

INTRODUCTION TO LIGHTLAB

By Suzanne O. Shera

Who notices a rainbow or a reflection on a lake without feeling a sense of awe and wonder? When exposed to the unique sceneries created by light, we can't help but share the experience with someone nearby, even if they are strangers. The wondrous effects of light are numerous, and its nature continuously stimulates our curiosity.

Personally, I became fond of light's properties since High School, specifically when I learned about Total Internal Reflection, a phenomena where light becomes trapped inside a transparent matter instead of refracting outward. Consequently, I studied Physics and Optics in College, and worked in research for eight years. Consequently, I studied Physics and Optics in college, and worked in research for about eight years.

Soon after I dedicated myself to the Lord Jesus, I noticed the numerous analogies in the Bible about Him being the light of the world. Just as light is an amazing energy and indispensable to the survival of mankind on Earth, Jesus' life on earth is fascinating and He is essential to our relationship with our Father in heaven.

So a desire grew in me to use my knowledge about the nature of Light for God's glory. When an opportunity to minister to fourth and fifth grade children at church opened up in 2008, I developed worksheets about light which included fun hands-on activities bible teachings that centered around God's plan for mankind through Jesus. Over the course of a few years, the worksheets evolved to twelve distinct lessons with the following format:

- I) **Introduction:** My goal is to present the concept about light and the bible study theme.
- II) **Background:** The scientific concept is explained, including historical overviews, biographies of scientists especially the Christian practitioners, and modern day applications.
- III) **Activities:** These reinforce the concept and stimulate the students' minds in a playful and fun atmosphere.
- IV) **God's light:** This is the bible study, invoked by the concept, that sheds God's light on the participants' hearts.

Throughout the whole book, teaching on light science and Christianity are sequential and build up on the previous chapter in order to maintain continuity. For example, the scientific concepts are presented in the order of most Optics textbook which might discuss:

1. Light sources and its electromagnetic nature (Chapters 1,2)
2. The way light travels in the air until obstructed by opaque, transparent or reflected materials (Chapter 3)

3. A close look to Shadow formations, reflection and refraction (Chapters 4-8)
4. The splitting of light split into colors and recombining colors (Chapters 9-11)
5. A final activity that uses Salty water in a circuit to light up a bulb. (Chapter 12)

The Bible studies revolve around the Gospel message. They are arranged in the following order:

1. God's creation of light, (Genesis 1:3,4) and the coming of Jesus as the light of the world was a foretold prophecy, a mystery that eventually unfolded (Chapters 1,2)
2. Humans need to understand their sinful nature and their need for a relationship with God (Chapters 3, 4)
3. Reading God's word helps to know who God is, how He wants us to live, and how we can enlarge His kingdom (Chapters 5,6)
4. It is important to seek God's wisdom and stay focused on Jesus, who is the perfecter of our faith (Chapters 7 and 8)
5. God made many covenants with His people to give them hope. The first covenant was with Noah, followed by the prophets. The last covenant was accomplished through Jesus, who died once for all (Chapter 9)
6. As members of one church, we need to be united in serving God and enlarging his kingdom by using our gifts (Chapter 10).
7. A final re-telling of the Gospel message using the colors that symbolize God's character and plan for mankind through Jesus Christ. (Chapter 11)
8. As followers of Jesus, we need to be salt and light so that the whole world will know that He is Lord. (Chapter 12)

Prior to deciding to publish this book, I tested the lessons on eight homeschooled children who attended LightLab classes twice a month. They loved learning about the science of light, and were excited by the activities such as building small circuits, creating sparks, examining shadows, learning magic tricks with reflection and refraction, experimenting with lenses, exploring the properties of white light as it split into the rainbow colors and reversing the process, combining colors, and more. After engaging in the playful atmosphere that the activities offered, the children listened attentively to the Bible lessons and heard about God's plan for mankind through Jesus Christ. At our last meeting, the children were able to demonstrate the lessons to their parents, thus confirming that the teachings were appropriate for their age group.

This book is mainly designed for children 8 to 11 years old, and can be used individually as well as groups. An adult can plan the lessons, supply the items for the activities, and minister. It is best to cover a full lesson per session, which is designed to take up to 1.5 hours depending on the size of the group. This group time can be shortened by assigning the Background and God's light sections to be completed individually before and after.

To add to the group time or assign homework to the children, additional resources can be found on the book's website. These include:

- Learning assessments such as crossword puzzles
- Extra science activities
- Videos relevant to the lesson

The author's wish is that the users of LightLab will be blessed by studies on Light, which God created first for the world. As the children marvel in its nature, they will delight in Jesus who reflects God's light and redeems them back to the father. They will also learn of the Holy Spirit's work in guiding their ways and showing them how to shine God's light on others.

John 8:12

When Jesus spoke again to **the** people, he said, "I am **the light of the world**. Whoever follows me will never walk in darkness, but will have **the light of life**."