to free you up to focus your attention on your students" (Tomlinson, 1995, p.31). An anchor activity is simply a task students work on independently. Such activities allow the teacher to work with groups or individual students while other students are more self-directed.

I developed questions to foster higher level thinking based on Bloom's Taxonomy (Bloom, 1956). There are six main levels of the taxonomy that describe progressively higher levels of cognitive activity. The levels are knowledge, comprehension, application, analysis, synthesis, and evaluation. "Objectives and instructional focus for regular students might emphasize knowledge and comprehension. Gifted students, who should grasp information and relationships more rapidly, can invest more time at the higher levels" (Davis and Rimm, 1998, p.228).

I wanted to give the students the opportunity to research an aspect of immigration that interested them. I gave them some options, but left the door open for other topics and products. I did this to allow for individual differences and different intelligences. In his 1983 book, Frames of the Mind, Gardner presented his Theory of Multiple Intelligences which consists of eight

intelligences: linguistic, logical-mathematical, spatial, bodily-kinesthetic, musical, interpersonal, intrapersonal, and naturalist. "When individuals have opportunities to learn through their strengths, unexpected and positive cognitive, emotional, social, and even physical changes will appear" (Campbell, Campbell and Dickinson, 1996, p. xvii).

For the next part of the unit I used two poems that lent themselves to the theme and central concepts of the unit, "The New Colossus" by Emma Lazarus and "Immigrants" by Pat Mora both found in the book Literature and thought: From there to here: The immigrant experience (2000). The rich vocabulary and figurative language stimulate the reader to use interpretive and evaluative behaviors. A story on Thomas Alva Edison and quotes from famous Americans rounded out my content selections. They contributed to the theme and concepts. I wanted the students to demonstrate understanding through a self-selected product. Like Tannenbaum, I think gifted students should be producers of knowledge, not just consumers of knowledge. As part of his definition of giftedness is the premise that gifted children are those with the "potential for becoming critically acclaimed performers or exemplary producers of ideas in spheres of activity that enhance the

moral, physical, emotional, social, intellectual, or aesthetic life of humanity" (Tannenbaum, 1983, p.86).

Finally, I added two optional activities. First, students could visit an English-as-a-Second-Language classroom, preparing questions before the visit. Secondly, they could investigate the pros and cons of current immigration policy and organize a debate. One side could argue for current policy and the other team could argue for changes. Both activities deepen understanding of the theme and concepts. They also add flexibility in pacing with the mainstream curriculum.

Unit #5 Memories to Keep

Unit five, my next unit, "Memories to Keep," was more difficult because I wanted to incorporate the brain and how memory works in relation to learning, as well as, how memories help us learn about the past. I adapted the theme, making it "Memories to Keep: Keeping Memories Alive Can Help Us Today and Tomorrow".

Next, I came up with my central concepts: a) our brain is an amazing organ and if we take proper care, it can achieve great things; b) people can improve their memory by using helpful techniques; c) through metacognition we can improve our ability to learn; and d) memories teach us

about history. I wanted students to begin exploring these concepts by reading for information so I searched for magazine and newspaper articles on the topics of the brain, memory, and learning. Many of them had readability too advanced for fourth grade, even gifted students. Finally, I found some on the Internet. They are varied, challenging, and provide meaningful content for the learner. I decided to have the students keep a word bank, fill out a research organizer for each article, and present one of the articles to the rest of the class in a format of their choice. I intend to have them build vocabulary and background information while keeping in mind their individual differences and learning intelligences. Then I wanted to move from gathering information to applying it to their lives and their learning. I wanted them to become aware of and improve their own metacognition. The unit provides them with techniques to do this. The students are also given the chance to experiment with each. They are required to take notes so they can better participate in a follow-up discussion. After spending time trying the techniques, students conduct two experiments on friends and/or family. It gives them an opportunity to reinforce what they have learned, collect and graph data, and analyze the results.

Finally, I move to using memories to learn about history. An oral history project seems to be the perfect way to do that. Having an independent project allows students to "draw on their interests and strengths, and to confront-and grow from-appropriate challenges" Tomlinson (1995, p.64). Students choose whom they will interview. They develop questions and decide how to share information gathered.

Optional activities for this unit include additional research, reading articles, and inviting specialists into the classroom.

I am pleased with this unit. It is different from all of the others my partners and I have developed. I think it will be refreshing for students. They don't read articles often. I hope this unit will help them search out information on topics of interest to them. I also think that the sooner students learn about metacognition, the sooner they can use it to their advantage.

The following quotes from Cognitive Psychology and Instruction by Bruning, Schraw, and Ronning demonstrate this philosophy: "Several instructional studies suggest that metacognition can be improved by direct instruction and modeling of metacognitive activities", and "Metacognitive knowledge appears to be highly trainable

even in younger students (p.98)." With the support of these quotes in mind, I am hopeful that this unit will benefit the students in our district.

Alternate Activity

Grade 4 - Unit 1

UNIT 1: MAKING WISHES HAPPEN; PEOPLE BRING ON THEIR OWN GOOD FORTUNES

CENTRAL CONCEPTS:

- People can overcome obstacles and accomplish great things.
- People take risks for the hope of a better future.
- Through the study of immigrants we are encouraged to persevere through our struggles.

RATIONALE:

This unit of study differentiates content, process, and product. Content is differentiated from the regular curriculum and within this alternate unit. Process is also differentiated. Students are given choices for products. It is tied to the regular curriculum, is rigorous, has cross-disciplinary focus, and contains activities that foster higher level thinking skills. Reading, writing, technology, and research are all incorporated. Both cognitive and affective goals and varied assessments are included. The unit is flexible and promotes self-reliance on the students' part.

OBJECTIVES:

Cognitive:

- Students will read and discuss a book about an immigrant and ponder questions regarding immigration to the United States.
- Students will keep a word bank of new vocabulary words.
- Students will share their understanding of their book and immigration through a self-selected product.
- Students will analyze poems for structure and meaning.
- Students will read and reflect on a paper about Thomas Alva Edison.

- Students will utilize technology for research and the development of a product.
- Students will read and reflect on quotations that were written by famous Americans and relate to the theme of this unit.
- Students will prepare a persuasive presentation for their classmates, justifying the theme of this unit.
- Students will create a Venn Diagram.

Affective:

- Students will realize that hard work and perseverance pay off.
- Students will recognize the benefits of being born in the United States.
- Students will develop a greater respect for immigrants in their community.

PRE-ASSESSMENT:

See forward, unit overview, and sample pretest.

TIME REQUIREMENT AND PROCESS:

These lessons are designed so students can work independently or with minimal assistance. It is, however, desirable and more beneficial if students work with the classroom teacher, (TAG) facilitator, or another adult. The lessons are related to the core curriculum and each other and are designed to take approximately six weeks, the estimated time for Macmillan/McGraw-Hill Units. Rubrics and end-of-unit evaluations have been included to aid teachers with the assessment process. Lessons may be modified or omitted if necessary.



Alternate Activity

Grade 4 - Unit 1

THEME: MAKING WISHES HAPPEN; PEOPLE BRING ON THEIR OWN GOOD FORTUNES

IN THIS UNIT YOU WILL:

- Read a book and ponder questions about immigrating to the United States.
- Participate in a discussion about immigration and your book.
- Research an aspect of immigration.
- Share your understanding of the book and immigration through a self-chosen product.
- Analyze poems about immigration.
- Read about the struggles and successes of inventor Thomas Alva Edison.
- Read and reflect on quotations that are written by famous Americans and relate to the theme of this unit.
- Prepare a persuasive presentation for your classmates, justifying the theme of this unit "Making wishes happen; People bring on their own good fortunes."

BEFORE BEGINNING THIS UNIT, YOU MUST:

1. Complete the "Contract" (p. 22) and have both your teacher and your parent(s) sign it.
2. Make certain you have copies of the work log (p. 23) and complete it every day. Your teacher will tell you when and how often he/she will check your log.

3. Have available a pocket folder. Keep all unit materials and assignments together in this folder so that your teacher can check your work periodically.
4. Read through the entire unit. Meet with your teacher and/or the person who will lead the book discussion to plan a date and time.
5. Find out how much time your teacher has allotted for you to work on this unit. Plan how you will budget your time to complete the activities in this unit.

CONTRACT FOR READING ALTERNATE ACTIVITIES

I agree to follow the guidelines below:

1. I will stay on task at all times.
2. I will not interrupt the teacher while she/he is working with other students.
3. If I need to leave the classroom to work in another location, I will move quietly to that location and follow the directions of the adult in charge.
4. If I am working with a group, we will use "6 inch voices" or voices that cannot be heard 6 inches away.
5. If I need help when the teacher or adult in charge is busy, I will ask other students who are also working on alternate activities. If they cannot help, I will move on to another part of the activity or read a book until help is available.
6. I will never boast about this opportunity to work on alternate activities.
7. I will keep a careful log of all the work that I do and I will share the work and the log with my teacher as directed.
8. I will keep my work and log together in a unit folder and make it available to my teacher upon request.
9. I will not distract other students or call attention to myself by inappropriate behavior.
10. I understand that independent, advanced work is a privilege. I know that if I violate these rules, I will lose the privilege of working on an alternate unit and will have to rejoin the class for teacher-directed instruction.

Student Signature_____Date_____

Teacher Signature_____Date_____

I have looked over the alternate unit made available for my child. I will encourage my child to develop independent learning skills by monitoring the unit work.

Parent Signature_____Date_____

Adapted from: Winnebrenner, S. (1992). Teaching gifted kids in the regular classroom. MN: Free Spirit Publishing Inc.

Work Log - Reading Enrichment Units

(Keep this log in the folder with your work from the unit. Share your work with your teacher, as directed, and have him/her sign the teacher check)

NAME: _____ UNIT: _____			
DATE	TOTAL TIME	WORK COMPLETED TODAY	TEACHER CHECK

Adapted from: Winnebrenner, S. (1992). Teaching gifted kids in the regular classroom. MN: Free Spirit Publishing Inc.

UNIT 1: MAKING WISHES HAPPEN; PEOPLE BRING ON THEIR OWN GOOD FORTUNES

TO COMPLETE THIS UNIT, TAKE THESE STEPS:

I. HISTORICAL FICTION ACTIVITY: READING ABOUT IMMIGRATION

A. Choose one of the following books.

- Dear America: The Journal of Otto Peltonen A Finnish Immigrant by William Durbin
- Dear America: A Journey to the New World The Diary of Remember Patience Whipple by Kathryn Lansky
- Dear America: Voyage on the Great Titanic The Diary of Margaret Ann Brady by Ellen Emerson White
- Dear America: A Coal Miner's Bride: The Diary of Anetka Kaminska Lattimer, Pennsylvania, 1896 by Susan Campbell Bartoletti
- Dear America: Dreams in the Golden Country: The Diary of Zipporah Feldman, a Jewish Immigrant Girl, New York City, 1903 by Kathryn Lansky
- Dear America: So Far From Home: The Diary of Mary Driscoll, an Irish Mill Girl, Lowell, Massachusetts, 1847 by Barry Deneberg
- You may choose another historical fiction based on immigration if you'd like. Please get it approved by your teacher before you begin.

B. Read the following questions and keep them in mind as you read your book. Take notes as you read. We will use these questions for discussion.

1. Where did your character come from and why did he/she leave their country?
2. What struggles did he or she encounter on the trip and after arriving in the United States?
3. What qualities did he/she possess that contributed to his/her survival and/or success?
4. Compare and contrast your life to that of the main character.

5. What were events taking place in the United States when your character arrived? Find interesting information about that time in history.
 6. If you could trade places with that person, would you? Why or why not?
 7. What can you tell me about the author? Does he/she have any biases? Provide examples.
 8. Please note any interesting information you would like to share with the group.
- C. Participate in a discussion on immigration and the books read. Use the questions above and the discussion rubric (p.26) to help you prepare.
- D. Choose a product* to demonstrate your understanding of some aspect of immigration. Please discuss your plans with your teacher and get approval before beginning. You may choose from, but are not limited to, the following ideas:
- Give a PowerPoint presentation on the United States immigration policy or that of another country.
 - Make a timeline showing waves and peaks in immigration or changes in U.S. immigration policy.
 - Create a map of your character's journey noting significant points along the way.
 - Use publishing software to make a newsletter showcasing successful immigrants.
 - Draw two political cartoons, one that reflects attitudes of Americans toward immigration today and one that reflects their attitudes about immigration during another time in U.S. history.

*Note that this product will require investigation on your part. Look over the Project evaluation sheet (p.27) as you prepare your project. You may find the following websites helpful:

<http://www.ellisland.org/ellis.html>

<http://www.familytreemaker.com/00000389.html>

<http://capital.net/~alta/index.html>

<http://home.sol.no/~kmeyer/statue.htm>



Discussion Assessment Rubric

0	1	2	3
Student did not speak at all during discussion.	Student made irrelevant comments during discussion, and/or participated, but was easily distracted. The quality of participation was poor. The student interrupted while others were speaking.	Student made relevant comments during discussion, actively participated, and the quality of participation was good. The student used appropriate turn-taking skills.	Student made relevant comments and took on a leadership role to encourage discussion. The quality of participation was high. Appropriate turn-taking skills were used.

Ideas adapted from:

Winnebrenner, S. (1992). Teaching Gifted Kids in the Regular Classroom.
MN: Free Spirit Publishing Inc.

Project Evaluation

Standards	Criteria			
Areas of Assessment †	High	Very Good	Adequate	Needs Work
Research and Preparation <ul style="list-style-type: none"> Resources Evidence Deadlines Use of time 	<input type="checkbox"/> Used a variety of reliable resources <input type="checkbox"/> Used appropriate evidence & examples <input type="checkbox"/> Met deadlines <input type="checkbox"/> Well prepared & extended research	<input type="checkbox"/> Used several resources <input type="checkbox"/> Made effort to use evidence & examples <input type="checkbox"/> Met deadlines <input type="checkbox"/> Well prepared	<input type="checkbox"/> Used minimum number of resources <input type="checkbox"/> Used some evidence & examples <input type="checkbox"/> Needed encouragement to meet deadline. <input type="checkbox"/> Minimal preparation	<input type="checkbox"/> Used few resources <input type="checkbox"/> Used little evidence and few examples <input type="checkbox"/> Didn't meet deadlines <input type="checkbox"/> Spent little time on preparation
Content <ul style="list-style-type: none"> Purpose Organization Audience appeal Information & accuracy Sources 	<input type="checkbox"/> Creatively fulfilled purpose <input type="checkbox"/> Used logical, order <input type="checkbox"/> Created & maintained high audience interest <input type="checkbox"/> Covered topic well <input type="checkbox"/> Had few errors. Outstanding information <input type="checkbox"/> Credited sources	<input type="checkbox"/> Completely fulfilled purpose <input type="checkbox"/> Easy-to-follow order <input type="checkbox"/> Kept audience's attention <input type="checkbox"/> Covered topic with appropriate information <input type="checkbox"/> Had few errors <input type="checkbox"/> Credited sources	<input type="checkbox"/> Fulfilled purpose <input type="checkbox"/> Order was confusing <input type="checkbox"/> Lost audience's attention at times <input type="checkbox"/> Covered the basics <input type="checkbox"/> Had several errors <input type="checkbox"/> Credited sources	<input type="checkbox"/> Did not fulfill purpose <input type="checkbox"/> Used hard-to-follow order <input type="checkbox"/> Created little audience interest <input type="checkbox"/> Omitted important information <input type="checkbox"/> Had many errors <input type="checkbox"/> Provided incomplete credits
Other <ul style="list-style-type: none"> Visual Effort Details 	<input type="checkbox"/> Interesting, easy to see, communicated ideas clearly <input type="checkbox"/> Showed outstanding effort <input type="checkbox"/> Supported ideas with many rich details	<input type="checkbox"/> Interesting, easy to see, communicated main ideas <input type="checkbox"/> Showed effort <input type="checkbox"/> Supported the main ideas	<input type="checkbox"/> Somewhat interesting, didn't communicate ideas well <input type="checkbox"/> Showed fair effort <input type="checkbox"/> Weakly supported main ideas	<input type="checkbox"/> Messy, disorganized, hard to understand, <input type="checkbox"/> Showed little effort <input type="checkbox"/> Didn't support main ideas

Adapted from: Winnebrenner, S. (1992). Teaching gifted kids in the regular classroom. MN: Free Spirit Publishing Inc.

UNIT 1: MAKING WISHES HAPPEN; PEOPLE BRING ON THEIR OWN GOOD FORTUNES

II. ANALYZING POETRY

- A. Read the poem "The New Colossus" by Emma Lazarus (p.29) and the poem "Immigrants" by Pat Mora (p.30).
- B. Look up any words you don't know and write them in your own words.
- C. Answer the following questions for each poem. Remember to use full sentences and use part of the question in your answer.

The New Colossus

1. Why do you think the Statue of Liberty is compared to the Greek Colossus?
2. Why is The Statue of Liberty called, "Mother of Exiles?"
3. The "golden door" is a metaphor for the opportunity to seek a better life in America. Do you think the golden door is "open" to all immigrants who arrive in the United States? Explain your answer.

Immigrants

1. What are some things the poet says that immigrants do to "Americanize" their children?
2. Why do parents speak to the children in their native language only when the children are sleeping?
3. Why do the parents want to Americanize their children?
4. What is the parents' biggest fear?
5. Find and explain at least one symbol used in this poem.

- D. Make a Venn Diagram comparing and contrasting these two poems.

THE NEW COLOSSUS

BY
EMMA LAZARUS

Not like the brazen giant of Greek fame,
With conquering limbs astride from land to land:
Here at our sea-washed, sunset gates shall stand
A mighty woman with a torch, whose flame
Is the imprisoned lightning, and her name
Mother of Exiles. From her beacon-hand
Glow world-wide welcome; her mild eyes command
The air-bridged harbor that twin cities frame.
"Keep ancient lands, your storied pomp!" cries she
With silent lips. "Give me your tired, your poor,
Your huddled masses yearning to breathe free,
The wretched refuse of your teeming shore.
Send these, the homeless, tempest-tost to me,
I lift my lamp beside the golden door!"



Source: Lazarus, E. (2000). Literature and thought: From there to here: The immigrant experience. Logan, Iowa: Perfection Learning Corporation.

IMMIGRANTS

BY
PAT MORRA

wrap their babies in the American flag,
feed them mashed hot dogs and apple pie,
name them Bill and Daisy,
buy them blonde dolls that blink blue
eyes or a football and tiny cleats
before the baby can even walk,
speak to them in thick English,
hallo, babee, hallo.
whisper in Spanish or Polish
when the babies sleep, whisper
in a dark parent bed, that dark
parent fear, "Will they like our boy, our girl, our
fine american boy, our fine american girl?"



Source: Mora, P. (2000). Literature and thought: From there to here: The immigrant experience. Logan, Iowa: Perfection Learning Corporation.

UNIT 1: MAKING WISHES HAPPEN; PEOPLE BRING ON THEIR OWN GOOD FORTUNES

III. REFLECTION OF THE THEME

- A. Read the three-page paper about Thomas Alva Edison (p.32-36). Consider the struggles he endured to become a successful inventor.
 - B. Read the quotations (p.37-39) by famous Americans. Reflect on their meanings.
 - C. Prepare a persuasive presentation for your classmates, justifying the theme of this unit: Making wishes happen: People bring on their own good fortunes. You are not required to obtain any new information for this presentation. Instead, utilize what you have already learned. You may choose from, but are not limited to the following ideas:
 - A poster
 - A speech
 - A skit
 - A song
 - An Inspiration Software presentation
 - A picture book
 - A commercial
- ❖ You may work individually, in pairs, or in small groups.
 - ❖ Please get you idea approved by your teacher before you begin.
 - ❖ Fill out the unit evaluation form (p. 41) when you complete the unit.

Thomas Alva Edison

"Build a better mousetrap & they will beat a path to your door"

Close your eyes for a minute, clear your mind, and take a look around the room--almost everything you see is an invention, a product of someone's imagination.

What is it about an individual's imagination to cause him or her to fathom an idea or object, and then having the ambition, discipline and perseverance to see that idea through to a working model? Heredity? Upbringing? Environment?

The Mighty Inventor

To help view these questions we shall look at the life of the greatest inventor of all-time: Thomas Alva Edison. According to some sources Edison designed, built and delivered the electrical age. Many scholars and businessmen suggest (Henry Ford foremost among them) that the period from the invention of the telegraph until the invention of the transistor (roughly the span of Edison's life) be known as "The Age of Edison"

What was it about Edison? This was a man that recorded an astounding 1,093 patents. Was it the achievements alone that made him a living legend, or also the personality of the man? Edison, the epitome of the self-made man, stressed common sense, was a natural storyteller, businessman, and a showman. When discussing the label of "genius" bestowed upon him, Edison replied *"Genius is 1% inspiration and 99% perspiration"*. And indeed that was how he worked, at times working for days with nothing more than short naps. He would ignore conventional theories that might have saved him a great deal of time. His outlook and personality can best summed up by his experience working with a storage battery (later successful). After about 10,000 experiments failed, Edison said *"...I have not failed. I've just found 10,000 ways that won't work"* (don't we all feel that way). So back to the original questions concerning heredity, upbringing and environment...

Early Life

This was a man who had only 3 months of formal schooling. Interestingly enough this short time was the result of his genius, his family, and most important to this discussion--his curiosity. His never-ending questioning of why things work or what causes things to happen irritated his teacher in an era when boys who asked many questions would be whipped. One day Thomas (known as Alva to his family) heard

the schoolmaster tell the school district inspector that the boy was "addled". When Edison ran home & told his mother, a former schoolteacher, she took him out of school. Later there was another brief attempt at formal education but his poor hearing from an early bout with scarlet fever interfered with his ability to pay attention, which irritated his teachers (Note: The poor hearing refutes the myth of Edison's damaged hearing due to a conductor's pulling him by the ears onto a train a few years later). His mother felt that learning could be fun (a radical idea at the time), and made it a "game of teaching". But he learned at such a speed that his mother could no longer teach him.

One of the greatest influences of Edison's early life was a chemistry book (by Richard Parker) given Tom when he was 9. He became obsessed with the book, and tested every experiment in the book to prove the author wrong.

Teenage Years

As we see, the factors of heredity, upbringing, and environment were the major causes of setting Edison on his path. The lack of public school education may also have been helpful for some of Edison's skills (as well as some of his curiosity, independence, and stubbornness), for it did not stifle his imagination and creativity as the discipline of schooling can do. But in order to seek the answers to his infinite number of questions, he had to go out on his own at the age of 12; not only to learn all he could, but also to help support his family.

From the ages of 12-15 Edison held a variety of odd jobs, including from stint as a "news butcher" on a train to printing his own paper. One day he saved a boy's life and in gratitude the father taught Edison how to become a telegraph operator. This was his occupation in Boston in 1868, when he perfected the first invention he tried to sell, an electric vote-counting machine. Edison spoke to a Congressional committee about it, but was turned down because according to a congressman, the machine worked so fast, it left no time from the start of the roll call to trade votes. From that point on, Edison vowed "...never to invent anything that nobody wanted".

New York

Penniless, Edison drifted to New York the following year, and persuaded an employee of a stock ticker company to let him sleep in the office, where in his solitude Edison learned the mechanics of the stock ticker machine. One day, one of the machines broke down. Despite many efforts from

others, only Edison was able to fix it, and received a well-paying job in return. Soon Edison went out on his own, and sold an invention of his for an improved stock ticker. This gave him enough money to open a workshop in Newark, New Jersey, and become a full-time inventor. The laboratory was a forerunner of today's modern research facility and itself was a great invention. Among his many patents over the next few years was the improvement of the typewriter, making it possible for the first time to type faster than could be written by hand.

New Jersey & The Phonograph

In 1876, Edison moved to Menlo Park, New Jersey, and improved the telephone by adding a carbon transmitter, and for the first time, people no longer had to shout into the phone.

The anniversary we are celebrating with this column was one of the most original inventions ever devised (and Edison's personal favorite); that being the cylinder phonograph.

Edison was trying to find a way to record telegraph messages automatically by drawing a paraffin-coated paper tape at high speed through a receiving instrument where a stylus embossed it with dots and dashes of an incoming message. On one such attempt, the tape ran through making a sound similar to human speech. Edison wondered what would happen if he connected a telephone diaphragm to the embossing needle in place of the telegraph arm. He made (actually, a foreman made from Edison's sketch) a cylinder covered in tinfoil, with a crank that turned a stylus around the cylinder. The user turned the crank while speaking, and then moved the stylus over the cylinder to play back the recording.

On December 6, 1877, the first successful model of the machine was designed. Edison recited "Mary Had A Little Lamb" around a small group of witnesses. All were astonished when Edison's voice was almost perfectly reproduced.

It was this invention that earned Edison the nickname "The Wizard of Menlo Park". But the best was yet to come...

Edison Sees The Light

Edison did not invent the electric light or incandescent lamp, but what value could it have had if the electric light could not be distributed economically? Edison wanted a substitute for gas as a means of lighting the home. He felt that the key was a filament, a "carbonized thread", that did not contain air (as opposed to the wires and rods used by other inventors). On October 19, 1879 he made an

incandescent lamp that burned for 40 hours. The next year he made lamps suitable for commercial use with bamboo filaments. In September 1882, Edison opened the 1st commercial central station on Pearl St., New York City, with 400 lamps wired to the circuits of the feeder & main system Edison had devised (along with the dynamos). This was the beginning of the electric lighting industry in America (Yeah, thanks Con. Ed.).

In 1887 Edison moved to a larger laboratory at West Orange, New Jersey, spending most of his time perfecting his inventions of the previous decade. He began developing a machine called a kinetoscope, the idea of which was running pictures through a wheel with sprockets that could control the speed at which the pictures moved. It was once George Eastman developed celluloid-based photographic film that Edison found a film flexible enough to thread through the wheel. Edison soonafter created the first movie studio (in West Orange), and in 1914 connected the phonograph and camera to make talking pictures. The machine was flawed and Edison put it aside, leaving others to later correct the faults.

Later Years

Some of his later inventions and improvements included the storage battery, a cement mixer, the Dictaphone, and his last invention; a method of making synthetic rubber from goldenrod plants.

For the Golden Jubilee of the electric light (Oct. 1929), Henry Ford (an Edison fanatic) moved Edison's original Menlo Park laboratory and its surroundings to Greenfield Village, a huge museum in Dearborn, Michigan.

In his later years, Edison often said he was working on a device "so sensitive that if there is life after death it will pick up the evidence of it". But no such model has ever been found.

Legend has it that Ford commanded his son to capture The Great Inventor's last breath (on October 18, 1931) in a bottle and preserve it. The story also goes that Henry Ford immediately obtained the bottle for the Greenfield Village museum.

Edison undoubtedly left a tremendous legacy to the world. Many of his basic designs are still in use today. His legacy is not merely the machines he invented (although that is enough for a dozen men), but also in his influence on the business of invention, making it an occupation rather than a hobby. The world of invention in this country has essentially three periods: before Edison, the Age of Edison, and after Edison.

<http://www.americanhistory.about.com/homework/americanhistory/library/weekly/aa120197.htm>

Quotes

Alexander Graham Bell

American Inventor/Scientist

When one door closes, another opens. But we often look so long and so regretfully upon the closed door that we do not see the one which has opened for us.

John Wooden

College Basketball Coach

Things turn out best for those who make the best of the way things turn out.

Henry Ford

Founder of Ford Motor Company/Inventor

Failure is only the opportunity to begin again, more intelligently.

John Ralston

NFL Coach

Success comes in cans, not in cannots.

Thomas Jefferson

Third President

Nothing can stop the man with the right mental attitude from achieving his goal; nothing on earth can help the man with the wrong mental attitude.

Harry Truman

Thirty-third President

A pessimist is one who makes difficulties of his opportunities; an optimist is one who makes opportunities of his difficulties.

Syrus

Latin Mimi Writer

Many receive advice, only the wise profit by it.

Helen Keller

The marvelous richness on human experience would lose something of rewarding joy if there were no limitations to overcome. The hilltop hour would not be half so wonderful if there were no dark valleys to traverse.

Thomas Edison

American Inventor

Genius is one percent inspiration and 99 percent perspiration. I never did anything worth doing by accident, nor did any of my inventions come by accident; they came by work.

Source: Ferguson, H. (1990). The edge. Cleveland, Ohio: Getting the Edge Company.

ABRAHAM LINCOLN DIDN'T QUIT

Abraham Lincoln could have quit many times-but he didn't and because he didn't quit, he became one of the greatest Presidents in the history of our country.

"The sense of obligation to continue is present in all of us. A duty to strive is the duty of us all. I felt a call to that duty."

Probably the greatest example of persistence is Abraham Lincoln. If you want to learn about somebody who didn't quit, look no further.

Born into poverty, Lincoln was faced with defeat throughout his life. He lost eight elections, twice failed in business and suffered a nervous breakdown.

But Lincoln was a champion and he never gave up. Here is a sketch of Lincoln's road to the White House:

1831-Failed in business.
 1832-Defeated for Legislature.
 1833-Second failure in business.
 1836-Suffered nervous breakdown.
 1838-Defeated for Speaker.
 1840-Defeated for Elector.
 1843-Defeated for Congress.
 1848-Defeated for Congress.
 1855-Defeated for Senate.
 1856-Defeated for Vice President
 1858-Defeated for Senate.
 1860-ELECTED PRESIDENT

"The path was worn and slippery. My foot slipped from under me, knocking the other out of the way," Lincoln said after losing a Senate race. "But I recovered and said to myself, 'It's a slip and not a fall.'"

Source: Ferguson, H. (1990). The edge. Cleveland, Ohio: Getting the Edge Company.

**WHETHER YOU THINK YOU
CAN OR YOU CAN'T
YOU'RE PROBABLY RIGHT**

If you think you are beaten, you are;
If you think that you dare not, you don't;
If you like to win, but think you can't,
It's almost certain you won't.

If you think you'll lose, you've lost;
For out in the world you'll find
Success begins with a fellow's will.
It's all in the state of mind.

If you think you are outclassed, you are;
You've got to think high to rise;
You've got to be sure of yourself before
You can ever win a prize.

Life's battles don't always go
To the stronger or faster man;
But sooner or later the man who wins
Is the man who thinks he can.

A plaque has hung in my office for many years carrying the above selection of free verse. I am not aware of its origin, but consider it a pertinent guideline for one to pursue in life and toward specific goals as well. It has always provided an energizing thrust to my career in golf.

**Professional Golfer
Arnold Palmer**

Source: Ferguson, H. (1990). The edge. Cleveland, Ohio:
Getting the Edge Company.

UNIT 1: MAKING WISHES HAPPEN; PEOPLE BRING ON THEIR OWN GOOD FORTUNES

IV. OPTIONAL ACTIVITIES

- A. Visit an English-as-a-Second-Language classroom. Prepare questions before the visit. Take notes and have a follow-up discussion.
- B. Investigate the pros and cons of current immigration policy. Organize a debate. One side could argue for current policy and the other team could argue for changes.



Reading Alternate Activities Evaluation

Unit ____

Directions: Teacher and student should complete this evaluation separately.
Circle all that apply to the completed project with 1 being the low and 5 being the high.

Quality Project	Teacher	Student
1. Completed all components	1 2 3 4 5	1 2 3 4 5
2. Focused on task during independent time	1 2 3 4 5	1 2 3 4 5
3. Fulfilled policies of contract for alternate working conditions	1 2 3 4 5	1 2 3 4 5
4. Produced quality work	1 2 3 4 5	1 2 3 4 5
5. Probed for detail in responses	1 2 3 4 5	1 2 3 4 5
6. Presented to class or other audience	1 2 3 4 5	1 2 3 4 5
7. Demonstrated depth of thinking	1 2 3 4 5	1 2 3 4 5
8. demonstrated logical thinking skills	1 2 3 4 5	1 2 3 4 5
9. Demonstrated creative thinking skills	1 2 3 4 5	1 2 3 4 5

What did you get out of this project opportunity? Any specific benefits?
Explain your answer.

What can you do now that you couldn't do before?

What do you know that you didn't know before?

Student Signature Date

Teacher Signature Date

Adapted from: Winnebrenner, S. (1992). Teaching gifted kids in the regular classroom. MN: Free Spirit Publishing Inc.

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Alternate Activity

Grade 4 - Unit 5

THEME: MEMORIES TO KEEP; KEEPING MEMORIES ALIVE CAN HELP US TODAY AND TOMORROW

CENTRAL CONCEPTS:

- Our brain is an amazing organ and if we give it proper care, it can achieve great things.
- People can improve their memory by using helpful techniques.
- Through metacognition we can improve our ability to learn.
- Memories teach us about history.

RATIONALE:

This unit of study differentiates content, process, and product. Content is differentiated from the regular curriculum and within this alternate unit. Process is also differentiated. Students are given choices for products. It is tied to the regular curriculum, is rigorous, has cross-disciplinary focus, and contains activities that foster higher level thinking skills. Reading, writing, technology, and research are all incorporated. Both cognitive and affective goals and varied assessments are included. The unit is flexible and promotes self-reliance on the students' part.

OBJECTIVES:

Cognitive:

- Students will read several articles about the brain and memory.
- Students will keep a word bank of unfamiliar terms.
- Students will demonstrate understanding by completing a research organizer.
- Students will present information gleaned from an article of their choice to the class.
- Students will read about, practice, and discuss techniques used to improve memory.
- Students will prepare and create an oral history.

Affective:

- Students will realize the potential of their brain and that they have control of their learning (metacognitive awareness).
- Students will respect and appreciate the memories of others and the role memories play in linking the past to the present.

PRE-ASSESSMENT:

See forward, unit overview, and sample pretest.

TIME REQUIREMENT AND PROCESS:

These lessons are designed so that students can work independently or with minimal assistance. It is, however, desirable and more beneficial if students work with the classroom teacher, (TAG) facilitator, or another adult. The lessons are related to the core curriculum and each other and are designed to take approximately six weeks, the estimated time for Macmillan/McGraw-Hill Units. Rubrics and end-of-unit evaluations have been included to aid teachers with the assessment process. Lessons may be modified or omitted if necessary.



Alternate Activities

Grade 4 - Unit 5

THEME: MEMORIES TO KEEP; KEEPING MEMORIES ALIVE CAN HELP US TODAY AND TOMORROW

IN THIS UNIT YOU WILL:

- Read several articles about the brain and memory.
- Keep a word bank.
- Demonstrate understanding by completing a research organizer.
- Present information from one of the articles to your classmates.
- Read about, practice, and discuss techniques used to improve memory.
- Prepare for an interview with an elderly person in your family or community.
- Create an oral history.

BEFORE BEGINNING THIS UNIT, YOU MUST:

1. Complete the "Contract" (p.47) and have both your teacher and your parent(s) sign it.
2. Make certain you have copies of the work log (p.48) and complete it every day. Your teacher will tell when and how often he/she will check your log.
3. Have available a pocket folder. Keep all unit materials and assignments together in this folder so that your teacher can check your work periodically.
4. Read through the entire unit. Meet with your teacher and/or the person who will lead the "remembering techniques" discussion to plan a date and time.
5. Find out how much time your teacher has allotted for you to work on this unit. Plan how you will budget your time to complete the activities in this unit.

CONTRACT FOR READING ALTERNATE ACTIVITIES

I agree to follow the guidelines below:

1. I will stay on task at all times.
2. I will not interrupt the teacher while she/he is working with other students.
3. If I need to leave the classroom to work in another location, I will move quietly to that location and follow the directions of the adult in charge.
4. If I am working with a group, we will use "6 inch voices" or voices that cannot be heard 6 inches away.
5. If I need help when the teacher or adult in charge is busy, I will ask other students who are also working on alternate activities. If they cannot help, I will move on to another part of the activity or read a book until help is available.
6. I will never boast about this opportunity to work on alternate activities.
7. I will keep a careful log of all the work that I do and I will share the work and the log with my teacher as directed.
8. I will keep my work and log together in a unit folder and make it available to my teacher upon request.
9. I will not distract other students or call attention to myself by inappropriate behavior.
10. I understand that independent, advanced work is a privilege. I know that if I violate these rules, I will lose the privilege of working on an alternate unit and will have to rejoin the class for teacher-directed instruction.

Student Signature_____Date_____

Teacher Signature_____Date_____

I have looked over the alternate unit made available for my child. I will encourage my child to develop independent learning skills by monitoring the unit work.

Parent Signature_____Date_____

Adapted from: Winnebrenner, S. (1992). Teaching gifted kids in the regular classroom. MN: Free Spirit Publishing Inc.

Work Log - Reading Enrichment Units

(Keep this log in the folder with your work from the unit. Share your work with your teacher, as directed, and have him/her sign the teacher check)

NAME: _____ UNIT: _____			
DATE	TOTAL TIME	WORK COMPLETED TODAY	TEACHER CHECK

Adapted from: Winnebrenner, S. (1992). Teaching gifted kids in the regular classroom. MN: Free Spirit Publishing Inc.

THEME: MEMORIES TO KEEP; KEEPING MEMORIES ALIVE CAN HELP US TODAY AND TOMORROW

TO COMPLETE THIS UNIT, TAKE THESE STEPS:

I. READING FOR INFORMATION

A. Read the article, "Understanding how the brain works" (p.50-54) in this packet.

1. Look up any words you don't know. Keep a word bank.
2. Fill out a "research organizer" (p.67) after reading the article.

B. Read the 4 additional articles:

- *Bodies also need brain fitness* (p.55-56)
- *Just sleep on it* (p.57-58)
- *Mickey's memory maximized by man* (p.59-62)
- *Feature: memory, for true or false* (p.63-65)

C. Choose one of the articles above for a class presentation. You may share information through an oral presentation, a PowerPoint presentation, or an informational poster. You may also choose other forms of presentation. Make sure to get approval from your teacher before you begin. Look over the Project Evaluation sheet (p.66) as you work on your project.



Understanding how the brain works

Understanding how the brain works

Byline: Anonymous

Volume: 24

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Page: 6

Type: Periodical

Language: English

Riddle: What's the size of a grapefruit, weighs 3 pounds, and contains 10 to 50 Billion cells, each of which sends 50,000 messages per minute?

Answer: Read on...

If you think the answer is a computer, you're close. Actually, it's the computer you carry around with you every day: your brain. Experts see many similarities between the "command center" in your head and the digital box you may have in your home. But nothing can beat the brain for its blockbuster powers. It may be only the size of a grapefruit and look like a wrinkled blob of pinkish-gray jelly. But the brain has amazing abilities. If you give it proper care, it can often achieve great things.

What's on your mind?

The brain is constantly remaking itself. For instance, when the brain analyzes new information, it compares it with what has been learned. The process forms new connections or new pathways in the brain.

Memory and Learning. There are about 500 trillion possible connections among the neurons of the brain! Two processes are responsible for sing these connections: memory and learning. For example, when you learned the multiplication tables, you created certain connections in your nervous system. The more you practiced multiplying, the faster and smoother those connections became. The hippocampus (part of the brain stem) also helps you learn or remember. It changes shortterm memories-something that happened two minutes ago-into long-term memories that are kept for

years. That's why you still remember the day you got your first bicycle.

Emotions. The brain also files away learned emotions, such as anger and pleasure. Parts of the temporal and frontal lobes (see page 8) help us recognize danger and experience fear. When this happens, the brain sends out a "fight or flight" message to the body, and stress hormones start preparing you for action.

Pain. The brain takes charge of pain, too, but not in just one area.

That's because pain is a complicated sensation. It depends on a combination of memories, attitudes, and emotions. And these important files are located in different parts of the brain.

Scientists don't completely understand how the brain handles pain signals. They do know that the "ouch" effect varies from person to person. In other words, your reaction to pain may differ from that of your best friend. This is true even though your bodies release the same pain-relieving chemicals called endorphins (en-DOR-fins). This may partially explain why some athletes continue to perform even though they may sprain an ankle or break a bone.

Photos and Faces

Even after you're fully grown, your brain will continue remaking itself. Scientists know the brain is a work-in-progress. They know this thanks to hightech imaging techniques, such as magnetic resonance imagery (MRI) and positron emission tomography (PET). The MRI snaps detailed pictures of the brain. The PET scan reflects brain activity.

Recently, experts at the National Institute of Mental Health discovered that the age of 11 to 12 is a good time to learn loads of new skills, in areas such as language, math, and music.

Being able to handle math doesn't mean the maturing brain can handle everything. The brain has to "prune" or throw out certain useless connections. So it's not always able to interpret situations correctly and make "good calls." And the pruning process is not complete until early adulthood.

That means teenagers and younger kids may have some problems making decisions and coping with certain emotions such as anger.

Even reading facial expressions can be hard for many teens. A study of Massachusetts teens showed this. The teens could not tell if someone's face showed anger or fear. And recognizing the difference is crucial information when you're trying to react properly to someone.

It takes time and lots of work for young brains to mature. Some of that work is accomplished during sleep. The brain eliminates certain information stored in its short-term memory. Without enough sleep, the brain can't do this job. That's why younger kids and teens should not shortchange themselves on sleep.

Problems and Progress

As with every other part of the body, the brain can develop problems. These include tumors, strokes, mental retardation, headaches, and Alzheimer's disease.

Fortunately, science is finding ways to help more people prevent or recover from brain diseases. Experts now know people can help to create and recreate the shape of their brain. A recent study showed that kids with reading problems can often retrain their brains through special word games. And people who suffer strokes can often relearn to walk. Other parts of their brain can take over the functions the damaged parts used to perform. Different physical and surgical therapies help to make this possible.

Take "Brandi," a young girl with severe epilepsy (brain seizures).

Doctors removed a large part of Brandi's brain to reduce the number of seizures. And they did this without Brandi losing important abilities. Her brain created other nerve paths as she relearned how to eat, speak, and move like other kids. (See "Understanding Epilepsy" on pages 30 to 31.)

Brain Boosters

To make the best use of your brain cells, here are some tips on taking care of your command center:

Eat a healthy, well-balanced diet based on the Food Guide Pyramid. A recent study of English girls found that dieting lowered their IQs. The teens did not get enough iron-rich foods, such as nuts, lean meat, and leafy green vegetables.

Exercise regularly. You need to refresh and reenergize your brain with enough oxygen. Swim, bike, play team sports, or just go for a walk in your neighborhood.

Sleep 8 to 10 hours every night. Your brain needs this down time to carry out its tasks.

Do not use drugs or alcohol. New studies say that kids and teens who abuse alcohol or use other drugs may damage their brains. This damage can lead to memory loss when they're older.

Drink fewer caffeine -- containing beverages such as colas. They can cause you to feel anxious and irritable. They also are addictive.

Listen to music you enjoy. It relaxes the nerves. Now experts say it also may increase your math abilities. Researchers recently found that second-graders who received piano lessons did better on a math test than kids who didn't get music lessons.

Keep learning new things. Reading a lot today can improve your memory as you grow older. Find interesting hobbies, join school and community clubs, and reach out to people and places.

Work at staying emotionally healthy. Depression, anger, and anxiety can harm your brain. So can the stress hormones your body releases.

Protect yourself from head injuries. Wear a helmet that fits properly during sports activities such as roller blading and bicycling. (The helmet should be approved by a national agency such as the American National Standards Institute.) Also, wear your seatbelt in the car. Car crashes account for 44 percent of all brain injuries, says the Brain Injury Association. Dive only in the deep ends of pools. And stay away from guns.

Make time for relaxation. Close your eyes and do nothing a few minutes each day.

Avoid pesticides and other harsh chemicals. Wash fruits and veggies well before eating them, or buy organic foods. Take precautions when getting rid of dangerous chemicals such as household cleaners. Poisonous fumes can harm the brain.

Cut back on TV so your brain won't become a "couch potato."

Learn how to prevent brain injuries. Suggest to your principal that your school become a HeadSmart School. You and your classmates will get a one-day program on how to prevent brain injuries. For more information, cybersurf to www.biausa.org, or write to The Brain Injury Association, 105 North Alfred Street, Alexandria, VA 22314. You may also call the Brain Injury Association's Family Helpline at 1-800-444-6443.

The brain is constantly developing and maturing. Your brain will continue to steer you in the right direction if you respect it and its ability to grow and change.

Anonymous, *Understanding how the brain works.* , Current Health 1, 01-01-2001, pp 6.

Bodies also need brain fitness

Bodies also need brain fitness

Byline: SYLVIA WOOD CREDIT: Albany Times Union

Edition: FINAL HOME EDITION

Section: LIVING

ALBANY, N.Y. -- You work out and watch your diet, but when was the last time you exercised your brain?

New research is showing that it is possible to keep your brain fit and flexible with a little regular exercise and stimulation.

"Active brain cells produce more brain chemicals which help keep brain cells alive," said Lawrence C. Katz, a professor of neurobiology at Duke University Medical School in North Carolina.

But Katz, who promotes a regimen called "neurobics," doesn't believe you have to read a book a day or master the New York Times crossword puzzle to see benefits.

While such mental challenges are helpful, they aren't the only ways to get the brain to branch out and literally build new links between neurons.

Try brushing your teeth with the opposite hand. Or take a new route to work. Any exercise that gives your brain a break from the routine is establishing vital new pathways and circuits among brain cells. "The idea is to weave a more dense network of connections so if a few fray as you get older, you'll have others to fall back on," said Katz, the co-author of a new book, "Keep Your Brain Alive," by Workman Publishing Inc.

Dr. Paul Spurgas, the chief of neurosurgery at Ellis Hospital in Schenectady, has already seen the anecdotal evidence. "The patients in my practice who read, keep up with the newspapers, they tend to be sharper much longer in their lives," he said.

Unfortunately, research has shown that the average American is frittering away much precious mental energy, almost four hours daily, on television.

"Your brain is designed to be stimulated by your five senses," said Katz, who believes social interactions with other people are among the best ways to exercise the brain. "Planting a garden is brain exercise. Watching a video or television show about planting a garden isn't."

As with other types of exercise, it's never too late to start a regimen of mental workouts, according to Dr. Gary Bernardini, a neurologist at Albany Medical Center.

Simple activities like tying your shoes a different way, reading a book or balancing your checkbook with paper and pencil, instead of a calculator, are good places to start.

"It's almost like a muscle," Bernardini said. "If you use your brain and your memory, it's going to help as you get older."

SYLVIA WOOD CREDIT: Albany Times Union, *Bodies also need brain fitness.* , Tulsa World, 02-09-2001, pp 6.



August 30, 2000

Do you need an excuse for getting some extra sleep? If you do, then say, "Researchers have found evidence that sleep improves memory!"

Experiments published in the August 2000 issue of the journal *Nature Neuroscience* suggest that one of the functions of rapid eye movement (REM) sleep is to help memory processing. A research team headed by Pierre Maquet used positron emission tomography (PET) and brain blood flow measurements to assess brain function when people were learning a reaction time task and when they were sleeping.

In the experiments, people were trained to press buttons when they saw certain symbols on a computer screen. The performance of these people on the reaction time task improved with practice and improved even more after they got a night's sleep.

Dr. Maquet and his co-workers found that many of the brain areas activated when people performed the reaction time task were the same as those activated during REM sleep. During REM sleep, the visual cortex, premotor cortex, and some parts of the thalamus were more active in trained subjects than in untrained subjects. These were the same areas that showed significant activation during the reaction time task.

These data suggest that areas of the brain important for learning the reaction time task are "reactivated" during REM sleep. The researchers believe that this reflects the importance of REM in memory processing, perhaps by strengthening memories. However, these experiments examined only the type of memory important for performing actions (i.e., button pressing). This is the same type of memory necessary for riding a bike. Whether the brain is activated during REM sleep after tasks such as learning vocabulary words or multiplication tables is still unknown.

You may have heard that it is a good idea to get a good night's sleep BEFORE a big test. That may be true. These new experiments suggest that it may be important to get a good night's sleep AFTER you study or after you practice a skill such as shooting basketballs.

Mickey's Memory Maximized by Man

By Ellen Kuwana
Neuroscience for Kids Staff Writer
September 22, 1999

September Is Time For School

School has started. You're being bombarded with new information. Concepts to understand. Spelling words to master. In no time at all, you'll be studying for quizzes and tests. Wish you could take a magic pill and learn things faster? Wish you could remember things for longer? Although this sounds like science fiction, it is already happening in laboratory mice. Warner Brother's television cartoon "*Pinky and The Brain*," in which The Brain is a genius mouse made by Acme Labs, may be closer to reality than you think.

The Big Picture

By manipulating a single gene, scientists have created a genetically engineered mouse that outperforms regular mice on learning and memory tests. The results of this study were reported in the September 2, 1999 issue of the journal *Nature*. When they received an extra copy of the NMDA receptor gene, the mice were better able to navigate mazes, remember objects, and retain for longer information that they had already learned.

NMD-What?

The NMDA receptor is an important molecule. It is the receptor for the neurotransmitter glutamate, an excitatory transmitter in the brain. The receptor is found in many neurons in the brain where it plays a crucial role in synaptic plasticity (the ability for synapses to change) and memory formation, which occurs when learning takes place.

Genetic Engineering

Two basic experiments can be performed to examine what function a gene is affecting. First, scientists can remove the gene or block its effect. This is called gene deletion or "knocking out" the gene.

The other way to analyze a gene's function is to add the gene. This is called gene insertion. In this case, the added gene (NR2B) produces increased amounts of a protein (for the NMDA receptor). The mice produced twice the normal amount of protein, so that the overall activity of the NMDA receptor was enhanced. The study's head scientist, Joe Tsien (pronounced chee-YEN), explained, "It's like trying to open a window to get fresh air. The longer you open the window, the more fresh air you get." In this case, the "air" is the activated NMDA receptors. Activated NMDA receptors help in learning and making memories because they increase the amount of time that messages between nerve cells can last.

Test One: Putting the Mice to the Test

The scientists compared the engineered mice (called transgenic mice) to control mice (regular lab mice). The mice were initially shown two different objects and a few days later they were shown one new object and one of the original objects. The regular mice spent equal time examining both objects, but the transgenic mice did something different: they only examined the new object, suggesting that they "knew" that they had already seen the other object. The researchers interpreted this to mean that they had remembered the old object, but the control mice did not.

Test 1

Training Sessions



Test Sessions



Test Two: Not So Shocking Results

Next, the scientists put the mice in a chamber and gave them small electrical shocks. The shocks were not big

enough to hurt the mice, but did appear to frighten them. After getting a shock, the mice were returned to their cages. Sometime later (ranging from one hour to one day), the mice were brought back to the chamber. The transgenic mice showed more fear than the control mice, suggesting that they remembered what had happened to them in that specific place. The researchers then placed the mice in the chamber, shocked them, and played a tone - this made the mice relate the sound to the shock. When the mice heard the tone later, the transgenic mice displayed more fear than the control group, again suggesting that they remembered the association.

Test Three: Quick Learning

The scientists retaught ("reconditioned") the mice to fear the tone by pairing it with the mild shock again. Then they put the mice in the same chamber, but didn't shock them. The transgenic mice were at first more fearful of the chamber, likely because they remembered the shocks, but they also calmed down quicker than the control mice. Perhaps they understood the change in the conditions quicker. This could mean that they learned more effectively.

Test Four: Are these Mice Spatial?

The final test looked at the spatial skills of the mice. A mouse-size pool was filled with cloudy water, with a ramp hidden somewhere in the pool. The goal was to find the ramp: if the mouse found the ramp, it could climb out of the water. It only took the transgenic mice about three "swims" to find the ramp; the control mice required about six tries. A swimming result!

Why So Many Tests?

The various tests demonstrated several aspects of brain function. These experiments show that the mouse brain processes information related to touch, sights, and sounds using a common biochemical pathway that involves the NMDA receptor.

These Mice are Smarter...Or Are They?

News reports have hailed these engineered mice as "smart mice." Tsien himself has used this term. Although their performance on the tests is impressive, "smart" is not really the proper term for the mice. Tests were not done to assess their intelligence. In fact, it would be hard to get two people to agree on a precise definition of intelligence. It is more accurate to say that the mice learned faster and remembered longer, rather than to say they were smarter. People can have poor short-term memories and still be smart. There is no one gene that determines intelligence. Genes *and* experience influence what we learn and how we learn it.

Conclusions and Cautions

This study suggests that the NMDA receptor is crucial to learning and memory. This receptor is also present in human brains, so perhaps this work will lead to treatment for Alzheimer's disease, or other diseases in which learning and memory are impaired. But don't expect this to happen any time soon. This is just the first step, and a small step, toward improving our ability to learn and retain memories. No one knows the long-term effect of altering the brain's chemistry. The NMDA receptor, for example, lets calcium into brain cells. Too much calcium may make you more apt to have a stroke. A change seemingly as small as manipulating one gene or one protein can have huge consequences.

FEATURE: MEMORY, FOR TRUE OR FALSE

Feature: Memory, for true or false

COLUMBIA, Mo., Feb. 2, 2001 (UPI) -- How might a memory, so real that a crime witness may swear to it or friends may quarrel over it, be so wrong? By learning how true and false memories differ, scientists hope to learn more about how memory succeeds and fails.

"Although people believe that they remember events accurately, the human memory is error prone, creating memories of events that never happened," said neuroscientist Michael Stadler of the University of Missouri, Columbia.

While false memories might prove embarrassing at times, Missouri colleague Monica Fabiani explained they stem from mental processes that allow humans to make comparisons between different events. Because the brain can't remember everything, it relies in part on scripts of expectations to fill in many details. As a result, the mind can sometimes be lured into conjuring up illusory memories based on prior experiences.

"Many things that can be a 'bug' in one case can be a feature in another, " Fabiani said.

Normally, the only way to figure out if the mind is playing tricks is through external corroboration from something like a musty, old photo album. The Missouri researchers, however, have discovered that true and false memories have different electrical signatures in the brain. To uncover this fact, they actually created false memories in volunteers and studied their brain waves as they did so.

The methods used in this new research are based in part on a landmark study that psychologists Roddy Roediger and Kathleen McDermott conducted in 1995. The two researchers at Washington University in St. Louis, Mo., who were not involved in the Columbia study, used a long-overlooked technique that easily generated false memories when it came to a basic memory task -- recalling lists of words.

"The method was originally used in the 1950s," Roediger explained. "However, back then it was considered more of a

nuisance than something to study."

Roediger and McDermott tested volunteers by reading them lists of words that were all tied to a key concept such as sleep. However, these lists did not include the concept words themselves -- the sleep list might include the words bed, rest, and tired, but not sleep.

Remarkably, the two researchers discovered that subjects remembered things wrong as often -- or even more often -- than they did correctly. Not only that, the subjects not only "remembered" the key words, but also "remembered" the situation in which they first heard them.

"They didn't just feel as if the word was very familiar," Roediger said. "They actually said, 'I can remember the exact moment I heard the word.'"

The scientists at the University of Missouri took the 1995 studies one step further by studying the electrical brain activity surrounding false memory creation. Their results suggest that when it comes to true memories, people seem to actually relive events to a limited degree.

As study participants read word lists from a computer screen, the investigators recorded their brain wave readings, or electroencephalograms, from 20 electrodes pasted all over each participant's head. The researchers found there was sensory-related brain activity associated with true memories when participants recalled words they had read off the screen.

In contrast, false memories naturally had no actual sensory information connected with them, and showed different patterns of electrical activity across the hemispheres of the brain.

However, the scientists emphasized their technique is far from becoming the next lie detector test.

"Telling apart true from false when it comes to complex memories is much harder than with the basic memory tasks, due in no small part to the large number of stimuli involved and the measurements you'd need," Stadler said.

Fabiani agreed, saying their work was more an example of pure science.

The researchers said future Missouri studies could revolve around the other half of memory, forgetfulness. Stadler explained preliminary results from a follow-up study suggest when people are shown words they have forgotten, their brains still register sensory-related brain activity, as if out of recognition.

(Reported by Charles Choi in the UPI Washington bureau.)

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Author not available, *FEATURE: MEMORY, FOR TRUE OR FALSE.* ,
United Press International, 02-02-2001.

Project Evaluation

Standards	Criteria			
Areas of Assessment †	High	Very Good	Adequate	Needs Work
Research and Preparation <ul style="list-style-type: none"> Resources Evidence Deadlines Use of time 	<input type="checkbox"/> Used a variety of reliable resources <input type="checkbox"/> Used appropriate evidence & examples <input type="checkbox"/> Met deadlines <input type="checkbox"/> Well prepared & extended research	<input type="checkbox"/> Used several resources <input type="checkbox"/> Made effort to use evidence & examples <input type="checkbox"/> Met deadlines <input type="checkbox"/> Well prepared	<input type="checkbox"/> Used minimum number of resources <input type="checkbox"/> Used some evidence & examples <input type="checkbox"/> Needed encouragement to meet deadline. <input type="checkbox"/> Minimal preparation	<input type="checkbox"/> Used few resources <input type="checkbox"/> Used little evidence and few examples <input type="checkbox"/> Didn't meet deadlines <input type="checkbox"/> Spent little time on preparation
Content <ul style="list-style-type: none"> Purpose Organization Audience appeal Information & accuracy Sources 	<input type="checkbox"/> Creatively fulfilled purpose <input type="checkbox"/> Used logical, order <input type="checkbox"/> Created & maintained high audience interest <input type="checkbox"/> Covered topic well <input type="checkbox"/> Had few errors. Outstanding information <input type="checkbox"/> Credited sources	<input type="checkbox"/> Completely fulfilled purpose <input type="checkbox"/> Easy-to-follow order <input type="checkbox"/> Kept audience's attention <input type="checkbox"/> Covered topic with appropriate information <input type="checkbox"/> Had few errors <input type="checkbox"/> Credited sources	<input type="checkbox"/> Fulfilled purpose <input type="checkbox"/> Order was confusing <input type="checkbox"/> Lost audience's attention at times <input type="checkbox"/> Covered the basics <input type="checkbox"/> Had several errors <input type="checkbox"/> Credited sources	<input type="checkbox"/> Did not fulfill purpose <input type="checkbox"/> Used hard-to-follow order <input type="checkbox"/> Created little audience interest <input type="checkbox"/> Omitted important information <input type="checkbox"/> Had many errors <input type="checkbox"/> Provided incomplete credits
Other <ul style="list-style-type: none"> Visual Effort Details 	<input type="checkbox"/> Interesting, easy to see, communicated ideas clearly <input type="checkbox"/> Showed outstanding effort <input type="checkbox"/> Supported ideas with many rich details	<input type="checkbox"/> Interesting, easy to see, communicated main ideas <input type="checkbox"/> Showed effort <input type="checkbox"/> Supported the main ideas	<input type="checkbox"/> Somewhat interesting, didn't communicate ideas well <input type="checkbox"/> Showed fair effort <input type="checkbox"/> Weakly supported main ideas	<input type="checkbox"/> Messy, disorganized, hard to understand, <input type="checkbox"/> Showed little effort <input type="checkbox"/> Didn't support main ideas

Adapted from: Winnebrenner, S. (1992). Teaching gifted kids in the regular classroom. MN: Free Spirit Publishing Inc.

Research Organizer

Name _____ Date _____

I used the following source

I learned some new things about _____

For instance, I learned that _____

I also learned that _____

Something that interested me was _____

I would like to know more about _____

THEME: MEMORIES TO KEEP; KEEPING MEMORIES ALIVE CAN HELP US TODAY AND TOMORROW

II. **Memory**

Now that you have learned about the brain, we will take a look at how we process information into **long-term memory**. This process is called **encoding**. We will learn techniques that will help you remember things better. Hopefully you will be able to **retrieve** information from **storage** when you need it and improve your **metacognition**.

- A. Look up the bold-type words from the above paragraph and add them to your word bank.
- B. Read the 5 techniques for helping memory on the following pages (p.69-71).
- C. Begin using these techniques over the next few days. Take notes on how you apply each one.
- D. Set up a discussion time with your classroom teacher or your (TAG) facilitator. Be prepared to share your experiences regarding these techniques. See the discussion rubric (p. 72) so you can be fully prepared.

THEME: MEMORIES TO KEEP; KEEPING MEMORIES ALIVE



Technique 1: Visualize It! - Visualization

When you have an item to remember, "see" it in your mind. The more absurd you make the image the more likely you are to remember it. For example, if you go the mall and park the car on the level C in space #5, you might imagine that there are 5 Cats waiting in your car for your return. The Cats is for the level "C"; the 5 of course is for the space # 5.

Technique 2: Chain It! - Chaining

Chaining is a form of visualizing, but now you might have to remember several items in order. This time you must link the items together by thinking of images that connect them. While a grocery list does not necessarily have to be remembered in order (although it sometimes helps to find things faster), let's use it as an example: milk, bread, eggs, cheese, orange juice. Now, chain them with images:

1. A carton of milk pouring onto bread.
2. A sandwich (the bread) with raw eggs on it.
3. Eggs stuck in the holes of a swiss cheese.
4. Pieces of cheese hanging from an orange tree.

TRY IT!

Here is a bigger list of words to try:

shoe - piano - tree - pencil - bird - bus - book - dog -
 pizza - flower - basketball - door - TV - rabbit - spoon -
 eye - chair - house - computer - rock

You may find that bizarre and wild associations are easy to remember. Here is an example of chaining for the first three words (shoe - piano - tree) of this list.

Technique 3: Place It! - The Method of Loci

Location, Location, Location. Devised during the Roman Empire, the method of loci uses the chaining method with a twist. Now all the items to-be-remembered are linked to specific places in the order you would visit them. For example, you might think of the route you take to school:

1. Your room (you wake up)
2. Your kitchen (you have breakfast)
3. Front door of your house
4. Bus stop
5. Bus seat
6. Friend's house that you see from the bus
7. Gas Station that you see from the bus
8. Market that you see from the bus
9. School

Now you must link the items that you want remembered to each of these places. You have to remember the places first, of course, but this should be easy. Then chain each item to the places...remember, the more wild your idea the better. Using the grocery store example again: milk pouring on you in your room, bread that you can't get out of the toaster (kitchen), eggs splattered on your front door, etc.

Technique 4: Chunk It! - Chunking

Ever wonder why phone numbers are really one 3 digit number and one 4 digit number and NOT one 7 digit number. It's 999-9999, not 9999999. Or what about those social security numbers. It's 999-99-9999, not 999999999. They are a lot easier to remember in small chunks. Remembering things is easier when they are in pieces.

Technique 5: Acrostic It! - Those Catchy Phrases

An acrostic is a phrase that uses the first letter of a word to remember it. In neuroanatomy, one of the most familiar ones is:

On Old Olympus Towering Top A Famous Vocal German
Viewed Some Hops.

"What does this mean", you ask. Well, the first letters of each of these words in this little phrase stand for the first letters of each of the cranial nerves, in order: olfactory nerve (I), optic nerve (II), oculomotor nerve (III), trochlear nerve (IV), trigeminal nerve (V), abducens nerve (VI), facial nerve (VII), vestibulocochlear (VIII), glossopharyngeal nerve (IX), vagus nerve (X), spinal accessory nerve (XI), hypoglossal nerve (XII).

Here's another one:

My Very Early Morning Jam Sandwich Usually Nauseates
People

Or

My Very Excellent Mom Just Served Us Nine Pizzas

These two phrases represent the order of planets from the Sun:

Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus,
Neptune, Pluto

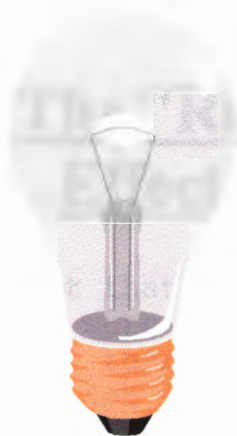
One last one...do you know the order of colors in a rainbow? Just remember this person's name: Roy G. Biv
R=red O=orange Y=yellow G=green B=blue I=indigo V=violet

Discussion Assessment Rubric

0	1	2	3
Student did not speak at all during discussion.	Student made irrelevant comments during discussion, and/or participated, but was easily distracted. The quality of participation was poor. The student interrupted while others were speaking.	Student made relevant comments during discussion, actively participated, and the quality of participation was good. The student used appropriate turn-taking skills.	Student made relevant comments and took on a leadership role to encourage discussion. The quality of participation was high. Appropriate turn-taking skills were used.

Ideas adapted from:

Winnebrenner, S. (1992). Teaching Gifted Kids in the Regular Classroom.
MN: Free Spirit Publishing Inc.



THEME: MEMORIES TO KEEP; KEEPING MEMORIES ALIVE CAN HELP US TODAY AND TOMORROW

III. EXPERIMENTING WITH MEMORY AND LEARNING

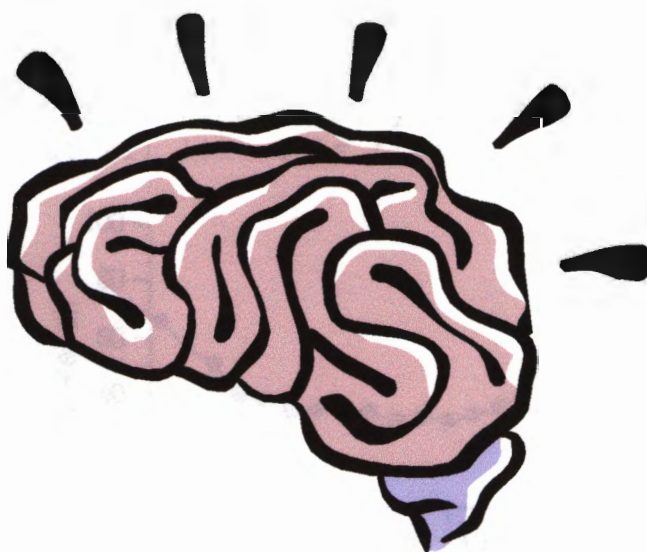
A. Now or Later - The "Recency/Primary" Effect (p.74-75)

This is an experiment you can do with a group of friends or family members to test their recall of a list of words.

B. There's a Chunk (p.76)

This partner activity tests the "chunking" technique of remembering lists such as numbers

C. In a few paragraphs, explain your results and what conclusions you might draw from them. Did your results agree with what you thought would happen?



Now or Later - The "Recency/Primary" Effect

Here is a memory experiment that requires a group of subjects to test. Get 5 or more friends to serve as your experimental subjects. Tell them that you will read a list of 20 words and that their job is to remember as many of the words as possible. Read the following list of 20 words at a rate of 1 word every second. Ask your subjects to write down the words that they can remember immediately after you finish reading the list.

Here is the list of words:

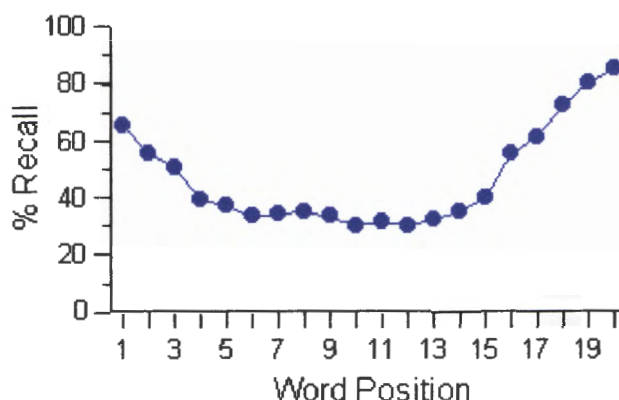
cat	apple	ball	tree	square	head	house	door	box	car
king	hammer	milk	fish	book	tape	arrow	flower	key	shoe

Now analyze the results of your memory study. You can collect the lists of words that your subjects wrote or you can just ask them which words that they remembered.

- Find out if there was better recall of any particular words on your list.
- Was there better recall of words that were read first or last?

To do this assign a "position" to each word that you read. So, "cat" was word #1, apple was word #2, ball was word #3,....., shoe was word #20. Calculate the percent of recall for each word. For example, if you had 10 subjects and 7 of them remembered the word "cat" then "cat" (word #1) had a percent recall of 70%. Calculate the percent of recall for each of the 20 words.

Now plot your results: the X-axis will be word position and the Y-axis will be % recall. Do you see a pattern? Does it look anything at all like this figure?



The results of this kind of experiment usually result in a graph similar to this one. (This kind of graph is called a "serial-position curve"). Words read first and words read last are remembered better than words read in the middle of a list.

This type of experiment provides evidence that there are 2 types of memory processes. It is thought that memory is good for the words read last because they are still in short term memory - this is the recency effect. Memory is good for the words read first because they made it into long term memory - this is the primacy effect.

It is also possible that some words in the list were very easy to recall for other reasons. For example, if your teacher just dropped a hammer on his or her toe, then everyone may find that the word "hammer" was easy to remember. Or perhaps, the last name of someone in the group of subjects is "King", then everyone would remember the word "king".

You can try this experiment again with a slight twist. Ask a new set of subjects to remember the same set of words. However, immediately after you finish reading the list, DISTRACT your subjects by having them count backwards from 100 by threes (100, 97, 94, 91, etc.) for about 15-30 seconds. Plot your serial position curve again. Do you see any changes? Usually, distraction causes people to forget the words at the end of the list. Did it happen to your subjects?

There's a Chunk

Grades 3-12

Does this chunking really work? Find out. Get a partner. Tell your partner that you are going to read some numbers and you want him or her to remember as many as possible. Don't tell your partner how many numbers or what range they will be in. Read these numbers in the following order at a rate of about 1 every second:

9 1 5 11 2 4 6 15 10 3 7 13 12 8 14

Immediately ask your partner to write down the numbers he or she remembers. Now tell your partner that you will read another set of numbers and you want him or her to remember them. Read these numbers in the following order at a rate of about 1 every second:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Immediately ask your partner to write down the numbers he or she remembers. Was the second time easier? Did your partner remember more numbers the second time? Both sets of numbers are exactly the same...it is just that the second one can really be "chunked" into 1....one series of numbers that is easy to remember.

THEME: MEMORIES TO KEEP; KEEPING MEMORIES ALIVE CAN HELP US TODAY AND TOMORROW

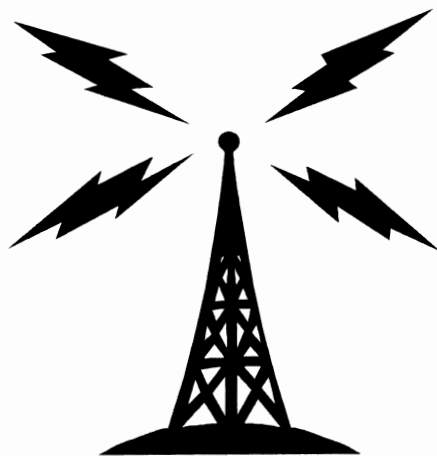
IV. ORAL HISTORY

We've learned about the brain and memory. We've practiced techniques to help us remember better. Now we are going to learn through other people's memories. We will accomplish this through oral histories. This oral history project will serve as a link from the present to the past and help you obtain information related to ordinary people.

- A. Think of people you know that are at least 60 years old. If you can't think of anyone, ask a parent to help. Write down their names and rank them in order of your first choice, second choice, etc. Keep in mind their availability, transportation, and your purpose.
- B. When you call or talk to the person you hope to interview, introduce yourself and explain the project. Ask if they would be willing to be interviewed. Tell them that you would like to tape record the interview. If they agree, make arrangements for a parent to go with you. Set a date, time, and place for the interview.
- C. Do some research on the time period in which your "client" was young. Read up on historical events, costs of major items, popular music and movies, etc.
- D. Create a list of questions to ask at the interview. Remember that you want to learn as much as you can about the past. Compose open-ended questions and be prepared to ask for examples and descriptions. You should have between 10 and 20 questions.
- E. Have your teacher check your questions.
- F. Practice asking the questions to a friend or family member. Practice using a tape recorder and taking notes. Remember to say please and thank you.
- G. On the day of the interview be prepared.
 - Take extra pens or pencils and a notebook.
 - Make sure you have a tape recorder and extra batteries.
 - Be polite and make the interviewee comfortable.
 - Take good notes.

**THEME: MEMORIES TO KEEP; KEEPING MEMORIES ALIVE
CAN HELP US TODAY AND TOMORROW**

- You may ask him/her to spell names or other words into the tape recorder if there is a chance of error.
 - Thank him/her and let them know when you plan to finish the project and make sure that he/she gets a copy of it.
- H. Prepare your product. You will need to read through the information you have gathered. Using your notes and the taped interview, make an outline of the information you want to include in your final product. Show it to your teacher. Write out what you will say for your oral presentation. Practice it several times. When you are ready, make a recording. Feel free to experiment with editing in music and/or comments from the interviewee. Share any additional ideas with your teacher.
- I. Look over the Project Evaluation sheet (p. 79) to help you prepare.



Project Evaluation

Standards	Criteria			
Areas of Assessment †	High	Very Good	Adequate	Needs Work
Research and Preparation <ul style="list-style-type: none"> Resources Evidence Deadlines Use of time 	<input type="checkbox"/> Used a variety of reliable resources <input type="checkbox"/> Used appropriate evidence & examples <input type="checkbox"/> Met deadlines <input type="checkbox"/> Well prepared & extended research	<input type="checkbox"/> Used several resources <input type="checkbox"/> Made effort to use evidence & examples <input type="checkbox"/> Met deadlines <input type="checkbox"/> Well prepared	<input type="checkbox"/> Used minimum number of resources <input type="checkbox"/> Used some evidence & examples <input type="checkbox"/> Needed encouragement to meet deadline. <input type="checkbox"/> Minimal preparation	<input type="checkbox"/> Used few resources <input type="checkbox"/> Used little evidence and few examples <input type="checkbox"/> Didn't meet deadlines <input type="checkbox"/> Spent little time on preparation
Content <ul style="list-style-type: none"> Purpose Organization Audience appeal Information & accuracy Sources 	<input type="checkbox"/> Creatively fulfilled purpose <input type="checkbox"/> Used logical, order <input type="checkbox"/> Created & maintained high audience interest <input type="checkbox"/> Covered topic well <input type="checkbox"/> Had few errors. Outstanding information <input type="checkbox"/> Credited sources	<input type="checkbox"/> Completely fulfilled purpose <input type="checkbox"/> Easy-to-follow order <input type="checkbox"/> Kept audience's attention <input type="checkbox"/> Covered topic with appropriate information <input type="checkbox"/> Had few errors <input type="checkbox"/> Credited sources	<input type="checkbox"/> Fulfilled purpose <input type="checkbox"/> Order was confusing <input type="checkbox"/> Lost audience's attention at times <input type="checkbox"/> Covered the basics <input type="checkbox"/> Had several errors <input type="checkbox"/> Credited sources	<input type="checkbox"/> Did not fulfill purpose <input type="checkbox"/> Used hard-to-follow order <input type="checkbox"/> Created little audience interest <input type="checkbox"/> Omitted important information <input type="checkbox"/> Had many errors <input type="checkbox"/> Provided incomplete credits
Other <ul style="list-style-type: none"> Visual Effort Details 	<input type="checkbox"/> Interesting, easy to see, communicated ideas clearly <input type="checkbox"/> Showed outstanding effort <input type="checkbox"/> Supported ideas with many rich details	<input type="checkbox"/> Interesting, easy to see, communicated main ideas <input type="checkbox"/> Showed effort <input type="checkbox"/> Supported the main ideas	<input type="checkbox"/> Somewhat interesting, didn't communicate ideas well <input type="checkbox"/> Showed fair effort <input type="checkbox"/> Weakly supported main ideas	<input type="checkbox"/> Messy, disorganized, hard to understand, <input type="checkbox"/> Showed little effort <input type="checkbox"/> Didn't support main ideas

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THEME: MEMORIES TO KEEP; KEEPING MEMORIES ALIVE CAN HELP US TODAY AND TOMORROW

V. OPTIONAL ACTIVITY

- A.** Look in your library or on-line for books and/or articles about brain research. Take notes and share information with your group or class.
- B.** Invite a neurologist, a psychologist, and/or a researcher. Prepare questions prior to the visit.

Reading Alternate Activities Evaluation

Unit ____

Directions: Teacher and student should complete this evaluation separately. Circle all that apply to the completed project with 1 being the low and 5 being the high.

Quality Project	Teacher	Student
1. Completed all components	1 2 3 4 5	1 2 3 4 5
2. Focused on task during independent time	1 2 3 4 5	1 2 3 4 5
3. Fulfilled policies of contract for alternate working conditions	1 2 3 4 5	1 2 3 4 5
4. Produced quality work	1 2 3 4 5	1 2 3 4 5
5. Probed for detail in responses	1 2 3 4 5	1 2 3 4 5
6. Presented to class or other audience	1 2 3 4 5	1 2 3 4 5
7. Demonstrated depth of thinking	1 2 3 4 5	1 2 3 4 5
8. demonstrated logical thinking skills	1 2 3 4 5	1 2 3 4 5
9. Demonstrated creative thinking skills	1 2 3 4 5	1 2 3 4 5

What did you get out of this project opportunity? Any specific benefits? Explain your answer.

What can you do now that you couldn't do before?

What do you know that you didn't know before?

Student Signature Date

Teacher Signature Date

Adapted from: Winnebrenner, S. (1992). Teaching gifted kids in the regular classroom. MN: Free Spirit Publishing Inc.

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IV.CONLUSIONS AND RECOMENDATIONS

I believe that the two units I have developed are quality units because they differentiate content, process, and products, not only from the mainstream curriculum, but within each unit as well. They are rigorous, have cross-disciplinary focus, and contain activities that foster higher level thinking skills. Reading, writing, technology, and research are all incorporated. Activities and projects are based on the theme and central concepts. Both cognitive and affective goals are included. Authentic assessment is utilized. The units are flexible and promote self-reliance on the students' part.

Ideally, teachers will use these units within the classroom. They compliment our mainstream curriculum, making them easier to incorporate. They have been designed in sections to enhance flexibility. Teachers may choose to do part or all of the units, depending on the needs of their students.

Involving support staff, such as G/T facilitators, counselors, and media specialists contributes to students' success. Teachers may invite specialists to the classroom to provide enrichment or follow-up to the topics. Unit one guests might include an expert in

genealogy, local immigrants, and/or someone with ethnic culinary talents. A neurologist, a psychologist, and/or a researcher may be ideal experts for unit five.

I have given the units to several fourth grade teachers and G/T facilitators in our district and have asked for feedback. In a week I will begin field testing them myself. This will allow me to evaluate them and get student input. I expect to make minor changes, but am confident that they will be effective teaching tools for many. I will also gather background information to enhance the units. I'll bookmark websites, purchase books, compile lists of resources, and check out local opportunities that compliment the units.

I plan to continue developing curriculum for my school and/or the district because I see the need for it. We do not yet have in place a K-6 comprehensive, defensible, differentiated curriculum. I think these two units, along with the units Schmit and Werner have developed, are outstanding alternate units and can be used as examples for our district as we continue to develop such curriculum. It is an ongoing process and I would like to be a part of it.

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