

**Initial Application
TEMP-2016-1680
Jonas Reitz**

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1. Summary

Protocol Title

Opening Gateways to Completion: Open Digital Pedagogies for Student Success in STEM

Primary College	New York City College of Technology
PI relationship to CUNY	Full-time Faculty

Application Initiated By	Jonas Reitz
Are you seeking an approval for a project that is lacking definite plans for involvement of human subjects (45 CFR 46.118)?	No
Research Type	Social Behavioral
Research Type	Social Behavioral
Are you seeking an exemption from IRB review?	Yes

Lay Summary

For many students, especially high-need students, mathematics "gateways" the courses required to pursue study in STEM fields appear as insurmountable barriers. This project brings together two Hispanic-Serving Institutions within the City University of New York (CUNY) to address this compelling national issue. New York City College of Technology (City Tech) and Borough of Manhattan Community College (BMCC) will participate in a cross-campus collaboration that will introduce open-source digital technologies, open educational resources, and active learning pedagogies into the sequence of high-enrollment mathematics courses required for STEM disciplines at each college. Through an intensive pedagogical intervention that will impact more than 90 faculty and 3,100 students during the grant period, we seek to improve student achievement in these courses and advance their progress to the degree opening the gateways to success in STEM. Working together over a five-year period, the project teams will adapt courses in the foundational mathematics sequence to use WeBWork, a free and open source online homework system supported by the Mathematical Association of America and the National Science Foundation (<http://webwork.maa.org/>). The teams will design and develop a comprehensive suite of open educational resources (OERs) for each course, consisting of WeBWork assignments, videos, and supporting materials. In parallel, we will conduct a series of intensive year-long faculty development seminars that will enable full-time and adjunct faculty at each campus to implement these OERs successfully in their classes, introducing them not only to the technologies but also to engaging pedagogical strategies that have been proven effective with high-need students such as ours. Sessions will focus on active learning, high-impact educational practices, and problem-based learning, explore flipped classroom approaches, and equip participants with best practices for assessment and student advisement. The project will be enhanced by use of the OpenLab (<https://openlab.citytech.cuny.edu/>), City Tech's innovative open source digital platform for teaching, learning, and collaboration. In addition to serving as the project's shared communication space and resource exchange, the OpenLab will be further developed to integrate with the WeBWork platform an important contribution that will not only benefit students and faculty at City Tech but also, since the code will be released publicly, the educational technology community worldwide. All open educational resources, seminar materials, best practices, and lessons learned will be made freely and publicly available, amplifying the impact of the project's work. A rigorous formative and summative assessment of the Opening Gateways initiative will be conducted by a third-party evaluation consultant in collaboration with program staff and each college's Office of Assessment and Institutional Research. The evaluator, the Office of Research, Evaluation, and Program Support (REPS), is an independent research office affiliated with the City University of New York's Central Office. REPS is not directly affiliated nor funded by individual CUNY colleges, including City Tech and BMCC. The evaluation will be designed to allow for continuous improvement through clear evaluation feedback and to facilitate a deep understanding by stakeholders of the impact of providing faculty professional development and use of open educational resources on student achievement and retention.

**Do you have a scientific protocol or
a sponsor"s protocol? No**

2. Summary - Exemption

Select all categories that apply. If all of your procedures do not fit within exemption categories, your protocol does not qualify for exemption from IRB review.

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3. Research Personnel

Name/Department	Role/Status	Contact	Access	Signature Authority	Phone	Email
Jonas Reitz / New York City College of Technology	PI / Jonas		Yes	Yes	3477309641	
Althea Webber / CUNY Central Office	Other / Staff (non MD)		Yes		646-664-8321	
Allyson Murphy / Hunter College	Other /		Yes			

4. Other Personnel

None

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5. Research Sites

Name	CUNY
Sub-Location	New York City College of Technology
Site PI	99999999
Role of the site in research	9999999
Has IRB?	No
Permission Granted?	No

Name	CUNY
Sub-Location	Borough of Manhattan Community College
Site PI	99999999
Role of the site in research	9999999
Has IRB?	No
Permission Granted?	No

6. Research Design - Overview

Research Purpose and Hypothesis

The Opening Gateways initiative seeks to improve student achievement in mathematics "gateway" courses through the development and implementation of Open Educational Resources (OERs) and intensive faculty professional development. A rigorous formative and summative assessment of the Opening Gateways initiative will be conducted by a third-party evaluation consultant in collaboration with program staff and each college's Office of Assessment and Institutional Research. The evaluation will be designed to allow for continuous improvement through clear evaluation feedback and to facilitate a deep understanding by stakeholders of the impact of providing faculty professional development and use of open educational resources on student achievement and retention. The primary objective of the evaluation is to answer the following questions: 1. How was the initiative implemented across the participating colleges? 2. To what extent are faculty engaged and satisfied with the quality of the professional development seminar and Open Educational Resources? 3. What is the impact of faculty participation in professional development and use of technological resources on student academic performance (course outcomes, retention, and degree completion)? Results of the rigorous implementation and impact evaluation will describe the estimated effect of faculty professional development and access to open educational resources on students' academic outcomes, how these effects vary by population and context, and how the program is implemented. These findings will help City Tech and BMCC refine their institutional strategies and contribute to the discussion on how intensive faculty professional development opportunities and technological resources can increase student success.

Research Design and Methodology

Formative Assessment: Program Implementation Analysis The formative evaluation will assess program activities with the aim of improving the program's design and performance, and therefore its chances of successfully achieving the desired outcomes. The formative evaluation will address the following questions: How was the year-long professional development seminar developed and implemented? How were resources and curriculum designed for placement on the Open Educational Resources and WeBWorK? The evaluator will use a combination of qualitative and quantitative methods like focus groups, surveys, and interviews to collect data from key stakeholders representing three distinct viewpoints: 1) representatives from participating colleges; 2) participating faculty; and 3) students.

Summative Evaluation: Participant Impact and Outcomes Analysis A rigorous impact analysis will be conducted by the third-party evaluator. The evaluator will conduct a quasi-experimental study, to understand the impact of faculty participation in professional development on student academic outcomes. The evaluation will compare the educational outcomes of students in sections taught by participating faculty to the outcomes of students in comparable sections not taught by participating faculty. In order to estimate the potential effects of faculty professional development and use of web-based technology on student academic outcomes, it is important to compare outcomes of students receiving instruction from faculty participants with outcomes of students in similar course not taught by faculty participants. To do so, a comparison group will be constructed using propensity-score matching. Students enrolled in courses taught by faculty receiving grant-funded services will be matched to other CUNY students in similar courses based on academic progress and time-invariant characteristics. Students will be tracked over time to assess success rate in relevant courses, retention in subsequent semesters, and degree attainment. Data for this analysis will be obtained from CUNY's Institutional Research Database and CUNYFirst, the University's administrative data warehouse. To supplement administrative data, data collected from WebWorK on use of web-based resources, plus information collected directly from the students and faculty will be used to better understand the impacts of the initiative.

Retrospective Data Review ONLY No

Funding Requested/Obtained Yes

Will you obtain informed consent from participants? Yes

Compensation for participation Yes

Will participants incur any research related costs? No

Is compensation available for research related injury? No

Surveys or Questionnaires Yes

Will the survey or questionnaire be self administered by the participants? Yes

Do you intend to give feedback to participants based on survey/questionnaire results? No

Attach survey(s) / questionnaire(s)

Title Faculty pre-survey

Upload Faculty_survey_final_20160901.docx

Title Faculty post-survey

Upload Faculty_post_survey_draft_20160908.docx

Interviews Yes

Will any individual(s) other than the research personnel be present during the interview? No

Attach interview questions

Title Faculty interview questions

Upload inst_interview_questions_20160906.docx

Title Student interview questions

Upload stdnt_interview_questions_20160909.docx

Observation No

Audio or Video Recording or Photograph Yes

Please be sure to insert template language regarding recordings and/or photographs in the consent document

Check all that apply

Audio Recording Yes

List the procedures that will be recorded

Interviews/focus groups will be recorded.

State the purpose of recording

The purpose of the recording is to have detailed transcripts to do a thorough analysis of the contents of the interviews/focus groups and to obtain a complete picture of what has been said in the interview/focus group.

Will participants be permitted to review, edit and/or erase the recording? No

Explain why not

Participants will not be permitted to review, edit, and/or erase the recording. This would prevent evaluators from gaining a clear understanding of what was said in the interview/focus groups and may lead to unclear results.

Will participants be identified in the recording? No

Video Recording No

Photograph Yes

List the procedures that will be photographed

Seminar meetings

State the purpose of photographing

Photographs will not be used for research purposes, but only for communication of grant activities (e.g. for use on the grant website).

Will participants be permitted to review, edit and/or erase the photographing? Yes

Will participants be identified in the photographing? Yes

How will you maintain participant confidentiality?

Participants will be asked to sign a standard CUNY photo waiver giving permission for photographs to be used by the grant (see Attachments).

Deception No

Access to or use of pre-existing non-medical records, including student records Yes

Number of records to be reviewed 16000

Access or use of medical records No

Describe type of records

- Student demographic data- Student transcript data- Student assessment test data

List data points you will abstract

Student demographic data- Date of birth- Gender- Race- Ethnicity- Native language- Student term-level transcript data- Term of enrollment- College of enrollment- Degree pursued- Major or program of study- Semester credits attempted- Semester credits earned- Semester GPA- Cumulative credits attempted- Cumulative credits earned- Cumulative GPAS- Student course-level transcript data- Term of course enrollment- College of course enrollment- Department code- Catalog code- Course unique ID code- Course name- Credits- Course type (e.g. Regular, Developmental, Message, Remedial)- Grade- Pass/fail designation- Student basic skills area status- CUNY Assessment Test date- CUNY Assessment Test test type- CUNY Assessment Test score- Semester subject proficiency status (Reading, Writing, Math)- Student degree data- Term of degree- College of degree- Degree awarded- Major or program of degree

Will participants be screened? Yes

Biological Samples No

Drugs or Vaccines No

Devices No

7. Research Design - Procedures and Risks

Participant Group	CUNY Employees
Procedure	Complete a survey.
Where it will take place?	Online (web-based survey).
When it will take place?	At the beginning, middle and end of participation in Opening Gateways faculty seminar program.
Frequency	Up to three times per year.
Is procedure optional for participants?	No
Associated risk or discomfort	N/A
Anticipated severity of risk or discomfort	N/A
Expected frequency of risk or discomfort	N/A
Risk reduction or mitigation method	N/A

Participant Group	CUNY Students
Procedure	Complete a survey.
Where it will take place?	Online (web-based survey).
When it will take place?	During semester in which faculty participant is implementing Opening Gateways techniques.
Frequency	Once per year.
Is procedure optional for participants?	Yes
Associated risk or discomfort	N/A
Anticipated severity of risk or discomfort	N/A
Expected frequency of risk or discomfort	N/A
Risk reduction or mitigation method	N/A

Participant Group	CUNY Employees
Procedure	Interview / focus group.
Where it will take place?	At one of the participating institutions (City Tech, BMCC).
When it will take place?	During participation in Opening Gateways faculty seminar program.
Frequency	Once per year.
Is procedure optional for participants?	No

Associated risk or discomfort	N/A
Anticipated severity of risk or discomfort	N/A
Expected frequency of risk or discomfort	N/A
Risk reduction or mitigation method	N/A

Participant Group	CUNY Students
Procedure	Interview / focus group.
Where it will take place?	At one of the participating institutions (City Tech, BMCC).
When it will take place?	During semester in which faculty participant is implementing Opening Gateways techniques.
Frequency	Once per year.
Is procedure optional for participants?	Yes
Associated risk or discomfort	N/A
Anticipated severity of risk or discomfort	N/A
Expected frequency of risk or discomfort	N/A
Risk reduction or mitigation method	N/A

8. Research Design - Risks and Benefits

Does your research claim to present a therapeutic benefit to the participants? No

Expected Direct Benefit(s)

None.

Benefit to Society

Overarching Goal: Increase the number and proportion of Hispanic and high need students who achieve timely completion of an associate or a baccalaureate degree. Goal 1: Increase momentum by reducing course failure and withdrawal in required mathematics courses, thus reducing time to degree completion and non-contributory credit accumulation. Goal 2: Enhance pedagogical effectiveness of required mathematics courses by providing access to intensive faculty development and ongoing peer support in design and implementation of active learning pedagogical strategies (Open Educational Resources, collaborative learning and other High-Impact Educational Practices, problem-based learning, interdisciplinary applications, flipped classroom approaches, open digital pedagogy, and assessment best practices). Goal 3: Reduce financial barriers to student success and make college more affordable for economically disadvantaged students by increasing the quality, availability, and use of Open Educational Resources in high-enrollment mathematics courses. Goal 4: Strengthen students' intellectual engagement with their studies through the use of open digital technologies to support active learning, providing increased opportunities for interaction with course materials, faculty, and peers.

Will data safety monitoring be done? No

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9. Funding - Sources

Grant or Contract Title	Opening Gateways to Completion: Open Digital Pedagogies for Student Success in STEM
Grant or Contract Number	P031S150220
Funding Status:	
Grant/Contract PI:	Jonas Reitz
Department	New York City College of Technology
Division	
Phone	
Email	JREITZ@CITYTECH.CUNY.EDU
Funding Source:	US Department of Education
Contact	
Funding Category:	Federal
Do the protocol and funding proposal match?	Yes

10. Participants - Populations

Age Range(s) 18 to 65 years
Targeted Population(s) CUNY Students
Targeted Population(s) CUNY Employees

CUNY Students

Are any of the researchers directly No
involved in the instruction of
students who may be asked to
participate in this research?

11. Participants - Projected Enrollment

Please provide the upper limit of anticipated enrollment

Projected Enrollment	8000
Total number of records to be reviewed	16000

12. Participants - Eligibility

Inclusion Criteria and Rationale

Faculty participants are selected through an application process. A call for participants is distributed to current math faculty at participating institutions, and interested faculty complete an application form. Applicants are selected by the grant team based on their responses. Student participants are selected by virtue of enrolling in a course taught by one of the faculty participants - they are not actively recruited or screened. Among student participants, volunteers for interviews will be solicited via flyers distributed in class. Selection of interview subjects will be random among volunteers.

Exclusion Criteria and Rationale

N/A

13. Participants - Recruitment

Outline the recruitment process in a step-by-step fashion

For faculty participants, a Call for Fellows is developed describing the program benefits and responsibilities. The Call is distributed by email, through posters and flyers at participating campuses, and on the web. Recruitment is targeted to math faculty (full and part time) at participating campuses. For students enrolled in sections taught by faculty participants during their Implementation Semester (Spring semester of their participation in the program), all students 18 and over will be asked to participate in surveys. We will also recruit volunteers from among these students to participate in interviews/focus groups. In each case, recruitment will be carried out by distributing flyers in class.

Indicate how and where these materials will be displayed, distributed or published

Distributed by email to Math Department email (at participating campuses). Posted on the project website. Distributed on paper in Math Department faculty mailboxes. Posted on bulletin boards in and around the Math Departments. For students, flyers requesting student participation in surveys and volunteers to participate in interviews/focus groups will be distributed in class.

Attach copy of each

Type

Title Opening Gateways Seminar Call for Fellows

Type

Title Opening Gateways Student Interview Flyer

Identify the group(s) to whom email will be sent

Full and part time Mathematics Department faculty at participating institutions (City Tech and BMCC)

Indicate how you have access to these email addresses

The email will be sent to the Department Chair at each participating institution, who will forward it to Department-maintained lists of faculty.

Attach email text you will use

Type

Title Opening Gateways Call for Fellows - email

Identify the web site(s) by name and URL

Opening Gateways, <https://openlab.citytech.cuny.edu/openinggateways/>

Indicate who controls the web site

The Opening Gateways management team controls the website, which lives on the OpenLab, City Tech's open digital platform for teaching, learning, and collaboration.

Attach text of web site content you will use

Type

Title Opening Gateways website

14. Participants - Screening

Description of Screening Activities

Outline the screening procedures in a step-by-step fashion, including a timeline

For faculty participants, applications are limited to full and part time mathematics faculty teaching "gateway" mathematics courses at BMCC and City Tech. Student participants are limited to students in math courses taught by participating faculty during the implementation semester.

Select the proposed informed consent process for the screening activities

Oral or Internet based informed consent for screening activities No

Documented informed consent combined with main study informed consent form and process No

Documented informed consent separate from main study informed consent form No

Will you record identifiable information about the participants during screening activities? No

If a potential participant is determined ineligible, will you retain their data? No

Is there a possibility that the screening procedures may result in positive identification of a condition? No

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15. Participants - Consent

Documented informed consent and/ Yes
or parent or guardian permission

Oral or Internet based informed No
consent and/or parent or guardian
permission

Documented informed consent and/or parent or guardian permission

Identify where and when consent will be obtained from potential participants

Consent documents will be distributed and collected along with the first survey (for both faculty and students).

Attach Consent/Permission Document(s)

Title Faculty consent

Title Student consent

16. Participants - Compensation

Type	Monetary
Amount	\$2000.00
Justification	Time
Description (Address the compensation schedule for participants that withdraw from the research protocol.)	We will compensate faculty participants for their participation in the overall program, but not specifically for participation in the surveys/interviews/focus groups. Faculty participants will receive either \$2000 or 3cr release time for their participation in the seminar and production of seminar deliverables.
When will participants be compensated?	Other
Explain when	Faculty receiving monetary compensation will be paid in two lump sums, at the end of the Fall semester and at the end of the Spring semester. Faculty receiving release time will take it in the fall seminar (though some may be allowed to take it in the spring seminar on an exception basis).
Describe mechanism in place to ensure confidentiality when distributing compensation	Compensation will be made through the established payment mechanisms provided by CUNY's Research Foundation.

17. Participants - Privacy and Confidentiality

Describe the mechanisms in place to protect the privacy of participants during recruitment, consent process and research procedures

All data will be shared via CUNY-approved secure online document sharing platform (ShareFile) Axway Secure Transport. The data will be deposited in an (ShareFile) Axway Secure Transport folder that is restricted to the REPS research team and Senior Database Administrator. Furthermore, the data will be stored on CUNY's secure network in a folder restricted to the REPS research team.

Describe the mechanisms in place to maintain confidentiality of participant data

Data will not be circulated via email or stored on zip drives or other electronic devices. The data will be considered confidential. Only members of the REPS research team working on the Title V Cooperative grant project will have access to this data. No data received will be re-disclosed to any other parties outside of REPS. Individual students, teachers, and schools will not be identified in any reporting.

How will you store participant data CODES

Describe the coding mechanism:

Assign study participant identification codes.

Indicate where links to codes will be stored

We'll keep a list of the identifiable information linking individuals to their codes in a separate location with restricted access. Data will be stored on CUNY's secure network in a folder restricted to the REPS research team.

Identify the individual(s) who will have access to the links

The REPS research team (Althea Webber, Allyson Murphy).

Will codes be deleted (and data anonymized) at a later date? No

What will you do with the data once the research has been completed? RETAINorDESTORY

18. Attachments

Type	Name	Version	Status	Filename	Uploaded Date
Advertisement	Title V Opening Gateways - Call for Fellows 2016-2017.pdf	1	New	Title V Opening Gateways - Call for Fellows 2016-2017.pdf	08/08/2016
Email Text	City Tech - Call for Fellows - EMAIL.pdf	1	New	City Tech - Call for Fellows - EMAIL.pdf	08/08/2016
Website Text	Opening Gateways - Call for Fellows - WEBSITE.pdf	1	New	Opening Gateways - Call for Fellows - WEBSITE.pdf	08/08/2016
Curriculum Vitae	Citi Completion Report - Reitz	1	New	ReitzCitiCompletionReport.pdf	08/23/2016
Curriculum Vitae	Citi Completion Report - Murphy	1	New	MurphyCitiCompletionReport.pdf	08/23/2016
Curriculum Vitae	Citi Completion Report - Webber	1	New	Althea Webber CITI Completion Report.pdf	09/05/2016
Curriculum Vitae	CV - Reitz	1	New	JonasReitzCV.pdf	09/05/2016
Survey(s)	Faculty_survey_final_20160901.docx	1	New	Faculty_survey_final_20160901.docx	09/05/2016
Survey(s)	Faculty_post_survey_draft_20160908.docx	1	New	Faculty_post_survey_draft_20160908.docx	09/11/2016
Interview Question(s)	stdnt_interview_questions_20160909.docx	1	New	stdnt_interview_questions_20160909.docx	09/12/2016
Records Access Authorization	CUNY Student Records Authorization letter	1	New	D_Crook_access_letter_20160908.pdf	09/11/2016
Other Data Collection Tools	Photo Release Form	1	New	Photo-VideoReleaseForm-RevFeb2010.pdf	09/12/2016
Advertisement	student_flyer_20160912.docx	1	New	student_flyer_20160912.docx	09/12/2016
Informed Consent Document	Opening Gateways - Informed_Consent_Form_CUNY - FACULTY 20160912.doc	1	New	Opening Gateways - Informed_Consent_Form_CUNY - FACULTY 20160912.doc	09/12/2016
Informed Consent Document	Opening Gateways - Informed_Consent_Form_CUNY - STUDENT 20160912.doc	1	New	Opening Gateways - Informed_Consent_Form_CUNY - STUDENT 20160912.doc	09/12/2016