



An Online Discussion Forum in Undergraduate Mathematics: One Department's Experience

Wes Maciejewski, Ph.D.

Department of Mathematics and Carl Wieman Science Education Initiative, The University of British Columbia



Background

Members of the Department of Mathematics at the University of British Columbia have used the online discussion forum *Piazza* (piazza.com) in a variety of courses over the last couple of years. However, there has been little coordinated effort for systematic adoption. This poster presents results from surveys offered to students and instructors in courses that use Piazza and observations of Piazza usage. The intention is to evaluate the effectiveness of Piazza and to guide and inform future use of Piazza.

Introduction

Piazza has features that are desirable by math instructors:

- Easy-to-use, visually appealing interface.
- Easy referencing to posts.
- Supports the $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$ typesetting language.
- Free to use (for now?).

Figure 1 presents a screenshot of a typical course on Piazza.

The following are results from a survey of instructors and students in courses using Piazza and a summary of observations of Piazza in-use.

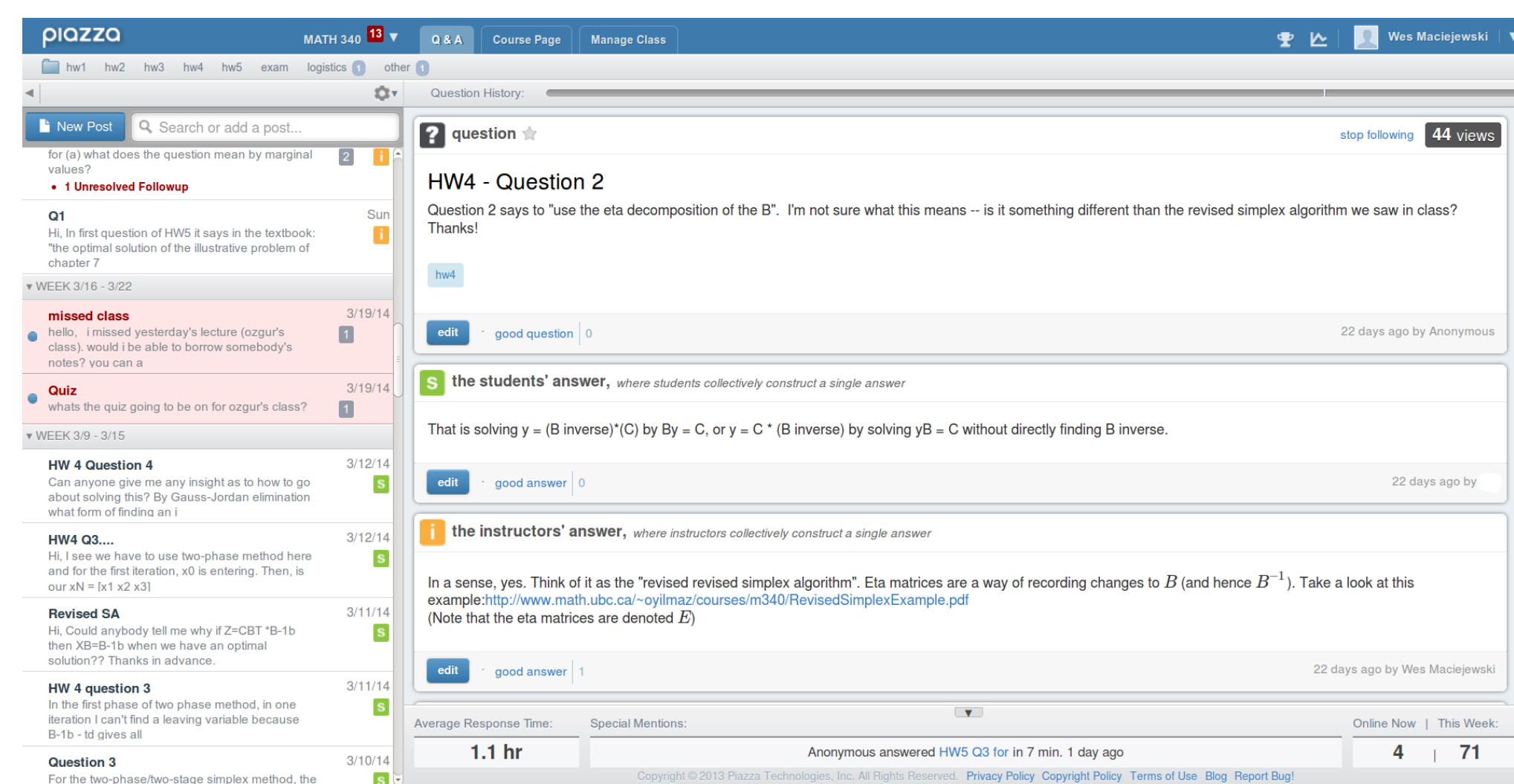


Figure 1: A typical interaction on Piazza. Posts by students and instructors appear on the left and, upon clicking, open on the right. Student responses are indicated by a green icon and instructor responses by an orange icon. $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$ is supported, as is seen in the instructor's response in the figure, but not in the students' posts...

Typical Usage

Piazza is primarily used as a question/answer forum for students to discuss questions on assessments. It is continuously available and the average response time (from instructors or students) is ~ 25 min in a typical large course. Table 1 presents usage statistics for a typical large, first-year, multi-section course.

Many courses use incentives (marks, draws) to encourage participation.

Table 1: Approximate percentage of students in the corresponding range of number of posts viewed or questions or answers posted.

Range	Views	Questions	Answers
0	< 1%	64%	78%
1 – 10	4%	32%	20%
11 – 50	15%	4%	1%
51+	80%	< 1%	< 1%

Student Comments

The good:

- “It can be troublesome at times to attend office hours. Piazza is a very convenient, and often quick way to learn how to tackle a problem, after having already spent some time trying without success.”

The bad:

- “It seems like a lot of posts at times and very messy.”
- “It's a good tool but it needs to be opened to all classes. Some of my friends from other sections haven't even [heard] of it.”

The ugly:

- “[I'm] not understanding why Piazza is being promoted in the first place... useless.”
- “Thank god Piazza is not mandatory.”

Stratified Survey Results

One section of a course was identified, based on student and instructor comments, as having a less-effective Piazza implementation. This was the only section of the multi-section course using Piazza. The survey results from this section were isolated and compared to the responses from a course that used Piazza in all sections. The results are in Figures 2 and 3. Both the instructor of the “single-section” course and the instructors of the “multi-section” course were actively involved in Piazza and both courses used participation incentives.

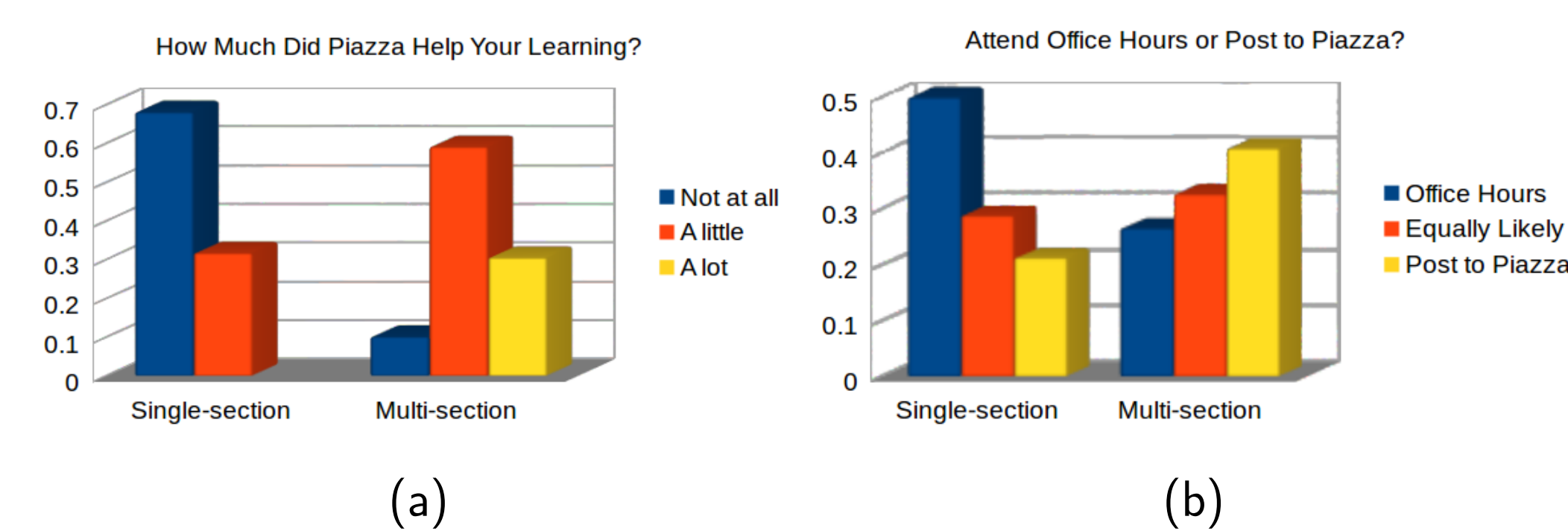


Figure 2: Student responses to two survey questions, (a) “how much did piazza help your learning in this course?”, and (b) “are you more likely to attend office hours or post to Piazza?”. In both figures the single-section result is left and the multi-section results are right.

Instructor Responses

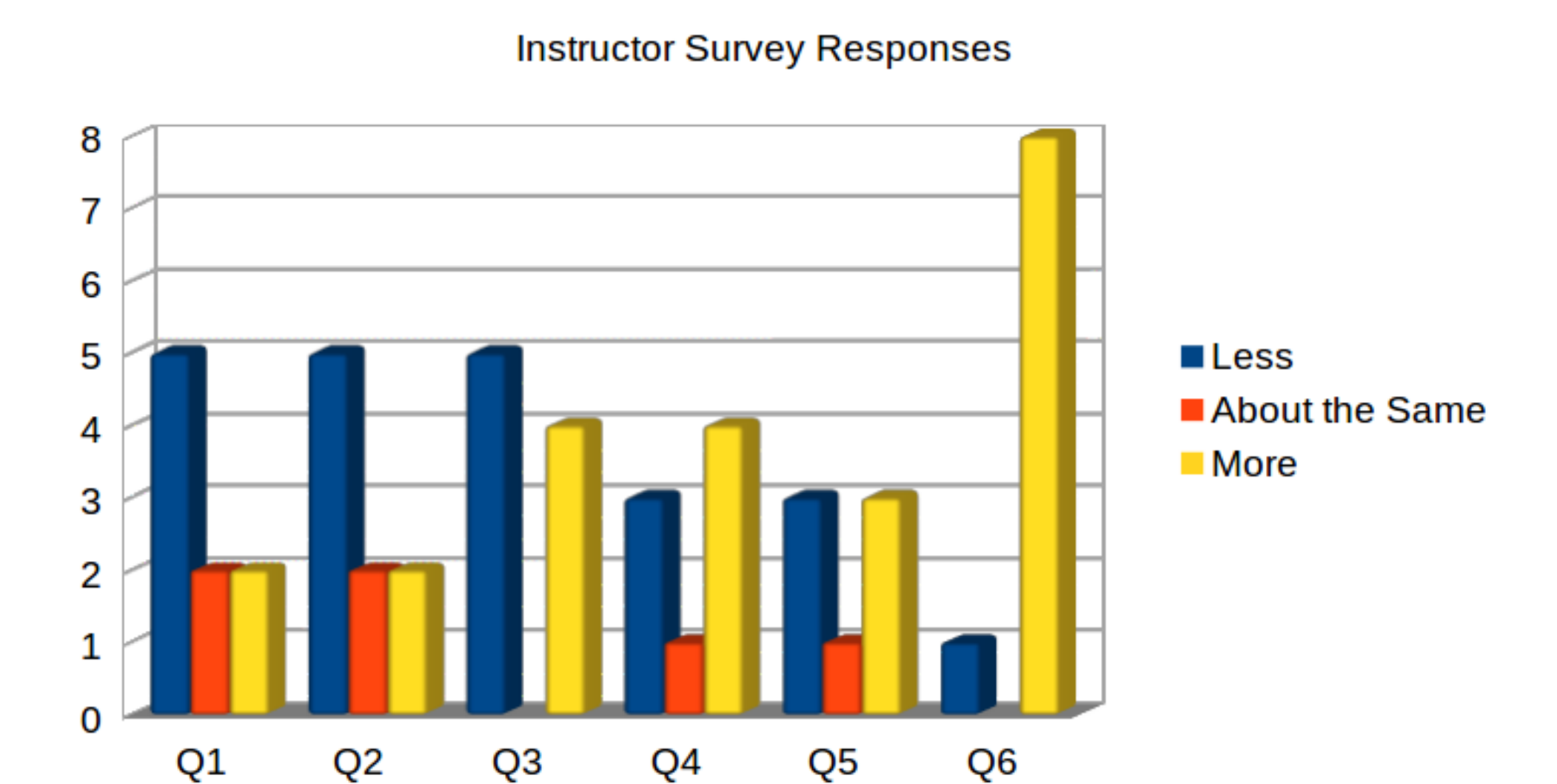


Figure 4: Instructor responses to the questions “How much time does Piazza require relative to the following other ways of helping students?”

Q1. Regular office hours

Q2. One-on-one meetings with students

Q3. Email

“How much does your class benefit from Piazza relative to the following other ways of helping students?”

Q4. Regular office hours

Q5. One-on-one meetings with students

Q6. Email

Conclusion and Further Questions

Piazza is generally well-received by both students and instructors, albeit only if it is widely used in a course. Students seem to most like the quick response time and continual availability. Instructors report time savings and improved student learning compared to other modes of interaction.

Topics for further investigation include:

- Most effective incentives for participation
- Training students to use Piazza
- Quality of discussions on Piazza
- Students self-organizing on websites other than Piazza

Contact Information

- Web: <http://www.math.ubc.ca/~wes>
- Email: wes@math.ubc.ca

Figure 3: Single- (a) and multi-section (b) responses to the statement, “how much did Piazza help your learning relative to other following ways of seeking help?”

Q1: Office Hours

Q2: Math Learning Centre

Q3: Online Videos

Q4: Private Tutor

Q5: Other (books, online resources,...)