Undergraduate Outcomes Assessment Committee
2014-2015 Annual Report

Committee: Holly Ault (Secretary), Chrysanthe Demetry (Director, Morgan Teaching and Learning Center), Elizabeth Desjardins (Student Representative), Neil Heffernan (Secretary),Art Heinricher (Dean of Undergraduate Studies), Kent Rissmiller (Chair), Jill Rulfs (CAP Representative and Secretary), Satya Shivkumar

The Undergraduate Outcomes Assessment Committee (UOAC) held 22 meetings during the 2014-2015 academic year.

1. The Committee continued work on the IQP and MQP Advisors Reports on student project learning begun the previous year. Revisions were made to the instruments based on a pilot test of them conducted by Prof. Demetry. A draft motion was prepared regarding the need for these advisors reports, rules regarding data collection and use, and the relevant instruments. It was forwarded to CAP in the end of September. The motion (attached to this report), was approved by CAP without changes and voted favorably at the December 18, 2014 Faculty meeting.

2. A subcommittee of UOAC met with personnel from IT to discuss electronic implementation of this Advisor's report so that faculty can complete the report when they are submitting final grades for projects. This implementation process is currently ongoing with work to continue during the summer.

3. The Committee drafted and sent a memo to the President, Provost and Dean of Undergraduate Studies regarding the need for a professional assessment coordinator to support WPI's continuing assessment of learning outcomes for program improvement and accreditation. A second memo relative to this issue was sent to the President in April.

4. The committee discussed the "Assessment Plan for Undergraduate Learning Outcomes" drafted in 2013. This report will provide a framework for the compilation of data related to the institutional learning outcomes. This centralized database will further support the work of UOAC in executing its charge to coordinate and communicate outcomes assessment activities across campus. The committee discussed various sources of data that could be used to demonstrate student outcomes for the learning objectives, whether additional sources of data might be necessary, etc. It was noted that some sources such as departmental MQP reviews may not provide consistent data across departments, and that the committee needs to work towards resolution of these inconsistencies in order to obtain valid data.

5. The committee discussed summer peer reviews of MQPs. The data from these reviews is included in the assessment matrix, however, there are significant differences between departments in the process, type of data collected and frequency of reviews. The Committee discussed a common form to be used as the core of the summer MQP reviews. Dean Heinricher met with departments scheduled to conduct summer MQP

reviews in 2015 to encourage them to use this instrument in addition to any programmatic questions that individual departments choose to use.

6. Progress on the IQP/MQP Advisors' report and the identification of a common core instrument for summer MQP reviews will likely address the concerns raised by NEASC for attention in our Fall 2016 report.

7. The Committee spent considerable time discussing the Matrix and the 2013 Draft Assessment Plan writing by UOAC (P. Hanson). Issues for discussion included the need to update our WPI learning outcomes, first approved in 2004, problems with missing data and changed data sources for the Matrix and difficulty in assessing several of the outcomes including:

   • Base of knowledge in mathematics, science and humanistic studies,
   • Employ current technological tools,
   • Awareness of personal, societal and professional ethical standards,
   • Skills, diligence and commitment to excellence to engage in life-long learning.

   The Committee decided not to engage in an effort to rewrite the University Learning Outcomes at this time, but focus on improving our sources of data and bringing this information into the Matrix.

8. In exploring these issues (from point 7 above), the Committee looked in to the learning outcomes for the Great Problems Seminar and the learning goals for the Humanities and Arts Requirements. In addition, the Committee reviewed recent efforts by Humanities and Arts to assess the Inquiry Seminar and Practicum and met with Prof. Boudreau to discuss this process. Data from the HUA assessment can support our assessment of overall WPI learning outcomes.

9. An additional source of information for the Matrix is from surveys of alumni. The Committee gathered information from some departments regarding their use of alumni surveys and found very inconsistent practices among them. The need for consistent use of an alumni survey was discussed with the suggestion that we routinely survey alumni who graduated, perhaps, 2 years ago and 5 years ago to understand the value of their WPI education.

Date: September 26, 2014
To: Committee on Academic Policy
From: Kent Rissmiller, Chair, Undergraduate Outcomes Assessment Committee (UOAC)
Subj: Proposed Processes and Forms for an Advisor Report on MQP Learning and an Advisor Report on IQP Learning

For several years UOAC has been discussing ways to strengthen assessment of student learning in MQPs and IQPs. We hosted several meetings of the "Program Assessment Interest Group" (some department heads, associate department heads, program directors, and assessment coordinators within departments) to gather their ideas and get feedback as our work progressed. The outcome of this work is a proposal for Advisor Reports on MQP and IQP Learning. This document presents a draft motion and rationale for consideration by CAP. We look forward to your questions, feedback, and action on this issue.

Motion: The Committee on Academic Policy recommends and I move that the WPI Faculty create an Advisor Report on MQP Learning and an Advisor Report on IQP Learning, including: 1) procedures for collecting student learning assessment data from faculty project advisors through the existing eProjects process; 2) the attached Advisor Report surveys; and 3) rules governing the availability and use of collected data.

Procedures for collecting assessment data from project advisors: The Advisor Report surveys will be integrated into the existing eProjects system. The survey will be accessible within the first week of the start of project registration (whether it is a one-term or a multi-term project) and remain open until final grades are submitted. There will be one survey for each project, but for team projects advisors will be asked to assess the achievement of each registered student on the team. Only the Advisor of Record (as recorded in Banner) will have access to the survey.

Project advisors will be able to enter their survey responses at any time during the project but will be directed to the survey by the eProjects system when students submit their final report for approval. The advisor will not be *required* to complete the survey before submitting the final project grade on the CDR form.

Rules governing the availability and use of collected data: While the eProjects site will be used to collect data, data will not be available from that site. The Dean of Undergraduate Studies (for MQPs) and the Dean of IGSD (for IQPs), or their Assistant or Associate Deans, will report data only in summary form at the institute and program levels, for distribution to programs, departments, UOAC, and other groups undertaking outcomes assessment initiatives. Department and program heads may request information about which of their faculty members completed MQP Advisor Reports, but they will not be given learning outcomes data at the advisor level. The data will be used to improve the qualifying projects and to focus improvement efforts in areas of need. The data will *not* be used to assess or rank project advisors.

Rationale

In 2007 and 2012, respectively, the WPI Faculty approved processes and instruments for a Student Report on IQP Learning and Advising and a Student Report on MQP Learning and Advising. When students submit their final project report on the e-projects site, they are asked to rate their progress in areas that are aligned with the Faculty-approved, institute-wide IQP and MQP learning outcomes, which in turn map to the broader set of undergraduate learning outcomes.

Data about students' perceptions of their own progress are one important source of information about IQP and MQP learning and a WPI education more broadly. However, any strong outcomes assessment process should have multiple measures of learning, and assessment of learning by faculty advisors is an essential component. Consistent with its charge to identify and facilitate procedures for assessing undergraduate learning outcomes and to coordinate assessment activities on campus, UOAC is proposing that we create Advisor Reports on IQP and MQP Learning.

Why do we need Advisor Reports on MQP and IQP Learning? Aren't project grades enough?

Project grades awarded by advisors do not provide actionable information about student achievement of specific learning outcomes associated with the IQP and MQP. For this reason, project grades provide no guidance for continuous improvement efforts.

Our existing assessment methods for IQP and MQP learning have a variety of limitations. The Interdisciplinary and Global Studies Division does conduct summer IQP reviews every three years, whereby a group of faculty reviews IQP reports for evidence of the IQP learning outcomes. Some departments and programs, particularly those accredited by ABET, also conduct similar summer reviews of MQP reports. While these IQP and MQP reviews provide important and actionable information, not all student learning outcomes (e.g., oral presentation skills, teamwork skills) are evident in project reports. In addition, some WPI program directors and prior ABET visitors have expressed concern that none of our assessment methods for team-based IQPs and MQPs, aside from student self-perceptions, are designed to glean information about *individual* learning outcomes since reports are produced by teams. Another limitation is that UOAC is unable to consolidate and interpret information from those departments and programs that do conduct summer MQP reviews, since questions across departments are not aligned. Because IQPs and MQPs are such a strong source of learning for the faculty-approved Undergraduate Learning Outcomes, UOAC needs information about MQPs and IQPs in order to fulfill its charge. For all of these reasons, UOAC believes that we would benefit from a uniform, campus-wide system to gather student learning outcomes data from IQP and MQP advisors, using the institute-wide IQP and MQP learning outcomes as the basis for a simple, common core of questions.

Accreditation is another driver for improvement in our assessment practices. In its accreditation letter to WPI dated November 2012, the New England Association of Schools and Colleges (NEASC) asked that our fifth-year interim report show progress in "systematically using the Major Qualifying Project to assess student achievement and using the results to improve academic programming." The NEASC team found inconsistent practices across departments in MQP reviews and analysis of results. Taken together, the Student Reports and Advisor Reports on IQP and MQP Learning will provide consistency, will enable UOAC to analyze the results, and will still enable departments and programs to measure program-specific learning outcomes.

What are the anticipated benefits of Advisor Reports on MQP and IQP Learning?

UOAC sees at least four benefits:

1) The Advisor Reports will provide a faculty perspective on student achievement of learning outcomes, whereas now we have only students' perspectives of their progress in each of the learning outcomes. A related benefit, as mentioned previously, is that these faculty assessments will be for individual student outcomes rather than team outcomes.

2) Having a campus-wide system will assist department heads, associate heads, and program directors in their program-level assessment efforts, especially those programs that do not already have a regular

MQP assessment process in place. There will be a mechanism for degree programs to include additional program-specific questions on the MQP Advisor Report surveys to aid their outcomes assessment efforts.

3) The common core of questions will enable UOAC to identify any weaknesses across programs that may be most efficiently addressed with campus-wide initiatives rather than program-level initiatives. UOAC can then engage the academic administration and units such as the Morgan Teaching and Learning Center, Communication Across the Curriculum, and Gordon Library in providing support for development efforts.

4) When completing the Advisor Report on IQP/MQP Learning, advisors will be reminded of the learning outcomes, helping them think through their grading decisions. Thus, the process itself is beneficial as well as the resulting data.

What are the costs to faculty, departments, and programs?

The primary cost associated with the system is the faculty time dedicated to the completion of the survey. One of the design criteria for the system will be that it be as brief as possible and easy for project advisors to access and complete.

How will the system work?

The Advisor Report surveys will be integrated into the existing eProjects system since that system is working well for Student Reports on MQP and IQP Learning. The survey will be accessible within the first week of the start of the project registration (whether it is a one-term or a multi-term project); this is a necessity because there is no mechanism for Banner to know when any particular project will actually be completed. Only the Advisor of Record, as recorded in Banner, will have access to the survey. There will be one survey for each project, but for team projects advisors will be asked to assess the achievement of each registered student on the team.

Project advisors will be able to enter their survey responses at any time during the project but will be directed to the survey by the eProjects system when students submit their final report for approval.. In this way, it will parallel the system created for the Student Reports in that the advisor will be prompted to complete the survey before students print the eCDR form. It will also parallel that system in that the advisor of record will not be *required* to complete the survey before submitting the final grade.

Who will have access to the data and for what purposes?

The data will *not* be as widely available as the data from Student Reports on IQP/MQP Learning and Advising or Student Course Reports. Neither students nor faculty will be able to access the data on the eProjects site. The Dean of Undergraduate Studies (for MQPs) and the Dean of IGSD (for IQPs), or their Assistant or Associate Deans, will report data only in summary form at the institute and program levels, for distribution to programs, departments, UOAC, and other groups undertaking outcomes assessment initiatives. Department and program heads may request information about which of their faculty members completed Advisor Reports, but they will not be given learning outcomes data at the advisor level. This restriction is important so that advisors feel comfortable providing forthright assessments of student learning without concern about how it may reflect on the quality of their project advising.

The data will be used to improve the qualifying projects and to focus improvement efforts in areas of need identified by faculty members who advise those projects. The purpose is not to assess or rank project advisors; this trust is critical if the faculty advisors are to feel free to honestly assess the achievement of their students. There are many factors in addition to advising that contribute to learning outcomes, such as the broader curriculum and a wide variety of support services, infrastructure, and other resources.

What resources will be necessary for implementation?

Once the Faculty have approved the main requirements for the system, including both the survey delivery and the data collection and reporting requirements, UOAC will request a meeting with the IT Division to discuss the steps required for a formal proposal to the Unified Digital Campus (UDC) committee. The UDC will also determine the implementation schedule.

Rationale for specific choices in the survey instruments

A draft version of the instrument was pilot tested in May 2014 with 17 faculty members from 13 departments and programs. UOAC made refinements in the rating scale based on feedback from those colleagues.

Departments that currently use MQP review forms use 3-level, 4-level, and 5-level rating scales. UOAC members favor a 3-level scale for several reasons. We believe that a simple 3-level scale with similar qualitative descriptions as the A-B-C project grading guidelines (Exceeds Expectations/Meets Expectations/Below Expectations) will more likely have commonly understood meanings among faculty members, without going through a norming or calibration process. The questionnaire may also be quicker to complete if a 3-level rating scale is used. In addition, criteria are easier to define (e.g., 100% of WPI graduates should demonstrate achievement of outcomes at a level that at least Meets Expectations.) If this 3-level rating scale is approved at the institutional level, then programs that had been using 4-level or 5-level scales will not immediately have historical data for comparison purposes. However, UOAC believes that there will be benefits of switching to a single campus-wide scale due to the ability of making peer or program comparisons going forward.

The wording of questions is drawn directly from faculty-approved MQP and IQP learning outcomes and/or the existing Student Reports on IQP and MQP Learning. Consistent wording between questions on Student Reports and Advisor Reports will enable some comparison between student and faculty perspectives.

For the MQP Report, we clearly identify "WPI graduates" as the comparison group, since the faculty-approved MQP Learning Outcomes in the Undergraduate Catalog state that: "By completing their MQP, WPI students will achieve the following learning outcomes at a level at least equivalent to that of an entry level professional or graduate student."

Faculty who participated in the pilot test recommended that an online form could be completed more quickly if all assessment data for individuals on a team project could be entered into a single table rather than a series of consecutive tables. UOAC will make this request when the implementation proposal is presented to the Unified Digital Campus (UDC) committee.

Advisor Report on MQP Learning

By providing your assessment of student achievement of MQP learning outcomes, you are contributing to our collective responsibility to continuously assess and improve student learning in this important degree requirement. Students are asked to assess their own *progress* in the seven MQP Learning Outcomes already. The survey is designed to record the faculty advisor's assessment of each individual student's *achievement* in the same MQP Learning Outcomes.

The data will be used to focus improvement efforts in areas of need identified by faculty members who advise MQPs. These data will *not* be used to evaluate MQP advising or rank MQP advisors. We realize that there are many factors in addition to advising that contribute to learning outcomes, and even an outstanding student may not exceed expectations in all of the learning outcomes.

A note on confidentiality: While advisors are encouraged to discuss achievement of learning outcomes with students as part of the feedback and grading process, these Advisor Report data will not be shared with your project students. The Dean of Undergraduate Studies will report data only in summary form at the institute and program levels, including a list of faculty who have completed the forms.

Please interpret the rating scale as follows:
Exceeds expectations: Outstanding achievement for a WPI graduate
Meets expectations: Acceptable achievement
Below expectations: Weak, marginal work

Select N/A if the outcome is not applicable to this particular project or if you have no information by which to make an assessment.

[The system will prompt the Advisor to complete a separate assessment for each student on a team project.]

This student demonstrated the following levels of achievement for **institute-wide** MQP learning outcomes:

	Exceeds Expectations	Meets Expectations	Below Expectations	N/A
1. Applying fundamental and disciplinary concepts and methods specific to the major	O	O	O	O
2. Skill and knowledge of current technological tools and techniques relevant to the major	O	O	O	O
3a. Skill in written communication	O	O	O	O
3b. Skill in oral expression and public speaking	O	O	O	O
3c. Skill in visual communication (i.e., use of images and graphics to convey information, data, and ideas)	O	O	O	O
4. Identifying, analyzing, and solving problems creatively through sustained critical investigation	O	O	O	O
5. Finding, critically evaluating, and integrating information and ideas from multiple sources.	O	O	O	O
6. Understanding and applying ethical standards (for example, human and animal rights in research, respect for intellectual property, social and environmental responsibility, honest reporting of data, sensitivity to conflict of interest)	O	O	O	O
7. Taking responsibility for learning and project direction	O	O	O	O
8. Ability to work with others as a member of a team.	O	O	O	O
How many students were on the project team?	☐			

This student demonstrated the following levels of achievement for **program-level** MQP learning outcomes:

	Exceeds Expectations	Meets Expectations	Below Expectations	N/A
1. Program-specific outcome 1	O	O	O	O
2. Program-specific outcome 2	O	O	O	O
3. Program-specific outcome 3	O	O	O	O
4. Program-specific outcome 4	O	O	O	O
5. Program-specific outcome 5	O	O	O	O
6. Program-specific outcome 6	O	O	O	O
7. Program-specific outcome 7	O	O	O	O
8. Program-specific outcome 8	O	O	O	O
9. Program-specific outcome 9	O	O	O	O
10. Program-specific outcome 10	O	O	O	O

Written Comments (Optional)

What institute- or program-level support, for students or advisors, is most needed to help enhance student learning in MQPs?

Advisor Report on IQP Learning

By providing your assessment of student achievement of IQP learning outcomes, you are contributing to our collective responsibility to continuously assess and improve student learning in this important degree requirement. Students are asked to assess their own *progress* in the nine IQP Learning Outcomes already. The survey is designed to record the faculty advisor's assessment of each individual student's *achievement* in the same IQP Learning Outcomes.

The data will be used to focus improvement efforts in areas of need identified by faculty members who advise IQPs. These data will *not* be used to evaluate IQP advising or rank IQP advisors. We realize that there are many factors in addition to advising that contribute to learning outcomes, and even an outstanding student may not be exceed expectations in all of the learning outcomes.

A note on confidentiality: While advisors are encouraged to discuss achievement of learning outcomes with students as part of the feedback and grading process, these Advisor Report data will not be shared with your project students. The Dean of IGSD and Dean of Undergraduate Studies will report data only in summary form at the institute level, including a list of faculty who have completed the forms.

Please interpret the rating scale as follows:
Exceeds expectations: Outstanding achievement for an upper-level WPI student
Meets expectations: Acceptable achievement
Below expectations: Weak, marginal work

Select N/A if the outcome is not applicable to this particular project or if you have no information by which to make an assessment.

[The system will prompt the Advisor to complete a separate assessment for each student on a team project.]

This student demonstrated the following levels of achievement for WPI's IQP learning outcomes:

	Exceeds Expectations	Meets Expectations	Below Expectations	N/A
1. Demonstrate an understanding of the project's technical, social and humanistic context	O	O	O	O
2. Define clear, achievable goals and objectives for the project	O	O	O	O
3. Critically identify, utilize, and properly cite information sources, and integrate information from multiple sources to identify appropriate approaches to addressing the project goals.	O	O	O	O
4. Select and implement a sound methodology for solving an interdisciplinary problem	O	O	O	O
5. Analyze and synthesize results from social, ethical, humanistic, technical or other perspectives, as appropriate	O	O	O	O
6. Maintain effective working relationships within the project team and with the project advisor(s), recognizing and resolving problems that may arise	O	O	O	O
7. Demonstrate the ability to write clearly, critically and persuasively	O	O	O	O
8. Demonstrate strong oral communication skills, using appropriate, effective visual aids	O	O	O	O
9. Demonstrate an awareness of the ethical dimensions of their project work	O	O	O	O

How many students were on the project team? ☐

Written Comments (Optional)

What institute- or program-level support, for students or advisors, is most needed to help enhance student learning in IQPs?