

**Sidi-Ammar****Text:****Investigating the Effects of Light Intensity on Plant Growth**

In this experiment, our primary focus is to explore the effects of varying light intensities on plant growth. Light plays a pivotal role in photosynthesis, the process by which plants convert light energy into vital chemical energy, fueling their growth and vitality. By meticulously observing and documenting plant growth under different light conditions, we seek to deepen our understanding of how light intensity influences plant development.

**Our hypothesis suggests that** plants exposed to higher light intensities will demonstrate enhanced growth compared to those subjected to lower light levels. This hypothesis stems from the fundamental understanding that light acts as a catalyst for photosynthesis, and increased light availability should translate to greater energy for plant growth.

**To test our hypothesis,** we carefully selected plant species and cultivated them in pots filled with nutrient-rich soil. We arranged the plants into three groups: one bathed in direct sunlight, another placed in partial shade to reduce light exposure, and a control group kept in complete darkness. We ensured consistent environmental conditions such as temperature, humidity, and watering across all groups. Throughout the experiment, we regularly monitored plant growth, measuring parameters such as height, leaf count, and overall health. To ensure the reliability of our findings, we repeated the experiment multiple times.

After several weeks of observation, distinct disparities in plant growth emerged under varying light conditions. Plants exposed to direct sunlight flourished, exhibiting tall, robust stems, abundant foliage, and overall vitality. Conversely, plants in partial shade displayed slower growth, characterized by shorter stems and fewer leaves. Those in complete darkness showed minimal growth, underscoring the critical role of light in sustaining plant life and growth.

Our results confirm our hypothesis, demonstrating that higher light intensity indeed fosters enhanced plant growth. This phenomenon can be attributed to the pivotal role of light in driving photosynthesis, where increased light availability translates to greater energy production, facilitating accelerated plant growth. These findings underscore the significance of light as a key determinant in plant growth and emphasize the importance of optimizing light conditions for successful cultivation in agricultural and horticultural practices.

**Reading Comprehension****1 Reorder the following ideas as they appear in the text**

- a) description of the experimental setup, including the selection of plant species, arrangement into groups, and maintenance of consistent environmental conditions. **3<sup>rd</sup>**
- b) Statement of the hypothesis that higher light intensities will lead to enhanced plant growth due to increased energy availability for photosynthesis. **2<sup>nd</sup>**
- c) Introduction of the experiment's primary focus: investigating the effects of varying light intensities on plant growth. **1<sup>st</sup>**
- d) Discussion of the observations made after several weeks of the experiment, highlighting differences in plant growth under different light conditions. **4<sup>th</sup>**
- e) Conclusion drawn from the results, confirming the hypothesis that higher light intensity fosters enhanced plant growth. **5<sup>th</sup>**

## 2 Answer the following questions from the text

a) What is the primary focus of the experiment described in the text?

The answer: the primary focus of the experiment is to test our hypothesis that plants exposed to higher light intensities will demonstrate enhanced growth compared to those subjected to lower light levels.

b) How does light contribute to plant growth according to the text?

The answer: light contributes to plant growth via enhancing plant growth which means it fosters photosynthesis.

c) What is the hypothesis regarding plant growth concerning light intensity?

The answer: the hypothesis states that whenever a plant is subjected to sufficient light levels it will bloom in a better way compared with the one exposed to lower light levels.

d) How was the experiment conducted to test the hypothesis?

The answer: we selected plant species and cultivated them in pots filled with nutrient-rich soil. We arranged the plants into three groups: one bathed in direct sunlight, another placed in partial shade to reduce light exposure, and a control group kept in complete darkness

e) What conclusion was drawn from the results of the experiment?

The answer: Plants grow better when exposed to direct sunlight .

f) Why is light considered a key determinant in plant growth according to the text?

The answer: light is considered as important because it has a pivotal role in enhancing photosynthesis.

## 3 Fill in the following table from the text

Observation	Hypothesis	Methods	Results	Explanation
Plants do not grow in complete darkness .However, they grow when exposed to sunlight.	Our hypothesis suggests that plants exposed to higher light intensities will demonstrate enhanced growth compared to those subjected to lower light levels.	we carefully selected plant species and cultivated them in pots filled with nutrient-rich soil. We arranged the plants into three groups: one bathed in direct sunlight, another placed in partial shade to reduce light exposure, and a	Plants exposed to direct sunlight flourished, exhibiting tall, robust stems, abundant foliage, and overall vitality. Conversely, plants in partial shade displayed slower growth, characterized by shorter stems and fewer leaves.	This phenomenon can be attributed to the pivotal role of light in driving photosynthesis, where increased light availability translates to greater energy production, facilitating accelerated plant growth.

		control group kept in complete darkness		
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#### 4 Match each word with its corresponding definition

Words	Definitions
1- Hypothesis - d	a) The group in an experiment that does not receive the treatment being tested and is used as a baseline for comparison.
2- Control group - a	b) The factor being measured or observed in an experiment; it depends on the independent variable.
3- Variable -C	c) The factor that is deliberately changed or manipulated by the researcher in an experiment.
4- Dependent variable- B	d) A tentative explanation or prediction that can be tested through experimentation.
5- Independent variable- E	e) Any factor in an experiment that can be changed, manipulated, or measured.

#### 5 Translate the following sentences into English

1-La physique est vraiment importante pour la science et la technologie, car elle nous donne les bases pour comprendre comment fonctionnent la matière et l'énergie.

b- Physics is very important for science and technology because it gives us the fundamental rules for understanding matter and energy.

2-Pour les ingénieurs et les technologues, savoir comment bougent les choses, quelles forces agissent sur elles, et comment l'énergie se comporte est vraiment essentiel pour inventer de nouvelles choses géniales.

b- For engineers and technologists. It helps understand how things move and which forces affect them also how energy is composed for inventing new incredible things.

3. La physique est utilisée pour fabriquer tout, des objets simples qu'on utilise tous les jours aux choses super compliquées comme les vaisseaux spatiaux.

b- Physics is used to make everything from simple everyday objects to very complicated things such as spatial ships.

4. Les physiciens trouvent des idées pour rendre l'énergie plus propre, pour nous permettre de communiquer plus facilement, et même pour aller explorer l'espace - tout ça grâce à la physique !

b- Physicists find ideas to make energy cleaner, allowing us to communicate easily also to explore space ; everything thanks to physics.

**Sidi-Ammar****Text :****Title: Confirming Einstein's Idea: How Light Bends Around the Sun**

Albert Einstein had a big idea about how gravity works, called the Theory of General Relativity. One cool thing it predicted is that light bends around really heavy objects, like our Sun. This experiment wanted to check if that's true by watching stars near the Sun during a total solar eclipse.

To test his hypothesis, We picked a good spot to watch the eclipse where the sky was clear. Then we set up telescopes with special filters and cameras to see stars close to the Sun. We had to keep adjusting the telescopes to follow the Sun's movements. We looked at stars near the Sun before, during, and after the eclipse. We took lots of pictures to make sure we had enough data. We also made sure our equipment was set up right for accurate measurements.

After the eclipse, we used computer programs to study the pictures we took. We wanted to see if the stars looked like they were in slightly different places because of the Sun's gravity pulling on their light.

During the eclipse, we saw that stars close to the Sun seemed to be in slightly different spots than we expected. This matches what Einstein said would happen with his Theory of General Relativity. It's like the Sun was bending the light from the stars around itself.

This experiment showed that Einstein was right! His idea about light bending around heavy objects, like our Sun, is true. It means that gravity isn't just about things pulling on each other—it also affects how light moves. This discovery helps us understand more about how our universe works.

*Adapted from various resources and edited by the teacher*

**Reading Comprehension****Say whether the following statements are True or False, write T or F next to each sentence**

- Albert Einstein's Theory of General Relativity predicted that light bends around heavy objects like the Sun. True
- The experiment aimed to verify Einstein's prediction by observing the deflection of starlight during a lunar eclipse. False
- During the eclipse, stars located far from the Sun appeared to be in slightly different positions than expected. False
- The results of the experiment supported Einstein's Theory of General Relativity by demonstrating the observed deflection of starlight due to the Sun's gravity ;True

2) **Answer the following questions from the text**

- a. What **did** Albert Einstein's Theory of General Relativity predict?

The answer: Albert Einstein's Theory of General Relativity predicted that light bends around heavy objects like the sun.

- b. What was the purpose of the experiment described in the text?

The answer: The purpose of the experiment was to verify Einstein's Theory by observing stars around the sun during a total solar eclipse.

- c. How did the experimenters prepare for the observation?

The answer: the experimenters prepare for the observation by selecting a good spot to observe the stars' movements Then we set up telescopes with special filters and cameras to see stars close to the Sun. We had to keep adjusting the telescopes to follow the Sun's movements. We looked at stars near the Sun before, during, and after the eclipse. We took lots of pictures to make sure we had enough data. We also made sure our equipment was set up right for accurate measurements.

- d. What did the experimenters observe during the eclipse?

The answer: The experimenters observed the stars movements which were close to the sun during the eclipse.

3) **Fill in the following table from the text**

<b><u>Observation</u></b>	<b><u>Hypothesis</u></b>	<b><u>Methods</u></b>	<b><u>Results</u></b>	<b><u>Explanation</u></b>
	Light bends around heavy objects	We had to pick a spot where the sky was clear and then we set up telescopes to observe the sun before, during, and after the eclipse.	stars close to the Sun seemed to be in slightly different spots than we expected	The results supported Einseiten's theory that light bends around heavy objects,Also that gravity is not only about dropping items but it also affects light and cosmic issues.

4) **Exploring the language**

Expressing Concession using **However, Even though, Despite the fact that, In spite of ,Despite, Although**

He called the cops, the thief escaped

In spite of calling the cops | the thief escaped.

The thief escaped in spite of calling the cops.

1. **However:** Used to introduce a contrast or contradiction to what has been said before. Example: "She studied hard; however, she didn't pass the exam."
2. **Even though:** Indicates a concession or contrast, implying that despite a particular fact or circumstance, something else still holds true. Example: "Even though it was raining, they decided to go for a picnic."
3. **Despite the fact that:** Similar to "even though," it emphasizes a contrast between two clauses. Example: "Despite the fact that she was tired, she went for a run."
4. **In spite of:** Similar to "despite," it is used to introduce a clause indicating contrast or concession. Example: "In spite of the difficulties, they managed to complete the project on time."
5. **Despite:** Used to indicate that something happened or is true despite a particular condition. Example: "Despite the rain, the event was a success."
6. **Although:** Introduces a concessive clause, indicating a contrast or contradiction to what is stated in the main clause. Example: "Although it was late, he decided to go for a walk."

**Task :** Combine the following sentences using one of the connectors: "however," "even though," "although," "despite the fact that," or "in spite of."

- a. multiple failures, they finally succeeded in replicating the results.

Although they failed multiple times, they finally succeeded in replicating the results.

- b. The software has many bugs;, it is still widely used by professionals.

In spite of having many bugs, the software is still widely used by professionals!

- c. the complexity of the coding, she managed to develop a functional app (Although)

Although the complexity of the coding, she managed to develop a functional app.

- d. The new microscope is powerful, it requires minimal maintenance.

Despite being powerful, the new microscope requires minimal maintenance.

despite the microscope requiring minimal maintenance, it is powerful.

- e. the spacecraft encountered technical difficulties, it successfully completed its mission. (Even though)

Even though the spacecraft encountered technical difficulties, , it successfully completed its mission.

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*"Learning English is not just about mastering a language; it's about unlocking a world of possibilities, connecting cultures, and embracing endless opportunities for growth."*

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## Passive/Active Voice

### Active Voice:

- In the active voice, the subject of the sentence acts.
- The structure is Subject + Verb + Object.
- Example: "The cat (subject) chased (verb) the mouse (object)."

### Rules for Active Voice:

1. Use the active voice to emphasize the doer of the action and make your sentences clear and direct.
2. The subject comes before the verb, and the verb acts on the object.
3. Active voice is generally preferred in writing for its clarity and straightforwardness

### Passive Voice:

The mouse was chased by the cat.

The teacher sent the lesson

The lesson was sent by the teacher.

- In the passive voice, the subject of the sentence receives the action.
- The structure is Object + Be Verb (am, is, are, was, were) + Past Participle.
- Example: "The mouse (subject) was chased (passive verb) by the cat (agent)."

### Rules for Passive Voice:

1. Use the passive voice when the focus is on the recipient of the action or when the doer is unknown or less important.
2. The object comes before the verb, and the verb is formed using a form of "to be" (am, is, are, was, were) plus the past participle.
3. Passive voice is often used in formal writing, scientific reports, or when the doer of the action is unknown.

### Exercise 1

1. Rewrite the following sentences using either passive or active voice to convey the intended meaning.

a- The new feature was implemented by the development team.

The development team implemented the new feature.

b- JavaScript powers many interactive websites.

Many interactive websites are powered by JavaScript.

c- The bug was fixed by the programmer before the release.

The programmer fixed the bug before the release.

d- Various programming languages influence the software development process.

The software development process is influenced by various programming languages

e- The coding challenge was completed by the participant in record time.

The participant completed the coding challenge in record time.

f- The lead developer is introducing a new coding standard.

A new coding standard is being introduced by the lead developer.

g- The syntax errors were corrected by the code reviewer.

The code reviewer corrected the syntax errors.

h- IntelliSense assists developers in writing code more efficiently.

Developers are assisted by IntelliSense in writing code more efficiently.

**Sidi-Ammar****Text:****How Temperature Affects the Reaction between Hydrochloric Acid and Sodium Thiosulfate**

The aim of this experiment was to explore the impact of temperature on the rate of reaction between hydrochloric acid (HCl) and sodium thiosulfate (Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>) solution. Understanding the factors influencing reaction rates is essential in chemistry and has broad applications across various domains.

We made sure to stay safe by wearing goggles and gloves. We started with a beaker of 50 mL of sodium thiosulfate solution and checked its starting temperature. Another beaker had 10 mL of hydrochloric acid, and we noted its starting temperature too. We then **mixed** the two and timed how long it took for a yellow sulfur to cover up an "X" we drew. We did this at different temperatures, repeating each trial three times.

We found that when the temperature went up, the reaction happened faster. At 25°C, it took 50 seconds, but at 55°C, it only took 20 seconds. This means higher temperatures make reactions speed up. When it's hotter, the molecules move more, so they bump into each other more often. This makes the reaction go faster. The reaction getting faster with higher temperatures also tells us it's a type of reaction that gives off heat.

In short, temperature really matters in how fast the reaction between hydrochloric acid and sodium thiosulfate happens. Warmer temperatures make reactions faster because the molecules move around more. This experiment helps us understand better how reactions work.

**For future experiments**, it could be interesting to look at other things that might change how fast the reaction happens, like using more or less of the chemicals or adding something to help the reaction along. And of course, always remember to be safe when doing experiments with chemicals.

**Reading Comprehension****1) Reorder the following ideas as they appear in the text**

- a) Highlighting the Importance of Temperature in Reaction Kinetics **4**
- b) Observing Reaction Times at Different Temperatures **3**
- c) Ensuring Safety and Setting Up the Experiment **2**
- d) Considering Future Experimentation and Safety Measures **6**
- e) Exploring the Impact of Temperature on Reaction Rate **1**
- f) Understanding the Relationship Between Temperature and Reaction Rate **5**

**2) Answer the following questions from the text**

- a) What was the aim of the experiment described in the text?

**The answer: the aim of the experiment described in the text is to explore the impact of temperature on the rate of reaction between hydrochloric acid (HCl) and sodium thiosulfate (Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>) solution.**

- b) How did the researchers ensure safety before conducting the experiment?

**The answer: researchers ensured safety by wearing goggles and gloves**

- c) What process did the researchers follow to observe the reaction times at different temperatures?

The answer: the process the researcher follows to observe the reaction times is : mixing both chemicals and waiting to see the yellow sulfur cover an X drawn .

- d) What observation did the researchers make regarding the relationship between temperature and reaction rate?

The answer: The observation concluded by the researchers is that whenever the temperature is up the reaction happens faster and vice versa.

- e) Why did the researchers emphasize the importance of temperature in reaction kinetics?

The answer: The researcher emphasized the importance of temperature in reaction kinetics because the hotter, the faster molecules move around which results on a quick reaction.

- f) What suggestions did the researchers provide for future experiments, and why are they important?

The answer: the suggestions provided by the researcher are to test the reaction process at different circumstances for example adding more or less of one of the chemicals and most importantly to keep safe.

3) **Fill in the following table from the text**

Observation	Hypothesis	Methods	Results	Explanation
Temperature is an essential element in the chemical reaction.	The impact of temperature on the rate of reaction between hydrochloric acid (HCl) and sodium thiosulfate (Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> ) solution	We made sure to stay safe by wearing goggles and gloves. We started with a beaker of 50 mL of sodium thiosulfate solution and checked its starting temperature. Another beaker had 10 mL of hydrochloric acid, and we noted its starting temperature too. We then mixed the two and timed how long it took for a yellow sulfur to cover up an "X"	We found that when the temperature went up, the reaction happened faster. At 25°C, it took 50 seconds, but at 55°C, it only took 20 seconds.	Warmer temperatures cause molecules to move more rapidly, leading to more frequent collisions between reactant molecules and thus we have a faster reaction. Additionally, the release of heat during the reaction accelerates the reaction at higher temperatures.

		we drew. We did this at different temperatures, repeating each trial three times.		
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**4) Rewrite sentence B so that it means the same as sentence A**

a-The researchers **conducted** the experiment using advanced equipment.

b)**The experiment was conducted by the researchers using advanced equipment**

a-Engineers designed the new prototype for the solar-powered car.

b)**The prototype was designed by engineers for the solar-powered car.**

a-A new species of plant was discovered by scientists in the rainforest

b)**Scientists discovered a new species of plant in the rainforest.**

a-The data analysis had been completed by the statisticians before the results were presented to the research team.

b)**The statisticians had completed The data analysis before the results were presented to the research team.**

**5) Summarize the following paragraph**

Computing is indispensable in science and technology, enabling data analysis, simulation, and problem-solving across various fields. It empowers researchers to process large datasets, model complex systems, and conduct simulations, advancing research in biology, physics, chemistry, and more. Additionally, computing facilitates the design and development of innovative solutions in engineering and technology, from advanced machinery to software applications. It is widely used which facilitates understanding and addressing complex challenges in diverse scientific and technological domains.

**The answer:**

Computing

Its importance in science and technology .

It enables data analysis , and boosts / enriches research .

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*"Embarking on the journey of learning English is akin to opening the doors to a linguistic tapestry, weaving the threads of eloquence, understanding, and global communication. It's the symphony that harmonizes cultures and broadens the horizon of intellectual exploration."*

**Text:**

Chemistry plays a fundamental role in both science and technology, serving as a cornerstone for understanding the composition, structure, properties, and transformations of matters. Its applications span a wide range of fields, from healthcare and materials science to energy and environmental sustainability.

In science, chemistry serves as a vital tool for exploring the natural world. By studying the properties and behavior of atoms and molecules, chemists uncover the fundamental principles governing chemical reactions and interactions. This knowledge forms the basis for advancements in fields such as biochemistry, pharmacology, and environmental science. For example, understanding the chemical structure of biomolecules like DNA and proteins has led to breakthroughs in genetics and biotechnology, revolutionizing medicine and agriculture.

In technology, chemistry drives innovation and facilitates the development of new materials, processes, and products. From the synthesis of pharmaceuticals to the design of advanced materials for electronics and transportation, chemistry plays a pivotal role in shaping modern society. Nanotechnology, for instance, leverages chemical principles to manipulate and engineer materials at the nanoscale, leading to innovations in areas such as drug delivery, energy storage, and environmental remediation.

Furthermore, chemistry contributes to addressing global challenges such as climate change and resource scarcity. Through research into alternative energy sources, sustainable materials, and green chemistry practices, chemists are working to create a more environmentally friendly and sustainable future. For instance, the development of renewable energy technologies like solar cells and batteries relies heavily on advancements in materials chemistry.

Overall, the use of chemistry in both science and technology underscores its significance as a driving force behind innovation and progress. By leveraging chemical principles and techniques, researchers and engineers continue to push the boundaries of knowledge and create solutions to some of the most pressing challenges facing humanity.

**Reading Comprehension**

**1 )Read the text carefully then answer the following questions**

a-How does chemistry contribute to advancements in fields such as biochemistry and environmental science?

Chemistry contributes to the advancements in fields such as biochemistry and environmental science by studying the properties and behavior of atoms and molecules.

b-What role does chemistry play in technology, particularly in the development of new materials and products?

Chemistry plays a vital role in technology by processing products and materials for example. From the synthesis of pharmaceuticals to the design of advanced materials for electronics and transportation

c-Can you provide examples of how chemistry is applied in addressing global challenges such as climate change and resource scarcity?

Chemistry is applied in addressing global challenges such as climate change and resource scarcity **by** working on the development of renewable energy technologies like solar cells and batteries relies heavily on advancements in materials chemistry.

d-How has chemistry influenced innovations in nanotechnology, and what are some of its applications?

Chemistry has influenced innovations in nanotechnology positively and some of its applications are : drug delivery, energy storage, and environmental remediation.

e-In what ways does the study of chemistry impact our understanding of the natural world and chemical interactions?

Chemistry helps us understand certain phenomena like solar energy or designing inventions.

### 3) Match each word with its corresponding definition

Words	Definitions
1. Atom -H	A- A substance consisting of two or more different elements chemically bonded together in a fixed ratio.
2. Compound -A	B-A substance that speeds up a chemical reaction without being consumed in the process.
3. Molecule- E	C-A pure substance made of only one type of atom.
4. Element- C	D-A substance that undergoes a chemical reaction.
5. Reactant -D	E-A substance that is formed as a result of a chemical reaction.
6. Product-E	F-A substance that can donate a proton or accept an electron pair in reactions.
7. Catalyst- B	G. A substance that can accept a proton or donate an electron pair in reactions.
8. Solution -I	H. The smallest unit of a chemical element that retains the properties of that element
9. Acid – F	I. A homogeneous mixture composed of two or more substances.
10. Base_G	J. A substance capable of neutralizing an acid.

### 4) Translate the following sentences into French

1. La chimie est cruciale pour comprendre la composition, la structure et les propriétés de la matière, impactant à la fois la science et la technologie.

Chemistry is crucial for understanding matter's composition, structure, and properties, impacting both science and technology.

1. Chemistry is key in studying atoms, molecules, and chemical reactions, essential for scientific exploration.

La Chimie est essentielle dans l'étude des atomes, et molécules et des réactions chimiques, essentielle à l'exploration scientifique.

2. Chemistry drives innovation in materials, pharmaceuticals, and electronics, shaping modern technology.

La chimie est le moteur de l'innovation dans les domaines des matériaux, des produits pharmaceutiques et de l'électronique, façonnant la technologie moderne.