# Heuristic Evaluation of Microsoft Teams

CS3106 - Human Computer Interaction

## Abstract

This report covers a variety of features and shortcomings of the collaborative work platform Microsoft Teams. I have analysed parts of the system with respect to Nielsen's ten usability heuristics. After my evaluations, I met up with the rest of my group and we discussed our findings and compared how the heuristics apply to the design choices of the application.

## Introduction

Microsoft Teams is a workspace platform which offers users a collaborative tool to support education. Some of its main features are but not limited to group chats, private chats, team threads, video conferencing, event scheduling, and file sharing. It has become a crucial element in online tuition during lockdown and has allowed millions of students across the globe to continue their studies from home.

## First Evaluation Phase

During my usability inspection I tried undertaking multiple different tasks on Microsoft Teams while thinking about the heuristics one at a time and considering how the system satisfies or doesn't satisfy Nielsen's usability principles. This act of trying to achieve different things as a beginner user is called a cognitive walkthrough and allows me, the inspector, to better understand how friendly the interface is to fresh users. If my goal was easily reached following obvious actions then a feature is identified. However, each time something isn't quite right, an issue is identified.

For each of Nielsen's ten heuristics I set different tasks to achieve and played through the logical steps for progression thinking at each step how the system should ideally display relevant information and react based on user activity. This allowed me to identify design qualities and shortcomings in parts of Microsoft Teams that I have never used before leading to a more comprehensive evaluation.

The instance of Microsoft Teams I was evaluating is the MacOS application version 1.3.00.33671.

# Top Positive Features

1. Live chat during a video call.

   - This allows students in lectures to ask questions and provide answers in a non-invasive queue based way. It is an upgrade over the existing lecture paradigm of putting up your hand when appropriate as it allows people to make contributions without interfering with the lecturer's current line of teaching. It also means students can collaborate and clarify things for confused peers.

2. Collaborative file editing.

   - This allows multiple users to work simultaneously on one document. Again, it is an improvement over a usual work environment where each person working on a group project has their own documents and files which can be worked on by one user at a time. The feature massively increases the efficiency of users working together on a task.

3. Prompt before joining calls to ask the user their microphone and camera preferences.

   - This lets users join group calls in a completely non-invasive way without disrupting any current conversation. It also introduces an element of privacy which lets users choose what they share while they work. Especially during lockdown when people are working from home it lets users stay in their comfort zone while still interacting with their colleagues/peers.

4. Mute warning.

   - This tells users who are talking during a call when they are muted. It is such a simple feature which huge payoff for new users who may not necessarily check the mute icon for the microphone status. A simple pop-up telling the user that they're muted prevents users from thinking they're contributing to a discussion when no one else can hear them.

5. Help button.

   - The help button allows curious users to find out anything they want about the functions of the system which lets users quickly and easily become experts massively increasingly their work efficiency. It also provides answers for new users that are confused about how to achieve their goals.

| Feature | Why |
| --- | --- |
| **Live chat during a video call** | Enables non-disruptive participation. |
| **Collaborative file editing** | Facilitates simultaneous group work |
| **Prompt before joining calls to ask the user their microphone and camera preferences** | Preserves user privacy by allowing users to choose how much they share. |
| **Mute warning** | Prevents users being muted for extended periods of time. |
| **Help button** | Allows for platform help and discovery of new features. |

# Top Issues Identified

1. No landing/home page.

   - Microsoft Teams has no landing page and so when the application is opened, users are thrown into a page that might not be relevant to them. A home page could include the most relevant parts of each page and it could adapt to what is relevant at that point in time. For new users this can be confusing as most applications have this page. Additionally, users will have to know how to get to the page they are looking for which can lead to a steeper learning curve dampening user efficiency. This can be solved by adding a home page as described which is where users are dropped upon opening Microsoft Teams.

2. Turning call audio on requires unmuting microphone.

   - This is completely unnecessary and causes disruption for the whole call when joining in progress. Microphone muting and call audio are independent options and turning call audio on should not require unmuting your microphone. When the user is using their device's speaker for audio instead of headphones, this action of unmuting and turning audio on creates a feedback loop echoing to all users in the call. This is easily fixed by decoupling these controls.

3. No assignment timer.

   - In the specific case of the weekly computer science quizzes in which the user has 5 minutes to complete a number of multiple choice questions there is no indication as to how long the user has to complete the quiz. Five minutes is a short amount of time which can be easily overlooked while focussing on an assignment. Overstepping the time assigned results in a mark deduction which is a large cost for students. Very easily a timer could be implemented for users to keep track of time remaining on assignments.

4.  No lecture in progress link.

    • Users cannot see and join lectures in progress from anywhere in the application other than the page on which the call is being held. This means that users must find and navigate to the lecture page before joining. The time it takes to find the lecture is unnecessary and confusing for beginner users. If the platform had a homepage, a good solution to this would be to have a direct link to join the lecture from outside the Teams channel. Another fix for this would be having that link on the Teams page to reduce the number of clicks to join a call.

5.  Duplicate Team names are allowed.

    • If two Teams have clashing names then users can easily be sent on the wrong oath to achieving their goals. The unnecessary complication and confusion this causes reduces user confidence and system efficiency. The problem can be avoided by introducing a naming convention to the teams or completely stopped by requiring unique team names.

6.  Help is split into broad sections.

    • The help section is very dense and comprehensive making it unclear where information might be. It goes into a lot of detail which could lead to a confused user take longer to find solution in help than it would have taken them to figure out a solution on their own. This can be frustrating for users and hinders efficiency. A better solution would be to have brief and simple help sections which can be digested at a glance. Users would be able to click on these quick help objects and see more detail about what they are looking for.

7.  Undo button is inconsistent.

    • An extremely important feature for building user confidence is the undo button. It allows people to try things without knowing if the outcome furthers their progression without the risk of affecting current progress. The undo button doesn't do anything after a number of uses causing user uncertainty and reduction in confidence. The system should allow arbitrary undo and redo operations.

8.  Calendar can only show you a maximum of one week at a time.

    • This makes it difficult for users to plan ahead and visualise larger periods of time. It also stops users seeing what is planned in more than one calendar week at once. This is a constraint on the amount of information the user can consume at once and substantially affects the efficiency of the calendar.

9.  When leaving a group, the group name is not displayed.

    • This can lead to the non-reversible mistake of leaving the wrong team. If a user accidentally leaves a team they cannot simply rejoin and they must contact an admin to rectify the situation. Not being able to undo this action is another source of user anxiety and could easily be avoided by prominently displaying the name of the team which the user is trying to leave.

10. The interface can be cluttered.

- Especially in the activity page, teams shows the user a lot of information at once; not always relevant information too. If someone is looking for a specific notification, they have to sift through the dense page of notifications and activity that doesn't always involve the user. If the activity page had tabs to categorise the type of notification then users would be able to see relevant information quicker and more accessibly.

| Issue | Why |
|---|---|
| **No landing/home page** | Increases time for user to find relevant page. |
| **Turning call audio on requires unmuting microphone** | Causes disruption when joining calls in progress. |
| **No assignment timer** | Can lead to late submissions/user anxiety. |
| **No lecture in progress link** | Increases time for user to find scheduled lectures. |
| **Duplicate team names are allowed** | Causes confusion and can lead to hidden information. |
| **Help is split into broad sections** | Is not obvious where in the help section to look for a particular solution. |
| **Undo button is inconsistent** | User confidence is knocked by the idea that their actions may not be reversible. |
| **Calendar can only show you a maximum of one week at a time** | Stops users from visualising more than just one week at a time. |
| **When leaving a group, the group name is not displayed** | Causes confusion and can lead to non-reversible action. |
| **The interface can be cluttered** | Slows down finding relevant information. |

# Second Evaluation Phase

During the second evaluation phase our group had a call on teams to discuss our findings. We aggregated our results into one table which can be seen in the section below. We had many similar features and issues noted but placed different weightings on each dependent on personal experience. We tried to keep the evaluation unbiased by simulating new users and trying previously unused aspects of Microsoft Teams.

# Aggregated Top Positive Features and Top Issues

| Feature | Why | Agreements |
|---|---|---|
| **Highlights selected items** | Allows user to see where their cursor is and what they are going to select. | 4 |
| **Back and forward buttons** | Allows you to go back to a previous state. | 4 |
| **Consistent colour scheme** | Easy to associate things with colour. | 3 |
| **Comprehensive help button** | Provides lots of help if needed. | 3 |
| **Ability to edit/delete posts and messages** | Can delete mistakes or update information. | 3 |

| Issue | Why | Agreements |
|---|---|---|
| **Interface can easily become cluttered with many items** | Takes longer to find what you need in amongst everything. | 4 |
| **No warning when kicking someone out the call** | Can accidentally kick someone without a warning which is unideal. | 3 |
| **Allows for duplicate team names** | Could cause confusion between which team is which leading to mistakes. | 2 |
| **Not clear how many things are ordered** | Hard to find specific items. | 2 |
| **Documentation mostly online** | Have to go to browser to access help which some users may not know how to do. | 2 |
| **Undo button doesn't do anything after a while** | Button becomes redundant and confuses user | 2 |
| **When leaving a group, the group name is not highlighted** | Since the team name does not stand out, the user could be accidentally leaving the wrong team without knowing. | 2 |
| **Different buttons within Teams with similar functionally is confusing** | Both the i and the triple dot buttons could both do similar actions. | 2 |
| **Back and forward buttons switch tabs** | Not how you would expect the buttons to function and might take you to the wrong place. | 2 |
| **Team calls not in history** | Harder to keep track of your team calls as they are buried within the chat. | 2 |

# Conclusion

Microsoft Teams is an excellent piece of software which allows millions of students across the globe to continue their tuition despite the current global climate. It's design allows the user to see lots of information about the system status at any given time satisfying Nielsen's first usability heuristic. Many features of Teams imitate or improve upon current paradigms which allows users to use the platform in an intuitive way. Every user has access to the same functionalities but has full freedom with what they choose to do with these tools which provides a space for many different types of work to be efficiently completed. Elements of the application are kept consistent to promote an easily learning experience for new users. The platform also rarely throws errors and user mistakes are easily reverted. The simple tab design of Microsoft Teams allows users to recognise buttons and actions without having to recall what the outcomes will be. Many of the core functions work well and as intended but there are always going to be small problems that are overlooked which Microsoft Teams seems to be littered with.

Overall, the platform is designed very well and users generally have a good experience whether they're of beginner or expert status. Each of Nielsen's ten usability heuristics are quite well covered in the design but none to a perfect degree. If the developers focussed on individual heuristics and the issues within those categories, many of the platform's shortcomings can be quite easily and quickly ironed out. This would lead to a well-rounded and user-friendly experience.

# Appendix

| List of Heuristics | Identified Problem or Feature | Brief Justification |
| --- | --- | --- |
| **Visibility of system status** | Feature: Shows activity status in top right corner. | Users can check instantly at any time what their activity status is. |
| | Feature: Shows activity status of other users. | Users can see who is available to interact with at each time. |
| | Feature: Shows notification badges on icons. | Users are prompted to visit pages with new information relevant to the user. |
| | Feature: Shows other people editing the same file as you and what they're doing. | Users can see the work of their peers in real time allowing for constructive criticisms. |
| | Feature: Shows user when they're muted and reminds them if they start talking while muted. | Prevents users from thinking they are talking on a call while they are muted. |

| List of Heuristics | Identified Problem or Feature | Brief Justification |
| --- | --- | --- |
| | Issue: There is no indication that a lecture is in progress on the app outside of the Teams channel on which the lecture is being broadcasted. | Users must find their lecture on the app before they can join. A button to take users straight to an ongoing lecture would increase platform efficiency. |
| | Issue: There is no timer while completing an assignment to indicate how much time you have taken/have remaining. | This can lead to late submissions or rushed submissions, both affecting the users' performance on the assignment. |
| Match between the system and the real world | Feature: During lectures students can virtually put their hand up to get the attention of the lecturer. | Allows students to get the attention of lecturers and facilitates participation much like in a real classroom. |
| | Feature: Icons are designed to represent the page they take you to. | Allows new users to recognise the steps they need to take rather than recall. |
| | Feature: Group calls have virtual whiteboards which allow the users to share content for the lecture. | Allows users in a group call to all focus on one page of information. |
| | Feature: Users can change the application language to their native language. | Allows for more users to understand the written labels within the application. |
| | Feature: Users can react to posts with an emoji. | Allows users to express emotions regarding different posts/messages. |
| | Issue: There is no way for a lecturer to 'point' at parts of the virtual whiteboard other than showing the mouse. | Lecturers have to use their small mouse to address specific points of a slide. A pointer with graphical significance would fix this. |
| User control and freedom | Feature: Users can post in threads with the ability to edit and delete their post at a later time. | Allows users to choose what they want to post and also make amendments based on mistakes / changes. |
| | Feature: Users can comment on posts and reply directly to comments in sub-threads. | Makes it easy for users to continue multiple conversations within the same comments section. |
| | Feature: Current calls can be opened in a separate window. | Allows for focus on call or multitasking. |
| | Feature: Forward and back buttons to navigate through visited states. | Makes user confident that they can try things with the ability to reverse their actions. |

| List of Heuristics | Identified Problem or Feature | Brief Justification |
|---|---|---|
| | Issue: When joining a call in progress, the user has to unmute themselves in order to turn audio on which causes a feedback loop and an echo for the whole call. | These two actions should not be linked and each should be separate options for the user. It doesn't make sense for the user to have to unmute their microphone in order to hear their lecture. |
| **Consistency and standards** | Feature: Users can turn on dark mode. | Allows users to have a low brightness interface. |
| | Feature: Emoji support. | Allows users to be more expressive in messages. |
| | Feature: Font is sensibly chosen and consistent. | Keeps readability easy and consistent. |
| | Feature: Heading and subheading style is consistent. | Keeps readability easy and consistent. |
| | Feature: Consistent icon design. | Ensures that users do not get confused by icons in different states. |
| | Issue: No landing/home page. | A landing page with a collection of relevant information and current tasks would hugely benefit the Teams platform as it would allow users to see what they want without having to search for it. |
| **Error prevention** | Feature: User must confirm certain actions such as leaving a call/teams. | Gives users an extra chance to not make a mistake providing more confidence to beginner users. |
| | Feature: Allows user to choose microphone and camera status before joining calls. | Gives users the ability to join calls in a non-disruptive manner. |
| | Issue: Chat messages cannot be deleted after a period of time. | Stops users from removing old comments which may be wrong/have inconsistencies. |
| | Issue: Team names can be duplicated. | Can lead to confusion and hidden information. |
| | Issue: Users can be kicked from calls without warning. | Also leads to confusion in the case that a user is kicked by accident. |
| **Recognition rather than recall** | Feature: Leave call button is red and very explicit. | Prevents users from accidentally leaving calls by making the function of the button very obvious. |

| List of Heuristics | Identified Problem or Feature | Brief Justification |
| --- | --- | --- |
| | Feature: Navigation bar is consistent and always shown with the same icons to take the users to the same pages. | Allows users to jump to different parts of the application immediately to navigate the platform. |
| | Issue: Teams call history not available. | Stops users from keeping track of who has been in which calls and when. |
| | Issue: Some icons are not immediately recognisable, such as the assignments icon. | Can cause confusion and leads new users to wrong areas of the application. |
| **Flexibility and efficiency of use** | Feature: Keyboard shortcuts. | Allows advances users to quickly execute actions without searching through the GUI. |
| | Feature: Meet now is its own button instead of scheduling a meeting for the current time. | Allows users to quickly start a meeting without have to choose a date and time. |
| | Feature: All sections of teams can be instantly accessed from the navigation bar. | Allows users to move between states quickly and form anywhere on the app. |
| | Feature: Calendar has a button to jump to today's date. | Allows users to jump back to the most relevant part of the calendar after exploring other areas of it. |
| | Feature: There is a search bar for users to find quickly what they're looking for. | Allows users to skip searching through the graphical interface when they already know what they're looking for. |
| | Feature: Users can mute everyone in a call at once with the mute all button. | Allows users to instantly mute a call without leaving or interacting with individual users. |
| | Feature: Live chat during video calls can be shown/hidden. | Les users choose their view of / how they want to interact with other users in a call. |
| | Issue: Keyboard shortcuts are reserved for users more familiar to the system and aren't shown to beginner users. | Stops beginner users using shortcuts and forcing them to go through longer procedures to achieve the same thing. |
| | Issue: There is no indication that a lecture is in progress on the app outside of the Teams channel on which the lecture is being broadcasted. | Users must find their lecture on the app before they can join. A button to take users straight to an ongoing lecture would increase platform efficiency. |

| List of Heuristics | Identified Problem or Feature | Brief Justification |
| --- | --- | --- |
| | Issue: Zoom increments are too large. | Stops users with awkward screen sizes/ratios from having a perfectly proportioned interface. |
| **Aesthetic and minimalistic design** | Feature: Users can choose between the light and dark modes. | Allows users to use a low brightness colour scheme. |
| | Feature: Can minimise certain windows to show less information. | Allows users to focus on just the ongoing call. |
| | Issue: Lots of information is presented to the user at once. | Can hide relevant information from the user within clutter leading to longer task completion times. |
| | Issue: Calendar can only show the user a maximum of one week at a time. | Stops users from visualising longer periods of time and doesn't allow for cross-week views. |
| | Issue: App descriptions can exceed the allocated length and be cropped. | Can leave out crucial information indicating to the user which application would best fit their task. |
| **Help users recognise, diagnose, and recover from errors** | Feature: Users are prompted to write a message when they attempt to send an empty field. | Stops empty messages being published to the channel which would be useless and cause redundancy on the page. |
| | Feature: Users are warned of their mute status when they try talking while on mute. | Stops users from thinking they're being heard when speaking when they aren't for extended periods of time. |
| **Help and documentation** | Feature: Help button allows user to find information about how to use each part of the system. | Lets curious or confused users find details about any part of the system teaching them how to use the embedded tools. |
| | Feature: Thorough online documentation. | Allows users to find comprehensive documentation on all parts of the platform giving beginner users an opportunity to become more efficient. |
| | Issue: Help is split into sections which don't have obvious end points. | Can be confusing for a user who doesn't know which section their issue / investigation falls under and lead to falling user confidence. |