

Mercy College

NSF Robert Noyce Master Teacher
Fellows Program

External Evaluation Report
Project Year 1

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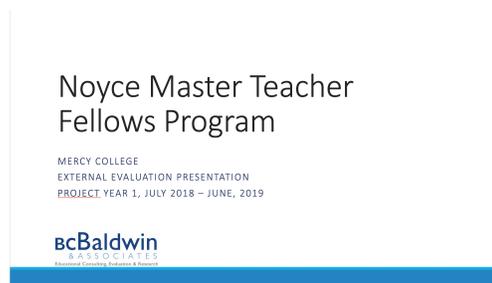
Project Overview

The Mercy College Master Teacher Fellowship (MTF) is to recruit and retain veteran teachers from local high needs districts to complete an advanced certificate in STEM Education, as well as demonstrate leadership capabilities in terms of leadership and mentorship of other teachers in their districts as well as increased student test scores and high evaluation marks by peers and administrators. This program is a 5-year, Robert Noyce Teacher Scholarship program, Track 3 (Master Teacher Fellowship). This evaluation report measures and reflects on the effectiveness and efficacy of different programmatic strategies to achieve these ends.

Year 1 Evaluation overview

This evaluation covers the first year of the project, between July 2018 through June 2019. An overview, synopsis style video presentation was made of this evaluation report, and can be viewed at: <http://www.bcbaldwin.com/home/mercy-teaching-fellows/mtf-year-1-evaluation>.

This video provides an overview of the main elements contained within this written evaluation report, as well as providing some contextual analysis of the project. Please be aware that this video is “unlisted”, therefore not searchable within the YouTube platform and the Evaluation website link. However, anyone with the URL link can view the video and read the evaluation report, so please share sparingly and accordingly.



Below in Table 1 is a Conceptual Model, showing the different inputs, activities and anticipated outcomes of the project.

Table 1: Conceptual Model

Inputs	Activities	Short-Term Outcomes	Long-Term Outcomes
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Mercy College
inputs

- Recruitment and selection of master teachers
- Development of Advanced Certificate program
- Instruction of coursework in program
- Professional Development and management of vPLC

- increased number of teachers from partner districts interested in further education in advanced STEM
- increased number of teachers from non-partner districts to pursue Advanced Cert in STEM
- teachers participate in school-based and college-based PD activities within their PLC

- sustained teacher attitudes toward PD in advanced STEM pedagogies
- sustained, elevated student achievement scores in science and mathematics
- teacher self-development and leadership of school-based PD activities in STEM

District partners
inputs

- willingness to partner
- Providing safe class environments for PLC and leadership opportunities
- Aggregation of student test scores

- increased student achievement scores in science and mathematics
- district willingness to develop their own advanced STEM academies for master teachers

- sustained higher student achievement scores in science and mathematics
- district maintenance of their own advanced STEM academies for master teachers

Evaluation and Assessment	<ul style="list-style-type: none"> · data collection via surveys, interviews · formative assessment feedback · summative assessment reporting 	<ul style="list-style-type: none"> · initial and intense data collection at commencement of project · ongoing feedback provided to project management team · development of yearly annual external evaluation reports 	<ul style="list-style-type: none"> · data collection throughout project · data collection at end of each project year to determine yearly progress · feedback to both project personnel as well as NSF regarding project evaluation, suggestions for improvement and recommendations for future implementation strategies
NSF Noyce	<ul style="list-style-type: none"> · funding for all inputs from Mercy and district partners 		

Year 1 Recruitment Strategies

Because this project focuses on recruiting master teachers to participate in the project, ultimately leading to an equivalency of A total of 14 teachers were recruited from the following partner districts:

- Yonkers (44%)
- Port Chester (19%)
- Elmsford (13%)
- New Rochelle (25%)

All of the teachers possess qualifications that describe a typical master teacher. Namely, all teachers are certified, possess content degrees in their field of instruction, and have been nominated by their supervisor or building principal as being a leader in their school. Applicants had to complete an online application—including transcript submission, supervisor observation reports, recommendations, written essay questions and then followed by an interview and classroom walkthrough. This process will ensure that the most qualified applicants are selected based on merit and leadership capability, with consideration given to increasing underrepresented minority participation.

To this end, a total of 14 teachers were selected to participate in the first two cohorts of fellows (7 teachers in each).

Program Coursework and Structure

Throughout the duration of the program, the fellows enroll in three grant-funded Mercy College graduate courses (nine credits) in STEM pedagogy:

Enhancing Science / Mathematics with STEM
Engineering for the Classroom
Leadership in STEM Education

These three courses are required for the fellows to complete. If the fellows are interested in pursuing an Advanced STEM certificate, there are three more required courses to complete (two STEM content courses as well as one course in programming and robotics).

During the summer, the Center for the Urban River at Beczak (CURB) – a collaboration with Sarah Lawrence College and the former Beczak Environmental Education Center have designed a course entitled *Teaching the Environment*, which all fellows have the opportunity to attend for a full week in the summer. This professional development opportunity provides hands-on experiences in both science learning and science teaching in a real-life environment on the banks of the Hudson River. Fellows spend time in research labs, classrooms and in the outdoors to explore different aspects of environmental science and how they can develop their knowledge and skills necessary to become successful environmental stewards and advocates for their students.

The grant supplements teachers' salaries by \$10,000 per year, increasing to \$13,000 per year after coursework is completed. Because this is a five-year grant, and because there is a five-year requirement that the fellows teach in high-needs schools, there is an ongoing opportunity that fellows continue to participate in and lead professional learning opportunities both in their home schools as well as at Mercy College in upcoming years – thereby increasing the fellows' leadership skills through the aid of their participation in the program.

Data Sources and Collection

Empirical Data was collected from the candidates using four different instruments:

1. Science / Math Teaching Efficacy and Beliefs Instrument (STEBI / MTEBI)
2. Questionnaire on Teacher Interaction (QTI) instrument
3. PLCs and emphasis on video-PLCs and faculty PLCs (via TCAR rubric)
4. Danielson observation framework for teacher leadership

Semi-structured interviews were also conducted with the project personnel which focused on the development and implementation of the new courses for the teaching fellows. Empirical and qualitative data will be expanded below.

Empirical Data

STEBI / MTEBI

The Science (or Math) Teaching Efficacy and Beliefs Instrument (STEBI / MTEBI) are survey instruments designed to measure two subscales: Personal Science (or Math) Teaching Efficacy and Science (or Mathematics) Teaching Outcome Expectancy. Namely, this instrument measures how well candidates think how professionally successful they will be in terms of both their teaching, as well as how their students learn science / mathematics concepts and material. The candidates self-reported ratings to a number of items that aimed to measure candidates' values on these two subscales. Table 2 below shows the candidates' self-reported means for each of these subscales. Any sub-scale rating substantially lower than a "4" rating warrants discussion and consideration as a factor to address by other means.

Table 2: STEBI / MTEBI sub-scale values

Sub-scale	Rating (1-5)
PSTE (n=5)	4.03
STOE (n=5)	4.58
PMTE (n=12)	3.72
MTOE (n=12)	4.14

As seen from the data from these instruments, the subscales of teacher efficacy and outcome expectancy are very strong. However, since these instruments have only been administered one time (as pre-tests to both of the cohorts), it is normal to assume that teachers are more comfortable with their professional capabilities because they have been comfortable in their ways for a long while. With the fellows' participation in the program with coursework in advanced topics in leadership, STEM education and additional PD opportunities, it will be worthwhile to take note of these values in the coming semesters.

QTI

The Questionnaire on Teacher Interaction instrument is used predominantly to categorize teachers' behavior from two sub-scales: Leadership and Helpfulness.

Table 3: QTI sub-scale values

Sub-scale	Rating (0-4 scale)
Leadership	1.94
Helpfulness	1.57

The QTI was a self-scored survey (the fellows were predicting how their students would rate the teacher him/herself). The leadership and helpfulness sub-scale values indicated that the fellows believed that their students would rate them about

“middling” in terms of both of these values. Because these fellows have been nominated by their supervisors as leaders within their schools, it was surprising to see that the fellows believed that their students would not rate their leadership or helpfulness skills as extraordinary – since these skills are hallmarks of teachers’ success.

Follow-up with these teachers in the future will hopefully shed more light on these measures.

TCAR

The Teacher Collaboration Assessment Rubric (TCAR) is designed to measure teacher’s reported experiences as a part of a professional learning community. Namely, this instrument measures how well the project management and instructional team felt that their PLCs were performing based on four sub-scales: Dialogue, Decision-making, Action and Evaluation. Table 3 below shows the staff members’ (n=4) self-reported means for each of these subscales.

Table 3: TCAR sub-scale values

Sub-scale	Rating (0-2)
Dialogue	1.46
Decision-making	1.68
Action	1.63
Evaluation	1.33

A cursory analysis of this data indicates that the program staff highly rates the function of the PLC, with highest marks going to the processes of decision-making and taking action, with lower marks for evaluation and dialogue.

A bit of quantitative data was also collected from this survey. A few respondents noted that the team has been highly functioning and that *“I feel that we all contributed to the program and course development.”*

Danielson framework

Data from the Danielson framework for Professional Responsibilities (Rubric 4) was collected from classroom observations and video-recording experiences in the fellows’ classrooms during the school year. Data is shown in Table 4 below (n=13).

Table 4: Danielson sub-scale values

Sub-scale	Rating (1-4)
Participation	3.50
Growth	3.56
Professionalism	3.63

Overall	3.57
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The fellows were rated quite high in terms of their professional responsibilities through observations and videos. In follow-up administrations of these surveys, it will be interesting to note any sort of growth in these fellows over the years, as well as differences or similarities from the fellows in subsequent cohorts.

Qualitative Data: Observations and Interviews with Stakeholders

Qualitative data were collected in terms of both observations with the project PLC as well as interviews with selected stakeholders. Virtual and face-to-face meetings were held approximately every two weeks during the fall and spring semesters of 2018-2019 when the courses were being developed and taught. The focus of the qualitative data analysis was with the development of the coursework along with feedback and reflections of implementing the course with the teaching fellows.

The courses that have been developed to this point are Enhancing Science / Mathematics with STEM and Engineering for the Classroom. These courses were collaboratively planned by the entire PLC. Guest speakers (from the PLC) were brought in to teach sections and portions of each course depending on the expertise of the group. The course was taught during Spring semester 2019 to a class that consisted of all of the fellows, plus a few other graduate students in the School of Education. The instructor noted that a major advantage to the course was that having the fellows mixed in with the non-fellows was that the fellows could immediately go back to their classrooms and “try out” some new methods with their students because they had the experience and confidence to do so.

The Engineering for the Classroom course has been designed but will not be taught until Fall semester 2019 for the first time. The process of designing this course has been the same as the previous course – with all members of the PLC taking part in developing different sections within the course syllabus, according to their specific expertise. These developers will also be called upon to guest-teach a lesson or two during the semester.

Analysis and Summary

In summary, the data collected during this first year indicates that recruitment and participation by the fellows in the project is high. This is noted by the willingness for the teachers to self-select and learn more about STEM and leadership within their schools. The quantitative data indicates that the teachers feel are comfortable with their professional abilities, but that they predict that their students might not find their leadership and helpfulness skills at high levels. The data from the Danielson model indicated that the fellows were proficient and distinguished in their teaching skills, as noted by others.

There is ample room for professional growth on the part of the fellows that are participating in this project. They report that their self-efficacy values are high, but that they feel that their students might not notice the fellows' helpfulness and leadership within the schools. This is an area of great potential positive outcomes.