

Roles and Responsibilities of WPS-WPI GK-12 PIEE Project Personnel

The goals of the WPS-WPI PIEE project are as follows:

- To develop partnerships between WPS and WPI;
- To implement the technology/engineering portion of the MSTECF in grades K-6;
- To develop curricular materials and prepare teachers so that the project is self-sustaining after the grant expires.

The PIEE project is complex and involves a large number of people with different roles; The purpose of this document is to articulate expectations of each role, so as to minimize confusion and misunderstanding and maximize productive collaboration;

K-6 Classroom Teachers are experts on K-6 pedagogy and have authority for management of their classrooms.

All:

- are the experts on K-6 pedagogy and on curricular standards (both Massachusetts Curriculum Frameworks and Worcester Public Schools Benchmarks) as they apply to their classrooms;
- have authority for management of their own classrooms;
- are the decision-makers on overall and specific curriculum content, except as delegated to fellows¹ and IQP students;
- define the roles and their specific expectations of fellows and IQP students with respect to teaching, discipline, and preparation of lessons;
- interpret and explain K-6 school culture for the fellows and IQP students, and facilitate facilitate the Fellow's interaction with other school personnel if time permits;
- share lesson plans and long-range plans with Fellows in advance so that the Fellow can enhance classroom instruction with appropriate activities;
- provide Fellows with science and math textbook copies and curriculum materials;
- prepare and deliver science lessons, with assistance from WPI Fellows and IQP students;
- to the extent possible, deliver engineering lessons prepared by Fellows and IQP students;
- participate in a week-long PIEE workshop with Fellows in June, the week after school ends;
- attend quarterly meetings with PIs (Principal Investigators), Fellows, and other teachers;
- meet weekly, in person or by email, with Fellows to plan lessons and schedules;
- complete and submit evaluations of fellows and IQP students as requested by PIs;
- complete and submit assessment materials (class surveys, etc;) as requested by project assessment consultant;
- prepare materials for and participate in regional or national project or professional meetings as appropriate;
- obtain photo releases from as many students as possible;
- submit invoices to facilitate payment for time spent on project during quarterly meeting with PIs, fellows, and other teachers.

Continuing WPS teachers (2nd year and beyond):

in addition to the responsibilities listed above,

- deliver engineering lessons with the assistance of fellows and IQP students;
- assist new teachers at the same grade level in planning appropriate engineering curriculum for their classes.

¹ The term "fellows" refers to both WPI graduate and undergraduate fellows;

Graduate fellows develop and implement engineering lesson plans and provide day to day supervision of IQP students working in their classrooms.

- provide expertise with respect to engineering content and underlying scientific principles;
- work 30 hours per week in the summer on project activities, and 20 hours per week during the WPI academic year, as described in their contract letter;
- spend 1 (continuing classrooms) -3 (new classrooms) hr/wk in each classroom;
- develop and adapt engineering lesson plans as appropriate for the needs of the teacher; prepare materials, deliver or assist with delivery of lessons as appropriate;
- communicate at least weekly with teacher, by email, by phone, or in person, to plan upcoming curriculum;
- as fellow time commitment permits and if the teacher wishes, provide assistance with delivery of science and math lessons;
- working in pairs, organize and facilitate one visit to WPI of all the K-6 classes in the PIEE project to view an engineering demonstration or lab;
- serve as liaisons between K-6 schools and university resources;
- assist with project fairs in which your students are involved;
- communicate regularly (at least weekly), in person or by email, with grade level teachers to plan lessons and schedules, and communicate decisions to undergraduate IQP team;
- at the beginning of each WPI term, communicate with the teacher and the IQP students to establish a schedule for engineering lessons and for presence of each fellow and IQP student in the classroom;
- collaborate with IQP students to be an effective classroom support team; mentor and manage day to day work of IQP students;
- review editorially and submit engineering lesson plans developed by self and IQP students, in the standard PIEE project format, to central repository;
- participate in a week-long workshop with teachers in June;
- develop and deliver engineering activities for some WPI summer camps for K-12 students (e.g; Camp REACH, GEMS Jr., Strive Jr.);
- participate in summer orientation meetings;
- participate in large group (all the grade level teams) and weekly grade level team meetings as scheduled;
- maintain and submit to designated PI a monthly log of hours spent on PIEE project work;
- keep a reflective journal of PIEE project involvement and submit it quarterly for confidential review by the PIs;
- participate quarterly in self-evaluation of own PIEE project performance;
- complete and submit assessment materials as requested by project assessment consultant;
- prepare materials for and participate in regional or national project or professional conferences as appropriate;
- prepare and submit a portfolio of your classroom activities;
- provide digital photographs of hands-on classroom activities as appropriate;
- make satisfactory progress towards a graduate degree.

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Undergraduate fellows have essentially the same role as graduate fellows, but work in classes or grade levels where prior teams have developed significant content and where teacher(s) is/are experienced. :

- provide expertise with respect to engineering content and underlying scientific principles;
- work 30 hours per week in the summer on PIEE project activities, and 10-15 hours per week during the WPI academic year, as described in the contract letter;
- spend 2-4 hours per week in the assigned WPS classroom;
- develop and adapt engineering lesson plans as appropriate for the needs of the teacher; prepare materials, deliver or assist with delivery of lessons as appropriate;
- as time commitment permits and if the teacher wishes, provide assistance with delivery of science and math lessons;
- assist with project fairs in which your students are participating;
- communicate regularly (at least weekly), in person or by email, with grade level teacher to plan lessons and schedules, and communicate decisions to IQP team;
- at the beginning of each WPI term, communicate with the teacher and the IQP students to establish a schedule for engineering lessons and for presence of each fellow and IQP student in the classroom;
- collaborate with IQP students to be an effective classroom support team;
- if employed for the summer, participate in a week-long PIEE workshop in June, and participate in summer orientation meetings;
- participate in large group (all the grade level teams) and weekly grade level team meetings as scheduled;
- participate quarterly in self-evaluation of own PIEE project performance;
- complete and submit assessment materials as requested by project assessment consultant;
- prepare materials for and participate in regional or national project or professional meetings as appropriate;
- maintain a reflective journal and submit it quarterly for confidential review by the PIs;
- submit all lesson plans to an online repository.

IQP students (working in classrooms), working in classroom-based teams, develop 4 engineering lessons and deliver 2 of them. (Also see separate IQP planning and evaluation document)

- provide expertise with respect to engineering content and underlying scientific principles;
- work 17 hours per week on the project per 1/3 unit of WPI registration during the WPI academic year;
- spend 2-3 hours per week in the classroom per 1/3 unit of registration and half that time for 1/6 unit;
- develop at least two engineering lesson plans per IQP student; prepare materials, implement or assist with implementation of one of the lessons. Ideally, IQPs are done in teams of 2-3 students per classroom, so each classroom team is expected to collaborate on the preparation and delivery of its lessons.
- as time commitment permits and if the teacher wishes, provide assistance with delivery of science and math lessons;
- offer assistance with delivery of after school programs as time permits or in lieu of other responsibilities;
- assist with project fair(s) in which your students are participating.
- communicate frequently, in person or by email, with WPI fellow and other IQP students to coordinate decisions and schedules on planning;
- provide unit and lesson plans in a professionally acceptable written form to faculty advisor and fellow;
- participate in large group (all the grade level teams) and weekly grade level team meetings as scheduled;
- prepare materials for and participate in at least one regional or national professional meeting;
- write a project proposal including a literature review and a final project report;
- submit all lesson plans to an online repository.

IQP students (online repository group) continue the development of the online lesson plan repository and provide computer support to schools as appropriate.

- continue development of an online repository of engineering unit and lesson plans;
- obtain feedback from fellows, teachers and IQP students on how to improve the repository;
- work with fellows, teachers and IQP students to resolve any problems in using the repository;
- develop and deliver one computer unit plan to one grade level (ask the teachers);
- provide computer support to one or more schools (let's ask the principals about this);
- work 17 hours per week on the project per 1/3 unit of WPI registration during the WPI academic year;
- participate in large group (all the grade level teams) and weekly IQP team meetings as scheduled;
- prepare materials for and participate in regional or national project or professional meetings as appropriate;
- submit all lesson plans to an online repository.

Faculty (departmental or research) advisors of graduate fellows stay informed about their fellows' activities, and assist in K-6 outreach activities.

- communicate with fellow and PIs to ensure reasonable time allocation among courses, research, and PIEEE activities;
- commit up to 15 hours per academic year to the project, including
 - attending one meeting per semester;
 - when appropriate, hosting visits of K-6 classes to engineering demonstrations or laboratories;
 - participating as judges in engineering or science project fairs;
- communicate with PIs re academic progress of graduate fellows.

Faculty advisors of grade level teams supervise the graduate fellows and IQP teams at each grade level. (Also see separate IQP planning and evaluation document)

- conduct weekly meetings of individual grade level teams;
- oversee the academic portion of the IQP—proposal writing, report writing, providing feedback on student writing, grading;
- mentor graduate fellows with respect to their oversight of the classroom portion of the IQP students' work;
- manage group dynamics issues within the grade level team;
- report issues with teachers to the PIs;
- attend weekly large group meetings;
- visit each classroom twice per academic year;
- meet together biweekly to coordinate expectations of grade level teams;
- make sure lesson plans from grade level team are deposited in online repository;
- provide PI with a hard copy and CD of the grade level team's IQP report.

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PI and co-PI—WPI oversee project finances, selection and training of fellows and IQP students, administrative issues, communication with WPS, and assessment.

- manage project finances;
- manage WPI project personnel:
 - recruit, select, assign, and evaluate WPI PIEE fellows;
 - recruit, select, and assign IQP students;
- act as liaison between fellows and principals regarding issues with teachers;
- facilitate work of assessment consultant;
- oversee work of administrative assistant;
- conduct communications with NSF, including required reports;
- communicate with WPI non-project personnel, including summer camp directors, minority affairs director, director of K-12 outreach, and faculty advisors of fellows;
- organize and conduct training and workshop sessions for WPS PIEE teachers and fellows;
- organize and conduct weekly large group meetings;
- organize and conduct visits from external parties as appropriate;
- promote the project via web site, brochure, external presentations, etc.;
- meet quarterly with principals and teachers and with WPS co-PI.

Co-PI—WPS facilitates communication between WPI and WPS.

- serve as liaison to WPS administration and superintendent;
- coordinate selection of WPS schools for participation in PIEE project , and serve as liaison to these schools;
- assist with fellow orientation;
- promote the project within WPS and the greater Worcester community.

Administrative Assistant (CEDTA staff) handles routine administrative tasks.

- collect and collate meeting schedules to find compatible meeting times;
- send out meeting reminders;
- reserve rooms for project meetings; reserve and transport necessary A/V equipment;
- maintain project website;
- develop and distribute project promotional materials.
- manage project-related communications as appropriate;
- copy, distribute, and collect project documents;
- maintain comprehensive annual project schedule, and issue reminders as appropriate;

Principals manage personnel and other school-specific decisions.

- are responsible for personnel issues within the schools, e.g; teacher selection, performance, teacher scheduling;
- prepare materials for and participate in regional or national project or professional meetings as appropriate;
- occasionally participate in quarterly meetings with the PIs, fellows, and teachers;
- meet quarterly with the PIs.

K-6 Students are enthusiastic participants.

- work cooperatively in small groups;
- keep a log of events and notes of procedures;
- are invited to share the joy of learning hands-on engineering, in the form of public project displays and presentations.