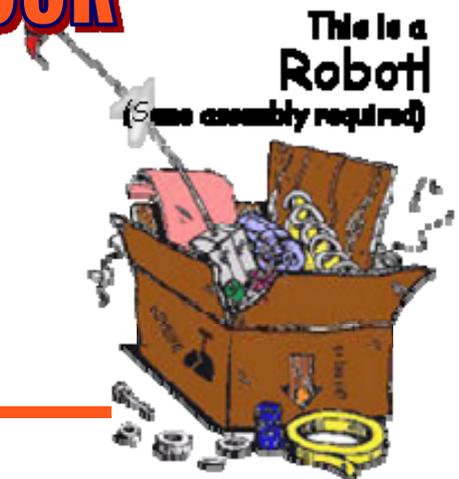




The trials and tribulations of
writing a

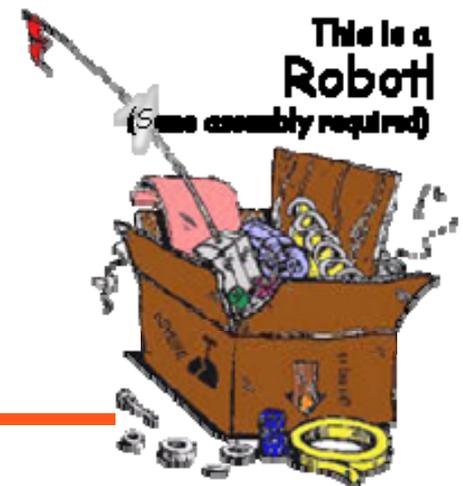
Project Engineering Notebook





Writing A Project Engineering Notebook

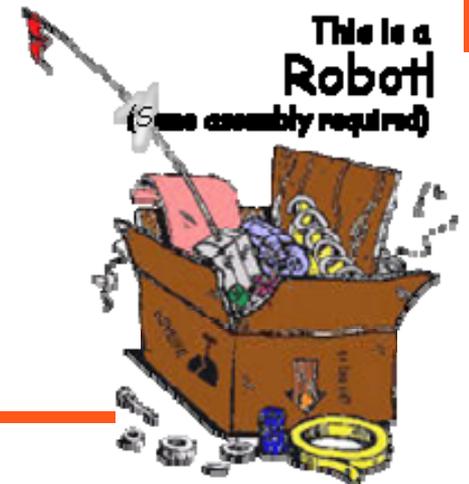
- A literary masterpiece?
- A comic book?
- A photo essay?
- A journal of your activities for six weeks?





Objectives

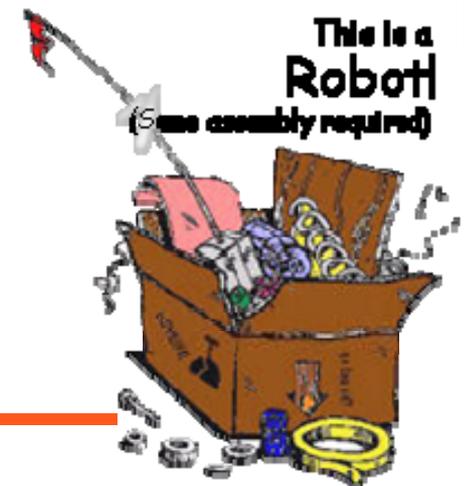
- Understand what an engineering notebook is
- Understand the notebook's requirements
- Understand how to design, lay out, and write a *quality* notebook





Read before you start!

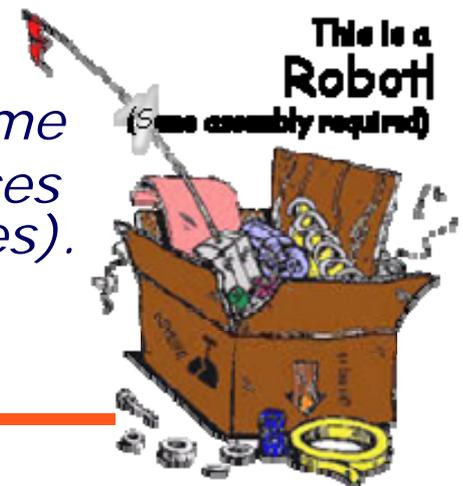
- From the Awards and Judging Guidelines:
“Project Engineering Notebook—the purpose of the notebook is to document the process the team uses to design, build, and test their robot.”





Guidelines

- Standard 3-ring binder, max 2" ring size
- 30 **single-sided** typed pages or less
- On the binder cover:
 - School name
 - Team name
 - Teacher contact
 - Team #
- Research section:
A description of how the 2007 game theme is related to current technological practices or scientific research (min 2, max 5 pages).





Guidelines

- Use standard 8 1/2" X 11" paper, double spaced, using 1" margins, and a 12 pt. serif type font
- Add supplemental information in the appendices. This material should directly support the process described.





Create a team

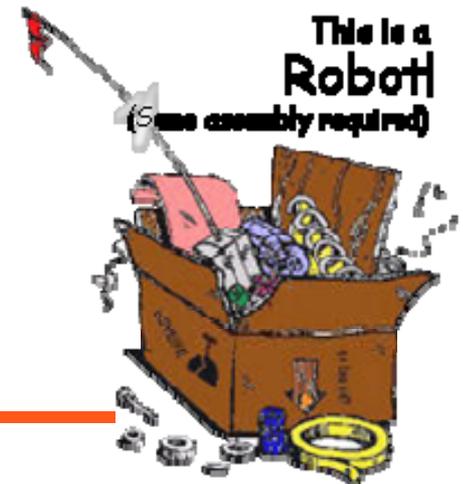
- ID the notebook development team—shouldn't be just a one-person effort
- All robotics team members should play some role
- Provide source info, writing, editing, graphics, CAD drawings, page design, etc.





Plan and schedule

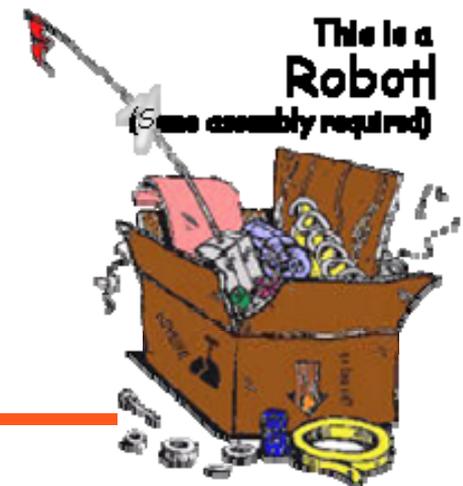
- Have an initial plan and schedule
- Think about your audience
- Write a good outline! Organize your information
- Include where and what graphics you need for each section
- Finalize assignments and schedule





You must cover these topics

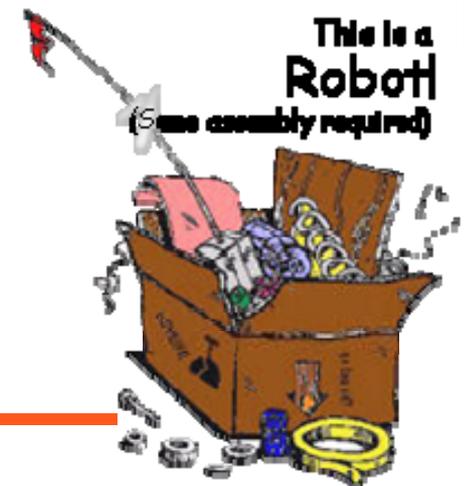
- Implementation of Engineering Design Process
- Brainstorming approaches
- Design creativity
- Analytical evaluation of design alternatives
- Offensive and defensive strategies
- Research paper
- Support documentations





Notebook quality

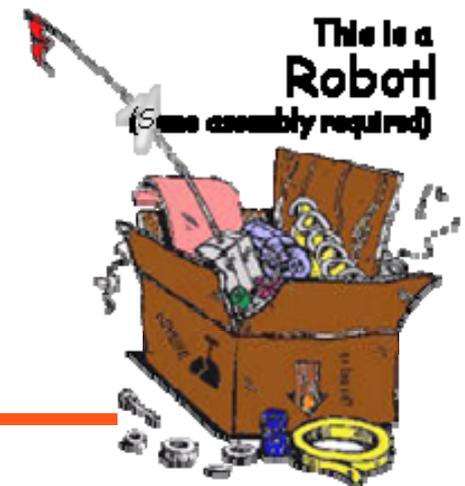
- Overall notebook quality
- Grammar and spelling
- Organization
- Presentation
- Compliance with the specifications
- Make sure your team does the same





Brainstorming approaches

- Write about your process for brainstorming
 - What did you brainstorm?
 - What were the results?
- Write about your ALTERNATIVE ideas

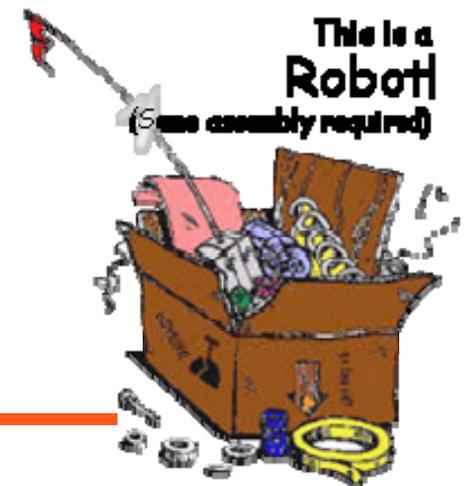




Design creativity

- How we used creativity to solve the problem presented in the game

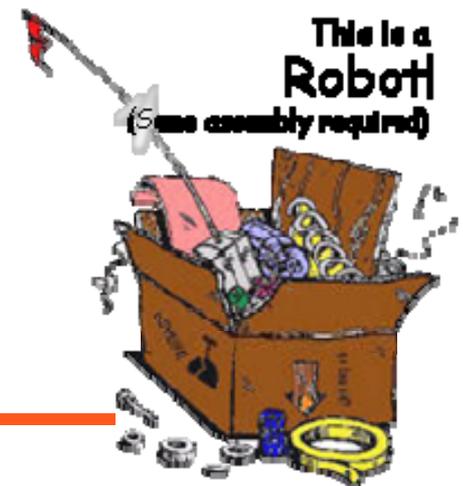
Remember you should be getting source from your team members. You can observe and write about what you see but your team members should be reporting to you or sending you emails about what they are doing that you might not have seen.





Strategies

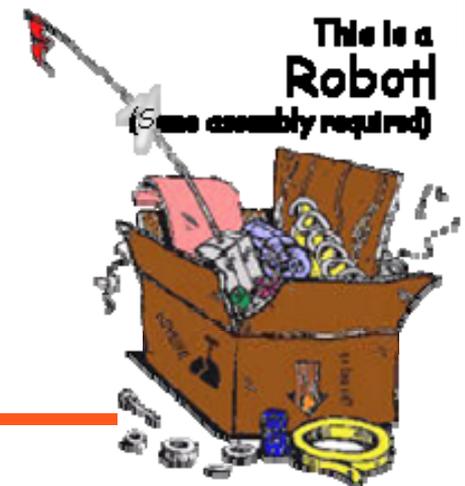
- Offensive and defensive evaluation of the game
- Write about how you analyzed gaming strategies and design elements to achieve goals





Implementation of the EDP

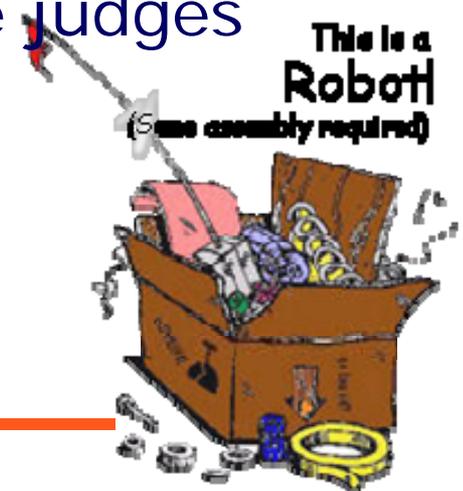
- Your documentation must show evidence that the Engineering Design Process (EDP) was effectively used:
 - Document your testing process
 - Document both failures and successes
 - Document cause and effect





Support documentation

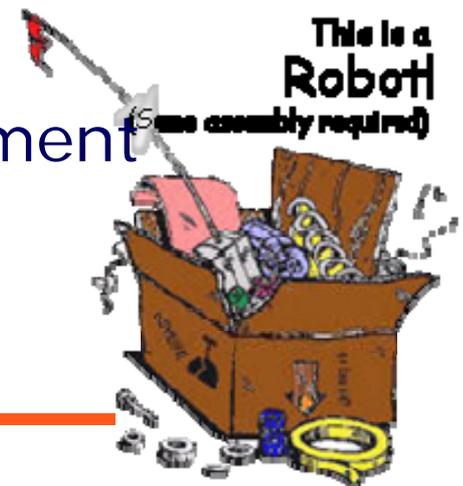
- Include support material that ***DIRECTLY*** supports what you wrote about in the first section
- Include CAD/other drawings, photos meeting minutes, etc
- Use *see page X in Appendix B* in your first 30 pages to provide reference for the judges





Design your page layout

- Keep it simple!
- Max 4 colors per page
- Max 3 fonts – use bold and italic face sparingly
- Don't use quotes and underlining
- **Emphasize** sparingly
- Use “white space” and avoid clutter
- ***BE CONSISTENT*** throughout your document





Write the book

E. B. White's 17th rule in *The Elements of Style*:

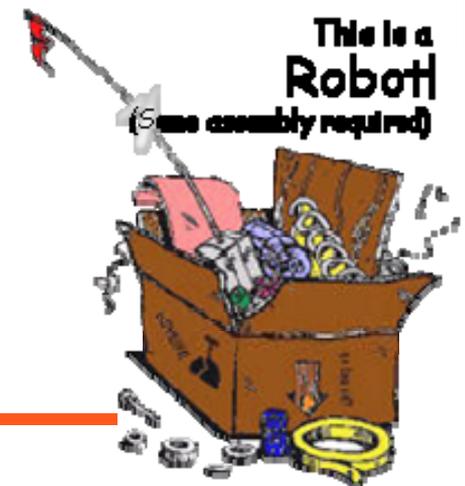
17. Omit needless words. Vigorous writing is concise. A sentence should contain no unnecessary words, a paragraph no unnecessary sentences, for the same reason that a drawing should have no unnecessary lines and a machine no unnecessary parts.





Write the book

- Remember your audience!
- Focus on what is important - put that first
- Use lists, tables and figures effectively
- **Think, think, think!** No brain dumps!
- Use a stylebook
- Be consistent!





Design the graphics

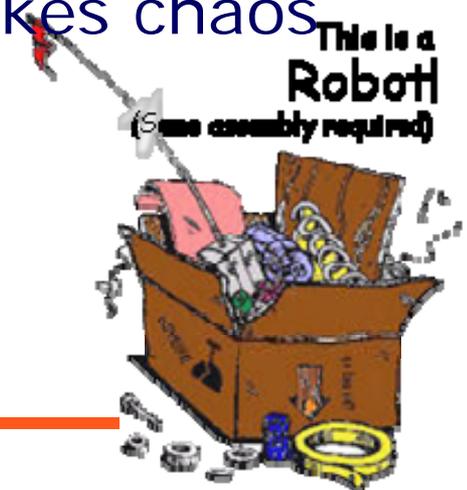
- Keep 'em clean, don't let them get too busy
- Focus on what is important—get photos of team members using tools, brainstorming, CADs to support your design
- Don't overdo the fonts
- Don't use too many colors, heavy lines





Review for quality control

- A good editor saves a lot of embarrassment
- Get outside reviewers—have students who are good at grammar and writing to look over your book
- Don't forget to review the graphics
- Coordinate revisions—free-for-all makes chaos





A little style!

Avoid

in the amount of
 for the purpose of
 in reference to
 in order to
 in order that
 if it should turn out that
 with the result that
 question as to whether
 if at all possible
 in most cases
 at the present time
 a number of
 a distance of 2 yards
 totally demolished
 alternate choices

Use

for
 for
 about
 to
 to
 if
 so
 whether
 if possible
 usually
 now
 some, several
 2 yards
 demolished
 alternatives or
 choices

Passive vs active voice:

- This equipment should be examined for damage
- Examine this equipment for damage

Personal pronouns help:

- We vs the students
- You vs the student or the user

Use a personal, conversational tone:

- For a personal tone, imagine how the same words would sound spoken
- Consider how you would express your ideas to your coaches or teachers

