



INTERDISCIPLINARY COMPUTING: CODING BOOT CAMPS

LOUISE ANN (“LOU ANN”) LYON, PhD



THE NEED FOR SOFTWARE DEVELOPERS

- Necessary in more and more fields (2/3 of all tech jobs are outside of the tech sector, per the White House *CS for All* Fact Sheet)
- More job openings than candidates (1.4 million job openings and only about 400,000 graduates qualified for those jobs, per code.org)
- Issues of diversity

ENTER THE CODING BOOT CAMP!

- Intensive training ground
- Typically 12 weeks in length*
- Average price over \$12,000*
- 35% female students*
- Focus on areas such as Web development and User Interface/User eXperience, App development
- Teach languages and platforms such as Python, Ruby on Rails, React
- Model project development techniques such as Agile

*Numbers gathered from CourseReport.com

BOOT CAMP OR UNIVERSITY CLASSROOM?

PREPARING WOMEN AND UNDERREPRESENTED MINORITIES FOR THE SOFTWARE DEVELOPMENT WORKFORCE

NSF-funded, qualitative study in progress with data so far from:

National focus groups and interviews with:

- 9 university faculty
- 11 industry representatives familiar with hiring practices
- 9 boot camp representatives familiar with admissions and teaching practices

Silicon Valley interviews with:

- 14 university faculty
- 6 boot camp representatives
- 4 industry hiring managers
- 49 students (20 university, 29 boot camp)



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BOOT CAMP STUDENT BACKGROUND...INTERDISCIPLINARY?

Based on our research, boot camps typically attract students with bachelor's degrees who are career changers

...but a surprising number of CS degree recipients! One boot camp representative reports that “about 1 in 5 of our students have a degree in Computer Science.”

BOOT CAMP TIES WITH INDUSTRY

- Multiple curriculum updates per year, in contrast to university programs.

A boot camp representative reports that he asked a university faculty member about curriculum changes and was told it was “a 4 to 5 year process. We know that in technology what is used right now will not be used in 5 years. If your curriculum is based on what you learned 5 years ago, that's pretty tough...We get feedback from every single employer that our candidates are in front of, so that we know exactly what big shops and small shops want right now. We're able to change [our curriculum] quickly”

- Internship and job placement assistance.

BOOT CAMP INSTRUCTIONAL PRACTICES

- Preparation for future learning
- Environment modelled on the workplace
- Hands on, collaborative, knowledge construction pedagogy

“It turns out that the best way to learn a specific skill like programming is also a good way to learn how to be professional. We set up our school so that it's a workplace simulation. The person who is teaching you is really your manager. Your fellow students are your coworkers. The same way in a job; you'll ask your manager to just give you a helping hand. Point you in the right direction, but not necessarily teach you everything you need to do. You lean on your coworkers because they've mastered a technique or you participate in their cohort. That will be what you'll experience in a job but also that's a great way to learn.”

EMPLOYMENT OUTCOMES

- Camps boast placement rates of over 95% on their websites

...but caveats to this include a lack of industry standard of what “placement rate” means, gaming the numbers, extremely low admission rates

- Some camps so confident in placement rates that students pay tuition *after* placement
- Lack of assessment data, but an industry hiring manager reports that “by two years, I would generally say...you can’t tell the difference” between college and boot camp graduates.

TAKE-AWAYS FOR UNIVERSITIES

- Recruitment of underrepresented/interdisciplinary candidates for CS through job knowledge
- Follow your own advice on best pedagogical practices!
- Knowledge of latest tech helps in job placement

The background is a solid green gradient. In the four corners, there are decorative white line-art patterns resembling circuit traces or fiber optic paths, with small circles at the end of the lines.

CONTACT:

LouAnnLyon@ETR.org