

Teaching A Touchy Topic: Life Cycles and Reproduction

Grade Level: Fifth Grade

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Length of Unit: Five Lessons (Parental Permission may be required for participation in the study of this unit.)

I. ABSTRACT

This unit is for fifth grade students and consists of five lessons. It is designed to help make students feel more comfortable learning about the touchy subjects of life cycles and sexual reproduction. Lessons will incorporate activities and discussions leading to an understanding of sexual reproduction in animals, changes in human adolescence, and the reproductive system.

II. OVERVIEW

A. Concept Objectives

1. Students will be able to approach “touchy” subject matter and increase their comfort level.
2. Students will understand the process of external fertilization
3. Students will understand the life cycle of a human.
4. Students will understand how the reproductive system works.
5. Students will become familiar with changes that occur during puberty.

B. Content from the *Core Knowledge Sequence*

1. Reproductive organs: testes (sperm) and ovaries (eggs) and external fertilization: spawning.
2. Internal fertilization: birds, mammals and development of the embryo: egg, zygote, embryo, growth in uterus, fetus, newborn.
3. Puberty: Glands and hormones, growth spurt, hair growth, breasts, voice change.
4. Females: ovaries, fallopian tubes, uterus, vagina, menstruation and males: testes, scrotum, penis, urethra, semen
5. Sexual reproduction: fertilization, zygote, implantation of zygote in the uterus, pregnancy, embryo, fetus, newborn.

C. Skill Objectives

1. Students will be comfortable participating in activities and discussions involving life cycles and reproduction
2. Students will be able to create a mural representing the sequence of external fertilization.
3. Students will understand the process of internal fertilization by creating a life cycle wheel.
4. Students will reinforce the concepts taught involving the development of an egg from fertilization to birth by playing a board game.
5. Students will understand puberty and the reproductive system by viewing an educational and participating in a discussion. (Boys and girls may be separated for video and discussion.)

III. BACKGROUND KNOWLEDGE

A. For Teachers

1. www.oswego.org/staff/cchamber/resources/lifecycle.cfm
2. www.fed.cuhk.edu.hk/~johnson/teaching/reproduction/reproduction.htm
3. www.med.upenn.edu/meded/public/berp/overview/Br-I.html

- B. For Students
 - 1. Life Cycles, Second grade, Core Knowledge Sequence

IV. RESOURCES

- A. Evan-Moor EMC 803. Animal Life Cycles: Birds, Insects, Amphibians. Evan-Moor Corp., 1994, ISBN 1-55799-093-X.
- B. Hayhow, J., Pryor, B., Walkenhorst, B.; Just Around the Corner for Boys. Marshfilm Enterprises, 2000.
- C. Hayhow, J., Pryor, B., Walkenhorst, B.; Just Around the Corner for Girls. Marshfilm Enterprises, 2000.
- D. Hirsch, Jr. E.D. What Your Fifth Grader Needs to Know. New York: Dell Publishing, 1993, ISBN 0-385-31464-7

V. LESSONS

Lesson One: Talking About “Touchy” Topics

- A. *Daily Objectives*
 - 1. Concept Objective(s)
 - a. Students will be able to approach “touchy” subject matter and increase their comfort level.
 - 2. Lesson Content
 - a. Introduction to life cycles and reproduction.
 - 3. Skill Objective(s)
 - a. Students will be comfortable participating in activities and discussions involving life cycles and reproduction.
- B. *Materials*
 - 1. Parent information letter (Appendix A)
- C. *Key Vocabulary*
 - 1. Touchy Topic- a topic that students may feel uncomfortable discussing.
 - 2. Reproduction- the act, process, or result of reproducing (generating offspring.)
 - 3. Life Cycle- the development of an organism from birth, to growth, to reproduction, to death.
- D. *Procedures/Activities*
 - *Prior to this unit, send home parent information letter (appendix _).
 - *We encourage teachers to set the atmosphere for this unit during this lesson. Use your personality, comfort level, and relationship with your students to help determine what that atmosphere should be.)
 - 1. Tell the students that we will be covering topics that may be considered to be “touchy” topics over the next week. Define “touchy” topics.
 - 2. Explain that students will be asked to act in a mature manner throughout this unit.
 - 3. Seek to create an environment that is conducive to the discussion of adult subject matter.
 - 4. For questions that require more personal information refer the students to their parents, guardians, nurse, or health professional.
 - 5. Introduce the unit topics of life cycles and reproduction. Define life cycle and reproduction.
 - 6. Tell students we will be discussing more about these topics throughout the week.
- E. *Assessment/Evaluation*

1. Observe students to evaluate their comfort level with the “touchy topics” of life cycles and reproduction.

Lesson Two: Mural Miracles

A. *Daily Objectives*

1. Concept Objective(s)
 - a. Students will understand the process of external fertilization.
2. Lesson Content
 - a. Reproductive organs: testes (sperm) and ovaries (eggs) and external fertilization: spawning.
3. Skill Objective(s)
 - a. Students will be able to create a mural representing the sequence of external fertilization.

B. *Materials*

1. Blue butcher paper for each group
2. Crayons, markers, paint, or colored pencils
3. Pencil
4. *What Your 5th Grader Needs to Know*
5. *Chalk or whiteboard markers*
6. Rubric (Appendix B)

C. *Key Vocabulary*

1. External fertilization- when a sperm and egg join outside the bodies of the parents.
2. Spawning- a form of external fertilization. (ex. fish spawning)
3. Egg- the reproductive cell formed in a female animal.
4. Sperm- the male reproductive cell.

D. *Procedures/Activities*

1. Teacher will read “Reproduction in Animals” (Pages 349-350) from *What Your 5th Grader Needs to Know* to the students. (You only need to read the part about external fertilization and spawning!)
2. List the stages of external fertilization on the board. (ex. Stage #1 The female fish and male fish come very close together in the water. Stage #2 The female releases her eggs into the water and the male releases his sperm. Stage #3 The sperm swim to the eggs and fertilize them.
3. Pass out a copy of the rubric (Appendix B) to the students
4. Go over the rubric together as a class. This will inform students of each of the components their mural must contain.
5. Divide your students into groups of four or five.
6. Assign each of your groups a place to work in the room.
7. Have students bring the supplies they will need to create the mural to their assigned place.
7. Pass out a piece of blue butcher paper to each group.
8. Have students create a mural representing the stages of external fertilization (Give students approximately 30 minutes)
9. Collect the murals from each group.

E. *Assessment/Evaluation*

1. Use the rubric (Appendix B) to check for successful completion of an external fertilization mural.

Lesson Three: Circling with Life Cycles

A. *Daily Objective(s)*

1. Concept Objective(s)
 - a. Students will understand the life cycle of a human.

2. Lesson Content
 - a. Internal fertilization: birds, mammals and Development of the embryo: egg, zygote, embryo, growth in uterus, fetus, newborn.
 3. Skill Objective(s)
 - a. Students will understand the process of internal fertilization by creating a life cycle wheel.
- B. *Materials*
1. Tag board
 2. Scissors
 3. Brass fasteners (Brads)
 4. Markers, crayons, or colored pencils
 5. Copies of pictures of developmental stage of a chicken, frog, and human (from Animal Life Cycles: Birds, Insects, Amphibians. Evan-Moor EMC 803. ISBN 1-55799-093-X)
- C. *Key Vocabulary*
1. Life cycle- the development of an organism from birth, to growth, to reproduction, to death.
 2. Zygote- a fertilized egg
 3. Embryo- a developing organism
 4. Fetus- an embryo in the later stages of development
- D. *Procedures/Activities*
1. Students will brainstorm types of life cycles with which they are familiar.
 2. Class discussion of what all cycles have in common (circular recurring pattern).
 3. Students will create a scientific definition for “life cycle.”
 4. Read “Reproduction in Animals” from E.D. Hirsch’s *What Your Fifth Grader Needs to Know*, pages 349-350. (Just the part about internal fertilization.)
 5. Discuss and compare differences between external and internal fertilization.
 6. On a transparency. or written on the board, students will identify the stages of development for a frog, a chicken, and a human and sequence them correctly.
 7. Students are broken into small groups of 4 or 5 for life cycle activity.
 8. Each student is then given a copy of pictures of the stages of a frog, a chicken, or a human.
 9. Students are then given a tag board wheel, cut-out page, and brad to construct a life cycle wheel.
 10. Students construct the cover for the booklet by first folding the cover page in half, then selecting a cut-out to use.
 11. Students cut out the wheel and the pictures of the developmental stages they will be using.
 12. Students will need to plan where to glue the pictures before they begin securing them to the paper. It will take some planning so all of the pictures will appear in the wheel when it is turned. Please note the pictures need to be glued to the wheel in a reverse clockwise sequence to appear in the correct order when the wheel is spun.
 13. Students will secure the wheel to the cover page using a brad.
 14. Students will draw and color an appropriate picture on the cover of their booklet.
- E. *Assessment/Evaluation*
1. Students will demonstrate their understanding through successful completion of their life cycle wheel.

Lesson Four: The “Stages of an Embryo” Game

- A. *Daily Objectives*
1. Concept Objective(s)

- a. Students will understand how the reproductive system works.
 - 2. Lesson Content
 - a. Sexual reproduction: fertilization, zygote, implantation of zygote in the uterus, pregnancy, embryo, fetus, newborn.
 - 3. Skill Objective(s)
 - a. Students will reinforce the concepts taught involving the development of an egg from fertilization to birth by playing a board game.
- B. *Materials*
 - 1. Game cards (Appendix C)
 - 2. Game board (Appendix D)
 - 3. Game markers or pieces
 - 4. *What Your Fifth Grader Needs to Know*
 - 5. Rules for “Stages of an Embryo” game (Appendix E)
- C. *Key Vocabulary*
 - 1. Zygote- a fertilized egg.
 - 2. Embryo- a developing organism.
 - 3. Fetus- an embryo in the later stages of development
 - 4. Reproduction- the act, process, or result of reproducing (generating offspring.)
 - 5. Uterus- the female organ in which the embryo develops.
- D. *Procedures/Activities*
 - 1. Teacher will read “Development of the Embryo” (page 351) from *What Your Fifth Grader Needs to Know*. Tell the students to pay attention and listen very carefully.
 - 2. Tell the students that they will be playing a board game called “Stages of an Embryo.”
 - 3. Break students up into groups of 4.
 - 4. Pass out a game board (Appendix D), one set of game cards (Appendix D), and game pieces/markers to each group.
 - 5. Pass out the rules for “Stages of an Embryo” game (Appendix E)
 - 6. Go over the rules.
 - 7. Have students play the game. Walk around and observe.
- E. *Assessment/Evaluation*
 - 1. While students are playing the game, check to make sure that they understand that a player’s movement in the board game is representative of the development of an egg from fertilization to birth.

Lesson Five: Just Around the Corner

- A. *Daily Objectives*
 - 1. Concept Objective(s)
 - a. Student will become familiar with changes that occur during puberty.
 - 2. Lesson Content
 - a. Puberty: glands, hormones, growth spurt, hair growing, breasts, voice change
 - b. Females: ovaries, fallopian tubes, uterus, vagina, menstruation; Males: testes, scrotum, penis, urethra, semen
 - 3. Skill Objective(s)
 - a. Students will understand puberty and the reproductive system by viewing educational video and participating in a discussion.
- B. *Materials*
 - 1. VCR
 - 2. Just Around the Corner For Boys Video
 - 3. Just Around the Corner For Girls Video

4. Parent Permission Letter (Appendix F)
- C. *Key Vocabulary*
1. Glands- an organ that secretes a substance to be used in the body
 2. Hormones- any of various substances normally secreted by glands
 3. Growth spurt- a sudden increase in physical size
 4. Ovaries- the organs in a female in which the egg cells are formed
 5. Fallopian tubes- the two tubes that conduct the egg from the ovaries to the uterus
 6. Uterus- the in which the fetus rests and grows; the womb
 5. Vagina- the passage from vulva to uterus in a female animal
 7. Menstruation- to discharge the menses
 8. Testes- the male sex glands
 9. Scrotum- the external bag or pouch containing the testicles
 10. Penis- the male organ through which sperm and urine are discharged
 11. Urethra- the tube through which urine is discharged from the bladder
 12. Semen- the male reproductive cell
- D. *Procedures/Activities*
- * Parent Permission Letter (Appendix F) should be sent home and returned to the teacher before the class views the movies. Viewing the movies may be an optional activity.
 - * Boys and girls can be separated for video and discussion.
1. Introduce the topic of the movie. Explain to students that the movie will offer information on the changes that occur in the human body during puberty, and how to manage these changes as they begin.
 2. Tell students that discussion will be held after the movie and that any questions they may have can be asked at that time.
 3. Show the movie. Encourage students to be mature and respectful while watching the movie.
 4. At the end of the movie, begin the discussion by explaining that everyone begins puberty at different times, but it is important that everyone know what to expect. Try to create an atmosphere that is supportive and polite during the discussion.
 6. Begin answering students' questions. Keep the answers informative yet brief. For questions that require more personal information, refer the students to their parents, guardian, nurse, or health professional.
- F. *Assessment/Evaluation*
1. Participation in discussion on puberty and the reproductive system.

VI. CULMINATING ACTIVITY

- A. This unit will end with a Personal Hygiene and Health Day. Invite community health care workers and representatives to present information and advice to parents and students.

VII. HANDOUTS/WORKSHEETS

- A. Appendices A-F

VIII. BIBLIOGRAPHY

- A. Evan-Moor EMC 803. *Animal Life Cycles: Birds, Insects, Amphibians*. Evan-Moor Corp., 1994. ISBN 1-55799-093-X.
- B. Evan-Moor EMC 816. *Animal Life Cycles: Picture Cards*. Evan-Moor Corp., 1998. ISBN 1-55799-695-4
- C. Fairfax, B, Garcia, A.; *Read! Write! Publish!* Creative Teaching Press, Inc., 1992.
- D. Hayhow, J., Pryor, B., Walkenhorst, B.; *Just Around the Corner for Boys*. Marshfilm Enterprises, 2000.

- E. Hayhow, J., Pryor, B., Walkenhorst, B.; Just Around the Corner for Girls. Marshfilm Enterprises, 2000.
- F. Hirsch, Jr. E.D. What Your Fifth Grader Needs to Know. New York: Dell Publishing, 1993, ISBN 0-385-31464-7
- G. www.med.upenn.edu/meded/public/berp/overview/Br-1.html

Teaching A Touchy Topic: Life Cycles and Reproduction

Appendix A

Dear Parents or Guardians,

During the next week we will be teaching our Core Knowledge Unit on Life Cycles and Reproduction. This unit will cover such topics as internal and external fertilization, development of an embryo, puberty, and life cycles of a frog, chicken, and human. These topics will be covered in a mature and sensitive manner. We will encourage a supportive and respectful atmosphere while teaching these lessons. It will be suggested that students with further questions discuss them with a parent or guardian.

If you have any questions about the curriculum that will be covered or the manner in which it will be presented, please feel free to contact us at the school.

Sincerely,

Teacher Name

Appendix B

Mural Rubric

Total Project _____ (possible 100 points)

	<u>Points Earned</u>	<u>Possible Points</u>
Mural contains the correct steps for external fertilization	_____	<u>50</u>
Mural contains a title	_____	<u>5</u>
Neatness	_____	<u>15</u>
Teamwork	_____	<u>30</u>
Total	_____	<u>100</u>

Appendix C

<p>Once an egg is _____, it is called a zygote.</p> <p>a. fertilized b. produced</p>	<p>THE CORRECT ANSWER IS A</p>
<p>A fertilized egg is called a(n) _____,</p> <p>a. embryo b. zygote</p>	<p>THE CORRECT ANSWER IS B</p>
<p>A zygote begins to _____ and _____.</p> <p>a. divide and grow</p> <p>b. join and shrink</p>	<p>THE CORRECT ANSWER IS A</p>
<p>After several days or weeks the zygote becomes an _____.</p> <p>a. egg b. embryo</p>	<p>THE CORRECT ANSWER IS B</p>

Appendix C

<p>An embryo is a developing _____.</p> <p>a. organism b. antibody</p>	<p>THE CORRECT ANSWER IS A</p>
<p>In most _____, the embryo develops inside the mother's body.</p> <p>a. fish b. mammals</p>	<p>THE CORRECT ANSWER IS B</p>
<p>The embryo develops inside the mother's body in an organ called the _____.</p> <p>a. fallopian tube b. uterus</p>	<p>THE CORRECT ANSWER IS B</p>
<p>The zygote attaches itself to the _____ of the uterus.</p> <p>a. floor b. wall</p>	<p>THE CORRECT ANSWER IS B</p>

Appendix C

<p>In the later stages of development, the embryo is called a _____.</p> <p>a. zygote b. fetus</p>	<p>THE CORRECT ANSWER IS B</p>
<p>When it has developed enough to live on its own, the fetus is _____.</p> <p>a. an adult b. born</p>	<p>THE CORRECT ANSWER IS B</p>
<p>Horses take _____ months to develop inside their mothers.</p> <p>a. 11 b. 6</p>	<p>THE CORRECT ANSWER IS A</p>
<p>Sheep take only _____ months to develop inside their mothers.</p> <p>a. 2 b. 5</p>	<p>THE CORRECT ANSWER IS B</p>

Appendix C

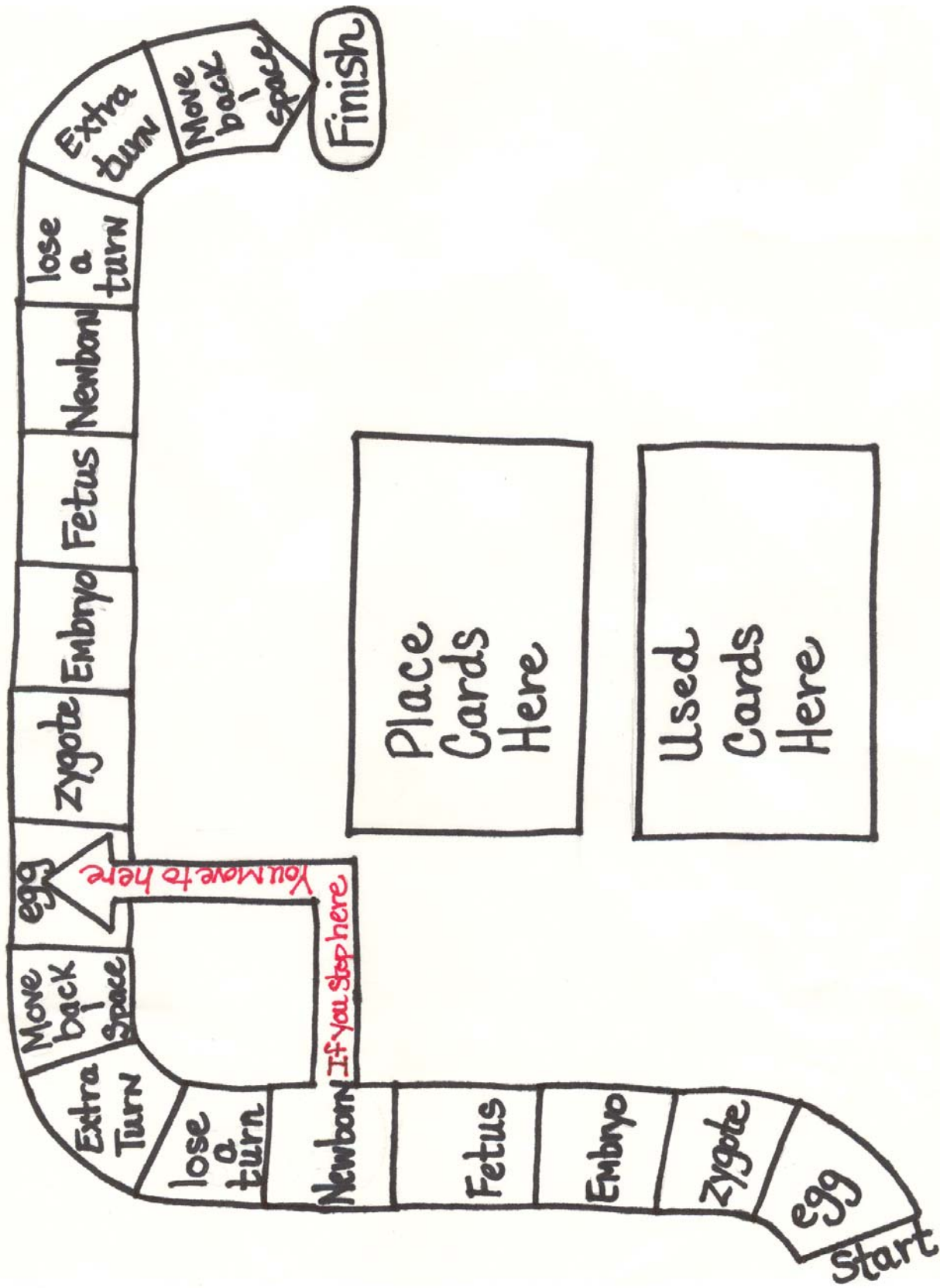
<p>How long does it take for a human embryo to develop?</p> <p>a. 32 weeks b. 40 weeks</p>	<p>THE CORRECT ANSWER IS B</p>
<p>MOVE AHEAD 2 SPACES</p>	
<p>MOVE AHEAD 1 SPACE</p>	
<p>MOVE BACK 2 SPACES</p>	

Appendix C

<p>SWITCH PLACES WITH ANOTHER PLAYER</p>	
<p>LOSE A TURN</p>	
<p>GO BACK TO START</p>	

Appendix C

<p>In the uterus the developing embryo gets its _____ and _____ from the mother.</p> <p>a. food and water b. air and blood</p>	<p>THE CORRECT ANSWER IS A</p>
<p>The zygote travels down a _____ from the ovary.</p> <p>a. tube b. blood vessel</p>	<p>THE CORRECT ANSWER IS A</p>



Appendix E

Rules For “Stages of an Embryo” Game

1. The person who is the oldest goes first.
2. Each player takes a turn and chooses a card.
3. A player must answer the question on the card correctly to advance one space.
4. Some cards contain directions. If a player chooses one of these cards, he/she must follow the directions.
5. The first player to reach finish wins.

Teaching Touchy Topics: Life Cycles and Reproduction
Appendix F

Dear Parent or Guardian,

This letter is to inform you that we will be showing the video Just Around the Corner for parental preview on __ (Date) __. The showing of the girl's video will be in room _____ at __ (Time) __. The showing of the boy's video will be in room _____ at __ (Time) __. A fifth grade teacher will be present at each showing to answer any questions you may have about the instruction of this Core Knowledge Science Unit.

We will be showing the video, Just Around the Corner, in class on __ (Date) __. Boys and girls will be separated into different classrooms for the viewing of their respective videos. Teacher led discussion will follow. For questions that require more personal information students will be encouraged to speak to a parent or guardian. A Parent Permission Slip is required to view the video.

Please fill out the section below and send it to school with your student. Parent Permission Slips are due by __ (Date) __.

Just Around the Corner Video Permission Slip

I, _____ (Parent Name) _____ give _____ (Student Name) _____ permission to view the video, Just Around the Corner at Challenge Charter School.

Parent Signature

Date