The following checklist is based on a handout I gave in a seminar in 2009, shortly after our business began and we started to publish science curriculum. Going through it will give you a picture of what my considerations and concerns were as a homeschooling parent and the kind of science curriculum I wanted to develop. *– Joy ☺*

Observe Some Science Curriculum and Think…

◻ Scientific Truth: Is it science?

Watch out for 1. false religion/philosophy (evolution, Gaia hypothesis, some ethics relating to medical sciences or animal rights movement – remember, humans are a special creation who are caretakers of the rest of creation, not equal to it .)

2. inaccurate gobbledygook (e.g. solids vrs. liquids lesson in a primary teacher's book asked students to figure out whether cows, birds, etc. were "solids" or "liquids". This is an example of gobbledygook and a waste of time to do such a lesson! True science does not classify living creatures this way.)

◻ Useful Vocabulary:

Is the vocabulary meaningful to a young child?

Is the vocab. useful to understand a concept of why or how something works or is made?

Watch out for 1. "science" curriculum that is mainly language arts activities (e.g. sorting science vocabulary into phonetic groups, doing more creative writing assignments on the topic instead of a scientific investigation, etc.)

2. defining terms only to learn lists of impressive words (your goal in home school should not be to impress the relatives or friends with how many big scientific words your child can spell and define but you should be concerned that they begin to understand foundational concepts of what, how and why things do what they do.)

Should we be spending significant time in reciting, for example, the names of all the bones in the body. Many reference charts give this information but what is important to learn is how to read a diagram, what the bones make, how they function, why one might break, etc.. One of my physiology profs use to tell us that even if we became a doctor, we'd have a chart on our wall for a reason. My cell biology prof told us that he didn't think that memorizing the Kreb cycle was beneficial; however, knowing how to read and explain it when looking at it, that was important! My point: memorizing large amounts of information which can be easily looked up nowadays can be quite unnecessary.

◻ Useful Lessons:

Are the lesson concepts meaningful for the long-term?

- Will they help a student understand a deeper-level of studies in the future?
- Will they help a student understand something that is useful to them in the future?
- Or is this mainly trivia/trivial and valuable as short-term entertainment?

□ Experiments:

What are the experiments like in this resource?

- How many experiments? (Too few, too many?)
- How much time, energy, and additional-to-around-the-home-items or kits are required? (Is this affordable?)
- How much parental guidance is required? (see comments about inquiry-based learning)

Note Re: Younger Grades:
"Experiments" are often more so "demonstrations" in K-3 levels (which means more work for teacher/parent). Some should be included to teach scientific method, practice observation skills, recording skills, to see what happens if or when (cause and effect), and to teach skills in being accurate ("repeatable"). However, an all-hands-on-experiment/demonstration-curriculum, especially in the early years, will be more exhausting and very expensive (time, energy, and money). Also, some science topics are "taught and caught" better using other methods so "just doing experiments" misses some important parts of scientific inquiry.

□ Model-building:

What are the crafts/activities like in this resource?

- Are they useful/purposeful? (beyond play)
- How much space, time, and additional materials or kits are required? (affordable?)

Some problems are better solved by model-building rather than by experiment. Easy for children to problem-solve on their own (independence), teaches reasoning skills, detail pattern making, step by step recording of information, and learning from mistakes. (I personally prefer model-building more than experiments for younger levels.)

□ Natural observation:

Does the program include more than just our own backyard?

Yes, we need to learn about things around us – this is so relevant to real life. But there is a disadvantage is that is "all" we learn in science…Studies would be limited to local area (microscope, backyard, etc.) and only to some of the strands of science (e.g. life science, earth/space science). Also, "just observing" misses more in-depth information from other people observing similar things. Observation should be also accompanied by research into learning what others have learned about it.

What about technology? Is that included?

Technology is about how to make and fix things to help us work (bridges, computers) health care, fabrics, synthetic chemicals, plastics, electromagnets, simple machines, gears, pulley systems, etc.) - problem solving by designing a tool to do work for us. A good science plan should include topics involving practical life skills of science called technology and not just an observation of nature. Both are important.

◻ What is the style or structure or methodology used?

This is more about your own personal preferences! ☺

- ### Communication:

This is about how the information will be recorded by the student and how that understanding is communicated to other people (e.g. parent, siblings, teacher) and retained for the long-term. Examples are: craft, poster, project, show and tell, notetaking, tests, discussions, assignment or worksheet completion, etc.. Find a science curriculum that has a style that you think you will like to us and will have long-term value.

- ### Reading/Research Skills:

This is about incorporating lessons for how to read non-fiction materials and summarize information. You can add this skill to any curriculum resource if it isn't already part of it.
