



Artificial Intelligence to Enhance Formative Assessment of Student Writing

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Who We Are

- University of Rochester, School of Nursing
 - Andrew Wolf, Director for Educational Effectiveness & Assistant Professor
 - Rebecca Wolf, Writing Center Coordinator
 - RN to BS, Accelerated, MS, DNP, and PhD programs
- Vantage Labs
 - Vice President of Cognitive Computing
 - Focus on Artificial Intelligence, Machine Learning, Big Data, Natural Language Understanding
 - More than 2 billion daily customers
 - IntelliMetric scoring on more than 100Billion constructed resp



The Challenge...

- Faculty experts in nursing and healthcare, not writing
- Comprehensive exam failures due to weak writing
- Faculty spent hours “correcting” student papers
- Faculty noted recurring student problems:
 - Lack of attention to scholarly convention (APA)
 - Problems with coherence and clarity
 - Inability to synthesize ideas
 - Difficulty presenting a focused and logical argument
- Frustration with lack of student progress throughout program and lack of consistent faculty standards when assessing writing

Writing Taskforce...

Charge from academic program directors:

1. Identify students' writing needs and address faculty concerns
2. Explore evidence-based strategies used to improve writing instruction across programs
3. Improve student writing supports
4. Develop implementation plan



Writing Taskforce Findings

- Students needed
 - Meaningful, relevant context for writing
 - Revision opportunities
 - Prioritized formative feedback (Hierarchy of Writing Concerns)
 - Well-designed, clear assignment guidance
 - Clear expectations (rubrics)
- Faculty needed
 - Support revising assignments, creating rubrics, and providing feedback
 - Way to assess and track writing progress across the program



Writing Across the Curriculum Approach

- Promotes critical thinking
- Allows students to construct knowledge (WTL)
- Opportunities to engage in the writing process
 - Planning, drafting, revising
- Writing is taught throughout the program and is the responsibility of ALL faculty
- Students must practice the academic conventions of a discipline to effectively communicate within that discipline (WID)
- <https://wac.colostate.edu/>



Writing Implementation Plan

- **Revise Curriculum**
 - Create Program Learning Outcome for written communication
 - Revise writing courses in RN-BS and MS programs to map to PLO
 - Implement Writing Across the Curriculum in WI courses first
- **Create Assessment**
 - Direct and indirect measures
 - Standardized rubric elements for scholarly writing assignments
- **Writing Center to Support Faculty and Students**
 - Create/revise assignment guidance sheets
 - Develop rubrics
 - Provide feedback using HoWC (faculty and writing coaches)



URSON Hierarchy of Writing Concerns

1. Focus
2. Development/Use of evidence
3. Organization
4. Sentence-level mechanics
5. Scholarly conventions (APA style)

Triangulation of Data

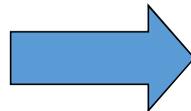
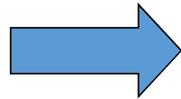
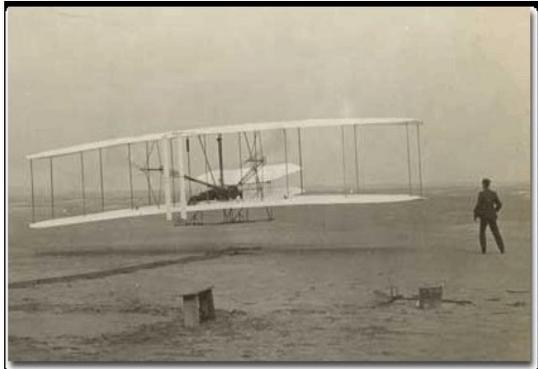
- Standardized scholarly writing rubric (eportfolio)
- Student evaluations
- Pre-tests with Intellimetric
 - Aligned to writing competencies (HoWC)
 - Objective
 - Efficient
 - Meaningful data

IntelliMetric and College Success

- Advanced AI scoring of free text responses
- Scoring holistically and on 5 analytic categories
- Scores at or above human-level performance
- Low Cost Option or Customizable platform
- Ability to add, change, and update survey questions
- Collecting Data for current and future reporting



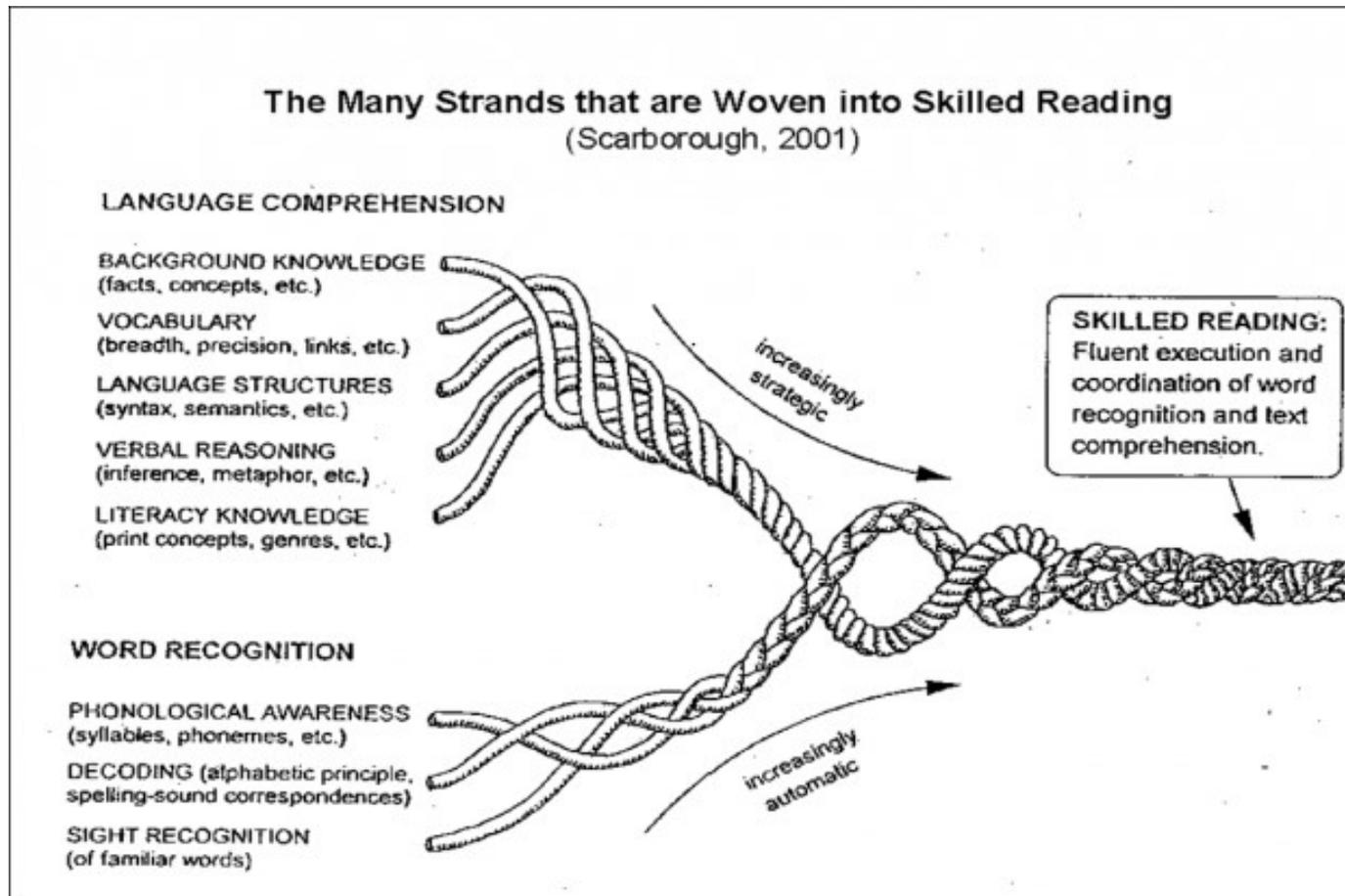
Think Differently



*Manning Hall Classroom, ca 1890 –
Brown University*

*Manning Hall Classroom, ca
2003–Brown University*

Reading in the Organic Brain



Does this really work?

- Let's go live...



Future Plans

- Research project related to specific writing challenges:
 - Where do students struggle most, related to hierarchy of concerns?
 - Does writing improve after taking one writing course? After writing intensive courses? At the end of the program? Across the curriculum?
- Using data for improvement
 - Faculty development: where students struggle and why
 - Instructional methods to address Hierarchy of Writing Concerns
 - Remediation targeted to writing concerns

Lessons learned

- Efficient
- Potential for objective data collection across programs
- Meaningful feedback for students
- Aligns well with Hierarchy of Writing Concerns
- Faculty require development in understanding results, and how to use them to guide instruction
- Able to quickly differentiate instruction



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