The long way from an enthusiastic graduate teaching assistant to an aspiring STEM professor, ready for Generation Z: Preparing the future faculty through a teaching fellowship program at the University of Nebraska-Lincoln

Shahab Karimifard[1] and Tareq Daher[1]

[1]University of Nebraska Lincoln

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Abstract

Generation Z (Gen-Z) is composed of those born in the late 1990's or after. The first cohorts of Gen-Z students gradually started to enter colleges after 2013. Gen-Z students are very different than millennials in almost all aspects. They are more likely to reject the traditional and conventional teaching methods that lack active learning components. A shift towards modern and interactive student-centered methods is being implemented by a new generation of instructors to better serve Gen-Z needs. However, this transition from passive lecture-based instruction to active learning methods is hindered by a gap that we call "the missing step". This missing step in the transition phase refers to training and preparing future faculty to adopt research-based instructional strategies. My fellow aspiring professors and I were mostly educated via old-school methods. Without proper training on STEM teaching, we were likely to approach our teaching by modeling what we saw. If granted the opportunity to teach engineering in a faculty role, we would have come into it lacking teaching theory and instructional strategies rooted in engineering education. If a new instructor is not familiar with subjects such as "active learning", "backward design", "evidence-based instructional strategies", "flipped classroom", and "Bloom's revised taxonomy", or is not acquainted with importance of modern classroom assessment techniques, rubrics, and motivation strategies, the result will be an unfillable gap between the instructor and the Gen-Z students. I was in the first cohort of Ph.D. students who completed the College of Engineering's graduate teaching fellowship program at the University of Nebraska-Lincoln. This one-year, well-structured, peer-observation program gave me invaluable knowledge about teaching following the research, helped me in designing a course in Canvas system, taught me how to write my teaching philosophy properly, and prepared me to achieve the CIRTL associate status. Starting such a program in every school for interested graduate students can make a significant difference. I will present my perspectives on the program and its impact.

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PRESENTED AT:

GENERATION Z

Who are they?

- Baby Boomers: 1946-1964
- Generation X: 1965-1981 (Parents of Gen. Z)
- Millennials (Generation Y): 1982-1997
- **Gen Z**: Born after 1997

Some of their identified traits:

- Individualized (*Anything weird is cool*)
- Digital natives (*Technology has always been in their life*)
- Practical (*Very price-conscious*)
- Less reckless (*Slower to grow up*)
- Authentic (*Care about honesty and openness*)
- Seek novelty and uniqueness
- Close with parents (*Parents are role models*)
- Socially conscious (*Embrace diversity*)

How to Teach to Gen Z:

- Teach “with”, not “at”
- Be transparent and honest
- Have a socially conscious curriculum
- Align learning outcomes with industry standards
- Offer hybrid learning options

Why Old-school Teaching to Gen Z is Doomed to Fail:

- Teaching “at” the students
- Classic and rigid syllabus
- Limited learning options
- Obsolete, comparing to the industry needs
- Boring!

THE MISSING STEP FOR FUTURE FACULTY

We mostly sat in classes with old-school teaching methods

We will be teaching Gen Z with different expectations!

THE PROGRAM

Program Structure:

Application

- One page letter of application, detailing the motivation for seeking participation in the program
- A recommendation letter from the advisor

In the Fall Semester

- Enrolling in and passing the “STEM Teaching” course
- Attending a 3-hour training on COPUS
- Writing a Teaching Philosophy

In the Spring Semester

- Participate in at least four CIRTL workshops, including at least one focusing on each CIRTL Core Idea
- Writing a reflective memo on the CIRTL workshops
- Conduct two classroom observations using COPUS

STEM Teaching Course:

The First Cohort

Module 1:

Backwards design, active learning, picking the unit

Module 2:

Bloom’s taxonomy, just-in-time teaching (JITT)

Module 3:

Quality verbs for writing the learning goals, start the canvas

Module 4:

Assessment methods and techniques, GRASPS template

Modules 5 and 6:

Rubrics

Module 7:

Peer observation training, COPUS

Module 8:

Teaching and Learning Symposium 2018

Module 9:

Online module about CANVAS

Module 10:

Online assessment techniques

Modules 11 and 12:

Teaching philosophy

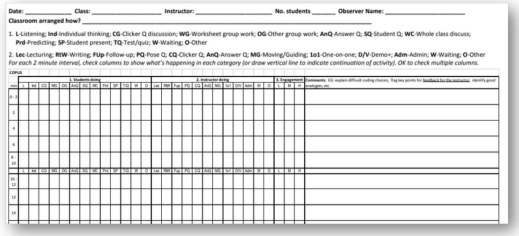
Term Project:

Designing a unit of a course in CANVAS

COPUS:

Introduction to Classroom Observation Protocol for Undergraduate STEM (COPUS)

Three-hour training on how to conduct COPUS


Date: _____ Class: _____ Instructor: _____ No. students _____ Observer Name: _____
Classroom arranged how? _____
1. L-Listening; Ind-Individual thinking; CG-Clicker Q discussion; WG-Worksheet group work; OG-Other group work; AnQ-Answer Q; SQ-Student Q; WC-Whole class discuss; Prd-Predicting; SP-Student present; TQ-Test/quiz; W-Waiting; O-Other
2. Lec-Lecturing; RtW-Writing; FUp-Follow-up; PQ-Pose Q; CQ-Clicker Q; AnQ-Answer Q; MG-Moving/Guiding; 1o1-One-on-one; D/V-Demo+; Adm-Admin; W-Waiting; O-Other
For each 2 minute interval, check columns to show what's happening in each category (or draw vertical line to indicate continuation of activity). OK to check multiple columns.
COPUS

- Paired up with an experienced faculty for peer observation
- Performed four classroom observations, two courses:

Computer Science I: Engineering and Science Focus

*From the computer science department

Building Environmental Technical Systems I

*From the construction management department

Teaching Philosophy:

- Strategies to write a proper teaching philosophy
- Developed rubrics for assessing our teaching philosophy
- Wrote the teaching philosophy
- Two experts reviewed the document
- Finalized the teaching philosophy

CIRTL Workshops:

1. Teaching Philosophies/Portfolios
2. Are students right to perceive group work as a waste of time?
3. Leading Class Discussions
4. Technology in the Classroom

- *Wrote a reflective memo on all four workshops*

... and completion!

AREAS TO IMPROVE

- Faculty mentorship program
  (Applied for the second cohort)
- Limiting the program to Ph.D. students
- Setting a prerequisite of at least 36 passed credit hours for the Ph.D. students entering the program
- Focusing more on the neuroscience aspects of learning

CONCLUSIONS

- Although they seem very close, it definitely is a very long way from being "an enthusiastic graduate teaching assistant" to "an aspiring STEM professor"!

- It is crucial for all schools to invest in such a program for their interested Ph.D. students

Sorry but time is up!

ABSTRACT

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REFERENCES

https://www.wiley.com/en-us/Generation+Z+Goes+to+College-p-9781119143451 (https://www.wiley.com/en-us/Generation+Z+Goes+to+College-p-9781119143451)