

Part 3 with 210 Pages

Part 4 with 259 pages

## A TOUR Of The Aquaponics USA AGWARTS Science Curriculum

**For Superintendents, Principals  
& Teachers**



**Narrated By Grace Sylke,  
Curriculum Creator  
Marketing Director**

The first thing that becomes apparent is **this Curriculum is far from ordinary**. In fact it is borrowed from the writing & artistic style of Graphic Novels, and I, Grace, playfully describe it as a Mini Graphic Novel disguised as Curriculum. This **TOUR** delineates the organizational structure and logic behind the Curriculum that has combined a Storyline with a Curriculum Compilation in this fashion.

So it's only fitting that this **TOUR** follows the same writing and artistic style as the Curriculum to share the feeling & fun that the Curriculum embodies while simultaneously introducing some of the most rigorous and challenging Science Subjects your Students will ever encounter with the goal of creating a Love For Science in each one of them. If you received a hard copy, we explain you also received the actual PDF in your Email Box with Live Links so you can determine the thoroughness of these Lessons and have fun with the Animated/Talking Characters.

This Guided **TOUR** has only one Narrator, me, Grace, just like the Curriculum has Narrators, which, in **Part 1**, are identified by their Names, **Professor** and **Larry**. But in **Parts 3 & 4**, the Narrators are identified by both their Names and their AI Images, and each Narrator is assigned to one specific Grade Level making it easy for Teachers to recognize which Curriculum to use. This 28 Page Document condenses 688 Pages of Compiled Open Source Science Curriculum, so here we go.



**Blue-Eyed Red Bird** is your **Guide** on this informative **TOUR** through the **AGWARTS Curriculum Compilation**.

We're calling Blue-Eyed Red Bird **BERB** for short. He is one of the many zany Characters that appear in the Curriculum, which, as I explained, is written like a Mini Graphic Novel with a minimal Storyline about **AGWARTS**.

**AGWARTS** is a fictional **STEM** School By Aquaponics USA full of wonderfully weird Cartoon Characters who represent the **AGWARTS** Staff, Principal, Students, Teacher Liaisons and their Mascots. This writing style has been adopted to lighten the heavy and rigorous Science that makes up most of the Curriculum in hopes that the Lesson Plans, Worksheets, Labs, Definition Boxes and Videos will be more Learnable & even Fun for your Students.

Sometimes, **BERB** will introduce you to some of his zany fellow Characters, but most of his focus will be on the rigorous Science that is included in the Science Curriculum. for all Grade Levels.

There's an inside joke that runs through the Curriculum, which is named **AGWARTS** after **HOGWARTS**, the popular fantasy story about Magic. At **AGWARTS**, many of the Characters wear glasses except for **Larry Cotter**, a Narrator in **Part 1** and our version of **Harry Potter** in the theme story we borrowed. Hence, **BERB**, wears Bottle Glasses. Just a FYI.

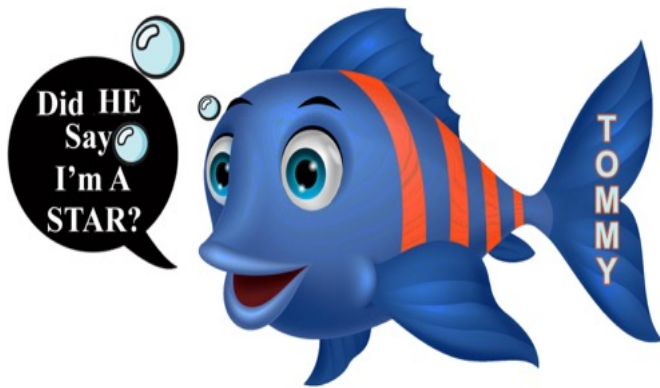


And right off the bat, **BERB** is needing to introduce **Tommy Tilapia** who swam into Page 2 without an invitation, but that's how it goes around here at **AGWARTS** where just about anything can happen at any time.

That also means we are **starting this Tour at the end of Part 1** where Tommy and his Tilapia Friends are introduced on **Page 142** and the information about Tilapia and Fish continues through **Page 194**. That's **52 Pages about the Fish in an Aquaponics System**.

On Page 3, we're going to look at the "**Part 1 Table Of Contents**" to describe these 52 Pages about the Fish.

But first the formal introduction of **Tommy Tilapia**, who represents the only Fish Aquaponics USA recommends for your Classroom Teaching & Food Growing Systems due to their high tolerance for water quality issues that a beginner Aquaponics Farmer might encounter and due to their mild taste that blends well with vegetables. You are raising Food Fish along with Vegetables, which means both crops in this Miniaturized Water Conserving Multi-Crop Farm are edible.



Notice that **Page 145** below in the "**Part 1 Table Of Contents, Page 5**" Introduces and Defines the Subject of **Taxonomy** and shares the first of many **Taxonomy Charts** that appear in the **AGWARTS** Curriculum. **Part 4** is where **Taxonomy**, which is the Science of Classification for both Plants and Animals, becomes a very important Subject that is introduced by the **AGWARTS Botanist, Bonnie**. There are **20 Taxonomy Charts of the best and easiest Vegetables to grow in Part 4 on Pages 80-97 and 142-163** along with extensive Nutritional information about those vegetables. Page 19, shows you an example of these **Taxonomy Charts**.

## **Part 1 Table Of Contents, Page 5**

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| <b>Tilapia Classification in the Field of Taxonomy</b>     | <b>145</b>     |
| <b>AUSA Blue Tilapia in their 320 Gal Tank Video</b>       | <b>146</b>     |
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| <b>PROFESSOR &amp; TommyTilapia Balancing Act</b>          | <b>148</b>     |
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| <b>Other Aquaponics Fish</b>                               | <b>153</b>     |
| <b>DB#10: All About Tilapia</b>                            | <b>154</b>     |
| <b>DB#10: Cichlid History &amp; Politics</b>               | <b>155</b>     |
| <b>DB#10: Tilapia Are Vertebrates</b>                      | <b>156</b>     |
| <b>LearnBright Video&amp;Lesson: What Is A Vertebrate?</b> | <b>156</b>     |
| <b>BiologyOnline Lesson: Kingdom Animalia</b>              | <b>157</b>     |
| <b>DB#10: Tilapia Are Both Farmed &amp; Banned</b>         | <b>157</b>     |
| <b>Resilience of Tilapia Creates Paranoia</b>              | <b>158</b>     |
| <b>DB#10:Blue Tilapia</b>                                  | <b>159</b>     |
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| <b>DB#10: Black Mozambique Tilapia</b>                     | <b>168</b>     |
| <b>Meet 3 Tilapia Dept. Staff Members</b>                  | <b>169-171</b> |
| <b>Stress is the Cause of Tilapia Diseases.</b>            | <b>172-173</b> |
| <b>What Makes AUSA Fish Food Healthy?</b>                  | <b>174-175</b> |
| <b>DB#10: Viral Tilapia Diseases</b>                       | <b>176-177</b> |
| <b>DB#10: Bacterial Tilapia Diseases</b>                   | <b>177-180</b> |
| <b>DB#10: Parasitical Tilapia Diseases</b>                 | <b>181</b>     |



Look at **Page 156** above to see “**Tilapia Are Vertebrates**”. When you get your copy of the actual Curriculum and go to that Page, you will see what is called a numbered “**Definition Box**”, (**DB#10:**), where the **AGWARTS** Curriculum explains that Tilapia are Vertebrates and defines that term like this:

*“A Vertebrate is an animal with a backbone and has several broad classes including Fish, Amphibians, Birds, Reptiles and Mammals of which Humans are one group. All classes of Vertebrates have developed brains, internal skeletons to which muscles can attach, two eyes, closed circulatory systems and muscular mouths.”*

One of the things that happens when your Students read this **Definition** is they realize that Tilapia share a common **Taxonomic Group** with Humans, “**Animalia**”, and that we are all “**Vertebrates**”. This fact opens a new door in their awareness.

There are multiple “**Definition Boxes**” that run throughout the **AGWARTS** Curriculum, and they are distinguished by a Picture Frame that looks like the one below. The Curriculum explains that “**Definition Boxes**” can be turned into Grade-Specific Lesson Plans regarding the Science Subject being described. All “**Definition Boxes**” have Clickable Resources as seen below, which were actually searched for and found by AUSA rather than AI.

The cute little “**Arrow**” Character runs across the Top of the “**Definition Boxes**” showing your Students where they are in the process of completing the Definition, which can often run for several Pages. All “**Definition Boxes**” share High School Level information, but we introduce the “**Magic School**” Program to our Teachers who can use Raina, their AI, to recreate the “**Definition Boxes**” in language that better suits their Elementary and Middle School Students, or they can simply ask Grok or Chat GPT to perform that service.



### **9. Continued: How Are Plant and Animal Cells Different?**

*“Cytokinesis is the division of the Cytoplasm during cell division in both Animal and Plant cells, but the mechanism for Cytokinesis is different. In Animal cells, a cleavage (split) furrow forms that pinches the cell membrane in half. In Plant cells, a cell plate is conducted that divides the cell.”*

*“Glyoxysomes are only found in Plant cells. They help to degrade lipids, particularly in germinating seeds for the production of sugar. Animal cells do not have Glyoxysomes.”*

*(Resources and Quotes taken from [thoughtco.com](https://www.thoughtco.com) article called “[Differences Between Plant and Animal Cells](#)” and the linked articles about the individual Organelles)*

Immediately following the “**Definition Boxes**” comes Curriculum to reinforce the Science Subject that was just defined. Looking back to the “**Part 1 Table of Contents, Page 5**” on Page 3, under “**Tilapia Are Vertebrates**” is the “**LearnBright Video & Lesson: What Is A Vertebrate?**”, which is excellent Curriculum for Elementary Students. AUSA offers this website (the only Curriculum with a Pay-Wall) **Free** to Elementary Teachers for the first year after a System Purchase.

Immediately following that Curriculum is the **BiologyOnline Lesson about “Kingdom Animalia”**, which offers extensive **Open Source High School Biology Lessons** that have accompanying Quizzes. AUSA offers **Answer Keys** for all **BiologyOnline Lessons**.

Below is “**Part 1 Table Of Contents, Page 6**” that lists all of the rest of the 52 Pages of Curriculum about Fish. Both **Enchanted Learning and education.com** offer Elementary & Middle School Curriculum with a focus on Elementary School.

| <b><u>Part 1 Table Of Contents, Page 6</u></b>                                      |                |
|---|----------------|
| <b>DB#10: Fungal Tilapia Diseases</b>   | <b>182</b>     |
| <b>External Tilapia Anatomy Info-Sheet</b>  | <b>183</b>     |
| <b>Internal Bony Fish Anatomy Info-Sheet.</b>                                       | <b>183</b>     |
| <b>Introducing Enchanted Learning Program</b>                                       | <b>184-185</b> |
| <b>Enchanted Learning Worksheet:</b>  |                |
| <b>Label The Fish Anatomy</b>   | <b>186</b>     |
| <b>Make a Paper Plate Fish Enchanted Learning</b>                                   |                |
| <b>Activity Sheets: Make A Paper Fish Plate</b>                                     | <b>187</b>     |
| <b>and Make An Edible Aquarium</b>  | <b>188</b>     |
| <b>Enchanted Learning Activity: Color the Angel Fish</b>                            | <b>189</b>     |
| <b>Education.com Worksheet: Freshwater Fish</b>                                     | <b>190</b>     |
| <b>Education.com Coloring Page: Fish School</b>                                     | <b>191</b>     |
| <b>World By Charlie, YouTube “I Wonder Why Fish Swim In Schools?”</b>               | <b>191</b>     |
| <b>Baltimore National Aquarium Reprint of Fish Diseases Lesson Plan</b>             | <b>192</b>     |
| <b>WebArchive.org: New Jersey Marine Science Consortium, Fish Morphology</b>        | <b>192</b>     |
| <b>WebArchive.org: Population Density in Fish and Limiting Factors Affecting It</b> | <b>192</b>     |
| <b>DB#11: Three Types Of Fish:</b>  |                |
| <b>Bony, Jawless, Cartilaginous</b>   | <b>193-194</b> |
| <b>LearnBright Lesson &amp; Video: All About Fish</b>                               | <b>194</b>     |
| <b>Conclusion, Part 1</b>   | <b>194</b>     |
| <b>What Is Coming In PART 3</b>   | <b>195</b>     |
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| <b>PART 2 Activity: Teaching Puppet Shows</b>                                       | <b>195-201</b> |

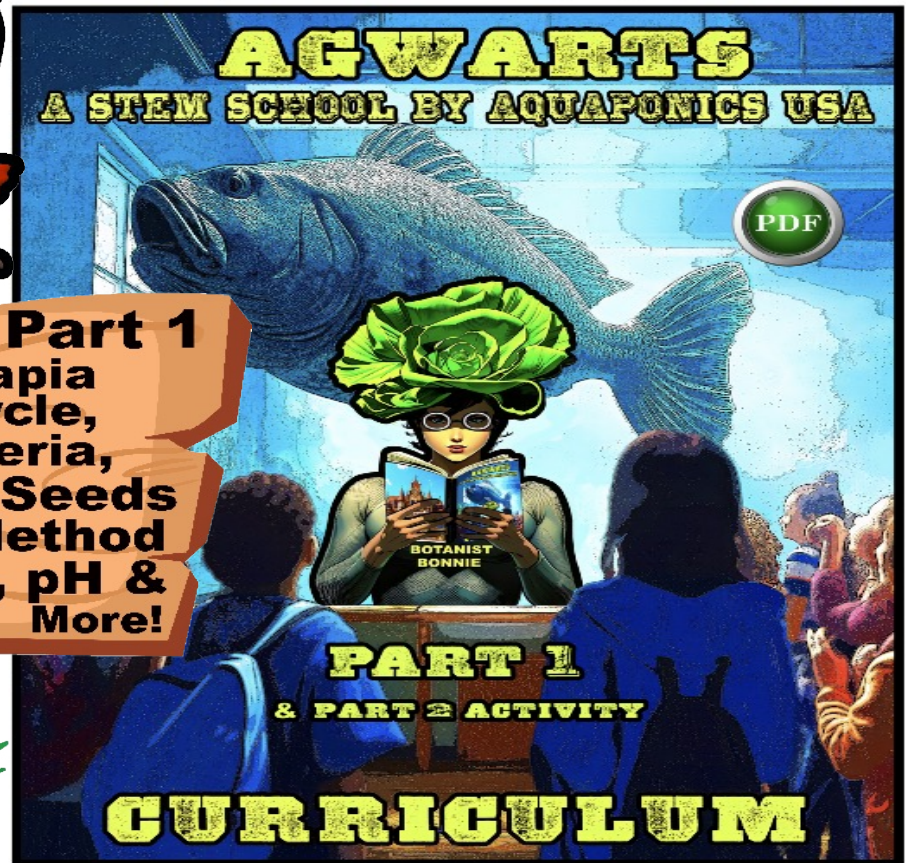
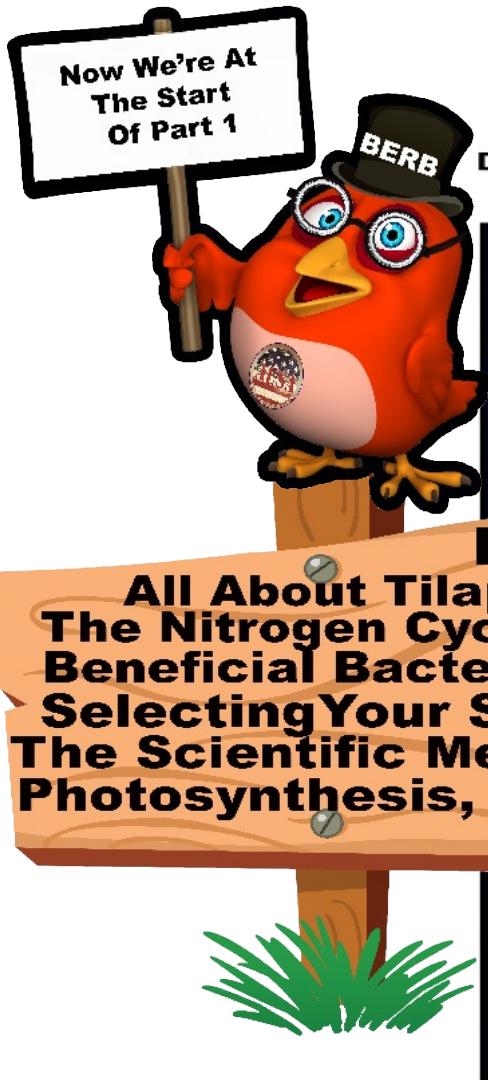


The last four entries in the above “**Part 1 Table Of Contents, Page 6**” are the **Part 1 Conclusion, What Is Coming in Parts 3 & 4** and a **Description of the Part 2 Optional Activity**, which is the **[PUPPET THEATER KIT](#)** so Students can create Aquaponics Teaching Puppet Shows by becoming one of the Curriculum Cartoon Characters and demonstrating what they have learned about Aquaponics. This **Optional Activity** is described in the **[\(See our “Take Your Aquaponics Program District-Wide” Doc\)](#)**.

CURRICULUM for Classroom STEM & CTE Teaching &  
Food Growing Systems

Part 1 with the Part 2 Activity

219 Pages of Lesson Plans, Worksheets, Labs  
Definition Boxes, Activities, Videos, Songs & a Story about  
**AGWARTS, A STEM School By Aquaponics USA**



The “**Part 1 Table Of Contents, Page 1**” below introduces the Foreword, many of the **AGWARTS** Staff Members and three original Songs about Aquaponics, which can be turned into fun Sing-Along experiences for your Students especially when they are sharing their Aquaponics Teaching Puppet Shows with their [PUPPET THEATER KIT](#).

The other **6 Part 1 Table Of Contents Pages** have **11 “Definition Boxes”** running through them starting with “**DB #1: What Is Aquaponics?**” on Page 24 and ending with “**DB#11: Three Types Of Fish: Bony, Jawless, Cartilaginous**” on Page 194. There are also many Lesson Plans, Worksheets, Labs, Videos and Worksheets as stated at the top of Page 1 above.

As the above Sign says, the major Science Subjects included in **Part 1** are: the first of the **Great Earth Cycles, The Nitrogen Cycle, Beneficial Bacteria, The Scientific Method, pH and Photosynthesis**, which we playfully call “**A Can Of Worms**” due to its multifaceted and challenging associated subjects. Below are the “**Part 1 Table Of Contents, Pages 1-7**”.

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Here's  
Where Flyers  
Come In  
Handy!



See Part 1 Table Of  
Contents, Page 6  
on Page 6 of this Guided  
TOUR above.

I'm Larry  
Cotter, the  
Student Liaison  
For Part 1



I'm his  
Mascot,  
OC Cat



**Part 1 Table Of Contents, Page 7**

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A talking  
Dog with  
A Laptop.  
I'm off the  
REZ!



Hey, Plato.  
I'm new here,  
but maybe I  
could take you  
over to the Mess  
Hall with me to  
Get some  
Food

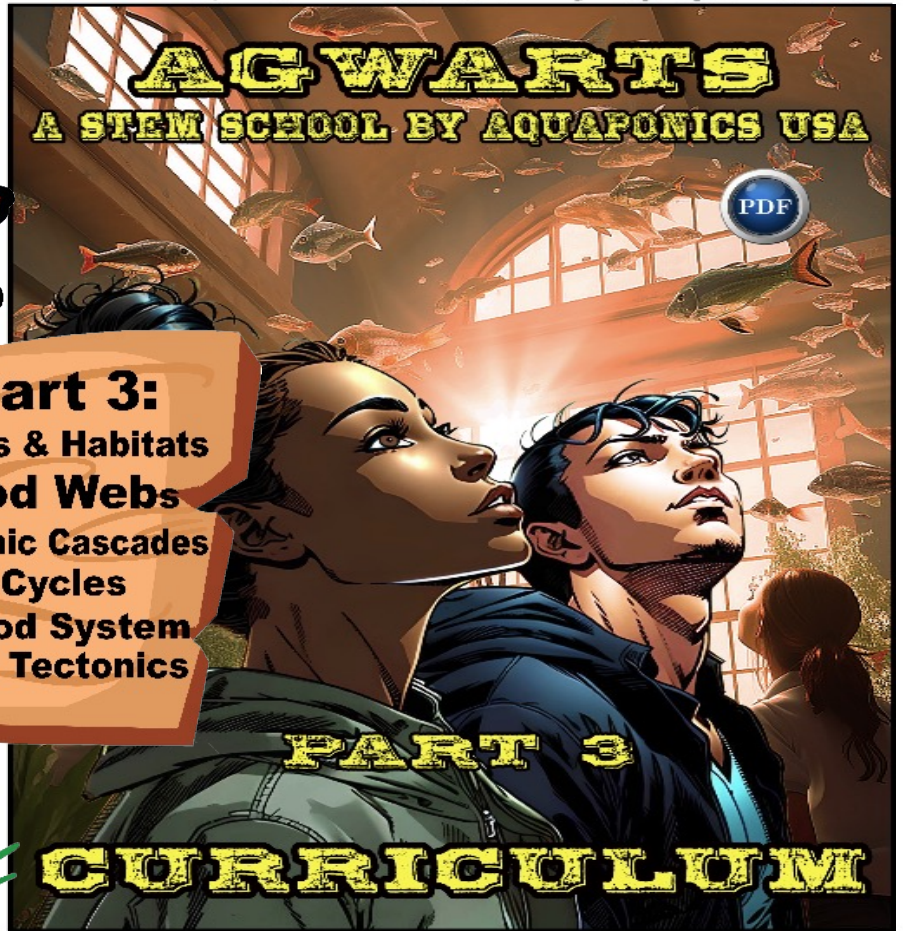
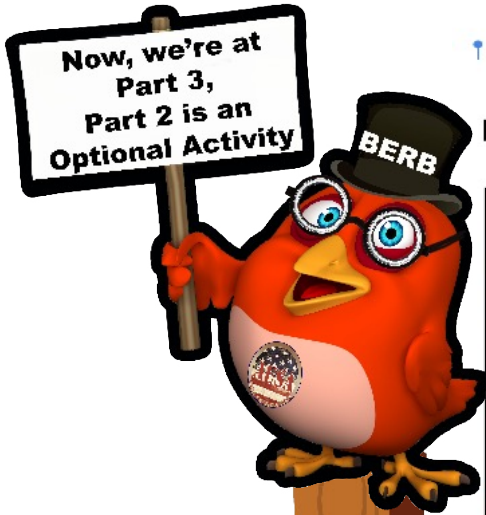
My Name is Plato &  
I'm tired & Lost!  
Looking for Part 3  
Have My Own Laptop  
Will Work for Food!

Really?  
That would  
Be great,  
Dude.



PART 3

210 Pages of Lesson Plans, Worksheets, Labs  
Definition Boxes (DB), Activities, Videos & a Story about  
AGWARTS, A STEM SCHOOL By Aquaponics USA



**Part 3:**  
**Ecosystems Biomes & Habitats**  
**Food Chains & Food Webs**  
Keystone Species & Trophic Cascades  
Symbiosis & Earth Cycles  
Food Science & the Food System  
Earth's Spheres & Plate Tectonics

The “**Part 3 Table of Contents, Page 1**” below introduces the Foreword and two new Members of the **AGWARTS** Staff seen on the Cover, **Aria** and **Noah**, who have joined the Team as Student Liaison/Co-Teachers and who were both former Students.

**Aria** and **Noah** introduce a new **Curriculum Identifier**, which is called a **Spiral Notebook**, so when Teachers see the **Spiral Notebook**, they know it holds **Curriculum**. **Aria** and **Noah** also explain that their Images will signify what Grade Level of the Curriculum you are seeing as **Aria** presents **Elementary Curriculum**, **Noah** presents **High School Curriculum** and **Larry** who was the single Student Liaison in **Part 1**, now presents only **Middle School Curriculum**.

The three **Student Liaisons** take turns presenting **Curriculum** after the Science Subject has been defined in “**Definition Boxes**”. There are **15 “Definition Boxes”** in **Part 3** starting with **DB#1: Ecosystems** and ending with **DB#15: What Are Plate Tectonics?** Below are the “**Part 3 Table Of Contents Pages 1-5**”.

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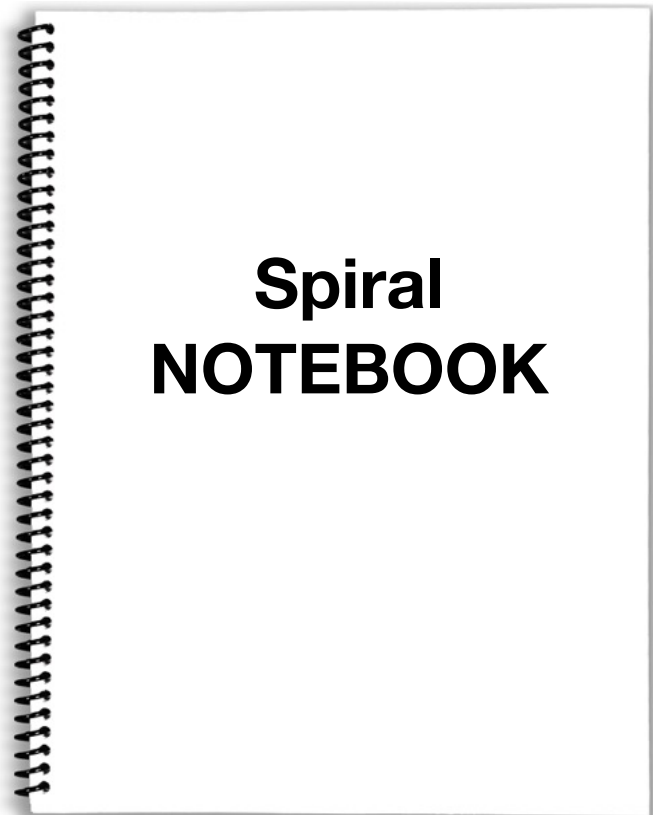
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**Spiral Notebooks** can be Vertical like the above sample or Horizontal like the one below that is listing an amazing number of **Links for High & Middle School** Students about Ecosystems from [Georgia Virtual Learning](#). We use **Georgia Virtual Learning throughout Parts 3 & 4** and share instructions on how to navigate this excellent site as well as provide Links. Just Click on any of the Links below to see the excellence of this Curriculum.

Roll Down to the Ecological Organization (EO) Module:

- Click On: [\(EO\)-Ecological Organization Module Overview](#)
- Click On: [\(EO\)-Organization of Life Lesson](#)
- Click On: [\(EO\)-Ecosystems and World Biomes Lesson](#)
- Click On: [\(EO\)-Aquatic Biomes Lesson](#)

Go Back to [“Shared Environmental Science” Modules](#)

Roll Down to Ecological Interaction. (EI) Module

- Click On: [\(EI\)-Ecological Interactions Module Overview](#)
- Click On: [\(EI\)-Roles in an Ecosystem Lesson](#)
- Click On: [\(EI\)-Species Interaction Lesson](#)
- Click On: [\(EI\)-Community Structure Lesson](#)
- Click On: [\(EI\) Ecological Succession Lesson](#)

Go Back to [“Shared Environmental Science” Modules](#)

**PART 4**

259 Pages of Lesson Plans, Worksheets, Labs  
Definition Boxes (DB), Activities, Videos & a Story about  
**AGWARTS, A STEM School By Aquaponics USA**



**Part 4:**  
Taxonomy & Nutritional Charts  
of 20 Popular Plants  
The Oxygen Cycle  
Flowering Plants  
What Is Algae?  
What Is Light?  
Difference between Bugs  
and Insects and More

The “**Part 4 Table of Contents, Page 1**” below introduces the Foreword and a very important member of the **AGWARTS** Staff. She is **Botanist, Bonnie**, who is on the Cover of **Part 1** as the Butter Lettuce Bonnet Wearing Head Botanist, but she only showed up briefly in that part, and has come into prominence in this **Part 4** to share her extensive knowledge about Botany, which is the study of Plants.

**Bonnie** not only is an Expert Taxonomist, but she also loves sharing important facts about the Geologic Time Scale of both of the crops grown in Aquaponics Systems, Flowering Plants and Tilapia.

There are **10 “Definition Boxes”** in **Part 4** starting with **DB#1: “What Is The Oxygen Cycle”** on Page 22 and ending with **DB#10: Breeding Tilapia** on Page 248. All of the **Great Earth Cycles** are covered in the **AGWARTS Curriculum** including the **Nitrogen Cycle, Part 1**, the **Carbon, Water and Rock Cycles** in **Part 3** and now the **Oxygen Cycle** in this **Part 4**. Below are the “**Part 4 Table Of Contents, Pages 1-8**”. The “**Part 4 Table Of Contents, Page 9**” is on Page 16.

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**BOTANIST BONNIE:** Our **Quizlet** Class is being sponsored by Aquaponics USA so once you create your Free Account, just go to your new Quizlet Home Page and type our Class Name in lower case: aquaponicsusa

and then Click Return. You will be directed to our Class. It’s secondary name is “STEM Class By Aquaponics USA” and billed as an Aquaponics Home School Class. It doubles as our **AGWARTS Quizlet** Class, too.

It’s easy to create your Free Account. Just follow the prompts and make sure you stay with the “Free Account” choice as Quizlet will try to get you to pay. So far we have two Learning Tools up in our **Quizlet** Class. Click on our Class Box and you will go to our Class that is offering a **Set of Flashcards** and a **Study Guide**.

1. The Flashcard Set: “**History of Plant Taxonomy**”. There are examples of these Cards on the right. There are 40 Cards and using them can be really helpful as this is a challenging Lesson. Go to [Flash Cards](#).
2. The Study Guide: “**History of Plant Taxonomy**”. The Study Guide Is basically a reiteration of everything you’ve learned in this DB#2 Series except it is presented in short Bullet format. Go to [Study Guide](#).
3. Teachers: Joining our [Quizlet](#) Class and directing your Students to it can be very helpful for you, too. We will be adding more Flash Cards, Study Guides, Practice Tests and Folders in the future.



Another one of the Open Source **AGWARTS** Curriculum Resources is called [LibreTexts](#), which is an amazing find as exemplified below with one Lesson presented by **Noah**, the **AGWARTS High School Student Liaison**.

As I explained on Page 10, in **Parts 3 & 4**, the Narrators are both Named and Seen, hence you see Noah in the Spiral Notebook below introducing his chosen Lesson.



**NOAH:** As you've seen from Aria's Lessons, we are segueing from Oxygen to Plants, the focus of this **Part 4**. The first group of Lessons I want to Introduce are from **LibreTexts**. The Unit I'm introducing is **30: Plant Form and Physiology**.

There are 25 Lessons in this Unit. Return to "Plant Form and Physiology" on the Right of the Blue Menu Bar after every Lesson to go to the next Lesson or Click On the next Lesson here. The Links Below are not Live.

**START** by going to [LibreTexts Biology: Plant Form and Physiology](#)

Click On: [Lesson 30.1: The Plant Body](#)

Click On: [Lesson 30.2: Stems/Functions of Stems](#)

Click On: [Lesson 30.3: Stems/Stem Anatomy](#)

Click On: [Lesson 30.4: Stems/Primary & Secondary Growth](#)

Click On: [Lesson 30.5: Stems/Stem Modifications](#)

Click On: [Lesson 30.6: Types of Root Systems and Growth Zones](#)

Click On: [Lesson 30.7: Root Modifications](#)

Click On: [Lesson 30.8: Leaves/Leaf Structure & Arrangement](#)

Click On: [Lesson 30.9: Leaves/Types of Leaf Forms](#)

Click On: [Lesson 30.10: Leaves/Structure, Function, Adaptation](#)

Click On: [Lesson 30.11: Plant Development/Meristems](#)

Click On: [Lesson 30.12: Plant Development/Genetic Flower Control](#)

Click On: [Lesson 30.13: Transport of Water & Solutes & Potential](#)

Click On: [Lesson 30.14: Transport of Water & Solutes/Pressure, Gravity](#)

Click On: [Lesson 30.15: Transport of Water & Solutes/Movement of Water](#)

Click On: [Lesson 30.16: Transport of Water & Solutes/Photosynthates](#)

Click On: [Lesson 30.17: Plant Sensory Systems/Responses to Light](#)

Click On: [Lesson 30.18: Plant Sensory Systems/Phytochrome System](#)

Click On: [Lesson 30.19: Plant Sensory Systems/Blue Light Response](#)

Click On: [Lesson 30.20: Plant Sensory Systems/Responses to Gravity](#)

Click On: [Lesson 30.21: Plant Sensory Systems/Auxins, Cytokinins](#)

Click On: [Lesson 30.22: Plant Sensory Systems/Abscisic Acid, Ethylene](#)

Click On: [Lesson 30.23: Plant Sensory Systems/Wind & Touch Response](#)

Click On: [Lesson 30.24: Plant Defense Mechanisms/ Against Herbivores](#)

Click On: [Lesson 30.25: Plant Defense Mechanisms/Against Pathogens](#)

**NOAH:** This Series of Lessons alone could take you 25 Days if you introduce them one day at a time. That's 5 School Weeks. Or you can choose which Lessons you think will best suit the interest of your Students. Now I'm "Passing The Baton" to the Professor who has returned to Re-Introduce our incredible Botanist Bonnie.



If you go to the actual Curriculum, everything in Blue is a Link to **25 Lessons** numbered **30.1** to **30.25**. I'm giving you two of those Links you can Click below:

[Lesson 30.1: The Plant Body](#)

[Lesson 30.2: Stems/Function of Stems](#)

The subject of **Symbiosis** is not new to your Students when they get to **Part 4**. In **Part 3**, they have read the **Definition** that goes through **3 Pages of DB#6 Boxes**, they have done **Curriculum Lessons** available for **both Elementary and High School Students** and they **have been given Worksheets and seen InfoGraphics** about **Symbiosis**. But nothing has prepared them for what comes in **Part 4** by yet one more great Open Source Science website at [biointeractive.org](http://biointeractive.org). Noah introduces the Lesson like this:



In **Part 4 on Page 198**, I introduce a fascinating **Lesson** about **Light and Symbiosis**. The definition of **Symbiosis** is shared In **Part 3**, “**DB#6: What Is Symbiosis?**”

*“Symbiosis is an evolved interaction or close living relationship between organisms from different species, usually with benefits to one or both of the individuals involved.”*

**NOAH:** But there’s more that goes with this **Light** and Symbiosis Lesson. It’s a Video that explains what you and your students just learned in the [Symbiotic Bioluminescence](#) Lesson and an Activity to share with your Students. Below is the Video, and below that is the Activity. All of the Bold Blue Links below are Live.



**Click the Image to play this Video in YouTube.**

**This is the Science behind how Symbiosis works for “The Bobtail Squid, and it’s amazing.**

**You’re going to love it!**

**START** by going to the BioInteractive’s Page called:

**“[Activity for Nature’s Cutest Symbiosis: The Bobtail Squid](#)”**

Notice this Page is organized like the original Lesson Page except for one thing.

On the Right Side of the Page is a grey Box that says “**Materials**” and underneath are Linked: “[Educator Materials \(PDF\)](#)” and

“[Student Handout \(PDF\)](#)”

Now you have everything you need to introduce a multiple day Lesson on these adorable Squid and their bacteria buddies that **Light** them up at night.

Below is the final Lesson we want to share. It is **one example of the 20 most popular and easiest Plants to grow** in an Aquaponics System. This page is in **Part 4, Page 142** and shows the **Taxonomy Chart of Watermelon** along with the Growing Instructions and History. A follow up **Page, 143** (not shown), shows the Nutritional Information for Watermelon in 3.5 oz Portions. There are a **Total of 40 Pages in Part 4** that cover the Taxonomy Charts and Nutrition of these **20 Plants**.



**Growing Instructions:** As you can see from their Family Name, Melons are Cucurbitaceae Plants, which means they have to be hand pollinated because there are no natural pollinators working in your AP System (See Pages 223-225 for those instructions). The good news about Cucurbitaceae is they are climbers, and need a trellis so they don't take up a lot of space in the Grow Bed. Total grow out time is 11-13 Weeks.



**History:** "Melons from an area in Sudan called Kordofan are the closest relatives and may be progenitors of modern, cultivated watermelons. Wild watermelon seeds were found in Uan Muhuggiag, a prehistoric site in Libya that dates to approximately 3500 BC. In 2022, a study was released that traced 6,000-year-old watermelon seeds found in the Libyan desert to the Egusi seeds of Nigeria, West Africa. Watermelons were domesticated in north-east Africa and cultivated in Egypt by 2000 BC, although they were not the sweet modern variety. Sweet dessert watermelons spread across the Mediterranean world during Roman times.

**Watermelon**      **Citrullus lanatus**

|  |                           |
|--|---------------------------|
| <b>Kingdom:</b>                                      | <b>Plantae</b>            |
| <b>Division (Phylum):</b>                            | <b>Angiosperm</b>         |
| <b>Class:</b>  | <b>Dicotyledon</b>        |
| <b>Order:</b>  | <b>Violales</b>           |
| <b>Family:</b>                                       | <b>Cucurbitaceae Juss</b> |
| <b>Genus:</b>  | <b>Citrullus Schrad</b>   |
| <b>Species:</b>                                      | <b>Citrullus lanatus</b>  |
| <b>Taxonomy: <a href="#">USDA Plant Database</a></b> |                           |
| <b>Watermelon</b>                                    | <b>Citrullus lanatus</b>  |

Considerable breeding effort has developed disease-resistant varieties. Many cultivars are available that produce mature fruit within 100 days of planting. China produces about two-thirds of the world's total of watermelons due to the excellent climate conditions in the producing region. The U.S. is 7th among the Watermelon producing Countries. Watermelon grow across the ground or can be trained to grow on a trellis in an Aquaponics System.

Quotes and Resources from Wikipedia Page called "[Watermelon](#)".

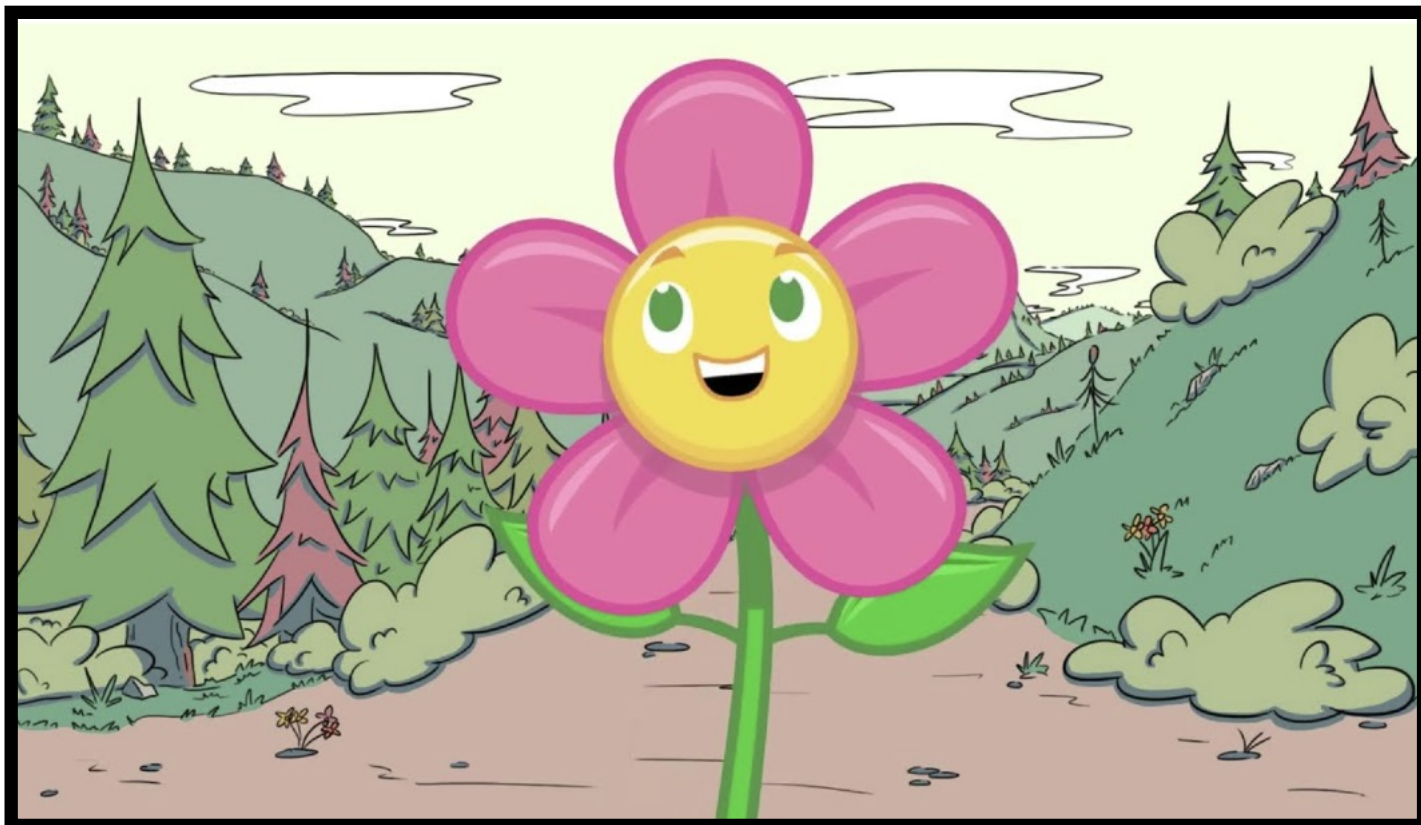
On Page 19, I shared our final Sample Lesson, but now I want to share a special addition to the Curriculum, which are our **Animated Characters**. Four of these characters are in **Part 4**. They add a special fun quality to the story precisely because they can move and talk. Introducing the **Love For Science Bear, Brodie**, who becomes a Narrator in **Part 4**, and **Poppie, the Popcorn Truck Vendor**.

**Click the Images of Brodie & Poppie below to See their Fun, Short Videos.**



And here's our favorite **Animated Character** of all, **Angie, the Angiosperm**. Angiosperms are Flowering Plants, and their Geologic timeline story is really fascinating. This is that Story that Angie tells in her two Videos below.

**Click the Images of Angie below to See & Hear her amazing Stories.**



Our fourth **Part 4 Animated Character** is **Hulu**, a [Hawaiian Gold Tilapia](#), which is one of 5 Tilapia Species that we sell on our AUSA website. **Hulu** is on a mission to share why Tilapia are a very Special Species of Fish. I'll let her speak for herself.

**Click the Images of Hulu below to See & Hear her Special Story.**



## Hawaiian Gold



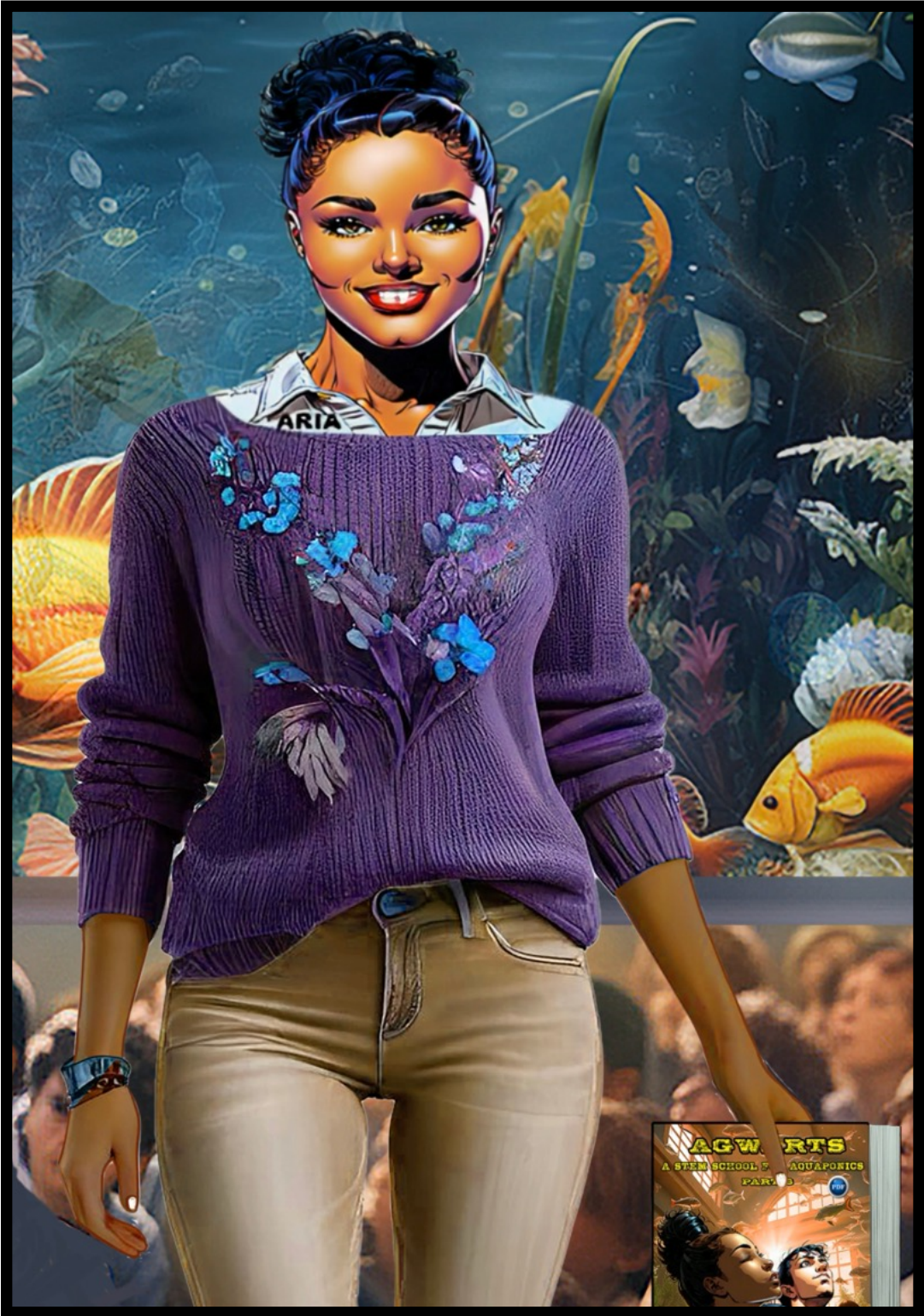
[Hawaiian Gold](#) (*Oreochromis Mossambicus*) is a freshwater fish that can withstand brackish water, poor water quality, pollution and oxygen scarcity.

Adults reach up to 16 inches in length and are known to be very fast growers. Hawaiian Gold do best in very warm water between 75 ° and 95 ° F.

Tilapia is the most popular fish among Aquaponics farmers for several reasons the most important being they are one of the hardest fish on the planet. The 2nd most important reason is they taste great.

Now I would like to introduce **Aria Arnold**, our Student Liaison & Co-Teacher who arrives in **Part 3**. Aria is the **AGWARTS Elementary Teacher** who shares the excellent and extensive Elementary Lessons from the **AGWARTS Science Curriculum**.

Here she introduces herself to her Class and explains how she wants them to fall in Love with Science and will help them do that by making Science fun.



And then, there's **Noah Nolan**, our **High School Student Liaison and Co-Teacher**. He is also an **AGWARTS** Alumni and just graduated from the nearby University with Honors and a Major in Horticulture.

Noah is working Full Time as our **High School Student Liaison** until he starts his Masters Program in 2030. We are so fortunate to have him for a few years at **AGWARTS** as he, too, knows some of our High School Students who were in Middle School when he was in attendance. I'm going to let **Noah** speak for himself.

**Click the Images of Noah below to Hear his Introduction.**



**We Hope You  
Enjoyed Your AGWARTS  
Curriculum Tour  
If you have any ?'s,  
Call: 760-671-3053**



**But What  
About  
OpenSciEd,  
Serendip Studio &  
The Professor?**



**OPPS!  
The  
Professor,  
The Principal  
Of  
AGWARTS!**



**I'm  
OVER  
Here!**

And last but not least is the Professor who is the Principal of **AGWARTS**. In the Animated Talking Video below, he explains why he was almost forgotten by **BERB** and what his Goal is for his **AGWARTS** Students.

**Click on the Image of the Professor below to hear his Story.**



**PROFESSOR:** There's one more Big Announcement! As Usual.

## Teachers we have a **Red Bubble** [AGWARTS Store](#).

And your Students are going to Love it because it's going to be full of their favorite **AGWARTS** Characters on everything imaginable including **Stickers, Phone Cases, T-Shirts, Hoodies, Notepads, Totes, Mugs, Pins** and more, by early November, which, of course, is just in time for Christmas. And why the Hat!



**Why all the Veggies?** Because right now the **First Collection** in our **Red Bubble AGWARTS Store** features all **20 of the weirdly wonderful Vegetable & Fruit Cartoon Characters** that are also featured in **Part 4** of this Curriculum with their Taxonomy Charts, Nutritional Info and Origin Stories.

The Next Collection will be the **AGWARTS Staff**, then the **AGWARTS Students and Mascots** will be added, until every Curriculum Character is available by November.

c

# Thank You for Viewing

Our AGWARTS Curriculum TOUR



**Created by Aquaponics USA**

**Narrated By Grace Sylke**

**And Distributed to District Superintendents,  
Principals and Teachers**

**For More Information or To Schedule a Tour,  
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