

S1: User Research

Project Overview: A Solution to Produce Better Teaches

Our target users are individuals at the University of Washington who have been teaching for less than two academic years. Through research and design we hope to eventually implement a solution to facilitate the process of receiving student feedback. Our solution hopes to ultimately improve a new instructor's teaching abilities.

Competitive Analysis of the Learning Tool: Canvas

One of the most notable pieces of technology recently added to the higher education space is Learning Management Systems (LMS). A LMS is defined to be “a software program that allows for students to authenticate themselves, register for courses, complete courses and take assessments” (Learning Systems Architecture Lab). Learning management systems have proven their success as a paper by Brown et al claim that, “institutions running an LMS are almost always near 99% [of all higher institutions]”. Many instructors and students are using this tool, but can it meet the needs of our target users?

Canvas Network by Instructor Inc., will be the subject of this competitive analysis as it is the current LMS used throughout the University of Washington. Canvas has a webpage titled “Instructor Guide” dedicated to help familiarize instructors with its many features. Two of which include: **tracking** - measuring a student's progress towards pre-defined goals and **interaction** - facilitating the communicating between instructors and students (Advanced Distributed Learning Co-Lab). The following are examples of these features on Canvas and an analysis on if these features are designed to help instructors become better teachers.

Figure 1: An example of an online timed quiz:

The screenshot displays an online quiz interface. At the top, there is a table titled "Attempt History" with columns for "Attempt", "Time", and "Score". The table shows one attempt: "LATEST" with "Attempt 1", "14 minutes", and "2 out of 2". Below the table, it states: "Score for this quiz: 2 out of 2", "Submitted Jan 17 at 10:06pm", and "This attempt took 14 minutes." The main content area shows "Question 1" worth "0.2 / 0.2 pts". The question is: "In DNA, the base called adenine binds to which other base?". There are four radio button options: "guanine (A-G)", "itself (A-A)", "cytosine (A-C)", and "thymine (A-T)". The "thymine (A-T)" option is selected and highlighted with a green bar and the text "Correct!!".

Attempt	Time	Score	
LATEST	Attempt 1	14 minutes	2 out of 2

Score for this quiz: 2 out of 2
Submitted Jan 17 at 10:06pm
This attempt took 14 minutes.

Question 1 0.2 / 0.2 pts

In DNA, the base called adenine binds to which other base?

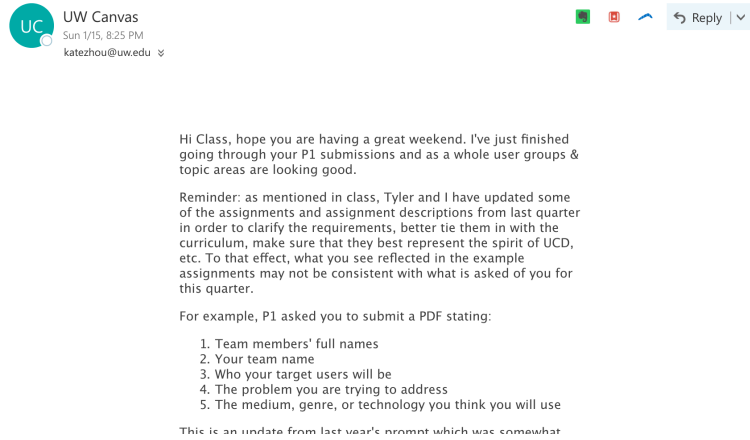
- guanine (A-G)
- itself (A-A)
- cytosine (A-C)
- thymine (A-T)

Correct!!

Canvas quizzes are a great way to measure a student’s understanding and administrating small student assessments. In terms of helping the instructors, these quizzes could easily be retooled to polling quizzes that assess the quality of classroom lectures.

Figure 2: Canvas Notifications enable better student-instructor interactions

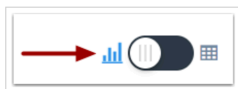
Example submissions vs. assignment descriptions: HCDE 318 A Wi 17: Introduction To User-Centered Design



Canvas is able to notify students automatically via email when an instructor makes an announcement, posts a new discussion, grades an assignment etc. This is an easy and time-saving interaction that help new instructors better their support students.

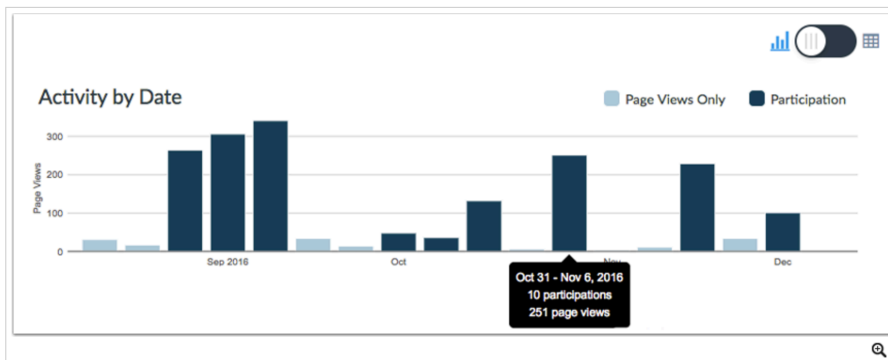
Figure 3: Course Analytics available to the instructor:

View Analytics Graphs



By default, analytics are shown in a graph format. There are three types of graphs: Activity by Date, Submissions, and Grades.

View Activity by Date



Canvas also provides instructors with the ability to view student profiles and track their progress such as submissions, page views and scores. These course analytics provide powerful insight however they are very student-centered. There are no analytics that measure instructors' performances.

Canvas is a phenomenal tool to facilitate interactions and generate student progress analytics. Unfortunately, it has yet to fully solve for our defined need of new instructors: to help them improve their overall teaching abilities. Primarily what is missing is a structured way of providing feedback to the instructors on how they are performing. Canvas is a tool more for helping and understanding students than it is a tool to produce better teachers. Our solution hopes fill the missing features of Canvas and design for additional needs of a new instructor.

Interview With An Undergraduate TA

Interview Process:

I began by asking the participant if they were willing to take part in a short user research interview. I selected an individual who was a new undergraduate TA at the University of Washington teaching in a STEM field. Before starting the interview, I explained the project to the participant and confirmed their consent to take notes. Additionally, no personal questions were asked of the participant to ensure the interview was conducted ethically. The biases in this interview are apparent as this is just the perspective of a single TA on campus.

How long have you TA'd for?
2 quarters
What subject/classes have you been TAing?
CSE 142/143 introductory CSE classes
Can you explain to me your role as a TA in a brief sentence?
My role was to break down concepts in lecture into easier words/ideas and to give tips on how to succeed on homeworks/tests, as well as give students practice with concepts.
What do your weekly tasks involve?
Teach section 1-2 times per week, grade weekly assignments, attend various meetings, attend lecture once a week, man the IPL once a week, and respond to various emails. Grade midterms and finals for those respective weeks.
Could you help walk me through a section where you are teaching?

In a typical section, we start with a quick programming question, I ask about the students' week, trying to be personable and relate to the students. Then we do a short minilecture on what was covered in lecture and spend the rest of the time doing exercises, which can be done in groups, individually, or as a class, I pick and choose depending on the week or how much help I think they need on their homework.

How are you able to support your students outside of the classroom?

My students have my email, they know my IPL hours, and they can use Piazza for outside help. Piazza is an online platform that allows us to post questions and have discussions.

What are the primary technological tools that you are using to communicate and help students?

Typically I use a whiteboard, but I also send out weekly emails and also use Viz, a visual debugger, to help students see what's going on with their code.

How confident are you in your teaching abilities?

Teaching in the beginning was pretty difficult. I wasn't quite used to being in front of a classroom for 50 minutes leading the section but it definitely got easier over time. It was also nice to sit in on other sections and see how other TAs were teaching.

Are there frustrations with the current tools you have?

The only frustration when it comes to being a TA is the amount of time I spend grading. I'm pretty thorough when it comes to giving feedback, so naturally it takes me a lot of time to grade. There is a grading tool that we use which could definitely be better designed.

Could you explain the TA training you received?

When I started out, we had grading parties, weekly TA training sessions, and IPL shadowing to get up to speed on how to be a good TA. Meetings are always great for advice as well on a certain weeks section.

Have you received additional support as a TA to help you improve?

Yes, the teachers are constantly asking us and giving us feedback on how we are doing. I get feedback from students at the end of the quarter and we have a review after 3 quarters of being a TA.

Have you reviewed your course evaluation forms? If so, how helpful have you found these evaluation forms to be?

I have not yet for last quarter, they tend to be funnier than helpful for me.

References

1. Berking, P., & Gallagher, S. (2011). Choosing a learning management system. Advanced Distributed Learning (ADL) Co-Laboratories,(2.4).

2. Brown, M., Dehoney, J., and Millichap, N. (2015). The Next Generation Digital Learning Environment: A Report on Research. Educause Learning Initiative paper.
3. "How Do I View Course Analytics?" How Do I View Course Analytics? | Canvas Instructor Guide | Canvas Guides.
4. Learning Systems Architecture Lab [LSAL]. (2004). SCORM Best practices guide for content developers (2004 ed.). Pittsburgh: Carnegie Mellon University.