

FETAL DEVELOPMENT

Lesson 2

GRADE

6

LEARNER OUTCOME¹ W-6.3:

Identify and describe the stages and factors that can affect human development from conception through birth.



MATERIALS:

1. **CARDS: Conception**
2. **SLIDE: Fertilization and Implantation**
3. **SLIDE: Exploring Fetal Development**
4. **HANDOUT: Exploring Fetal Development**
5. **SLIDES: Pregnancy, Fetal Development: 1st Trimester, 2nd Trimester, 3rd Trimester, Genetics, Identical Twins, Fraternal Twins**



INTRODUCTION:

Students explore the stages of fetal development.



APPROACHES/STRATEGIES:

A. GROUND RULES (5 min)

Ensure ground rules are established before beginning this lesson. For classes that have already established ground rules, quickly reviewing them can promote a successful lesson.

B. MY BIRTH STORY FOLLOW UP (5-10 min)

Students share their discoveries about their birth stories.

1. Teachers can verify that students had the handout signed by a parent or guardian. You may consider collecting the handouts and awarding a prize to one student by picking one out of the pile of signed forms.
2. Use the following questions to debrief the handout **My Birth Story**.

- What did you learn about your birth story that you thought was exciting or that made you happy?
- What did you learn about your birth story that surprised you?

C. EXPLORING CONCEPTION (10-15 min)

Students demonstrate a basic understanding of the process of conception.

1. Using the “Y” shaped continuum from **Lesson One**, add the word “Conception” to the bottom of the “Y”.
2. Using the **Conception** cards give one card to a student until all cards are distributed.
3. Have students with cards (using tape or sticky tack) arrange the events that occur during conception in the proper order along the bottom line of the “Y.”
4. Instruct the students who did not have cards to rearrange the order of the continuum if they think there are any cards misplaced.
5. Go through the cards together, and make corrections according to the answer key provided. Use the **Fertilization and Implantation** slides to review cards 1-5. Ensure you explain the meanings of the vocabulary terms on the slide.

ANSWER KEY

Conception

1. Sperm enters vagina
2. Sperm travels up the vaginal canal
3. Sperm meets egg in the outer portion of the fallopian tube (fertilization)
4. Fertilized egg travels down the fallopian tube into the uterus
5. Fertilized egg attaches itself to the lining of the uterus
6. Fertilized egg uses lining of the uterus for nourishment.
Fertilized egg takes nine months to grow completely into a full-term baby.

Debrief this activity using the following questions:

How many sperm are ejaculated during each ejaculation?

- As many as two million sperm can be ejaculated during each ejaculation.



You might want to cut out a large circle (egg) and a sperm cell cut-out to visually show the egg and sperm combining. This will help students to understand the process using a concrete demonstration. The idea of “conception” may be difficult for students with differing abilities. You may show a picture of an unborn child in the mother’s uterus. Use a handout depicting the woman’s body. Have student’s draw where the baby grows. Remind students that lunch goes into the stomach, not the uterus.



OPTIONAL SLIDES:

- **Genetics**
- **Identical Twins**
- **Fraternal Twins**

How many eggs are usually released during a menstrual cycle?

- Usually one egg is released.

What can happen if more than one egg is released?

- If both eggs are fertilized, it means a woman may have fraternal twins. Identical twins happen when the fertilized egg splits into two before cells begin dividing.

How long does an egg “live” inside a woman’s body?

- 12-24 hours from the time of ovulation.

How long do sperm “live” inside a woman’s body once ejaculated?

- 3 to 5 days from the time of ejaculation.

Will a pregnancy occur every time sexual intercourse occurs?

- No. Pregnancy only happens if sperm can fertilize an egg and implant into the wall of the uterus.

When does a pregnancy occur?

- When a sperm fertilizes an egg. This can happen if intercourse takes place within the period of ovulation.
- Women are most likely to become pregnant if intercourse happens around the middle of the menstrual cycle. Each woman has a different length of menstrual cycle, so it is difficult to predict.

D. INTRODUCTION TO FETAL DEVELOPMENT (5 min)

Students demonstrate their knowledge of fetal development.

1. Have students join together with a partner or group of three.
2. Write the following words on the board: Placenta, Amniotic Sac, Umbilical Cord and Fetus.
3. Ask student groups to brainstorm their best definitions for each of the words.
4. Ask students to share their definitions with the class, allowing groups to add information or correct information.
5. Explain that after the next activity, groups will be able to define these words and other words associated with fetal development.

E. EXPLORING FETAL DEVELOPMENT (30-35 min)

Students research the stages of fetal development and share their findings with the class.

1. Have student pairs/groups join one other pair/group to form a group of 4-6 students.
2. Explain to students that pregnancy takes approximately nine months, and that it is divided into three stages, called trimesters. Trimester one includes the first three months. Trimester two includes months 4-6. Trimester three includes months 7-9.
3. Explain that each group will be given a stage of fetal development to research, and will be asked to report back to the class on their findings. There may be more than one group researching each stage.
4. Ask students to choose a role within the group: leader, reader, recorder, or presenter. In groups of more than four students, there can be two of any one role.
5. Display the slide **Exploring Fetal Development** and explain that the leader of each group needs to help the group follow the tasks in order.

6. Provide the handout **Exploring Fetal Development** for each group to collect.
7. Allow groups to research the stage of fetal development they have been assigned. Research can be done using research materials from your school library or the Internet, or by using an approved video.
8. Ask the presenter of each group to present the group's findings. This should be done in order, so that students who have researched trimester one present first, trimester two present second, and trimester three present third.
9. Debrief this activity using the following questions:
 - Why do you think we can't remember the time we spend in the uterus before we are born?
 - Why is it important for a fetus to spend as much of the nine months as possible inside the uterus?



OPTIONAL SLIDE:

- Pregnancy
- Pregnancy 1st Trimester
- Pregnancy 2nd Trimester
- Pregnancy 3rd Trimester



To save time you could assign each group a definition to report to the rest of the class.



QUESTION BOX (10 min)

Have students fill out questions and address them next class.



TAKE IT HOME

Encourage students to share what they have learned in class with an adult at home.



Keep in mind that all students do not live in a "traditional" family nor do they have equal opportunities for open discussion within their "family." Although it is best for students to complete this assignment with a supportive parent or guardian, it may not be possible. Be sensitive to the needs of your students.



Teachers may consider assigning a mark for the group presentation of the **Stages of Fetal Development**.



SELF REFLECTION

During the lesson, were:

- Ground rules being followed?
- Good practices established regarding group work and discussion?

What will you change for future classes with this group?

What will you change for future use of this lesson?



STUDENT ASSESSMENT

During the lesson, did students:

Knowledge:

- Identify the stages of fertilization and contraception?
- Describe the stages of fetal development?

Skills:

- Work together in small groups to research the stages of fetal development?
- Participate in class discussion and exemplify listening and appropriate speaking skills?

Attitudes:

- Acknowledge that fetal development is reliant on time?
-

¹Alberta Education. (2002). *Health and life skills guide to implementation: Kindergarten to grade 9*. Retrieved from <http://www.education.alberta.ca/media/352993/pos.pdf>

Sperm enters vagina

Sperm travels up the vaginal canal

Sperm meets egg in the outer portion of the fallopian tube (fertilization)

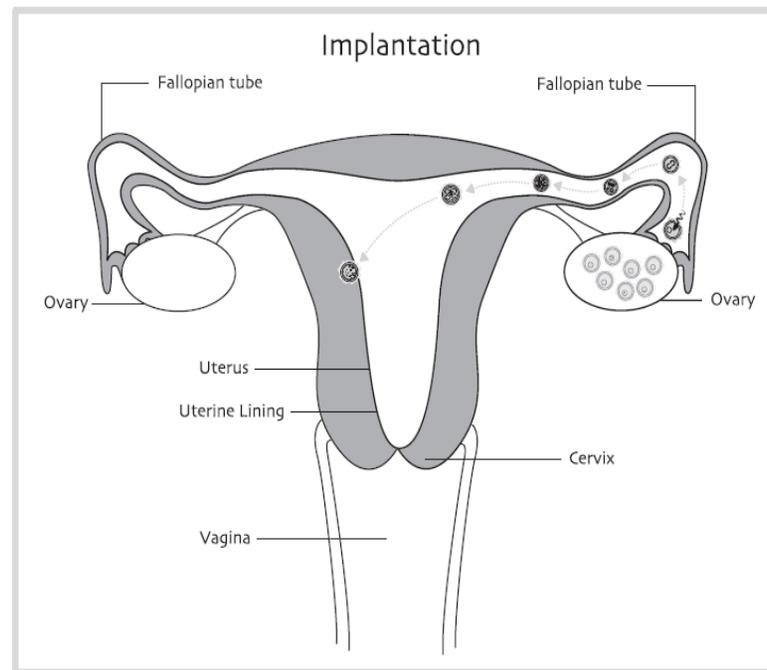
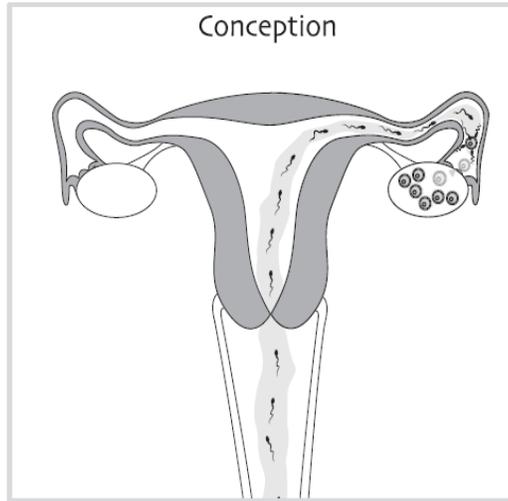
Fertilized egg travels
down the fallopian tube into the uterus

Fertilized egg attaches
itself to the lining of the uterus

Fertilized egg uses lining of the uterus for
nourishment

Fertilized egg takes nine months to grow
completely into a full-term baby

GRADE 6: FETAL DEVELOPMENT LESSON 2: SLIDE



EXPLORING FETAL DEVELOPMENT

1. Make sure all group members are assigned a job.
 - Leader, reader, recorder, or presenter (In groups of more than four students, there can be two of any one role).
2. The recorder will write everyone's names in the correct spot on the handout.
3. The recorder will place a checkmark beside the trimester your group is assigned to research.
4. The reader will read out loud the introduction.
5. As a group use the material provided by your teacher to study fetal development. Research the development that takes place during the trimester you have been assigned.
6. Answer the questions on the handout together. The reader will read each question, and the recorder will write down everyone's ideas.
7. Work together to help the presenter practice his or her presentation to the class. The presentation includes your group's answers to each question.
8. The presenter will present your group's findings to the class when it is your group's turn.

GRADE 6: FETAL DEVELOPMENT LESSON 2: SLIDE

FIRST TRIMESTER		
The first trimester (the first three months of pregnancy) is a critical time in the baby's life. It is the period of rapid growth and development. By the end of the first trimester, all of the baby's organs will be formed and functioning.		
1 day		The sperm and the ovum unite.
7-10 days		The fertilized ovum attaches to the lining of the uterus. The placenta begins to form.
2 weeks		The baby, called an embryo, is now a layered disc on the uterus wall. A woman will miss her menstrual period.
4 weeks		The beginning of the embryo's eyes, ears, nose, spine, digestive tract and nervous system are present. The tube for the future heart starts beating.
8 weeks		The baby, called a fetus, now has all the organs that a full term baby will have. The heart is functioning. Bones begin to form.
12 weeks		Tooth buds are present. Fingernails and toe nails are forming. Immature kidneys secrete urine into the bladder. External genitalia are forming. The fetus can now move in the amniotic fluid, but these movements cannot be felt. The baby's heart beat may be heard with an electronic listening device.

Adapted from: BC Ministry of Health. (2011). The best chance: Stages of pregnancy. Retrieved from: <http://www.bestchance.gov.bc.ca/pregnancy/1st-trimester/stages-of-pregnancy/1st-trimester-mother.html>

Illustrations from: Public Health Agency of Canada. (2011). *The sensible guide to a healthy pregnancy*. Retrieved from http://www.healthycanadians.gc.ca/health-sante/pregnancy-grossesse/health-guide-sante-eng.php?hycnd_src=healthyPregnancy_13&medium=banner_link&campaign=hpfeaturebox

GRADE 6: FETAL DEVELOPMENT LESSON 2: SLIDE

SECOND TRIMESTER		
<p>During the second trimester (the next three months of pregnancy) the brain develops a lot. Most of the brain's development begins now and continues for two or more years after the baby's birth. During the second trimester until about 24 weeks, the fetus cannot live outside of the body because its lungs, heart and blood systems have not developed enough.</p>		
<p>16 weeks 16cm (6 ½ inches) 110g (4oz.)</p>		<p>The face looks more human, the baby has hair, the ears stand out, and the baby can hear the mother's voice. Between 16 and 20 weeks, the baby's movements may be felt. If this is a woman's first pregnancy it is possible that the baby's movements may not be felt until 18 to 20 weeks.</p>
<p>17 weeks</p>		<p>The baby begins to store some antibodies and this slowly increases until birth.</p>
<p>20 weeks 25 cm (10inches) 300g (10oz)</p>		<p>Eyebrows and eyelashes appear. A fine downy hair (lanugo) appears all over the baby's body and may be there at birth. The baby's skin is thin, shiny, and covered with a creamy protective coating called vernix. Oil glands appear. The baby's legs lengthen, and move well. Teeth develop-enamel and dentine are being formed. By the end of the fifth month the baby is about half the length of a newborn. During the second trimester, meconium (the baby's first stool) begins to appear in the intestines.</p>
<p>24 weeks</p>		<p>Sweat glands form. Your baby has a lean body with red and wrinkled skin. Early breathing movements begin. A substance called surfactant is formed in the lungs. This substance helps the lungs to expand normally after the baby is born.</p>
<p>26 weeks 30cm (12inches) 600g (1 1/3 lb)</p>		<p>The baby's outline may be felt through the abdomen. The eyes may be open now.</p>

Adapted from: BC Ministry of Health. (2011). The best chance: Stages of pregnancy. Retrieved from: <http://www.bestchance.gov.bc.ca/pregnancy/1st-trimester/stages-of-pregnancy/2nd-trimester-baby.html>

Illustrations from: Public Health Agency of Canada. (2011). *The sensible guide to a healthy pregnancy*. Retrieved from http://www.healthycanadians.gc.ca/health-sante/pregnancy-grossesse/health-guide-sante-eng.php?hycnd_src=healthyPregnancy_13&medium=banner_link&campaign=hpfeaturebox

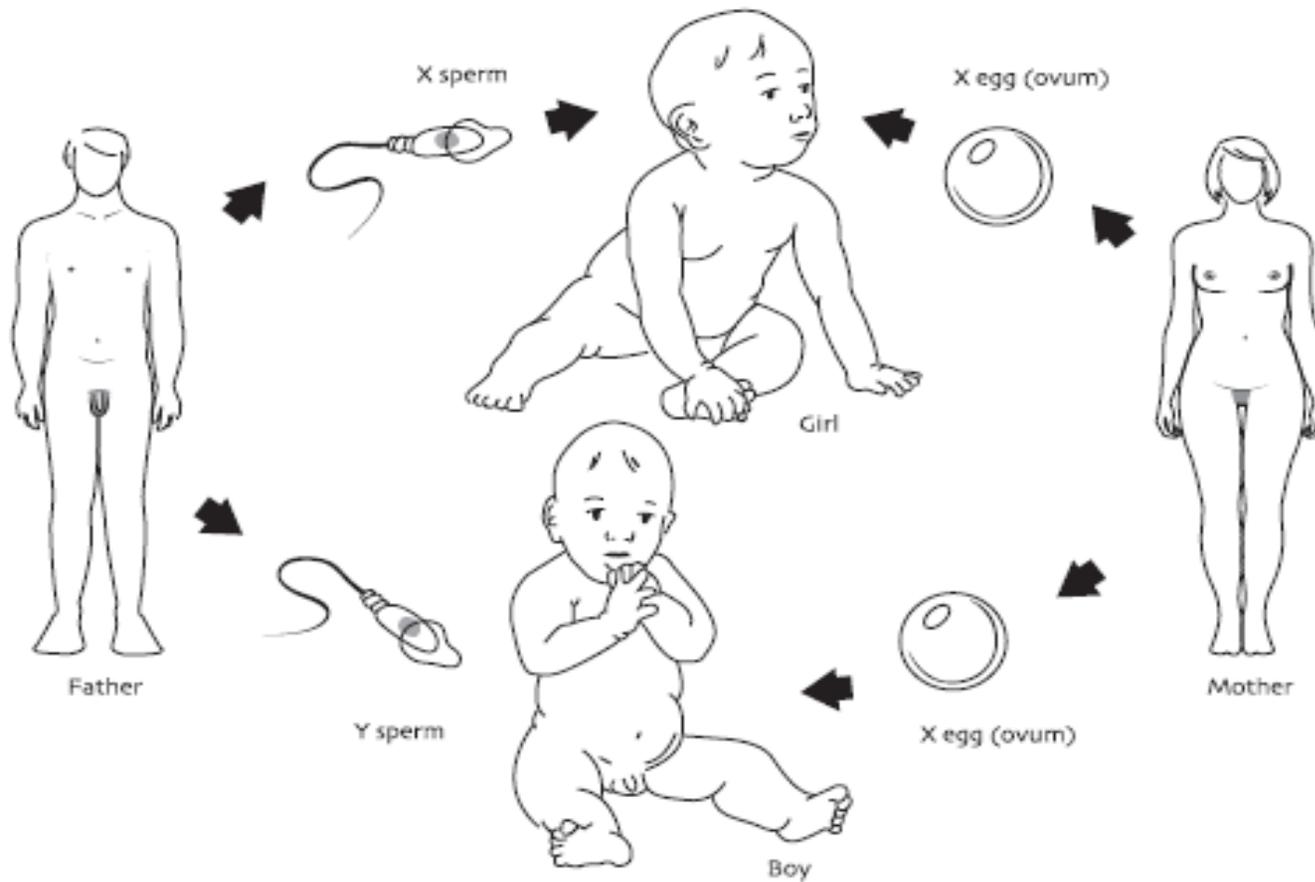
GRADE 6: FETAL DEVELOPMENT LESSON 2: SLIDE

THIRD TRIMESTER		
<p>During the third trimester (the last 3 months of pregnancy) the baby could survive if born before it is full term, but would need special care. The closer to full term, the more ready the baby is to cope with the birth process and life outside the uterus.</p>		
<p>28 weeks</p> <p>35-37 cm (14 inches)</p> <p>1100 g (2lb. 5oz)</p>		<p>The baby's body is still lean but the skin is less wrinkled and red. The baby can now store iron, calcium, and other nutrients. The baby can hear and respond to sounds.</p>
<p>32 Weeks</p> <p>40-42 cm (16 inches)</p> <p>1800-2100g (4lb-4lb. 7oz)</p>		<p>The baby's skin is pink and smooths out as the fat forms under it. The baby develops a sense of taste and becomes aware of sounds outside the mother's body. The male baby's testicles begin to drop into the scrotum. The pupils in the baby's eyes can react to light.</p>
<p>36 weeks</p> <p>45-47 cm (18 inches)</p> <p>2000-2900g (4lb. 11oz-6lb. 5oz)</p>		<p>The baby's body is rounded and usually plump. The downy hair on the baby's body begins to disappear. The baby's skin is smooth, pink, and covered with a grayish-white cheese-like substance called vernix. The baby continues to increase the store of antibodies and is able to resist some diseases.</p>
<p>40 weeks</p> <p>45-55 cm (18-22inches)</p> <p>3200g + (7lb. +)</p>		<p>Head hair is usually present. The testicles of male babies are now in the scrotum and the labia majora of female babies are developed. The baby is now full term.</p>

Adapted from: BC Ministry of Health. (2011). The best chance: Stages of pregnancy. Retrieved from: <http://www.bestchance.gov.bc.ca/pregnancy/2nd-trimester/stages-of-pregnancy/3rd-trimester-baby.html>

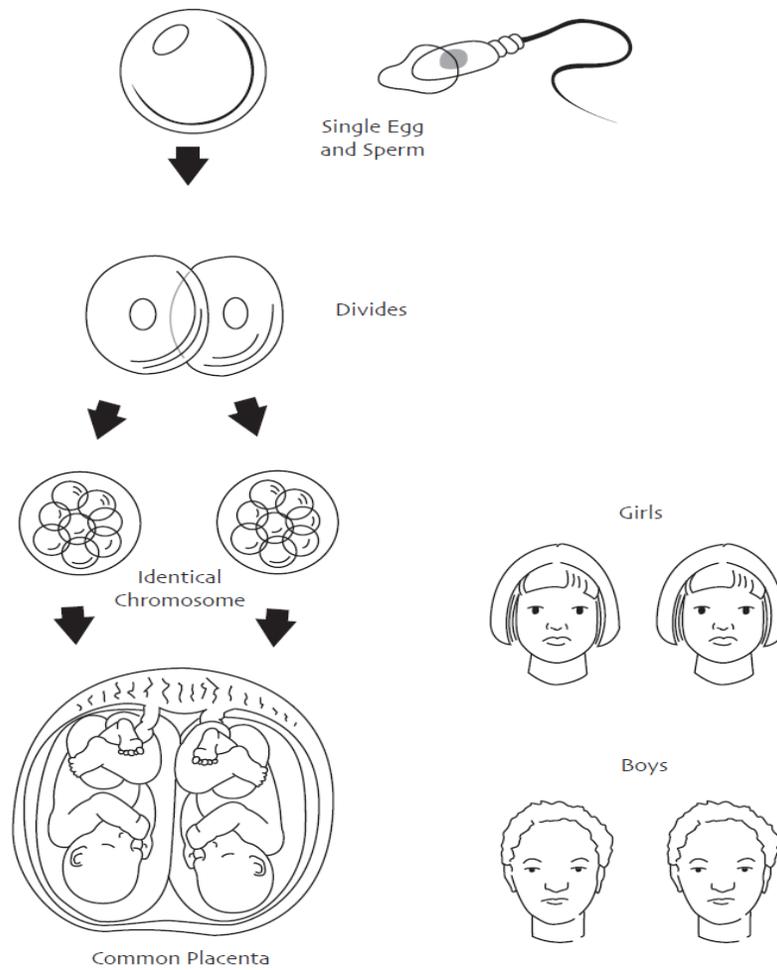
Illustrations from: Public Health Agency of Canada. (2011). *The sensible guide to a healthy pregnancy*. Retrieved from http://www.healthycanadians.gc.ca/health-sante/pregnancy-grossesse/health-guide-sante-eng.php?hycnd_src=healthyPregnancy_13&medium=banner_link&campaign=hpfeaturebox

GENETICS



GRADE 6: FETAL DEVELOPMENT LESSON 2: SLIDE

Identical Twins



Adapted from *Sexuality: An Education Resource Book*, Canada: Globe/Modem Curriculum Press, page 301

GRADE 6: FETAL DEVELOPMENT LESSON 2: SLIDE

