ARDUINO EDUCATION STARTER KIT

ARDUINO
EDUCATION

LEARN ELECTRONICS AND GET STARTED WITH PROGRAMMING IN YOUR CLASSROOM STEP-BY-STEP

TEACH MIDDLE SCHOOL STUDENTS THE BASICS OF PROGRAMMING, CODING, AND ELECTRONICS. NO PRIOR KNOWLEDGE OR EXPERIENCE NECESSARY AS THE KIT GUIDES YOU THROUGH.

ARDUINO EDUCATION LEARNING EVOLUTION

Our aim is to help students achieve their dream careers in STEAM. Our cross-curriculum content and open-source approach are essential tools for STEAM classes that develop with students as they progress **through middle school, high school, and university**, preparing them for a successful future.

Step by step, we champion students as they progress through their STEAM education with projects that increase in complexity to challenge them as they develop their skills.

We support students in achieving successful careers in STEAM-related fields with educational kits that are targeted to their age and ability. The technology is practical, creative, and fun. Students learn using the same products that companies around the world use in applications like rapid prototyping, AI, drone technology, and developing machine learning.

WHAT IS THE ARDUINO EDUCATION STARTER KIT?

- Affordable for schools and inspired by the original Arduino Starter Kit, the **Arduino Education Starter Kit** provides entire step-by-step-lessons with information and materials- such as detailed teacher's guidance, key words, exercises, extra optional activities, concepts, history and interesting facts, for a complete and in-depth class experience.

- The Arduino Education Starter Kit also leaves teachers free to decide on their own approach to using the kit in class. It can be used for an entire semester and integrated into different subjects from physics and history to chemistry, programming, and electronics.

- With the Arduino Education Starter Kit students with no prior coding / electronics experience can learn about current, voltage, digital logic and programming from the most famous inventors in the history of technology.

BENEFITS OF THE ARDUINO EDUCATION STARTER KIT

- No prior coding or electronics experience is required
- Easy to get started
- Lessons are fun and engaging with real-world topics
- Boost critical thinking, collaborative learning, and problem-solving skills
- Increase your own confidence in electronics with teacher guidance

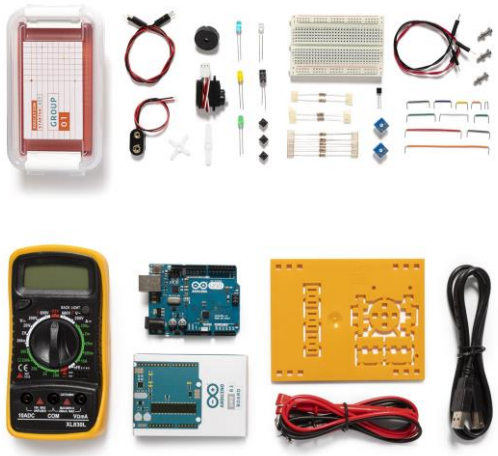
CURRICULUM ALIGNMENT

- This Education Starter Kit follows the US Common Standards Concepts and focuses on core concepts of coding and electronics.

KEY LEARNING VALUES

- Learn electronics step-by-step, with no prior coding or electronics experience required
- Learn about current, voltage, digital logic, and programming

- Suitable for ages 11- 14
- 8 students per kit (recommended)
- 9 lessons and 2 open-ended projects
- Available in English and Spanish

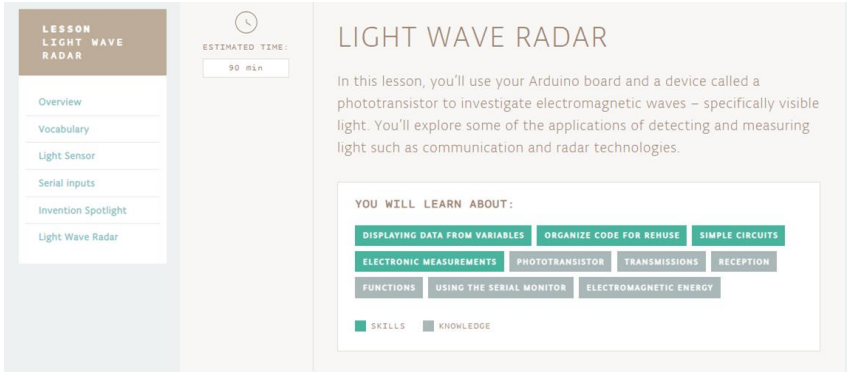


The Arduino Education Starter Kit includes: 4 Arduino Uno rev 3, 4 Starter Kit mounting piece, 4 USB cable, 4 Breadboard 400 points, 4 multimeters, Solid core jumper wires, 4 Easy-to-assemble plastic base, 4 9v battery snap, 4 Stranded jumper wires (black), 4 Stranded jumper wires (red), 4 Phototransistors, 8 Potentiometer 10k Ohms, 20 Pushbuttons, 4 Temperature sensor [TMP36], 20 LEDs (red), 20 LEDs (green), 20 LEDs (yellow), 20 LEDs (blue), 4 Piezo capsule [PKM17EPP-4001-B0], 4 Capacitors 100uF, 20 Resistors 220 Ohms, 20 Resistors 560 Ohms, 4 Resistors 10k Ohms, 20 Resistors 10k Ohms, 8 Batteries 9V, 4 Female-male Jumper wires (red), 4 Female-male Jumper Wires (black)

- 4 Arduino Uno Rev 3 boards
- A collection of sensors and actuators
- Access to an online platform with content and extra resources
- Online step-by-step teacher notes

CONTENT

- **Online content for 9 lessons and 2 open-ended group projects** for middle school students (11+).
- **Optional and useful extra content** for both educators and students , such as resources for extended learning, teacher notes for educators, and further notes for students.
- Each lesson builds off the next and provides the **opportunity to apply skills and concepts** that were covered in previous lessons.
- Each lesson is designed to be completed by **a pair of students working with one Arduino Education Starter Kit and one computer.**
- The online course comes with **a logbook in a PDF format** that students complete as they work through the lessons.



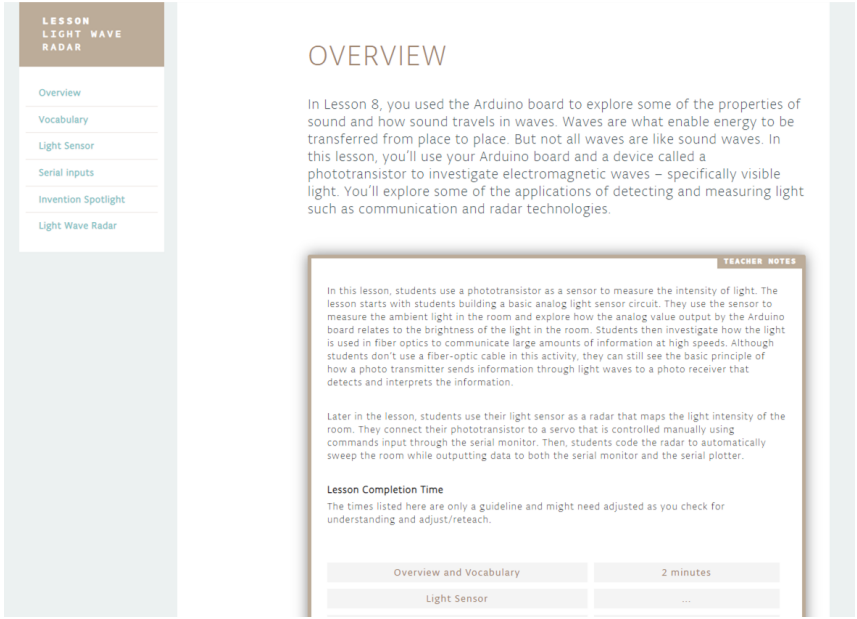
EXPLAINING THE LESSONS

Each lesson should last around 90 mins. The lessons are planned with the possibility of being divided in two ways:

- Covering the basics of electronics takes approximately **17 hours**
- Extra resources are provided within each lesson to provide extension possibilities. **These resources bring the total lesson time to 25 hours**

EXPLAINING THE LESSONS

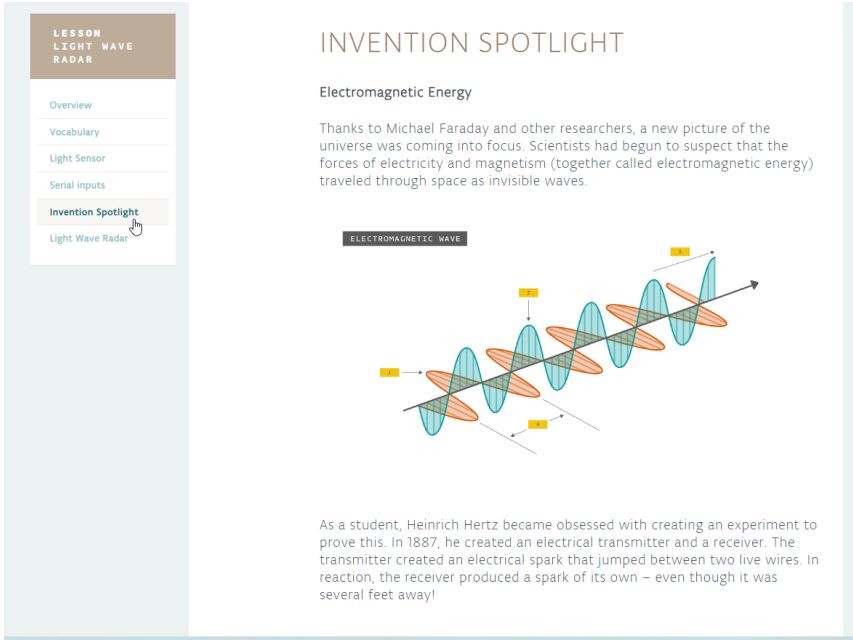
- The start of each lesson includes an overview, estimated completion times, and learning objectives.
- Throughout each lesson the teachers can use the helpful **teacher notes for lessons to go more smoothly.** The teacher notes are recommendations and extra information for teaching and learning guidance.
- Another learning tool inside the lessons is the **further notes for students,** including extended information for better understanding.



INVENTION SPOTLIGHT

- The Arduino Education Starter Kit takes students on a journey through past ideas, inventions, and innovations that have shaped our world.

- In the Invention Spotlight, students learn about different inventions and facts behind the topics and lessons, giving them a broader view and historical insight.



RESOURCES

- The resources are extra content which provide extended learning information for a more comprehensive experience. Resources aren't included in lesson time, but rather are optional extras, so it's up to students how they use this section. You'll find the resources on a content tab outside the lessons as well as in the "learn more about" botton within the lessons themselves.

VOCABULARY

- The lessons also come with words that might be unfamiliar to students. There are numerous vocabulary activities a teacher can do with their students. These activities can be considered as in-class extension activities or as additional assignments to be completed on their own.

PROJECTS

- The course includes **two open-ended projects**. These projects can be completed individually or in groups, and there's no right or wrong answer since students are free to develop the projects in a way they want to. They just have to meet certain constraints and criteria.

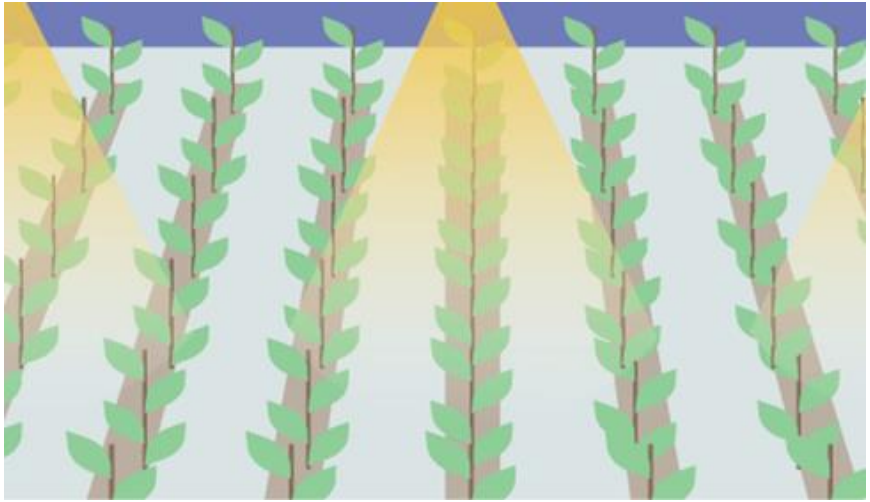
- Students will find different solutions and ways to develop the projects, inviting innovation, creativity and problem-solving thinking.

PROJECTS

Lesson 5- 90 mins

Students design, build, and program their own holiday light circuit.

Lesson 10- 180 mins



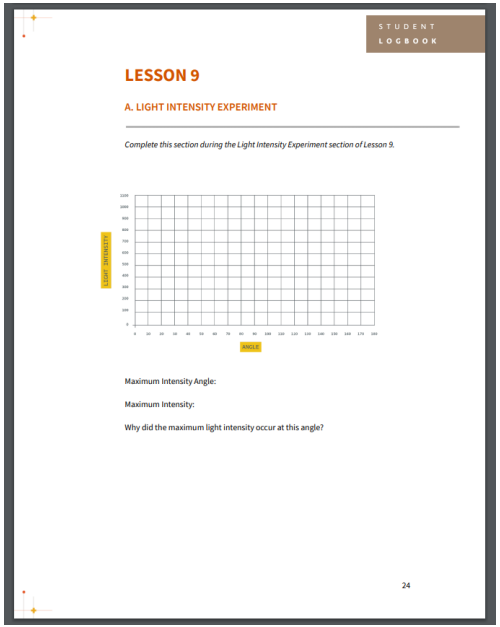
Students design, build, and program a climate-control system for a greenhouse.

LOGBOOK

- The Arduino Student Kit comes with an logbook.
- The logbook is a downloadable PDF with exercises related to the concepts learned during the lessons. Students answer the exercises as a way of reinforcing their newly-learned knowledge.
- The logbook comes with the solutions to the exercises at the end, inviting students to reflect on their answers and mistakes.
- You can print as many copies as needed for your class, and it can be completed either individually or in groups.

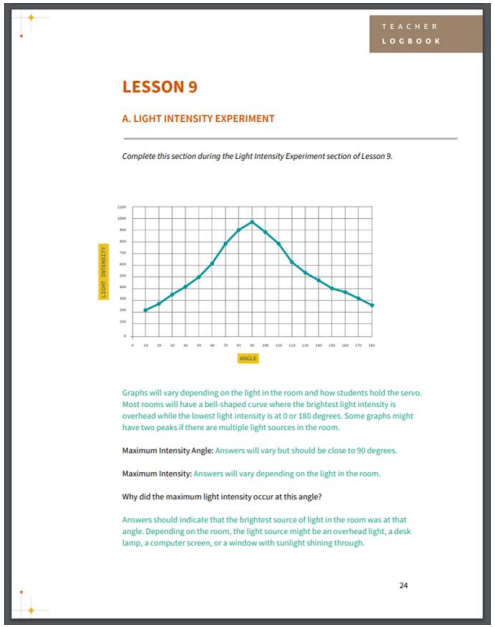
LOGBOOK

STUDENT VERSION



Exercises only

TEACHER VERSION



Includes solutions and extra information such as safety measures, charts and instructions

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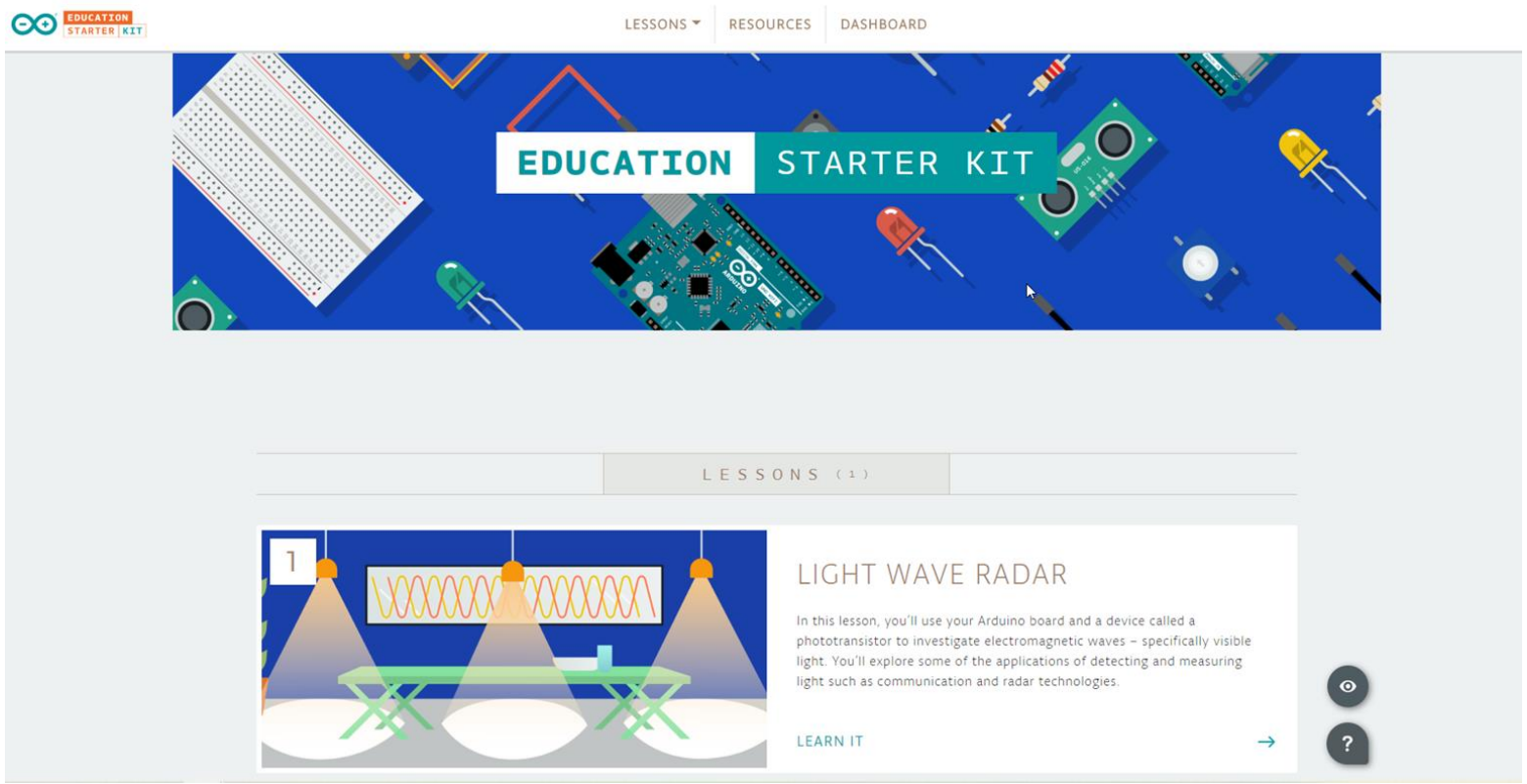
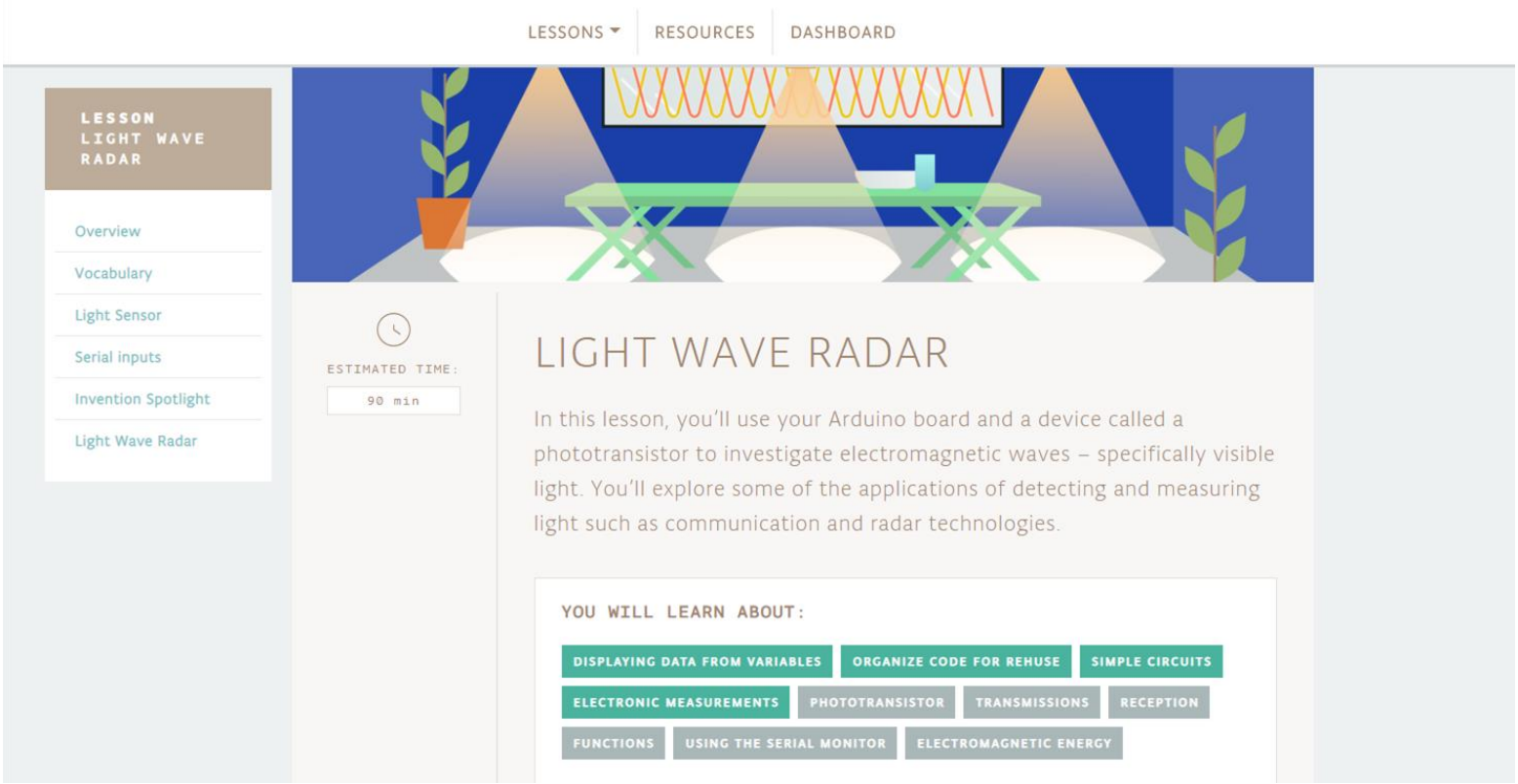
PLATFORM OVERVIEW

LANDING PAGE



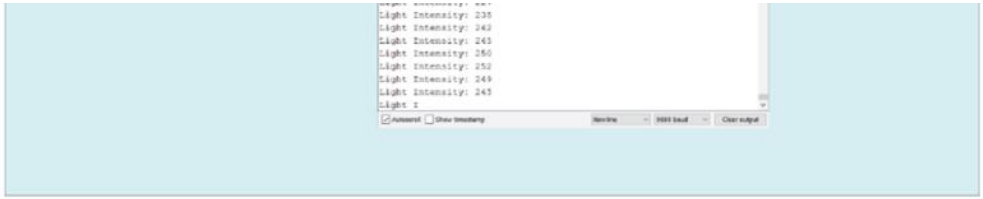
INSIDE THE LESSONS



RESOURCES PART 1

LESSON
LIGHT WAVE RADAR

- Overview
- Vocabulary
- Light Sensor
- Serial inputs
- Invention Spotlight
- Light Wave Radar



16) After you're certain that your light sensor is working correctly, click **Save** to save your sketch.

LEARN MORE ABOUT
ELECTROMAGNETIC SPECTRUM

Code creation – Light wave communication

One of the biggest uses of electromagnetic waves is for communication. Televisions, radios, cell phones, computers, Bluetooth devices, and remote-controlled robots and toys are just a few examples of devices that send and receive information through radio waves. But it's not just radio waves that are used for communication. **Fiber-optic** technology uses light to transmit large amounts of information over long distances at very high rates of speed.

RESOURCES PART 2

RESOURCES

Electromagnetic Spectrum

COLLAPSE ALL

science

Electromagnetic Spectrum

The light sensor you just created detects visible light. Visible light is part of the electromagnetic spectrum, which is made up of many different kinds of electromagnetic waves, including radio waves, microwaves, and X-ray waves.

THANK YOU FOR YOUR TIME!

ANY QUESTIONS?