**AAR Design Hangar Standards**

**Next Generation Science Standards (NGSS)**

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| **Standard Title** | **Sub-Standard** | **Description** | **Adult’s Role** |
| MS. Engineering Design  Grades 6-8 | [MS-ETS1-1](https://www.nextgenscience.org/pe/ms-ets1-1-engineering-design) | Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions. | Have children explain what the design challenge is to ensure a complete understanding of the problem and possible solutions. Encourage them to discuss factors affecting possible design elements. |
| MS. Engineering Design  Grades 6-8 | [MS-ETS1-2](https://www.nextgenscience.org/pe/ms-ets1-2-engineering-design) | Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. | Encourage children to record their observations and report on their findings / results, including elements of cause and effect. |
| [MS.Engineering Design](http://www.nextgenscience.org/msets-ed-engineering-design):  Grades 6-8 | [MS-ETS1-3](https://www.nextgenscience.org/pe/ms-ets1-3-engineering-design) | Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success. | Ensure children are analyzing their flights. They can do this by asking prompting questions that help children to better understand what they are viewing in their test flight. |
| MS. Engineering Design  Grades 6-8 | [MS-ETS1-4](https://www.nextgenscience.org/pe/ms-ets1-4-engineering-design) | Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved. | Ensure children design and build a prototype to test, record their observations, make modifications to the original design, and retest their prototype. |
| 3-5-ETS1-Engineering Design  Grade 3-5 | [3-5-ETS1-1](https://www.nextgenscience.org/dci-arrangement/3-5-ets1-engineering-design) | Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. | Have children explain what the design challenge is to ensure a complete understanding of the problem and possible solutions. Encourage them to discuss factors affecting possible design elements. |
| [3-5.Engineering Design](http://www.nextgenscience.org/3-5ets-engineering-design)  Grades 3-5 | [3-5-ETS1-2](https://www.nextgenscience.org/pe/3-5-ets1-2-engineering-design) | Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. | Encourage children to redesign multiple times and ask questions prompting which designs did better than others. |
| [3-5.Engineering Design](http://www.nextgenscience.org/3-5ets-engineering-design)  Grades 3-5 | [3-5-ETS1-3](https://www.nextgenscience.org/pe/3-5-ets1-3-engineering-design) | Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved. | Ensure children are analyzing their flight, making observations, and verbally explaining what they notice about their flight and how they plan on improving their design. |

**Common Core State Standards (CCSS)**

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| **Standard Title** | **Description** | **Adult’s Role** |
| [CCSS.ELA-LITERACY.SL.K.1](http://www.corestandards.org/ELA-Literacy/SL/K/1/)  Grades K-8, but the standard varies slightly | Participate in collaborative conversations with diverse partners about *appropriately aged topics and texts* with peers and adults in small and larger groups. | Engage children in conversation at the work tables, as well as while they test. Ask prompting questions in order to get children to discuss what they’re thinking or to discuss their designs or new modifications. |
| [CCSS.ELA-LITERACY.SL.2.3](http://www.corestandards.org/ELA-Literacy/SL/2/3/)  Grades 2-3 | Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue. | Ask children prompting questions about how and why their flight performed the way it did. Through this interaction, children can gain a better understanding of what to change in their design in order to improve their test flight. |
| [CCSS.ELA-LITERACY.SL.2.4](http://www.corestandards.org/ELA-Literacy/SL/2/4/)  Grades 2-7 | Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences. | Ask children questions about previous trial runs, prompting children to describe their previous test flight in detail in order to observe if the changes to their current design helped or hurt their flight performance. |
| [CCSS.ELA-LITERACY.SL.2.6](http://www.corestandards.org/ELA-Literacy/SL/2/6/)  Grades 2-3 | Produce complete sentences when appropriate to task and situation in order to provide requested detail or clarification. | Ask children questions and get them to explain how they came up with their design and what changes they made to their design to complete the design challenge. If they weren’t successful, ask them to explain what they think the problem might have been. |