



**Dr. Nelson Ying
Tri Region Science
and Engineering Fair**

MEMO

TO: Homeschooling Parents of MIDDLE SCHOOL children
FR: Mary Eileen Wood, Director
RE: Science Fairs for Homeschooling Families – IHIPs, quarterly reports

Young people develop skills and discover strengths and interests when doing science projects. Our younger son Christopher participated in his regional fair from 5th through 12th grades; we homeschooled from 6th through 12th. From our experience and discussions with other families, here are subject areas in which to include the work a student is doing.

Science: The science fair topic can serve as the core of a science program each year of middle school. Use June and July for all sorts of adventures, so August can be “choose your project” month in time for sending in your IHIP. Science shows on TV and radio often started Christopher on some new building idea – he’s 25 now and you should see what’s still in our cellar!

Sample IHIP: Junior Level Science fair project. She will conduct a detailed six-month observation of a square meter of stream shoreline. Evaluation: Oral presentation to parents and neighbor who is a landscaper; judging at the Ying TRSEF in March.

Sample Quarterly: She continues her 4x/week observations. Until the killing freeze, she tracked plant growth and coloration, correlating with hours of sunlight at that GPS site. She then monitored the rotting rate of leaves, taking a sample of each tree species to freeze and to oven dry as comparisons.

Math: The real-world application of math started rather simply in 5th grade as he dented our kitchen table while breaking balsa bridges – the breaking point mass the bridge could bear divided by the actual weight of the bridge. These simple fractions let him build graphs to his heart’s content. By 8th grade, he wanted more sophisticated analyses, so he asked engineers how to do the required calculations. Math became a real tool that advanced learning about his science passion-of-the-year; he loved it.

Sample Quarterly: To compare the strength of each bridge, he recorded the mass of each bridge, then recorded the total mass required to break the bridge. He calculated the ratios; see attached copies of worksheets. Evaluation: Detailed review of his calculations by a high school math teacher in our church.

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English: For middle school science fair projects, students read one or more books about what they are exploring, take careful notes about what they do, write a summary of their work called an “abstract,” and write a paper about what they have discovered. Junior Level Judges at the science fair work in teams assigned a single grade level; their training emphasizes that they are to look for *grade-appropriate* learning and writing.

Sample IHIP: As part of his science research course, he will tape a journal about his work. Once a week he will write a two-paragraph summary of his progress, based upon the recordings. Evaluation: Summaries submitted to our local librarian for review and mark-up.

Sample IHIP: He will write a paper for his science fair project, summarizing what his question was, the procedure he developed, the results of his experiment, and what he has concluded. Evaluation: Series of editing stages, then submitted as part of his science fair project to the Ying TRSEF.

Sample Quarterly: First quarter: Attached please find copies of his weekly summaries. Fourth Quarter: Attached please find a copy of his completed research paper.

Public speaking: The student prepares a 3-5 minute talk on her research which opens the presentation to each judge. When a young person is presenting to absolute strangers, she really does have to communicate accurately.

Sample Quarterly: She presented to three Fair Judges and two Special Award Judges on Fair Day, each presentation to a separate individual (see attached Fair Program).

Art: This is a great excuse for your child to take a lot of photographs. Especially for students for whom writing is a challenge, photos can build a framework that “tells the story” of the project.

Depending upon the artistic bent of the student, the science fair display board can become an artistic endeavor in and of itself. Use this as an opportunity for critical evaluations of various fonts or color combinations. What is distracting? What adds clarity? How much is “too much”? Note: While a fancy artistic masterpiece will not dazzle judges, it can be fun for the students.

Sample IHIP: Photography will be the art focus for this academic year. To demonstrate his successful learning, he will produce a photographic time study as part of his science fair project, taking pictures every day of the mold he is growing.

Sample Quarterly: He designed and made his science fair poster for the Ying TRSEF, using font colors to highlight the items on his board required by fair rules. He created three trial versions to compare layouts for readability and logical sequence.

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