

Interim Visit Report

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On May 7, 2008, I visited Louisiana Tech University to observe the Freshman Design Expo and obtain first hand impressions of the curriculum. During my visit, I met with administrators, faculty, and students. A copy of my itinerary is given at the end of this report.

I have several observations after my visit:

1. The Living with the Lab Curriculum is recognized by the administration as being a significant improvement in the freshmen curriculum. The administration supports the goals of the curriculum.
2. The faculty has formed a cohesive team that works together effectively and strives to deliver an excellent curriculum.
3. The faculty is motivated, well-qualified, and dedicated.
4. The students feel that they are being asked to work very hard. They feel like they are rising to the challenge and they are proud of their work.
5. The breadth of the projects displayed was impressive.
6. The students were enthusiastic and articulate about their projects.

Suggestions to consider:

1. Create a shop certification program. (Maybe quiz them before going into the shop.)
2. Create “course champions” for each of the program sections: ENG 120, etc.
3. Coach students about the skills that they are acquiring – emphasize that they should stress these skills when looking for internships, summer jobs, or other employment.
4. When students are asked what skills and concepts they are learning outside their major, they don’t have a good concept of what their major includes. It would be better to give students a list of concepts and have them indicate which ones they feel they are learning. Students could then indicate their major.
5. In preparation for the design project expo, it might be a good idea to have students prepare an “elevator speech” that explains their project.

Comments from David Hall

I'm very much looking forward to the summer and a time to rest and reflect on the past year. Your suggestions to offload responsibility for various courses to others yesterday as well as increasing the role and responsibilities of student assistants are on target for sustainability. I also hope to get Heath and Mikey to take charge of supervising the student labor aspects of the help desk / prototyping lab next year; they have definite ideas of how the lab and help desk should be run and will do a good job.

While I did do much of the development work this past year, I'm afraid that you may have the impression that I did it with little help from others. Mark Barker and I have been developing the freshman sequence since back in 2002. Kelly taught a section a couple of years ago, and Mikey became involved last year. Many of the handwritten notes posted on the web are Mikey's. This past year, everyone teaching the courses has contributed on one way or the other:

Stan Cronk

- Finds the errors in the notes and alerts me.
- Teaches most of the review sessions before exams.
- Developed engineering economics problems in 122 as well as regression notes in 120
- Primary author of one of the ASEE papers

Hisham Hegab

- Handled almost everything related to the RTD project (with student help)

Mark Barker

- Helps keep us going in the right direction - lots of conversations
- Helped hammer out the schedule and content for the entire year last summer
- Writes homework problems
- Some of the handwritten notes are Mark's
- Made up 1st drafts of class plans
- Carried half the load of the summer workshop last year

Anthony Reed (a student)

- Worked with Mark and me to hammer out the schedule last summer
- Primary author of one of the ASEE papers (with help from other students)

Mikey Swanbom

- 555 and transistor notes in 121, some statics notes, some ENGR econ notes
- Writes homework problems
- Selected and purchased lathes and mills in freshman room
- Primary author of one of the ASEE papers

Kelly Crittenden

- Most of the IDEO / Pugh method / 10 faces of innovation / bug list / etc. 122

Davis Harbour

- Set up and maintains the computer in the freshman room
- Screen capture notes

Entire Team

- Make out problems for exams
- Provide input at meetings
- After-hours monitoring of labs
- Develop and modify projects

I'm sure there are a lot of contributions that I'm forgetting. I'm lucky to have these guys working with me and continuing to graciously put up with me as the year has gone on.

My job this year was . . .

- * Developing the web site(s)
- * Learning several software packages related to the web site (Dreamweaver, Illustrator, Photoshop)
- * Posting previously generated content to the web
- * Developing new notes or modifying old notes
- * Developing homework problems
- * Purchasing course supplies and equipment
- * Preparing the supplies for distribution to students
- * Organizing events / writing annual reports / papers
- * Supervising student workers

Fall quarter was the most difficult since we were just starting to scale things up. My late nights have decreased as the year has progressed, but I'm still working more than I'd like to (for various reasons). I've been determined to complete what we started with the ENGR 12X courses this year and try to make it as high-quality as possible. What happens with the ENGR 22X courses will be mostly up to Kelly, Davis and Mark, but I feel some level of responsibility as the NSF project director for our grant.

Faculty comments

- Curriculum has made great strides
- Likes projects
- Thinks that freshmen are still forming impressions of what engineering is like
- Made exams more difficult to condition students to a hard world, want to emphasize fundamentals more
- Most graduates go to work in industry, many in the oil industry
- Can't give students too much – students must learn how to learn
- Students aren't aware of how good they have it with so much project work
- The lag sections need to be the same quality as the first sections
- The faculty meet regularly to make sure everyone is on the same page. We only meet one hour, we need more time.

Transcription of Focus Groups

ENGR 120/121

(5 ME's, 1 IE, 2 ChemE's)

Things that you liked about Living with the Lab:

I liked how we used math and engineering formulas together.

I enjoyed the Boe-bot.

Boe-bot –cool, fun, programming – first time I'd ever done that.

I like that they didn't always tell us what to do – we had to figure it out on our own.

Not just lecture – learn while doing.

It was cool that we got to program the Boe-bot. I liked the parts where you programmed and figured it out. I liked the hands-on. I liked the way they threw it at us, and we got to do what we wanted. We had to figure out how to fix it. We learned a lot more because we had things that went wrong. They don't spoon feed, we have to figure it out. I liked the Bobot. I learned while we did stuff, it was not just lecture. We knew why we were doing what we were doing. I liked that we used the pump. We knew how to do it, you could fix it.

No spoon feeding

We got classmates to help.

Definitely like working on a team – can help each other and it good to have different views. Not much group conflict. Some people have problems with their group members all contributing.

There's a reason for everything that you learn.

Using the same pump from last quarter

Always someone there to help, faculty, classmates

There was always someone who could help if you had trouble with your project.

I'm glad that we learned MathCad.

I liked Excel.

The ENGR 120 is very stressful, but it gets you prepared. I'm glad I didn't take 120 in the first quarter and pushed it back.

You start learning right off the bat.

Good faculty.

Overall good curriculum, stressful but worth it

People know what they want to do (major) or if engineering is not for them

I'm glad that I started the program one quarter behind – that way we're not guinea pigs.

Same formulas in math and engineering

Things that could be improved with Living with the Lab:

I wish that we could have more choice (for scheduling.) I don't like blocks. I would like to mix and match blocks. Sometimes you want to avoid a certain teacher.

Give us more of a choice in teachers.

I was in an all girls group and I didn't like it – we didn't know all that stuff. I was frustrated by troubleshooting.

We don't know how to compare this experience to other colleges. People tell us it is different, but we don't have anything to compare it to.

I had to restore my computer. I had to buy Solid Edge 3 times. A lot of people had software problems with Solid Edge.

You have to spend a lot of money on software and parts.

There is no instruction in Solid Edge.

I would like more instruction in Solid Edge.

I think it would be better if we were given more instruction in Solid Edge in class.

There were some problems with pacing of the course. Some classes seemed fast paced – too much so. Other classes were slower and we could keep up.
The midterm had some random questions – what is a certain drill bit called.
I can't grasp programming and circuitry.
Chem Lab could be more difficult – I learned that in high school.

What skills and concepts have you learned outside your major?

Students weren't sure what was in their major, so we asked for them to describe what they were learning.

I liked learning about the pump. I learned how to scale up a pump. It was good that we used low quality stuff so that we know how to fix it.

I want to learn more about ergonomics after graduation. I now appreciate how comfortable a chair is. The student center chairs are too short.

I am thinking about taking more programming classes after working with the Bobot.

I like team projects better – they help you to understand. We have 4 different ideas and we have to compromise. Some groups have problems getting along.

ENGR 120 and Math 240 shows a lot of people they should be engineers.

Good to get a taste of different engineering areas before I go into a major.

Chemistry lab was very easy.

I had a lot of the chemistry in high school.

Too soon to tell -I want to learn more about ergonomics after graduation.

It helps to see a lot of thing, electrical circuits and logic and mass balance.

Our projects are small scale of real life – water pump, pool heater

ENGR 122

(2 CE's, 1 Nano Systems)

Things that you liked about Living with the Lab:

I liked the projects. I liked working with electronics and programming.

I got a good grasp of how to take the project from start to finish.

I liked the hands on work, I liked working in teams, I liked using machines, I liked getting help on programs.

I liked fabrication. I liked the fact that we got to build it ourselves. The group thing worked out pretty good.

I got to meet new people and get used to working with other people. We had to figure out what they were good at.

I liked the help desk. They were helpful and had spare parts. They fixed my MathCad (software).

I liked the video clip the Deep Dive by IDEO.

I thought it was strange because of the 10 roles they had people segregated into. Caregiver, storyteller, experimenter, anthropologist, director, producer, cross pollinator.

Things that could be improved with Living with the Lab:

The pump project wasn't smooth. We didn't do enough research before we did the pump.

Homework could be put up more quickly. Once it was posted at 8:00 at night and was due the next morning. He did let us turn it in late.

I would have liked more examples of global problems, energy crisis, population problem – I felt like they were just tacked on and not part of the class – like just so we could say that we did it

I would like more emphasis on Boe-bot programming. Not just commands, but how to write a good program.

We had a lot of problems with programming.

The Boe-bot has problem with interfacing to the computer.

I would have liked more in-depth with MathCad – because the program can do a lot of cool things.

I thought the IDEO video was stupid at first, a little too much. But maybe it is me just going against something different. But it works!

What skills and concepts have you learned outside your major?

Patience, programming, building, measuring, drilling, milling, everything to do with machines, Solid Edge, MathCad, mass balance, circuits, linear regression, statics, engineering economics, and physically building a circuit.

Prototype, prototype, prototype

Talk it through and then prototype

IDEO roles

What ideas do you have for new products?

Using a distance indicator on a front bumper, need enough clearance to make the curb.

Automatic guitar tuner - measure tension, tweak until get the tension right,

Keep sound level on a TV constant – don't have it go up with commercials.

I would love to have my project, but I don't want to bring it to market myself. I would be happy to help someone else.

My project is already being done by other car companies.

What would you like to do after graduation?

Maybe research in nanosystems

Build bridges or dams

Work in the construction industry

Freshman Design Expo – Spring, 2008

Project titles are listed below with like projects grouped together:

Radio Frequency Parking Identification
Blind Spot Detector
Mail Arrived Detector
Automated Book End System
Self-Leveling System for Trailers
Electronically Assisted Trailer Hitching
Beta Cruise Control
Coin Bundle Vending Machine
Master Key Detector
Keyless Door Entry
Remote Controlled Door Lock
Remote Locator
Remote Car Jack
Industrial Safety Crosswalk
Automated In-Home Inventory System
Robotic Lawn Mower
Automated Bubble Air Freshening System (SmellGoods)
Portable Themed Pinball Machines
Alert Bracelet
Escalator
Wallet protection
High Beam/Low beam Headlight Switching
Rescue Ranger
Talkman
Paranoid Space Detector
Modernized Home Security System
Parking Sensor
Smart Backpack
Air Cannon Deer Feeder
Eco Friendly Lighting System
SPOTBOT
Radio Doggie Door

Patsy Brackin Agenda

Wednesday, May 7, 2008

10:00 - 10:15 Arrival and Review of Schedule, David Hall BH 255

10:15 - 11:00 ENGR 121 fish tank presentations BH 129

11:00 - 11:30 Jim Nelson BH 217

11:30 - 12:00 Mikey Swanbom and John Easley BH 204

12:00 - 1:00 Lunch (Hall, Barker, Napper, Boudreaux, Nelson) Ropp

1:00 - 1:45 Focus group #1 (with Alicia - ENGR 120 and 121 students) BH 259

1:45 - 2:30 Focus group #2 (with Alicia - ENGR 122 - honors and regular) BH 259

2:30 - 3:00 Davis Harbour and Stan Cronk NH 115

3:00 - 4:00 Meeting with LWTL Faculty (general discussion on project) BH 129

4:00 - 8:00 Freshman Design Expo Student Center

Design Expo Schedule

3:00 – 4:00 Setup of tables and dividers

3:30 – 4:15 Students set up their projects

4:15 – 4:30 Opening ceremonies – Heath Tims

4:30 – 5:30 Judging of first 20 teams

5:30 – 6:00 Dinner in iLab

6:30 – 7:00 Judging of second 20 teams

7:00 – 7:30 Tabulation of results / winners

7:30 – 7:45 Presentation of awards