

Proceedings
Teaching Entrepreneurship to Engineering
Students

Engineering Conferences International

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What is the Culture at the University
that Fosters a Spirit of Innovation and
Entrepreneurship?

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<http://dc.engconfintl.org/teaching/13>

Fostering a SpiRIT of Innovation

Introduction

Presenters

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Fostering a SpiRIT of Innovation

Agenda

- What got us into entrepreneurial education
- What we do to foster Innovation
- Supporting Technology and Innovation through Projects
- Example



What got us here

- **Connect students to careers**
- **Connect careers to courses**
- **Retention issues**
- **Student morale (comfort zone)**
- **Moving beyond abstract to real**



What we do to foster Innovation

- **Emphasis on creating ‘things’ in coursework**
- **Start early and often**
 - **First quarter Freshmen through Senior projects**
 - **Facilitate student driven activities**
- **Involve students with multidisciplinary teams**



Support through Projects

- **Backbone instead of Capstone project**
- **Projects run independent of courses**
- **Team responsible for 'Infusing' work into classes**
 - **Involve Freshmen to Seniors**
 - **Interview for position on teams**
- **Courses act as Consultants**
- **Projects cross department, College, and even Institution lines**



Gates and Phases of a Project

Phase 1 – From Problem Identification to Concept selection

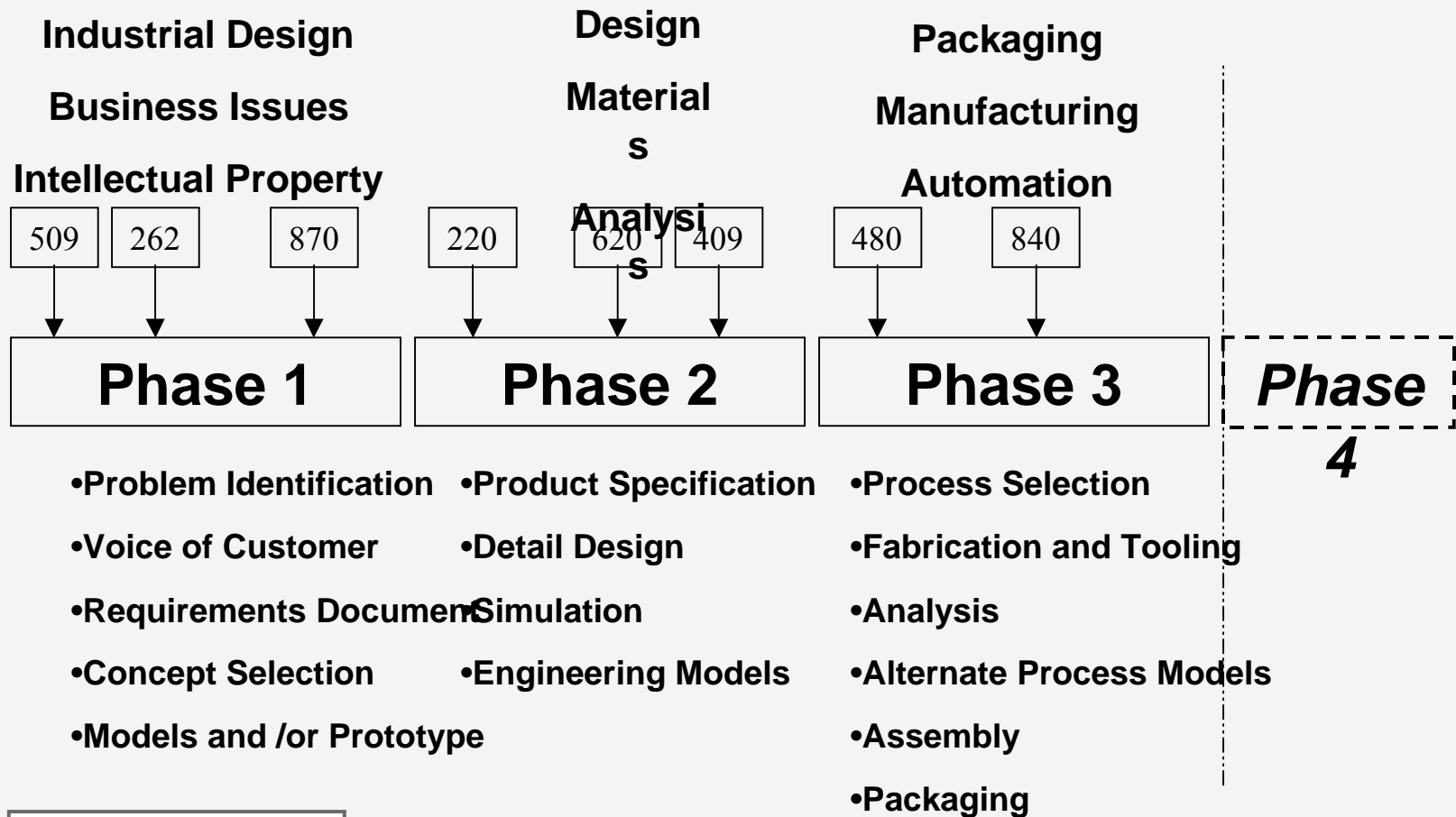
Phase 2 – From Initial Design to Assembly and Manufacturing feasibility

Phase 3 – From Finished Design to Manufactured and Packaged product.

(Phase 4 – Team breaks free of the 'Studentbator' to pursue profit.)



Sample Roadmap



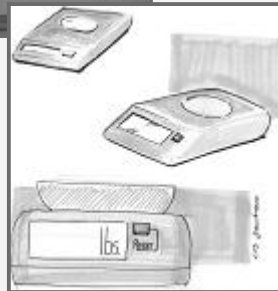
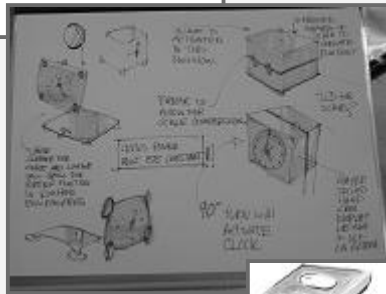
Projects

- **Three types of project generators**
 1. Industrial
 2. Student team driven (Entrepreneurial)
 3. Faculty
- **Several projects ongoing simultaneously**
- **First and second generation products**
 - Apply what was learned
 - Greater experience



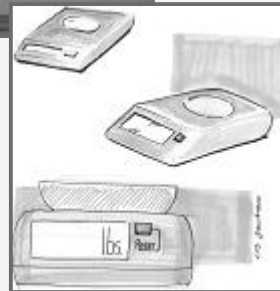
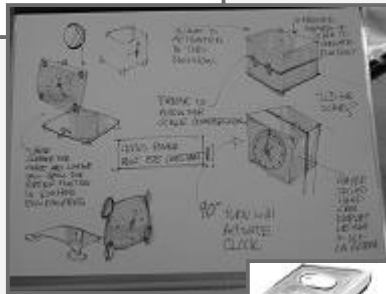
Product Realization

The Kitchen Scale Project



Product Realization

Phase 1 - Concept

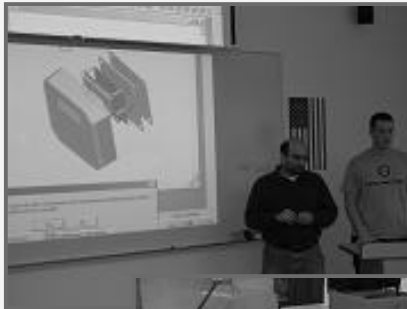


- Problem Identification
- Voice of the Customer
- Intellectual Property Search
- Industrial Design
- Customer Requirements



Product Realization

Phase 2 - Development



- **Detail Design**
- **Component Selection**
- **Simulation and Analysis**
- **Prototyping**



Product Realization

Phase 3 - Manufacture



- **Manufacture**
 - Part Fabrication
 - Hard Tooling
- **Assembly**
- **Packaging**

Summary

- **Students Seem be more involved and happier**
 - Improved Grades*
 - Better Attraction and Retention*
 - **See a much greater interest in Industry**
 - Morse Manufacturing, Inc. (Barrel handling equip)
 - Crosskates, Inc. (All terrain roller-skis)
 - **Increased enrollment. (15% This year alone with 40% over the past three years)**
-  **Plans to formalize Product Realization**

*(Not enough data to statistically prove yet)