



# Human Development Jigsaw

## Lesson Topic

Human Development and Trimesters of Pregnancy

**RIEL Biology Element**  
Collaboration

## Time Required

One to two class periods

## Standards Addressed

- SC.912.L.16.13 Describe the basic anatomy and physiology of the human reproductive system. Describe the process of human development from fertilization to birth and major changes that occur in each trimester of pregnancy

## Science and Engineering Practice

- Obtaining, evaluating, and communicating information.
- Analyzing and interpreting data.

## Lesson Summary

This activity teaches students about the different stages of pregnancy and the major developments that occur during each trimester. Students will become an expert on one trimester of pregnancy and then communicate what they learned through a jigsaw activity. Finally, students will work together to analyze data in order to determine what trimester of pregnancy three individuals are in.

Collaboration will help students when creating their one-pager on their assigned trimester. Since they are creating their one pager in partners, students will be able to read through the article together and discuss what the article is saying in their native language. They can also work together when creating the one-pager and use each other's strengths. The second part of the lesson involves a jigsaw where they are teaching other students about the trimester they became an expert on. Communicating information with others is one of the best ways to learn. Finally, they work together to analyze data and apply everything that they taught each other.

Students will first obtain information about their assigned trimester through a reading and a video. The students are provided multiple ways to obtain their new information. The students will then have to evaluate what the most important information is and what are the defining characteristics of their trimester. Finally, they will have to create a one-pager that communicates the most important information to their peers. When they meet up in their larger groups they will have to teach others about their trimester which is another form of communication.

In order to assess what students learned through the jigsaw, students will be presented with three case studies about three pregnant individuals. They will have to analyze the qualitative and quantitative data on each mother and decide which trimester the mother is in based on the major developments in the baby.

## Materials

- Human Development Articles and Videos
- Human Development Student Learning Guide
- Construction paper for one-pager
- Markers and colored pencils for one-page

## Before the Activity

Prior to the lesson, the teacher should print out the articles on each trimester. The teacher should also set out the materials needed to create the one pager such as construction paper and markers. Finally, the teacher needs to print out a student learning guide for each student.

The students should have already learned about the male and female reproductive structures before completing this lesson.

## Lesson Activities

- 1. Engage: Elicit Prior Knowledge.** Teacher engages prior knowledge in the students by asking where fertilization takes place and structure in a female that the baby develops in. Allow students to turn and talk to discuss the answer to the question if they are stuck. The then teacher introduces to the students that the objective of the lesson is to learn the steps of human development during pregnancy and describe the major changes that occur during each trimester.
- 2. Explore: Trimester One Pager.** Teacher groups students into partners and assigns each partnership one of the three trimesters of pregnancy to become an expert on. While creating the partnerships, the teacher should be mindful of students' language levels and try to place emergent bilingual students with another student who speaks their native language.
- 3. Students then read the article and watch the video** that aligns with their assigned trimester. While reading, students should use various reading strategies such as #hashtag summaries or gist statements in order to obtain the most important information from their text and video.

## Content Learning Objectives

Students will be able to describe the steps of human development and the major changes that occur during each trimester.

## Lesson Activities

4. **After watching the video and annotating the text,** students should create their one-pager about their specific trimester of pregnancy. Their one-pager should include the size of the baby during the trimester, the time period of the trimester, major developments that occur, and anything else the students think should be included. The teacher should be circulating the room while students work to answer questions and make sure the one-pagers are accurate.
5. **Explain: Human Development Jigsaw.** Once the posters are complete, the teacher will create groups of six ensuring that there is a partnership from each trimester in each group. Students will then use their one pager to teach the rest of the group about what they learned. Students should record what they learn about each trimester in their student learning guide. The teacher should encourage the students to ask questions to each other once everyone has shared.
6. **Elaborate/Evaluate: Data Analysis.** The students will return to their original partnership to complete the final piece of the lesson. On the back of the student handout are three data sets about pregnant women and their fetus. Using the information and what students have learned from the jigsaw, the students will have to determine what trimester the mother is in and explain their reasoning. At the end of class, the teacher should lead a discussion on each data set and have the class come to a consensus on what trimester each mother is in. The teacher will be able to evaluate student comprehension from this ending discussion and be able to clarify any misunderstandings that may still be present.



Name: \_\_\_\_\_

Date: \_\_\_\_\_

# Human Development Articles and Videos

## First Trimester (0 to 12 Weeks)

At fertilization, the egg and sperm combine to form a zygote, which implants in the wall of the uterus. The zygote becomes an embryo as its cells divide and grow.

The first trimester is the most crucial to your baby's development. During this period, your baby's body structure and organ systems develop. Most miscarriages and birth defects occur during this period.

At 6 weeks, the heart starts to beat and it can be measured using a fetal Doppler. By the end of the first 12 weeks all of the body's major organs and structures have begun to develop. This includes the digestive system, reproductive system, brain, and spinal cord. Facial features have begun to form along with fingers and toes. The eyelids have formed and will remain closed until around week 28, to protect the eyes. The kidneys start producing urine in the amniotic sac. The placenta provides nutrients to the developing fetus.

By the end of the first trimester, the fetus is around 3 inches in length and weighs nearly 1 ounce.



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## Second Trimester (13 - 28 Weeks)

The second trimester of pregnancy is often called the "golden period" because many of the unpleasant effects of early pregnancy disappear. During the second trimester, the mother is likely to experience decreased nausea, better sleep patterns, and an increased energy level. Somewhere between 16 weeks and 20 weeks, the mother may feel the baby's first fluttering movements.

The fetus goes through many changes during this time, growing to be around 1 foot (12 inches) in length and weighing 1.5 pounds. The second trimester is defined by a major period of growth as the major organs start to mature.

During the second trimester the bones in the legs and arms start to harden and the baby can start to move their limbs. The baby can start to respond to stimuli as it can start to hear the mother's heartbeat. Skin, hair, and nails have formed. Taste buds have formed and bone marrow starts to make blood cells. The placenta continues to provide oxygen and nutrients for the baby. The baby will continue to grow and develop as it enters the third trimester.



## Third Trimester (29 - 40 Weeks)

During the third trimester, the fetus continues to grow in size and weight. The lungs are still maturing, and the fetus begins to position itself head down. By the end of the third trimester, the fetus is about 19 to 21 inches long and weighs, on average, 6 to 9 pounds.

For the mother, the third trimester marks the home stretch, as they prepare for the delivery of their baby. The fetus is continuing to grow in weight and size, and the body systems finish maturing. The mother may feel more uncomfortable as they continue to gain weight and begin to have false labor contractions (called Braxton-Hicks contractions).

The major developments during the third trimester include the lungs becoming fully developed and the fetus can open its eyes and see light. The baby starts to accumulate fat which will provide insulation once they are born. The brain continues to mature but the skull remains unfused so it can fit through the birth canal. Hearing is fully developed, and movements become even more noticeable. The placenta continues to provide nutrients for the baby.

Toward delivery, the fetus drops lower in the person's abdomen and usually turns head-down.







Name: \_\_\_\_\_

Date: \_\_\_\_\_

# Human Development Student Learning Guide

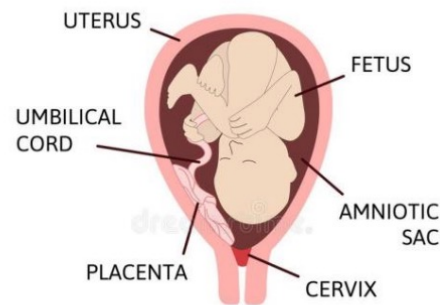
## Early Development Background:

- Fertilization takes place in the fallopian tube when the egg and sperm meet
- The zygote (fertilized egg) starts to divide and creates a blastocyst
- The blastocyst then implants in the uterus to grow and develop

Trimesters of Pregnancy	Description
<b>First Trimester</b>	Time Period: _____  Length: _____  Major Developments:  -  -  -
<b>Second Trimester</b>	Time Period: _____  Length: _____  Major Developments:  -  -  -
<b>Third Trimester</b>	Time Period: _____  Length: _____  Major Developments:  -  -  -

## Key Terms:

- **Placenta:** An organ that develops in the uterus during pregnancy and provides oxygen and nutrients for the developing fetus
- **Umbilical Cord:** A hollow rope that connects the embryo to the placenta
- **Amniotic Sac:** A fluid-filled sac where the embryo develops



**Directions:** Use the information in the Case Study to determine what trimester the mother is in.

<p><b>Case #1:</b> A 34 year old female requests for size and date of pregnancy</p> <p>Findings: Length: 37.5cm Weight = 1000 grams</p> <ul style="list-style-type: none"> <li>- Baby hears and recognizes voices</li> <li>- Brain waves show rapid eye movement (REM) sleep, which means the baby may be dreaming</li> <li>- Eyes are starting to open and close</li> <li>- Branches of lungs are quite developed</li> </ul>	<p>Trimester: _____</p> <p>Explanation Why:</p>
<p><b>Case #2:</b> A 29 year old female requests for size and date of pregnancy</p> <p>Findings: Length = 0.9 to 1.2 inch Weight = 2 g(0.07oz)</p> <ul style="list-style-type: none"> <li>- Webbed hands and feet</li> <li>- Cartilage and bones begin to form</li> <li>- Heartbeat detected</li> <li>- Upper lip and nose tip is being formed</li> <li>- Optic vessels visible but remain closed for several months</li> </ul>	<p>Trimester: _____</p> <p>Explanation Why:</p>
<p><b>Case #3:</b> A 33 year old female requests for size and date of pregnancy</p> <p>Findings: Length = 8cm Weight = 23g (0.8oz)</p> <ul style="list-style-type: none"> <li>- Webbed hands and feet</li> <li>- Bone replaces cartilage and ribs appear</li> <li>- Movements can be measured/detected</li> <li>- Mouth can open/close</li> <li>- Growing rapidly</li> </ul>	<p>Trimester: _____</p> <p>Explanation Why:</p>