


# Faculty Development Plan

Reporting on 2021 and Planning for 2022

  
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## **Who am I as an Educator?**

I am a caring instructor who is invested in the academic success and personal development of my students. I take seriously the responsibility of working with undergraduate and graduate students in this most important time of their lives. My goal is to provide learning and research environments that will develop marketable skills, integrity, a love of learning, and an appreciation of the gospel of Jesus Christ. I am uniquely qualified to work with my students because of my several years teaching in secondary schools, experiences training in-service and pre-service teachers, and my experiences researching and publishing in science education.



# 1. SCHOLARSHIP REFLECTION

## Overview

During my first semester at BYU I submitted two refereed conference paper proposals (NARST and ASTE). I also sent a paper on teaching contexts to a new journal and worked with a graduate student from acoustics ( [REDACTED] ) to help him format and submit a paper about mentored research. Throughout the semester I worked with a physics education undergraduate [REDACTED] to start work on a thesis in PER working on the 108 labs (in collaboration with [REDACTED] ). During this semester I recruited a team of 3 undergraduates to do research with me next year (both PER work and science education research). I submitted and received IRB approval for one project and am in the middle of gaining approval for a second.

## 2021-2 Publications

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

## Scholarship Under Review

[REDACTED]

[REDACTED]

## 2021 Peer Reviewed Presentations

[REDACTED]

## Scholarship Strengths

- I have a plan to work on two lines of research (teacher beliefs is physics education and mentored undergraduate research experiences).
- I am including and giving the education undergraduate students opportunities to do education research in the department.
- I have made connections in the department ( [REDACTED] ) and have collaborated with them to do research.
- I am submitting work for publication and am continuing to produce work to be published.

## Ways to Improve my Scholarship

- I will improve my mentoring program with the education undergraduates by developing an onboarding process that will give them the skills they will need to be productive researchers.
- I will develop more connections with scholars outside the department by reaching out and learning about their research to develop future collaborations.
- I will allocate time each week to finding and writing grant proposals so that I can fund graduate students and improve the quality of my work.
- I will work on strategies for recruiting graduate students to do science education research. For example, I will find a path for the current education undergraduate students to return and earn a master's degree within the department doing education research.

## Scholarship Goals

### *Short-term Objectives*

- Submit 5 new manuscripts to top tiered journals during the 2022 calendar year
  - Belief paper, Chapter 4, 5, and 6 of my dissertation, new mentoring paper
- Build a training program to help the undergraduate students working with me build research skills
- Schedule time at the beginning of my day to write for at least 30 minutes every weekday (working on new manuscripts)
- Reach out to faculty outside the department and college to find collaborators
- Apply for a research grant during the 2022 calendar year

### *Long-term Objectives*

- Obtain Continuing Faculty Status at BYU
- Build a research PER/Science Education Research group with both graduate students (who can act as mentors) and undergraduate physics education students that is focused on developing high quality research skills and aimed at helping the students generate meaningful outcomes (publications, presentations, conferences ...)
- Obtain funding for my research group and program to support students and produce work that will enhance the science education field

## 2. TEACHING REFLECTION

### Overview

During my first semester I taught the 476 and 496 student teaching and intern courses with [REDACTED]. This was the first semester where the students were required to take the new evaluation from the state (PPAT). We held meeting with the students before the due dates to prepare them for the submissions. As a part of the course, I also visited each student teacher several times throughout the semester to give them feedback and coaching on their teaching.

### 2021-2 Teaching Accomplishments

#### Courses Taught and Prepped

Winter 2022

- PHSC 225 – Introduction to Experimental Physics
- PHY S 476 – Secondary Student Teaching
- PHY S 496 – Academic Intern: Secondary Education

Fall 2021

- PHY S 476 – Secondary Student Teaching
- PHY S 496 – Academic Intern: Secondary Education

#### Accomplishments of Students I have Mentored

- Student teachers and interns from the Fall semester all passed PPAT.
- Two students successfully present their senior thesis/capstone project.
- An undergraduate RA submitted their original work to a science education conference

### Teaching Strengths

- My experience teaching in the schools combined with my graduate studies gives me a unique perspective to mentor new teachers
- I keep notes for each of the days I teach. In these notes I comment on the pacing of the lesson, student engagement, and my evaluation of how well we met the learning goals. I use these notes in future semester to continually improve my teaching.
- I have many years of teaching experience, and I enjoy working in the undergraduate courses

### Ways to Improve my Teaching

- I will read science education journals and attend conferences as I continue to refine my practice
- I will continue to track my teaching and work in the classroom, using formative assessments to measure student understanding
- I will give more formal feedback to the student teachers and interns when I visit them

- I will use student mid-semester and post course student feedback to evaluate my teaching and make adjustments to meet the evolving needs of my students.

## **Teaching Goals**

### *Short-term Objectives*

- Rebuild the course and update the syllabi for 377 and 378 (methods and practicum courses) as I prepare to teach these courses in the Fall.
- Increase student input in my courses by developing and using a mid-semester evaluation form to get feedback from students while they are still taking the course.

### *Long-term Objectives*

- Develop a physical science teaching methods course that integrates cutting edge science education research with the inquiry-based program Duane has developed
- Continue to take advantage of professional development opportunities to improve my instruction (attending conferences, reading and implementing current research, etc.)



### 3. CITIZENSHIP REFLECTION

#### Overview

I currently serve on two committees in the department (see below). In these committees, we meet weekly and set goals/objectives to work on between meetings to serve the department and college. I've had the opportunity to help with the undergraduate fair, observe a fellow teacher's instruction, and mentor many students on their academic progress. I also serve as a reviewer for papers and poster presentations (~5 page proposals) that come in for the ASTE and NARST international conferences.

#### 2021 Citizenship Activities

##### Service to the Department of Physics and Astronomy

- **Teaching Improvement Committee** (2021 – Present): Responsible for updating the learning outcomes for the physics education and physical science education majors, prepared materials for informal peer teaching reviews, served as peer teaching reviewer, and attended committee meetings
- **Undergraduate Committee** (2021 – Present): Responsible for advising all the undergraduate education majors, attending undergraduate events (graduate major fair), and attending committee meetings

##### Service to Professional Organizations

- **Reviewed Paper submissions for ASTE conference** (3 papers)
- **Reviewed Paper submissions for NARST conference** (3 papers)
- **Review Papers for the International Journal of Science Education** (~1 paper per year)

#### Undergraduate Students that I Mentor in Research:

Name	Project	Progress
██████████	Using Modeling in 108 Labs	██████████ collected all of his data in the fall. He completed the analysis and writing in the winter and presented his work at the Spring Research conference. He successfully defended his senior thesis at the end of the winter semester.
██████████	Using Modeling in 108 Labs	██████████ designed a new lab for 108 with one of her peers. They tested the lab and collected data in the winter semester. She is working on analysis and plans to write a senior thesis from the work and present it as a poster in the winter AAPT conference.

[REDACTED]	Virtual Learning Study	[REDACTED] is doing analysis on data I collected while teaching at Michigan. She plans to see how transitioning to virtual learning changed the way students engaged with the science practices and what impacts that could have on future teaching. She submitted a proposal for a research poster to the ASTE winter conference.
[REDACTED]	App Development for Physics Tutorials	[REDACTED] is developing an app that he wishes to use with students in early physics courses as a way to help them prepare for exams. He plans to study how often they use the app and how their progress changes.
[REDACTED]	Explanation and Argumentation in Undergraduate Physics Labs	[REDACTED] is using data collected in earlier projects to evaluate the use of the explanation and argumentation in undergraduate physics labs. He is currently developing his conceptual model and literature review.

### Citizenship Strengths

- Serving on both the undergraduate and teaching improvement committee allow me to use information and skills from one space in the other
- My background in education research gives me a unique perspective for the teaching improvement committee
- I attend all of my meetings and do my best to contribute as I learn from my more senior peers

### Ways to Improve my Citizenship

- Continue to learn from my peers who have more experience than I do in these spaces
- Look for more opportunities to volunteer and leverage my expertise
- Try to make connections outside of the University to serve the science education community
- Look for opportunities within the schools in my local communities

### Citizenship Goals

#### *Short-term Objectives*

- Attend all of my meetings
- Volunteer for opportunities that match my skill set within my committees
- Talk with the local science teachers to see what their perceived needs are (can do this during student teacher visits)



*Long-term Objectives*

- Help build the department, university, and community through meaningful service
- Build a program to help local science teachers get master's degrees in science education
- Find opportunities to review manuscripts/proposals for top tier journals

