

# Heuristic Evaluation of CoCode

## 1. Problem/Prototype Description

We evaluated the medium-fidelity prototype of CoCode, which is a platform aiming to improve computer science education by allowing students and tutors to meet one another.

## 2. Violations Found

### 1. H7: Flexibility and efficiency of use | Found by: A

- Severity: 3
- A user who's both a student (say, in CS110) and a tutor (say, in CS106B) has to start from the home screen to offer tutoring in CS106B and then restart from the home screen to get help in CS110. "Saved Problems" only shows CS106B problems; I assume that other courses' problems would be on a different screen.
- Fix: offer a history view or notification center where users can see combined activity across all classes they're involved with.

### 2. H4: Consistency and standards | Found by: A, B

- Severity: 3
- On the "Problems with peer tutors available" screen, a notification appears that Anonymous Ostrich wants to teach ismeasurable. However, ismeasurable isn't in the "Problems I want to learn now" section, which is confusing for the user.
- Fix: only offer to teach problems that the student wants to learn.

### 3. H2: Match between system and the real world | Found by: A, C

- Severity: 4
- The wording in the menu bar is vague. It's not clear what the difference is between "Learn" and "Collaborate." It's also not clear what "My Stuff" is.
- Fix: rename "Learn" to something that's more indicative, e.g. "Solo Study." Change "My Stuff" to "My Units" or something like that.

### 4. H1: Visibility of system status | Found by: A, B

- Severity: 3
- On the "Currently online" screen that has a dropdown for concepts and problems, it's not clear what each of the rows with people icons are.
- Fix: add some text such as "Join a Room" so it's more clear what the buttons are. 5.

### H3: User control and freedom | Found by: A, B

- Severity: 3
- From the aforementioned "Currently online" screen (screen 38), clicking one of the people icon clusters takes you to a screen about writing code together (screen 44). Clicking "Leave Room" takes you to a different page than where you came from (screen 34). Additionally, the "Leave room" button currently takes the user to the main collaborate page with all concepts and problem reset. However, the user may wish to just leave the current room and join a room under the same concept-problem combo.

- Fix: add a back button that takes you to the previous page, or make the "Leave Room" button act as such a back button.

#### **6. H4: Consistency and standards | Found by: A**

- Severity: 2
- The fewestCoinsFor problem (screen 44) and isMeasurable problem from the popup (screen 8) have inconsistent UIs. The former has people icons on the bottom left, whereas the latter has video icons on the right.
- Fix: standardize the UI that has the code editor on the left and the people somewhere on the screen.

#### **7. H6: Recognition rather than recall | Found by: A**

- Severity: 4
- "Problem 2.3" (screen 33) has the code for the fewestCoinsFor problem, but it doesn't have the problem statement, so the user would need to remember how to find the problem from another part of the platform.
- Fix: include a link to the problem statement

#### **8. H4: Consistency and standards | Found by: A**

- Severity: 3
- In some screens, the grey rectangles with problem names are clickable. On the synchronous teaching page (screen 26), the only clickable button is "Teach Now," and you can't click a problem to teach it.
- Fix: allow users to click a problem to teach it, or display a the list of problems in a way that doesn't imply that the problems are clickable

#### **9. H3: User control and freedom | Found by: A, C**

- Severity: 3
- On the popup that Anonymous Ostrich would like to learn CHeMoWIZrDy (screen 29), the red "X" button doesn't do anything, and the only way to close the dialog without getting routed to another page is to click "Stop Teaching."
- Fix: allow the user to click the "X" button to reject the teaching request.

#### **10. H2: Match between system and the real world | Found by: A, B**

- Severity: 3
- From the aforementioned teaching popup (screen 29), the "Stop Teaching" button language isn't clear. Is the user stopping teaching just for now, but they can jump back on later? Are they withdrawing from teaching the class? Are they closing the platform?
- Fix: add language to make this button's functionality clearer.

#### **11. H4: Consistency and standards | Found by: A**

- Severity: 2
- If you click "Stop Teaching" and then click "Making Change," you're routed to screen 33. Since half the real estate on that screen is geared toward learners, I assumed this screen is geared for learners, not teachers. At first, this seemed inconsistent to me; it's not obvious why teachers who click "Stop Teaching" are routed to a learner interface. (I assumed that person would still be a teacher, but they just aren't teaching right this second. I only noticed the +Teach button after several minutes.)

- Fix: make it clear that once you click "Stop Teaching," you're viewing a course's contents as a learner, not a teacher. Alternatively, make this screen more multipurpose so it can be used for both learners and teachers.

**12. H2: Match between system and the real world | Found by: A**

- Severity: 1
- On the solo coding in a room screen (screen 39), after allowing Anonymous Ostrich to join the room, three new participants appear. I would expect only one new participant to join the room after clicking the green checkmark.
- Fix: only add one participant to the room when the popup indicates that one person is joining

**13. H3: User control and freedom | Found by: A, B**

- Severity: 3
- On the aforementioned popup that Anonymous Ostrich would like to join the room (screen 39), the red "X" button doesn't do anything. There is no way to reject the person who wants to join the discussion.
- Fix: allow the user to click the "X" button to reject the new entrant.

**14. H4: Consistency and standards | Found by: A**

- Severity: 2
- On the "Problem 2.3 screen" (screen 33), the yellow buttons don't link to any pages. On other pages, however, the yellow buttons are clickable and allow the user to perform an action.
- Fix: make the yellow buttons on slide 33 clickable.

**15. H3: User control and freedom | Found by: A**

- Severity: 2
- From the screenshot of Keith's lecture slide (screen 11), there's no way to get out of this view or go to the previous screen.
- Fix: add a back button and/or persist the menu bar on this view.

**16. H4: Consistency and standards | Found by: A**

- Severity: 2
- From the "Saved Problems," "Work in Progress," and "Solved Problems" screens under "My Stuff," neither the gray buttons with problem names nor the "Concept" and "Problem" dropdowns are clickable. This contradicts other parts of the platform where such buttons are clickable.
- Fix: make these buttons clickable throughout the platform.

**17. H4: Consistency and standards | Found by: A, B**

- Severity: 2
- On the isMeasurableRec screen (screen 3), the yellow chat icon doesn't open a popup window, as it does on other screens.
- Fix: make the chat icon open a popup window

**18. H3: User control and freedom | Found by: A, C**

- Severity: 2
- From "Problem 2.3" (screen 33), if you click the person under "Learn from Peers" to go

to screen 5, then click "Leave Session," you're routed to "Problems with peer tutors

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available" (screen 12). I would expect to be routed back to the screen I came from, namely screen 5.

- Fix: make the "Leave Session" button take the user back to the previous page they were on.

#### 19. H2: Match between system and the real world | Found by: A

- Severity: 3
- If I'm on the home screen wanting to find a peer tutor, I'd be inclined to click the "Collaborate" button. Unless you click the "Learn" button and subsequently see the explicit option for a peer tutor, it's not clear which option to choose in the menu bar when looking for a tutor. More broadly, the difference between "Learn" and "Collaborate" isn't obvious purely by looking at the menu bar for someone who doesn't already know what your platform does.
- Fix: make the purposes of the "Learn" and "Collaborate" buttons clearer. A drop-down menu bar might help with this so the user can quickly scan the functionality under each menu bar item.

#### 20. H3: User control and freedom | Found by: A

- Severity: 2
- On the "Currently online" screens, once you select a Concept and/or Problem from the dropdown menu, there's no way to unselect that concept or problem or both. ○ Fix: add a way to remove the "Concept 2" or "Human Pyramid" filter once it has been selected, such as an X button or a blank entry at the top of the dropdown menu. Also consider a "clear selection" button that resets both selection to default.

#### 21. H4: Consistency and standards | Found by: A

- Severity: 1
- After clicking "Collaborate" in the menu bar, we see concepts along with problems for each concept. However, after selecting a concept from the dropdown menu, we only see icons of people and don't see a list of problems for that concept as we did on the previous screen.
- Fix: retain the view from the first "Collaborate" screen so that we see the list of problems along with how many people are working on it after we've selected a concept from the dropdown.

#### 22. H2: Match between system and the real world | Found by: A, B

- Severity: 2
- From the home page (screen 9), the yellow "+ My Stuff" and the blue topic links don't lead to another page. This violates the user's expectation that buttons and links yield a change of action.
- Fix: fix the connections on those buttons and links so the user is routed to a new page.

#### 23. H10: Help and documentation | Found by: A, C

- Severity: 1
- There is no help page, onboarding guide, or FAQ for the app. Users might have questions as to what they can do on the platform or how they can perform a particular task and

don't have anywhere to go.

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- Fix: add a help/FAQ/resources page that's linked from every page (e.g. in the top right corner next to the settings icon).

#### 24. H8: Aesthetic and minimalist design | Found by: A

- Severity: 0
- On the "Learn" page, the header says "Lectures," and each item in that box repeats "Lecture" at the start of the line. The same idea applies to "Section Handouts" and "Assignments." This is repetitive and not minimalist.
- Fix: you could make an ordered list and omit the "Lecture," "Section Handout" or "Assignment" prefix.

#### 25. H8: Aesthetic and minimalist design | Found by: A

- Severity: 0
- The gray boxes are not very bright and the aesthetic is mostly functional but not engaging. Other than the blue menu bar, the app is mostly grayscale.
- Fix: you could add more color to the app instead of primarily using gray boxes in the layout.

#### 26. H2: Match between system and the real world | Found by: A

- Severity: 2
- From the "My Stuff" page, the "Concept Highlight," "Problem Highlight," and "Recently Saved" items aren't clickable, even though the user would likely expect to be able to click those.
- Fix: make those items clickable.

#### 27. H8: Aesthetic and minimalist design | Found by: A

- Severity: 1
- On screen 37, after selecting a concept and clicking (but not selecting from) the problem dropdown menu, the time icon for the top right collection of people icons vanishes. On the same page, the text inside the time circles is not always properly centered. This is not aesthetic.
- Fix: move the partially-hidden item to the foreground, and center the text of each timing in the rectangular box.

#### 28. H9: Help Users with Errors | Found by: B

- Severity: 2
- *Learn tab - Review course materials*: there is no back button from the "review course material" page to help users with errors or to go one step back. The user has to go up and click the "learn" tab again, which may be unintuitive.
- Fix: add a back button on "review course materials"

#### 29. H2: Match between system and the real world | Found by: B

- Severity: 1
- It may not be obvious to the user what the concept's name specifically refers to. "Making change" may seem very broad to the user. This may be particularly relevant if the learner here is new to the discipline.

- Fix: A quick intro or description of the concepts that shows up once the user hovers over the concept card

### 30. H3: User control and freedom | Found by: B

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- Severity: 3
- *Problems with peer tutors available page - pop-up for ismeasurable tutor found:* no prompt is given to the user on whether they can choose to be taught one concept first, if multiple concepts can be taught at the same time. The user also cannot choose which tutors to go to, if multiple tutors are free to teach the same concepts at the same time.
- Fix: Add indicators (e.g. green dot) to concepts with available tutors, or numbering indicators showing how many tutors are available for which concepts.
- Fix: Add an intermediate page for the user to select a tutor.

### 31. H1: Visibility of System Status | Found by: B

- Severity: 1
- *Live session page:* once the user clicks save, there are no prompts to show successfully saved, and they can no longer access the comments button. This is relevant as the user may forget to save during a live session before the session ends, or may also constantly try to save to avoid losing contents (like word doc users may do). This may potentially generate anxiety for the user.
- Fix: a pop up informing the user that all materials (recording, notes) would be saved automatically to “my stuff” after the session completes

### 32. H4: Consistency & Standards | Found by: B

- Severity: 0
- *Live session page:* Once clicked onto the “mute” button, the profile picture doesn’t change to have the red mute icon. Given users are familiar with zoom, the user may expect to see the red mute button on the bottom left of the profile to make sure they have successfully muted.
- Fix: add “mute” icon to profile to mimic convention.

### 33. H1: Visibility of System Status | Found By: B, C

- Severity: 2
- *(Route 1) home page - individual concept card “making change” - under right-hand “Collaborate” header:* the time indicator button on the top right of the groups (e.g. 4min, 15min, 8min) may be a bit confusing for the first-time user.
- Fix: add a small instruction line under the “Collaborate” header guiding the user as to what the minutes mean.

### 34. H4: Consistency & Standards | Found By: B

- Severity: 3
- *(Route 1) home page - individual concept card “making change” - under right-hand “Collaborate” header:* The user would think the “+” button creates a new room to collaborate, and they likely expect to be able to configure settings such as privacy level, number of people, etc. However, they get routed to a room that looks very similar to the existing rooms; it's not clear that they're in a new room.

- Fix: add some intermediate steps so the user knows what kind of room they're signing up for

#### 35. H4: Consistency & Standards | Found by: B

- Severity: 1

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- *Collaboration live session page*: on the bottom left of the page, the profile picture is circled with a “red” frame. It is a bit unclear as usually the current speaker is indicated with a green frame. It is also a bit unclear as to whether the circled speaker is “me” or the “live speaker”.

- Fix: change profile frame to green to mimic convention.
- Fix: add “me” to the profile that indicates “me”.

#### 36. H1: Visibility of System Status | Found by: B

- Severity: 2
- *(Route 2) Collaborate tab*: “concept 2” drop-down selected, problem not selected display: the user is not prompted to select the problems to see the subset of groups working on specific concepts.
- Fix: a prompted comment box near the “problem” drop-down that guides the user to select a problem before viewing available rooms

#### 37. H3: User Control & Freedom | Found by: B

- Severity: 3
- *Teach tab - teaching synchronously*: there is no way for the user to select which problems they can teach. This is related to user control, particularly when the user comes into the page the first time, or their level of knowledge improves that changes the set of concepts they can teach. Due to this confusion, the user may confuse the “+” button on the cards under the “problems I can teach” as “add this concept to the problems I can teach.”
- Fix: Allow editing features for “problems I can teach”. Allow group editing features to select a batch of problems. Allow drag as it can be within many users’ habits when it comes to card-view display.

#### 38. H3: User Control & Freedom Found By: B

- Severity: 3
- *Learn Now button*: When clicking “learn now”, the pop-up request for a live session does not give the user choice to choose. If the user wants to teach multiple concepts, multiple students may request a session. The user currently cannot select which one to attend to, if there are multiple ones. The user also cannot see who may be waiting in line to be taught. On the contrary, if there is no current request for teaching for the user, the user is not informed as to what page they should see, or how long they should wait, etc.
- Fix: Add an intermediate waiting-room page where the user may see waiting students and their requested concepts. The user can bulk select students who want to learn the same concepts before starting the session.

#### 39. H4: Consistency & Standards | Found by: B

- Severity: 1

- It is not clear whether the live session page is for the learner or for the tutor. The “mute” button’s response indicates that this page is for the learner, whereas the task is to “teach”.
- Fix: differentiate this page for “teach” versus “learn”

**40. H4: Consistency & Standards | Found by: B**

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- Severity: 2
- The “tutor” here cannot see buttons for functions such as the waiting room where they may admit students who are interested to join and learn the same concepts. Since for task “learn”, the user can join rooms with multiple people, this function not being enabled may lead to some confusion.
- Fix: add a waiting room function to admit people in in a non-disruptive way.

**41. H4: Consistency & Standards | Found by: B**

- Severity: 2
- The “save” button is dysfunctional, which may create confusion as to what is saved for the “tutor” (working notes and code vs. the entire recording).
- Fix: Clarify the save functionality for the “teach” task.

**42. H6: Recognition not Recall: | Found by: B**

- Severity: 3
- *Home page*: It is a bit unclear how are “concept 1, 2, 3” divided, or what they mean (e.g. by difficulty level vs. order in which it is taught in class).
- Fix: add a sub-header explaining the concept categories, or other illustrations that inform the users why they are divided as such

**43. H1: Visibility of System Status | Found by: B**

- Severity: 1
- *“My stuff” on the homepage*: When the user sees the button to add to my stuff the first time on the home screen, it may be confusing because “my stuff” is a bit too informal to mean “concepts or notes archives”. The user only got clearer about what “my stuff” is once clicking the “save” button during the collaborative flow.
- Fix: change the button to “Add to my stuff” or “Add to my concepts bag”.

**44. H1: Visibility of System Status | Found by: B**

- Severity: 2
- *My stuff tab - “Work in progress” side-bar*: It is a bit unclear to the user how things are saved to this sidebar, as currently the task flows do not give an entry point for showing how concepts or problems are saved to be in “work in progress” tab.
- Fix: clarify workflow for how things are saved to “work-in-progress”.

**45. H4: Consistency & Standards | Found by: B**

- Severity: 1
- *My stuff tab - Going back to the home page under “my stuff”*: Currently this entry point is to click on the profile picture. This may be potentially confusing for the user, since clicking on one’s profile can imply a settings page.
- Fix: Potentially add a “home” side bar on top of “Courses”.

**46. H6: Recognition rather than Recall | Found by: C**

- Severity: 2
- *All screens except Choose Course Screen and My Stuff:* There is no indication of what course's materials/concepts the user is seeing after clicking on 'CS106B' on the Choose Course screen. The user may forget which course they are teaching/learning more concepts for.

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- Fix: Add the course title in the navigation bar (e.g. "CS106B") so that the user can quickly check which course they are studying/tutoring for at any point in the application.

#### 47. H8: Aesthetic & Minimalist Design | Found by: C

- Severity: 1
- *Home Screen and Learn → Review Course Material Screen:* The light blue links on the light gray background in the "This Week's Highlight" section are hard to read since the text is quite small and is a light color on another light color. This may lead to users having difficulty reading the links and strain their eyes to see them.
- Fix: Either change all of the links to be a darker shade (I would steer away from light blue in accordance with the color guidelines we saw in lecture), or have a darker shade for the background.

#### 48. H6: Recognition rather than Recall | Found by: C

- Severity: 2
- *Home Screen:* Users may not recognize that rectangles for the list of problems under each concept are horizontally scrollable because there is no visual cue/indication that they can be swiped. This means that users may not be able to find the problems they are looking for.
- Fix: Add an arrow on the left and right side (e.g. "<" and ">") of the screen for each of these lists of problems under the concepts to indicate that users can scroll through them horizontally.

#### 49. H8: Aesthetic & Minimalist Design | Found by: C

- Severity: 1
- *Home Screen:* There is no white space beneath the last row of concepts on the main screen and the bottom of the page when a user scrolls down. This might give the false impression that there are more concepts they can look at, but they cannot scroll further down.
- Fix: Add white space after the last row of concepts to add a buffer between it and the bottom of the page to indicate that the user has reached the end of the list.

#### 50. H2: Match b/t System & World | Found by: C

- Severity: 1
- *Choose Course Screen:* Users may be confused by how the course options are represented with icons of people; they may associate these people icons with peers/tutors instead of course content/materials.
- Fix: Use generic object icons to represent the different course options instead (e.g. a computer icon, calculator icon, graph icon, etc.) to indicate that these represent

course options and not actual people and their accounts.

#### 51. H6: Recognition rather than Recall | Found by: C

- Severity: 2
- *Learn* → *Talk to a Peer Tutor Screen*: The “Problems I want to learn now” and “Problems available” sections look very similar in color and font size, and are quite close to each other on the screen. This might cause the user to think that these sections are related to each other or confuse them as the same section.

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- Fix: Indicate priority and/or more common usage of this screen by either increasing the size of one section (e.g. increase the size of the “Problems I want to learn now” section with larger font/larger rectangles for the concepts so they are easier for the user to quickly click on) or increasing the spacing between these two sections to distinguish between them more clearly.

#### 52. H4: Consistency & Standards | Found by: C

- Severity: 2
- *Across multiple screens*: The words “topic” and “concept” are used interchangeably throughout this application (e.g., in the “This Week’s Highlight” section on the Home screen, they are referred to as “topics” such as Recursion and Backtracking. However, directly underneath this section, they are referred to as “concepts” like Concept 1, 2, etc.). This difference in wording may confuse the user, who may interpret them as different categories when they are actually referring to the same idea.
- Fix: Choose one term (“concept” is used more frequently in the current prototype) and stick with this phrasing for all screens.

#### 53. H3: User Control & Freedom | Found by: C

- Severity: 3
- *Entering a Room with a Tutor/Student Pop Up*: There is no confirmation of how the user will enter the room--will they enter with their video on? Mic on? Instead, by clicking on the checkmark button on the screen that pops up with the tutor/student and the problem they’d like to teach/want to learn, users are taken directly to the room.
- Fix: Add a confirmation screen that confirms if the student wants to join with or without their video/audio on before they enter the room.

#### 54. H9: Help Users with Errors | Found by: C

- Severity: 2
- *Entering a Room with a Tutor Pop Up*: There is no way for a student to “undo” if they accidentally click the ‘X’ button when a popup notification appears with a tutor and the problem they’d like to teach to the student. There is no indication that after clicking the ‘X’ button that the student can go and find that tutor for that problem again if they accidentally clicked on the ‘X’ button (this can fall under the H5:Error Prevention category as well).
- Fix: Add a list of the student’s popup notifications (e.g. on the navigation bar) that students can look through and find previous notifications for tutors that have been available to teach problems, and join rooms from there if the tutor is still available.

#### 55. H8: Aesthetic & Minimalist Design | Found by: C

- Severity: 2
- *Learn* → *Review Course Material Screen*: The links on this page are very close together, which puts strain on the user's eyes when trying to scan through to find their desired course materials. Users may also accidentally click on the wrong link since they are so close together (this can fall under the H5: Error Prevention category as well).
- Fix: Add more spacing between the links to distinguish them more clearly for the users.

#### 56. H4: Consistency & Standards | Found by: C

- Severity: 1
- *Collaborate* → *Join a group online* → *Group Room*: Some button labels are capitalized while others are left all lowercase (e.g. most buttons have labels like "Leave Room" where each word capitalized, while the "share screen" button is all in lowercase). This may confuse users since they might interpret the lowercase label as just a label instead of an actionable item.
- Fix: Use consistent capitalization patterns for button labels (e.g. since the majority of the application uses the pattern of capitalizing the first letter of every word, this would be a good pattern to set on all screens).

#### 57. H4: Consistency & Standards | Found by: C

- Severity: 1
- *Between a Collaborate Group Room and Recording a Video in the Teach tab*: The "Share Screen" and "Whiteboard" buttons have very different styles on both screens. In the Collaborate "group room" with other students, the style is a two-button toggle with rounded corners where the selected option is highlighted in light blue with white font, and the unselected option is light gray with dark gray font color. In contrast, on the page where a user records a video of them teaching a problem, the style of these buttons has a different font and the selected option is highlighted in white with black text.
- Fix: Use a consistent font and color indication for the selected option for this two-button toggle across both screens.

#### 58. H5: Error Prevention | Found by: C

- Severity: 3
- *Collaborate* → *Join a group online* → *Group Room*: There is no confirmation for leaving a room. Since the button to "Leave Room" is centered on the bottom, a user might accidentally press this button while they try to navigate from one side to the other side of the screen, especially since the actionable buttons of viewing the chat, muting/unmuting, etc. are to the right of the "Leave Room" button. This may cause serious issues if the user mistakenly presses the button while their group is engaged in a good discussion about the problem/concept they are tackling and misses this discussion.
- Fix: Relocate the "Leave Room" button to one side of the bottom bar and add a confirmation message to check that the user actually wants to leave the room when they click this button.

#### 59. H7: Flexibility & Efficiency of Use | Found by: C

- Severity: 2
- *Collaborate* → *Finding a Concept/Problem*: There is not a way for users to quickly search/filter for the concept or problem they are looking for. Scrolling through the list of all concepts and all problems available in the dropdowns takes time and may frustrate the user, especially if there are many options to choose from.

- Fix: Add a search or filter bar within or next to the Concept/Problem dropdowns.

#### 60. H3: User Control & Freedom | Found by: C

- Severity: 2
- *Teach* → *Record/Upload a Video* → *ChemoWizrdy*: If users decide they don't want to teach a given concept (e.g. CHemoWizrdy), there is not a way for users to go back directly to the list of concepts they could possibly teach. Instead, users have to click on the "Teach" tab at the top of the page, and re-select "Record/Upload a Video" to navigate back to this list.
- Fix: Add a "Back to List" button on the bottom left of the page so users can click it to go back to the previous page.

#### 61. H2: Match b/t System & World | Found by: C

- Severity: 3
- *Teach* → *Teach Synchronously*: The wording of "Teach Now" can be confusing to the user. Does this mean the user is taken to a room and waits for students to join? Does this mean the student is just marked as an available tutor and can continue to use the app as they wait? The positioning of the button at the top center of the page may also confuse the user as to which concepts/problems this action will be related to, since the top-centering implies that it is applicable to all items on the page (e.g., is it for all concepts on the page? Or just the problems/concepts in the "Problems I want to teach"?).
- Fix: Move the button closer to the "Problems I want to teach" section to show relatedness, and reword the action (e.g., instead of "Teach Now", perhaps "I'm Free to Tutor").

#### 62. H6: Recognition rather than Recall | Found by: C

- Severity: 3
- *Teach* → *Teach Synchronously* → *Teach Now*: There is no visual indication on the Home screen that a user has signed up to teach a problem/problems until a notification comes that another user would like to learn one of these problems. This means that the user has to remember if they have signed up to teach.
- Fix: A status next to the user's account icon in the top right corner in the navigation bar that shows as "Available to Teach" when the user has signed up to teach.

#### 63. H3: User Control & Freedom | Found by: C

- Severity: 3
- *Teach* → *Teach Synchronously* → *Teach Now*: After the user clicks "Teach Now", there is no way for the user to "Stop Teaching" until a notification comes that another user would like to learn one of these problems.
- Fix: On the "Teach" tab, add an option to "Stop Teaching" so that users can mark themselves as unavailable to teach quickly instead of waiting for this notification, which may not always come to all users.

#### 64. H1: Visibility of System Status | Found by: C

- Severity: 2
- *Teach* → *Record/Upload a Video* → *Record Video*: There is no indication of how long the user has been recording. Users might want to see how long they have taken to gauge if they have explained in enough detail or perhaps went longer than they had expected.
- Fix: Include a stopwatch in the bottom left corner that keeps track of how long the user has recorded for so far.

### 3. Summary of Violations

Category	# Viol. (sev 0)	# Viol. (sev 1)	# Viol. (sev 2)	# Viol. (sev 3)	# Viol. (sev 4)	# Viol. (total)
H1: Visibility of Status	0	2	4	1	0	7
H2: Match Sys & World	0	2	3	3	1	9
H3: User Control	0	0	4	8	0	12
H4: Consistency & Standards	1	7	8	3	0	19
H5: Error Prevention	0	0	0	1	0	1
H6: Recognition not Recall	0	0	2	2	1	5
H7: Efficiency of Use	0	0	1	1	0	2
H8: Minimalist Design	2	3	1	0	0	6
H9: Help Users with Errors	0	0	2	0	0	2
H10: Help & Documentation	0	1	0	0	0	1
<b>Total Violations by Severity</b>	<b>3</b>	<b>15</b>	<b>25</b>	<b>19</b>	<b>2</b>	<b>64</b>

**Note: check your answer for the green box by making sure the sum of the last column is equal to the sum of the last row (not including the green box)**

CS 147 Winter 2021 website

<https://hci.stanford.edu/courses/cs147/2021/wi/index.html>

CS 147 Winter 2021: Assignment 9 (Heuristic Evaluation Group Template)

Instructor: James Landay

#### 4. Evaluation Statistics

Severity / Evaluator	Evaluator A	Evaluator B	Evaluator C
Sev. 0	67%	33%	0%
Sev. 1	27%	40%	27%
Sev. 2	40%	32%	44%
Sev. 3	47%	53%	26%
Sev. 4	100%	0%	50%
<b>Total (sevs. 3 &amp; 4)</b>	52%	48%	29%

<b>Total (all severity levels)</b>	42%	39%	32.8%
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## 5. Summary Recommendations

This medium-fidelity prototype is a good starting point for your next steps. The functionality of whiteboarding while coding seems useful. The graphics for the review course material vs. talk to a peer tutor page was well done and made your platform seem more approachable. Users will likely appreciate the flexibility between teaching live and submitting pre recorded content.

The three main areas I would recommend that your team focus on as you move forward are H3: User Control and H4: Consistency and Standards; these heuristics had the most violations based on our findings during studio. We believe that by paying careful attention to giving your users cues as to which part of the application and the content they are viewing, resolving inconsistent wording and styling, and clearly distinguishing related content will greatly help improve the user experience for your web app. For example, buttons that look the same should have the same functionality across the app. Also, there should always be a way to return to the previous screen without re-navigating through the menus to get there. Lastly, the overall design is very functional, but we'd encourage you to try to use colors and icons to make the overall UI more appealing.

One general recommendation that we have for the team that doesn't fit neatly into one of the heuristic categories is to consider how to clarify to the users what information others will be able to see. For example, when you click "Done" after recording/uploading a video, will everyone using the application be able to see this video? We believe that by tweaking the wording on some actionable items, such as changing "Done" to "Share" or even "Send to CS106B resources", will help your team better convey this to the user. Since your application is centered around collaboration, this is an important concept to keep in mind to build trust with your users.

Another general recommendation we have for the team is that we wish more choice is given to the user to allow for edge cases to be resolved, as well as provide better psychological safety. Since both teaching and learning from a stranger (who may not be the TA of your class that you've become familiar with) can be very daunting, the psychological barrier may need further design to overcome. This may look like tutors having a choice which concepts they prioritize teaching when multiple learners request for different concepts. It would also be good to focus on concepts as opposed to specific problems since people who are knowledgeable about certain topics but haven't taken the class won't know what Making Change means, for instance.

We look forward to seeing the high-fidelity prototype!

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<https://hci.stanford.edu/courses/cs147/2021/wi/index.html>