Learner Outcomes

W-5.3 Identify the basic components of the human reproductive system, and describe the basic functions of the various components; e.g. fertilization, conception.

How To Use

This lesson plan contains several activities to achieve the learner outcome above. You may choose to do some or all of the activities, based on the needs of your students and the time available. Some of the activities build on the ones that come before them, but all can be used alone. For a quick lesson, combine activities A, C and E.

Classroom Activities & Timing

A. Ground Rules (5-10 minutes)
B. An Egg Meets a Sperm (15-20 minutes)
C. Step-by-Step Reproduction (10-15 minutes)
D. Reproduction Crossword (15-20 minutes)
E. Question Box (5-10 minutes)

Required Materials

HANDOUT and ANSWER KEY: An Egg Meets a Sperm
DIAGRAMS: Menstrual Cycle, Sperm Production, Fertilization, Implantation
CARDS: Step-by-Step Reproduction
HANDOUT and ANSWER KEY: Reproduction Crossword

All the student handouts are also available in the Grade 5 Workbook.
All the diagrams are also available as slides in Grade 5 Diagrams.
Background Information

This lesson deals with the biological process of sexual reproduction. There are many additional ways that families are created, including in vitro fertilization, adoption, surrogacy, fostering, and donor eggs or sperm.

The process of sexual reproduction begins in the individual bodies with ovulation (Journey of an Egg lesson) and sperm production and ejaculation (Journey of a Sperm lesson).

Fertilization

During sex, the erect penis is inserted into the vagina. Sperm are ejaculated into the vagina and begin swimming up past the cervix, through the uterus and into the fallopian tubes. The tail of each sperm cell acts as a propeller to move the sperm forward. The first sperm will enter the fallopian tube minutes after ejaculation, and can live in the fallopian tubes/uterus for up to five days. If the sperm encounter an egg in the fallopian tube, each sperm cell will attempt to penetrate the egg. Only one sperm will succeed in penetrating the egg, which is called fertilization. Once one sperm has penetrated the egg, the outer membrane of the egg changes and prevents fertilization by any other sperm.

Implantation

After the sperm cell and the egg unite, the fertilized egg is called a zygote. The zygote travels down the rest of the fallopian tube and into the uterus. It also begins dividing, so that the single fertilized cell becomes two cells, the two cells become four, etc. The cells are now called an embryo. About 5-7 days after fertilization, the embryo implants into the lining of the uterus.

If more than one egg is released at the same time, each egg can be fertilized by a different sperm. This will result in fraternal twins. If a zygote divides into two distinct entities, this will result in identical twins. Why the zygote divides into two at this stage is unknown. About 3% of births in Canada are twins, triplets, or more.

Inclusive Language

Language is complex, evolving and powerful. In these lessons, inclusive language is used to be inclusive of all students, including those with diverse gender identities, gender expressions and sexual orientations. This includes the use of ‘they’ as a singular gender-neutral pronoun.

A person’s sex can be male, female or intersex (not clearly defined as either male or female). Sex is independent of gender identity. Gender identity is a person’s internal sense of identity as female, male, both or neither, regardless of their sex assigned at birth.
For many people, their gender matches the sex they were assigned at birth (cisgender). For others, their gender identity does not match the sex they were assigned at birth. They may use terms like transgender, trans, non-binary, gender fluid, gender queer, agender or others, to describe their gender identity. The umbrella term ‘trans’ is primarily used here, to describe people whose gender identity and sex assigned at birth differ. While this umbrella term does not fit everyone, the intention is to be inclusive as possible.

In these lessons, you will notice that body parts and processes are not labelled as male or female. While it is ok to use the terms boy/girl/male/female, it is important not to assume that all boys or girls have certain anatomy. This approach is more inclusive of intersex and gender diverse people.

A. Ground Rules

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

B. An Egg Meets a Sperm

This story explains how sperm production, ovulation and pregnancy are related. It walks through the stages of fertilization and implantation, and provides a detailed explanation of how each step fits into the process.

1. Distribute An Egg Meets a Sperm handout to students.

2. Display the Sperm Production, Fertilization and Implantation diagrams.

3. Have students follow along with their handouts and fill in the blanks as you review the processes of sperm production and ovulation, and continue the story with fertilization and implantation.

C. Step-by-Step Reproduction

Students demonstrate knowledge of the components of the human reproductive systems and the process of reproduction. This activity will be much easier if Activity B is done first.

1. Print the Step-by-Step Reproduction cards onto paper or cardstock. Consider laminating the cards for reuse.
2. Use masking tape to mark out a ‘Y’ shape on the floor. Use the cards to mark one arm of the Y as ‘Egg’, the other arm as ‘Sperm’, and put the ‘Pregnancy’ card at the end, as shown below.

3. Give all the other cards to the students, in random order.

4. Have students place each step in order along the Y. If you completed the previous activity, encourage the students to refer to their An Egg Meets a Sperm handout for help in getting the cards in the correct order.

5. Use the answers below to ensure all steps are in the correct order.

### Answers

**Egg**
1. Lining of uterus thickens with blood
2. Ovulation occurs (egg released from ovary)
3. Egg enters fallopian tube

**Sperm**
1. Sperm is made in the testicles
2. Sperm exit the testicles and travel up the vas deferens
3. Sperm cells mix with semen

**Pregnancy**
1. Erect penis is inserted into vagina (sexual intercourse)
2. Sperm cells leave the penis (ejaculation) and enter vagina
3. Sperm travel through the cervix, uterus, and into fallopian tubes
4. One sperm cell attaches to an egg and forms one cell (fertilization)
5. Cell starts to divide
6. Cells (zygote) travel through fallopian tube to uterus
7. Cells attach to wall of uterus (implantation)
D. Reproduction Crossword

Use the crossword puzzle as a homework assignment, assessment option, or just a fun activity to wrap up the lesson.

1. Give each student a copy of the crossword.

2. Encourage students to work with a partner to complete the crossword.

E. Question Box

Answer any questions from the question box in the previous lesson. Have students submit any new questions and address them next class.

Addressing the questions at the next class allows you time to review the questions and prepare responses.

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:
- describe the reproduction process?
- identify steps of fertilization and implantation using appropriate terminology?

Skills:
- participate in class discussion and exhibit appropriate listening and speaking skills?
- identify support people?
Grade 5 Reproduction

**Attitudes:**

- recognize that during puberty, reproductive systems mature to be able to reproduce?
- recognize that ovulation and sperm production could result in pregnancy?
An Egg Meets a Sperm

Read the following story and fill in the blanks using the words provided. Words from the word bank can be used more than once.

**Word Bank**

<table>
<thead>
<tr>
<th>fertilization</th>
<th>implantation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ovary</td>
<td>ovulation</td>
</tr>
<tr>
<td>egg</td>
<td>penis</td>
</tr>
<tr>
<td>semen</td>
<td>sperm</td>
</tr>
<tr>
<td>testicle</td>
<td>tubes</td>
</tr>
<tr>
<td>uterus</td>
<td>zygote</td>
</tr>
</tbody>
</table>

Once upon a time there were two important cells, the sperm cell and the egg. The _____________ cell was made and stored in a testicle. The _____________ was stored in an ovary. These two cells had a very important journey to make! For if they were to meet one another a powerful event could happen.

The sperm cell had the longer journey to make. The sperm cell needed to travel from the _____________ through the vas deferens all the way to the urethra and out of the end of the _____________ into the vagina, past the cervix, through the uterus, and into the fallopian tube. There it would meet the ___________. As the sperm cell travelled through the vas deferens it mixed with other fluid and was now called ___________. Ejaculation is when semen leaves the penis.

For the two cells to meet, the egg would mature and leave the _____________. It would travel out of the ovary and into the fallopian tube, a process called _____________.

The meeting of the two cells happens through sexual intercourse, when a penis enters a vagina. Sperm cells in semen are ejaculated out of the end of the penis and into the vagina. Hundreds of millions of sperm cells are ejaculated out of the penis, but only around 1,000 make it as far as the fallopian _____________.

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The semen containing sperm travelled from the vagina, through the cervix and into the uterus in search of the egg.

Once the ____________ cells found the egg they started trying to break through the outer lining of the egg. One sperm cell broke through the lining and attached to the egg. This breaking through and attaching process is called _________________.

Once one sperm cell entered the egg none of the other sperm cells that made the epic journey could enter. The two cells now became one, called a zygote.

The ____________ began to divide into two identical cells, and those two into four, and those four into eight and so on, until many cells formed a larger ball of cells, called an embryo. This embryo continued to travel through the fallopian tube into the _________________. Once the embryo entered the uterus, it attached itself to the wall of the uterus. This is called _________________.

Once implantation has happened, the ball of cells continues to grow into a baby. The powerful event has happened, and a new journey has begun: the journey of a developing baby.
Once upon a time there were two important cells, the sperm cell and the egg. The sperm cell was made and stored in a testicle. The egg was stored in an ovary. These two cells had a very important journey to make! For if they were to meet one another a powerful event could happen.

The sperm cell had the longer journey to make. The sperm cell needed to travel from the testicle through the vas deferens all the way to the urethra and out of the end of the penis into the vagina, past the cervix, through the uterus, and into the fallopian tube. There it would meet the egg. As the sperm cell travelled through the vas deferens it mixed with other fluid and was now called semen. Ejaculation is when semen leaves the penis.

For the two cells to meet, the egg would mature and leave the ovary. It would travel out of the ovary and into the fallopian tube, a process called ovulation.

The meeting of the two cells happens through sexual intercourse, when a penis enters a vagina. Sperm cells in semen are ejaculated out of the end of the penis and into the vagina. Hundreds of millions of sperm cells are ejaculated out of the penis, but only around 1,000 make it as far as the fallopian tubes. The semen containing sperm travelled from the vagina, through the cervix and into the uterus in search of the egg.

Once the sperm cells found the egg they started trying to break through the outer lining of the egg. One sperm cell broke through the lining and attached to the egg. This breaking through and attaching process is called fertilization. Once one sperm cell entered the egg none of the other sperm cells that made the epic journey could enter. The two cells now became one, called a zygote. The zygote began to divide into two identical cells, and those two into four, and those four into eight and so on, until many cells formed a larger ball of cells, called an embryo. This embryo continued to travel through the fallopian tube into the uterus. Once the embryo entered the uterus, it attached itself to the wall of the uterus. This is called implantation. Once implantation has happened, the ball of cells continues to grow into a baby. The powerful event has happened, and a new journey has begun: the journey of a developing baby.
Egg
Lining of uterus thickens with blood
Ovulation occurs

(egg released from ovary)
Egg enters fallopian tube
Sperm
Sperm is made in the testicles
Sperm exit the testicles and travel up the vas deferens
Sperm cells mix with semen
Pregnancy
Erect penis is inserted into vagina (sexual intercourse)
Sperm cells leave the penis (ejaculation) and enter vagina.
Sperm travel through the cervix, uterus, and into fallopian tubes.
One sperm cell attaches to an egg and forms one cell (fertilization)
Cell starts to divide
Cells (zygote) travel through fallopian tube to uterus
Cells attach to wall of uterus (implantation)
Reproduction Crossword

Complete the crossword below

Word Bank
- clitoris
- egg
- ejaculation
- erection
- fertilization
- implantation
- menstruation
- ovulation
- penis
- pregnancy
- semen
- sex
- sperm
- testicles
- uterus
- vagina
- vulva

Across
2. When the penis gets larger and firmer
6. Monthly shedding of the uterine lining
8. External genitals including the labia, clitoris and opening of the vagina
9. The penis is inserted into the vagina
11. The embryo attaches to inside of the uterus
12. Where the baby grows and develops before birth
13. Path from the uterus to the outside of the body
15. Sex organ attached to the scrotum that becomes larger and firmer during arousal
16. Part of the vulva that becomes larger and firmer during arousal
17. The end result of fertilization and implantation that results in a baby

Down
1. Thick whitish fluid that contains sperm
3. Release of the egg from the ovary
4. Glands that produce sperm
5. A sperm joins an egg to become one cell
7. Reproductive cell made in the ovaries
10. Release of semen from the penis
14. Reproductive cell made in the testicles

Created using the Crossword Maker on TheTeachersCorner.net

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**Answer Key**

**Across**
2. When the penis gets larger and firmer (erection)
6. Monthly shedding of the uterine lining (menstruation)
8. External genitalia including the labia, clitoris and opening of the vagina (vulva)
9. The penis is inserted into the vagina (sex)
11. The embryo attaches to inside of the uterus (implantation)
12. Where the baby grows and develops before birth (uterus)
13. Path from the uterus to the outside of the body (vagina)
15. Sex organ attached to the scrotum that becomes larger and firmer during arousal (penis)
16. Part of the vulva that becomes larger and firmer during arousal (clitoris)
17. The end result of fertilization and implantation that results in a baby (pregnancy)

**Down**
1. Thick whitish fluid that contains sperm (semen)
3. Release of the egg from the ovary (ovulation)
4. Glands that produce sperm (testicles)
5. A sperm joins an egg to become one cell (fertilization)
7. Reproductive cell made in the ovaries (egg)
10. Release of semen from the penis (ejaculation)
14. Reproductive cell made in the testicles (sperm)