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**MEDICAL
LABORATORY SCIENCES**

**DEVELOPMENT OF A STRATEGIC WRITING
PLAN FOR MULTILINGUAL AND NATIVE
ENGLISH SPEAKING STUDENTS IN A
MEDICAL LABORATORY CURRICULUM**

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Medical Laboratory Sciences

What is Medical Laboratory Science?

- Baccalaureate health care degree
- Prepares students to perform medical laboratory testing
 - Diagnostic Microbiology
 - Hematology and Hemostasis
 - Clinical Chemistry
 - Transfusion Medicine
 - Molecular Diagnostics
- 70% of medical diagnoses and treatment plans are based on laboratory test results
- Very detail-oriented
- A profession of introverts



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Medical Laboratory Sciences

University Of Minnesota's MLS Program

- Approximately 90-95 students (Juniors + Seniors)
- Approximately 45-50% non-native English speakers, primarily transfer students
- Represented approximately 12 different languages
 - Amharic, Vietnamese, Cambodian, Russian, Somali, Korean, Arabic, Oromo, Chinese, Akan, Cantonese, Kiisi/Swahili

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MLS Program

- Joined WEC Program in 2012
- All MLS courses taken in senior year (2 semesters plus summer)
- One writing intensive course at the very end of the program
 - Very little writing or writing instruction in other courses

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MLS Faculty Views

- Not happy with student writing
- As seniors in college, students should already know how to write
- Teaching writing is more work, barely enough time to teach technical aspects of MLS
- Writing takes too much time to grade
- Most MLS professionals don't have to write much (a view shared by MLS students)

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WEC Survey

- Survey of writing in the profession
 - Two-thirds of practitioners viewed writing as extremely important in the profession, compared to fifty percent of faculty and only 21% of students
 - 91% of clinical practitioners expected new employees to demonstrate proficiency in the use of correct grammar, spelling, and mechanics of writing

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Genres of Writing in the Profession

- E-mails
- Standard Operating Procedures
- Reports to Administrators
 - Justifications for new equipment
- Personnel Issues
 - Performance reviews
 - Job Descriptions
- Business Letters

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Pilot Study on Student Writing

- Types of writing errors made by native and non-native English speaking MLS students
 - Global errors (understanding)
 - No significant difference in number of errors
 - Local errors (sentence-level)
 - Same types of errors made, but greater in number in non-native English speakers

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Changes in MLS Curriculum

- Transition from traditional to hybrid courses, with more flipped classroom
 - More recorded lectures with transcripts available
 - More in-class time for writing instruction
- Transition from one year of courses to two year program
 - More time to help students develop as writers
- Addition of a second writing intensive course early in the curriculum

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Goals

- Students
 - See the importance of writing in the profession
 - Make students responsible for their own writing
 - Improve student writing skills
- Faculty
 - View writing in the profession and in the classroom differently
 - Scaffold writing assignments to build on student skills

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Research Questions

- What writing tools will be most effective in helping students improve their writing?
- What strategies are particularly useful with multilingual students?

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Junior Year – Professional Issues Course

- A writing intensive course in the junior year
- Make students aware early why writing is important
- “Low stakes” writing
- Introduce formatting, plagiarism concepts, importance/purpose of writing in the profession
- Reflective writing
 - More room for “writing with an accent”
- Drafts and feedback
- Error logs
 - Making students responsible for their own error correction

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Student Error Logs

- Students were given reflection paper assignments responding to questions posed by the instructor
- First drafts submitted in Turnit-It allowed students to track errors by type and make corrections based on feedback from Turnit-In and the instructor
- Students kept error logs of the number and types of errors for each assignment

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Student Error Logs

- Types of errors included (22 total):
 - Subject / verb agreement
 - Missing apostrophe
 - Article missing or incorrect
 - Comma splice
 - Missing word
 - Run-on sentence
 - Spelling errors
 - Wrong word

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Error Log Results

- Significant correlation between language and number of errors for
 - Run-on sentences
 - Sentence structure
 - Word choice
- Multilingual students showed more improvement than native English speakers
- Exception: multilingual students continued to make more article errors

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Junior Year – Biomedical Laboratory Techniques course

- Required getting faculty to look at writing and writing instruction differently
 - Lab reports, graphs, figures and figure legends ARE writing within the discipline
- When can errors be tolerated and when can they not be tolerated

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WAC vs. MLS

- Accuracy in writing is sometimes necessary
 - Example: the plural of “test” is not “testes”
 - John Anderson & John Andersen
- Timing limits in writing assignments is sometimes necessary
 - “Writing to learn” vs. “Writing to communicate”
- “Writing with an accent” - information must be clear

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Writing in the Discipline

- Scholarly Inquiry course
 - Case Study group project, peer review
 - Literature review - Scientific writing, writing for learning
- Diagnostic Microbiology
 - Lab reports, formatting
 - Descriptive writing

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Writing in the Discipline

- Body Fluid Analysis
 - Writing Standard Operating Procedures extremely important
 - Previously, students wrote one procedure in last semester
 - Now, write components first before putting the pieces together.
 - Students understand why this writing is critical to the profession

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Writing in the Discipline

- Transfusion Medicine
 - Importance of accuracy in communication
- Clinical Chemistry
 - Writing to different audiences – E-mails to patients explaining results

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Last Semester – Management Course and Clinical Experiences

- Laboratory Management is an online writing intensive course taken while students are on their clinical experience
- Utilize student observations as much as possible
 - Reflective writing (formatting not important)
 - Budget proposals (formatting important)
 - Comparison of processes at different hospitals

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Last Semester – Management Course and Clinical Experiences

- Great way to get them to understand importance of writing
 - Talk to laboratory managers about writing in the profession
 - More about genres – proposals, business letters, e-mails, shift notes, laboratory results, medical records & the legal issues involved with professional writing (96% of communications were e-mails or short, concise electronic correspondence related to patient care)

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MLS Writing Discussion Board

“I discovered that there is a great deal of writing that goes into the job.it is extremely important to communicate clearly. This is something that could affect patient results and ultimately treatment. Therefore communication and procedures must be written in an easy to understand format so that no matter who is collecting a sample or performing the test, things are done correctly.”

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Lessons Learned

- Step 1 - Convincing faculty to include writing didn't have to be painful
 - Adding writing didn't necessarily mean “term papers”
 - Writing could be threaded throughout the existing course designs in short, concise assignments (Example: serum vs. plasma)
 - Short writing assignments make it easier to take timely corrective action
 - “Larger writing projects may in fact be inappropriate for the subject matter”

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Lessons Learned

- When grading, faculty do not need to correct everything (nor should they)
 - Getting students to find their own mistakes
 - Concentrate on one or two concepts at a time
 - Look at the purpose of the assignment (Is it for grammar and formatting, or is it for content? What is the importance of each for each assignment? Is the meaning understandable?)

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Lessons Learned

- More assignments with feedback on drafts
 - Students rarely read comments made on papers that do not need to be corrected and turned in again
- Faculty realized not all assignments require assessment of local errors (E.g. test questions)
 - Time constraints on exam place multilingual students at a disadvantage

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Lessons Learned

- Importance of providing clear instructions, and examples of effective and ineffective writing

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Lessons Learned for WAC

- Importance of technical factors of writing in health care
 - Even small technical errors that might not directly impede final understanding may cause a significant delay in interpretation by the receiving medical practitioner, which could have grave consequences for the quality of patient care

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“This study taught me several things about how WAC scholars need to challenge their own assumptions about writing in the disciplines”

- Multilingual Writing Specialist

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QUESTIONS?

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