Disciplinary Discourse in Design Reviews

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junior industrial design / mechanical engineering
1. disciplinary approaches
2. instructor roles
rooted in science / the arts tradition
rooted in IIT / Cranbrook tradition
an aside:
what if the ID instructor taught the ME class, and vice versa?
another aside:
what if the ID students took the ME class, and vice versa?
disciplinary legitimacy

socratic debate

/ studio practice
approach

syllabi

/ questions asked

/ themes
industrial design course

- ground-breaking / “next level” design
- provides design brief
- emphasizes passion for the design
mechanical engineering course

- design based off methods learned and customer specifications
- specific statistics about design parts
- stresses necessity to complete
industrial design course
ID syllabus*

- helping students prepare to enter Industrial Design
ID syllabus*

creations in group design projects that are based upon D-search [note: versus “research”], aesthetically refined, functionally improved, and designed with production and the user in mind
gain a basic understanding of D-search
ID syllabus*

control of advanced computer modeling to be able to model complex forms accurately;
mastery of Photoshop rendering.
approach

love coach
/ helper
/ champion
“This is nice and simple... I don’t wanna diminish what you feel passionate about, but that’s what’s gonna—the passion you have for something is gonna come out in your design.”
“Cause, you know, you need to be **passionate** about these things..."
“...didn’t you say it had to be 15 inches high?

Well, I said—they gave you a range, though”
“I love this just the fact it is open and that's — to me, that's the — you got this energy”
“Which would you rather develop?”

“You’re the designer. Which, which do you think?”

“Stop and make a decision”
“How is that gonna work—just push, pull?
I don’t know about that yet. Well, actually, we’ll let them worry about that.
Really?
Ah, have some ideas about it, but—"
“as a designer, what’s that tell you?

He [Todd]’s gotta discover that”
approach

love coach

/ helper

/ push along
mechanical engineering course
ME syllabus

- good design practice;
- thorough problem definition and understanding;
- creativity in the development of design concepts;
ME syllabus

- quality engineering work including analytical and physical modeling;
- timely and well-conceived experiments and hands-on activities;
- professional oral and written communications;
“Because ME XXX is the capstone design course, the projects are open-ended and a thorough process is nearly as important as the solution itself. This means that your obligations and expectations will not be as clearly spelled-out as in more traditional classes.”
“In summary, treat your instructor as you would your boss in your first job. Treat your team mates as you would your colleagues in your first job.”
approach

mentor, boss

/ technical advisor

/ pull along
To serve as a mentor in understanding the design process
To serve as an adviser to your group in response to questions
To act as a coach to stimulate the group and its members to high performance levels
“One, did you build it? One, is it fully assembled? One, is it fully assembled... **Two**, if it is not fully assembled per the prints, what has changed and why? All right? There's only two questions. **Two**, is it fully functional? If it is not fully functional, what is not working and why... which will lead you into how do you fix it, probably”
“Do you know the response time of the solenoid? Can you rephrase the question? How fast is the angular velocity? So this is supposed to have a frequency of two hertz. We’ve been playing with it just because that speed affects—”
“Calculate it. Don’t give it to mas “uh”. That’s an addendum.

Um, and then moving forward from that, ah, we, again, used this updated, ah, ah, ah, torque to calculate our, ah, stresses that will be on our gear teeth for lifting. Ah, we used a Louis stress analysis equation, um, and came up with a, ah, total – or a maximum stress of about 18,000 – or, ah, 1,800 psi. Um, our material is – they’re using for these is gonna be steel which has about, um, ah – ultimate tensile strength of 57,000 psi. Ah, in general, allowable stress on a material is about one-third of that, um, so working that into our ah, margin of safety, we believe we have a margin of safety of about nine on, ah, our lifting gears.
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“Why were we trying to get ‘em last night as opposed to in the last three months?”
approach

mentor, boss

/ technical advisor

/ pull along
so...
be true to yourself
or
prove yourself
ID:
relaxed and open, absolute constraints given with fairly open suggestions. true to yourself.
ME: challenging. points out flaws and struggles the group may have. Prove yourself.
disciplinary legitimacy and tradeoffs to be made?
an aside:
what if the ID instructor taught the ME class, and vice versa?
another aside: what if the ID students took the ME class, and vice versa?
Design should be mastered as a liberal art before it is considered a business tool. Great design comes from an artistic or cultural impulse, not from a focus group...Great design is about meaning first, the market second.
...good design starts with a clear point of view, but it should be based on facts, not intuition... we challenge our students to experiment, but to do so like scientists (using hypotheses, building on past work), not like artists.
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