



# *Educational Needs in Computing of Experienced Full-Time Working Professionals*

Authors: **Ashley J. Haigler<sup>1</sup>, Suzanna E. Schmeelk<sup>2</sup>, Tonya L. Fields<sup>1</sup>,  
Lisa R. Ellrodt<sup>1</sup>, and Ion C. Freeman<sup>1</sup>**

Affiliations: **<sup>1</sup>Pace University & <sup>2</sup>St. John's University – New York (United States)**

Session: **Adult Education 17:05–19:10 on June 27, 2019**

# Talk Outline

- Research Overview/Contributions
- Introduction
- Literature Review
- DPS Student Survey Background
- DPS Student Survey Questions/Responses
- Conclusions and Future Work
- References



International Conference  
The Future of Education



# Research Overview

- Pace University introduced an industry-based doctoral degree in computing for experienced full-time working professionals (EFWPs) in 1999.
- The Pace University Doctor of Professional Studies (DPS) in Computing accepts students with several years of experience into a weekend-based on-campus doctoral program.
- Faculty with exceptional industry and academic experience lead the DPS program.
- This research examines the educational needs of students who have enrolled in the DPS program.



International Conference  
The Future of Education



# Research Contributions

- The research reports on the responses to a survey sent to the DPS Students.
  - Queries past and current students on overall educational motivations, time constraints, budget constraints, job constraints, and research interests.
  - Responses indicate that EFWPs chose the Pace University program based on the hybrid program structure, dissertation research relating to the student's full-time working experience, location, and costs.
  - Reports on major obstacles to completing the program, student incentives to matriculate, average hours of full-time work per week, degree funding, and length of time to complete degree.
- The results of the survey can be used to inform curriculum design with the needs of EFWPs.



International Conference  
The Future of Education



# Introduction

- This research seeks to understand the Educational needs of Experienced Full-Time Working Professionals
  - Why are they pursuing an advanced degree?
  - What obstacles do they face?
- Our findings can lead to more informed decisions on curriculum and program design for this student population.



International Conference  
The Future of Education



# Literature Review

Recent related works on topics:

- (1) Doctoral Student Meta-Research, (2) Doctoral Student Well-Being, (3) Doctoral Student Retention, (4) Student Needs
- (5) Customer Needs
  - Bettencourt & Ulwick [10], Ulwick [11] and Ulwick [12] explore methodologies to determine potential customer needs.
  - Their scientific process involves customer interviews, customer surveys, and customer rankings for helping to uncover unmet customer needs.
  - One of the formulas they share is that unmet needs can be categorized by the following formula: “opportunity = [importance + max(importance - satisfaction, 0)]”.
  - The elements with the highest opportunity are typically areas to examine first for tapping into customers unmet needs.



International Conference

The Future of Education



# Professional Educational Needs Survey

- IRB Approved sent to all Pace University Seidenberg DPS students who were enrolled since the founding of the program to learn about their educational needs
- Distributed to a list of 288 members via Qualtrics of which there were 40 responses at the time of this writing
- The goal was to identify what motivates and is essential for the DPS students



International Conference  
The Future of Education



# Professional Educational Needs Survey Questions

- 23 categorical questions graded on a Likert scale
  - 11 posed to every respondent
  - 10 posed only to those who self-identified as an alumni of the program
  - 2 questions posed only to non-alumni with one of those only posed to current students - “What are some major obstacles faced while working on your degree?”
- Questions for this survey selected based on
  - Pertinence to the topic of obstacles and interests
  - Informativeness of the results

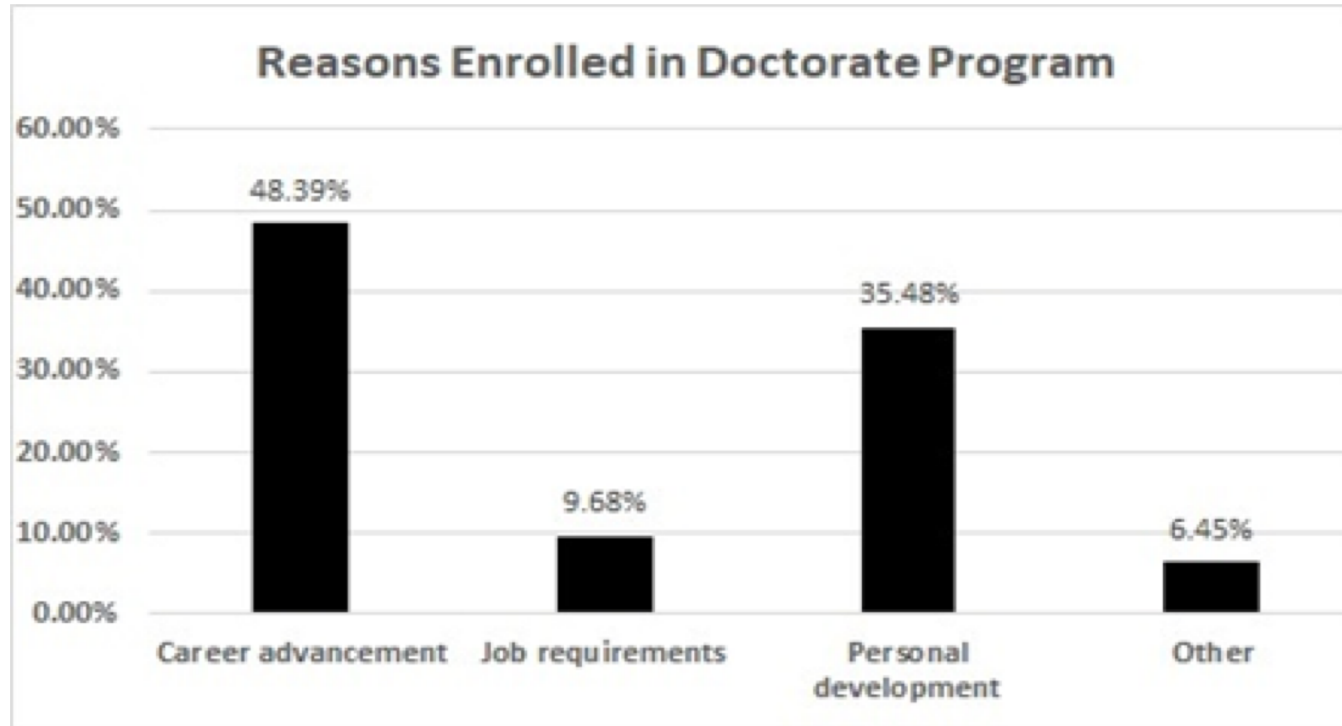


International Conference  
The Future of Education





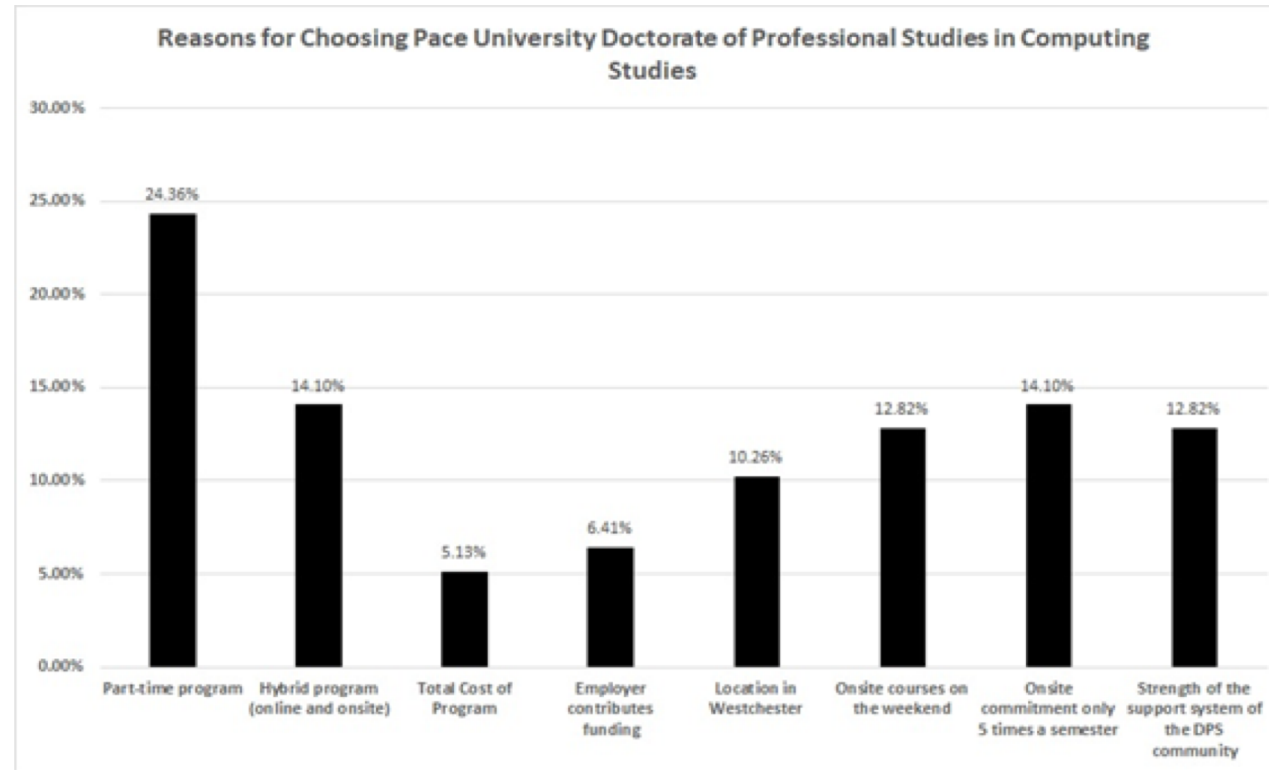
# Survey question: “Please rank reasons you enrolled in a doctorate program?”



International Conference  
The Future of Education



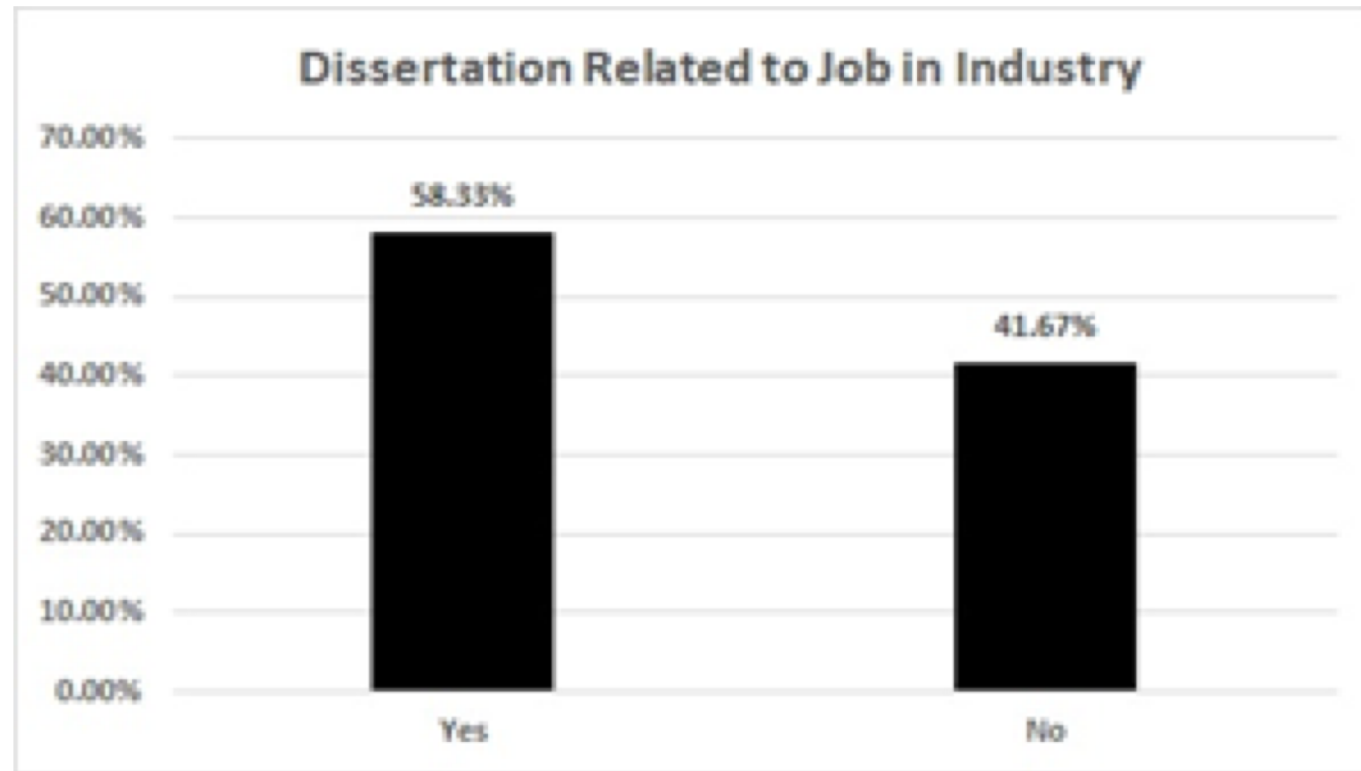
# Survey question: “Why did you choose the Pace University Doctorate of Professional Studies in Computing Studies?”



International Conference  
The Future of Education



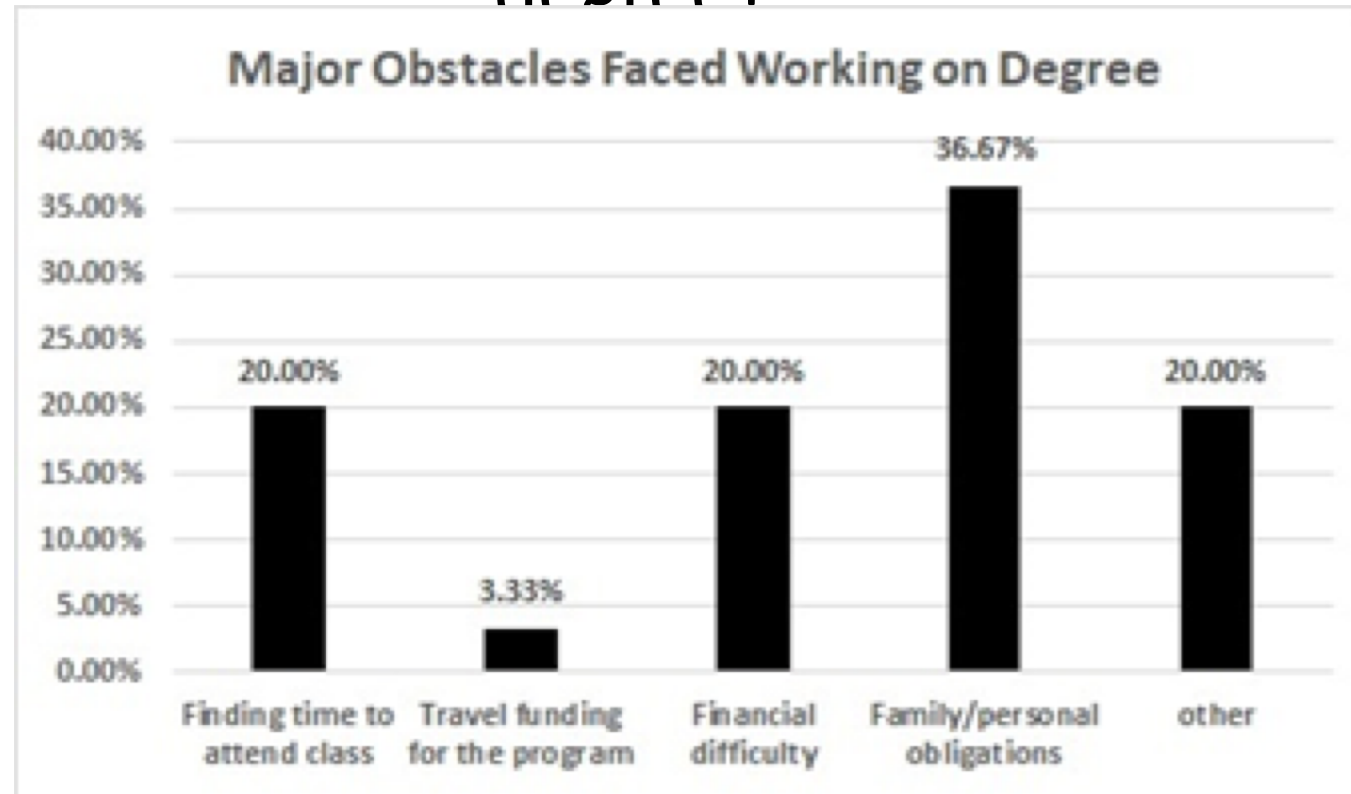
# Survey question: “Was your dissertation related to you job in industry?”



International Conference  
The Future of Education



# Survey question: “What are some major obstacles faced while working on your degree?”

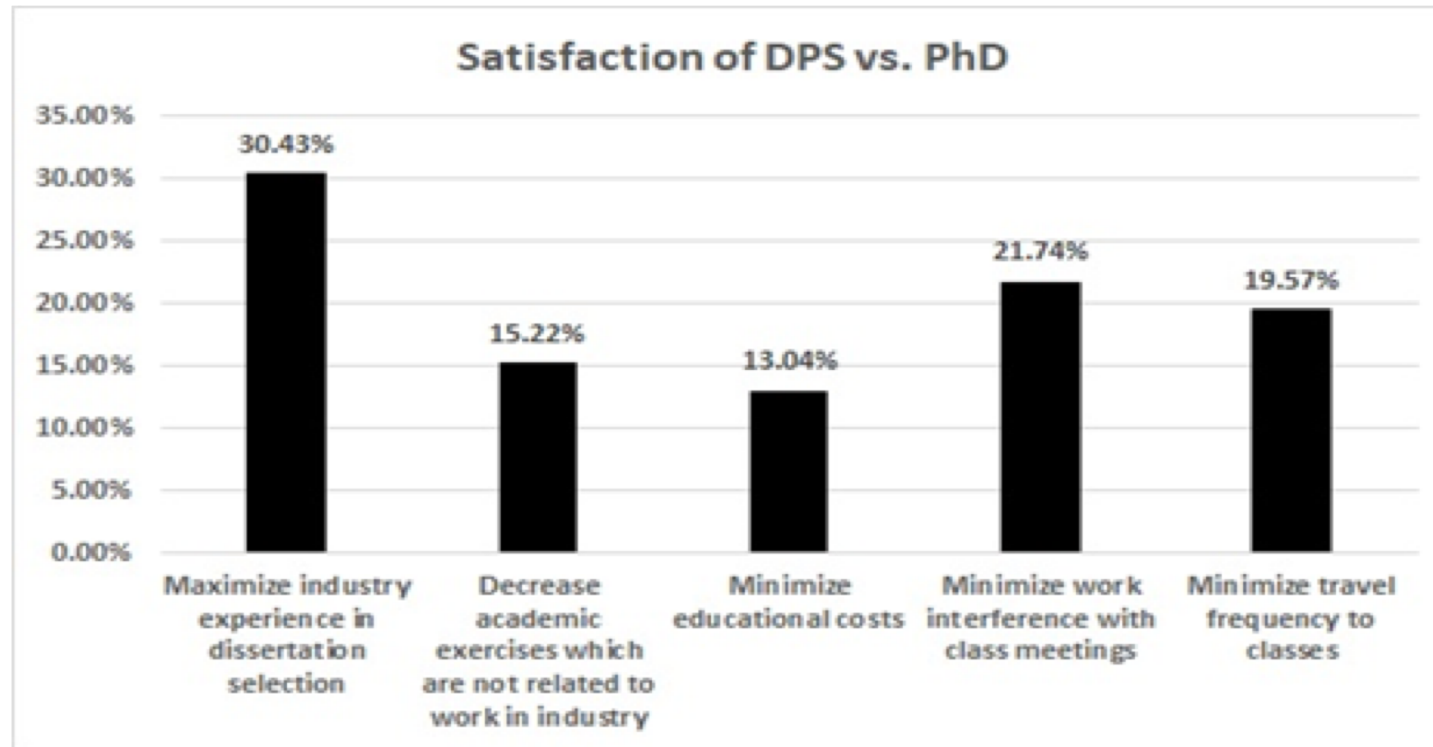


International Conference  
The Future of Education



## Survey question:

“Please rate the below on order of satisfaction with the Pace DPS program versus a traditional PhD Program”



International Conference  
The Future of Education



# Conclusions and Future Work

- Uncovered needs of experience full-time working professionals (EFWPs)
- Builds on the limited investigational literature specific to EFWPs student education
- Presents insights for the education community regarding doctoral level goals and needs for EFWPs
- Survey results can inform curriculum and program design for the EFWPs needs



International Conference  
The Future of Education





# References

1. Lisa R. Ellrodt, Ion C. Freeman, Ashley J. Haigler and Suzanna E. Schmeelk, "Doctor of Professional Studies in Computing: A Categorization of Applied Industry Research," 2018 IEEE Frontiers in Education Conference (FIE), San Jose, CA, USA, 2018, pp. 1-6. doi: 10.1109/FIE.2018.8658886
2. Fred Grossman, Charles Tappert, Joe Bergin, and Susan M. Merritt. 2011. A research doctorate for computing professionals. *Commun. ACM* 54, 4 April, 133-141. DOI: <https://doi.org/10.1145/1924421.1924450>
3. Susan M. Merritt, Allen Stix, Judith E. Sullivan, Fred Grossman, Charles C. Tappert, and David A. Sachs. 2004. Developing a professional doctorate in computing: a fifth-year assessment. In *Working group reports from ITiCSE on Innovation and technology in computer science education (ITiCSE-WGR '04)*. ACM, New York, NY, USA, 42-46. DOI: <http://dx.doi.org/10.1145/1044550.1041654>
4. Lisa R. Ellrodt, Ion C. Freeman, Ashley J. Haigler, Lynne E. Larkin, Suzanna E. Schmeelk, and Ronald G. Williams, "Pace University DPS in Computing Studies: A Categorization of Applied Industry Research," The Michael L. Gargano 16th Annual Research Day. Pace University. May 2018 Retrieved from: <http://csis.pace.edu/~ctappert/srd/index.htm>
5. Ion C. Freeman, Ashley J. Haigler, Suzanna E. Schmeelk, Lisa R. Ellrodt and Tonya L. Fields, (2018) "What are they Researching? Examining Industry-Based Doctoral Dissertation Research through the Lens of Machine Learning," 2018 17th IEEE International Conference on Machine Learning and Applications (ICMLA), Orlando, FL, 2018, pp. 1338-1340.



International Conference  
The Future of Education



# References

6. Ashley J. Haigler, Suzanna E. Schmeelk, Tonya L. Fields, Lisa R. Ellrodt, and Ion C. Freeman. The Michael L. Gargano 17th Annual Research Day. Pace University. May 2019 Retrieved from: <http://csis.pace.edu/~ctappert/srd/index.htm>
7. Manuela Schmidt, and Erika Hansson. "Doctoral Students' Well-Being: A Literature Review." *International Journal of Qualitative Studies on Health & Well-Being*, no. 1, 2018. EBSCOhost, doi:10.1080/17482631.2018.1508171
8. Dorn, Shelly M., and Rosemary Papalewis. *Improving Doctoral Student Retention*. 1997.
9. Yingzi Luo, Zewen Liu, Jiale Zhang, and Jianxiu Gu "A Study on the Quality of Doctoral Education Based on the IPOD Framework: A Case of Agriculture-Related Disciplines." *Chinese Education & Society*, vol. 51, no. 3, Jan. 2018, pp. 199–221.
10. Lance Bettencourt, A. and Anthony Ulwick (2008) *The Customer-Centered Innovation Map*. W. Harvard Business Review. May 2008, Vol. 86 Issue 5, p109-114.
11. Anthony Ulwick. (2008) *Giving Customers A Fair Hearing* MIT Sloan Management Review.
12. Anthony Ulwick. (2005) *What Customers Want: Using Outcome-Driven Innovation to Create Breakthrough Products and Services* 1st Edition. McGraw-Hill Education.



International Conference  
The Future of Education

