Tips from the Trenches

Design Project Rubric.

The report should consist of the listed sections and follow the given criteria.

Abstract	___ ___	A concise statement which tells the intention of the experiment and what was learned
Background	___ ___	Concepts from module activities and additional information is well synthesized
	___	Concepts are accurately conveyed
	___	Connections are made between the background and the experimental problem
Product Description	___ ___	Product, uses, and desirable properties presented
	___	Creative product idea
Procedure for Constructing and Testing Prototype	___ ___	Controlled and varied prototype parameters are appropriate and thoroughly explained
	___	Criteria for successful prototype is connected to desirable properties
	___ ___	Test design is sound with controlled and varied treatments
	___	Data to be gathered is relevant to the criteria
	___ ___	Procedure is clear and repeatable
Hypothesis	___	Hypothesis has supporting reasons
	___	Supporting reasons are connected to the background covered
Data	___ ___	Data is organized and labeled
	___ ___	Labeled graph/figure is used to explain data
Conclusion	___	Results are clearly explained
	___	Explicit connection of properties/criteria to data/recommendations
	___	Prototype evaluation is consistent with results
	___	Hypothesis is reflected upon and supported
	___	Problems and sources of error are presented
Bibliography	___ ___	MWM cited and 3-5 other sources and parenthetic references used

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Offering Extra Credits

Many teachers who use the Materials World Modules use extra credit points as a prize for the group that produces the best overall design.

Offering extra credit motivates many students to strive for the best design. However, this increased competition also tends to reduce the amount of communication among groups, because students do not want to give away their "trade secrets." As a result, students do not participate in the exchange of scientific ideas, and cannot learn from each other as easily as when the exchange of information is encouraged.

Renee Dewald tried to address this issue when she designed her assessment method for the Composites module. The first year she used the module, she gave extra credit to the group with the best design across all of her classes. She felt that this had resulted in little sharing of ideas, and wanted to devise a method to motivate students without stifling communication.

What she did was to offer five extra credit points (the project was worth 25 points total) to the group with the best design in all here classes, but also to promise two extra credit points to everyone in the class from which the best design came.

This approach did appear to be successful in getting students within a class to work together and share ideas.