

Medical Laboratory Sciences

Using Writing as a Learning Tool

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Objectives

- 1) Describe how low-stakes, short writing assignments can improve student learning outcomes
- 2) Describe how Turn-It In can be used by students to improve their own writing
- 3) Identify three writing to learn activities

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Writing Acronyms

- WAC – Writing Across the Curriculum
 - Including writing in classes other than English composition, literature, etc.
- WID – Writing In the Discipline
 - Writing assignments that give students practice writing in the formats specific for the discipline
- WEC – Writing Enriched Curriculum
 - Including writing in most if not all courses
- WTL – Writing To Learn
 - Short, informal writing task to help students think through key concepts

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U of MN MLS Program

- Class cohort of about 60 students, many of whom enter the program in their senior year
- High percentage are transfer students (a little over 50%)
- High percentage are non-native English speaking (on average, between 45-50%)
- Accepted into the WEC Program in 2012

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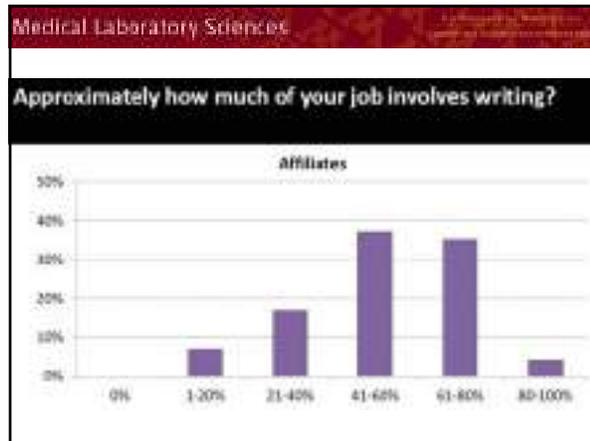
WEC Process

- Survey students, faculty, and practitioners about writing in the discipline
- Develop discipline-specific writing characteristics, desired writing abilities of graduates, and help with incorporating writing into the courses
- Liaison develops a *faculty-driven* writing plan
- Resources available (money, workshops, etc.)
- Analysis of writing samples to assess outcomes

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Survey Results

- Importance of writing skills in the medical laboratory
 - 72% of students rated writing skills as extremely or very important
 - 90% of MLS faculty rated writing skills as extremely or very important
 - 94% of clinical affiliates rated writing skills as extremely or very important



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Abilities of Writing in MLS Graduates

- Concise
- Clarity
- Contextual
- Meaningful
- Professional
- Reflective
- Collaborative
- Format

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Why does writing matter?

- Surveys show that 80% or more of salaried employees (as opposed to hourly employees) have some responsibilities for writing.
- According to most corporate leaders, employees who are skilled in writing are the most likely to be promoted
- “More than 90 percent of mid-career professionals recently cited the ‘need to write effectively’ as a skill ‘of great importance’ in their day-to-day work.”

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“What appears to matter more than the amount of time given to an assignment is the nature of the writing task, the kind of thinking that gets done..... The cost need not be great: even relatively brief tasks can boost learning.”

From *How does writing affect learning? A review of the research* by RL Bangert-Drowns, MM Hurley, and B Wilkinson

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Writing to Learn Activities

“Short, impromptu or otherwise informal writing tasks that help students think through key concepts or ideas presented in a course. Often, these writing tasks are limited to less than five minutes of class...”

Definition from the WAC Clearinghouse

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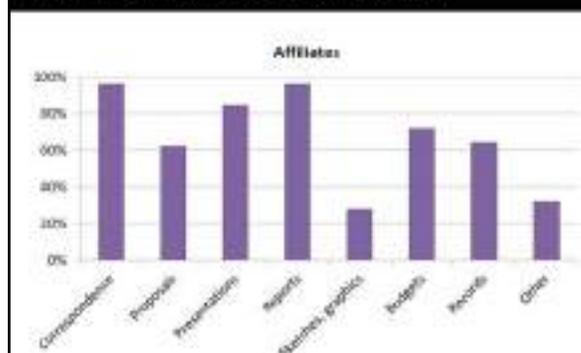
WAC CLEARINGHOUSE

- wac.colostate.edu
 - Free downloads of books on writing

Why include WTL activities?

- To increase time on task with challenging content
- To encourage critical reflection and transference of skills and knowledge
- To improve classroom community and learning environment
- To promote active learning and interactive learning

What kinds of writing do you do in your job?



Faculty Concerns

- Time – both student time and faculty time
 - Generally WTL assignments are short, usually between five and fifteen minutes
 - Great activities for flipped classroom
- Grading
 - Most instructors do not grade these, but read and comment on some
 - Have students share with a classmate
 - Consider just giving students points for doing the writing – don't grade the content

Things to Consider in WTL

- Goals for the course: What do you want students to know and do? How can that knowledge or skill be demonstrated in written form?
- Timing: when to offer and how long to take
- Location: In class, out of class, laboratory
- Purpose, audience and context of task: Choose authentic contexts, real audiences and tightly defined purpose

Things to Consider in WTL

- Task: Description, summary, explanation, prediction, application, contrast/distinction, argumentation, evaluation, identify limits or exceptions, suggest implications
- Form of assignment: quick write, narrative, abstract, letter, e-mail exchange, questions, drawing, summary, discussion board, critical reflection

Questions to Ask Yourself

- How will the assignment promote mastery of knowledge or its application, metacognitive reflection (“thinking about thinking”), develop students’ critical thinking abilities, creativity, and/or communication skills?
- How will you use it in the course: discussion, paired readers, group work, test preparation, read to class, connect to other materials, show examples, connect to lecture, lead to formal writing, scaffold learning tasks, demonstrate revision?

Questions to Ask Yourself

- What guidelines will you give students for assignments?
- How will you or others read and respond to these writings?
- How will you be “teacher as a mentor” rather than “teacher as examiner”?
- How will you “count” or grade these writings, if at all?

Questions to Ask Yourself

- What results do you expect? What will make it a successful assignment?
- How does this assignment relate to other assignments and goals of the course?

Adapted from Art Young, *Teaching Writing Across the Curriculum*, 4th ed. 2011.

Writing to Learn for Faculty

- Provides a tool for faculty to learn what areas are not clear to students or how well students learned a certain point
- Example:
“Why is the normal range for potassium higher for serum than it is for plasma?”

Student Answers

- “The normal range for serum potassium is higher than for plasma potassium because serum is an unclotted sample with coagulation factors still in the serum where plasma has been clotted and the coagulation factors or compounds have been removed.”

Student Answers

- “The platelets can burst in the serum, while there are not nearly as many platelets in plasma. There is a higher chance for error in platelets letting out the K⁺ in the serum.”

Student Answers

- “Potassium is the biggest intracellular cation. When cells lyse, a lot of K⁺ gets into the serum so the range is higher. Whereas plasma doesn't have lysed rbc's so there aren't a lot of K⁺ in plasma. Therefore a lower normal range for plasma.”

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Student Answers

- “The serum includes all components (proteins, electrolytes, etc.) whereas the plasma is strictly just the fluid in which the RBCs flow in. Potassium is located 23X higher in RBCs than in plasma (used interchangeably with serum sometimes).”

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Before Class Writing Activities

- Summarize the content of assigned reading or online lecture
- Answer a complex question (case study, etc.)
- Describe how today’s topic relates to prior content, or content from another discipline
- What was new, novel, interesting, troublesome, _____ about

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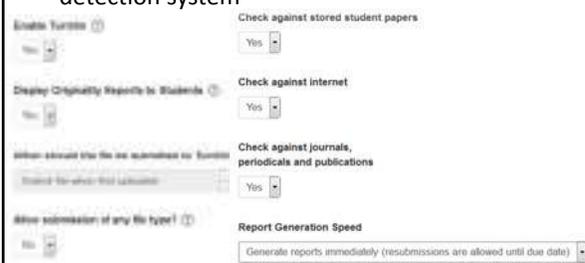
Faculty Resistance

- Grading writing takes too much time
- I am not an English major
- I have so much content, I don’t have time in my class to do writing assignments

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Using TurnIt In

- TurnIt In is more than just a plagiarism detection system



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Enable e-rater grammar check

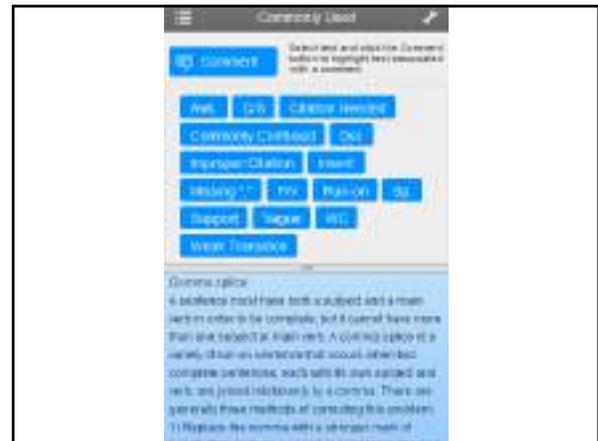
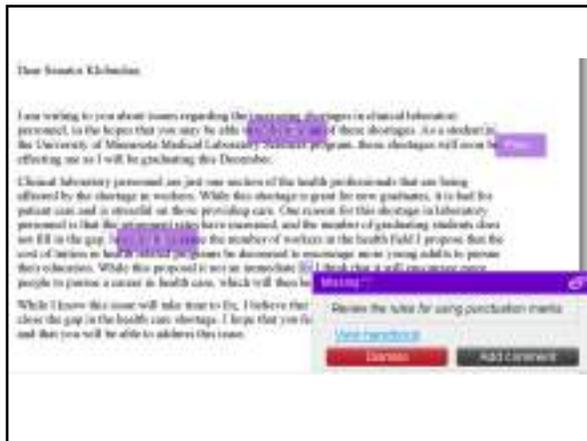
ETS® Handbook

e-rater Dictionary

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e-rater Categories Spelling

- Grammar
- Usage
- Mechanics
- Style



I hate spelling errors...

You mix up two letters and your whole post is urined.

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- ### Corrections and Reflections
- Error logs
 - Students track the type and number of errors they make in three writing assignments in a writing intensive course
 - Reflect on the writing errors and how they are improving their writing

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Multilingual and Native English-speaking Student Writers in Medical Laboratory Sciences (MLS): A Comparative Pilot Study

Janice M. Conway-Klaasson, Julie M. Thompson, Patricia A. Eliason, Molly Rojas Collins, Robin Murie, and Donna J. Spannaus-Martin

Journal of the Scholarship of Teaching and Learning 15(4):139-160 (2015)

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- ### After Class Activities
- Tweet the lecture
 - Reflect on problems, cases, data, clinical experience
 - Follow a lead/team based citation reference activity
 - Investigate an implication or extension
 - Respond in a "public genre" (letter to public official, letter to the editor)
 - Connect today's learning to a larger project
 - Write some exam questions

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Start of Class Activities

- Write a note to a student who missed the last class telling them one important thing they missed
- Tell me what you know about
- Concept mapping
- Identify an example or parallel from personal experience
- Comparison or connection
- What's the biggest misconception about?
- Hypothesis and prediction: Given what you know about

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During Class Activities

- Explain the content to a friend or roommate
- Five minute writing workshop

Dear Mr. Franken:

Many different job agencies and hospitals themselves have seen the shortage of medical laboratory scientists and technicians. The US Department of Labor Bureau of Labor Statistics states in its Occupational Outlook Handbook that "between 2012 and 2022 the demand for clinicians in the laboratory is set to grow 22 percent. If the demands for the laboratory are not met, patients could see a drop in the level of care they receive when they come to the clinic or hospital

As you can see, this is a serious situation that needs to be addressed. A new program to help fund the laboratory and be able to provide the upmost care to their patients is needed. This grant program would also help to fund new testing that would be beneficial to all who come and need care. Minnesota is know for giving great healthcare for it's citizens and the laboratory would benefit from a program to keep its citizens healthy and happy.

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During Class Activities

- Explain the content to a friend or roommate
- Five minute writing workshop
- Take a position based on evidence
- Ask a question/provide clarification
- Analyze a case study or data set
- Address a problem or plan a strategy for the solution to a problem

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<p>Normal Blood in SST</p>  <ul style="list-style-type: none"> • Serum • Separator Gel • Cellular components 	<p>Abnormal Blood in SST</p>  <ul style="list-style-type: none"> • Separator Gel • Cellular Components • Serum
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Questions

1. Simply state the principle of centrifugation
2. What could have caused this to happen?
3. What would you do if you received this specimen?

<p>Normal Blood in SST</p>  <ul style="list-style-type: none"> • Serum • Separator Gel • Cellular components 	<p>Abnormal Blood in SST</p>  <ul style="list-style-type: none"> • Separator Gel • Cellular Components • Serum
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Student Answers to #1

- A centrifuge spins and the force of gravity forces heavier particles (like RBCs) and lighter particles (like platelets or immunoglobulins) float on top. Components are separated by mass, so RBCs are on the bottom and serum containing immunoglobulins float of top
- They are separated by density

Student Answers to #2

- The serum is heavier than the RBCs causing them to settle on the bottom first. Might have done a bad draw on the patient and the sample was not properly stored
- If serum appears on the bottom, some substances can make serum heavier than RBCs, like lipids, so serum moves to the bottom, and RBCs float to the top.

Student Answers to #3

- I would recollect to ensure the correct patient
- Respin then I would request a new specimen to be collected
- Have the specimen redrawn in a red-top no gel and spin again. Then you can use a needle to get below the red cells

During Class Activities

- Probe for implications and extensions
- Scaffold assignment tasks (trial run or drafts)
- Write a question they still have about a particular topic, exchange with other students
- Address a common misconception (troll slaying)
- Identify a counterargument or limitation

Possible End of Class Activities

- What's the most important thing about ...?
- Why does this content matter?
- Which topics addressed today seem most relevant to your learning?
- Which topics addressed today seem the most challenging to understand?
- Predict the connection to the next topic
- Imagine you have to go home and tell your parents about today's lesson. What would you tell them?

Five Minute Workshop

- Use past students' writing assignments as examples
- Put the example up and have students determine what isn't clear, what the mistakes how, how they would correct it, etc.
- Can be individuals, pairs, groups, or just whole class "shout-out" activity

Assignment

You are one of the medical laboratory scientists that answers questions on the Lab Tests Online web site (<http://labtestsonline.org>). A patient has written to ask about why their fasting glucose results have been so good their last two visits, but their hemoglobin A1c results have not been as good. Compose an e-mail to this patient, explaining to them in simple language how these tests relate to each other and why their results can be so different.

Dear Mr. Doe,

I have read your email and would like to answer your questions and concerns about your test results for the last two quarters. Your plasma glucose, fasting levels are quite good for these two quarters as they are both below the 92 mg/dL which is diagnostic for gestational diabetes. This can be from a proper diet (which involves watching sugar consumption) and proper fasting before the test. This would show a fasting plasma glucose level that is within normal ranges. The second test is the glycosylated hemoglobin test. This test uses the amount of hemoglobin that has been reduced by glucose to give information on the amount of glucose that has been in the plasma on average for the last two to three months. The results of this test need to be less than 5% for the plasma glucose level to be within healthy limits. As you can see the results are higher than that for all three quarters and this shows that your average glucose level for the two to three months before the tests were higher than 97mg/dL. The reason that these two tests are showing such different results is because while your plasma glucose levels before the fasting tests are very good, the plasma glucose levels during the entire three month quarter are quite high. As your diet becomes more consistent and your glucose consumption comes down with the diet, you will see both of these tests come to be closer to healthy ranges. I hope this has answered your questions, please contact me if you have further questions about your results.

Summary

- Short writing assignments help students develop critical thinking skills
- Short writing assignments help faculty determine areas where students are confused

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