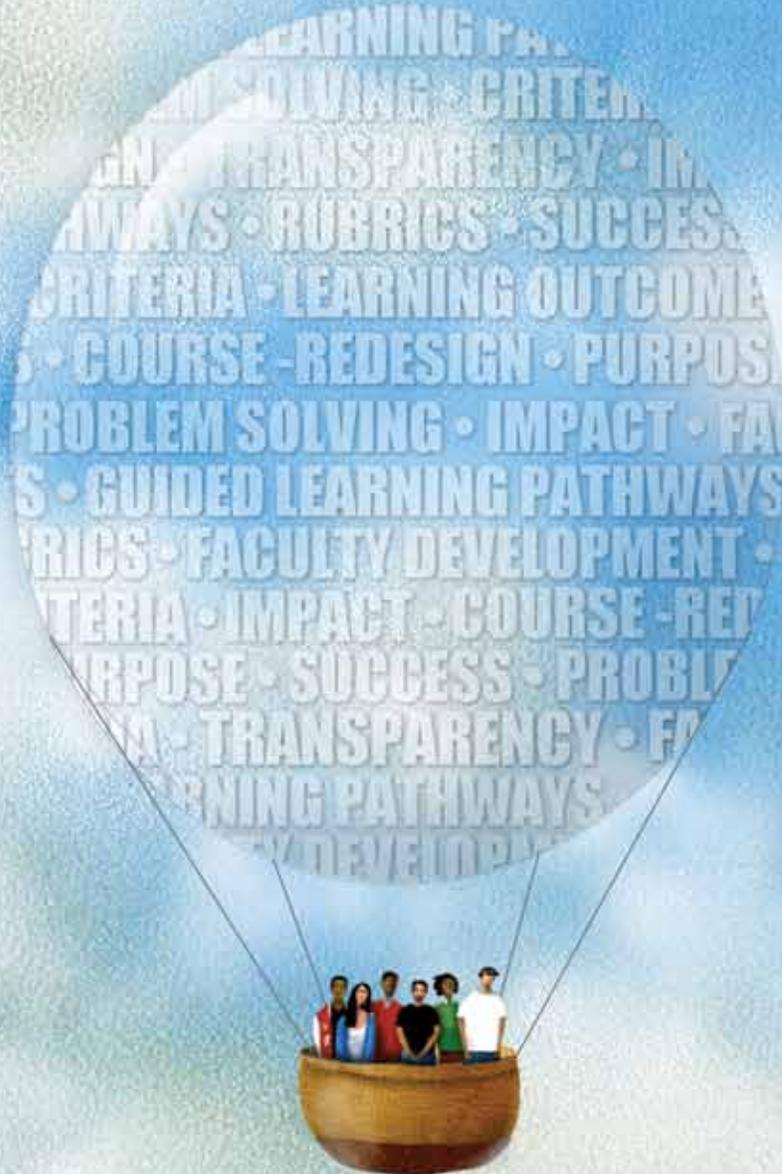


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# peerReview

EMERGING TRENDS AND KEY DEBATES IN UNDERGRADUATE EDUCATION

## Transparency and Problem-Centered Learning



A PUBLICATION OF THE ASSOCIATION OF AMERICAN COLLEGES AND UNIVERSITIES



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# Designing Purposeful Pathways for Student Achievement through Transparency and Problem-Centered Learning

► **Tia Brown McNair**, vice president for diversity, equity, and student success, AAC&U

“What are your learning outcomes for all of your students?” “Do your students know that these are your expectations?” “Do students understand the relationship between their demonstrated achievement of your learning outcomes and their preparation for future success in life and work?” Answering these common questions are essential to the design of more purposeful curricular pathways leading to student success. However, too many educators answer these questions with “I am not sure” or “no.” AAC&U’s recent national survey of chief academic officers, found that “85% of AAC&U member institutions report that they have a common set of intended learning outcomes for all undergraduate students ... [but] fewer than one in 10 (9%) indicate that almost all students understand those intended learning outcomes, and [only] 36% think that a majority of students understand them” (Hart Research Associates 2016, 3, 5). Is this lack of transparency and understanding of learning outcomes at the institutional level hindering student success efforts? How transparent are faculty about their intended learning outcomes at the classroom level?

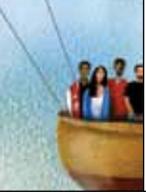
As detailed in *Assessing Underserved Students’ Engagement in High-Impact Practices* (2013), my colleague Ashley Finley and I found that students want to understand better why their participation in a particular high-impact experience is relevant to their overall success or development. Specifically, students who participated in focus groups we conducted suggested that those responsible for designing high-impact educational experiences (e.g. faculty, student affairs professionals, and administrators)

should intentionally help students “connect-the-dots” and explain exactly why engagement in these experiences should matter to their success, both in the short- and long-term. Students are more motivated to learn when they understand the end goals of their learning experience. Most importantly, they want to know how these experiences are preparing them for lifelong success. Designing purposeful and intentional pathways for student achievement requires educators to help students understand the “why” and the “how” of student learning.

In the 2006 publication, *Purposeful Pathways: Helping Students Achieve Key Learning Outcomes*, AAC&U promoted the development of intentional learners: students who are “self-aware about the reasons for their studies, adaptable in using knowledge, and able to connect seemingly disparate experiences” (Leskes and Miller 2006, 4). Building on this insight, AAC&U foregrounds helping students develop as intentional learners as a guiding principle within the

## ABOUT TG

**TG**<sup>TM</sup> Created by the Texas Legislature in 1979, TG is a public, nonprofit corporation that promotes educational access and success so that students can realize their college and career dreams. TG offers resources to help students and families plan and prepare for college, learn the basics of money management, and repay their federal student loans. In addition, TG administers Federal Family Education Loan Program (FFELP) loans made before July 1, 2010, on behalf of the US Department of Education.



family of projects that are part of the Liberal Education and America's Promise (LEAP) initiative.

In 2015, AAC&U launched the next phase of the LEAP initiative called The LEAP Challenge. The project described in this journal addresses a core component of the LEAP Challenge framework—problem-centered inquiry. AAC&U's President, Carol Schneider (2015), explained this new phase of work, this way: "The best way to prepare students to create solutions in a complex world . . . is to actively involve students in working on problem-centered inquiry from the time

gains, including both student perceived gains and their actual demonstrated achievement. Faculty planning at the individual classroom level along with the development of communities of practice with educators who teach in multiple disciplines within and across institutions were key components of the project design. Building upon existing research on the role of transparency in teaching, high-impact practices, and the use of a rubric for evaluating "problem solving," developed as part of AAC&U's Valid Assessment of Learning in Undergraduate Education (VALUE), the project aimed to advance understanding of effective practices

Community College of the City University of New York; University of Houston-Downtown; and Winston-Salem State University) were selected to participate in the project. Participating faculty were asked to select two courses and then implement transparency practices in one of the two selected courses (e.g., clearly articulated learning goals on the syllabi, additional discussions with students about the intent and purpose of the assignment, helping students understand the value of the learning goals to their future success, etc.), along with problem-centered high-impact learning assignments and/or experiences. The goal was to examine the degree to which greater transparency of intent and purpose of high-impact practices contribute to students' depth of engagement in and learning from these experiences, and to examine the relationship between problem-centered high-impact practices and students' demonstrated improvement in learning outcomes. Throughout the study, faculty utilized course electronic portfolios to capture reflections on effective strategies for improving transparency of learning outcomes, intentionality, and communication of goals.

*This project addressed not only faculty planning at the individual classroom level, but also helped develop communities of practice with educators who teach in multiple disciplines within and across institutions.*

they enter college (and, optimally, before) until they successfully complete their degrees—two-year and four-year degrees alike. The 'challenge,' then, is to prepare every college student . . . to engage complex problems and questions and to ensure that they develop facility in evidence-based inquiry, analysis, and decision making" (6).

### TRANSPARENT TEACHING PRACTICES AND UNDERSERVED STUDENT LEARNING AND SUCCESS

The project, *Transparency and Problem-Centered Learning*, funded by TG Philanthropy, sought to develop and test the impact of using more transparent teaching practices and problem-centered assignments to support students' learning and success. The project examined the degree to which more clearly articulated expectations for student learning and problem-centered instructional strategies deepened student learning

for students' development and success. Several questions guided the project design:

- To what degree does greater transparency of intent and purpose of high-impact practices contribute to underserved students' depth of engagement in and learning from these experiences?
- What are the effective strategies for improving faculty transparency of intentionality and communication of goals to underserved students as part of high-impact practices?
- How does increased student engagement through problem-centered high-impact practices result in demonstrated improvement in learning outcomes?  
Faculty teams from seven minority-serving institutions (California State University-Los Angeles; Community College of Philadelphia; Heritage University; St. Edward's University; Queensborough

### THE TRANSPARENCY IN LEARNING AND TEACHING SURVEY

Faculty engaged in training on transparent teaching practices designed by Mary-Ann Winkelmes from the Transparency in Learning and Teaching in Higher Education project at the University of Nevada, Las Vegas, and a co-principal investigator in the project. To compare the influence of transparency practices on student learning, the Transparency in Learning and Teaching Survey was administered to students in both the control and experimental classes. The Transparency in Learning and Teaching Survey asks students about their perceptions of the current and future learning benefits they are gaining. The survey generates findings about learning/teaching methods best



suiting to increasing students' learning outcomes with attention to differences based on students' ethnicity, educational background, discipline/topic of study, level of expertise and class size. Faculty teams also received training on designing problem-centered assignments and high-impact practices as well as training in the use of AAC&U's Problem Solving VALUE rubric to assess student achievement, (see the rubric on p. 6 for reference).

The project documented the value of increased transparency about learning outcomes as a positive influence on several factors that advance student success, including students' sense of belonging (see p. 31). The project generated mixed results

from the direct assessment of student work products using AAC&U's Problem Solving VALUE Rubric. As detailed in Finley's article, below, the mixed findings on student learning outcomes may be explained by such issues as faculty training on the use of the rubrics and the difficulties of executing multiple intervention strategies within one semester of classes.

Aside from the overall project findings, readers will learn much from the articles below about how to implement more intentional and effective teaching practices. All of the project participants are engaged in a continuous learning process to create purposeful pathways to help all students become intentional learners. ■

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### Investing in Success: Cost-Effective Strategies to Increase Student Success

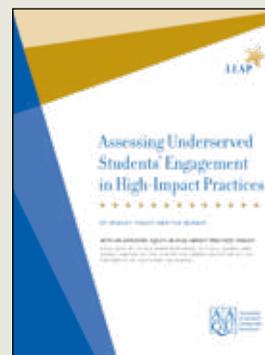
By Jane Wellman and Rima Brusi

This publication provides advice and planning tools to help educational leaders invest in high-impact practices, despite budget constraints. It presents ways to evaluate both the benefits and costs of high-impact practices, and strategies for investing in innovations. Building on research from the Access to Success initiative and the Delta Cost Project, the authors provide examples of campuses that have made wise investments developing or scaling particular practices, with positive results for student learning, graduation rates, and the bottom line.

### Assessing Underserved Students' Engagement in High-Impact Practices

By Ashley Finley and Tia McNair

This publication presents findings from a national study conducted by AAC&U researchers to investigate the impact of engagement in high-impact practices on traditionally underserved populations (defined here as first-generation, minority, transfer, and low-income students). The mixed-method analysis includes student-level data on engaged learning at thirty-eight participating institutions—from the state higher education systems in California, Oregon, and Wisconsin—drawn from the National Survey of Student Engagement (NSSE), as well as qualitative data obtained through student focus groups held at nine selected campuses. This report serves as a guide for campus-based inquiry to further our understanding of underserved student engagement with high-impact practices. The publication also includes a toolkit on assessing equity in high-impact practices developed by the Center for Urban Education at the University of Southern California. (One complimentary copy is available per person.) This report is also available for free online at [www.aacu.org/assessinghips/](http://www.aacu.org/assessinghips/).



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# Problem Solving VALUE Rubric

This is one of sixteen rubrics developed by AAC&U in its Valid Assessment of Learning in Undergraduate Education (VALUE) initiative. The VALUE rubrics were developed by teams of faculty experts across the United States building from existing campus rubrics and related documents for each learning outcome and incorporating feedback from faculty on many campuses. The rubrics articulate fundamental criteria for each learning outcome, with performance descriptors demonstrating progressively more sophisticated levels of attainment. The rubrics are intended for institutional-level use in evaluating and discussing student learning, not for grading.

The core expectations articulated in all sixteen of the VALUE rubrics can be translated into the language of individual campuses, disciplines, and even courses. The utility of the VALUE rubrics is to position learning at all undergraduate levels within a basic

CAPSTONE	
4	
<b>DEFINE PROBLEM</b>	Demonstrates the ability to construct a clear and insightful problem statement with evidence of all relevant contextual factors.
<b>IDENTIFY STRATEGIES</b>	Identifies multiple approaches for solving the problem that apply within a specific context.
<b>PROPOSE SOLUTIONS/HYPOTHESES</b>	Proposes one or more solutions/hypotheses that indicates a deep comprehension of the problem. Solutions/hypotheses are sensitive to contextual factors as well as all of the following: ethical, logical, and cultural dimensions of the problem.
<b>EVALUATE POTENTIAL SOLUTIONS</b>	Evaluation of solutions is deep and elegant (for example, contains thorough and insightful explanation) and includes, deeply and thoroughly, all of the following: considers history of problem, reviews logic/reasoning, examines feasibility of solution, and weighs impacts of solution.
<b>IMPLEMENT SOLUTION</b>	Implements the solution in a manner that addresses thoroughly and deeply multiple contextual factors of the problem.
<b>EVALUATE OUTCOMES</b>	Reviews results relative to the problem defined with thorough, specific considerations of need for further work.



framework of expectations such that evidence of learning can be shared nationally through a common dialog and understanding of student success.

### DEFINITION

Problem solving is the process of designing, evaluating, and implementing a strategy to answer an open-ended question or achieve a desired goal.

Download this and other VALUE rubrics at [www.aacu.org/value-rubrics](http://www.aacu.org/value-rubrics).

MILESTONES		BENCHMARK
3	2	1
Demonstrates the ability to construct a problem statement with evidence of most relevant contextual factors, and problem statement is adequately detailed.	Begins to demonstrate the ability to construct a problem statement with evidence of most relevant contextual factors, but problem statement is superficial.	Demonstrates a limited ability in identifying a problem statement or related contextual factors.
Identifies multiple approaches for solving the problem, only some of which apply within a specific context.	Identifies only a single approach for solving the problem that does apply within a specific context.	Identifies one or more approaches for solving the problem that do not apply within a specific context.
Proposes one or more solutions/hypotheses that indicates comprehension of the problem. Solutions/hypotheses are sensitive to contextual factors as well as one of the following: ethical, logical, or cultural dimensions of the problem.	Proposes one solution/hypothesis that is "off the shelf" rather than individually designed to address the specific contextual factors of the problem.	Proposes a solution/hypothesis that is difficult to evaluate because it is vague or only indirectly addresses the problem statement.
Evaluation of solutions is adequate (for example, contains thorough explanation) and includes the following: considers history of problem, reviews logic/reasoning, examines feasibility of solution, and weighs impacts of solution.	Evaluation of solutions is brief (for example, explanation lacks depth) and includes the following: considers history of problem, reviews logic/reasoning, examines feasibility of solution, and weighs impacts of solution.	Evaluation of solutions is superficial (for example, contains cursory, surface level explanation) and includes the following: considers history of problem, reviews logic/reasoning, examines feasibility of solution, and weighs impacts of solution.
Implements the solution in a manner that addresses multiple contextual factors of the problem in a surface manner.	Implements the solution in a manner that addresses the problem statement but ignores relevant contextual factors.	Implements the solution in a manner that does not directly address the problem statement.
Reviews results relative to the problem defined with some consideration of need for further work.	Reviews results in terms of the problem defined with little, if any, consideration of need for further work.	Reviews results superficially in terms of the problem defined with no consideration of need for further work.



## Building a Culture of Transparency

- **Kirsten Fisher**, associate professor of biology, California State University–Los Angeles
- Claudia Kouyoumdjian**, associate professor of child and family studies, California State University–Los Angeles
- Bidhan Roy**, associate professor of English, California State University–Los Angeles
- Valerie Talavera-Bustillos**, associate professor of Chicano studies, California State University–Los Angeles
- Michael Willard**, faculty director of service learning, and associate professor of liberal studies, California State University–Los Angeles

**M**ost universities respond to public demands for accountability in the form of increased attention to rates of performance, retention, and graduation. In our experience, these metrics are often administrators' or departments' main concerns when conducting self-studies for program review. However, there are other important measures of student success prior to these outcomes that are often overlooked or dismissed as classroom issues. When considered within an institutional framework of faculty development, we feel that providing faculty with opportunities to codevelop course content and approaches to teaching and learning can also contribute greatly to student engagement and success.

Toward that end, a team of California State University–Los Angeles (CSU–LA) faculty from our biology, Chicana/o studies, child development and family studies, English, and liberal studies departments recently participated in the AAC&U Transparency and Problem-Centered Learning project. In order to contribute to the implementation of a civic-learning requirement in CSU–LA's new general education (GE) curriculum, our team chose to pilot GE courses that focused on civic- or service-learning projects in local communities. The team's goal was to implement the new GE civic-learning requirement in a way that meaningfully engaged the predominantly Latino, first-generation college students who attend CSU–LA. We focused on issues and needs in local communities addressed through a service-learning project or "real-world" issues considered in a civic-learning course—where students did not spend time working in a community setting. Thus, we defined our approach as "problem-centered" and we developed assignments that allowed students to research solutions to problems in relation to the cultural wealth of community residents and

the process of problem solving outlined in the Problem Solving VALUE Rubric.

Our team project used transparency within a student-centered, community cultural wealth (Yosso 2005) framework that highlighted students' life experiences and acknowledged the cultural competencies they brought with them to their identities as college students. This community cultural wealth approach had several advantages: it provided a common platform for problem-centered learning across a variety of disciplines, and students' knowledge and ways of knowing not only informed but also shaped their instructors' teaching and learning.

### A STUDENT-CENTERED APPROACH TO PROBLEM-BASED LEARNING

The community cultural wealth (Yosso 2005) approach views students' cultural knowledge and life experience as academic assets. As a theory of education, it can be applied in pedagogical practice to help students identify what types of cultural wealth they bring with them to college from their communities. Yosso identifies the knowledge, skills, and contact of at least six forms of cultural capital that communities of color possess and nurture: aspirational, linguistic, familial, navigational, social, and resistant capital (77). Pedagogy informed by this theory is a student-centered approach that emphasizes teaching *from* and *with* students' experiences, acknowledges inequalities students may have faced, and acknowledges students' lived experiences as assets to their education.

As part of the transparency project, we viewed our courses through a community cultural wealth lens. These classes included a liberal studies class about community arts called Multicultural Arts, Los Angeles (Willard) and a biology class called Plant



Biology (Fisher), in which students explored how disciplinary methods (the arts and ethnobotany) could inform solutions to local problems. These two classes participated in service-learning projects in East Los Angeles schools. Also, students in a Chicana/o Studies class, titled *Class, Race/Ethnicity, and Gender* (Talavera-Bustillos), led workshops on college readiness; and in a child development class called *Urban Families* (Kouyoumdjian), students worked with middle school students and parents. Finally, in an English class, *Understanding Literature* (Roy), students participated in a service-learning project in which they corresponded with prison inmates about their experiences training American Staffordshire Terriers (one of the breeds commonly known as pit bulls) rescue dogs to be nonaggressive. As part of the project, students edited inmates' writings on this subject for publication.

The community cultural wealth framework made classwork more relevant to students as it challenged them to identify their strengths (or assets). One such strength was their status as college students. Embracing this status, especially with regard to their civic- and service-learning projects, allowed students to view themselves as community resources (sometimes in their own community) and as agents of change. Identification of one's own strengths was foundational to a problem-based learning approach. In their classes, faculty members found ways for students to identify forms of cultural wealth from their own lives and/or in their communities. After first providing students with a general overview of the problem-centered assignment(s) related to a civic-learning research or service-learning project, the next step was for faculty to engage students in discussions and dialogues about the forms of cultural wealth that they already possessed or that were already present in their communities.

For example, students in the child development class that worked in East Los Angeles schools participated in a community walk in which they identified assets—such as murals as physical assets—in the neighborhoods surrounding the schools. Students involved in the prison literacy project in the *Understanding Literature* class read Martin Luther King Jr.'s "Letter from a Birmingham Jail" in order to understand the concept of voice—a complex concept that can be defined as writing style, but also as a rhetorical technique intended to evoke an "affective response" from a reader. It was then possible for students to understand the importance of inmates' writings as a use of "voice" to communicate their experiences and point of view. Finally, students wrote about their own voices. Through these comparisons from literature (Martin Luther King Jr.), to inmates' writings, to their own writing, students came to understand voice as a form of cultural wealth.

By beginning with cultural wealth, the intent was to forestall assumptions about community deficits that might be inadvertently emphasized by an instructor or inferred by a student by focusing on "problems" in real-world, local communities. Beginning with conversations in which students provided examples of their own cultural competencies or a community's wealth allowed us to approach problem-based learning with an emphasis on individual and/or community *assets*. In a sense, we added a step to the problem-solving process (delineated in AAC&U's Problem Solving VALUE Rubric) by first identifying the strengths of a community and empowering students as agents uniquely positioned to recognize and translate those strengths into the language of their respective academic disciplines.

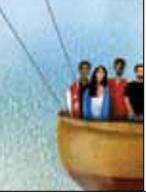
Beginning with cultural wealth assets allowed students to identify resources that might serve as solutions later in the

problem-solving process. In the liberal studies class on community arts, students proposed art projects that would incorporate and build on the social networks (social capital) within a community to address issues such as obesity, teen smoking, lack of recreational resources, lack of arts programming, and pollution. In the Plant Biology course, students assumed the role of ethnobotanists when they identified and interviewed members of their communities to discover and share plant-based treatments for a variety of health issues.

### TRANSPARENCY, PROBLEM-CENTERED LEARNING, AND COMMUNITY CULTURAL WEALTH

All of the faculty involved in this teaching and learning initiative agree that teaching with transparency methods and problem-centered learning was very productive. There is no question that intentional transparency benefitted our students; in fact, it clarified class goals and assignments for both students and faculty. While many of our assignments fell well outside the typical expectations of students entering our courses (e.g., reflective writing in a biology lab or correspondence with inmates in a literature course), students in our transparent course offerings were quick to grasp the relevance and coincidence of these assignments with the course learning outcomes and, more importantly, with their own development as citizens and life-long learners.

While the potential value for our students was clear, we did not anticipate the benefits that transparent methods held for us as teachers. Our experience using transparent assignment design—being explicit about "purpose," assignment "tasks," and "criteria for success"—pushed us to more carefully examine and more closely align in-class activities or out-of-class assignments with course learning outcomes and assessment tools.



Assignment design was one aspect of transparency, but we also discovered that transparency works best when it is incorporated into the content of a class, when transparency itself becomes the object of study, or, perhaps, when the process of assignment design is shared with students. In his Understanding Literature class, Bidhan Roy provided students with the criteria for success and then asked them to come up with an explanation of what would make a good assignment. Similarly, Claudia Kouyoumdjian explained transparency to students and checked in with them throughout the term, encouraging them to let her know if her expectations, assignments, or any aspect of the class was not clear. Both of these examples emphasize transparency as something not only shared among students but also, more importantly, *possessed* by students. Students were given ownership of transparency, and it became something they could use to be successful in their classes. This approach highlights a more integrated and student-centered use of transparency that scales up from intentional assignment design to course design.

Another aspect of transparency that we discovered as we made it more intentional: one can be too transparent. We found that a straightforward approach to problem solving could become even more content for students to learn, making it difficult to discern the process from other course content.

Problem solving doesn't always integrate with disciplinary methods in a straightforward or mechanical way. Some faculty found that when they designed problem-solving assignments in what they assumed to be a transparent way—by explicitly following the steps of the problem-solving process as outlined in the problem-solving rubric (defining a problem, identifying strategies to solve the problem, proposing solutions, evaluating potential solutions, implementing solu-

tions, and evaluating outcomes)—they encountered unexpected challenges related to their disciplinary methodologies. In the plant biology class, despite the essential structure of the scientific method as a problem-solving process, it was surprisingly complicated to align and assess the components of a scientific research project within the dimensions of the problem-solving rubric. When the research questions for these projects were formulated around civic issues, it was particularly difficult to disentangle the various dimensions of problem-solving and to explicate their connections to the civic and scientific elements of the assignment.

In classes that already included time-intensive (problem-centered) civic- and service-learning activities, teaching the problem-solving process turned into new course content that required more time in already full course schedules. These difficulties were not insurmountable, but they were unexpected and caused faculty to juggle the demands of teaching disciplinary knowledge with the demands of carrying out a problem-solving project. Such challenges (a normal part of implementing new teaching methods) were ultimately productive; they helped to clarify the distinction between “problem-centered” learning in civic- and service-learning projects and the more explicit process of problem solving in the rubric. This productive tension solidi-

fied the connections between civic/service learning and *problem-centered* learning (but possibly not always problem solving).

Our focus on civic/service problem-centered learning through the lens of community cultural wealth provided a means to engage in problem-solving without having to focus on the process in rigid or overly mechanical ways. All faculty were transparent and explicit about having students choose problems or issues that they were familiar with or were concerned about—but as noted above, only *after* they had first identified individual or community assets. These could be problems in their own communities or problems to which they had a personal connection. Faculty were intentional about making it clear to students how disciplinary methods *and* cultural wealth could be used to address relevant issues. Although there were differences among faculty in the degree to which they explicitly taught the problem-solving process itself, at the end of the term students in all classes could explain how disciplinary methods and the cultural knowledge from their own or other communities could be used to address real-world problems. Similar to the steps in the problem-solving rubric, they understood the sequential importance of beginning from a community's strengths, then identifying problems (or needs), and the value of multiple (at minimum community-based and discipline-based) solutions.

## APPROACHES TO TRANSPARENCY

This transparent approach to teaching and learning provided many lessons. We learned that transparency and problem-centered learning in and of themselves do not ensure better teaching or greater student success—though we also recognize and heartily endorse transparent assignment design as a “best” if not “proven” practice that increases student success (Winkelmes 2016). Being student-



centered about transparency and building student agency in the learning process is what we found to ensure better teaching and greater student success. With regard to transparency techniques, we learned that they are not a guaranteed solution that, simply by implementing, always yield better learning. The best results often come from using numerous techniques, not all of which are appropriate in any given class.

With regard to problem solving, we learned that the steps of the process need not always be transparent or rigidly prescribed. Whether problem-based learning is problem centered or problem solving, it may be more important for students to understand where solutions can come from (especially from their own experience and communities), and that they can use different kinds of knowledge (community-based and university-based) to effect change. These approaches to teaching worked best when they became part of a dialogue with students and when students were allowed to define transparency and problem-centered learning and use them according to interests and understandings they defined in collaboration with their instructors.

Similarly, when students were given ways to understand the cultural wealth of knowledge, skills, and social ties that exist in any community, they could frame solutions to problems in a way that was community centered—that is, based in assets from within the communities that they knew personally, that they had studied in civic learning, or where they had engaged in service learning. In this way students went beyond deficit thinking to form creative perspectives and solutions.

## IMPLICATIONS FOR IMPLEMENTATION OF GENERAL EDUCATION

Although it might not be revealed in quantitative measures of these teaching

techniques, our faculty observed the affective impact that problem-centered learning based in community cultural wealth had on students. For some students this approach helped with mastery of disciplinary knowledge. Affective dimensions of this were evident in students' expression of seeing greater value in, or larger purpose for, academic methods and disciplinary knowledge. For other students the affective dimension enhanced relevance and validation. That is, they could see how their own knowledge and experiences complemented disciplinary knowledge. Working on cultural wealth-based approaches to problem solving also allowed students to (re)examine and further develop their understanding of inequality and cultural identity.

As instructors teaching GE across many disciplines, we realized that a new kind of coherence is possible: a cross-disciplinary curriculum. Rather than focusing on shared topics or themes, this approach united different fields with the same teaching methods. Students' mastery of disciplinary content, as well as the positive affective gains they expressed, demonstrates the ways that this approach to GE can provide students with true ownership of their education. Within this model, students can experience the production of diverse knowledge in new ways, with a clear sense of personal relevance and public purpose.

Teaching these courses simultaneously and meeting frequently to talk about them allowed us to own the GE curriculum in ways that go far beyond the language of the policy document that governs the GE curriculum. We reflected upon the mission of the GE curriculum and its civic-learning outcomes as stated in the policy, but we discovered a more nuanced relationship between them. Through faculty discussions, the links between GE policy and our individual classes

that we had not previously seen became transparent. This project impressed upon us the importance of *how we implement* GE learning outcomes in our classes. That is, simply teaching civic content and assuming that outcomes are met may not be as effective as giving students a voice in content, assignment design, and even the learning outcomes. The courses we developed can substantiate this approach to a coherent curriculum for our faculty colleagues, who might view GE policy as something that simply warrants lip service in administrative documents or even course syllabi. Our experiences teaching these courses provide foundational evidence that can be expanded in the future to assess how well we are meeting the mission and outcomes of our GE policy.

Universities would do well to explore ways to make faculty and curriculum development more central to workload and RTP demands for their faculty. Faculty need opportunities to “co-develop” and try new teaching approaches, simultaneously and together. Allowing faculty the time to share their experiences while they are implementing new approaches is vital. Universities would do well to do this—indeed, they would probably thrive. And their public purpose would become more explicit for the stakeholders who can perhaps advocate for them better than any other: their students. ■

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## Increasing Underserved Student Success through Faculty Intentionality in Problem-Centered Learning

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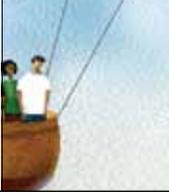
Community College of Philadelphia, a minority-serving institution, is the largest public college or university in Philadelphia. We are an open-admission institution with an enrollment of more than 34,000 students, which includes approximately 76 percent students of color and 53 percent students who are over twenty-five years of age. We offer seventy associate's degree and certificate programs in various fields, including business, humanities, allied health, liberal arts, science, technology, and social and behavioral sciences. Our main campus is located near downtown Philadelphia, and our three regional centers serve other areas of the city.

Our college chose to participate in the Association of American Colleges and University (AAC&U) Advancing Underserved Student Success through Faculty Intentionality in Problem-Centered Learning project because it aligned well with our strategic goals and interest in implementing high-impact practices, particularly those that have shown promise for underserved students. Like many US cities, Philadelphia wrestles with grave fiscal and social challenges. According to a 2014 report by the *Philadelphia Inquirer*, Philadelphia ranks first among the ten largest American cities for its percentage of residents living in deep poverty as defined by the number of residents with incomes lower than 50 percent of the federal poverty line. Not surprisingly, the city's public school system has been chronically underfunded, and many students graduate high school and enter

college not fully prepared to succeed in college-level work. In line with national trends, approximately 70 percent of our incoming students need to complete at least one developmental course in writing, reading, or math before they are eligible to take college-level courses, and 84 percent of our full-time students and 67 percent of all students receive some type of financial aid.

We have much to gain from adopting strategies that enhance our students' learning experiences and improve their learning outcomes and chances of success. Initially, our team was focused primarily on learning about and implementing the teaching strategies that formed the basis for the project, namely, faculty intentionality and transparency and problem-centered learning. However, the connections between those practices and the college's efforts with regard to general education and assessment soon became evident. In addition to addressing our goals related to students' learning outcomes, the project offered an opportunity for valuable professional development experiences for faculty, including

1. Acquiring more specific information about research and applications with high-impact practices and their effectiveness in improving student persistence and learning, especially for diverse student populations.
2. Interacting with colleagues across disciplines at our college and across the country to share experiences and ideas for engaging students and helping boost their success in college.



3. Expanding our repertoire of teaching strategies and materials to motivate, empower, and assist students to develop and improve learning strategies and academic skills that carry over to future courses.

### **INTENTIONAL TRANSPARENCY AND PROBLEM-CENTERED LEARNING**

Our project team included four faculty members who taught English, humanities, and introductory environmental science courses. At the outset of this project, some team members thought that their assignments were already quite transparent. Upon further examination, however, in light of the materials provided at the first AAC&U workshop in Baltimore, it became evident that students could benefit from having even more explicit, transparent instructions and expectations.

Our first step was selecting assignments to use for our pre- and post-analysis. All of our team members chose to adapt assignments they had used in previous semesters that lent themselves to a problem-centered approach. In many cases, we had found that students' responses in past semesters were not as reflective and substantive as we would have liked. We hoped that by providing more explicit direction through transparency in the assignments for the designated experimental sections, the students' responses would be more robust.

While re-designing our assignments, we found it helpful to refer to the Problem Solving VALUE Rubric. The training we received in transparent assignment design during the project sessions, as well as the opportunity to work with AAC&U's project coordinators and each other, giving and receiving feedback on our assignments, enabled us to integrate significant transparency revisions into our assignments and courses.

In reflecting on the process of revising assignments, one of our team members commented:

Although I had always stated the purpose and learning outcomes of assignments, in revising the assignments with transparency in mind, I made those sections much clearer. I added headings for the purpose, tasks, and criteria for assessment categories and provided the experimental group more detailed written and oral instructions. I spent time in class with the experimental group going over the instructions and providing examples of responses, both satisfactory and unsatisfactory.

We distributed the Problem Solving VALUE Rubric to students and provided our students annotated examples of assignment responses. In addition, for the experimental groups, we devoted time in class (we provided more written instructions for online classes) to clarify the steps in the problem-centered approach. In some cases, we even labeled the parts of our transparent assignments with language from the rubric to clarify to students how the rubric corresponded to the different steps of our assignments.

### **INTEGRATING STUDENTS' LEARNED EXPERIENCES IN PROBLEM-CENTERED ASSIGNMENTS**

Our team used a variety of strategies to prompt students to reflect on and integrate their personal experiences with course content as they tackled problem-centered assignments. These strategies included using service-learning projects integrated with a research paper, conducting field trips to a local farm and farm stand which connected to reading and writing assignments about the food system, and having students answer survey questions online to calculate their individual ecological footprints and then work in teams to develop potential solutions to the problems of overconsumption and exploitation of natural resources.

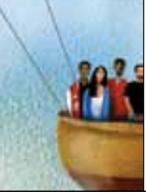
We found that students responded well to the integration of the personal with the

academic, and these assignments helped students to achieve the learning outcomes of our respective courses while at the same time gaining more insight about themselves and their roles as responsible citizens. Using problem-centered and experiential learning assignments helped our students to extend their learning beyond the goals of any one course and to begin to develop some of the other broader competencies that our college has chosen as core competencies for general education, especially effective communication, critical thinking, and responsible citizenship.

### **CHALLENGES AND SOLUTIONS**

The biggest challenges for us, collectively, were in distinguishing between the elements of transparency and problem-centered learning and in maintaining the integrity of the experimental and control groups. Once we realized the benefits of having more explicit (transparent) instructions and assignments, it was difficult to "withhold" those elements from the control group, and we were concerned that we would "taint" the control group with too much transparency. Since we were modifying assignments in both control and experimental classes to include problem-centered learning, it was hard to separate problem-centered learning and transparency and avoid adding transparency for the control class.

Further, as the semester progressed, because of the usual time constraints and pressures to cover content, it became increasingly difficult to distinguish between our approaches in the control and experimental classes. During in-person class sessions, we found that we did not always consciously differentiate between the two groups. For example, if we met the experimental group before the control group on the same day and used a teaching technique, question, or discussion prompt that worked well in



the earlier experimental group, it was natural to use it with the non-intervention control group as well. In addition, because some of the techniques used with the experimental group were quite obviously effective, it felt unjust to withhold them from the control group. We noted that to some extent, it was easier to maintain distinctions in online instruction than in in-person classes because written instructions and comments could more easily be kept separate.

Comparing experiences and sharing feedback among team members and with AAC&U project staff helped us overcome the challenges we faced. Generally, we noticed that the modifications to the transparency of our written assignments in the experimental group did correlate with an increased perception of transparency by students in the experimental classes. So, even though maintaining control and experimental groups in the dynamic environment of a classroom over the course of a semester was difficult, we did notice that the changes we made for our experimental courses had a positive impact. This was evident, not only in much of the preliminary data from the transparency survey, but also in the depth of questions students asked while working on the assignments and in the level at which they attempted to respond.

Initially, it was also challenging to incorporate the use of the Problem Solving VALUE Rubric while simultaneously working to increase transparency in our assignments. We used the rubric to help guide the construction of the assignments, but we wanted to avoid making the assignments too formulaic, and we were reluctant to provide too much guidance to students, as we wanted to see how they approached the problems themselves. We had some trouble differentiating among elements in the rubric, especially the elements involving strategies and implementation and evaluation of proposed

strategies. In scoring the students' work at the end of the semester, it was obvious that students also had difficulty with those distinctions. We might consider slight modifications to the rubric before employing it more widely.

### FUTURE DIRECTIONS

As a result of our exposure to the research as presented in the project meetings and our own experiences with our classes, our team members are convinced of the benefits of transparent and problem-centered learning assignments and motivated to expand our use of them. Also, the Institute on General Education and Assessment provided us opportunities to interact with scores of colleagues from colleges and universities around the country and collect ideas and information on a wide range of materials, innovations, and best practices.

We are eager to continue improving our own course materials and to share what we have learned with our colleagues. Specifically, we have begun to revise all of our assignments to include transparency and will design future assignments integrating even more transparency practices and problem-centered learning.

We also identified several promising possibilities for connecting high-impact practices to general education and assessment. We hope to engage in further discussion as a college community about these promising possibilities, such as increased focus on service and experiential learning, increased transparency throughout the curriculum, and the potential incorporation of capstone courses and e-portfolios.

Shortly after returning from the institute, we met with our newly inaugurated college president to share our experiences and offer ideas about future directions for incorporating high-impact practices as the college examines its general education and assessment efforts.

We are now poised to share findings and conclusions from the project with others on our campus through professional development sessions and workshops in our faculty center for teaching and learning, the body that provides a forum for the identification, study, and discussion of important educational issues on our campus.

Based on our experiences, we have identified three key elements to help faculty learn about transparency and begin to create more transparent courses and assignments. Those three elements are

1. Offering professional development sessions about the benefits of transparency and how to engage in transparent teaching and learning practices;
2. Providing annotated examples and templates of transparent and problem-centered learning assignments for different subjects and course levels (developmental, introductory/first year, advanced);
3. Establishing mechanisms for faculty to share and collaborate with colleagues and, when possible, the AAC&U staff while creating and revising transparent assignments.

We are hopeful that the lessons learned about transparency and problem-centered learning will prove valuable as Community College of Philadelphia moves forward with major curricular initiatives, including the review and revamping of our institution's general education and assessment and the introduction of guided pathways. ■

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# Advancing Student Success through Faculty Intentionality in Problem-Centered Learning

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Queensborough Community College of the City University of New York (Queensborough) is a minority-serving institution with over 16,000 students who originate from approximately 140 countries and more than a third of whom speak a language other than English. A majority of our students (more than 70 percent) transfer to senior colleges or universities, and others obtain the necessary skills for career advancement. As part of the Queensborough Academies plan for student success, the college offers seven high-impact practices (HIPs): writing-intensive courses, academic service-learning, learning communities, collaborative assignments and projects, common intellectual experiences, undergraduate research, and global and diversity learning—in each of its five academies: Science, Technology, Engineering and Math (STEM); Liberal Arts; Visual and Performing Arts; Health-Related Sciences; and Business.

Our Advancing Student Success through Faculty Intentionality in Problem-Centered Learning project team is composed of faculty who regularly employ HIPs and are experienced in the assessment of student learning. Each team member conducts research related to teaching and learning and reflects on their own teaching practice to enhance student success. We are scholars within our disciplines of mathematics, biology, sociology, English, speech and communication, and educational psychology. The members of the project team actively serve on various college committees and initiatives, including serving on the college's

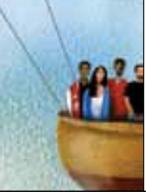
Senate and General Education Task Force.

When the AAC&U project call for proposals was announced, Queensborough immediately recognized this as a valuable opportunity for our college to (1) support our faculty professional development; (2) support our general education reform efforts; (3) learn effective ways to assess HIPs; and (4) enable our faculty to participate in national research of transparent problem-centered learning for the benefit of student success.

Participation in this project is well aligned with our college's strategic vision to increase student equity and access to quality HIPs. In support of these goals, this project benefits our students and can serve as a model for other colleges and universities. Queensborough's participation in this project enabled our faculty to collaborate with faculty from other educational institutions and to assess and enhance student learning for underserved students. In the following sections we describe our experiences with the project including the most critical dimensions and essential elements, the integration process, student responses, challenges, and future opportunities.

## CRITICAL DIMENSIONS OF TRANSPARENCY AND ESSENTIAL ELEMENTS IN IMPLEMENTATION

Through this project, we determined the following three critical dimensions that make courses and assignments more transparent for students



(1) set clear goals and expectations, (2) select transparency strategies to be implemented at optimal times, and (3) provide students with specific criteria for which they will be evaluated. Implementing these critical dimensions in courses and assignments provides a framework that encourages students to be thoroughly engaged in their coursework. For this project, students were asked to clearly define a problem providing evidence from different contextual factors; find multiple approaches in trying to solve the problem; and justify and evaluate their solutions using logical reasoning and examples from their life, culture, or society.

At different points throughout the semester, we employed the following eight transparency strategies to help ensure that our students could clearly understand how to successfully complete their assignments:

1. Engage in extensive in-class discussions on assignment learning goals, requirements, and expectations;
2. Scaffold the assignments;
3. Directly link assignments with the identified course learning outcomes;
4. Word assignments clearly and provide a rationale for choosing the assignment;
5. Allow students to explore the topic and voice their opinions;
6. Assess whether the students and the instructor share the same notion of transparency and adjust as needed;
7. Connect assignments to real-world applications and provide opportunities for reflection; and
8. Articulate clear guidelines for evaluation.

Encouraging students to frequently reflect on the significance and relevance of the work in relation to the real world was an integral component of identifying the purpose of the assignment. We added emphasis on “real-world” reasons for knowing the material and making direct connections between the assignments and the theoretical concepts students had to learn.

We scaffolded the assignments to provide the optimal amount of support students

needed, and then we gradually removed those scaffolds as our students became more proficient in their problem-solving abilities. We also used the Problem Solving VALUE Rubric as a model to organize the different sections of the assignments. Simultaneously, we made sure that, at the content level, the assignments had the same parameters and language of the highest levels of the rubric.

Transparency strategies were used in order to help students understand the purpose of the task and meet the requirements stated in the assignments and in the rubric. We asked ourselves how much information should we provide our students, and at what point in the class? This was to ensure that we were providing the students with the optimal amount of information to enhance their learning. Students were presented with and encouraged to use assessment tools and sample essays, such as an annotated version of essay samples, together with outcomes assessment sheets, which delineate the criteria for assessment of the students’ work. We engaged students in class discussions on the assignments’ requirements and expectations, explaining the content and the goals of the assignments. Further, we made use of technology platforms, such as Blackboard’s discussion board, where students could retrieve detailed assignment outlines and instructions and discuss their questions online.

### **INTEGRATING STUDENTS’ LEARNED EXPERIENCES INTO THE DESIGN OF A PROBLEM-BASED ASSIGNMENT**

At Queensborough, participating faculty integrated students’ learned experiences into the design of a problem-based assignment in the following three ways: (1) grounding the assignment in students’ experiences, (2) demonstrating the utility of problem-based assignments, and (3) regularly asking students to revisit their experiences. The significance of each of these ways suited a specific moment in the unfolding of the problem-based assignment; participating faculty often drew on all three in the course of the semester.

The process of grounding the assignment in students’ experiences included selecting a problem that was of inherent interest to students. For example, one faculty member related certain mathematics concepts to transfer data in higher education (which is of use to Queensborough students tasked with the “problem” of moving beyond an associate’s degree). Another faculty member chose to *demonstrate* the problem’s significance to her students. Describing how she used a fifty-question pre-assessment survey to reveal the problem’s relevance, she stated, “this survey sparked a lot of interest and questions from the students as the survey inquiries were directly related to everyday living.” Still other faculty selected problems that were reflective of the diverse contexts in which Queensborough’s students are known to live and learn, focusing on “problems” related to culture, language, and/or ethnicity.

Demonstrating the utility of the course material to students’ future learning (and lived) experiences was the second approach. For instance, one faculty member designed her entire sociology course around students’ professional aspirations, demonstrating how the unique perspective and methods of the discipline can help students both predict and better understand society’s career trends and needs. Another faculty member showed students how the statistical techniques that guided their multicriteria decision making in matters of college transfer could also help them evaluate FICO scores and have a better understanding of other matters of post-college financial planning.

A third way was to ask students to revisit their learning experiences on a regular basis, as the project—and the semester—unfolded. For example, the faculty members who focused on ethnic, linguistic, and cultural diversity asked students to reflect on issues of miscommunication in light of each newly learned concept and theory. While this reexamination added nuance to students’ understanding of the “problem” or issue at hand, it also demonstrated the relevance



and importance of each of the concepts and theories learned.

### HOW STUDENTS RESPONDED

As demonstrated, one of the key features of Queensborough's implementation of this project was the integration of the students' personal and academic aspects of their life. An outcome of this integration was that students responded with greater and deeper engagement towards the academic subjects they studied. For example, in a biology class, the students were engaged by the thematic pre-survey which aimed to determine the students' prior knowledge on the course topic. Because the survey included questions related to everyday living, the students related to these questions, which prompted spirited in-class discussions. The lively conversations which students conducted in the experimental class demonstrated that they were able to understand the academic concepts and their practical applicability. During the students' PowerPoint presentations on various global issues, they discussed their personal stances and supported their positions with findings from the literature.

Across the disciplines in which our problem-based courses were taught, students demonstrated enthusiasm for the practical application of the concepts and, in some cases, made surprising discoveries and important professional progress. In a communications class, students became aware that conflicts do not simply emerge from personal issues but are the product of the speakers' cultures. One student analyzed the differences in hosting a dinner in China and in the United States. In the Chinese collectivistic culture, when guests are asked whether they would like more food, they are expected to respond negatively. The host ignores the negative answer and proceeds to place more food on the plates. Whereas, in the United States, a negative response in the same situation is generally perceived at face value and the guests would not be given more food. Before this, students completed the transparent problem-

solving assignment, she explained that the differences are based on personal preferences. However, after completing the assignment, this student was able to conclude that the differences are cultural rather than personal.

Students' personal insights were also noticed in an introduction to literature course. One student continually emphasized that the assignment inspired him to research his cultural heritage, with which he was only vaguely familiar at the beginning of the semester, on an even deeper level. In addition, he claimed that as a result of both assignments, he planned to visit the country of his ancestors and to continue his investigation not only through reading about the country but also through experiencing its environment personally and perhaps by reestablishing lost family connections.

While students' positive responses are always a welcome ingredient in the classroom, in some cases faculty needed to seek ways to motivate students to examine the course concepts rather than only focusing on their practical application. In a statistics course, several students showed less interest in the core course concepts of weighted mean and relative risk and were significantly more attentive to the concepts' practical applicability, such as FICO score calculations and multiple-criteria decision making related to deciding to which school they might transfer.

Students demonstrated much enthusiasm for the practical application of the academic concepts in a sociology course. The course focused on concepts such as culture, socialization, identity, and structural inequality, as well as on fieldwork and other research methods. Students were most interested in the ways in which these concepts connected to their career pursuits. Two students were even able to find internships through the problem-based assignments.

### MOST PREVALENT CHALLENGES AND OPPORTUNITIES FOR STUDENT SUCCESS

The problem-solving rubric and the use of transparency methods provides a useful

framework for faculty and students in operationalizing transparency and problem-based assignment constructs while still allowing for variability in choice and interpretation. The rubric articulates the process of problem-solving well with the understanding that what qualifies as a "problem" varies among disciplines. More so, assignments that would normally be accepted as problem-centered may not incorporate some dimensions of the problem-solving process. Given the range of disciplines involved and the diversity of our students, it became apparent that we should remain flexible in the process of implementing transparent, problem-centered assignments.

There were several factors that we needed to consider and adjust for when designing effective problem-centered assignments. Our introductory general education courses serve a diverse student population, and we sought to develop assignments that met the academic level of the course but which also considered students' preparation level. Integrating problem solving can present a challenge to introductory courses where knowledge acquisition and comprehension are typically the primary goals. At the same time, it provided an opportunity to increase student engagement and improve academic performance in these courses. It helped that we sought assignments with real-world problems that would seem relevant to the students' lives. This led to students being more accepting of the problem-solver role.

We recognize the challenge of engaging students in their coursework to help ensure their academic success. This project has provided a meaningful experience for our students and for our project team. There is great potential for more faculty to participate in professional development activities in designing transparent, problem-centered assignments, implementing these approaches in their classes, and enhancing learning for our students in a most significant way. ■



# Transforming GE Courses from Predictive Contexts to Engage Unstructured Twenty-First-Century Problems

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For eighteen months, five faculty at Heritage University (HU) have participated in a project that features problem-centered learning and transparent assignment design with 1,172 graduate and undergraduate students, colleagues, and administrators in the Yakima Valley, Toppenish, Washington.

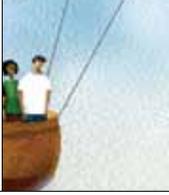
Partnering with the AAC&U Transparency and Problem-Centered Learning project, our team's purpose was to review, revise, and realign five courses (introductory biology, psychology, statistics, English, and freshman experience) within the general education (GE) curriculum with regard to problem-centered assignment design to optimize delivery and assessment of key assignments for transparency in evaluative measures and rubric design. As participants, we hoped to achieve relevance for each student and gain clarity with respect to expectations and assessment; on the global scale, we hoped to contribute to the university's retention goals.

As a first step, key assignments were revised for the "transparency course" and preserved for the "control course." There were two dimensions of change for the transparency course: expectations and assessment indicators of the class were expressed more transparently and assignments were designed to be problem-centered. Interdepartmental collaboration was invaluable for the revision process, as only colleagues from another department could achieve the objectivity and distance that reflects a student's experience with any given subject. Points of language and terminology, expected outcomes, specificity, connected

texts, format, exceptions, and critical perspectives were all pushed and challenged through group-generated affirmation and constructive conversation. A critical statement of one colleague about her work led her to admit, "I found that students were not prepared in class to have a very meaningful discussion of their work, and the assignment was often interpreted by students as 'busy work.' I'm hoping this new model will help students make more meaningful connections and be more thoughtful about their research."

Another shared, "I feel this assessment is a shotgun approach at measuring a small set of knowledge-based skills with little cognitive demand required of students, and lacks relevancy to the students' lives. I attempted to create ownership of the data set starting at the individual level and continued to broaden the scope of the data to a national level. Keeping in mind that the students need to feel some level of connectedness with the subject matter as the assignments develop, I added comprehension and analysis tasks to increase the cognitive demand."

It was only after wrestling to understand, as a team, what transparency would look like for our students that our group was able to plan the way forward. We chose several themes that are reflected in the comments above: meaningful application, relevance, and ownership. We recognized that simple, logistical facts such as how to turn in an assignment and when are often overlooked by instructors. With eyes to re-see, as students, the expectations and assessment indicators



glared with inconsistencies and ambiguity, verbose language, conflicting due dates, the necessity for inference, and impracticality.

The revised assignments carried a fresh air; nearly each faculty member was eager to present the transparent assignment, so much so that there were several conversations of ethics: was it ethical to continue with the muddled and ambiguous old assignment for a control group? For example, a department-wide summary response essay in English was notorious for student oversight. They tended *either* to summarize *or* respond, but not both, as the assignment required. The transparent revision was a scaffolded assignment divided into three parts to be submitted independently. The result was not an overwhelming success; students largely disregarded the initial summary and response portions instead opting to complete the final summary/response essay at the last minute. Grades did not improve, but the experiment did reveal new student biases and habits that could be improved.

The experiment was a success—at times it swapped inefficiency for inefficiency, yet it opened a conversation between faculty that resulted in new perspective: clarity comes with intentionality in assignment design, format, and content that reflects the world our students experience. It is the twenty-first-century way to re-see; text and ideas are as fluid as the flick of a button: Delete. Copy. Paste. Transparency is an active process that begins and ends with collaboration.

As an evaluative measure, the project led our team to partner with Mary-Ann Winkelmes at the University of Nevada, Las Vegas and the Transparency in Teaching and Learning in Higher Education project to generate anonymous student survey results on the degree of transparency noted in both intervention and control sections of each course. The survey verified key concerns that we had wrestled with repeatedly in designing courses with transparency at the center: Where does transparency

stop? Is there a balance between concision and over-transparency? How do student learning styles and the variables of culture, class size, gender, and age impact the degree of transparency? Is the medium of delivery a factor—online versus in-person courses, pen and paper versus electronic devices? The survey results showed that the majority of student populations—first-generation and underserved—better understood the courses when the concepts were woven into the fabric of belongingness and community in a classroom. Greater hospitality for each individual correlated with both a student's

*The survey results showed that the majority of student populations—first-generation and underserved—better understood the courses when the concepts were woven into the fabric of belongingness and community in a classroom.*

confidence to succeed in school and his/her recognition of when to seek help or clarification. Creating a sense of belongingness and teaching student-centered lessons are highlights of our community and part of the educational value offered at Heritage.

Students were less likely to perceive courses as transparent overall. Survey questions such as, “In this course, I knew the purpose of each assignment,” “My instructor identified a certain learning goal for each assignment,” and “In this course, I knew the steps to complete my assignments” were answered with less success, indicating a host of potential improvements with regard to language, explicit university-wide learning goals that are consistent between GE courses, and a more seamless integration of GE skills into major courses to follow through with real-world application. The positive endnote for us as a team was the favorable responses to the question, “How much did the instructor value you as a stu-

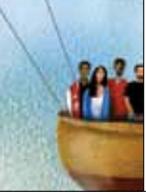
dent”—this was a direct indication that we will not ever be complacent as a faculty with regard to opportunities for student growth and learning. Transparency is a concept that we have newly integrated into the vernacular of professional development and best practices at Heritage University.

Problem-centered learning, dimension two of the project, has long been a central tenet of AAC&U. AAC&U president, Carol Geary Schneider, delivered an address at Wagner College's Innovation Celebration in 2014 citing the prediction of economists from Harvard and MIT that the demand in

future career fields will increase for career-ready college graduates that are skilled in working “with what economists are calling, ‘unstructured problems,’ open-ended problems, problems for which we don't yet know the answer.” The Problem Solving VALUE Rubric engages the critical thinking dimensions of coursework, promoting innovative strategies and the application of a single or multiple solutions in preparation for non-rule-based career tasks.

In aligning with this purpose, Jeffrey Thompson, professor of psychology, worked closely with AAC&U's project leader Ashley Finley to orchestrate a problem-centered assignment for his Psychology 101 course that played on the dimension of community problems and local engagement to divest psychology from an abstract, predictive context and move into the unstructured realities of the real world.

Finley's feedback on the initial draft assignment constructively aimed at this purpose: “Is



there a way to specify ‘community’ to connect more closely with students’ lives? Perhaps give an example of a local problem or issue or news-based issue that might be particularly relevant to the age of your students?”

The revised assignment, Thompson found, resulted in projects that altered the students’ expectations and predictions about community problems, prompting them toward feasible solutions, as characterized by the following students’ response: “I believed that marijuana would affect health but I wasn’t sure how. I believed that marijuana wasn’t just beneficial without having some consequences.”

In a thoughtful summation, she stressed the importance of spreading this information: “I have two brothers and several friends that smoke marijuana. And when I tell them to stop smoking, that it’s bad for them, they always say that marijuana doesn’t affect their health.” She concluded with a conviction to share her learned knowledge, “Now I know how marijuana can affect people.” Moving from problem to solution was seamless with the guided integration of the Problem Solving VALUE Rubric as Finley suggested, “You might want to adapt the form to more clearly highlight dimensions of the rubric.” The rubric became a key in moving students toward solutions without prescribing a hypothetical outcome: the problem remained open ended, and the solution creative.

Statistics was also a unique course to tailor to the problem-solving rubric as it lends itself to problems overtly. Our thoughtful statistics instructor, Tamera Wiley, latched innovatively to the attribute of problem-centered education that centrally places students’ real-world contexts as a premium learning device. In place of abstract data, students were urged to bring electric bills for analysis and given thought-provoking questions to address for the assignment extension, such as this one:

“Assume the federal government wanted

to adjust your electric rates and charge you according to the region in which you live? How would the new rates impact your monthly bill? How would that impact your annual expenses? What actions could you take to try to prevent price adjustment from occurring?”

Such questions emphasized problem-centered learning in a context that grounded understanding and not merely knowledge of abstract, computable data, effectively solving the question of “*why* is this important” for students.

To evaluate the experimental results and successes of the problem-centered assignment component, the team members worked both individually and as a collaborative entity to calibrate results on the AAC&U Problem Solving VALUE Rubric. One of the most useful bits of knowledge gleaned through this process was shared early on—that the VALUE rubrics have a front page. Complete with a defined purpose, a glossary with examples, and framing language, these context pieces became the governing feature of six intense summer weeks of scoring. While frustrating at times, the language led to discussion and a better collective understanding that our students are challenged when they are tasked with devising original and creative solutions. In effect, the LEAP Challenge’s emphasis on innovative thought for the next century is on target because across the board, from statistics courses to the university core, students at Heritage are only mildly prepared for twenty-first-century tasks, the “unstructured contexts” that the economists cited in Schneider’s speech foreshadow as necessary.

Both the transparency and the problem-centered pieces of the project came together in our unofficial analysis of the patterns revealed from the VALUE rubric scoring sessions: assignments without the problem-based component spelled out in transparent terms with clear directions; without evaluation procedures and guides, such as

rubrics or model assignments; and without overt problem structures with data sets or experimental guidelines, tended to be as low-scoring on the problem-solving rubrics as assignments without any clear problem-based objective at all.

The team has found that intentionality with assignment design is directly tied to student success regardless of the applicability or relevance of problem-based assignments, and therefore, as a group we remain in agreement that while each course will ideally integrate a problem-based assignment in the future, overall student success with meeting assignment criteria is accomplished through transparency.

Our inherent sense, collectively, is that thinking in a way that generates original information is somewhat incompatible within a learning system that still measures rule-based tasks. Ideally, the work environment would be replicated in the classroom, but writing, reading, computing, analyzing, and building are taught within guidelines, structures, and parameters that routinize the tasks for classroom reliability, instructor sanity, and systematized assessment targets. If this were truly twenty-first-century learning, the institution in all of its grandeur would embrace the fluidity of a conducive culture that molds to each student, personalizing education to the degree that we have come full circle and the apprentice learns at the knee of the carpenter, not in a classroom.

Therefore we recognize, as an institution, the necessity of offering organic, context-rich environments that will begin, for us, at the general education level. The revision of GE course outcomes for transparency and problem-centered learning will align knowledge and skill with major capstone courses to scaffold understanding. Enveloped by a sense of purpose that will remain with them long after they leave the classroom, students will learn that they are capable of a solution and will set their minds to find it in the mix of a liberal education curriculum. ■



# The (Ongoing) Plan for Student Success

► **Carthene R. Bazemore-Walker**, chief research officer, director of science initiatives, and associate professor of chemistry, Winston-Salem State University

Winston-Salem State University (WSSU) is a historically black constituent institution of the University of North Carolina with an enrollment of approximately 5,200. The majority of our students come from groups traditionally underserved by higher education, which includes underrepresented minorities (76 percent) and those eligible for need-based institutional financial aid (70 percent). Over the past six years, WSSU has been engaged in an intense period of reflection, redesign, and critique. With our previous strategic plan, *Achieving Academic Distinction: The Plan for Student Success 2010–2015* (The Plan), we accomplished an ambitious overhaul of several critical institutional areas, most notably our general education (GE) program and our student advising and academic support division. WSSU students now experience a more coherent curriculum—one that exposes them to diverse disciplines while simultaneously cultivating specific twenty-first-century skills—infused with purposeful educational guidance and assistance. This reimagined student learning experience has resulted in increased rates of student retention, persistence, and graduation at WSSU.

As part of The Plan, we also developed a robust program for faculty development and scholarship. This has led to the introduction of more active learning techniques and high-impact practices in some of our courses. Yet, we recognize that there is additional work to be done. A defined priority of our strategic plan was improving student learning through the use of novel pedagogical approaches that engage our students at developmentally appropriate levels. Student mastery of specific learning outcomes is to be verified through frequent and authentic assessment. However, as on other campuses, more work needs to be done in cultivating a compre-

hensive learning culture that embraces the idea that new learning approaches can be exceedingly beneficial for students, especially those similar to the ones we serve.

## WSSU'S PRIOR WORK WITH AAC&U

Since the work of AAC&U is highly respected on our campus, we have been able to advance several major institutional priorities by leveraging our involvement in their projects and initiatives. For example, six of our seven GE student learning outcomes (SLOs) overlap with the LEAP Essential Learning Outcomes—critical thinking, critical reading,

*WSSU students now experience a more coherent curriculum—one that exposes them to diverse disciplines while simultaneously cultivating specific twenty-first-century skills—infused with purposeful educational guidance and assistance.*

written communication, oral communication, quantitative literacy, and information literacy. Corresponding VALUE rubrics were adopted by our faculty with minimal revision. Because of our efforts and GE reform success, we were asked to author a case study for dissemination by AAC&U and we were chosen to participate in the Transparency and Problem-Centered Learning project. We are also involved in the PKAL PCFF2 (Preparing Critical Faculty for the Future 2) project. PCFF2 goals—cultivating STEM teaching and learning innovations, enhancing student success, and bolstering the leadership capabilities of African American STEM faculty—are all in line with our strategic priority to advance our STEM programs. Therefore, we were pleased to participate in the AAC&U Transparency project and we began the work to more

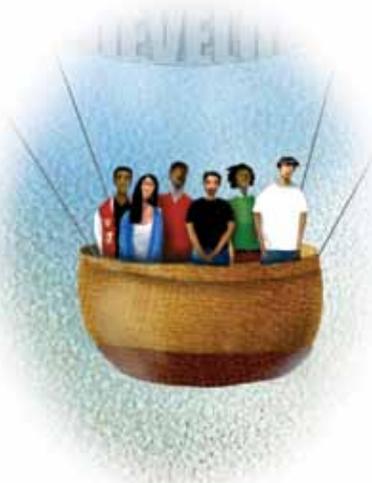


fully understand how high-impact, problem-centered, and transparent teaching practices are beneficial for underserved minority students.

### THE WSSU TEAM AND THEIR MOTIVATIONS

We received notification of our inclusion in the project in September 2014 and a campus team was formed shortly thereafter, consisting of faculty from three departments: biological sciences (Louise Allen, Manju Bhat, and Jeff Overholt); chemistry (Carthene Bazemore-Walker, team leader); and English (Leonard Muaka). The science faculty had previously worked together on pedagogical projects and welcomed the inclusion of a new member who could bring a needed contrast in perspective. Each of us would begin teaching two sections of our redesigned courses.

All of us volunteered because we desired to advance ourselves professionally in accordance with our university strategic plan. We understand that faculty have an individual responsibility to become better, more effective instructors *and* a collective obligation to advance the art and craft of teaching. The experimental design of the project was a particular draw for us because it would tie our professional growth to student performance and student perceptions of our



efforts. The project also had elements that could foster intra- and inter-institutional collaboration and provide multiple opportunities for self-reflection.

Furthermore, the project promised pedagogical training and support for us as we attempted this initial experiment. We desired to gain competency in the specific pedagogical approaches and assessment skills that were the focus of the project. We thought that the knowledge acquired in these areas would benefit us, our students, and our institution. Ideally, we wanted to improve our abilities to deliver content in a way that is relevant and applicable to our students' lives, design and assess meaningful and authentic coursework, and demystify the educational process so that our students become better learners in our courses and *after* our courses. These potential outcomes fit nicely within the context and goals of The Plan.

### MAKING COURSE ASSIGNMENTS MORE TRANSPARENT AND PROBLEM-CENTERED

We struggled with the idea of redesigning our courses. The challenge for us was that none of us had attempted problem-centered teaching before, and we learned that our assignments needed to be *both* problem-centered and transparent at the first project meeting in late October 2014. We were also concerned because the webinar training in assignment design was not scheduled to be given until November. With the fall semester in full swing, little time was available to us to plan for this major component of the project and implement it when classes began in January 2015.

Despite these timing issues, all of us were able to create new assignments. We agreed that problem-centered learning (PCL) would be a component of both sections of our courses, while transparency would be featured in experimental sections only. Two written assignments had to be produced: one to be given at the

start of the semester and the other at the end. We attempted to incorporate multiple transparent approaches (see below) into our experimental (more transparent) sections in order to differentiate it from the control (less transparent) sections. At the time, we felt several approaches were needed to make the transition from less transparent teaching to more transparent teaching. In retrospect, one approach done well and repeatedly would have probably sufficed. We may have unnecessarily made the already challenging task more laborious.

In general, the team attempted to stay true to the goal of transparency by providing clarity with respect to the learning goals of our assignments (the why) and the structure of our assignments (the how). One strategy was to provide students with the detailed criteria for success well in advance of an assignment's due date. This took the form of reviewing annotated copies of the problem-solving rubric or grading rubric during class. Another approach was to give the experimental group more detailed assignment prompts that included additional verbal and written instructions, examples, and guiding questions. However, this approach seemed to add to student confusion instead of clarity. One faculty member decided to also incorporate peer grading of draft versions of student work. The students used grading and rubric criteria previously reviewed by the instructor. Finally, student understanding of concepts and their ability to apply their learning were measured by several faculty using peer instruction with personal response systems. Because our assignments were new, we did not have samples of prior successful student work to use as examples for our current students. We all thought our students could have benefited from this particular transparent teaching practice.

With PCL, students apply conceptual understanding to a meaningful problem—one that is often taken from their learned experiences. We took the position that



“learned experiences” could refer to everyday experiences or discipline-specific knowledge. In this way, each of us had the freedom to evaluate the problem-solving skill of our students uncoupled from course content. Consequently, there were a range of prompts: figure out how to “come back” after failing a first exam in a class; pick appropriate attire for an important job interview; detoxify your body after acute exposure to a heavy metal; solve an environmental or ecological issue. The students were also creative. For example, one biology student chose to refocus her love of fish into a search for a remedy to the overfarming of wild seafood.

### PROBLEM-CENTERED ASSIGNMENTS, COLLABORATIVE WORK, AND STUDENT RESPONSE

PCL usually involves collaborative work as well, and two team members were able to incorporate peer instruction into their courses in a substantial way. This was a change in course structure and format for both of them. In one course, the instructor took an approach similar to process-oriented guided inquiry learning (POGIL). Through POGIL, students develop specific skills and content knowledge. So, they work in permanent groups throughout the semester to solve challenging, discipline-specific questions, using appropriate subskills in the problem-solving process. In the other course, PCL was fully explored. The instructor gave eight problem-based homework assignments so that students would have the opportunity to practice each subskill in increments. About the same number of in-class assignments were given in an effort to allow students to “work out the kinks” of the problem-solving process in a collaborative manner. In both courses, class discussions and peer interactions were different than in previous iterations of each course because students were actually working together! Some faculty also noted that there was quite a bit of student push

back in both courses because they were challenged to ‘think and do’ in ways vastly different than their previous education experiences had required. Additionally, students were also very resistant to the idea of working with others. However, over time group members bonded and learned to work more efficiently and effectively.

Students in both sections of all courses appeared to be equally engaged and achieved at a similar level. This is due to the team’s decision to treat both the control and experimental sections similarly with respect to PCL. This observation also seems to suggest that transparent teaching practices were not helpful for experimental sections, since these practices were withheld from control sections. Interestingly, *both* sections of the two courses that involved group work were deemed less transparent while *both* sections of the two courses that did not involve group work were found to be more transparent (based on student responses to the transparency survey). We think this is due to the nature of the survey, which was not designed to tease apart the distinct contributions of PCL and transparency. Furthermore, both PCL and POGIL require more student independence. This can be a tremendous paradigm shift for students and they may find it difficult to accept, acclimate to, and learn within this model. We suggest that this added complexity confounded student perceptions of just how transparent the collaborative courses were. Either that or the two courses that encompassed group work were just not transparent! More iterations of the project, with each experimental parameter tested in isolation, are needed to fully flesh out this issue.

### OUR PROJECT’S GREATEST CHALLENGE

Our single greatest challenge of participating in this project was time, both in terms of the timing of the project and the time investment required to complete the project. By September 2014, team

members were already handling full teaching schedules as well as managing administrative projects and other professional responsibilities. Yet, this project had multiple components. In order to do the project justice, the team initially felt that it needed the time to (1) potentially “backward design” courses to reflect a primary learning outcome of problem-solving instead of scientific literacy for the science courses or written communication for the composition course; (2) create written assignments for the primarily lecture-based science courses or revise course assignments for the composition course to be more problem-centered; (3) learn and become fluent with the use of transparent teaching practices so that they could be implemented well; (4) create assignments that reflect principles of transparency (for experimental sections of our courses); and (5) document our thinking and student reactions during the entire process via e-portfolios (Wiggins and McTighe 1998).

Although initially overwhelmed by the task, we quickly realized that we would not be able to tackle the loftier goal of backward designing courses to cultivate the skill of problem solving within our different disciplines. So, we then proceeded to incorporate the requisite project components in a thoughtful and deliberate manner. We allowed enough freedom in our campus approach to the project so that each faculty member could tailor their students’ experiences. Our team functioned as an *authentic learning* community. This was essential because it allowed us to exchange ideas, clarify our thinking, share student reactions, and provide professional support and collegiality. We plan to conduct two more iterations of the project at WSSU. ■

### REFERENCE

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## Transparency and Problem Solving: The UHD Experience

- ▶ **YuanYuan Kang**, assistant professor, biology, University of Houston-Downtown
- John Kelly**, assistant professor, special education, University of Houston-Downtown
- Creshema Murray**, assistant professor, corporate communication, University of Houston-Downtown
- Adriana Visbal**, lecturer, biology, University of Houston-Downtown

The University of Houston-Downtown (UHD) is a comprehensive four-year university located in the heart of the city of Houston, Texas. The university reflects the diversity of the Greater Houston Area as a Hispanic-Serving Institution, and through its academic programs engages with the community to address the needs and advance the development of the region. UHD is an inclusive community dedicated to integrating teaching, service, and scholarly research to develop students' talents and prepare them for success in a dynamic global society. Our vision is to engage every student in high-impact educational experiences, ensuring that students graduate with twenty-first-century skills.

Through a competitive process, UHD was selected as one of seven institutions in the nation to participate in AAC&U's Advancing Underserved Student Success through Faculty Intentionality in Problem-Centered Learning project. One of the primary reasons UHD was excited to join the AAC&U research project was because the research aligned with the university's newly developed Quality Enhancement Plan (QEP), which aims to promote integrative learning while engaging underserved student in high-impact educational practices. Our institution successfully completed a general education (GE) reform in fall 2014, implementing the Texas Common Core. However, UHD's GE program extends beyond the common core into the disciplines. With that in mind, our team is eager to share the results of our research work in implementing transparency and problem-centered learning into our courses over the spring 2015 semester. Our goal for this article is to educate faculty and administration on the purpose and structure of transparency practices and how they can enhance overall course experiences.

### DIVERSE TRANSPARENCY PRACTICES

The faculty members engaged in this project are representative of the diversity of our university and the students who participated in our research. The team members served in different faculty ranks and represented three colleges on our campus: the College of Humanities and Social Sciences, the College of Public Service, and the College of Sciences and Technology. The diversity of the team allowed each faculty member to bring a unique set of skills and life experiences in order to create and embed problem-centered learning experiences and assignments into their courses. Additionally, each instructor utilized a variety of transparency techniques, with a focus on transparent assignment design. The four courses selected for this project ranged in format from face-to-face to fully online, and they were already utilizing a variety of high-impact practices before being selected for participation in this project. Table 1 illustrates the variability between all four courses and gives an at-a-glance view of the methods used for implementing transparency.

After initial project orientation, our team followed the AAC&U Problem Solving VALUE Rubric to help guide the design of assignments, utilized lessons learned about transparency to modify content delivery, and collected overall course data including results of initial and final transparency surveys from intervention and control courses. The results of these surveys have been published and highlight how implementation of transparency can have a positive effect on students' perception of gains in skills valued by employers. We have chosen to highlight some of the analysis of our course data and share lessons learned from reflections, team discussions, and discussions with project leaders and teams from other institutions.



## RESULTS

As an integral part of the project, our team utilized the rubric in order to design or modify an existing assignment or sets of assignments for our courses. The goal was to be intentional in the implementation of transparency, both in assignment design and course delivery, in the intervention course. Each instructor selected an assignment to represent an initial sample and then an assignment to represent a final sample. Ten student samples from each intervention and control section were collected. Evaluation of assignments utilizing the four-point scale of the six-dimension rubric was performed blindly by another member of the team. Before scoring student samples, the team participated in two different calibrating exercises. The scoring process highlighted the importance of assignment alignment to the rubric and proved challenging. Assessing all dimensions of the rubric in a single assignment, especially when the course was designed to build problem-solving skills progressively, and conducting assessment in introductory level courses emerged as common challenges. Below is a short description of how each course utilized the rubric for assignment design and a brief overview of results, followed by faculty reflection.

## SMALL GROUP COMMUNICATION COURSE

### Implementation and Results

Implementation and design of both transparency and problem-centered learning presented a challenge for this course since the control course was delivered fully online whereas the intervention course was delivered face-to-face. Additionally, the intervention course also had a service-learning component. While the assignment itself was identical for both courses, students in the control course had freedom to create their own company for analysis whereas students enrolled in the intervention course had to select an existing company. These and other variations may account for the high variability seen in the initial assignment and precluded any meaningful data analysis.

**Lessons Learned.** Initial participation in this project was under the assumption that the area of communication studies and this course were already very transparent. Based on participation in this project, future classes taught in both the face-to-face and the online formats in the communication studies area will move their focus toward the need to explicate all assignments, course objectives, and project design based on the types of learners present in our classes.

## GENERAL GENETICS COURSE

### Implementation and Results.

For this course the problem-solving rubric was used to generate an assignment titled “Why Is There a Divided Opinion on GMO Food,” which was content-related but not specific to the course curriculum. Students had the opportunity to focus on an open-ended problem that is relevant and highly publicized. The assignments were built progressively and the initial sample aimed to only assess the first three initial rubric dimensions. The final assignment aimed to assess all or most of all of the rubric dimensions. The results of this course are summarized in figure 1. Both the experimental section and the control course section had a similar baseline for the initial assignment. The experimental section showed a marked increase as compared to the control when the average scores across dimensions were compared. Additionally, 100 percent of students in the experimental section improved their score in at least one dimension as compared to 89 percent of control section students.

**Lessons Learned.** The encouraging results can be attributed to the careful planning of the assignment based on the rubric and the experimental design. The relevance of the assignment to students’ daily lives aroused their interest and enhanced learning. Their final assignment was to generate a survey

TABLE 1. UHD CONTROL (C) AND INTERVENTION (I) COURSES

COURSE	FACE TO FACE	ONLINE	CLASS SIZE	LEVEL	HIGH-IMPACT PRACTICE	TRANSPARENCY TECHNIQUES
General Genetics	C, I		C-42 I-41	Junior	Problem solving in real life; team-based learning	C 2,3,6 I 1,2,3*,6*
General Biology	C, I		C-45 I-45	Freshman	Team-based learning	C 2,6 I 2*,3,6*
Introduction to Special Populations		C, I	C-39 I-40	Junior	Problem solving in real life; collaborative learning	C 1,2,3,4,6 I 1*,2*,3*,4*,5,6*
Small Group	I	C	C-30	Junior	Collaborative learning and service learning	C 1,5,6

Each instructor taught a control and intervention course in spring 2015. Transparency techniques 1–6 are as follows: 1. Create flexible formats that appeal equitably to various learners’ strengths. 2. Build students’ critical-thinking skills in a logical sequence (problem solving). 3. Set criteria for student success (provide to students in advance.). 4. Critique student work (provide examples to students in advance). 5. Perform self, peer, and group evaluations (provide to students in advance). 6. Explicate assignments’ purpose, task, and criteria in advance.

\*For the same techniques applied to both sessions, application was more intentional in the intervention sessions.



on GMOs and administer it to their family and friends. There was strong evidence of learning according to the analysis of the survey results and student reflection. The significant improvement in this final assignment in the intervention course further supports the importance of explicating each assignment's purpose and establishing criteria for success in advance.

## GENERAL BIOLOGY COURSE

**Implementation and Results.** This course utilized a set of six assignments to make connections across biology while focusing on insulin and diabetes. The assignments were created to progressively strengthen students' critical-thinking and problem-solving skills. The second of these assignments was chosen as the initial sample and the last assignment was chosen as the final sample. For both courses there was a small improvement when the average scores across rubric dimensions were compared. Additionally, 70 percent of students in the experimental section improved their score in at least one dimension as compared to 50 percent of control section students.

**Lessons Learned.** Since this was a freshman-level course, the instructor struggled with designing a content-specific assignment that would meet all rubric criteria without exceeding the expectations of the freshman-level students. Therefore, the assignments addressed only the first four dimensions of the rubric. A more open-ended and less content-driven assignment will likely allow for a better assessment of rubric dimensions. There was a marked change in how students in the intervention course interacted with the instructor and reflected on their performance in these assignment sets. There was a shift from the traditional "Why did I lose points?" attitude to a "What would make it better?" attitude. This change was apparent in course evaluation comments, where students in the intervention courses focused more on what and how they learned from the course than on likes or dislikes about the course or instructor, as was seen previously and in the control course.

## INTRODUCTION TO SPECIAL POPULATIONS COURSE

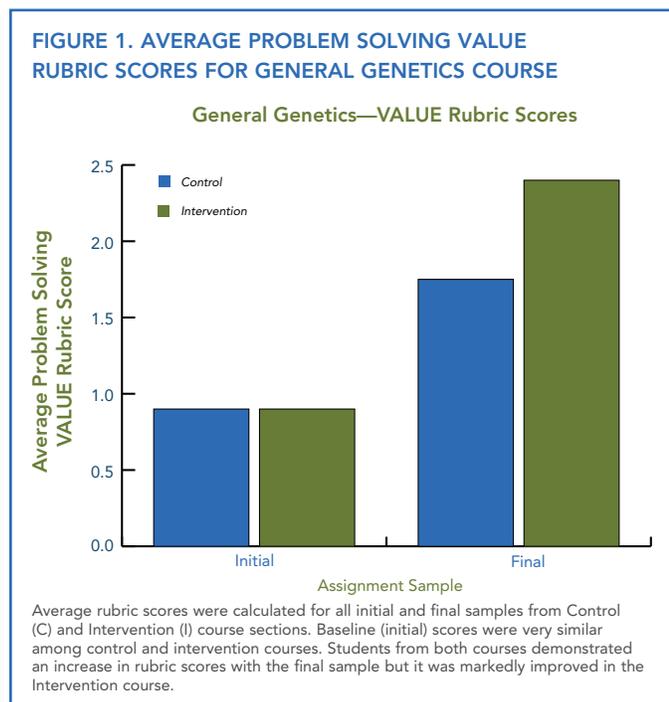
**Implementation and Results.** For problem solving, there were six assignments that were

content specific and required students to differentiate instruction for six different disability groups. Each assignment asked students to develop one accommodation in five different domains (content, instruction, setting, behavior, and affect) to foster a positive learning environment for students with that disability. Each activity met the criteria of open-ended and real-world applications. The first assignment, learning disabilities, was used for the initial

sample and the fifth assignment, Autism, was used for the final sample. Comparing the rubric scores, 90 percent of students in the experimental section improved their score in at least one dimension as compared to 55 percent of control section students.

**Lessons Learned.** The findings indicate that students could be more engaged in the problem-solving process based on all dimensions of the rubric. This has led to adopting a more backward design that will provide a more mindful approach to the activities specified in the problem-solving process.

Both the General Biology and Introduction to Special Populations courses exhibited an increase in transparency as measured by the transparency survey. To gain a better understanding of how students' perceived transparency related to their self-assessment and course assessment in final course evaluations, we mined data from the IDEA Students Ratings of Instruction (IDEA SRI), the current course evaluation system in place at UHD, and analyzed components related to three separate areas: transparency, motivation and metacognition, and perceived progress by the student. Table 2 summarizes these results. Overall, students from intervention sections reported feeling that they received more meaningful feedback, that instructors had a personal interest in their learning and were more available outside of class, and that instructors encouraged students to reflect on their own learning and progress. Most notably, and relevant to the problem-centered aspect of the project, students noticed a marked increase in "learning to analyze and critically evaluate ideas, arguments and points of view." These data suggest that our existing course evaluation system (IDEA SRI) can be used similarly to the transparency survey utilized in this project to shed light on students' perception of transparency. High transparency as perceived by students appears to correlate with their self-assessment of critical-thinking and problem-solving skills.





## SUMMARY AND MOVING FORWARD

This experiential project provided hands-on learning experience for faculty and students. Through participation in this project, faculty became more intentional at every step of designing, implementing, and assessing a problem-based assignment. Our students demonstrated higher learning or reported better engagement based on the data collected from the transparency report, IDEA evaluation, and problem-

solving rubrics. As a team, we identified four points that are key for future studies: (1) backward design of assignment to ensure proper alignment to rubric is essential; (2) remaining unbiased in application of transparency between control and intervention sessions proved problematic; (3) course characteristics such as delivery mode, student classification, and size should be taken into consideration for data interpretation; and (4) detailed faculty

training and continued support is vital to successful implementation.

Moving forward, our group will incorporate more transparency techniques in our teaching in order to improve student learning and retention. We also have the unique vantage point to share our knowledge with other UHD faculty members. Our team has devised a dissemination plan to contribute to the general education reform by providing faculty training on transparency and intentionality. To do this, we will provide training modules and workshops through collaboration with the UHD Center for Teaching and Learning Excellence. We have also identified stakeholders throughout the university who are committed to ensuring university-, college-, and department-level dissemination of transparency implementation techniques. Through their partnership we will recruit new faculty members to apply transparency to their courses and engage in an active dialogue on best practices. We hope that by sharing our lessons learned from participation in this AAC&U project and providing high-quality training, we can help build a culture of transparency and intentionality among UHD faculty.

The authors would like to acknowledge Dr. Rachna Sadana for her participation in this project and her design of General Biology assignments as well as UHD's Center for Teaching and Learning Excellence (CTLE) and University College for their support of this project. ■

**Table 2. Improvement in Course Evaluation Areas for Courses in which Transparency was Implemented**

AREA	% IMPROVEMENT IN INTERVENTION COURSE	
	General Biology	Intro. to Spec. POP.
<b>Transparency</b>		
Instructor provided meaningful feedback on student's academic performance	6	6
Instructor encouraged student-faculty interaction outside of class	17	11
Instructor explained the reasons for criticisms of student's academic performance	5	11
Instructor displayed a personal interest in students and their learning	5	7
<b>Motivation and Metacognition</b>		
Instructor encouraged students to reflect on what they have learned	13	4
Instructors stimulated students to intellectual effort beyond that required by most courses	7	4
Instructor found ways to help students answer their own questions	5	12
Instructor demonstrated the importance and significance of the subject matter	5	5
As a result of this course, I have more positive feelings for this field of study	8	10
<b>Perceived progress by Student</b>		
Learning to analyze and critically evaluate ideas, arguments, and point of view	23	11
Learning to apply course material (to improve thinking, problem solving, and decisions)	9	6
Acquiring skills in working with others as a member of a team	7	35

IDEA SRI course evaluation data was analyzed for components related to three separate areas: transparency, motivation and metacognition, and perceived progress by student. These components were then compared between intervention and control courses. There was a marked or slight improvement in every component analyzed for both courses. General Genetics and Small Group Communication did not have enough students to take either the transparency survey or the IDEA evaluation and thus were precluded from this data analysis.

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## Design and Implementation: Transparency and Problem-Based Learning at St. Edward's University

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St. Edward's University (SEU) is a private, Hispanic-Serving Institution with an undergraduate enrollment of over four thousand students. As a Catholic university, our mission statement speaks to the school's dedication to prepare graduates "to analyze problems, propose solutions and make responsible decisions" and "to confront the critical issues of society and to seek justice and peace." An essential learning outcome is for students to "use critical, creative, and collaborative thinking to solve problems and achieve common goals." The university considers problem-based learning an ideal mission fit because of the practice's demonstrated effectiveness in promoting deep learning; its student-centered nature provides for the very sort of open-ended problems with which we want students to engage after graduation.

In the 2014–2015 academic year, a team of SEU instructors participated in the AAC&U Transparency and Problem-Centered Learning project with a goal of examining how faculty intentionality and transparency affect student learning in a problem-centered environment. Participants redesigned assignments to include problem-based components and infused intervention sections of courses with heightened intentionality and transparency. The following account explains how our project team redesigned assignments and outlines the transparency practices applied, the challenges encountered, and the benefits gained.

### Transparency and Problem-Based Learning across Disciplines: The Courses

The instructors of our five-person team were deliberately chosen to reflect a variety of disciplines. The courses involved are introductory to

mid-level and satisfy the university's general education (GE) requirements. Four of the five instructors taught two sections of the same course, while the fifth instructor taught the courses with the same general topic (ethics) but with slightly different foci. The courses were

- Literature and Human Experience—an introductory-level literature course that focuses on racially and culturally diverse writers of texts of multiple genres.
- American Dilemmas—an interdisciplinary sophomore-level course that utilizes concepts and methodologies from the social sciences to analyze current social problems in the United States.
- Understanding and Appreciating the Arts—an introductory-level arts course in which instructors focus on one art form but provide a brief introduction to two other art forms.
- Ethics—a course that covers major ethical theories, principles and strategies and examines a number of contemporary issues. The second and intervention course is a variant of Ethics, titled Environmental Ethics. The course employs ethical theories, principles, and strategies to examine environmental issues such as climate change.
- Mathematics for the Liberal Arts—a course on general quantitative literacy with an aim to develop the ability to recognize, appreciate, and confidently participate in the mathematics of daily life.

### Assignment Redesign to Elicit Problem-Based Learning

Each instructor redesigned two assignments or portions thereof to reflect a problem-based and problem-solving approach to



learning. The team took inspiration from the Problem Solving VALUE Rubric in developing the nature and purpose of the assignments. Each team member encountered his or her own unique challenge during the design stage, but one common issue was the dearth of existing practical models. Therefore, the team is deliberately sharing adaptations specific to the courses involved.

In Mathematics for the Liberal Arts, the essay portion of two existing assignments was modified as to ask the students to suggest solutions to hypothetical problem scenarios. In one assignment, students, acting as life consultants, were asked to determine an optimal city to which the client could move based on parameters important to the client. In the other assignment, students were directed to suggest approaches to the problem of gender inequality in a particular country using a bank of statistical information about gender policies that are specific to their assigned country as the primary source of information.

For the American Dilemmas course, students were asked to select a contemporary social problem and analyze it over the course of the semester in the form of two research papers. In previous iterations of the class, students would choose their research paper topic from a predetermined list of social problems provided by the instructor. According to AAC&U project leaders, allowing students to choose their topics created a more authentic problem-based assignment. Another assignment modification was in terms of potential solutions to the problem. In previous semesters, students presented arguments for and against a specific policy solution, but this time students were encouraged to generate a variety of possible policy alternatives.

The ethics courses instructed students to consider how an ethical principle or policy applies to the resolution of a problem. Specifically, the assignments required the students to anticipate real-

world challenges in resolving the problem and to minimize the unworkable or impractical dimensions of the implementation of the policy or practice and the ethical assessment of the practice.

The Literature and Human Experience course was framed by historic and contemporary debates related to American identity. In the redesigned course, during the first week of class students selected the “threads” of American identity (such as patriotism, the American Dream, and justice for all) upon which the course would focus for the semester. The instructor then adapted course readings and discussion prompts to better address these threads. For the first assignment, students either examined how a historic literary text engaged with a social problem from its own time period or examined the elements of a contemporary social debate that were addressed in a historic literary text. For the second assignment, students were asked to take a stand on contemporary debates related to literature, such as the inclusion of graphic novels in a college literature classroom or of controversial books in a high school classroom.

In Understanding and Appreciating the Arts, assignments were approached as problems to solve. For example, one assignment required student partners to create and perform a scene using the nine acting ingredients. This was framed as the problem of “how to create a good scenario.” The assignment also included a “strategies” section, asking students to consider where to find information to achieve this. The students then had to generate three potential solutions (or scenarios) and evaluate strengths and weaknesses.

### **Heightened Intentionality and Transparency in Intervention Courses**

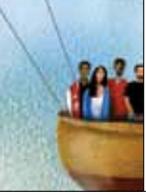
The project required instructors to conduct one intervention course with heightened intentionality and transparency, while also teach a control course with no (or far fewer) intentionality or transparency adaptations. As

a variety of transparency practices had been shared at the project meeting, many of the instructors used similar approaches. However, the nature and structure of each course necessitated both individual instructor choice and interpretation of some practices. Common to most was the practice of providing detailed assignment instructions and rubrics for grading. In some instances the instructions explicitly linked the course’s essential learning outcomes to the purpose of the assignment. Another common practice was peer review and self-evaluation, with an opportunity for revision. Instructors often increased the amount of informal feedback and check-ins for progress before the assignments were due. One instructor also used preparatory worksheets to guide students. Another instructor took advantage of the classroom’s computer terminals to encourage the students to begin the otherwise out-of-class assignments during the last few minutes of the class period, providing the students an opportunity to ask questions.

Several of the instructors provided samples of exemplary work as models, usually through the university’s online course management system. One instructor also included an annotated example, incorporating his comments as to why such work is exemplary. In a particularly unique approach, the theater instructor wrote a sample monologue and employed a theater major to perform it for the intervention class as the students themselves were preparing their own monologues.

### **Challenges and Benefits**

Instructors confronted some challenges implementing problem-based learning, and many faced questions about the extent to which to they should utilize the VALUE rubric. Some instructors struggled to get started due to the lack of assignment examples specific to their discipline. Another struggle was developing problem-based assignments so as not to conflict with (or come at the expense of) other



existing and important course outcomes. All of the courses involved were required GE courses, and some had required student learning outcomes with assessments focused on skills other than problem solving. These instructors at times felt that time spent on problem solving sometimes took away time spent on student learning outcomes-related activities. One challenge to fully applying the Problem Solving VALUE rubric was that in some cases the existing course organization, particularly where individual assignments were components of a larger assignment and built on one another throughout the semester, did not lend itself to addressing every dimension of the rubric. Some of the course instructors, particularly those from the humanities, found it difficult to translate or apply the specific vocabulary of the VALUE rubric to their fields.

The primary challenge encountered in implementing intentionality and transparency practices in the intervention was the dilemma posed by withholding such practices from the control courses. The difficulty had two aspects. The primary one was ethical, as the instructors generally recognized that intentionality and transparency help students learn more and produce better work. Instructors struggled with how to fairly provide all those benefits to one section while not providing them all to another. The other was the fact that instructors all had some intentionality and transparency practices imbedded in their teaching philosophies and practices before the start of the project, so not using them went against their already established habit of mind and practice.

Team members dealt with these dilemmas in different ways. One instructor fully committed to providing his intervention course with stark intentionality and transparency, but was prepared to curve course grades for the control course to fall in line with those of the intervention course if the scores on the relevant assign-

ments were significantly lower in the control. Others added additional layers of transparency to their intervention courses, while maintaining already established practices in both the intervention and control sections. All decided that they would not deliberately refuse any student from any of the sections when they asked for assistance. A few decided to focus on intentionality and transparency in direct and person-to-person interaction with the students, while keeping all written instructions and communication common to both control and intervention courses.

One unforeseen complication of transparency practices in the theater course arose when such practices conflicted with the student learning outcomes for the course. Some assignments required students to harness their creativity through their own experiences and without the instructor's influence and suggestion. The purpose was to elicit a variety of potentially new and innovative responses. Therefore, providing specific examples for student success was at odds with the intended outcome of the assignment, and the instructor for the course found the student work to be less creative when sample work had been provided. One resolution to this conflict is to approach transparency practices as a toolkit, from which to choose tools only when appropriate.

The primary benefit of this project was the instructors' heightened sense of awareness in the process of assignment and course design. Despite having several transparency practices already in their bank, the team members found the sample interventions shared at project meetings and webinars helpful for suggesting new ways to increase course transparency—for example, making the goals and purpose of an assignment even more explicit to the students. Some instructors have already taken major steps to incorporate additional transparency practices in their other courses. The project also influenced

teaching approaches during the class session, especially those that made use of recent student experiences. Some team members conveyed that their participation in the project and incorporation of problem-based learning in assignment design made them deliberate more deeply about the assignments' overall purpose and about all the skills, problem solving or otherwise, that such learning is supposed to help students develop or practice.

### Concluding Remarks

Concerns about not engaging in transparent practices with control groups and the practical challenges of implementing problem-based design in some courses or fields that have other goals at odds with such approaches still remain as obstacles to continued adaptation of such practices. If the research suggests that problem-based design does improve student learning and academic performance, that may help allay the ethical and practical concerns. However, at this time the data from the team's transparency experiments has yet to be fully collected and examined, so determining the empirical merits will have to wait for another day.

The team members believe that incorporating problem-based learning in their classrooms provided them another opportunity to examine the design and implementation of course instruction, apart from the usual professional pedagogical reasons to do so, and for that reason alone the exercise was worthwhile. Apart from the need of instructors to re-examine class instruction and assignments to achieve course goals, this experiment with problem-based learning provided a reason to engage in a rich and robust collaborative examination of course assignments and goals. And this is both intrinsically interesting and potentially useful for improving student learning. ■



# A Teaching Intervention that Increases Underserved College Students' Success

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The challenge to provide equitable opportunities for college students to succeed is a critical priority for the Association of American Colleges and Universities (AAC&U). In 2014, AAC&U partnered with the Transparency in Learning and Teaching in Higher Education (*TILT* Higher Ed) project, founded at the University of Illinois and now housed at the University of Nevada, Las Vegas, on an initiative that significantly increases underserved college students' success. TG Philanthropy funded the Transparency and Problem-Centered Learning project ([www.aacu.org/problemcenteredlearning](http://www.aacu.org/problemcenteredlearning)), with Tia McNair, Ashley Finley, and Mary-Ann Winkelmes as the coinvestigators. In its first year, the endeavor has identified a simple, replicable teaching intervention that demonstrably enhances students' success, especially that of first-generation, low-income, and underrepresented college students in multiple ways at statistically significant levels, with a medium to large magnitude of effect. These results offer implications for how faculty can help their institutions to right the inequities in college students' educational experiences across the country.

## The Project's Problem and Research Question

While federal and state initiatives focused on tuition relief are providing greater access to higher education, they do not guarantee equity of educational experience. Black, Hispanic, Native American, and Pacific Islander students are about half as likely to complete a four-year college degree as their white and Asian classmates (US Department of Education 2014). Completion rates for

low-income students lag far behind those of students whose family incomes are above the bottom quartile (Tough 2014). And first-generation college students are 51 percent less likely to graduate in four years than students whose parents completed college (Ishitani 2006).

Colleges and universities have of course made valuable efforts to address these skewed and inequitable outcomes, relying upon predictive analytics and resources including advising, scholarships, tutoring, and community-building programs. But there has been little systematic study of the role that faculty can play collectively in improving learning outcomes and success for underserved students. The Transparency and Problem-Centered Learning project aimed to complement existing student support efforts by training faculty and instructors to implement a teaching intervention that showed promise for increasing underserved students' success, and to research the impact of the intervention on students' learning experiences.

The project's basic research question in the 2014–2015 academic year was: What is the effect when teachers provide two transparently designed, problem-based take-home assignments (compared to the unrevised, business-as-usual take-home assignments in the comparison group) on spring-term first-year college students' learning experiences, especially underserved students' experiences, as measured by

- the amount of transparency students perceived in the course (measured by Transparency in Learning and Teaching in Higher Education Survey questions 36-44); ([https://unlv.co1.qualtrics.com/jfe/form/SV\\_9G0YyMonDPOfrX7](https://unlv.co1.qualtrics.com/jfe/form/SV_9G0YyMonDPOfrX7));



- students' self-ratings of three important predictors of success: academic confidence, sense of belonging, and improved mastery of skills that employers value (measured by Transparency Survey questions 4-6, 8-11, 22, 24-25, 32, 34-35);
- direct assessment of students' work as indicated by scored student work samples, selected randomly (addressed elsewhere in this special issue of *Peer Review*); and
- short-term retention rates.

### Rationale

These measures of success and the rationale for our intervention intentionally align with several important past studies. Multiple researchers have demonstrated that increases in college students' academic confidence and sense of belonging are directly correlated with higher GPAs and persistence and retention rates, especially for underserved students. Furthermore, they have demonstrated that these increases could be achieved through teaching/learning interventions. For example, ethnically underrepresented (African American) first-year college students who completed an exercise that aimed to increase their feelings of social belonging earned higher GPAs in the subsequent three years, reduced the racial achievement gap, reduced their feelings of self-doubt, increased their confidence, and were more likely to be in the top 25 percent of their college class (Walton and Cohen 2011). In addition, struggling college students increased their test scores after endorsing the belief that intelligence is not fixed but rather malleable. One year later, these students were 80 percent less likely to drop out of college, and their GPAs continued increasing (Aronson et al. 2002). For both white and African American first-year college students, sense of belonging can indirectly increase students' persistence behaviors (Hausmann et al. 2009).

Several past studies suggested that our intervention, in which teachers revised two take-home assignments in a term to make them more transparently designed (accessible) and problem centered (relevant) for students, might increase students' academic confidence and sense of belonging, as well as their mastery of skills that employers value, across a group of geographically dispersed schools. A 2013 study identified *transparency*—engaging teachers and students in focusing together on *how* college students learn what they learn and *why* teachers structure learning experiences in particular ways—as a teaching method that showed promise for improving underserved students' educational experiences in college (Winkelmes 2013). Another indicated that high-impact practices increased undeserved students' engagement (Finley and McNair 2013). Underachieving students across a group of geographically diverse schools (high schools, in the study) experienced higher GPAs and increased pass rates after receiving two implementations of a mindset intervention that provided students with information about how they learn and the purposes for their academic work (Paunesku et al. 2015). Recent national surveys of employers identified the ability to apply skills to solving problems as one of the skills employers value most, and our project's analyses included these problem-centered skills and others employers value (Transparency Survey questions 4-6, 8-11, 22, 24, 32) (Hart 2015, 2013; Winkelmes 2015).

### Intervention

We selected an intentionally varied set of institutions to implement the project's intervention, so that any school viewing the results would find a collaborator in our group with whom they could identify (see table 1).

The experiment included 1,800 students and thirty-five faculty from these schools. As part of the project, faculty received training on how to make two take-home assignments in a course more transpar-

Table 1. Participating Institutions

Institution Name	SIZE	PROGRAMS; ENROLLMENT	CARNEGIE CLASS; SETTING	PRIVATE PUBLIC
Community College of Philadelphia	Large	Two-year; exclusively undergrad, mixed part-time full-time	Associates; Single campus, Urban-serving, MSI	Public
California State University—Los Angeles	Large	Four-year, professional, Master's; high undergrad	Primarily non-residential; MSI, HSI	Public
St. Edward's University, Austin, TX	Medium	Four-year, professional, Master's; very high undergrad full-time	Primarily residential; MSI, HSI	Private
Heritage University, Toppenish, WA	Very Small	Four-year professional; high undergrad	Primarily non-residential; on Yakama Indian Reservation, MSI, Native American Serving	Private
University of Houston—Downtown, TX	Medium	Four-year, professional, Master's; very high undergrad, part-time	Primarily non-residential; MSI, HSI	Public
Queensborough Community College, Bayside, NY	Very large	Two-year; exclusively undergrad, mixed part-time full-time	Associates; Multicampus, Urban-serving, MSI, HSI	Public
Winston-Salem State University, NC	Medium	Four-year, professional Master's; very high undergrad, full-time	Primarily residential; MSI, HBCU	Public



ently designed and more problem-centered for students. Each faculty member taught two class groups of the same course in the spring 2015 term; one group would receive the intervention of two revised assignments, and the other would receive unrevised versions of the two assignments. Most of the courses were introductory-level courses containing first-year students; twelve were intermediate-level courses. Class sizes ranged from nine to seventy-four students, with an average class enrollment of about twenty-nine students. Faculty who implemented the two revised assignments agreed to adopt the Transparent Assignment Template to frame conversations with students about the purposes, tasks, and criteria for each revised assignment, before students began working (fig. 1).

At the end of term, sixty-one of the seventy courses completed the experiment. However, many teachers struggled to keep the intervention cleanly out of their control courses after seeing students respond positively in their intervention courses. Others found it difficult to limit the intervention to only two assignments. All 1,800 students were invited to respond to questions about their learning experiences on the end-of-term Transparency in Learning and Teaching Survey online. Sixty-eight percent of students responded to the survey, with 1,174 students or 65.2 percent completing all the survey questions. Historically underserved students in this group exceeded the three-hundred-fifty-person sample size recommended by What Works Clearinghouse (WWC) standards (US Department of Education 2014). The survey was completed by 425 first-generation students, 402 non-white students, and 479 low-income students. In addition, 297 multiracial students completed the survey.

## Results

The results of our project suggest that faculty can contribute to increasing all students' success, especially that of underserved students, in their first year of college (when the greatest number of

students drop out) (Head and Hosteller 2015). In courses where students perceived more transparency as a result of receiving the transparently designed, problem-centered take-home assignments, they experienced significantly greater learning benefits compared with their classmates who perceived less transparency around assignments in a course. Specifically, students who received more transparency reported gains in three areas that are important predictors of students' success: academic confidence, sense of belonging, and mastery of the skills that employers value most when hiring. These are "substantively important" and statistically significant findings that satisfy WWC standards for baseline equivalence measures of 0.05 or below, sample sizes above three hundred fifty, and effect size differences above 0.25 (US Department of Education March 2014).

The discussion that follows includes data from all 1,174 students who completed the survey in all sixty-one courses that completed the experiment. In a constrained sample of thirty-nine courses where the intervention was implemented twice as planned, 262 students who received the intervention in eighteen courses experienced significantly increased academic confidence and sense of belonging (with a magnitude of  $ES=0.30$  and  $ES=0.32$  respectively) compared with 396 students in twenty-one control group courses who received the instructors' unedited assignments. Instead of limiting our analysis to this subset, we discuss the full sample to offer a realistic indicator of what teachers and institutions can expect in practice when courses provide greater or lesser amounts of transparency for students around the purposes, tasks, and criteria for their academic work.

The benefits for all students in the full sample who received greater transparency were statistically significant ( $p<.05$ ) and substantively important (fig. 2).

For first-generation, low-income, and underrepresented students, those benefits were larger. First-generation students and multi-racial students experienced medium-to-large effect size differences in the three domains that are critical predictors of students' success: academic confidence, belongingness, and mastery of the skills that employers value (figs. 3 and 4).

A baseline equivalence test indicated that, prior to the intervention, groups who would receive more and less transparent instruction did not differ significantly (fig. 5).

The single largest underrepresented ethnicity group of students in our study was multiracial, with 237 students self-identifying in this category. Students who self-identified as belonging to a single underrepresented (non-white) ethnicity and students of low socioeconomic status (low-income, bottom income quartile) reported statistically significant, somewhat smaller benefits in the same three areas (figs. 6 and 7).

What was it about the intervention that underserved students noticed and appreciated? In the more transparent courses, first-genera-

**FIGURE 1. TRANSPARENT ASSIGNMENT TEMPLATE**

<b>Purpose</b>	
<ul style="list-style-type: none"> <li>▪ Skills practiced</li> <li>▪ Knowledge gained</li> </ul>	}
	<ul style="list-style-type: none"> <li>relevance to students 5 years out</li> <li>connection to Learning Outcomes</li> </ul>
<b>Task</b>	
<ul style="list-style-type: none"> <li>▪ What to do</li> <li>▪ How to do it</li> </ul>	
<b>Criteria</b>	
<ul style="list-style-type: none"> <li>▪ What excellence looks like (multiple annotated examples)</li> <li>▪ Criteria in advance to help students to self-evaluate</li> </ul>	
©2014 Mary-Ann Winkelmes	



tion, underrepresented, and low-income students indicated most often the following aspects:

- In this course, I knew the purpose of each assignment.
- Each assignment included a section that explained how the assignment was related to the objectives of the course.
- In this course, I knew the steps required to complete my assignments.
- Coursework and course activities benefited my learning.

- In this course, I knew how my work would be evaluated.
- My instructor provided students with annotated examples of past students' work.
- My instructor provided tools I could use to assess the quality of my and others' work.

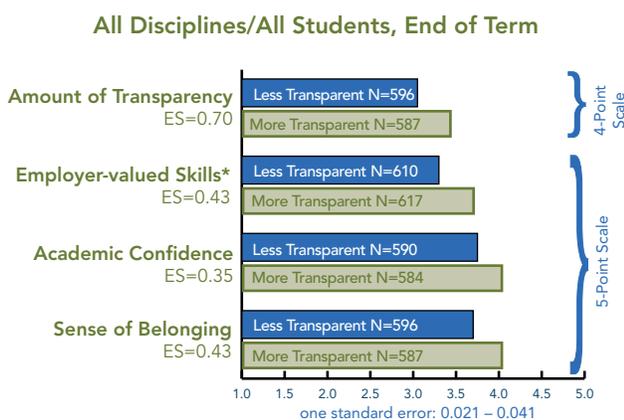
While all students in the aggregate in the more transparent courses reported an increase in their mastery of the skills that employers value most (Hart Associates 2015, 2013), these were the specific skills for which underserved students in our study noticed the greatest increases:

- connecting information from a variety of sources;
- learning on your own;
- applying knowledge and skills to different contexts;
- writing effectively;
- judging the reliability of information from various sources;
- considering opinions or points of view different from your own;
- judging the strengths and weaknesses of ideas.

In science, technology, engineering, and mathematics courses that offered more transparency, there were small increases to students' academic confidence and their sense of belonging, in comparison with the less transparent courses in these disciplines (fig. 8). In more transparent humanities, arts, and social science courses, students experienced medium effect size increases in the skills valued by employers, as well as small-to-medium effect size increases to their academic confidence and sense of belonging, in comparison with the courses that offered less transparency in these disciplines (fig. 9).

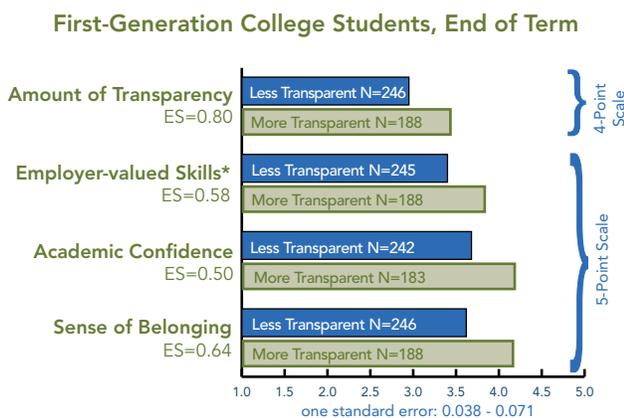
Students' short-term retention rates in the more transparent courses were slightly higher than those of students in the less

**FIGURE 2. ALL DISCIPLINES/ALL STUDENTS IN LESS TRANSPARENT VERSUS MORE TRANSPARENT COURSES—END OF TERM**



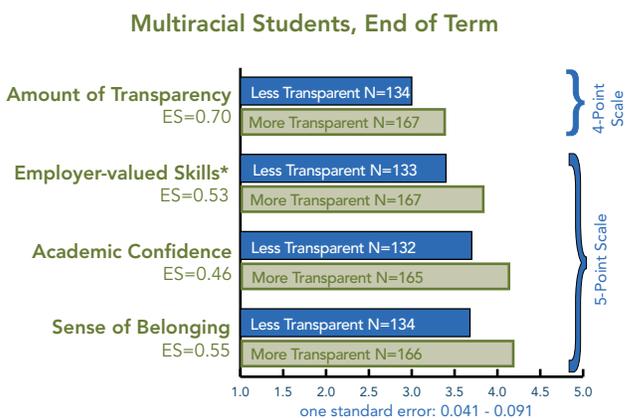
KEY: N: number of students responding  
 ES: effect size (Hedges' G). Effect sizes of 0.25 standard deviations or larger are "substantively important" (US Dept of Education WWC, 2014, p. 23).  
 Less Transparent: mean perceived transparency <3.3/4  
 More Transparent: mean perceived transparency ≥3.3/4  
 \*Hart Associates 2015, 2013

**FIGURE 3. FIRST-GENERATION COLLEGE STUDENTS IN LESS TRANSPARENT VERSUS MORE TRANSPARENT COURSES—END OF TERM**



KEY: N: number of students responding  
 ES: effect size (Hedges' G). Effect sizes of 0.25 standard deviations or larger are "substantively important" (US Dept of Education WWC, 2014, p. 23).  
 Less Transparent: mean perceived transparency <3.3/4  
 More Transparent: mean perceived transparency ≥3.3/4  
 \*Hart Associates 2015, 2013

**FIGURE 4. MULTI-RACIAL STUDENTS (MORE THAN ONE NON-WHITE ETHNICITY) IN LESS VERSUS MORE TRANSPARENT COURSES—END OF TERM**



KEY: N: number of students responding  
 ES: effect size (Hedges' G). Effect sizes of 0.25 standard deviations or larger are "substantively important" (US Dept of Education WWC, 2014, p. 23).  
 Less Transparent: mean perceived transparency <3.3/4  
 More Transparent: mean perceived transparency ≥3.3/4  
 \*Hart Associates 2015, 2013



transparent courses. While 9.18 percent of students (65 of 708 students) withdrew before the end of the term from the twenty-four less transparent courses where we gathered withdrawal data, only 7.50 percent of students (44 of 586 students) withdrew from the twenty-one more transparent courses where we gathered withdrawal data. In a parallel study of 1,143 University of Nevada, Las Vegas undergraduates in more transparent introductory-level courses, 90.2 percent of students returned the subsequent aca-

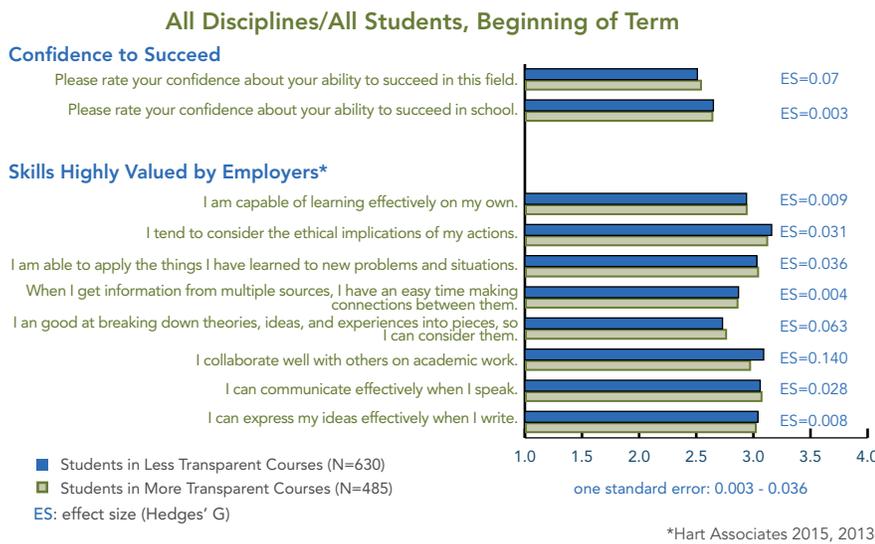
ademic year, in contrast to the average retention rate of 74.1 percent for first-time, full-time, first-year students.

Most of the faculty and instructors in our study now incorporate transparently designed, problem-centered assignments in all the courses they teach—not just the courses that our study included. We expect this to benefit long-term retention rates of students at these institutions.

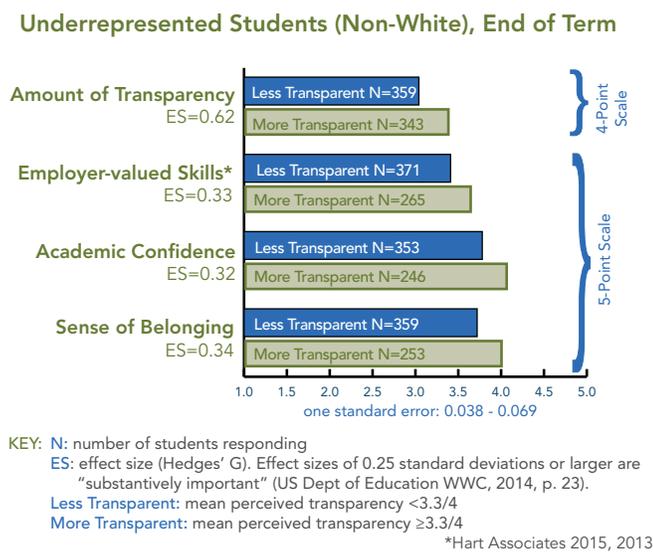
### Long-Term Implications

Our study identifies transparent teaching about problem-centered learning as an easily replicable teaching intervention that produces learning benefits already linked with students' success. Providing greater transparency about academic work on two assignments resulted in significant benefits for first-generation, low-income, and underrepresented students, who experienced increases in areas that are established predictors of student success: their academic confidence, sense of belonging, and awareness of their improved mastery of the skills employers value most when hiring. In addition to students, faculty also experienced benefits. Faculty noticed increases in students' motivation in class, higher-level class discussions with sharper focus, more on-time completion of assignments, and fewer disputes about grades (Winkelmets et al. 2015).

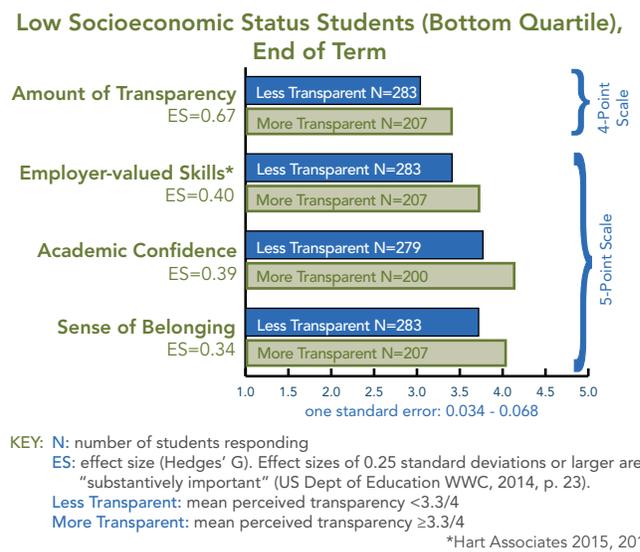
**FIGURE 5. BASELINE EQUIVALENCE, ALL DISCIPLINES/ALL STUDENTS—BEGINNING OF TERM**



**FIGURE 6. UNDERREPRESENTED STUDENTS (NON-WHITE), IN LESS VERSUS MORE TRANSPARENT COURSES—END OF TERM**

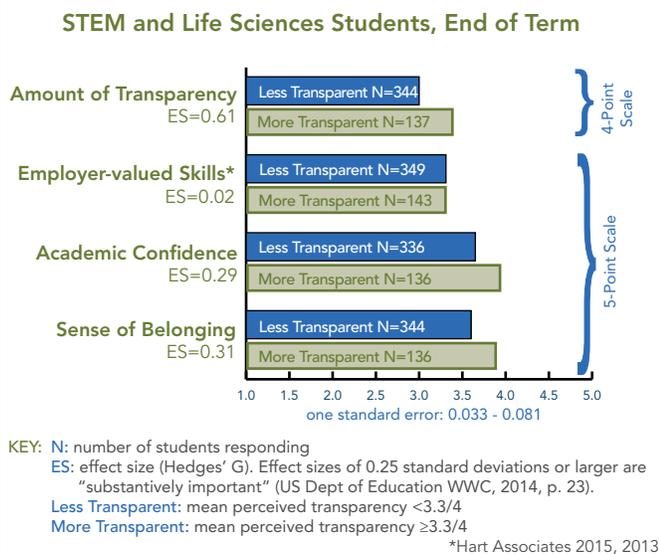


**FIGURE 7. LOW SOCIOECONOMIC STATUS STUDENTS (BOTTOM QUARTILE), IN LESS VERSUS MORE TRANSPARENT COURSES—END OF TERM**

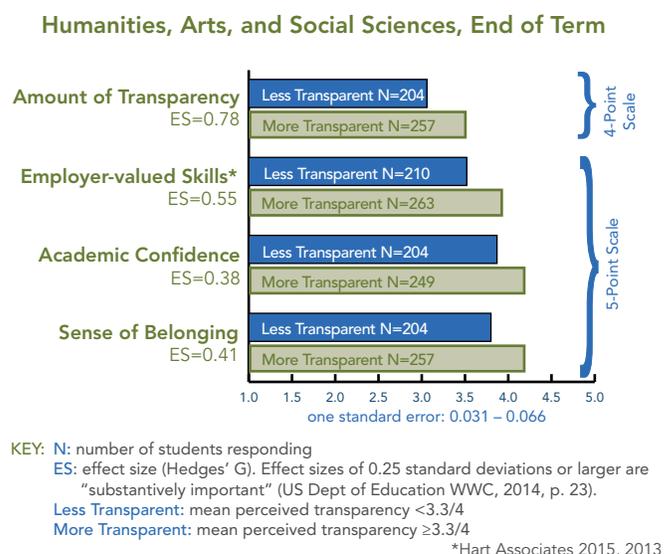




**FIGURE 8. STEM AND LIFE SCIENCES STUDENTS, IN LESS VERSUS MORE TRANSPARENT COURSES—END OF TERM**



**FIGURE 9. HUMANITIES, ARTS AND SOCIAL SCIENCES STUDENTS, IN LESS VERSUS MORE TRANSPARENT COURSES—END OF TERM**



For institutions, training faculty to incorporate transparently designed, problem-centered assignments may help to provide more equitable educational experiences and increase retention and completion rates, especially for underserved students. Teams of faculty at an institution, like the seven teams in our project, can implement this intervention in order to complement existing student support services that aim to increase students' success. As our project continues, we can expect increased GPAs, retention, and graduation rates of underserved students at the seven minority-serving institutions where the project is underway, and at more schools that join the initiative. The easily replicable and relatively small intervention of two transparently designed, problem-centered assignments in a term can support faculty and their institutions in righting current inequities in underserved college students' educational experiences, and in providing more equitable opportunities for all students to succeed. ■

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## Faculty Evidence

► **Dawn Michele Whitehead**, senior director, global learning and curricular change, AAC&U

In order to better understand faculty perspectives on participation in the project, the thirty-five faculty from the seven institutions who participated were encouraged to respond to thirteen critical reflective prompts over the course of the project—addressing their goals for participation, knowledge they hoped to gain, descriptions of the process of making their courses transparent and assignments problem-based. Since other tools in the project assessed and analyzed student performance and perceptions, the project leaders thought it was important to have at least one dimension of the project focus exclusively on the faculty. This article will focus on a few of their reactions and thoughts on their participation in the project and offer a few strategies for improving faculty transparency based on this project

The faculty had shared goals for participation in project. They all sought to improve the learning and the learning experience of students by improving their teaching. They cited a desire for knowledge about more intentional, deliberate, and student-centered teaching practices along with strategies for effective teaching for a range of students. The faculty also sought out a network of engaged scholars focused on teaching—allowing them a new group outside their discipline to engage in discussions on pedagogical matters.

They also described the process of making their courses more transparent and designing problem-based assignments. For designing more transparent courses, they all cited syllabus and assignment redesign, changes in the use of class time, sharing sample work and rubrics with students, and making connections between course and institutional learning goals. In order to design problem-based assignments, the majority were guided by the Problem Solving VALUE Rubric and/or the steps of problem solving, concrete applications and/or connections to real-world

problems, and connections to real-world problems, and a couple found the process very challenging.

### STRATEGIES TO IMPROVE FACULTY TRANSPARENCY

Five strategies were identified to improve faculty transparency of intentionality and communication of goals to students: communication of the value of transparency, time to do this work, consistent professional development, faculty learning communities, and time in class for transparency.

The connection between academic success and transparency has not been made for most faculty according to the reflections of faculty in this project. Faculty members are truly unaware that the difference between success and failure for many students could

*[The faculty] cited a desire for knowledge about more intentional, deliberate, and student-centered teaching practices along with strategies for effective teaching for a range of students.*

depend on the inclusion of text in a syllabus and/or additional instruction on an assignment. Furthermore, some faculty do not have a clear understanding of what transparency and intentionally actually mean, and a clarification would be helpful.

“The most important strategy is to make sure that faculty members understand the importance of being intentionally transparent in communicating their goals. Based on my observations, faculty assume they are being transparent but fail to truly understand the different facets of what transparency in the classroom means.”

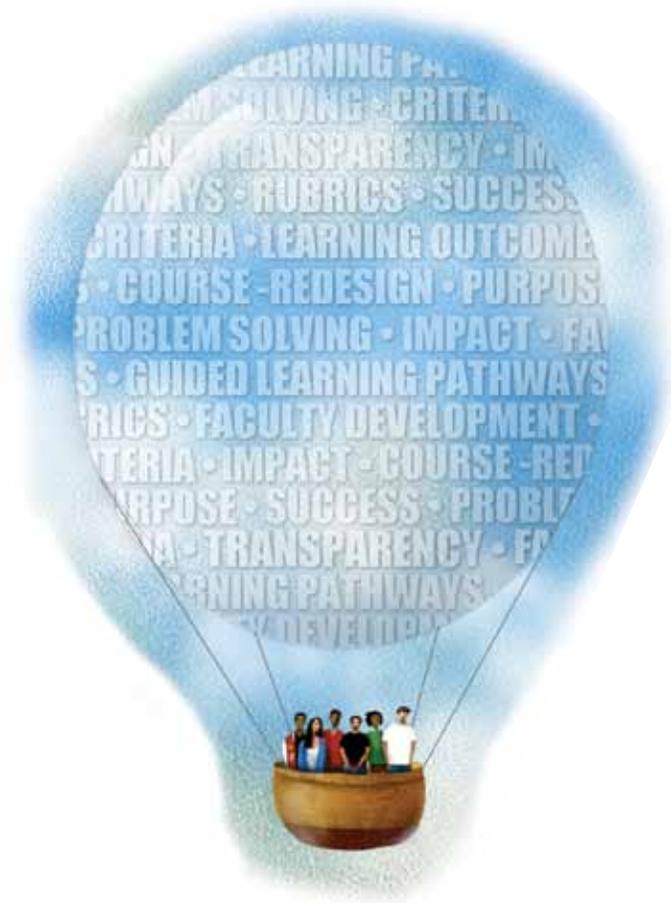
—Faculty Member



“I think that making faculty aware of what transparency is and how it could help to un-code academic culture is helpful. A minority, low-income, older, and/or first generation student doesn’t always understand the nuances of academic culture, and simply thinking of how assignments and courses fit into a wider picture of themselves and their futures can be helpful.”  
—Faculty Member

Faculty who participated in this project had paid time to engage in project work. This allowed course release time to learn and develop transparent teaching practices and reflect on the process of intentional, transparent teaching. This time was invaluable to faculty, and they wondered if other faculty would be able to do it. It was clear that course release time was essential to the success of course transformation. Paid time off was a part of the change.

“Receiving course releases allowed me to spend time developing the products I needed. It is a big investment to develop sample annotated assignments, develop PowerPoints to explain assignments with greater details, and to develop explicit rubrics.”  
—Faculty Member



Continuous, high-quality, professional development, as stated above, is another element that was mentioned by the faculty as an essential element. It ensures curricular support for course and assignment revision—integration of transparent elements into the syllabus and assignments—technical support and the addition of sample assignments and models of transparency teaching tools.

The establishment of faculty learning communities, also mentioned above, provided faculty with opportunities to learn from and with colleagues from across campuses. Faculty needed space to brainstorm, exchange ideas, gain feedback from others doing similar work, have facilitation by instructional design specialists, and support from outside faculty development consultants. They also really enjoyed the opportunities to engage with faculty from other disciplines. This interdisciplinary faculty community of practice met the goal of sustained professional development that many of the faculty had.

Finally, the vast majority of the faculty cited the importance of giving up class content time to incorporate and communicate transparency-related information. This was a real shock to many of the faculty, but they felt it was truly critical to student success. They really needed to take the time out of class to provide assignment and rubric-related descriptions to ensure students fully understood what was expected even if it meant there was less time devoted to course content.

“I spent almost an entire class period developing the assignment, asking for feedback and interpretation, individually and in groups. I modeled the assignment as a class using anonymous student work samples, and the email burden was reduced almost 100%! As were the harried questions and excuses, ‘I didn’t get it.’”

—Faculty Member

“I had to make adjustments to the amount of content, which may be difficult for some faculty. The reward for me was having homework assignments that aligned clearly with my expectations making them easier to grade. But I did have to give up some content, and place other content on the web in the form of videos.”

—Faculty Member

## CONCLUSION

The reflective prompts provided an insight into the faculty members’ experiences across the life of the project, and it allowed us to draw conclusions from the project that the student data did not. While it affirmed some of that data, it also helped us to understand some of the challenges the faculty experienced as they sought to make major changes to their courses to improve the experience of their students. It also helps us understand steps department chairs and faculty developers may want to take as they consider working with faculty to help make courses more transparent. ■



# Problem Solving and Transparent Teaching Practices: Insights from Direct Assessment

► **Ashley Finley**, associate vice president of academic affairs and dean of the Dominican Experience, Dominican University of California; former senior director of assessment and research, AAC&U

With the help of thirty-five faculty members across seven Transparency and Problem-Centered Learning project campuses, AAC&U sought to better understand how transparent teaching practices affect students' demonstrated ability with regard to a targeted learning outcome within courses already incorporating high-impact practices. Although the Transparency in Learning and Teaching Survey, a tool designed to assess levels of clarity and visibility around objectives for student learning, criteria for success, and examples of meeting criteria, would provide indirect evidence of students' perceived learning and attitudes, this project enabled us to gather direct evidence from students' work products regarding their ability to *demonstrate* a particular cognitive skill. Any one of a number of learning outcomes would have made sense for the focus of this project. But we knew, based on prior research, that students often mentioned aspects of problem-solving when discussing what it meant to be most engaged in learning or what they thought employers would most value (Finley and McNair 2013). The following student comments drawn from focus groups highlight the ways in which students recognize the importance of developing problem-solving skills.

"I mean you can have a wide-ranging knowledge about the general condition of what's going on, but [that knowledge] changes so fast... [in college] we're supposed to learn how to think critically and to attack problems... instead of having the right answer on hand all the time."

—Student in Oregon

"[Employers are]... asking you to think outside the box sometimes, as well as being able to perform inside the box... So... [a] bachelor's [degree is] informing [students] of how the world functions and works and how to... understand it and how do we function in it... how we interact with people and communicate and problem solve and the leadership that we can give..."

—Student in Oregon

"I guess you... learn the specifics from the book, but in [college] you kind of learn how to problem solve in a general sense. [Y]ou learn... how to go out and look for information on your own, and maybe look for resources and how to solve stuff if you don't know it... [W]hen you go apply for a job, you can say, 'I'm really good at... finding solutions for problems or finding information'... [and employers will think]... 'He's able to adapt and... not panic... if the answer is not given to him or if he needs to go out and do extra work in order to solve something.'"

—Student in California

Students also lamented when problem-solving experiences were absent from college learning or when peers were absent from the problem-solving process.

"In the real world, if I have a problem, I can call up three or four different people, and we can get together and solve a problem [but] in a classroom setting, it's me all by myself with no book, and I can't... hey, what do you think? [P]erhaps college would serve us better if it was more interactive... [let the] class get



together, solve these problems, and that's [the] final."  
—Student in Oregon

"[I] mostly have just huge lecture classes ... and ... even with ... my science lab, ... my class[mates] would just leave ... I would sit there for ... trying to figure out the problems ... [W]e never work as a team or anything like that."  
—Student in Wisconsin

Survey data from employers supports students' sentiments. When asked what skills students should attain in college, regardless of their field of study, 91 percent of employers indicated, "problem solving in diverse settings," followed by "direct experience with community problem solving" (Finley and McNair 2013). When employers were asked what skills should receive greater emphasis within colleges and universities, the second most commonly identified skill (81 percent) was "complex problem solving." The first was critical thinking and analytic reasoning (82 percent); skills that are, arguably, closely linked with problem-solving abilities.

#### APPROACH FOR DIRECT ASSESSMENT

In order to assess the effect of transparent teaching practices on students' abilities to problem solve, every member of a campus project team agreed to identify two similar courses being taught by a single faculty member; one course would be identified as a control course that did not engage transparency techniques and

the other would be the experimental course in which transparency techniques were used. All courses were taught within the general education curriculum. Project campuses were selected, in part, because they expressed an interest in developing their general education curricula to be more intentional, outcomes-based, and integrated into the institutional mission.

Ideally, all faculty participants would have identified two sections of the same course for this research and those sections would have been taught in the same semester. In reality, that research design, while useful for making comparisons, is challenging to execute. Ultimately, for reasons owing to course scheduling, circumstances that delayed course implementation, and communication issues, not all faculty were able to implement a control and experimental course within the project timeline or were unable to submit course data for analysis. Out of thirty-five expected experimental and control courses, data was received for nearly the same number of experimental (N=30) and control (N=29) courses. The total number of students across experimental and control courses was also roughly equivalent, 296 students and 284 students, respectively. Courses were taught either concurrently during the spring 2015 semester or between consecutive terms spanning the fall 2014–summer 2015 terms.

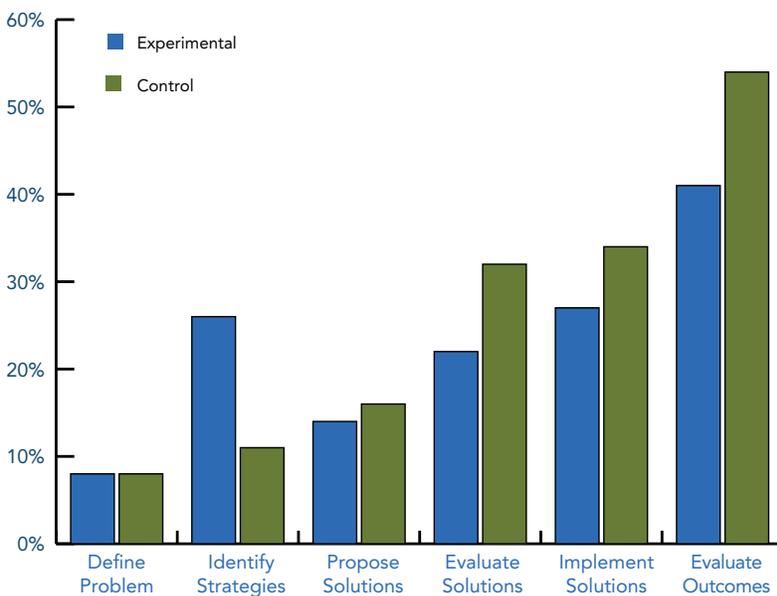
In order to assess improvement in student learning from the beginning to end of the course, faculty identified a pre- and a post-assignment, from each of which they would randomly select ten work products (twenty total work samples from each course). This was done for both control and experimental courses. All faculty

members participated in an in-person training session on how to apply the AAC&U Problem Solving VALUE Rubric to student work prior to conducting campus scoring. Following training, each campus team was instructed to collectively score student work samples gathered across courses, such that individual faculty did not score work exclusively from their own courses. Scoring was completed between the summer 2015 and fall 2015 terms. Results from each campus were forwarded to AAC&U for aggregation and analysis.

#### WHAT WE LEARNED

This project provided an opportunity to do the first multi-campus implementation of the AAC&U VALUE rubric. Because sample sizes were relatively small and were drawn from a non-random group of courses, we did not intend for the data gathered from rubric scoring to meet the rigors of statistical analysis. We did, however,

**FIGURE 1. COMPARISON OF PERCENT CHANGE FROM PRE-ASSIGNMENT TO POST-ASSIGNMENT FOR EXPERIMENTAL VERSUS CONTROL COURSES**





intend to learn something from faculty collaboration in the use of rubrics in general and from the use of the problem-solving rubric, in particular. Thus, the findings from the direct assessment of this project are more heavily weighted toward what we learned from the process of engaging faculty teams in the scoring of student work using the problem solving rubric than on actual data points. The data did indicate that, overall, students' demonstrated problem-solving skills improved from the pre-assignment to the post-assignment. This was true for students in both the control and the experimental courses. This finding was consistent when the courses were regrouped according to students' perceptions of whether a course was "more" or "less" transparent, rather than experimental or control, based on reported scores on the transparency survey. Figures 1 and 2 below indicate the percent of change from students' rubric score on pre-assignments at the beginning of the course to their performance on post-assignments at the end of the course.

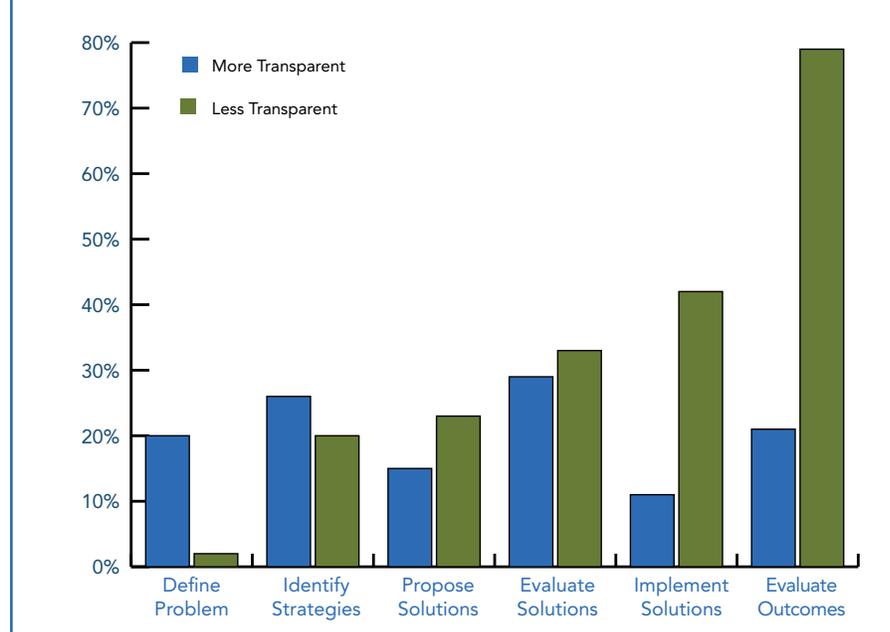
The graphs demonstrate that, although average rubric scores improved over time for all students in this project, the ability to draw conclusions from comparing courses (either control versus experimental or "less" versus "more" transparent) was difficult. Figures 1 and 2 suggest that students in courses with higher levels of transparency (whether labeled experimental or more transparent, respectively) demonstrated greater percent improvement in rubric scores over time, specifically in their ability to "define the problem" and to "identify strategies" for problem solving. But across other rubric dimensions, the students in the control or "less" transparent courses appeared to demonstrate greater improvement over time.

Mixed results should not be perceived as a failure. The practical reality for campuses engaging in direct assessment using rubrics as highly articulated as the AAC&U VALUE rubrics work is that an initial pilot may reveal messy data. It takes time for faculty to become proficient and comfortable with scoring and it also takes time for faculty to allow the rubric to inform assignment design. Faculty in this project were taking on the tasks of both understanding the rubric for scoring and understanding its utility for assignment design within the span of a number of months. They were also, concurrently, learning best practices with regard to transparent teaching practices. These caveats are not intended to excuse mixed data, but they are intended to provide insight in order to encourage faculty to dig into data points that

might not be in the intended direction or fall short of expectations. Direct assessment is a learning process that often, helpfully, starts with a pilot. Faculty in this project provided the means toward piloting the problem-solving rubric, both on their own campuses and nationally. Their collaborative efforts provided a number of insights and considerations that can be of help to faculty who may be exploring the use of this rubric on their campus. The following are a number of those insights gleaned from both faculty feedback on the direct assessment process and my own reflections from working with the project teams.

- **Rubrics can be instruments for transparency, as well as tools for assessment.** The depth and breadth of articulation within the problem-solving rubric (and all other VALUE rubrics) helps to accomplish two essential practices of transparent teaching—to clearly articulate the intended outcome and to communicate how students will be evaluated. The first page of the rubric details the meaning of problem solving, while the rows and progress points of the rubric itself help students to understand how they will be evaluated and how to improve.
- **Applying different disciplinary lenses to the same rubric and forming examples helped clarify how the rubric could be applied across disciplines.** Though the VALUE rubrics were intended to be common tools applied across disciplines, interpreting them as such is not always easy or obvious. In the case of the problem solving rubric, concerns were raised

**FIGURE 2. COMPARISON OF PERCENT CHANGE IN RUBRIC SCORES FROM PRE-ASSIGNMENT TO POST-ASSIGNMENT FOR LESS VERSUS MORE TRANSPARENT COURSES**





that the language of the rubric was best suited for application to problems specifically in the natural sciences. To address this, the meaning of words like “solutions” and “hypotheses” were discussed through the lens of the humanities. Collaborative brainstorming on examples of different problems across disciplines was also useful in helping faculty to envision how the rubric could be applied within their field.

- **Dimensions of the rubric need to be understood as both meaningful and feasible.** Faculty raised concerns that two dimensions of the problem-solving rubric, “Implement Solution” and “Evaluate Outcomes” were not practical for students to *actually* demonstrate within the span of a course. Instead, faculty reframed these dimensions, inviting students to discuss *possible* implementation procedures and hypothesizing *potential* outcomes.
- **Getting clear on the distinction between “0” and “Not Applicable” takes on-going conversation.** When using a VALUE rubric to score student work, a score of “0” is applied if the student’s demonstrated performance on a particular dimension does not reach the “benchmark” (1) level. By contrast, a score of “not applicable” is given if the assignment does not invite the student to demonstrate learning in the first place. The confusion over the practical application of these points across nearly all of the project teams may help explain the mixed results from the rubric data. Though a couple of team leaders believed they eventually achieved enough clarity to maintain consistent scoring, other team leaders were not as confident and at least one reported that this remained an issue throughout scoring. Campuses working with any of the VALUE rubrics should be cognizant of raising this issue as a potential area for

on-going discussion during the scoring process.

- **The scoring process isn’t just useful for getting data.** Several team leaders commented on the utility of the dialogue that arose from the scoring process for understanding how outcomes were shared across disciplines. These discussions also assisted with assignment design. In seeing where students were stronger or were weaker across the rubric, faculty could consider how to adjust assignments accordingly. One team leader commented on the ability to better engage in backward design following scoring because those conversations provided greater understanding of the intended outcome and therefore insights into how to construct more relevant assignments.

### CONCLUSION

The use of the problem-solving rubric across project campuses provided valuable insights into how this rubric can be applied, emergent issues, and the overall utility of the rubric itself and of the assessment process. Though results from the direct assessment were ultimately mixed, the process was found to be both meaningful and substantive for project teams. The lessons learned shed further light on how essential interdisciplinary dialogue is for faculty in engaging direct assessment of shared student learning outcomes. As one team leader reflected via e-mail, “I believe that [team discussion around rubric assessment] was the most powerful cross-content professional development that I [have] experienced!” ▪

### REFERENCE

Finley, Ashley, and Tia McNair. 2013. *Assessing Underserved Students’ Engagement in High-Impact Practices*. Washington, DC: Association of American Colleges and Universities.

# AAC&U MEETINGS

## NETWORK MEETINGS

### Global Learning and the College Curriculum: Nurturing Student Efficacy in a Global World

October 6–8, 2016  
Denver, Colorado

### Transforming Undergraduate STEM Education: Implications for 21st Century Society

November 3–5, 2016  
Boston, Massachusetts

### General Education and Assessment

February 23–25, 2017  
Phoenix, Arizona

### Diversity, Learning, and Student Success

March 16–18, 2017  
Jacksonville, Florida

### Global Learning and the College Curriculum

October 12–14, 2017  
New Orleans, Louisiana

### Transforming Undergraduate STEM Education

November 2–4, 2017  
San Francisco, California

[www.aacu.org/meetings](http://www.aacu.org/meetings)



# Advancing Underserved Student Success

► **Judith A. Ramaley**, president emerita, Portland State University

**W**hile the question that guided this project is simple, the answers to that question will be a game changer for all of us.

*What can we do to support success for all?*

Students who come to us well prepared for college do well but students who are less prepared are much less likely to succeed. Throughout my career, I have thought about these differences. What does it mean to be well educated and how can we engage students in ways that build upon their strengths, their experiences, and their own goals?

This project was designed to explore the impact of two key educational strategies, transparency and problem-centered learning, on the success of students who are unfamiliar with the culture and context of a college or university or who arrive unsure about their place in that world. The seven institutions that participated in this project were selected on the basis of their recent experiences with redesigning the general education curriculum and their commitment to supporting the success of underrepresented students. What sets this project apart from many others is that it drew the experiences of a cross-disciplinary group of faculty.

An especially challenging part of this project was the task of creating problem-based exercises that built upon the knowl-

edge and experience that the students brought to the class and that could be incorporated into an essentially content-driven class. The goal here was for the content to be a means to deeper learning. This task was easier for some faculty than for others due to the nature of their own disciplines and their own prior experiences with engaging students in problem solving. Some faculty handed the students a set of problems to choose from. Others started with an exploratory exercise designed to trigger reflection and the generation of questions. One instructor asked each student to analyze his or her own carbon footprint. Interesting questions arose from that discussion.

Did the use of transparency and problem-centered learning increase student engagement and confidence in the experimental course when compared to the control class? While everyone agreed that it is too early to make judgments on the basis of a single pair of classes, several faculty members pointed to signs that more students were participating in discussion and were listening to each other more and bringing in stories and examples from their own experiences.

There are lessons here about how to address troubling questions. The faculty participants in this project behaved like members of an interdisciplinary research

team. They built upon each other's observations and raised questions about what was happening and why. The project meetings provided a window into the realities of undertaking work of this kind and the value of collaboration as a vehicle for providing peer consultation and the capacity for collective action and responsibility. The outcomes of this project, if connected in a meaningful way to the larger campus efforts to prepare their graduates for a complex world, could contribute a greater depth and sense of purpose to those efforts as well as generate a growing body of shared experience to guide the process.

Any good research project generates more questions. Seeing this work from the perspective of the senior leadership roles I have played, I would ask: (1) What does this project tell us about the ways that experiences in college can shape motivation and confidence? (2) How do social interactions among students in these classes enhance or blur the effects of intentional interventions like these? (3) How can a campus community learn from these experiences and apply the lessons learned to other parts of the curriculum? (4) What other efforts, curricular and co-curricular, can complement these course designs and enhance the educational experiences of all students while improving graduation rates?

What would you ask? ■

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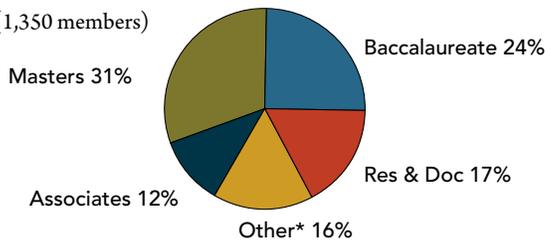
AAC&U is the leading national association concerned with the quality, vitality, and public standing of undergraduate liberal education. Its members are committed to extending the advantages of a liberal education to all students, regardless of academic specialization or intended career. Founded in 1915, AAC&U now comprises more than 1,300 member institutions—including accredited public and private colleges, community colleges, research universities, and comprehensive universities of every type and size.

AAC&U functions as a catalyst and facilitator, forging links among presidents, administrators, and faculty members who are engaged in institutional and curricular planning. Its mission is to reinforce the collective commitment to liberal education and inclusive excellence at both the national and local levels, and to help individual institutions keep the quality of student learning at the core of their work as they evolve to meet new economic and social challenges.

Information about AAC&U membership, programs, and publications can be found at [www.aacu.org](http://www.aacu.org).

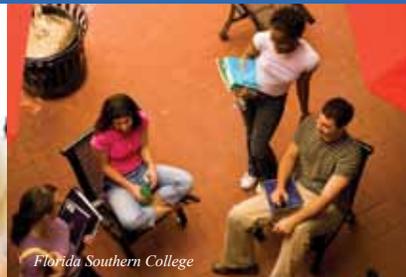
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(1,350 members)



\*Specialized schools, state systems and agencies, and international affiliates

## NETWORK FOR ACADEMIC RENEWAL



## AAC&U Working Conferences for 2016–2017

### Global Learning and the College Curriculum:

Nurturing Student Efficacy in a Global World

Denver, Colorado  
October 6–8, 2016

### Transforming Undergraduate STEM Education:

Implications for 21st Century Society

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### Diversity, Learning, and Student Success

Jacksonville, Florida  
March 16–18, 2017

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Exploring together the latest advances in teaching and learning, and faculty roles and leadership in general education and outcomes assessment; diversity, equity, and student success; transforming STEM education; and global learning in college.