THE TRANSPARENCY PROJECT:

DECODING THE UNWRITTEN RULES OF COLLEGE

TO INCREASE STUDENTS SUCCESS

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Senior Fellow, Association of American Colleges & Universities
Nevada Humanities Board of Directors
Founder and Principal Investigator,
Overview

PURPOSE:
- Understand how transparently designed assignments can offer equitable opportunities for all college students to succeed; and consider applications

TASKS:
- Review: summary of research findings
- Apply: to sample assignments

CRITERIA:
You’ll leave with
- Understanding of our research
- Strategies for applying transparency framework; draft assignment
2014-2016 AAC&U Study, Funded by TG Philanthropy

- Co-PIs: Tia Brown McNair, Ashley Finley, AAC&U
  Mary-Ann Winkelmes, UNLV (TILT Higher Ed)

- Schools:
  - Community College of Philadelphia
  - Queensborough Community College, Bayside, NY
  - St Edward's Univ. Austin, TX
  - Univ. of Houston – Downtown, TX
  - California State University, LA
  - Winston-Salem State University, NC
  - Heritage University, Toppenish, WA

- Publication: Peer Review (Spring 2016)
TILT Higher Ed Research Team:

Matthew Bernacki, Ph.D. (consultant)
Jeffrey Butler, Ph.D. (research, analysis)
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Sherry Marks (budget)
MaryKay Orgill (consultant)
Kati Harriss Weavil Ph.D. candidate (analysis)
Michelle Zochowski, M. Ed. candidate (analysis)
Equity of Access

Underrepresented, 1st Gen, Low Income:
Half as likely to complete in 4 years

High-achievement in HS
can frustrate college success

Equity of Experience

Gatekeepers unsustainable;
stunt research

Well-prepared novices
don’t think like experts
Early Engagement Hypothesis

Context:

• We lose the greatest numbers of underserved students from college in their first year.
• Two teaching practices that show learning benefits for all students, especially underserved:
  – Problem-centered for underserved engagement (Finley, McNair 2013)
  – Transparency in teaching/learning (Winkelmes 2013)

Hypothesis: Combining these in introductory courses might improve students’ learning experiences, the quality of students’ work, and students’ persistence.
What is Problem-Centered?

• Problem-Centered Learning engages students in exploring relevant, complex problems by applying discipline-based inquiry and critical thinking skills.
  – Problem-Centered approaches engage underserved students

What is Transparency?

• Transparent teaching and learning methods explicitly focus on *how* and *why* students are learning course content in particular ways.
  
  – Transparent teaching/learning methods benefit students who are unfamiliar with college success strategies by explicating learning/teaching processes.
  
  – Greater benefits for underrepresented and first-generation students

Research Question

What is the effect when teachers provide **two transparently designed, problem-centered 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:

- amount of transparency students perceived in the course
- students’ self-ratings of three important predictors of success:
  1. academic confidence,
  2. sense of belonging, and
  3. mastery of skills that employers value
- direct assessment of students’ work as indicated by scored student work samples, selected randomly

*TILT* Higher Ed Survey
Implementation

2014-2016 AAC&U study funded by TG PHILANTHROPY
“Transparency and Problem-centered Learning”

– 7 MSIs, 1800 students, 35 faculty
  • 425 First generation students
  • 402 non-white students
  • 479 low-income students
  • 297 multiracial students

– 2 x small teaching intervention
Transparent Assignment Design Template
Faculty/Instructors (in national study, 7 MSIs) agreed to discuss with students in advance:

**Purpose**
- Skills practiced [long-term relevance to students’ lives]
- Knowledge gained [connection to learning outcomes]

**Task**
- What students will do
- How to do it (steps to follow, avoid)

**Criteria** for success
- Checklist or rubric in advance so students can self-evaluate
- What excellence looks like (annotated examples where students/faculty apply those criteria)
Research Findings
Results

• Boosted students’ learning in 3 important ways (medium-large effect for underserved students):
  
  • Academic confidence
  • Sense of belonging
  • Skills valued most by employers

SUCCESS PREDICTORS
Increased persistence, grades
Impact: Boosted Predictors of success

All Disciplines/All Students, End of Term

Amount of Transparency  
ES=0.70

| Less Transparent N=596 | More Transparent N=587 |

Employer-valued Skills*

| Less Transparent N=610 | More Transparent N=617 |

Academic Confidence  
ES=0.35

| Less Transparent N=590 | More Transparent N=584 |

Sense of Belonging  
ES=0.43

| Less Transparent N=596 | More Transparent N=587 |

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
Baseline Equivalence
All Disciplines/All Students, Beginning of Term

Confidence to Succeed
Please rate your confidence about your ability to succeed in this field.

Please rate your confidence about your ability to succeed in school.

Skills Highly Valued by Employers*
I am capable of learning effectively on my own.
I tend to consider the ethical implications of my actions.
I am able to apply the things I have learned to new problems and situations.
When I get information from multiple sources, I have an easy time making connections between them.
I am good at breaking down theories, ideas, and experiences into pieces, so I can consider them.
I collaborate well with others on academic work.
I can communicate effectively when I speak.
I can express my ideas effectively when I write.

Students in Less Transparent Courses (N=630)
Students in More Transparent Courses (N=485)

ES: effect size (Hedges’ G)

one standard error: 0.003 - 0.036

*Hart Associates 2015, 2013
First-Generation College Students, End of Term

Amount of Transparency
- Less Transparent N=246
- More Transparent N=188

Employer-valued Skills*
- Less Transparent N=245
- More Transparent N=188

Academic Confidence
- Less Transparent N=242
- More Transparent N=183

Sense of Belonging
- Less Transparent N=246
- More Transparent N=188

one standard error: 0.038 - 0.071

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
Multiracial Students, End of Term

- **Amount of Transparency**
  - ES = 0.70
  - Less Transparent N = 134
  - More Transparent N = 167

- **Employer-valued Skills**
  - ES = 0.53
  - Less Transparent N = 133
  - More Transparent N = 167

- **Academic Confidence**
  - ES = 0.46
  - Less Transparent N = 132
  - More Transparent N = 165

- **Sense of Belonging**
  - ES = 0.55
  - Less Transparent N = 134
  - More Transparent N = 166

One standard error: 0.041 - 0.091

**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*
Low Socioeconomic Status Students (Bottom Quartile), End of Term

**Amount of Transparency**
- Less Transparent, N=283
- More Transparent, N=207
- ES=0.67

**Employer-valued Skills**
- Less Transparent, N=283
- More Transparent, N=207
- ES=0.40

**Academic Confidence**
- Less Transparent, N=279
- More Transparent, N=200
- ES=0.39

**Sense of Belonging**
- Less Transparent, N=283
- More Transparent, N=207
- ES=0.34

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
Impact: UNLV Retention Rates 1st year to 2nd year, 2014-2015

All UNLV Retention
- 74.1%  N = 2754 / 3716

MORE Transparent
- 90.2%  N = 1030 / 1143

red: UNLV first-time full-time freshman students in all courses AY 2014-2015, including “more transparent” courses, retained in October 2015

blue: UNLV students enrolled in 100-level or lower “more transparent” courses Spring 2015, who completed the Fall 2015 term

Sources: UNLV Data Warehouse / MyUNLV Analytics, 5/5/2016; UNLV Registrar; TILT Higher Ed Survey

<table>
<thead>
<tr>
<th>Category</th>
<th>Retention Rate</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-white</td>
<td>74.5%</td>
<td>539</td>
</tr>
<tr>
<td>Hispanic</td>
<td>71.3%</td>
<td>1916</td>
</tr>
<tr>
<td>Low SES</td>
<td>75.2%</td>
<td>787</td>
</tr>
<tr>
<td>African American</td>
<td>66.4%</td>
<td>318</td>
</tr>
<tr>
<td>First Generation</td>
<td>66.4%</td>
<td>353</td>
</tr>
<tr>
<td>All</td>
<td>74.1%</td>
<td>99</td>
</tr>
</tbody>
</table>

**ES** = Effect Size, **p** = p-value

<table>
<thead>
<tr>
<th>ES</th>
<th>p-value</th>
</tr>
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<tbody>
<tr>
<td>0.465</td>
<td>0.00</td>
</tr>
<tr>
<td>0.756</td>
<td>0.000</td>
</tr>
<tr>
<td>0.397</td>
<td>0.000</td>
</tr>
</tbody>
</table>

**Red:** UNLV first-time full-time freshman students in all courses, including "more transparent" courses, who were retained in October 2015 (Source: UNLV Data Warehouse / MyUNLV Analytics, 5/5/2016)

**Blue:** UNLV students enrolled in 100-level or lower "more transparent" courses in Spring 2015, who completed the Fall 2015 term (Sources: UNLV Registrar and TILT Higher Ed Survey)

* Differences between the two groups will be greater when "more transparent" group is removed from the (red bars) group of UNLV first-time full-time freshman students in all courses.
Impact on UNLV students’ views of learning

Helped Collaborating Effectively: STEM & Life Sciences

- First Generation: N=150, Mean Response = 3.660
- African American: N=31, Mean Response = 3.258
- Low SES: N=28, Mean Response = 3.680
- Hispanic: N=140, Mean Response = 2.907
- Non-White: N=116, Mean Response = 2.888
- Red: UNLV students enrolled in 100-level or below "less transparent" courses Spring 2015-Fall 2015
- Blue: UNLV students enrolled in 100-level or lower "more transparent" courses Spring 2015-Fall 2015
Impact on UNLV students’ views of learning

Helped Collaborating Effectively: Humanities & Social Sciences

- First Generation
  - N=303
  - ES=0.713
  - p=0.000
  - Mean Response: 3.710

- African American
  - N=74
  - ES=0.939
  - p=0.000
  - Mean Response: 3.649

- Low SES
  - N=252
  - ES=0.674
  - p=0.000
  - Mean Response: 3.619

- Hispanic
  - N=245
  - ES=0.800
  - p=0.000
  - Mean Response: 3.800

- Non-White
  - N=360
  - ES=0.712
  - p=0.000
  - Mean Response: 3.711

**red:** UNLV students enrolled in 100-level or below "less transparent" courses Spring 2015-Fall 2015

**blue:** UNLV students enrolled in 100-level or lower "more transparent" courses Spring 2015-Fall 2015
Impact on UNLV students’ views of learning

Helped Communicating: Writing, STEM & Life Sciences

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean Response</th>
<th>ES</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Generation</td>
<td>150</td>
<td>3.465</td>
<td>0.957</td>
<td>0.000</td>
</tr>
<tr>
<td>African American</td>
<td>28</td>
<td>2.447</td>
<td>0.724</td>
<td>0.0063</td>
</tr>
<tr>
<td>Low SES</td>
<td>140</td>
<td>3.402</td>
<td>0.793</td>
<td>0.000</td>
</tr>
<tr>
<td>Hispanic</td>
<td>115</td>
<td>3.443</td>
<td>0.895</td>
<td>0.000</td>
</tr>
<tr>
<td>Non-White</td>
<td>198</td>
<td>3.265</td>
<td>0.737</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Red: UNLV students enrolled in 100-level or below "less transparent" courses Spring 2015-Fall 2015
Blue: UNLV students enrolled in 100-level or lower "more transparent" courses Spring 2015-Fall 2015
Impact on UNLV students’ views of learning

Helped Communicating: Writing, Humanities & Social Sciences

- **First Generation**: N=240, Mean Response = 3.543, p-value = 0.000
- **African American**: N=69, Mean Response = 3.676, p-value = 0.000
- **Low SES**: N=195, Mean Response = 3.660, p-value = 0.000
- **Hispanic**: N=161, Mean Response = 3.575, p-value = 0.000
- **Non-White**: N=270, Mean Response = 3.588, p-value = 0.000

**Legend**
- **Red**: UNLV students enrolled in 100-level or below "less transparent" courses Spring 2015-Fall 2015
- **Blue**: UNLV students enrolled in 100-level or lower "more transparent" courses Spring 2015- Fall 2015

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What does Transparent Assignment Design look like?

Transparent Assignment Design Template

**Purpose**
- Skills practiced → long-term relevance to students’ lives
- Knowledge gained → connection to learning outcomes

**Task**
- What students will do
- How to do it (steps to follow, avoid)

**Criteria** for success
- Checklist or rubric in advance so students can self-evaluate
- What excellence looks like (annotated examples where students/faculty apply those criteria)

Winkelmes et al, *Peer Review* (Winter/Spring, 2016)
Questions / Comments
STEM and Life Sciences Students, End of Term

Amount of Transparency
- Less Transparent N=344
- More Transparent N=137
ES=0.61

Employer-valued Skills*
- Less Transparent N=349
- More Transparent N=143
ES=0.02

Academic Confidence
- Less Transparent N=336
- More Transparent N=136
ES=0.29

Sense of Belonging
- Less Transparent N=344
- More Transparent N=136
ES=0.31

one standard error: 0.033 - 0.081

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

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Humanities, Arts, and Social Sciences, End of Term

Amount of Transparency
ES=0.78

- Less Transparent N=204
- More Transparent N=257

Employer-valued Skills*
ES=0.55

- Less Transparent N=210
- More Transparent N=263

Academic Confidence
ES=0.38

- Less Transparent N=204
- More Transparent N=249

Sense of Belonging
ES=0.41

- Less Transparent N=204
- More Transparent N=257

one standard error: 0.031 – 0.066

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
Perceived Transparency in the Course

36. In this course, I knew the purpose of each assignment.
37. Each assignment included a section that explained how the assignment was related to the objectives of the course.
38. My instructor identified a specific learning goal for each assignment.

39. In this course, I knew the steps required to complete my assignments.
40. Each assignment included a detailed set of instructions for completing it.
41. My instructor provided detailed directions for each learning activity that was assigned.

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

Never, Sometimes, Often, Always
Learning Outcomes that at Least Four in Five Employers Rate as Very Important

Proportions of employers rating each skill/knowledge area as very important for recent college graduates to have*

<table>
<thead>
<tr>
<th>Skill/Knowledge Area</th>
<th>Very Important for Employers</th>
<th>Students: Very Important for Success in Workplace</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral communication</td>
<td>85%</td>
<td>78%</td>
</tr>
<tr>
<td>Working effectively with others in teams</td>
<td>83%</td>
<td>77%</td>
</tr>
<tr>
<td>Written communication</td>
<td>82%</td>
<td>75%</td>
</tr>
<tr>
<td>Ethical judgment and decision-making</td>
<td>81%</td>
<td>74%</td>
</tr>
<tr>
<td>Critical/analytical thinking</td>
<td>81%</td>
<td>79%</td>
</tr>
<tr>
<td>Applying knowledge/skills to real world</td>
<td>80%</td>
<td>79%</td>
</tr>
<tr>
<td>Analyzing/solving complex problems</td>
<td>70%</td>
<td>73%</td>
</tr>
</tbody>
</table>

*8, 9, 10 ratings on zero-to-10 scale, 10 = very important
Awareness of Improvement of Employer-valued skills

4. How much has this course helped you in writing effectively?
5. How much has this course helped you in communicating your ideas effectively in your spoken statements?
6. How much has this course helped you in collaborating effectively with others?
8. How much has this course helped you in improving your ability to separate and examine the pieces of an idea, experience, or theory?
9. How much has this course helped you in learning how to connect information from a variety of sources?
10. How much has this course helped you in learning how to apply concepts to practical problems or in new situations?
11. How much has this course helped you in considering the ethical implications of your actions?
   Not at all, A little, A moderate amount, A lot, A great deal
22. As a result of taking this course are you a better or worse judge of the strengths and weaknesses of ideas, or has the course made no difference?
24. As a result of taking this course are you a better or worse judge of the reliability of information from various sources, or has the course made no difference?
   Much worse, Somewhat worse, No difference, Somewhat Better, Much Better
32. Are you likely to apply knowledge and skills you gained from this course in contexts outside of this course?
   Not likely, Slightly likely, Moderately likely, Very likely, Extremely likely

New STEM-focused skills questions:
How much has this course helped you in designing experiments or processes to address a problem?
How much has this course helped you in analyzing and interpreting data and/or problems?
How much has this course helped you in choosing methods appropriate to solving a problem?
   Response options: Not at all, A little, A moderate amount, A lot, A great deal
Skills: Beginning and End of Course

The following 10 questions are asked at the beginning and end of term:

I can express my ideas effectively when I write.
I can communicate effectively when I speak.
I collaborate well with others on academic work.
I am good at breaking down theories, ideas and experiences into pieces so I can consider them.
When I am given information from multiple sources, I have an easy time making connections between them.
I am able to apply the things I have learned to new problems and situations.
I tend to consider the ethical implications of my actions.
I am capable of learning on my own.

Response options: Never, Sometimes, Often, Always

Please rate your confidence about your ability to succeed in school.
Please rate your confidence about your ability to succeed in this field.

Response options: Low, Moderate, High
Academic Confidence & Sense of Belonging

Confidence
30. Please rate your confidence about your ability to succeed in school.
31. Please rate your confidence about your ability to succeed in this field.
   Low, Moderate, High
25. As a result of taking this course are you more or less confident about your ability to succeed in school, or has the course made no difference?
26. As a result of taking this course are you more or less confident about your ability to succeed in this field, or has the course made no difference?
   Much less confident, Somewhat less, No difference, Somewhat more, Much more confident

Belonging
34. How much did class meetings incorporate the students' suggestions and interests?
35. How much did the instructor value you as a student?
New: How much did this course help you feel that you are a member of your school’s community?
   Not at all, A little, A moderate amount, A lot, A great deal
New: I feel that I am a member of my school’s community. Never, Sometimes, Often, Always
Review of Transparent Principles in Past Literature
<table>
<thead>
<tr>
<th>Research on Learning</th>
<th>Implications for Transparent Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elbow, Jaschik/Davidson, Mazur Ambrose, Bergstahler Gregorc, Kolb</td>
<td><strong>PURPOSE:</strong> Low stakes for greater creativity / risk Varied and/or flexible formats appeal equitably to students’ strengths; inclusive</td>
</tr>
<tr>
<td>AAC&amp;U HIPs, Bass, Bloom, Colomb, Felder, Perry</td>
<td><strong>PURPOSE:</strong> Build critical thinking skills in sequence. Target feedback to phase, don’t overwhelm</td>
</tr>
<tr>
<td>Doyle, Felder, Tanner, Winkelmes</td>
<td><strong>PURPOSE:</strong> Specify knowledge/skills, criteria and encourage self-monitoring.</td>
</tr>
<tr>
<td>Fisk/Light, Tanner</td>
<td>TASK: Provide annotated examples of successful work w/criteria applied, before students begin work</td>
</tr>
<tr>
<td>Aronson, Dweck, Fisk, Light, Schnabel, Spitzer, Steele, Treisman, Yeager/Walton, Vygosky</td>
<td>TASK: Structure and require peer instruction, feedback; positive attribution activities.</td>
</tr>
<tr>
<td>Finley/McNair Winkelmes et al Yeager, Walton</td>
<td>CRITERIA: Explicate purposes, tasks, criteria in advance. Give students a compass, set expectations; Explicate applicability, relevance; Engage students in applying shared criteria to increase belonging.</td>
</tr>
</tbody>
</table>
1. Varied and/or flexible formats appeal equitably

Music in Andrew Lloyd Webber’s
The Phantom of the Opera

Argument: Andrew Lloyd Webber’s orchestration relies on conventional Western styles of musical phrasing and instrumentation. It exploits the natural tendencies of music to correspond with the ebb and flow of emotions, and allows the music to reflect the mood and/or tone of a scene, thereby making the musical accessible to a large general audience.

1) Introduction
   a. The popularity of Phantom and its music
   b. Possible reasons: storv, spectacle, characters’ success mainly comes from orchestration

2) Critics of Andre Lloyd Webber’s music
   a. What reviewers criticize
   b. Why they are wrong

3) Why the music does deserve praise
   a. Tactics of Western music that Lloyd Webber uses
   b. Exploits the natural tendencies of musical phrasing
   c. Orchestrates the numbers with instruments commonly associated with different moods
   d. Relies on recurring themes, bringing back melodies associated in audience’s memories with certain character roles and types.
   e. In scenes with romantic implications, couples orchestration with rhythm of the lyrics to amplify sensuous overtones and transmit
1. Varied and/or flexible formats appeal equitably

• What is your topic? What position will you take?
• What are the major primary and secondary sources essential to this topic? List full citations. What main pieces of evidence will support your idea(s) about the topic?
• What are possible counterarguments? What evidence might support these? What are some possible ways to refute counterarguments? What evidence can be used?
• What problems or questions do you have?
2. Build students’ critical thinking skills in an intentional sequence

### Assignments for a sample business course

This chart indicates how each required assignment for the course helps you practice the disciplinary skills needed for passing the course.

<table>
<thead>
<tr>
<th>ASSIGNMENT</th>
<th>DUE DATE</th>
<th>Use of information technology</th>
<th>Communication skills oral and/or written</th>
<th>Teamwork</th>
<th>Understanding group and individual dynamics in organizations*</th>
<th>Understanding of domestic and global economic environments</th>
<th>Multicultural and diversity understanding</th>
<th>Analytic skills</th>
<th>Applying learned concepts to practical situations</th>
<th>Understanding of professional roles, including ethical reasoning, regard for self, regard for organizations, society**</th>
<th>Research, locating, evaluating and selecting useful information and references</th>
<th>Reflective (meta-)thinking</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>9/31/DOOD</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>+</td>
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<tr>
<td>2.</td>
<td>9/1</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>+</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>3.</td>
<td>9/11</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+</td>
<td></td>
<td></td>
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<tr>
<td>4.</td>
<td>9/11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>9/25</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
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</table>

* from American Association of Colleges and Schools of Business “Assurance of Learning Standards,” in Eligibility Procedures and Accreditation Standards...

** from Benjamin Bloom, Taxonomy of Educational Objectives

*** from Hart Research Associates, It Takes More than a Major: Employer Priorities for College Learning and Student Success, April 2013.
2. Build students’ critical thinking skills in an intentional sequence

### Bloom’s Taxonomy of Educational Objectives

<table>
<thead>
<tr>
<th>Competence</th>
<th>Skills</th>
<th>Assignment Cues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>• observation and recall of information</td>
<td>list, define, tell, describe, identify, show, label, collect, examine, tabulate, quote, name, who, when, where, etc.</td>
</tr>
<tr>
<td></td>
<td>• knowledge of dates, events, places</td>
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<td></td>
<td>• knowledge of major ideas</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• mastery of subject matter</td>
<td></td>
</tr>
<tr>
<td>Comprehension</td>
<td>• understanding information</td>
<td>summarize, describe, interpret, contrast, predict, associate, distinguish, estimate, differentiate, discuss, extend</td>
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<tr>
<td></td>
<td>• grasp meaning</td>
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<td></td>
<td>• translate knowledge into new context</td>
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<td></td>
<td>• interpret facts, compare, contrast</td>
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<td></td>
<td>• order, group, infer causes</td>
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<tr>
<td></td>
<td>• predict consequences</td>
<td></td>
</tr>
<tr>
<td>Application</td>
<td>• use information</td>
<td>apply, demonstrate, calculate, complete, illustrate, show, solve, examine, modify, relate, change, classify, experiment, discover</td>
</tr>
<tr>
<td></td>
<td>• use methods, concepts, theories in new situations</td>
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<tr>
<td></td>
<td>• solve problems using required skills or knowledge</td>
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</tr>
<tr>
<td>Analysis</td>
<td>• seeing patterns</td>
<td>analyze, separate, order</td>
</tr>
</tbody>
</table>
3. Specify criteria and encourage students’ self-monitoring

### Core assessment criteria for essays

<table>
<thead>
<tr>
<th>1. Addressing the question</th>
<th>The relevance of the content of the essay to the question or title set</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Good essays</strong> select relevant material (knowledge, concepts, interpretation, theoretical models, others’ perspectives).</td>
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<tr>
<td></td>
<td><strong>Better essays</strong> make it clear throughout how the material is relevant to the question.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Using evidence</th>
<th>The use of externally sourced material, such as research findings, facts, quotations, or other forms of information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Good essays</strong> include information from outside sources that backs up the points made in the essay.</td>
</tr>
<tr>
<td></td>
<td><strong>Better essays</strong> explicitly highlight or interpret the evidence to support a more general claim or idea or point being made in the essay.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. Developing argument</th>
<th>The construction of a coherent and convincing set of reasons for holding a particular point of view; the following of an analytical path leading from a starting point to a concluding point</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Good essays</strong> contain expressions of positions on the issues raised by the essay.</td>
</tr>
<tr>
<td></td>
<td><strong>Better essays</strong> develop arguments throughout the essay, with each element building on the last.</td>
</tr>
</tbody>
</table>

| 4. Critical evaluation/analysis | Determining the value, significance, strengths and/or |

*Using assessment criteria to support student learning HEFCE funded consortium project  http://www.assessmentplus.net*
3. Specify criteria and encourage students’ self-monitoring

CHEM 223 - Analytical Chemistry Lab
Kasia Kudzilo, University of Illinois

This document is an attempt to clarify the lab report organizational summary found in the online CHEM 223 Lab Manual.

I. Title of Experiment

II. Introduction
This section should concisely state the purpose of the experiment and the general means of accomplishing that purpose i.e., the method or instrumentation used. This includes stating your unknown (ex. Unknown A) and what you were trying to find out about it.

III. Procedure
This section should only reference the procedure in the online manual and any deviations from it. The procedure is not meant to be repeated. A deviation example would be if there were different solution concentrations used than what was given in the manual or any necessary added steps. Other important information includes drying time, temperature, cooling time, reagent amounts, and not just what was given in the manual but what you actually did. For example, if the manual said to weigh out 1.0 g NaCl, write what you actually got on the balance – 1.2 g, 0.9 g etc.
4. Provide annotated example of successful work, before students begin working

Carol Augspurger, School of Integrative Biology, University of Illinois at Urbana-Champaign
Used by permission of Carol Augspurger.

Use “invented triangle” to organize introduction. First, give big picture/context.
Topic sentence of paragraph; all sentences in paragraph relate to this topic.
Background information.
Key references included.
No direct quotations — only paraphrases with sources. Proper literature format used.

INTRODUCTION (4-5 paragraphs)
Both extrinsic and intrinsic factors affect the relative population size of species of small mammals in local habitats. Extrinsic factors may include the amount of food availability (Bell 1989), presence of competing species (Holt et al. 1995), and the presence of predators (Batzli and Lin 2001). Intrinsic factors may relate to their diet and food preferences (Heskie 2004), competitive ability (Holt et al. 1995), and body shape (Hoffmeister 1989) that affects their speed and agility in escaping predators. Differences in these factors are expected to result in varying population sizes of species of small mammals among local habitats. Understanding the factors that affect a species’ population size is important
4. Provide annotated example of successful work, before students begin working

Sample Glossary Entry:

apse:

in a Christian church, semicircular area at the end of the nave beyond the transept or choir.

STEP 1) Locate a term in the glossary that lacks an illustration.

STEP 2) Insert an image that illustrates the term.

STEP 3) Insert a label for your image.

Insert label here:

Artist’s or architect’s name, title of work, materials used in the work, original location of the work, current location of the work, URL, date accessed [your first and last name]

EXAMPLE:

Plan of a cathedral.
5. Structure Peer Instruction Activities and Peer Feedback

Mazur Group: improving education through research: www.mazur.harvard.edu

1) EXAMPLE CONCEPT TEST

Consider a rectangular metal plate with a circular hole in it.

When the plate is uniformly heated, the diameter of the hole

1. increases.
2. stays the same.
3. decreases.
5. Structure Peer Instruction Activities and Peer Feedback

Peer Response Sheet (Derek Bok Center for Teaching and Learning, Harvard U)

Read the paper through once, rather quickly, without pausing to write comments. Then put the paper aside and answer …

1. What single feature of the paper stands out to you as a reader?
2. What do you think is the writer's main point?
3. Was there anything in the paper that seemed confusing to you?
4. Underline the thesis statement. Is it clearly stated? If not, what seems confusing?
5. Is there any place where the writer needs to support an idea with more concrete detail or explanation? If so, where?
6. List at least two things you like about the paper.
7. What would you like to know more about? What questions do you still have?
8. Ask of the essay "so what?" after you finish reading. … "in what way(s) is this interesting, surprising, intriguing, etc.?" If the paper lacks a "so what," point that out and discuss the possibilities.
6. Explicate purpose, task(s), and criteria for students’ work in advance

Transparent Assignment Template
© 2013 Mary-Ann Winkelmes

This template can be used as a guide for developing, explaining, and discussing class activities and out-of-class assignments. Making these aspects of each course activity or assignment explicitly clear to students has demonstrably enhanced students’ learning in a national study.

Assignment Name
Due date:

Purpose: Define the learning objectives, in language and terms that help students recognize how this assignment will benefit their learning. Ideally, indicate how these are connected with institutional learning outcomes, and how the specific knowledge and skills involved in this assignment will be important in students’ lives beyond the contexts of this assignment, this course, and this college.

Skills: The purpose of this assignment is to help you practice the following skills that are essential to your success in this course / in school / in this field / in professional life beyond school:

- Understanding basic disciplinary knowledge and methods/tools
- Applying basic disciplinary knowledge/tools to problem-solving in a similar but unfamiliar context
- Analyzing
- Synthesizing
- Judging/evaluating and selecting best solutions
- Creating/inventing a new interpretation, product, theory

Knowledge: This assignment will also help you to become familiar with the following important content knowledge in this discipline:
Example Assignments for Discussion
Sample Assignments

Sample A, p. 7

Purpose

• Skills practiced (long-term (problem-centered) relevance to students’ lives)
• Knowledge gained (connection to learning outcomes)

Task: What to do

How to do it (steps to follow, avoid)

Criteria

• Checklist or rubric in advance to help students to self-evaluate
• What excellence looks like (multiple annotated examples)
Sample Assignments  Sample B, p. 7

Purpose

• Skills practiced
• Knowledge gained

{relevance to students
connection to LOs

Task: What to do
How to do it

Criteria

• What excellence looks like (annotated)
• Criteria in advance to help students to self-evaluate

Problem-centered
Sample Assignments

Sample C, p. 8

Purpose
- Skills practiced
- Knowledge gained

relevance to students
connection to LOs

Task: What to do
How to do it

Criteria
- What excellence looks like (annotated)
- Criteria in advance to help students to self-evaluate

Problem-centered

It’s A, revised
Sample Assignments

Sample D, p. 8

Purpose

• Skills practiced { relevance to students
• Knowledge gained } connection to LOs

Task (problem-based, relevant)

• What to do; How to do it

Criteria

• What excellence looks like (annotated)
• Criteria in advance to help students to self-evaluate
Your Assignments
Gather Feedback on Your Own Assignment

Why are we doing this now?

Purpose
- Knowledge: share feedback, insights; promote student success
- Skills: apply transparency; engage community of practice

Task
- Four steps, 2-4 min each, in pairs / 3s

Criteria
- draft you can use in your course
- helpful insights from colleagues as novices
Apply Transparency to Assignment: Set up

1. Volunteers: Who has an assignment for an upcoming course – from 1st half of term?
2. Sit with a disciplinary stranger who has an assignment
Choose an Assignment from Your Course

- from 1st half of the term
- after students are acquainted with basic tools and terminology the course uses
- when students are starting to apply those and try them out

Describe this assignment to your partners
(2 min each)
Feedback on Your Assignments, part 1 of 3

As a novice student, offer feedback on the **Purpose**
(3 min per assignment)

Five years after taking your course,

- What essential **knowledge** should students retain from doing this assignment?
- What **skills** should students be able to perform from doing this assignment?  
  *(p. 2 may help)*
- Why are these important to students?
Feedback on Your Assignments, part 2 of 3

handout page 6

As a novice student, offer feedback on the Task
In groups, discuss and define (2 min)

As a novice, list the steps you’d take to do the assignment.
Feedback on Your Assignments, part 3 of 3

As a novice student, offer feedback on the Criteria
In groups, discuss and define (3 min)

As a novice:
– Are you confident you are doing the task effectively?
– Are you confident you are doing excellent work?
– Do you have annotated good examples?

To answer yes, what would you need?
Additional Research-based Strategies

*handout page 1*

Offer feedback in groups, (2 min)

- Which additional research-based methods could be used? *(charts, pp. 1-2)*
Your in-class Activities

<table>
<thead>
<tr>
<th>Years out</th>
<th>Knowledge &amp; Skills</th>
<th>Purpose</th>
<th>Task</th>
<th>Task Cues</th>
<th>Criteria</th>
<th>Stakes % high/low</th>
<th>Assessed by peers/teacher</th>
<th>6 Transparent Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1)</td>
<td>Knowledge, disciplinary methods/tools content</td>
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<td></td>
<td>Bloom chart</td>
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<td>2)</td>
<td>Analysis/Application</td>
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<td>3)</td>
<td>Evaluation</td>
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<td>4)</td>
<td>Creative Contribution</td>
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[-----You just did this part in pairs. --------------------medium---------------------]

This is where an in-class activity can prepare students to excel on next assgt.

[-----Are students now ready to excel on *this* graded assignment?-------]
### Your in-class Activities

<table>
<thead>
<tr>
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<td>In-class activity for practice <em>before</em> students do it for a grade (low stakes)</td>
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<td>med/hi stakes</td>
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<td>Evaluation</td>
<td>In-class activity for practice <em>before</em> students do it for a grade (low stakes)</td>
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How did we do?

PURPOSE:
- Understand how transparently designed assignments can offer equitable opportunities for all college students to succeed; and consider applications

TASKS:
- Review: summary of research findings
- Apply: to sample assignments

CRITERIA:
You’ll leave with
- Understanding of our research
- Strategies for applying transparency in assignments
- Draft ideas for your teaching practice
Please join us!

http://www.unlv.edu/provost/teachingandlearning
Resources

Materials and resources (online)

- NILOA assignment library  http://www.assignmentlibrary.org/
- TILT materials  http://www.unlv.edu/provost/teachingandlearning

Research and publication opportunities:

- TILT: email request to mary-ann.winkelmes@unlv.edu
- NILOA Assignment Library submission:  http://www.assignmentlibrary.org/submitAssignment