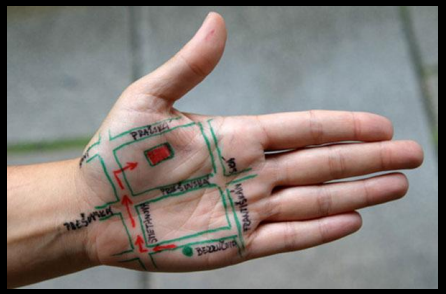
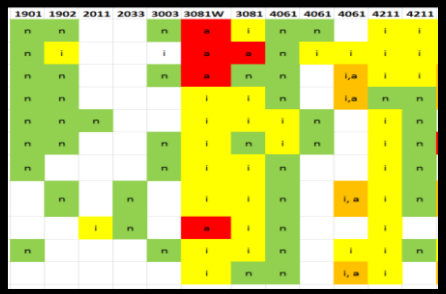
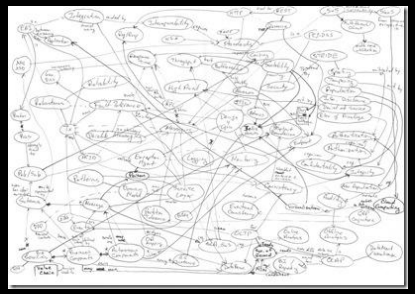
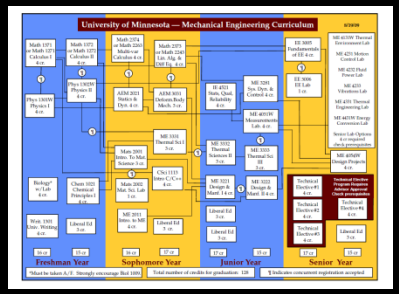


Yumi Janairo Roth





k. nelson



Mapping Waves, Bridging Shifts: Disciplinary Faculty Take on Whole Curricula

IWAC
June 13, 2014

Pamela Flash | WAC
Julia Robinson | Architecture
Leslie Schiff | College of Biological Sciences
Lisa Miller | Industrial & Systems Engineering,
Walt Jacobs | African American & African Studies

University of Minnesota, Twin Cities

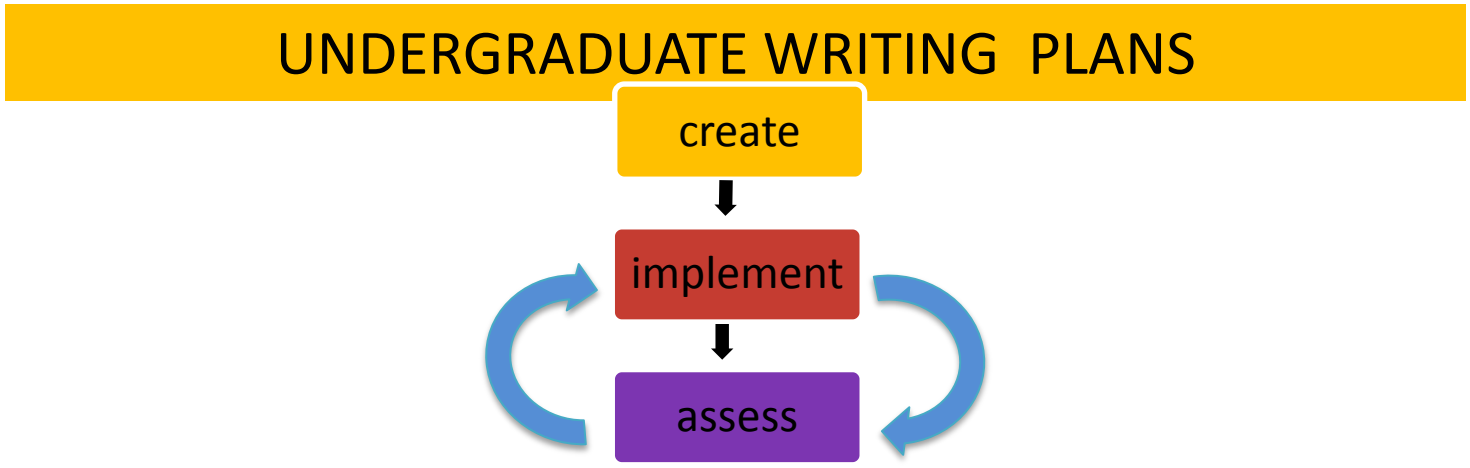
2006: we need to evolve our approach to WAC…

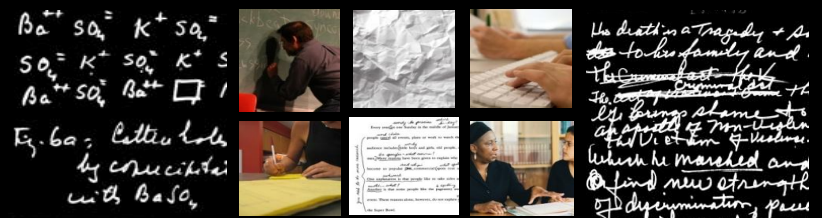
- Prolonged perception of writing and content as discrete instructional areas
- Course-based vs. curriculum-based integration of writing/writing instruction
- Amplified questions about central administration's fiscal support for writing instruction
- Uneven compliance with WI requirements / course recertification waylaid
- Disappointment in student writing

WRITING-ENRICHED CURRICULUM

2006 Question: How can we ensure an intentional and sustainable infusion of relevant writing instruction into diverse undergraduate curricula?

Answer: By putting change in the hands of unit faculty. By engaging faculty in a process of unearthing, interrogating, implementing, and assessing discipline-specific writing values, practices and expectations





TYPICAL WEC TIMELINE

F0	S0	F1	S1	F2	S2	F3	S3	F4	S4	F5	S5

Appoint Liaison, Sample

Survey, meet, create Writing Plan

Implement Writing Plan

Implement 2nd Edition Writing Plan

Implement 3rd Edition Writing Plan

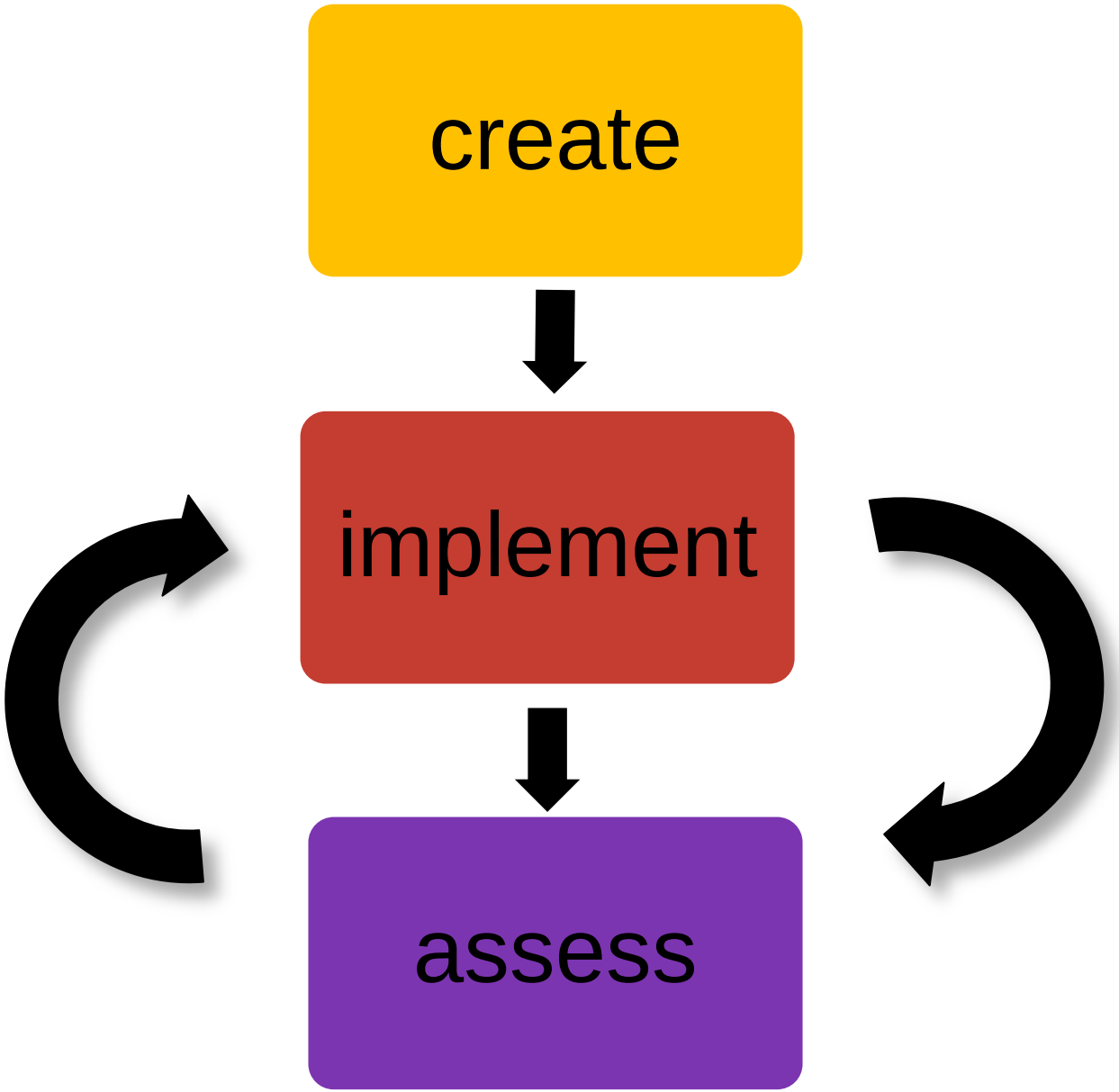
Submit 1st ed. Plan ("start-up")

Submit 2nd ed. Plan ("two-year")

Submit Writing 3rd ed. Plan

Rating #1

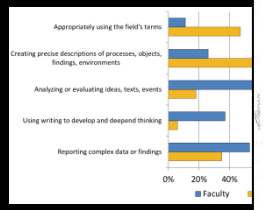
Rating #2

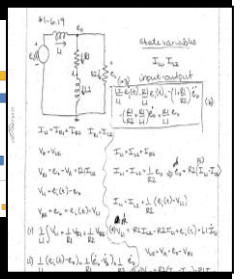

create
implement
assess

Create Writing Plan

SECTION I: CHARACTERISTICS OF WRITING?

Meeting #1

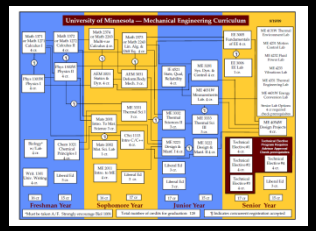




SECTION II: WRITING ABILITIES?

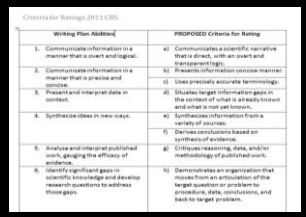
SECTION III: CURRICULAR SEQUENCING?

Meeting #2



SECTION IV: ASSESSMENT?

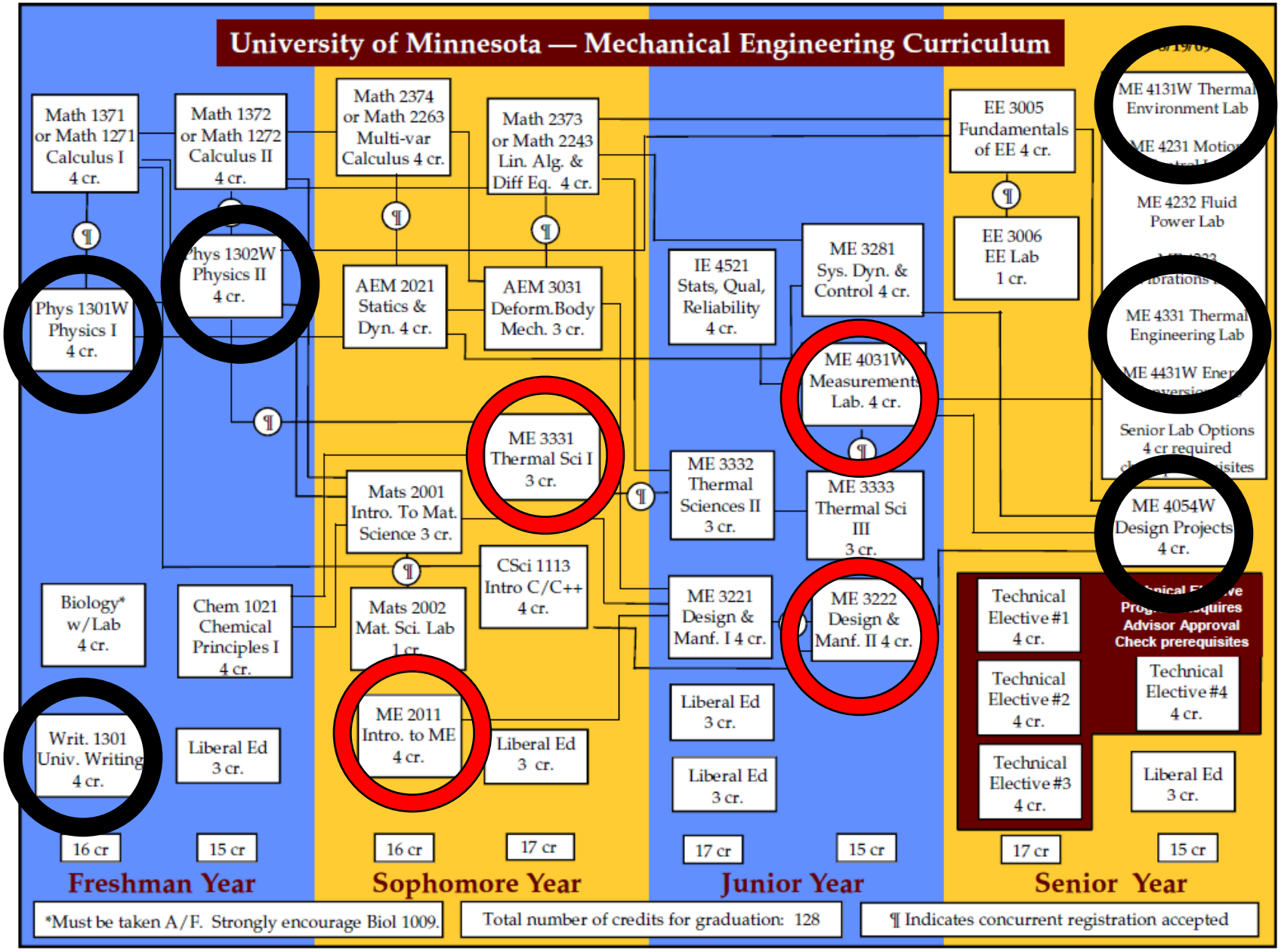
Meeting #3



SECTION V: SUPPORT?

Meeting #4

SECTION VI: PROCESS?


University of Minnesota — Mechanical Engineering Curriculum
Math 1371 or Math 1271 Calculus I 4 cr.
Math 1372 or Math 1272 Calculus II 4 cr.
Math 2374 or Math 2263 Multi-var Calculus 4 cr.
Math 2373 or Math 2243 Lin. Alg. & Diff Eq. 4 cr.
EE 3005 Fundamentals of EE 4 cr.
EE 3006 EE Lab 1 cr.
Phys 1301W Physics I 4 cr.
Phys 1302W Physics II 4 cr.
AEM 2021 Statics & Dyn. 4 cr.
AEM 3031 Deform.Body Mech. 3 cr.
IE 4521 Stats, Qual, Reliability 4 cr.
ME 3281 Sys. Dyn. & Control 4 cr.
ME 4131W Thermal Environment Lab
ME 4231 Motion
ME 4232 Fluid Power Lab
ME 4331 Thermal Engineering Lab
ME 4431W Energy
Senior Lab Options 4 cr required
ME 4031W Measurements Lab. 4 cr.
ME 3331 Thermal Sci I 3 cr.
ME 3332 Thermal Sciences II 3 cr.
ME 3333 Thermal Sci III 3 cr.
ME 4054W Design Projects 4 cr.
Mats 2001 Intro. To Mat. Science 3 cr.
CSci 1113 Intro C/C++ 4 cr.
Biology* w/Lab 4 cr.
Chem 1021 Chemical Principles I 4 cr.
Mats 2002 Mat. Sci. Lab 1 cr.
ME 3221 Design & Manf. I 4 cr.
ME 3222 Design & Manf. II 4 cr.
Technical Elective #1 4 cr.
Technical Elective #2 4 cr.
Technical Elective #3 4 cr.
Technical Elective #4 4 cr.
Advisor Approval
Check prerequisites
Writ. 1301 Univ. Writing 4 cr.
Liberal Ed 3 cr.
ME 2011 Intro. to ME 4 cr.
Liberal Ed 3 cr.
Liberal Ed 3 cr.
Liberal Ed 3 cr.
Liberal Ed 3 cr.
16 cr
15 cr
16 cr
17 cr
17 cr
15 cr
17 cr
15 cr
Freshman Year
Sophomore Year
Junior Year
Senior Year
*Must be taken A/F. Strongly encourage Biol 1009.
Total number of credits for graduation: 128
¶ Indicates concurrent registration accepted

Art History

WRIT1201, 1301, 1401: First-Year Writing

ArtH1001: Introduction to Art History

OR

ArtH1002W: Why Art Matters

OR

ArtH1004W: Introduction to Asian Art

ARTH1921W: Introduction to Film Study

ArtH3205: Intro to Aztec, Maya, and Inka Art
ArtH3208: Mexico on My Mind

ArtH3014W: Art of India

ArtH3015: Art of Islam
ArtH3017: Islamic Culture

ArtH3401: Art Now
ArtH3434: Art & the Environment
ArtH3464: Art Since 1945

ArtH3152: Art & Archaeology of Ancient Greece
ArtH3162: Roman Art & Archaeology
ArtH3172: Greek and Roman Art & Archaeology

ArtH3182: Art & Archaeology of Ancient Egypt & Western Asia

ArtH3302: Print Culture in Early Modern Europe
ArtH3315: Age of Curiosity: Art & Knowledge in Europe, 1500-1800

ArtH3013: Introduction to East Asian Art
ArtH3020W: Buddhist Art & Culture

ArtH3005: American Art
ArtH3577: Photo Nation: Photography in America

ArtH3311: Baroque Art in 17th Century Europe
ArtH3312: 18th Century: Rococo to Revolution
ArtH3335: Baroque Rome

ArtH3655: African-American Cinema
ArtH3921W: Art of the Film

ArtH3012: 19th and 20th Century Art
ArtH3484: Art of Picasso & the Modern Movement
ArtH3422: Off the Wall: History of Graphic Arts in Europe & America
ArtH3494: East/West, West/East

ArtH5325: Art of the Aztec Empire
ArtH5801: Spoken Word & Painted Texts in the Americas
ArtH5802: Art of the Inka and their Ancestors

ArtH5775: Formation of Indian Art: 2500 BCE to 300 CE
ArtH5776: Redefining Tradition: Indian Art, 400 to 1300
ArtH5777: Diversity of Traditions: Indian Art, 1200 to Present

ArtH5781: Age of Empire: Mughals, Safavids, and Ottomans
ArtH5785: Art of Islamic Iran

ArtH5411: Gender & Sexuality in Art Since 1863
ArtH5413: Alternative Media: Video, Performance, Digital Art
ArtH5417: Twentieth Century Theory & Criticism
ArtH5466: Contemporary Art

ArtH5113: Heritage After Iraq & Afghanistan
ArtH5115: Hellenistic & Iranian Asia
ArtH5192: Persia & the Ancient Iranian World
ArtH5786: Theorizing City & Space in the Mediterranean & W. Asia
ArtH5787: Visual Cultures in Contact… Ancient & Medieval Worlds

ArtH5301: Visual Culture of the Atlantic World
ArtH5302: Print Culture in Early Modern Europe

ArtH5765: Early Chinese Art
ArtH5766: Chinese Painting

ArtH5565: American Art in the Gilded Age
ArtH5575: Boom to Bust: American Art 1920s-1930s
ArtH5577: Art of the Harlem Renaissance

ArtH5335: Baroque Rome
ArtH5655: African American Cinema

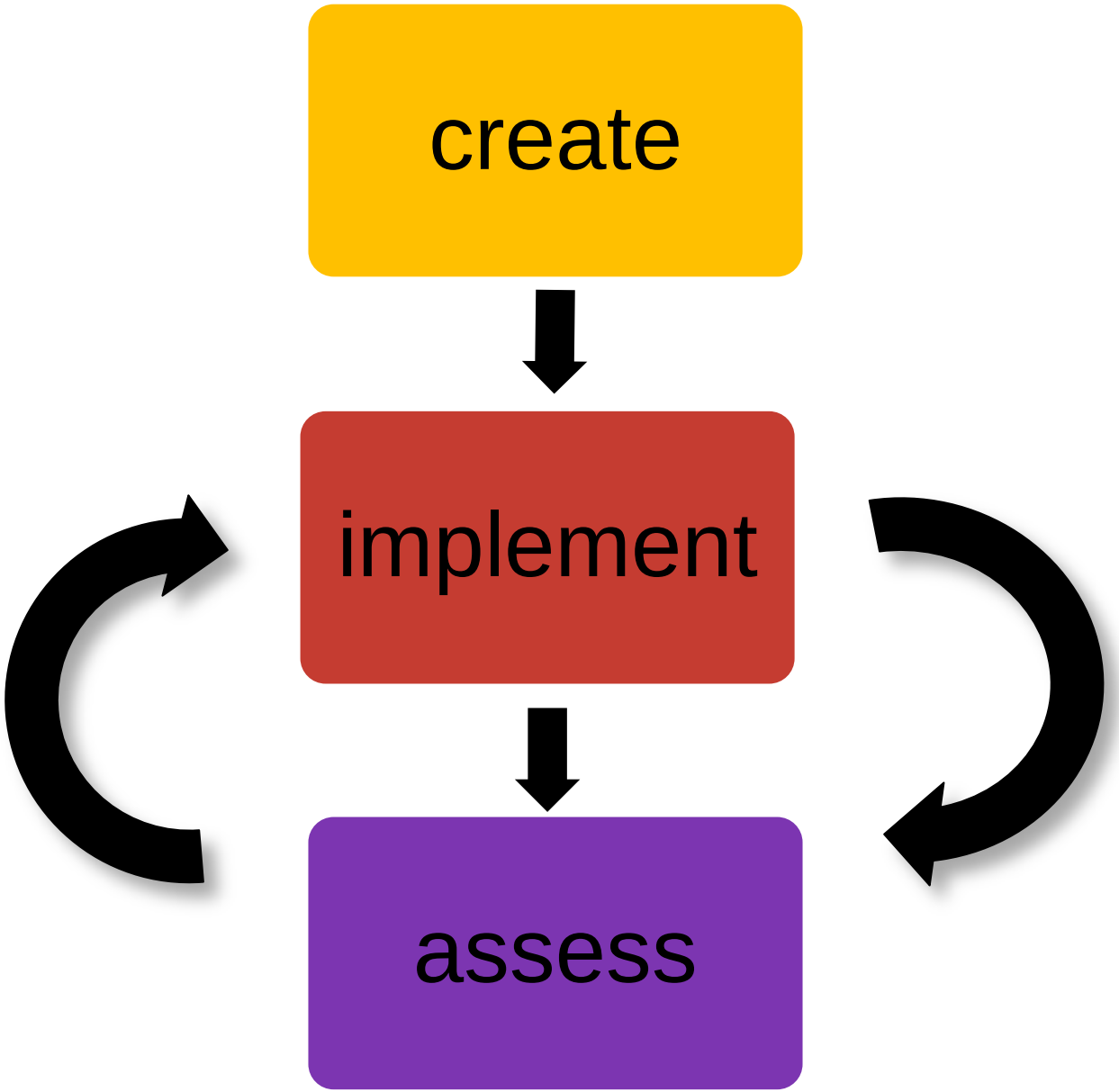
ArtH5422: Off the Wall: History of Graphic Arts in Europe & America
ArtH5454: Design Reform in the Era of Art Nouveau
ArtH5484: Art of Picasso & the Modern Movement
ArtH5422: Off the Wall: History of Graphic Arts in Europe & America
ArtH5494: East/ West, West/ East

ARTH 3971W Major Project

Computer Science

List of expected writing abilities ↓ **Courses (1K-4K)** →

Number	Ability	1901	1902	2011	20[illegible]3	3003	3081W	3081	40[illegible]1	4061	4061	4211	4211
1	**Describe software or system processes** accurately, clearly and illustratively, using appropriate structures.	n	n			n	a	i	n	n		i	i
2	**Provide low-level code explanations such as comments** accurately, concisely, and informatively.	n	i				a	a	n	i	i	i	i
3	**Describe algorithms** accurately and concisely, with appropriate structure, and appropriate balance between high-level characteristics and low-level details.	n	n			n	a	n	n		i,a	i	i
4	**Write for specific audiences** with appropriate tone, level of explanation, and accessibility.	n	n				i	i	n		i,a	n	n
5	**Use appropriate structures (e.g., lists, visuals** cite appropriately, and integrate into the text.	n	n	n			i	i	i	n		i	n
6	**Justify choices of design, algorithms, etc.** persuasively, clearly explaining the reasons for the choice, any important alternatives, tradeoffs, etc.	n	n			n	i	n	i	n		i	n
7	**Compare and contrast alternative solutions** clearly, accurately, and insightfully, with appropriate level of detail and appropriate structure, diagrams, etc.	n				n	i	i	n			i	n
8	**Present high-level (theoretical or technical) analysis** clearly, accurately, insightfully, providing a high-level summary that focuses on the most important aspects of the problem or system.		n		n		i	i	n		i, a	i	n
9	**Present low-level analysis or proofs** rigorously, precisely, and accurate, with appropriate structure, flow of ideas, and careful attention to details.			i	n		a	i	n			i	
10	**Document/clearly articulate content** accurately and concisely with an appropriate balance between high-level and low-level ideas, and appropriate structures.	n				n	i	i	n		i	i	n
11	**Authentically reflect individuality** though writing that shows the writer's unique background, perspective, etc.						i	n	n		i, a	i	

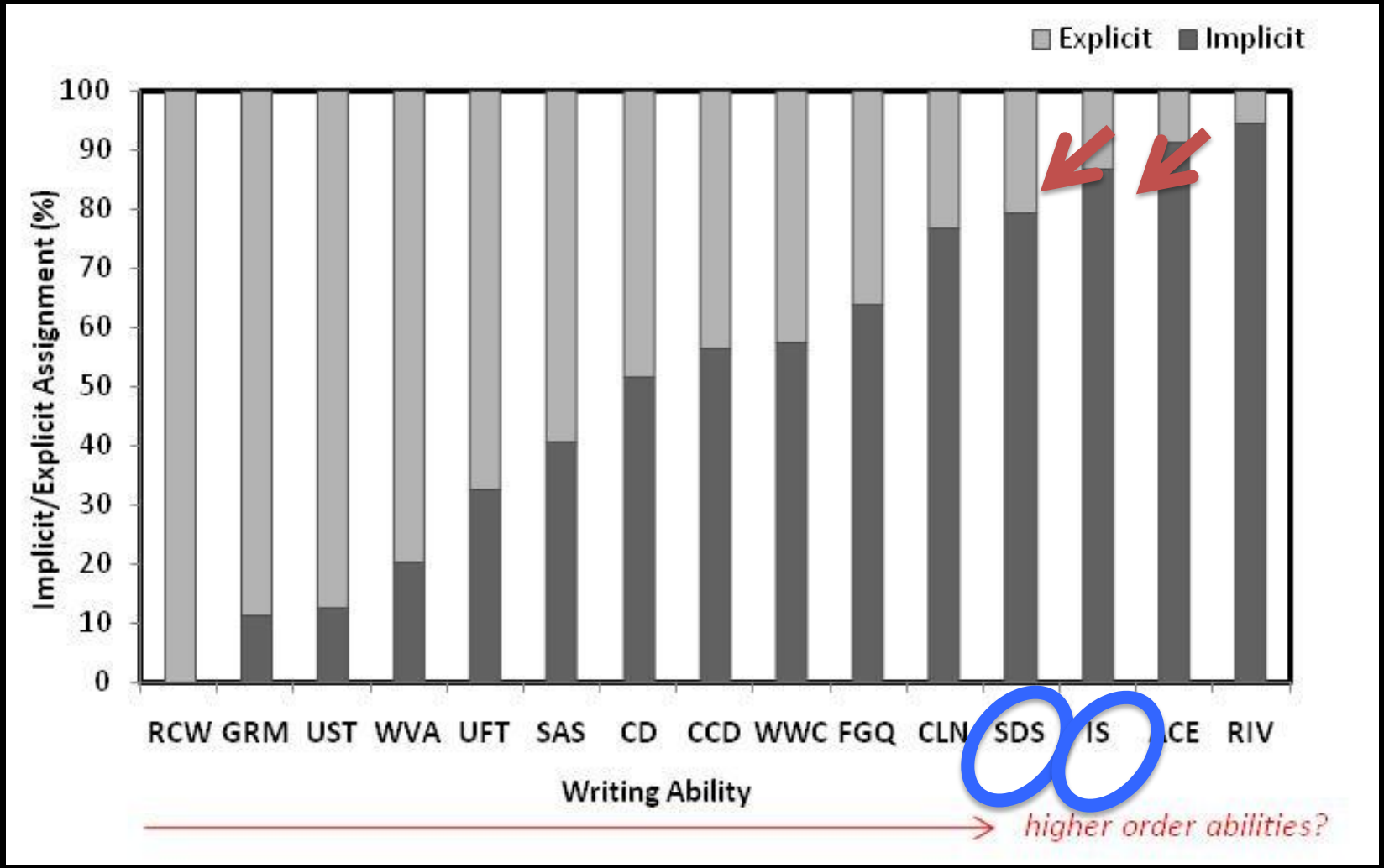

create
implement
assess

Ecology, Evolution, & Behavior

Writing assignments by course level

Assignment Genres	3000 LEVEL								4000 LEVEL						
	1	2	3	4	5	6	7	%	1	2	3	4	5	6	%
Worksheet/Problem Set	x			x	x			43%	x	x	x		x	x	83%
Informal Paper, 1-3 pg	x	x	x	x	x	x	x	100%		x			x		33%
Formal Paper, 1-3 pg	x	x			x			43%				x			17%
Formal Paper 4-10 pg		x	x	x		x		57%		x			x	x	50%
Individual Presentation	x	x						29%							0%
Group Presentation	x		x				x	43%				x		x	33%
Peer Review						x	x	29%					x	x	33%
Critical Reading ?s								0%	x			x	x		50%

Abilities communicated implicitly vs. explicitly



SDS= synthesizing disparate sources **IS=interrogating sources**

RCW = results centered writing
GRM = grammatically accurate writing

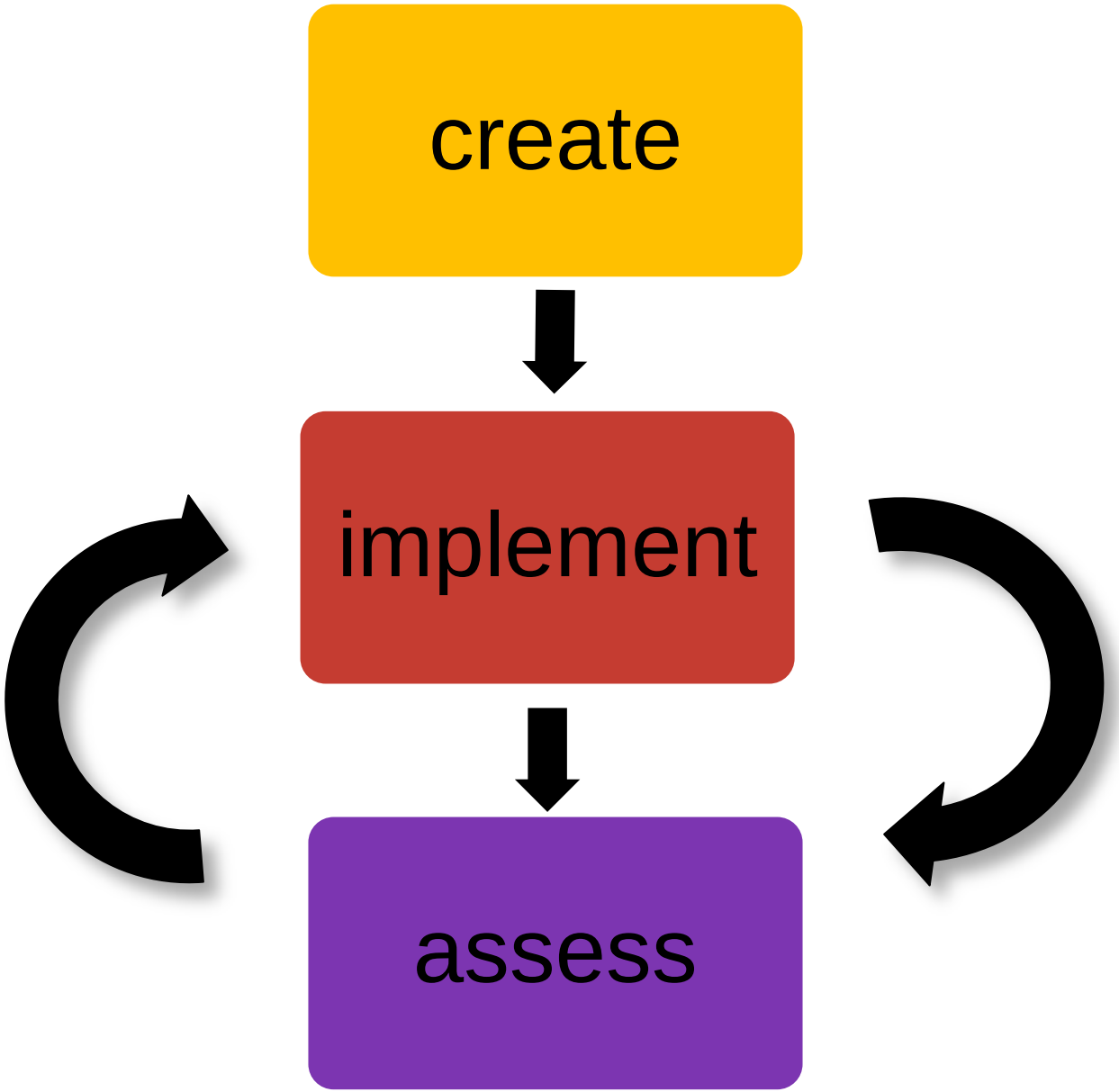
ACE = analyze for cause and effect
RIV = recognize the importance of variability

Interrogating Sources

- In-class activity on how to read a scientific paper
- Take home assignment + discussion critically reading a paper
- Multiple suggestions on discussions of papers for a range of students and goals

Synthesizing Sources

- Finding relevant literature
- Keeping track of key sources and conclusions
- Constructing an argument using multiple sources
- Synthesis workshop


create
implement
assess

A humanities department

Rating upper-division writing of graduating majors

August 2012

#	Criteria	2010 N=7	2012 N=9		2012 ___ raters only	2012 writing specialist only
1	Demonstrates an understanding of the importance of historical context.	0.67	0.81		0.74	1.00
2	Explains the context of historical events through the use of primary sources.*	0.68	0.64		0.63	0.63
3	Demonstrates an awareness of the particular nature, value, limitations, and incompleteness of historical sources.	0.29	0.53		0.59	0.38
4	Formulates and expresses viable historical research questions and hypotheses.	0.71	0.58		0.59	0.50
5	Engages in critical analysis of interpretive problems.	0.38	0.47		0.44	0.63
	Engages in persuasive analysis of interpretive problems	.65	x		x	x
6	Makes a persuasive and logically organized argument that is supported by the evidence.	0.67	0.55		0.48	0.71
7	Articulates this argument in a thesis statement.	0.70	0.63		0.54	0.88
8	Explains the broader significance of the topic.	0.57	0.49		0.58	0.25
9	Identifies and summarizes some of the main arguments, evidence, and historiographical context of a scholarly work related to the question.	0.33	0.47		0.52	0.25
10	Communicates ideas in compelling and accessible prose.	0.80	0.75		0.74	0.75
11	Cites evidence accurately to support argument.	0.57	0.56		0.52	0.75
12	Uses a consistent citation style.	0.90	0.83		0.81	0.88
13	Writing is grammatically and mechanically correct.	x	0.75		0.74	0.75

After discussing rating results, faculty chose to restructure capstone project course sequence.

Based on these findings, the Undergraduate Studies Committee was charged with developing a strategy to improve the efficacy of the capstone project. The eventual outcome was a proposal to replace the [redacted] 3959 – [redacted] 4961 sequence with a new single-semester capstone course, the [redacted] 4010 W Research Seminar (see Appendix III). Rather than the "open format" of the previous [redacted] 4961 Major Paper, [redacted] 4010 seminars are envisioned as small (20 students max), faculty-led "closed content" seminars, in which students are introduced to advanced research practices within the context of a theme chosen by the faculty instructor and drawn from her/his area of expertise. While each student in these courses will still be expected to develop an original research project based on her/his own interests, and to produce an original research paper of 20-30 pages at the conclusion of the semester, it is hoped that this "closed" format will help address some of the shortcomings of the [redacted] 3959 – [redacted] 4961 sequence.

From 3rd edition Writing Plan

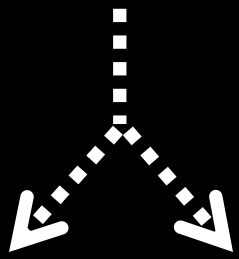
Intentionally-sequenced infusions of discipline-relevant writing instruction are unlikely to occur automatically in undergraduate curricula

but…

Engaging departmental faculty groups in data-driven discussions of writing-related assumptions and curriculum-wide writing instruction can…

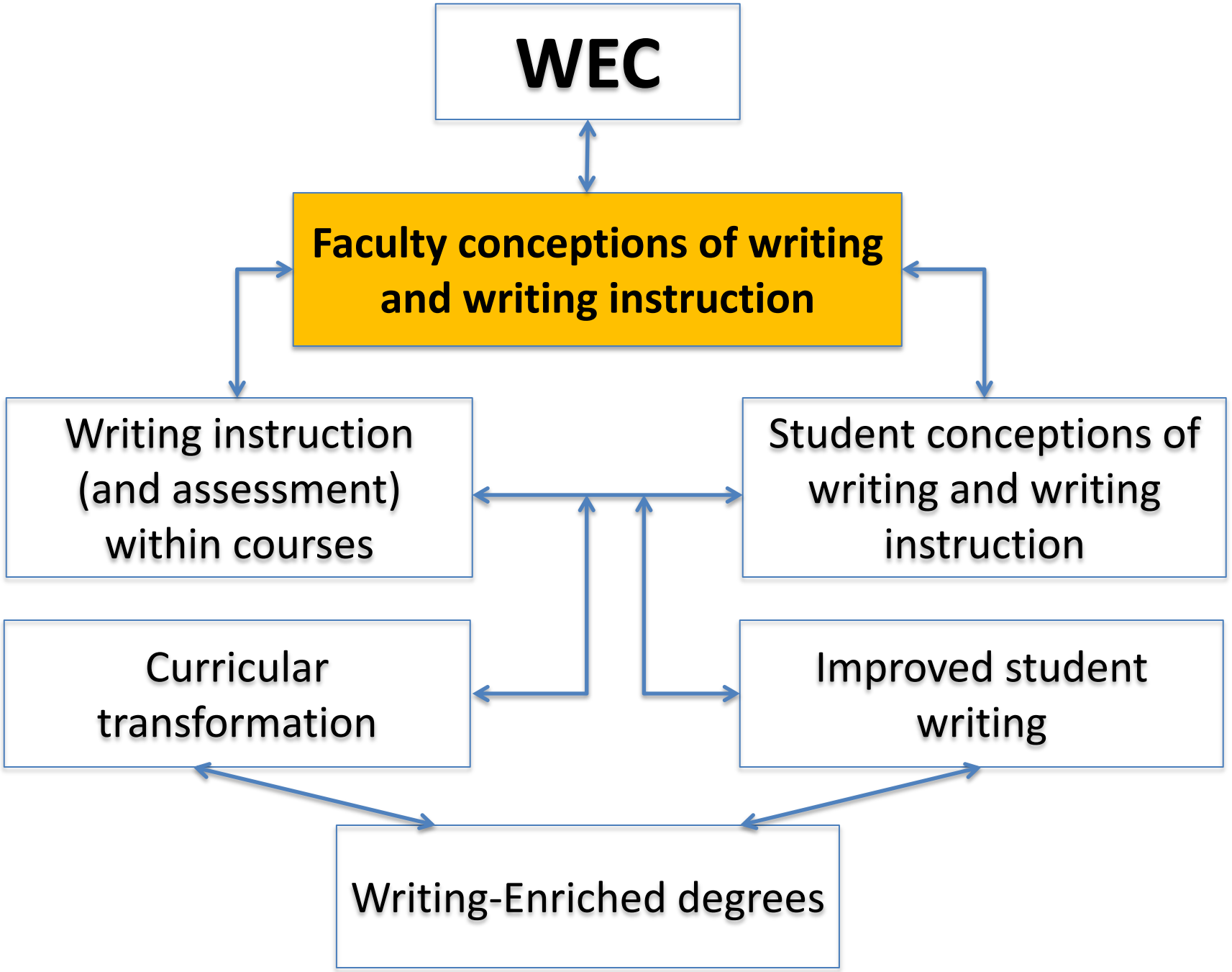
--reduce burden on individual courses

--increase attention to curricular implications of writing instruction

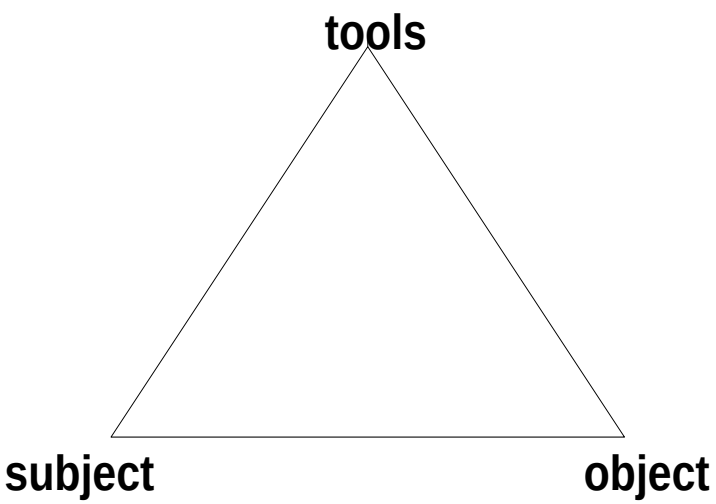


…which can increase students' ability to transfer relevant understanding between courses…

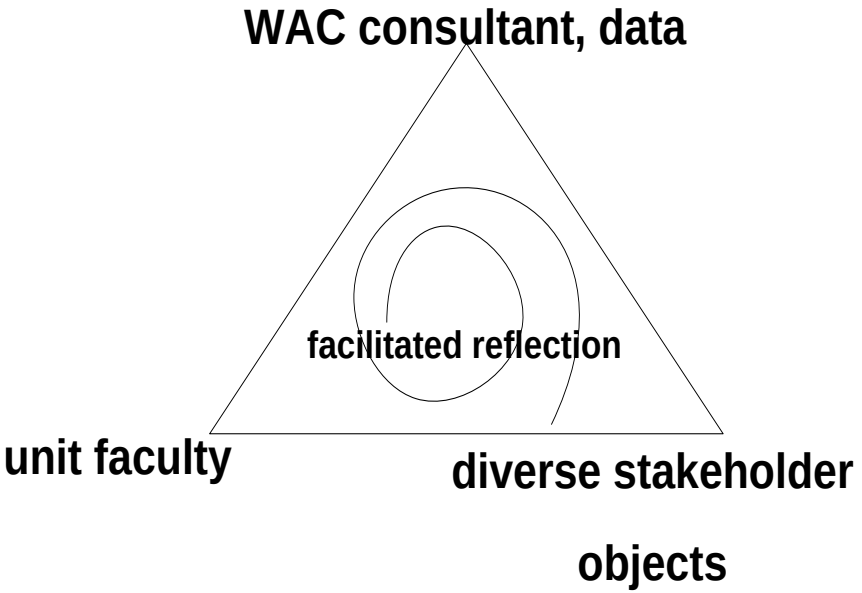
while at the same time increasing faculty willingness to "own" relevant writing instruction


WEC
Faculty conceptions of writing and writing instruction
Writing instruction (and assessment) within courses
Student conceptions of writing and writing instruction
Curricular transformation
Improved student writing
Writing-Enriched degrees

WEC's spin on Activity Theory



Activity Theory:
Vygotsky/Engeström



WEC adaptation

WEC in Architecture

For Session:

Mapping Waves, Bridging Shifts: Disciplinary Faculty Take on Whole Curricula

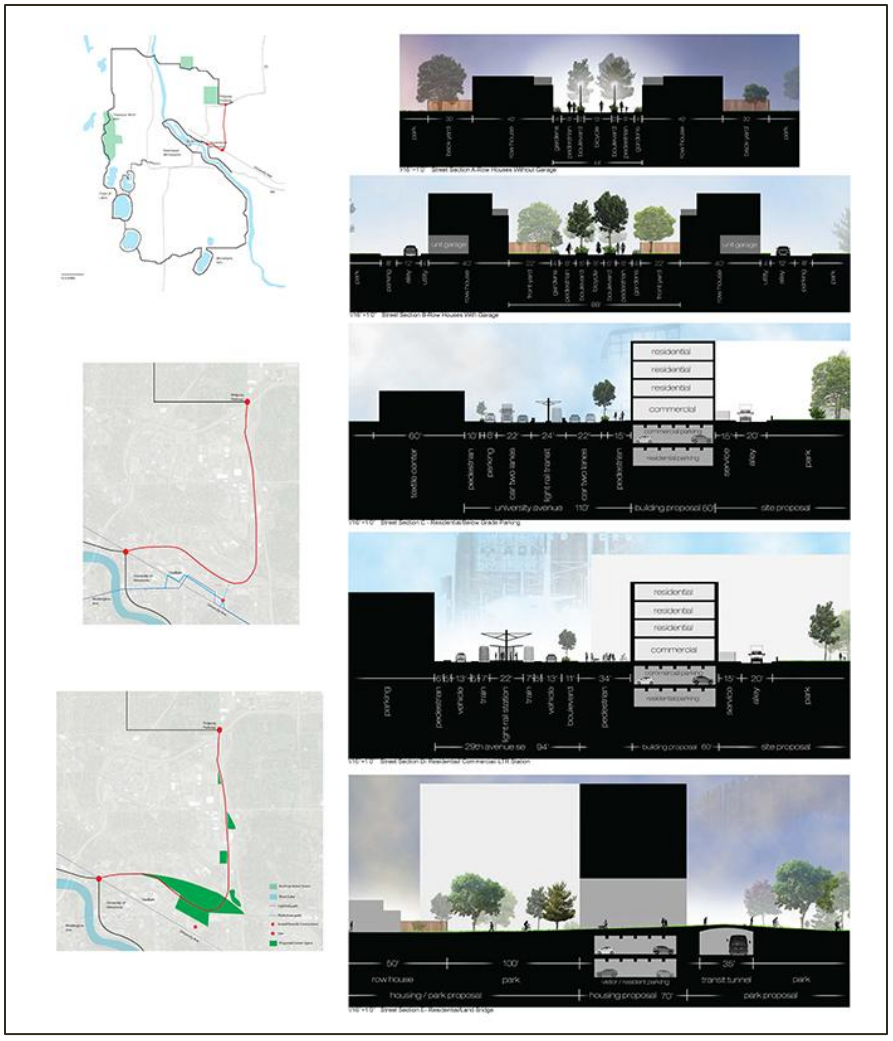
Shifting Currents, Making Waves- 12th International Writing Across the Curriculum Conference, June 12-14, 2014, University of Minnesota, Minneapolis

Julia W Robinson, WEC Liaison, Professor, School of Architecture

What is Writing in Architecture?

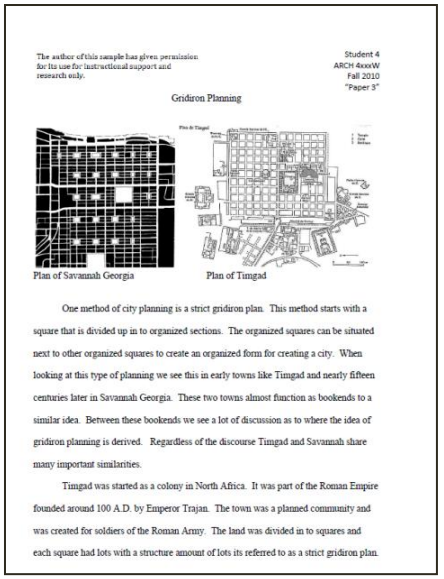
A

CONCEPT BOARD FOR DESIGN PROJECT



B

STUDENT PAPER ON URBAN DESIGN



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Student 4
ARCH 4xxxW
Fall 2010
"Paper 3"

Gridiron Planning

Plan of Savannah Georgia

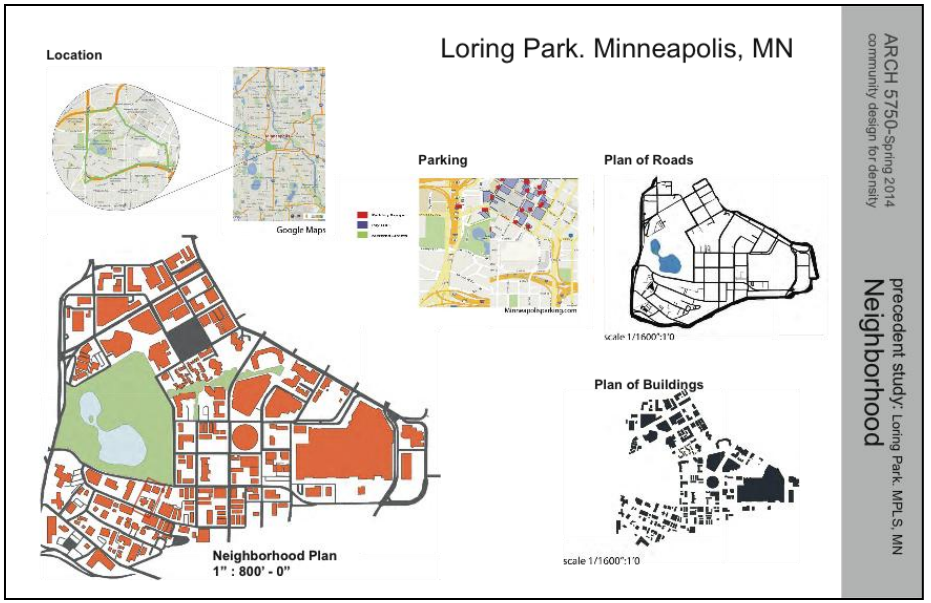
Plan of Timgad

One method of city planning is a strict gridiron plan. This method starts with a square that is divided up in to organized sections. The organized squares can be situated next to other organized squares to create an organized form for creating a city. When looking at this type of planning we see this in early towns like Timgad and nearly fifteen centuries later in Savannah Georgia. These two towns almost function as bookends to a similar idea. Between these bookends we see a lot of discussion as to where the idea of gridiron planning is derived. Regardless of the discourse Timgad and Savannah share many important similarities.

Timgad was started as a colony in North Africa. It was part of the Roman Empire founded around 100 A.D. by Emperor Trajan. The town was a planned community and was created for soldiers of the Roman Army. The land was divided in to squares and each square had lots with a structure amount of lots its referred to as a strict gridiron plan.

C

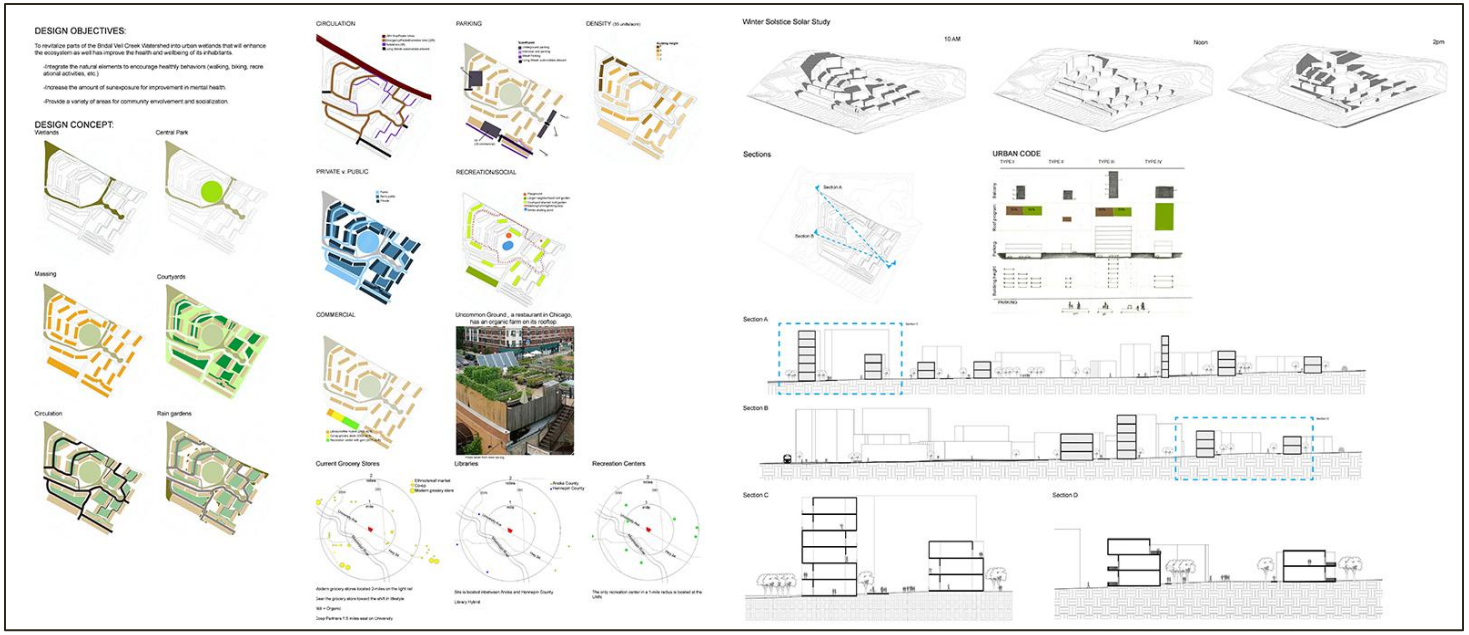
STUDY OF URBAN PRECEDENT FOR A DESIGN PROJECT

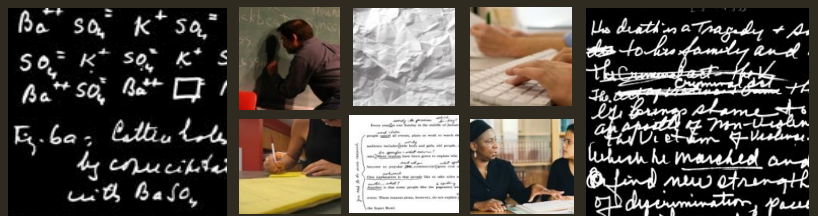


What is Writing in Architecture?

- Architectural design as argument (supporting a particular approach)
- Architectural argument is both visual and verbal
- Argument involves
  - Thesis identification
  - Description of the situation
  - Analysis of critical factors
  - Interpretation and conclusion/ design

CONCEPT BOARD SHOWING THE ARGUMENT SUPPORTING A DESIGN PROPOSAL





ARCHITECTURE WEC TIMELINE

F09 | S10 | F10 | S11 | F11 | S12 | F12 | S13 | F13 | S14 | F14 | S15

Appoint Liaison, Sample

Survey, meet, create Writing Plan

Writing Plan #1:
- [illegible]orkshops
- [illegible] Criteria
- Course Exchange

Writing Plan #2

-TA Workshops
-Faculty Workshops
-Instructor Website
-Student Website

Submit 1st ed. Plan ("start-up")

Submit 2nd ed. Plan ("two-year")

Submit Writing 3rd ed. Plan

Whole Faculty

Committee

Whole Faculty and Committee

Rating #1

Rating #2

Rating of Papers and Boards

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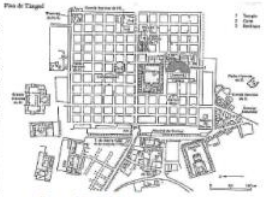
Student 4
ARCH 4xxxW
Fall 2010
"Paper 3"

Gridiron Planning

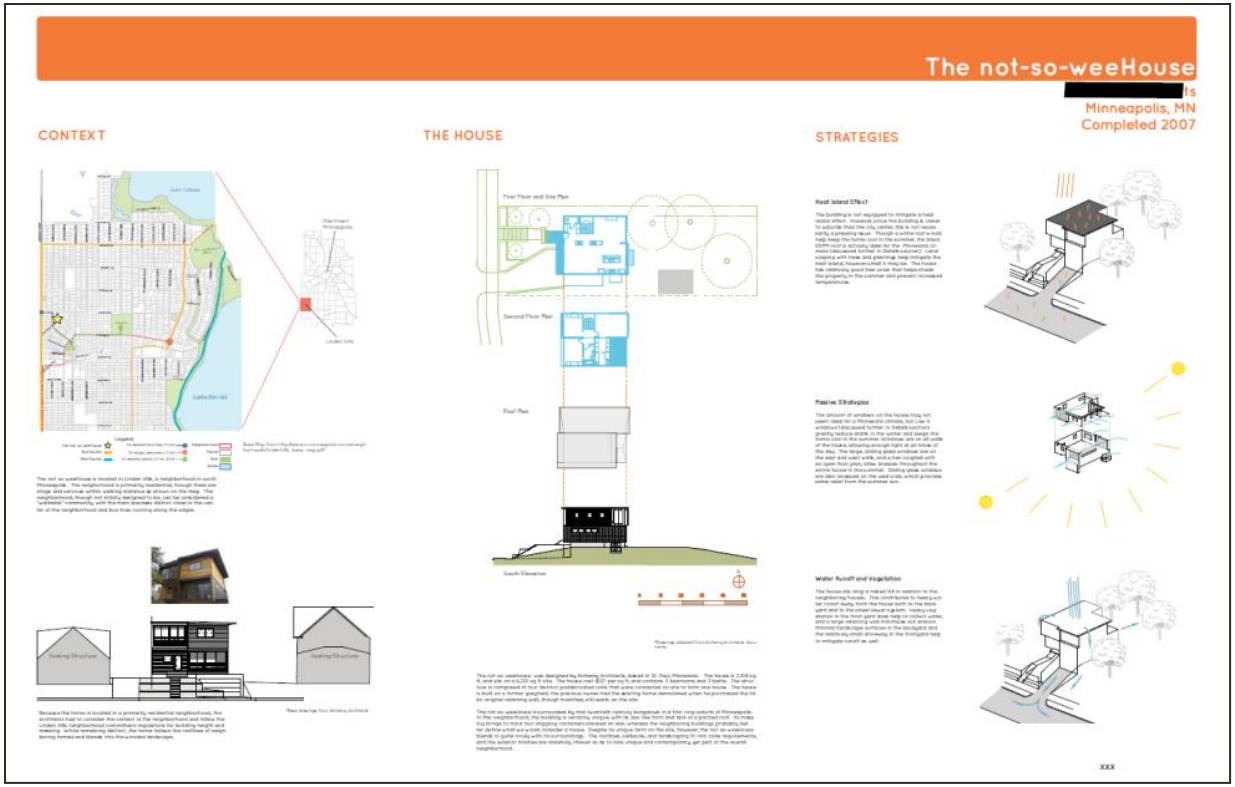
Plan of Savannah Georgia



Plan of Timgad

One method of city planning is a strict gridiron plan. This method starts with a square that is divided up in to organized sections. The organized squares can be situated next to other organized squares to create an organized form for creating a city. When looking at this type of planning we see this in early towns like Timgad and nearly fifteen centuries later in Savannah Georgia. These two towns almost function as bookends to a similar idea. Between these bookends we see a lot of discussion as to where the idea of gridiron planning is derived. Regardless of the discourse Timgad and Savannah share many important similarities.

Timgad was started as a colony in North Africa. It was part of the Roman Empire founded around 100 A.D. by Emperor Trajan. The town was a planned community and was created for soldiers of the Roman Army. The land was divided in to squares and each square had lots with a structure amount of lots its referred to as a strict gridiron plan.



Old & New Architecture WEC Criteria

Architecture Writing Enriched Curriculum (WEC)
Writing Criteria, March 2012

1	Describes designs and/ or ideas about designs to establish basis for subsequent analysis and or interpretation.
2	Addresses ideas and/or designs in an "analytic way" by taking into account multiple perspectives and acknowledging subjectivity of ideas and/or potential biases of information.
3	Forwards an interpretive position about design and/or ideas about design.
4	Describes and/or documents design process beginning with a statement of design's intent.
5	Describes design process in a way that makes design logic (i.e., perceived intent, choices) explicit to others.
6	In presenting evidence, discriminates between scholarly arguments and unsubstantiated claims.
7	Critiques reasoning, method, or logic.
8	Identifies hierarchies and patterns of and within precedents.
9	Persuasively addresses target audience by using language and style suited to those readers' concerns and backgrounds.
10	Documents sources using consistent citation formats so that readers can locate original materials.
11	Interprets and contextualizes references, ideas, environments and/or influences such that reader can answer the question. "Why should we care about this?"
12	Articulates question(s) that are of reasonable scope for the current project (i.e. they are adequately addressed)
13	Elaborates on "Why did they (other designers) do what they did?" and/or "Why did you (the student) do what you did?"
14	Conveys fresh insights into existing architectural debates, issues and problems.
15	Uses visual materials that strengthen and support written arguments by effectively demonstrating and explaining features of design or concept.

Architecture Writing Enriched Curriculum (WEC)
Revised Writing & Communication Criteria, April 2013
Critieria Targeted for Improvement I Bold (1, 6, 10 & 13)

Forming a topic	**1.**	**Forms a thesis or proposition as a statement that is open to investigation and debate**
	2.	Generates, refines, and reforms questions related to the thesis or proposition
Description	3.	Searches broadly to locate sources that contain information relevant to the thesis or proposition
	4.	Identifies evidence accurately and thoroughly - whether verbal or visual
	5.	Evaluates, organizes, and assembles visual and verbal evidence into a hierarchy that explains their relative significance
Analysis and Interpretation	**6.**	**Constructs arguments that are substantiated with appropriate evidence**
	7.	Leverages multiple perspectives to support complex arguments
	8.	Engages visual materials and verbal arguments in a dialogue that recognizes the autonomy of both lines of inquiry
	9.	Draws inferences from the argument(s) that lead to synthesis
Conclusion	**10.**	**Concludes with a summary or interpretation of the argument that develops, promotes, or advances the original thesis**
	11.	Discovers new ideas through the process of writing
Mechanics	12.	Uses language and style to persuasively address the target audience
	13.	**Documents verbal and visual sources using consistent citation formats so that readers can locate original materials**

Course Presentation and Exchange

Course Presentation and Exchange

- Shared Experience
- Organized by semester
- Learned about all courses in relation to one's own & to curriculum
- Saw relation between verbal and visual
- Gained buy-in

WEC in the College of Biological Sciences

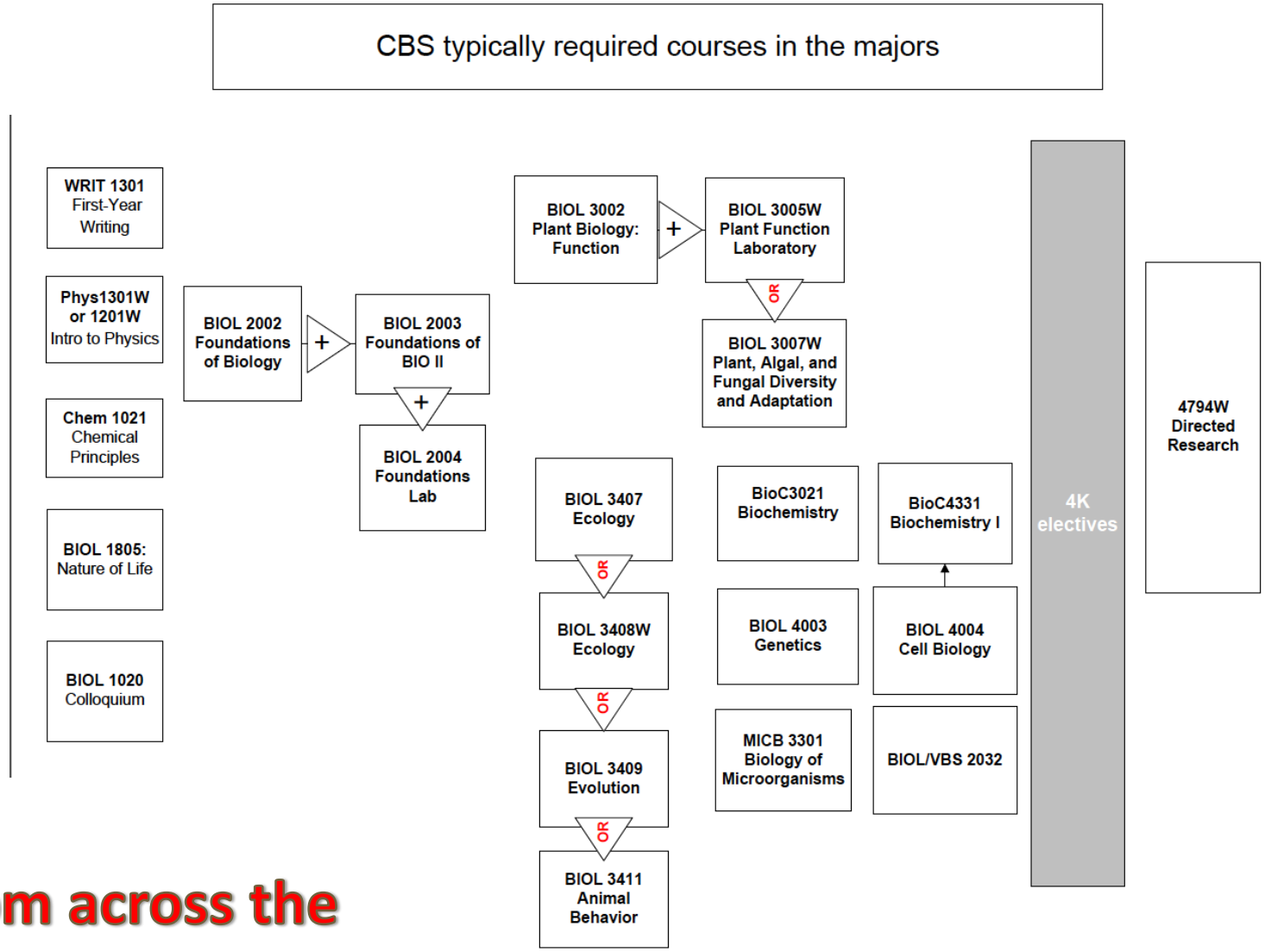
June 2014

Leslie Schiff, WEC Liaison

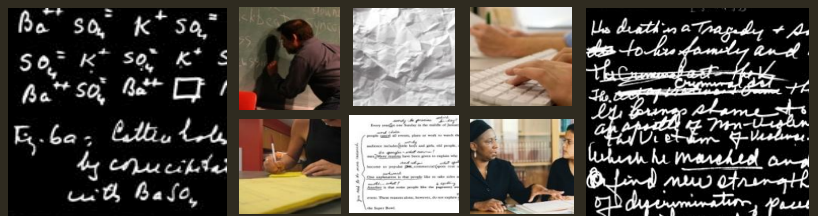
CBS by the numbers

- 7 academic majors
    - Biology
    - Ecology, Evolution and Behavior
    - Biochemistry, Molecular Biology and Biophysics
    - Genetics, Cell biology and Development
    - Plant Biology
    - Microbiology (Medical School)
    - Neuroscience (Medical School)
- Students: Freshman class of 510
- Faculty
    - 143 CBS faculty
    - ~40 faculty Microbiology and Neuroscience
    - Faculty in related and clinical disciplines who mentor directed research projects

Curriculum map



- **Vertical**
- **Draws from across the biological sub-disciplines**



THE CBS WEC TIMELINE

S08 | F08 | S09 | F09 | S10 | F10 | S11 | F11 | S12 | F12 | S13 | F13 | S14

Survey, meet, create Writing Plan #1

Implement Writing Plan #1: map/analyze writing instruction in lab courses, offer structured support to capstone

EEB Writing Plan

Submit 1st ed. Plan ("start-up")

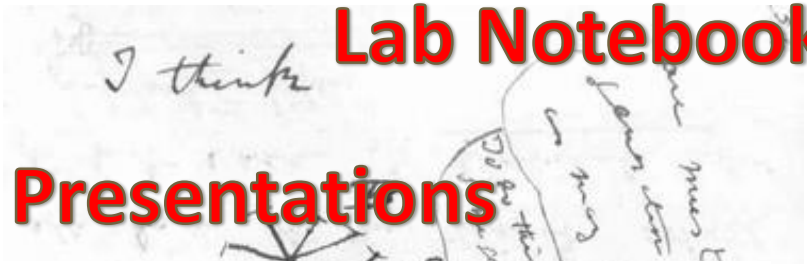
Rating #1

Submit 2nd ed. Plan ("two-year")

Rating #2

Writing in Biology

Lab Notebook

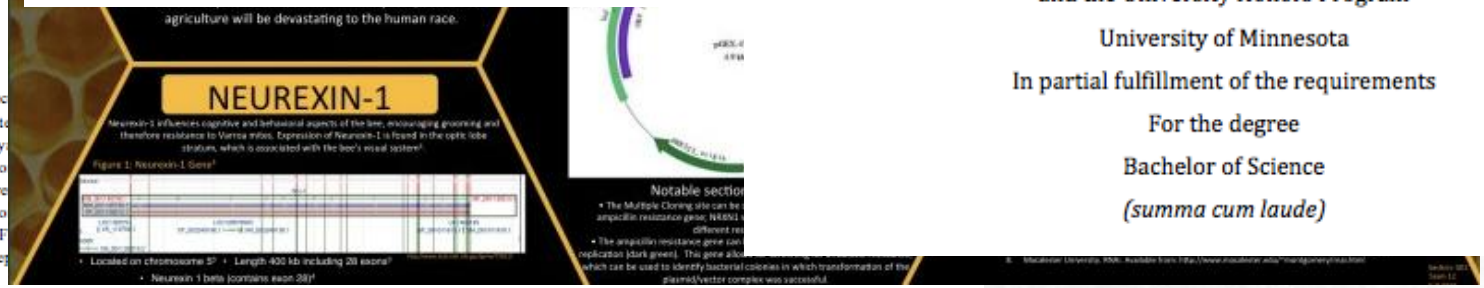


Posters Presentations

Protocol

1. Sample lysis

1. **Preparation of lysate from cell culture**
    1. Place the cell culture dish in ice and w
    2. Aspirate the PBS, then add ice-cold ly
    60 mm dish / 75 cm^2 flask).
    3. Scrape adherent cells off the dish usin
    cooled microcentrifuge tube.
    4. Maintain constant agitation for 30 minu
    5. Spin at 16,000 x g for 20 minutes in a
    6. Gently remove the tube from the centri
    discard the pellet.



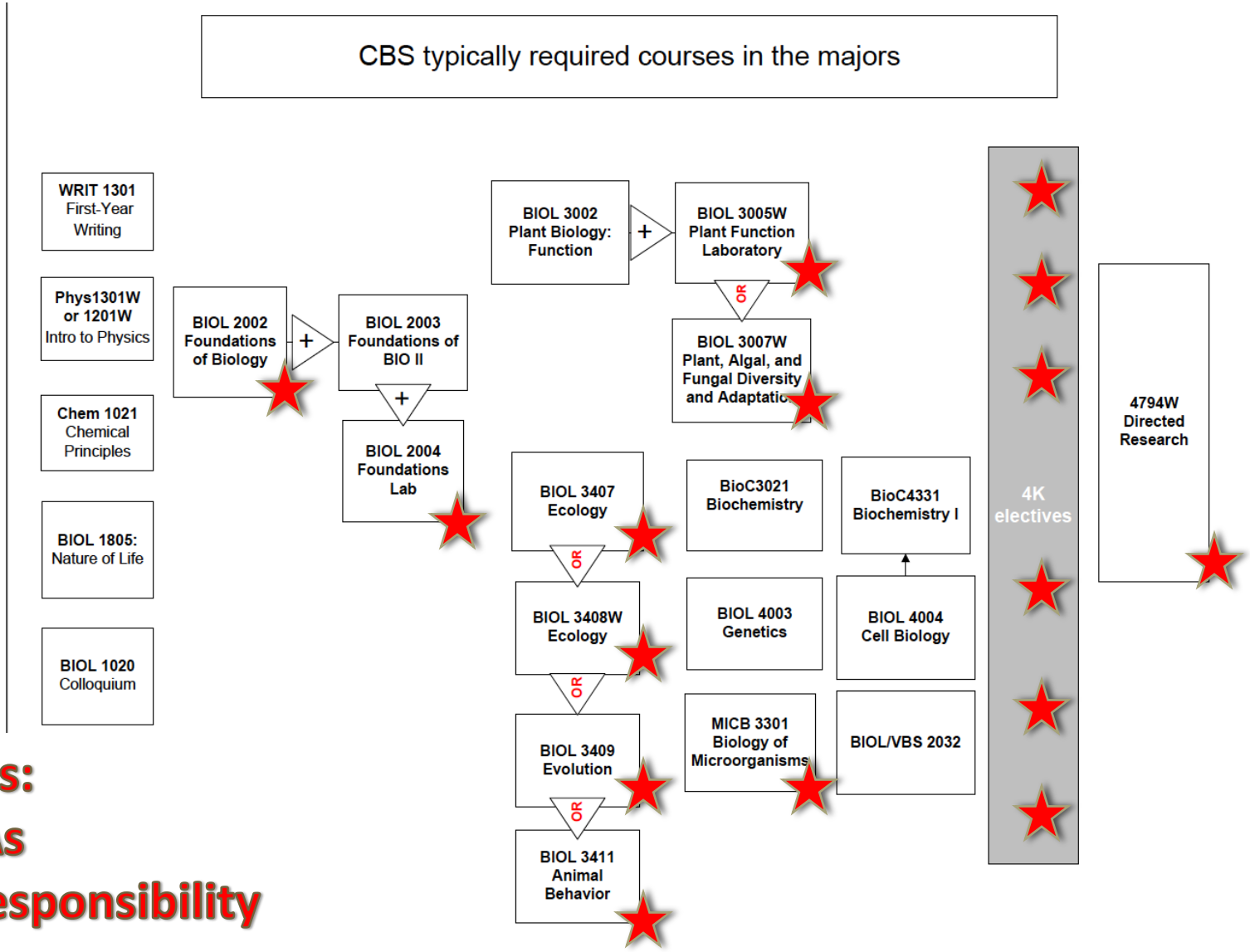
Thesis

The Effects of Agmatine on Inflammation and Nitric Oxide Production during *Pseudomonas aeruginosa* Lung Infections

Alexandra Schick
Dr. Bryan Williams Lab
University of Minnesota, Twin Cities
Department of Medicine-Pulmonary, Allergy, and Critical Care Division

Submitted to the College of Biological Sciences
and the University Honors Program
University of Minnesota
In partial fulfillment of the requirements
For the degree
Bachelor of Science
(summa cum laude)

Lab classes traditionally offer most opportunities for writing—target for our 1st plan



Challenges:
Role of TAs
Shifting responsibility

One of the major goals of the first writing plan-collect data!

To understand how we are currently communicating goals and expectations around scientific writing in CBS laboratory courses

To give faculty a comprehensive picture of writing instruction in CBS laboratory courses

Where do students have the opportunities to develop specific writing abilities?

Translated writing abilities into 3-letter codes

↓

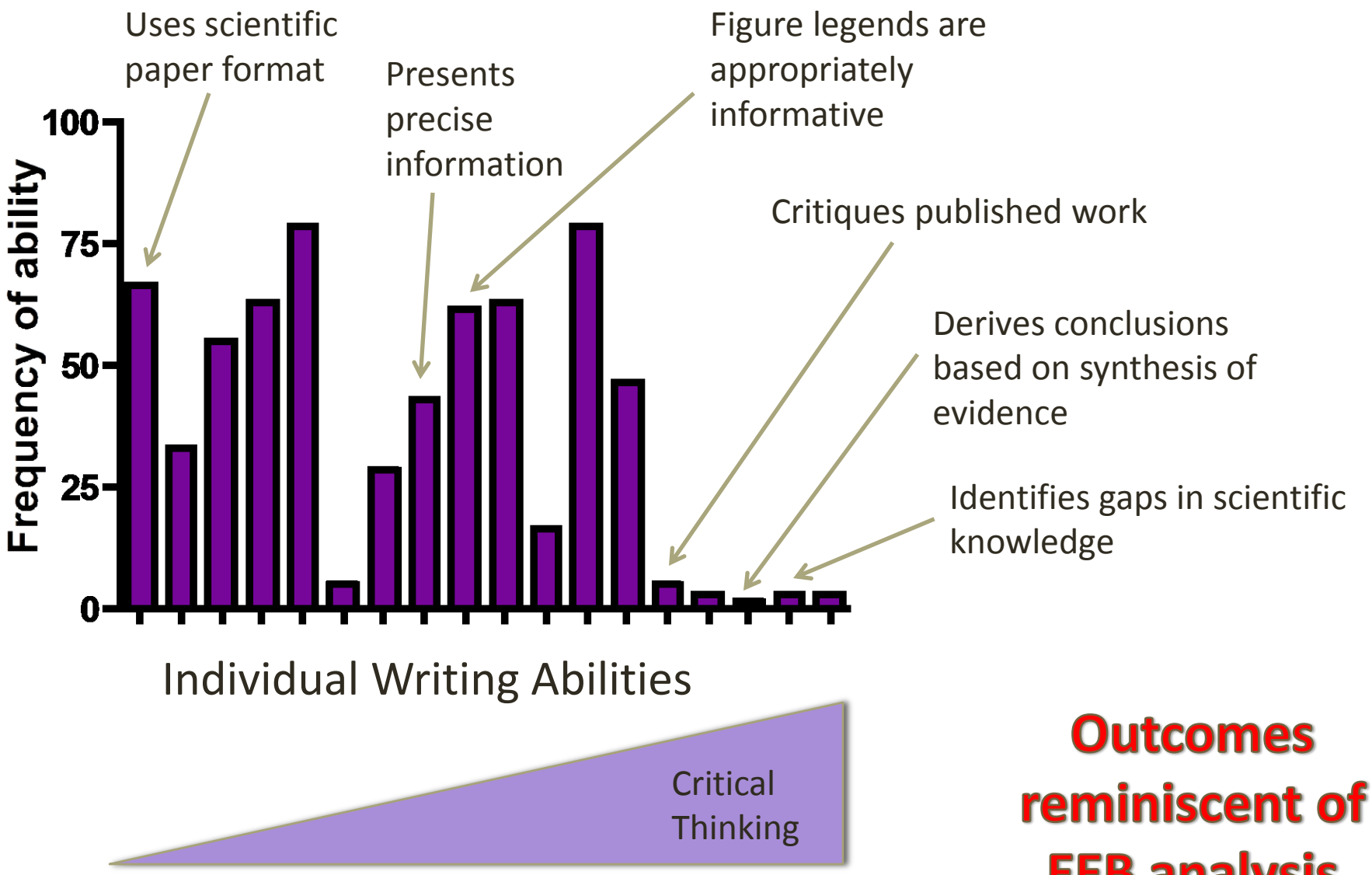
Analyzed lab report artifacts for presence or absence of each code (assigned)

↓

Compiled frequency of codes into “data”

What kind of ‘instruction’ are students receiving in printed materials?

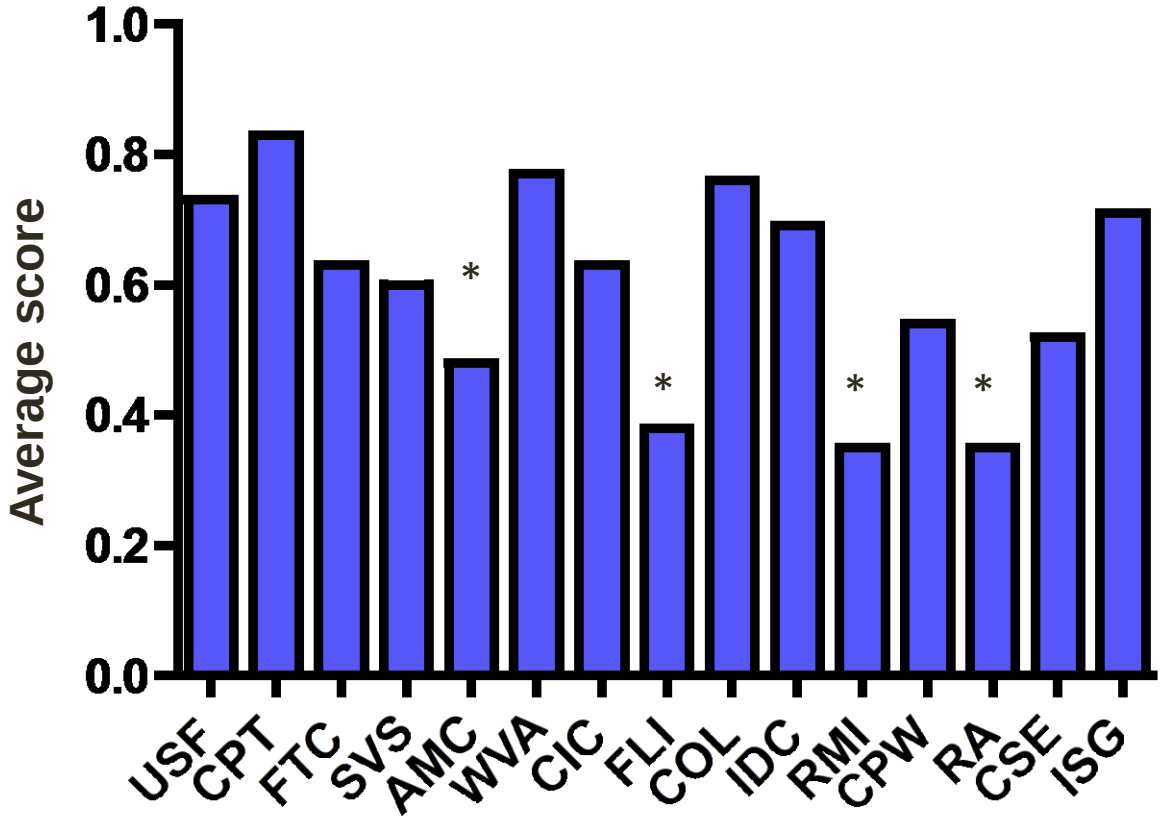
Instruction towards CBS desired writing abilities



Outcomes reminiscent of EEB analysis

Lab reports AND "Other" assignments from all majors, all levels

Capstone Rating of Writing: Average scores for Writing Abilities/Criteria



SUFFICIENT

AMC – Makes choices about which data to present visually
FLI – Table titles and legends are informative

RA – Critical analysis of published work
RMI – Identifies alternatives to interpretation and approach

INSUFFICIENT

* = abilities that were most frequently implicit in lab courses

Sample comments from raters

Strengths of Student Writing

Strong synthesis

Strong on interpretation of sources

Clear establishment of gaps of knowledge

Weaknesses of Student Writing

Little to no critical analysis of published work

Data representation:

They didn't seem to know how data should look; Should look at published papers

Figures were poor; legends were, at times, useless

Under-evaluated data : fact upon fact upon fact

BUY-IN: This kind of teaching could only be done by faculty within the discipline

What next?
Data-driven evolution: 2nd ed. writing plan

- Tools (rubrics, TA-training, 5-minute workshops)

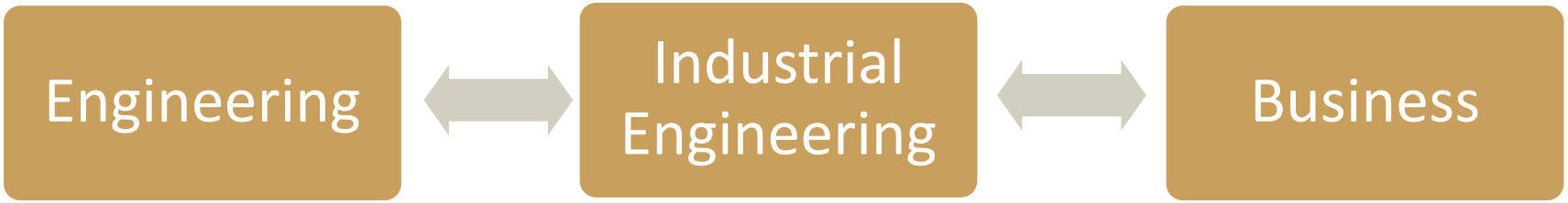
- Improve authenticity of data-related writing in the Foundations of Biology laboratory courses
  - Don't ask students to write typical lab report sections if they are likely to simply re-iterate materials in the lab manual (materials and methods)
  - Focus more methodically on particular lab report sections
  - Use authentic literature as a model and promote CRITICAL READING
  - Leverage student writing samples

WEC in Industrial & Systems Engineering

June 2014

Lisa Miller, WEC Liaison

ISyE Department Profile



ISyE Department and Undergraduate degree established in Fall 2012:

- New faculty:
  - 4 Professors (2 on leave)
  - 1 Associate Professor (me)
  - 5 Assistant Professors
- New curriculum:
  - Only 1 class previously taught
- New students:
  - First class will graduate Spring, 2015 (12 students)
  - Quickly growing (50+ students in class of 2016)

What is Writing in Industrial & Systems Engineering?

- Directed at **technical** or **business** audience
- Define **problem**, develop **model**, describe **solution approach**, and justify **recommended actions**
- Incorporates visual representations of **data**, **models**, and **insights**

Writi

Statement of Work

Problem/Opportunity & Proposed Solution

Opportunity

Children's Lighthouse of Minnesota is a nonprofit organization dedicated to building an independent home to provide short respite breaks for families of children with life-limiting conditions, and an option beyond the hospital or home environment for compassionate hospice care at the end of life. This home would be the first of its kind in the

(1) demand, $a = 100{,}000$ units / year

holding cost, $h = \$5/(\text{unit} \cdot \text{year})$

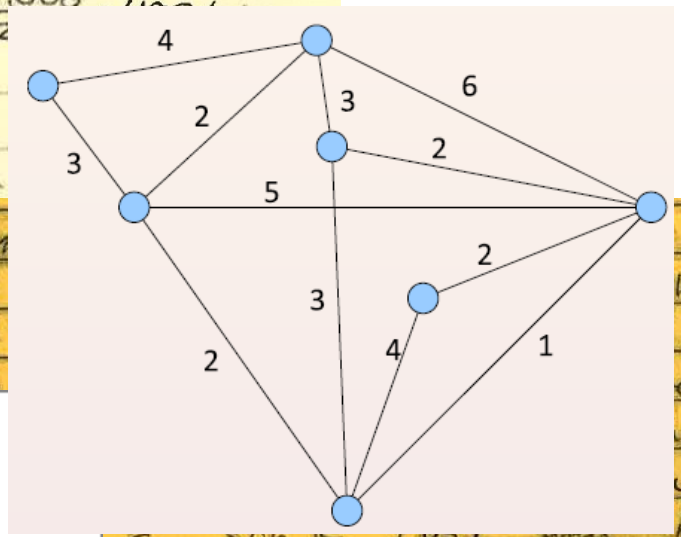
carrying cost, $K = \$750$ / order

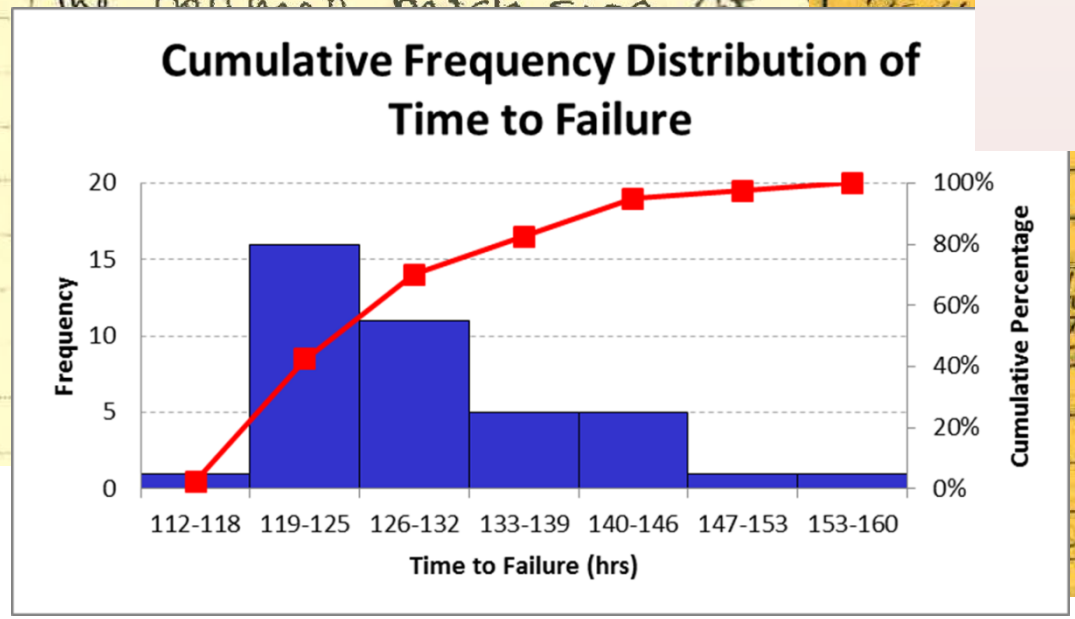
company operates 250 days / year

rate of production $r = 2000$ units

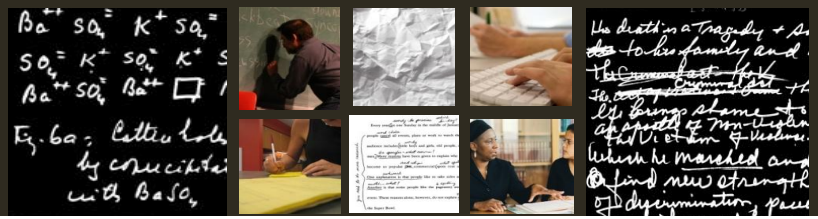
Optimal batch size:

$r \geq 0$ ✓ $r \geq a$ ✓





discount model there is now
centive to buy a certain amount
product thus possibly lowering
cost for the more product we
now we are decidy how much
based on unit cost will be



ISyE WEC TIMELINE

S13 | F13 | S14

How do we adjust the WEC process for a new program?

- Opportunity to embed writing instruction into initial curriculum and course design
- No students to survey or samples to assess

- Survey (no students!)
- Meet, create Writing Plan

Challenges:

- Minimal teaching experience
- Quiet discussions

Benefits:

- Early discussion of curriculum among faculty
- Writing top-of-mind in course development
- Improved faculty cohesion

Next month:

Submit 1st ed. Plan

Industrial and Systems Engineering Major Curriculum

First Year

(Fall or Spring Semester)

- WRIT 1301 or WRIT 1401

Sophomore Year

Fall Semester

- IE 1101 Foundations of ISyE
- IE 2021 Engineering Economics

Spring Semester

- IE 3521 Statistics, Quality, & Reliability

Junior Year

Fall Semester

- IE 3011 Optimization I

Spring Semester

- IE 3522 Quality Engineering & Reliability
- IE 3553 Simulation
- IE 4011 Stochastic Models
- IE 4551 Production & Inventory Control

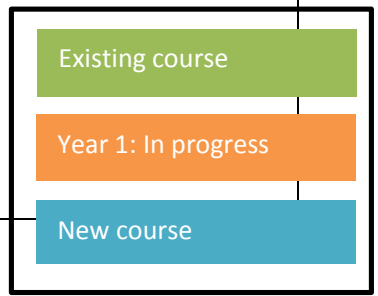
Senior Year

Fall Semester

- IE 3012 Optimization II
- IE 4511 Human Factors
- IE 4541W Project Management

Spring Semester

- IE 4041W Senior Design



ISyE Curriclum Mapping Worksheet

Name:____Lisa Miller_____ **Course Number and Title:** _____IE 4041 – Senior Design_____
How will faculty introduce and/or develop these abilities in the ISyE undergraduate curriculum?

ISyE Writing Ability **(With what writing abilities should ISyE majors graduate?)**	**Mark the writing abilities you plan to address in this course (X)**	**For those abilities that you checked, jot down the writing activities/writing assignments you already use/could use in the course (reports, problem sets, professional communication, PowerPoint, posters, etc.)**	**Identify the level of ability with which you expect students to enter this course:** Circle Novice (**N**), Intermediate (**I**), or Advanced (**A**)
1. Describe mathematical model in words			**N I A**
2. Write mathematical model in standard forms			**N I A**
3. Describe the steps of an algorithm in a clear, concise manner	x	**Within project report – both early drafts and final draft**	**N I A** **Advanced**
4. Explain and justify insights and conclusions of complex analyses to non-technical audiences	x	**Show examples (good and bad) in class** **Demonstrate in project report and project presentation.**	**N I A** **Intermediate**
5. Synthesize and summarize key points	x	**Demonstrate in project summary and project presentation.**	**N I A** **intermediate**
6. Create clear, impactful oral presentations with visual aids (e.g. PowerPoint)	x	**Show examples (good and bad) in class** **Demonstrate in project presentations – both progress updates and final presentation. Feedback will be given between updates & final.**	**N I A** **Intermediate**
7. Write project documentation intended for a technical audience a. Mathematical model descriptions b. Algorithm description c. Mathematical solution d. Other necessary technical details	x	**Project reports to be reviewed by mentor/faculty.**	**N I A** **Advanced**

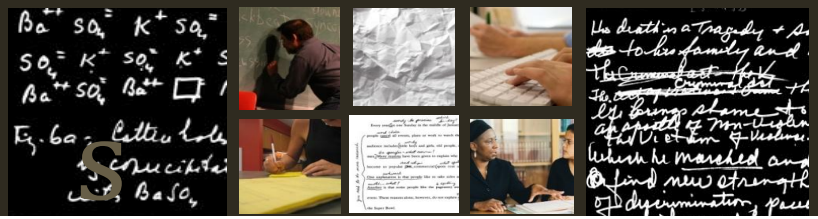
ISyE Curriclum Map

Industrial and Systems Engineering Writing-Enriched Curriculum Matrix		ISyE Courses									
		Fall (Soph.)		Spr (Soph.)	Fall (Jr.)	Spr (Jr.)			Fall (Sr.)		Spr (Sr.)
		IE 1101 - Foundations of Industrial and Systems Engineering	IE 2021 - Engineering Economics	IE 3521 - Statistics, Quality and Reliability	IE 3011 - Optimization I	IE 3553 - Simulation	IE 4011 - Stochastic Models	IE 4551 - Production & Inventory Control	IE 3012 - Optimization II	IE 4541 - Project Management	IE 4041 - Senior Design
Writing-Enriched Curriculum Qualities	1. Describe mathematical model in words										
	2. Write mathematical model in standard forms										
	3. Describe the steps of an algorithm in a clear, concise manner										
	4. Explain and justify insights and conclusions of complex analyses to non-technical audiences										
	5. Synthesize and summarize key points										
	6. Create clear, impactful oral presentations with visual aids (e.g. PowerPoint)										
	7. Write project documentation intended for a technical audience										
	a) Mathematical model descriptions										
	b) Algorithm description										
	c) Mathematical solution										
	d) Other necessary technical details										
	8. Write project documentation intended for a non-technical audience										
	a) Description of problem										
	b) Description of modeling and solution approaches for non-technical audience										
	c) Summary of conclusion, insights, and recommended actions										
	9. Represent self professionally, both in written and oral forms										
	10. Appropriately integrate visual aids (graphs, networks, charts, tables, flow charts) into project documentation										
	11. Communicate among a project team using web-based collaborative tools										
	12. Create team-written documents										
	13. Write according to faculty-approved style guidelines										

WEC in African American & African Studies

June 2014

Walt Jacobs, WEC Liaison



African American & African Studies OVERVIEW

AA&AS faculty = diverse

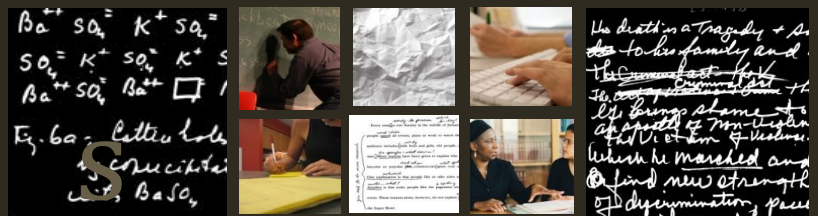
- 10 faculty/full-time instructors: literary scholars, language scholars, historians, sociologists, a developmental economist, and a novelist
- Strong allegiances to traditional disciplinary-based approaches

AA&AS majors = mighty but small (and *late*)

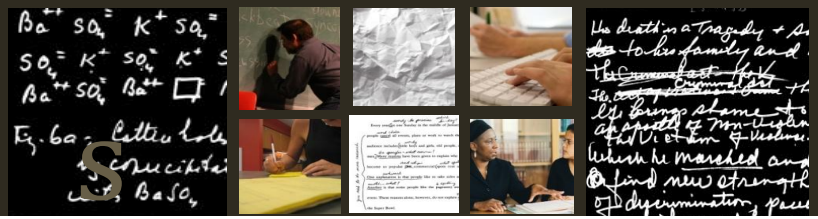
- 5-7 majors graduate annually
- 50% declare major in senior year

AA&AS curriculum = beyond flat: concave

- No-prereqs
- Majors and non-majors in all classes except senior seminar)
- 5 concentration areas (majors can take courses from any)
- Required senior capstone class (25+ page research paper)



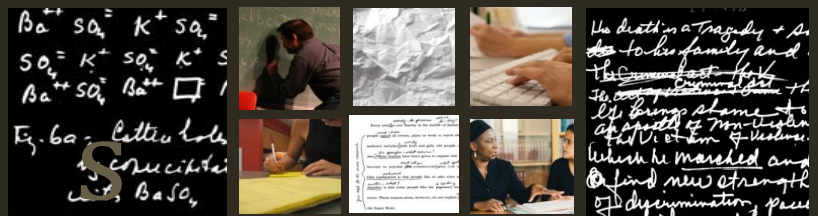
What challenges emerged as the AA&AS faculty engaged in discussions about integrating writing into their curriculum?



You're the WEC consultant: What would *you* do?

Consult with one or two colleagues (after introducing yourself): 4 minutes

Up next: what actually happened.



African American & African Studies TOOLKIT 1

From the AA&AS writing plan:

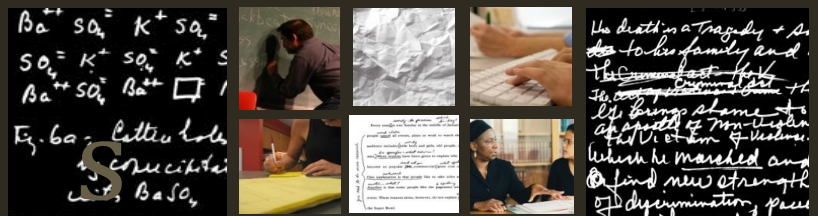
Our writing plan is centered on a "toolkit" of

- ***diagnostic assignments*** *that*
  a. *reveal where the students in each class are in terms of our articulated writing abilities*
  b. *assess/identify to what extent student performance is matching the department's articulated writing abilities*
- ***procedures*** *that instructors could use to address gaps.*

Principles

- *widely and explicitly* ***sharing writing expectations*** *with students*
- *employing* ***devices to become more intentional*** *in writing instruction*
- *thereby* ***creating efficiencies*** *based on the instructor's goals for the course.*
- *using a* ***class-by-class approach*** *fits with the department's philosophy of meeting students where they are.*

- 17 diagnostic/improvement procedures initially developed by a grad RA.
- More info: http://aaas.umn.edu/ugrad/writingplan.html



Writing Author-Centered Summaries

What is this tool? This tool presents an approach to practicing analytical voice and teaching students how to smoothly integrate textual sources into student writing.

Why might you find this tool useful? Students often fall into the temptation of masking their own voices with that of experts in the field. This tool allows students to practice how to smoothly integrate their own voice with the voices of experts in the field. It also veers them away from plot summary. This tool can be a useful part of a preparing a response or position paper, annotated bibliography, writing a concise statement of the main idea, or establishing the context of an argument. Read one (1) of the following texts by W.E.B. Du Bois: Norton AA: "A Litany of Atlanta," "Song of the Smoke," and "Two Novels."

Prompt: Write a five-sentence author-centered summary on the text you selected. Your audience for this assignment is a peer who has not read the essay. Tell your audience what the author is *doing* in the text. Be sure to use author tags whenever relevant (e.g. "DuBois *argues*," "Angelou *describes*" "Louis Gates *observes*, etc.)

Evaluation: Check system