

Decisions about teaching: What factors do engineering faculty consider?

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Studies of Engineering Educator Decisions (SEED)

- Why teaching decisions?
- What do we mean by teaching decisions?
- SEED
- The time factor
- Three ways time factor was referenced
- Suggestions
- Future work

Why teaching decisions?

- Entry point to understand teaching
- Synthesis point for all information (including factors and constraints)
- Links to general teaching expertise

What do we mean by teaching decisions?

- “A decision made during the execution of the professional responsibilities of the teacher” – Sutcliffe and Whitfield (1979).
- B. F. Skinner’s notion of a decision does not require to have choices. (as cited in Copeland, 1971).
- A decision is a commitment to act.

SEED

- To understand:
 - The *types* of teaching decisions that engineering faculty make
 - The *processes* by which they make teaching decisions
 - The *factors* they consider in making teaching decisions
 - Their level of *satisfaction* with the *outcomes* of these decisions

SEED

- Qualitative, semi-structured in-depth interviews
- Critical Decision Method
- A total of 33 participants
- 9 of 10 Engineering Departments
- Faculty across various tenured and non-tenure level
- Oversampled for women (10 women and 23 men)

SEED

- Interview Questions included:
 - Background/Demographics
 - Definition and Reaction of decision making
 - Pre-active teaching decision
 - Interactive teaching decision
 - Processes and Outcomes
- Selected 10 interviews – to identify themes that can be compared to the rest of the dataset
- Thematic Analysis

Time Factor

“Deciding about time – both the students’ time management and my own time management is simply a constraint of the modern world”

(SD107, Full Professor)

Time Factor

- Pervasiveness of the references to this factor as a constraint or barrier
- Time was first presented as a scarce resource and boundary conditions
- Time framed as a context for not considering relevant information
- Idea of *Satisficing*

3 other ways Time was referenced

- Faculty and Time
- Student and Time
- Content and Time

Faculty and Time

“...the courses I tend to choose to teach are courses that are related to my background, related to my interest, either laboratory or hands-on.

The senior-level course is a new course that I had developed, the one I teach in spring, and that was based on my interests -- started out as just materials, and gradually evolved toward the role of materials in construction and constructability, and so the senior course I teach is on reinforced concrete construction, and we talk about constructability issues, not just how materials affect it, but also understanding the whole process.

But that I guess would be a decision. I decided to offer -- to develop that course and offer it because it was kind of a continuation of my evolving interests.”

(SD113, Associate professor)

Student and Time

"...And so I send an e-mail to all the professors saying, okay, I'm going to give my midterm on the Wednesday of the fifth week or the fourth week or whatever.

And some of them respond, some don't. And so I had a case where like the professor announces two days before he was going to do his midterm on that same day, after I had already asked him, you know, to try to work with me on this. And so I communicated with him, and I said, I contacted you with the e-mail, I tried to sort this problem out, and then you end up assigning it on the same day. And he says, well, when I was a graduate student -- of course, the guy is like 70 years old. When I was a graduate student, we had to do all our tests on the same day. There's no reason why they can't do it, blah, blah, blah, blah, blah, blah, blah.

I'm like this is bullshit, because you know that if they do two midterms on the same day that they're going to be less prepared for one than the other, so, I mean why put them through that. We want them to do as best as they can in each class. It doesn't make any sense. It's just like kind of punish them, like a hazing ritual or something like that.

...And so I went back to the students, and I said, okay, he changed his date to my date. I talked to him about it, he's inflexible, so I'm changing my date, at last second. So then I turned mine from Wednesday to Friday. And then I said, don't tell him I did that, because he'll change his to Friday, you know. I was just pulling their leg, but, the students appreciated the fact that I was willing to work with them, you know. I mean this guy was going to be a horse's ass. I wasn't going to...."

(SD105, Associate professor)



Content and Time

“... you should stay in front of research area and know and you have to lead students in correct directions.

So many materials, usually – usually in every course there is whole part in application area and cannot give up whole part, that must be covered, in application area, the senior classes, even old textbook, they must know a lot of application area to apply this core theory to this area, right?

That area, we need to carefully select, okay, we in college cannot teach all of it because time is limited right?”

(SD109, Full Professor)

Suggestions

- Talk with other colleagues
- Be cognizant about scheduling
- Look for ways to make time by blurring boundaries between teaching and research
- Use time as a lens to ask questions about students
- Play with notions of time as it relates to content
- Utilize resources on your campuses to manage your time

Implication and Future Work

- An opportunity for engineering educators to reflect about their teaching
- A way to talk to engineering educators about teaching decisions
- A way to understand the factors they take into considerations
- Many other types of factors

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Faculty and Time

- Blurring the boundaries between Research and Teaching
- Using alternative teaching approaches
- Having guest speakers
- Balancing life and career by “planning ahead” and by using existing resources

Student and Time

- Flexibility in scheduling based on beliefs about students needs
- Negotiating midterm dates with colleagues
- Helping students manage their study time
- Helping students demonstrate their learning optimally
- Dealing with generation gap that revealed extreme differences in teaching philosophies between colleagues

Content and Time

- Be selective
- Meeting industry and application requirements
- Effort to update their teaching materials
- Alternative teaching strategies (i.e. problem-based learning, experiential learning, active learning...etc.)