The goal of the MWrite program is to implement Writing-to-Learn (WTL) pedagogy in classrooms at the University of Michigan. WTL assignments are designed to promote deep conceptual learning of fundamental concepts.\(^1\)\(^-\)\(^3\)

**MWrite prompt:**
- Real world context based on news reports or scientific literature
- Non-expert audience
- Specified role relating to authentic context

**Writing process:**
- Students write an initial draft in response to the prompt
- Students participate in anonymous peer review
- Students revise their writing
- Peer review and revision results in improved drafts and remediation of misconceptions\(^6\)

**Research Objectives**

The objective of this project was to see how the administration of a WTL assignment impacted students’ conceptual understanding of acid-base concepts over the course of one semester.

- The WTL assignment was given in an Organic Chemistry II laboratory in Fall 2016
- Students enrolled in the Winter 2017 semester served as the comparison group
- They completed a separate, non-WTL assignment.
- Students completed pre and post-three tiered surveys that tested their conceptual understanding of organic chemistry

**Research Questions**

1. How does the implementation of a WTL assignment support the development of students’ understanding of acid-base concepts?
2. How does the use of a WTL assignment in a second-semester organic chemistry course impact students’ confidence when answering acid-base problems?

**Theoretical Framework: Vygotsky’s Sociocultural Theory**

The design, data collection, and findings of this study were informed by Vygotsky’s Sociocultural Theory. By completing the WTL assignments, students are learning about organic chemistry concepts through the process of writing out their thoughts. This process affords them the ability to interact with the material and provides insight about their conceptual understanding. Since the MWrite process is social in nature, the students are able to receive feedback on their writing from their peers and incorporate this feedback on their final draft.

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**Research Results**

**Acid-Base Assignment Description**

The WTL assignment focused on having students explain the acid-base interactions that are involved when Levothyroxine enters the stomach.

For this assignment we asked students to describe their thought processes when writing a collaborative assignment. Levothyroxine is a pharmaceutical compound, which, like thyroxine, is deprotonated to its acid-base form when it enters the stomach. The physician, who took organic chemistry several years ago, needing help to understand the interaction between indicated like and organic chemistry and formed the prompt. Specifically, for this assignment, they were asked to describe their thought processes when writing a collaborative assignment.

**Findings from the Scoring of the WTL Assignments and Survey**

Students’ assignment drafts were scored using a 12-category rubric. Students received a 0 if that criteria was not present and a 1 if that criteria was present in their writing.

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**Conclusions**

- Initial findings indicate that the WTL assignment increased students’ ability to write about conceptual ideas on Draft #2.
- Completing the WTL assignments increased students’ conceptual explanation ability.
- Students struggled with Lewis-Acid base chemistry conceptual explanations, even after doing an assignment with this concept.
- Participation in WTL assignments can help increase students’ confidence.

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