



Impacting Student Writing in STEM: WID Enhancements & Small-Group Workshopping

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Research Question

What impact does WID curriculum have on student writing growth in their disciplines?

Spring 2015 essays scored an **average of 34%** higher than Pre-WID Fall 2012 essays across 5 categories of assessment.



Writing in the Disciplines -- WID

“an integrative relationship between writing and knowing”

writing plays ...

“a critical role in both recovering knowledge and generating new knowledge”

Writing in the Disciplines

- Rhetorical situations:
 - Contextual and complex
 - Variety of purposes, audiences, and genres
- Encourage exploration, synthesis
- Process: drafts, peer response, reflection
- Scaffolding

Carter (2011), Harris (2014), Melzer (2014)





WAC/WID Curriculum

“commitment to
the empowerment
of students
through a
constructivist
view of knowledge
that demands
critical thinking”

Bean (2007)

Saint Mary’s new Core Curriculum views WAC as an interwoven whole:

Composition

Great Books seminars.

Designated WID course in each major:

Departments develop and propose courses

Taught by professors in the major

Follows Composition and is intended to:

help students learn their discipline through writing -- i.e., writing to learn.

prepare students for writing in their major, while in college, and beyond.



Collaboration ~ Peer Review

Potential pitfalls:

students give misguided, too little, or too much advice

independent critique groups can lack commitment

many peer-only workshops lack guidance in how to analyze and discuss writing

“productive peer review ... can’t be briefly inserted into a writer’s learning process without extensive preparation.”

Harris (2014)



Writing Circles

Facilitated, structured
peer-review groups

3 to 5 students &
facilitator

Weekly

Course-based

Partial-Credit





Writing Circle Facilitators

Teach:

Principles of effective peer review:

- Description and detail over evaluation and judgement

- Idea-level over sentence-level

- Organization/structure over punctuation/spelling

Post-outlining: primary method of textual analysis



Writing Circle Facilitators

Moderate discussion of peer texts:

Analyze a prompt or text from class

Generate ideas through brainstorming

Workshop an outline or rough draft



Writing Circle Facilitators

Collaborate:

- With students to set weekly agenda
- With other facilitators
- With WAC Director, Associate Director, & faculty



Writing Circles & WID

Diversification

Increased

integration w/
WID courses

Coordinate with WID source course

Facilitators access course docs:
syllabi, calendars, prompts, etc.

Ongoing communication between
disciplinary faculty and facilitators

Pre-semester planning

Intra-semester check-ins

Inter-semester revision



Kinesiology 15: Measurement in Kinesiology

Objectives

overview of **research methods used in kinesiology** and increase a student's understanding of **empirical literature**

examine how **we measure important variables** in the field and how **cognitive, affective and psychomotor test** are constructed and implemented effectively

discipline-specific communication, both written and oral, which will serve as a means for demonstrating understanding **of research, measurement, and dissemination in Kinesiology**



Evolution of Kinesiology Syllabi

Pre-WID:

Little formality about how to write

Focus on modeling research articles

Emphasis on citation style

No reference to revision or drafting

Key assignments:

Research paper with 10 resources

WID:

Added scaffolding

Emphasis on process, i.e. paraphrasing,
organization (funnel method)

References to revising and editing

Branson (2004) “Anatomy of a research
article”

Key assignments:



Methods

Participants:

Kinesiology sophomores & some juniors (n=77)

Pre-WID Curriculum (Fall 2012): n=38

WID Curriculum (Spring 2015): n=39

Measures & Procedures:

Kinesiology Writing Circles: 10
Learning Outcome rubric for research papers

2 trained, independent readers assessed each paper, blinded to condition

19% of papers (n=15) were assessed by a third reader



Methods:

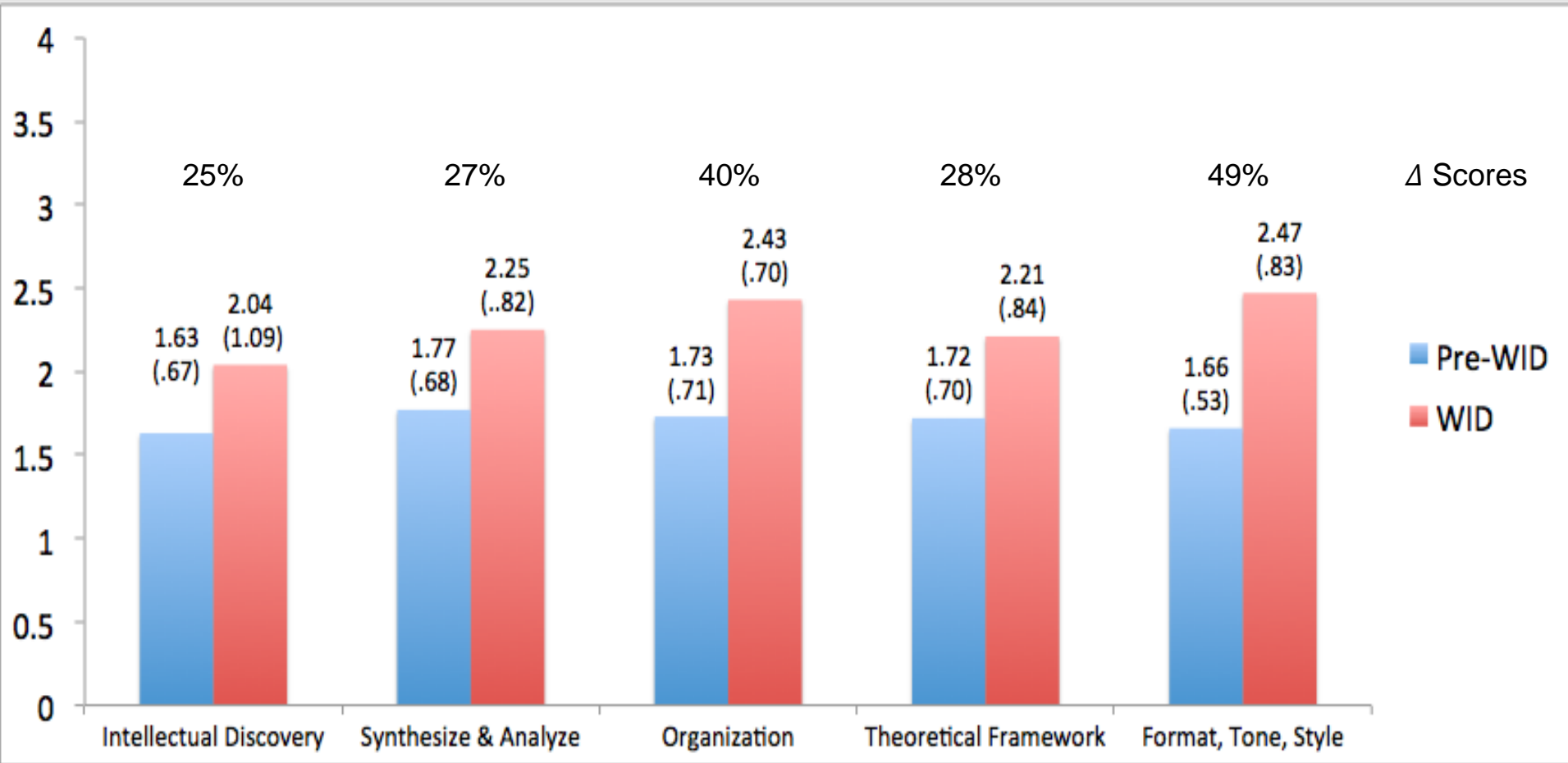
Development of Rubric using Core Curriculum Learning Outcomes

Critical Thinking: Evaluate and synthesize evidence for the purpose of drawing valid conclusions.

Written Communication: Use the process of writing (brainstorming, collaborating, outlining, researching, drafting, revising, & reflecting) to enhance intellectual discovery & unravel complexities of thought.



Results: Mean Scores (SD) by Group & Delta Scores





Results: One-way Analysis of Variance (ANOVA) Between Pre-WID and WID Papers

	<u>Pre-WID</u>		<u>WID</u>		$F_{(1,76)}^*$
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Intellectual Discovery	1.63	0.67	2.04	1.09	3.84
Synthesize & Analyze	1.77	0.68	2.25	0.82	7.70
Organization	1.73	0.71	2.43	0.70	18.45
Theoretical Framework	1.72	0.70	2.21	0.84	7.75
Format, Tone, Style	1.66	0.53	2.47	0.83	12.40

Note. N=77; * ANOVA significant at $p \leq .05$.



Relationship between Learning Outcome Variables

	Intellectual Discovery		Synthesize & Analyze		Organization		Theoretical Framework	
1. Intellectual Discovery								
2. Synthesize & Analyze	0.88 (77%)							
3. Organization	0.74 (55%)		0.83 (69%)					
4. Theoretical Framework	0.60 (36%)		0.66 (44%)		0.62 (38%)			
5. Format, Tone, Style	0.81 (66%)		0.77 (59%)		0.75 (56%)		0.50 (25%)	

Note. All Correlations significant at 0.01. (R is the shared variance.)



Discussion & Implications

Addition of WID pedagogy and Writing Circles to a Kinesiology course significantly improved research writing.



Implications for Circles

Facilitators

Practical Applications

Generate samples for students in current Writing Circles

Identify common mistakes to address proactively

Misunderstandings about APA

Personal narrative vs. objective writing



Limitations & Further Research

Study Design & Generalizability?

Further Research:

WID Program/Pedagogy

Campuswide Assessment





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Chase Manning, Research Assistant

Kinesiology students

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Thank you & References

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Writing Circles Organization and Logistics

2012-13: 12 Circles - 25 students
2013-14: 64 Circles - 221 students
2014-15: 108 Circles - 416 students
2015-16: 102 Circles - 414 students

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Table 1. Rubric for Critical Thinking Kines WID and Circles Assessment Project 2015

	4 - Highly developed	3 - Developed	2 - Emerging	1 - Initial
Intellectual discovery - <i>Written & Oral Communication</i>	Solidly situates writer's hypothesis and research question within the discipline, in the context of a well-reasoned gap in the literature, demonstrating the importance of the study.	Situates writer's hypothesis and research question within the discipline, in the context of a pertinent, well-defined gap in the literature, demonstrating the importance of the study.	Discusses writer's hypothesis and research question in terms of the discipline generally, in the broad context of a gap in the literature.	Attempts to form a hypothesis and research question and describe a gap in the literature. May make unsupported connections.
Synthesize and Analyze evidence for the purpose of drawing valid conclusions - <i>Critical Thinking</i>	Skillfully summarizes, analyzes, and synthesizes evidence, identifying relevant assumptions and theses and outlining their limits with respect to the research question.	Summarizes, analyzes, and synthesizes evidence, identifying some assumptions and theses and outlining their limits with respect to the research question.	Summarizes, analyzes, and begins to synthesize evidence to support ideas in the context of the research question. May be addressed in a piecemeal or mechanical manner.	Summarizes and attempts to analyze evidence. May not clearly support ideas.
Organization of ideas and complexity of thought within the discipline - <i>Written & Oral Communication</i>	Uses disciplinary conventions of logical and systematic organization, with clear topic sentences and effective transitions from the general topic, through specific sub-topics, to the research question and hypothesis.	Uses disciplinary conventions of organization, with mostly clear topic sentences and mostly effective transitions from the general topic, through specific sub-topics, to the research question and hypothesis.	Uses some conventions of organization, including some transitions or topic sentences and at least two subtopics, in a piecemeal or mechanical progression.	Mentions subtopics. Minimal attempt to organize, perhaps by source rather than topic.
Theoretical Framework - <i>Written & Oral Communication</i>	Clear and concise explanations of key terms, concepts, theories, or principles and their implications in the context of the research question.	Explains key terms, concepts, theories, or principles in the context of the research question.	Discusses key terms, concepts, theories, or principles.	Attempts to identify key terms, concepts, theories, or principles. May be misidentified.
Format, Tone, and Style - <i>Written & Oral Communication</i>	Uses >90% professional, concise language. Paraphrases evidence. Integrates sources elegantly, citing accurately in APA. Includes title page, problem description, summary of research, research question, hypothesis, and References page.	Uses about 75% professional, concise language. Privileges paraphrase over quotes. All sources cited accurately in APA. Includes title page, problem description, summary of research, research question, hypothesis, and References page.	Uses <50% professional, concise language. Privileges paraphrase over quotes. All sources cited. Includes all and only: title, problem description, summary of research, research question, hypothesis, and References page.	Uses 25% or less professional, concise language. Privileges quotes over paraphrase. Includes some citations. Missing some required elements or includes improper ones.