

3.1 Topic 1: Authentication and Safety

<https://w3c.github.io/coga/gap-analysis/#Discussion1>

About users:

People with cognitive and learning disabilities may not be able to use a website or web application because they cannot use the login or other authentication process. Without the issues that make login a less than optimal experience being solved, these individuals will encounter an absolute barrier, while others may be able to find work around and continue to access the website or app..

For example, users may:

- Experience barriers caused by the reliance on memory, either long term or short term
- Be unable to perform problem solving techniques designed to authenticate a person (eg CAPTCHAs)
- Be prevented from being able to use password aids like password management software/apps or memory aids like notebooks for recording passwords
- Run out of time or number of attempts to complete login and so be locked out.
- Experience extreme emotional responses (feelings of anxiety, being overwhelmed) before the task and/or during. This may also decrease self-confidence around using the rest of the site, and so prevent completion of the tasks that were the primary reason for a visit.
- Expend a greater amount of energy to complete the task due to confusion throughout the process, the emotional response, and the increased amount of time required to complete the task.
- Be required to seek assistance from others to successfully complete the authentication process or to troubleshoot once they are locked out of an account. This may require revealing their security question responses to another person.

While users with cognitive and/or learning disabilities may have been taught or developed problem solving skills and techniques to overcome barriers, and where to find further information when they need it, they may have more difficulty using these skills and techniques during this process. Problem solving difficulties whilst having issues with logins may cause them to feel angry and frustrated, and further reduce their ability to successfully complete authentication.

Examples of additional barriers faced by those with cognitive or learning disabilities include :

Example Issues	Additional Issues for those with Cognitive or Learning Disabilities
User occasionally forgets password/username	User frequently forgets password/username
When the user forgets their password/username, they can successfully use the "lost password" process	When the user forgets their password/username, they do not remember to use the "lost password" process or have difficulty completing this process.
When creating a password, distractions (e.g. advertisements, environmental interruptions) are disruptive but the user still can complete the task.	Distractions while creating a password may cause them to abandon the task, or have multiple accounts and not realize they do.
Simple, step by step instructions are helpful for first time users, but they will not be required for subsequent uses of the system.	Even with simple, step by step instructions, the process can still be difficult, even after repeated visits. These individuals may continue to need more time to complete the task, even if it is something they do weekly.
Take a few extra tries to complete the login process when information is presented in slightly different formats for two factor authentication (e.g. a space in presentation, but no space required in data entry field).	Slight differences in formats for two factor authentication can prove too difficult to problem solve independently, so they abandon the task.
When using two factor authentication, font differences for letters like I and L; differences between zeros and the letter O; and use of letters like m and w may cause slight confusion, but they quickly realize the mistake and enter the information correctly.	When using two factor authentication, font differences, use of letter and number combinations may cause confusion and is not something they are able to resolve on their own, causing them to abandon the task.

When requested to enter a series of digits that are a portion of a larger number (e.g. last 4 digits of a social security number or credit card), they may rehearse in their mind what those are and then enter the digits. Similarly, if two sets of digits are present on a card (e.g. a security pin and a credit card number) either using the help on the page or through problem solving they are able to determine which number to enter.	When requested to enter a series of digits that are a portion of a larger number (e.g. last 4 digits of a social security number or credit card), they may: not be able to correctly determine which numbers of the series should be entered, enter the digits in the wrong order, or not be able to complete the task if they do not have those digits available in front of them at the time they are completing the task. When 2 sets of numbers are on a card, they may not be able to determine which set to use, even with a text description (e.g. the numbers on the back of the card).
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This leads to the following user stories.

Number Text

1 As a: user distracted by an immediate medical distraction such as medication alert or seizure while I am completing a process

I need: a method to identify where I was in a process

So that: I can regain my focus and work out what to do next

Example: Filling out a form to pay council tax and getting distracted by a medication alert. When returning to process not being able to remember what I was doing.

2 As a: user who has failed to log in successfully multiple times and is running out of energy

I need: step by step guidance and support

So that: I can understand my mistake and fix it

Example: A user is very tired and trying to log into a booking system for accessing support but the system does not explain the mistake made. As the user gets more tired, they have a hard time working out where they are going wrong and becomes confused as they cannot remember what they did on previous events to fix the issue.

3 As a: user with memory issues and multiple different support people

I need: a way to know if I have no account, one account, or multiple accounts

So that: I can successfully login to the correct account or know I need to create one

Example: A user booking a doctors appointment ends up with multiple accounts as every carer creates a new account. Therefore the notes from the last visits (such as longer visits, or the need for the appointment to be on the ground floor) is not associated with the next visit and data is lost.

*4 As a: user who has difficulty with mirrored letters and numbers such as b,d,p,q,l,i, 3, and e
I need: my username and password to exclude these characters, or to make them understandable to me*

So that: I can successfully log into systems

Example: A dyslexic user is logging in via two factor authentication and is unsure between reading a code and writing it which letter is which.

5 As a: user who interprets instructions literally

I need: clarification on if two factors codes are split up for display, or because they should include the space

So that: I can successfully log into systems

Example: I get a two factor code which is displayed as; 123 456 on my device, but needs to be entered as 123455 into the website.

6 As a: user who needs to access support from another person to log into an event system to reserve tickets

I need: data to be stored until i can access support so I do not lose my place in the queue

So that: I can successfully access events

Example: Tickets for a rare relaxed performance of the Lion King stage show are released. I get two tickets into my cart and i am given 5 minutes to complete the booking. I did not know login would be required and did not have support. The support takes 30 minutes to arrive and by the time they arrive all the tickets are gone. If i had known login was required I could have done that ahead of time.

7 As a: user who has made an error which has been misattributed or misunderstood by someone supporting me

When a user has had difficulty completing a process, like submitting a form, sometimes they may have misunderstood a direction, or been unable to complete a task. Once the form is submitted there is not a way to add a comment to indicate this issue, and the user may not know who to contact or how to communicate that the issue occurred.

I need: a way to communicate my thought process, intentions and understanding

So that: the error is understood and I can successfully log into systems

Example: A social worker believed I was "refusing" to provides comments on an online copy of my care plan. In fact, i could not get my comments to save because I did not realise the save

icon only saved a draft and i then needed to approve the draft. As the social worker had misattributed the error as deliberate I was then excluded from future care planning

8 As a: user with low confidence under situational pressure

I need: to be able to login within 2 or less attempts

So that: the frustration does not cause responses due to stress like nail biting, scab picking, excessive heart rate and meltdowns

Example: A user is under time pressure to submit a tax return. As failed attempts to log in mount, the user gets very stressed caused harmful ticks like nail biting and eventually the user is unable to continue due to having a meltdown.

9 As a: user with a learning disability who finds learning new concepts difficult

I need: sign in forms to use common design patterns

So that: I can identify the username, password and submit button

Example: The username form and password form are on separate pages, the user is unable to find the password form so starts looking elsewhere on the website assuming the form is for something else. Same situation for forms which do not contain a clear label and input box.

9a user is accustomed to being presented with both the username and password fields on the same page. When only one is present:

- i) they may confuse this to be a new account page, not a login*
- ii) they may lose their place in the process if the password is on a page they need to navigate to*
- iii) they may forget that they already entered their username and re-enter it*

10 As a: user who can't read and uses symbols

I need: a way to use symbols I understand for key login concepts (like username and password)

So that: I can understand the login page

Example: Logging into the CBBC website in a special school for a user who uses a symbol set for understanding written documents

Possible Solutions

We recommend a variety of solutions, which may work independently or jointly with others, such as:

- biometric devices, e.g., rings
- security tokens, e.g., key fobs

- Keygen (see <http://www.w3.org/TR/html5/forms.html#the-keygen-element>)
- Fast IDentity Online (FIDO)
- CAPTCHA alternatives
- speech recognition (e.g. Google microphone for specific edit boxes - requires correct coding)
- allow for personalisation with symbol alternatives for reading and text input.
- Using consistent and familiar design patterns

Some of the user stories included above, solutions are not known at this time. For example, number 8.

W3C recommended guidelines and techniques

- Provide text alternatives that identify and describe the purpose of the non-text content.
 - See [[WCAG20]] [Guideline 1.1](#).
- Turn off or adjust time limits, including allowing continuation of activity without reauthentication.
 - See [[WCAG20]], [Guideline 2.2](#).
- Help users avoid and correct mistakes.
 - See [[WCAG20]], [Guideline 3.3](#).
- Save submitted data for reuse after a user authenticates.
 - See [[WCAG20]], [Technique G105](#).
- Encode user data as hidden or encrypted in a re-authorization page.
 - See [[WCAG20]], [Technique G181](#).