

Review of Novare Physical Science

By Carol Wells, Ph.D. (I am the homeschooling mother of five children. Three of my children have graduated from high school, and one has graduated from college. I have taught various science classes to my own children and to others at co-op classes through the years. I have a Ph.D. in Medical Physics from the University of Wisconsin—Madison.)

Novare was described as a ‘mastery-oriented curriculum.’ The emphasis is not on rote memorization or covering a tremendous number of topics, but on understanding fewer topics well and incorporating and linking knowledge gained with that in other subjects. This fits perfectly with the Classical education approach. The author incorporates historical notes that demonstrate the development of ideas and concepts and will probably relate to your history and literature studies as well. There is significant review of previously covered material throughout the course to enable ‘mastery’ including cumulative quizzes and Weekly Review Guides. Since students are reviewing material throughout the course, no cramming should be needed for final exams, and long-term retention should be superior.

Mays maintains a conversational tone in the book so that lectures are not needed, but presents the material more rigorously and more compatible with modern standard science texts than Apologia in using and explaining S.I. units, using modern terms like ‘quanta,’ and using the more correct, rigorous terminology like ‘energy’ rather than ‘heat.’ Overall, the big picture presented is so much more complete than what Apologia presents since it includes modern developments and proper, accepted scientific terminology. Exact vocabulary and terminology are an important aspect of science, which can be especially beneficial if a student is not encountering this exact vocabulary in their home setting. When material is too complicated for a 7th -9th grade student to understand, Mays still gives a reference to the proper topic so that a student could investigate further if they were so motivated, and if not, at least they have heard the terminology so that if they encounter it in the future, it will be familiar. Whereas Apologia often seems to ignore topics that are too complex, this text refers to them and explains the gist of the topic or the limits of special cases that he considers. All around, it is quite a bit more correct, exact, and rigorous than Apologia.

The photos and diagrams generously sprinkled throughout the text add interest and give examples that will delight and spark a student's curiosity. This is much superior to the Apologia texts. He also provides excellent examples in modern medicine and technology to demonstrate the relevancy of the material. One small thing that I did not like was the 11pt font size for the text. I would have preferred a page size like Apologia with larger photos and larger font.

The experimental method is soundly presented with excellent detail and explanation. Again, this is more rigorously explained than in the Apologia text. The strong emphasis on thinking, analyzing, and making connections is superb and in keeping with the 'mastery' approach. I was particularly impressed with the explanation for making and interpreting graphs and presentation of data in tables. This was clearly, thoroughly, and rigorously presented, which will benefit students in future science coursework.

There is a separate Student Lab Report Handbook that gives even further detail on good experimental technique and the proper lab report writing process. This is quite thorough, and I would expect to assign only a few reports throughout the year with this level of detail. It includes computer graphing instructions. This booklet is relevant for all science courses, not just the Physical Science course, so that it could be used throughout high school.

There is not a 'lab kit' available with all the experimental supplies, so preparing the lab exercises will take a bit more effort for teachers. Ideally these could be done in a co-op setting to share resources and promote discussion. There is a 'Special Parts Kit' which contains some of the custom-made wooden and metal parts for experiments.

In addition to the text, there is a resource CD which gives a course overview (which was good, but repeats the book preface, so it is not giving any additional information), quizzes, exams, a suggested schedule, an experimental manual with helpful details for preparing the labs, and an answer key for 'Learning-check' questions, quizzes, and semester exams. Missing from the CD are any additional demos to add interest to the course content. The Apologia CDs include demos of particularly fascinating phenomenon and extra explanation of more complicated problems worked out. I would have liked to see some demos, a list of possible demos to perform, or at least links to demos on youtube. I was told that as new supplementary material becomes available, this will be e-mailed to those who have purchased the Resource CD at no extra cost, so this may be available in the future.

There is one correction to note if you buy the book, on page 197. The third paragraph repeats the common misconception that Galileo was forced to deny his discoveries under threat of ‘painful death’ when, in fact, the trial in 1633 did have some irregularities where Galileo signed a plea bargain, and the Church didn’t give the light sentence that he expected in return for signing that plea bargain, so he rightly felt betrayed. In the end, he was merely put under house arrest, allowed to live quite comfortably continuing his research and writing (he completed *Discourses on Two New Sciences* in those years), but he was asked to treat the heliocentric idea as a ‘hypothesis’ not a ‘theory’ until it could be further verified with more experimental data.

This link clarifies Mays’s view on ‘young earth,’ global-warming, and evolution:
http://www.novarescienceandmath.com/wp-content/uploads/Novare_Newsletter_v6_1.pdf

Mays emphasizes the Christian pursuit of truth and the perception of God as rational and orderly in the Physical Science text. Mays successfully integrates faith and religion with the premise that scientific knowledge can lead us toward truth, beauty, and goodness.

In conclusion, I think the Novare Science and Math project is impressive, rigorous, worthwhile, and I plan to support it. I’m excited to have this new option for science. I hope this is helpful for your science curriculum planning.