#	Problem	Heuristic	Discussion	Recommendations
	Initial Project Creation			
1	Inconsistent data parameters	[4]	Instructional text for “Description” reads “Minimum of 6 characters”. While typing, different text shows up below the box with “Minimum of 10 characters”. (10 is the actual minimum). Tasks and Goals have no initial instructional text, it only appears once you begin typing.	Have “minimum of 10 characters” always shown beneath each text box.
	Project Main Page			
2	Add Data button premature when there is no datasheet	[4] [6]	The “Add Data” is presented at all stages of the project. It is a clear action item at the top of the Project Home Screen. However, a project manager cannot add data before adding a data sheet. This call to action could cause confusion for new project creators.	Make this button conditional, perhaps only after a datasheet is created.
3	Next step to create a datasheet not obvious, too many clicks to start	[1] [5] [10]	In our discussions with Dr. Newman, we have learned that creating a datasheet is the next most important task a project coordinator must do in order to collect data. Currently, there is no indication of this on the page after setting up the project. It is on the second tab called “Submit Data” which is a little misleading. There is also an indication in the help files that are emailed to the project creator shortly after creating the project.	We recommend that the UI include a call to action immediately after project creation for those project coordinators who know the kind of data they want to include. We suggest adding a conditional somewhere under the project information (in the prototype, we placed it under the “manager”). This section would be visible until the first datasheet is created. It would include a clear call to action for creating a datasheet.

4	Helpful resources not available	[1] [4] [6] [7] [10]	After creating a project, helpful links are sent via email to the project creator. They may be very helpful to the user, but are way over in an email program which is a different mental model, although a good place to have them for long-term reference. It requires the user to check email to know they exist, and afterward to remember they are saved there. There is also the potential that the email is deleted and therefore unavailable.	Provide helpful links on the Project Page. This could be done with a small “library” perhaps under the Project photo that is aptly named. We also thought of these topics which might be helpful to users and have more staying power than a webinar or video. We focused on topics that are “action” oriented, indicating that the user would find answers to tasks they want to complete: - CitSci Best Practices - Start Collecting Data - Data structures for newbies - Designing a good citizen science project - Datasheet best practices - What can I ask my volunteers to do?
5	Download button purpose unclear	[5] [10]	It is unclear what the “Download” button is going to download. There is hover text but it does not always show up.	Rename to “download data” and fix hover text.
6	Inconsistent or Broken Download Tracker	[1] [4]	While data download is complete, status reads “completed”, but progress reads “0.00%”.	
7	Missing Hint Text	[5] [10]	In the Manage Project Members page, “Invite People” and “Assign Members” have a space for a pop-up hint box, but nothing comes up.	
8	Terminology which is potentially problematic	[6] [11]	To a non-scientist, “Submit Data” might be something that is used to import data. “New datasheet” might be field-specific. It is assumed that most physical scientists (bio, geo, physics, materials, chem) will know what	

			a datasheet is. What about social scientists? Educational researchers? Highschoolers?	
9	Next step to create a datasheet not obvious, too many clicks to start	[1] [5] [10]	In our discussions with Dr. Newman, we have learned that creating a datasheet is the next most important task a project coordinator must do in order to collect data. Currently, there is no indication of this on the page after setting up the project. It is on the second tab called “Submit Data” which is a little misleading. There is also an indication in the help files that are emailed to the project creator shortly after creating the project.	We recommend that the UI include a call to action immediately after project creation for those project coordinators who know the kind of data they want to include.
10	Message in data tables is a dead-end.		At the bottom of the Project Profile Page, a user can view data under “Observations,” Maps,” and “Locations.” When no data is entered, true of all new projects, the text displayed is “No data available in table.” This is helpful information, but could be more helpful and could include a direct link to creating a datasheet.	Perhaps change the text to say: “No data to display. Have you made a datasheet yet?”
	Datasheet Creator			
11	No explanation of unfamiliar acronym	[10]	There is no information on the difference between location types. Latitude/Longitude is well known, but UTM is unfamiliar and has no explanation attached. This can be true f many different acronyms which are field specific.	We suggest that the form have help hover-text for reference (and education!) when acronyms are part of the system infrastructure. For acronyms and abbreviations, we suggest that users be prompted to also give the full, spelled out version of the characteristic.
12	No explanation of observation	[10]	There is no information on possible observation types. Most were not known to	Add an indication that most projects will use the “point” data type. Could also link to another

	types		the usability team so it is not obvious what to use, even for a basic project.	page or a popup with short descriptions of each.
13	No explanation of difference between buttons	[10]	“Add Organism”, “Add Predefined Organism Picklist”, “Add Any Organism Picklist”, and “Add Site Characteristic” are lacking any information about their purpose and differences between them. It is difficult to understand what the three “organism” buttons do. How are they different? A user may click them to infer how they might help their project.	
14	No requirements shown	[5] [10]	“Add Any Organism Picklist” requires the “point” data type, but this information is only shown after trying to add the picklist if “point” was not already chosen.	
15	Requirements for submission/saving unknown	[1] [5] [9]	There is no indication of what parts of a datasheet are required to be able to save it. Only once you click “save” or “preview” does the system give an error message listing what else is required.	
16	Little feedback from saving a datasheet	[1] [7]	When saving a datasheet, for some users there is a popup notification stating “Your datasheet has been saved!”, but it keeps you on the same page even though you are done editing the datasheet.	Perhaps have the “Save” button style change to look less like an option once the datasheet has been saved. Or perhaps there is a text status which hover consistently in the corner and toggles between “editing” and “saved” depending on the status of the fields.
17	Outdated video icon call-to-action	[2] [4] [6]	The icon for the help video for Datasheet Creation is dated and does not relate to most video icons used today. (appears on	If you choose to continue using a help video(s), consider using a more current icon to signify the availability for a video

			https://www.citsci.org/CWIS438/Contribute/DataEntryForms/Form_Edit.php AND next to the "New Datasheet" Button.	e.g.
18	Outdated video of poor quality by today's standards	[2] [4] [6]	The video is 22 minutes long without any help to figure out where the right help is in the video.	If kept, the current video could be sliced into smaller clips. Ideally, we recommend an updated series of videos be produced using today's best practices for instructional videos.
	No common name		Once an organism is added to the "Datasheet Creator" screen, the latin name is the only thing that is displayed.	Depending on the comfort level or working knowledge of the user, they may prefer the common name of an organism over the latin name. Once added to the datasheet, could it display the common name as well?
	Selection Windows (species, measurement, unit)			
19	Add Organism popup screen too large	[3] [7] [8]	The "Add Organism" selection window does not fit on the screen. As a result, the user must scroll down to see the "close" option, which is not immediately clear.	Resize the popup to fit the screen. If this is a problem that depends on the user's resolution, test it with more resolutions.
20	Not able to add an organism	[3]	Although a user can add a "measurement" of an organism, and likewise can add a "Site Characteristic", they are unable to add an organism. What if the organism is unavailable? How is this database generated? This question was answered somewhere in the recorded webinar as a response to a question from the audience. It makes sense that this is not an openly user-generated list. But the lack of the option may be apparent to some and cause confusion or frustration .	We suggest that you add a source that you populated the list with. It is also a great point that you make in the webinar that CitSci contributes new species to the source database.

21	Repeated measurements / site characteristics in list	[7] [8]	Many measurements in the list are repeated with no apparent difference between them. For example: the site characteristics list has 1,839 possible options already. Of those, 195 (or 11%) are duplicates of 1 or more other options. The most duplicated option is “Air Temp” of which there are 11 duplicates, and an additional “Air Temperature” option bringing it to 12. There is no easy way to distinguish the difference between these options.	
	“Status” column in the “Organism” selection window empty		There doesn’t seem to be an organism in the current system that has any content in the “status” column. The column seems to lack relevance. Why is it there. What’s its purpose?	Perhaps this space can be reclaimed for other information, or removed altogether to remove potential for confusion.
	Action after “Select” button		After clicking the “Select” button, the user is taken back to the “Create a Datasheet” screen. This may imply to a user that this step is done. In fact, sometimes it is. However, sometimes the user must add additional steps like adding measurements to the organism, and units to the measurement.	Our suggestion is to add the required screen directly after clicking “Select” to lead the user through the next crucial step.
	Which measurement is being added to?		After selecting a measurement to add a unit to, there’s no good way to remind the user which measurement they are working with. In the age of distractions, the user may likely get sidetracked in a conversation, email notification, etc. After returning to the screen, they have no reminder for where they are in	Add a dynamic tag in the title or header to indicate which measurement they are working on adding units to.

			the process.	
	So many clicks to add several measurements to one organism		For each organism measurement, the user has to	To save the user some clicks, is it possible to add the selected measurements to the top of this selection window so they can see a snapshot of the parameters they are adding without having to go back the “Datasheet Creator” screen?
	Other			
22	No type matching from previous selections (preview data entry)	[4] [5]	Clicking the map always uses Latitude and Longitude, even if UTM was selected as the location type.	Either change the map so it works with UTM, or add information so users know UTM locations must be entered manually.
23	Extra steps/page transitions for “Manage Tabs”	[7] [8]	While managing tabs for a project, the page refreshes for every change. This adds a lot of extra steps and loading time.	Add an “accept” button to make all changes at once, rather than one at a time.

Critical Concerns

It is not obvious that a datasheet needs to be created in order to have a working project. A project creator could think they are done and leave the site without realizing they need a datasheet. Dr. Newman indicated that this happens often.

Datasheet creation lacks helpful feedback. It is not obvious what sections are required for the creation or when the datasheet is considered complete. This could lead to unnecessary confusion and frustration for the user.

The “Add Organism” popup window is larger than the regular screen. You can’t see the “close” button without scrolling down and it is not obvious that you are able to scroll down. This could lead to a project creator getting stuck and thinking they need to close the whole web page rather than just the popup window.

You are unable (or it is very hard to figure out how) to add a new organism to the master list. If a project creator wanted to study something which isn’t on the list, they wouldn’t have any options.

Potentially problematic terminology or options that lack adequate information. Certain observation types and data types may not be known by the user and there is no additional information on the difference between them. Similarly, there are acronyms and abbreviations which may be unfamiliar or have different meanings between fields. This can make the user confused and overwhelmed by so many unknown options.