



Artificial Intelligence to Enhance Formative Assessment of Student Writing

Andrew Wolf, Ed.D., MS, RN, University of Rochester School of Nursing

Rebecca Wolf, M.Ed., University of Rochester School of Nursing

Paul Edelblut, Vantage Labs

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

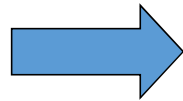
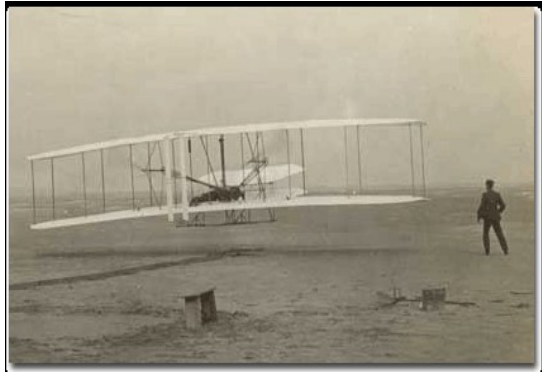
- Standardized scholarly writing rubric (eportfolio)
- Student evaluations
- Pre-tests with Intellimetric
 - Aligned to writing competencies (HoWC)
 - Objective
 - Efficient
 - Meaningful data

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



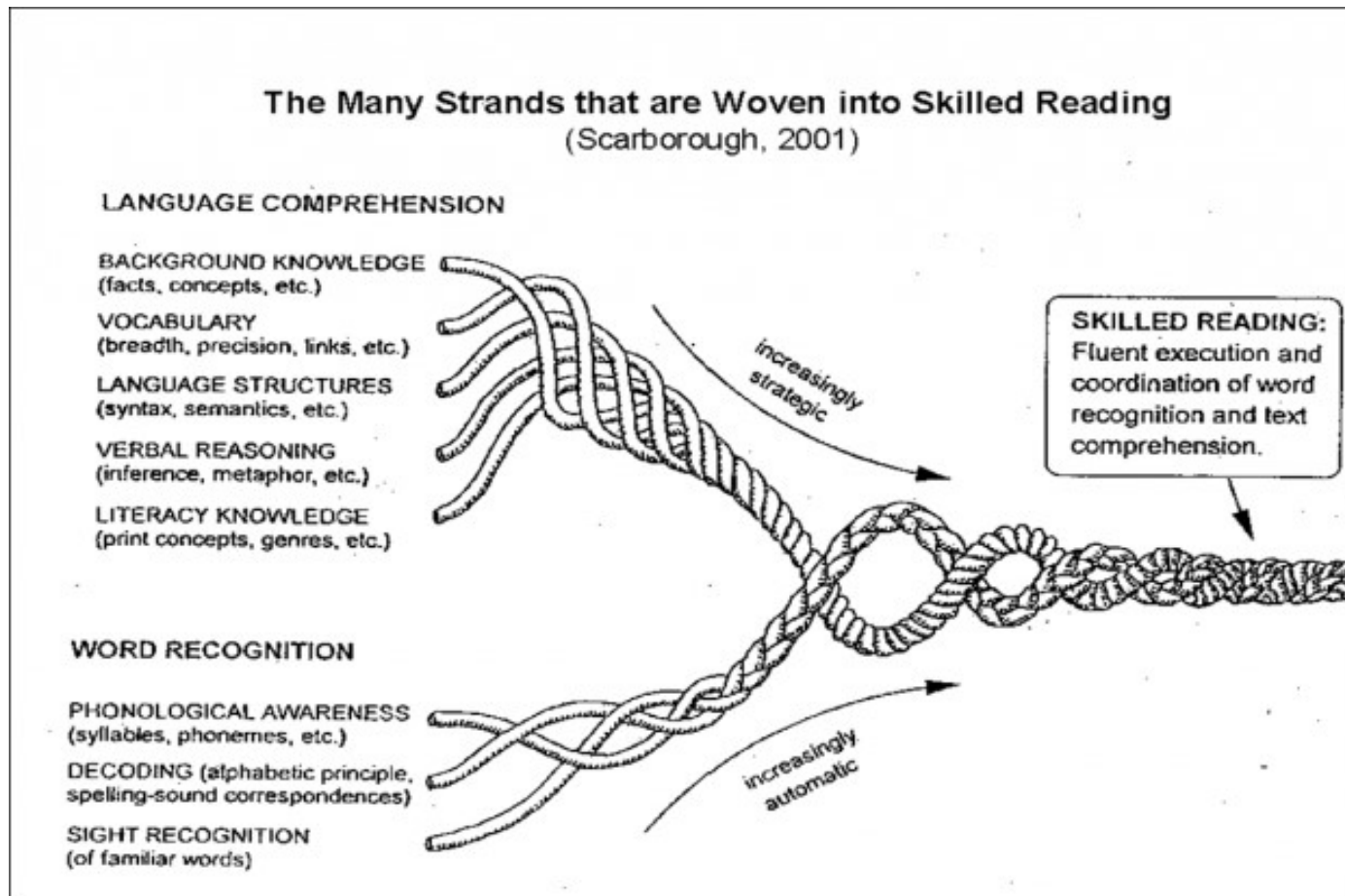
Think Differently



*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

Questions and contact info

- Rebecca Wolf Rebecca_Wolf@urmc.Rochester.edu
- Andrew Wolf Andrew_Wolf@urmc.Rochester.edu
- Paul Edelblut Pedelblut@vantage.com
 - @pauledelblut

