Evaluation

Knowledge Training Software
for the
60+ generation

Kitchen & Bathroom Safety

By Michael Schwanzer, April 2008

MSchwanzer@uclan.ac.uk

CO3707 Multimedia and Interactive Learning
University of Central Lancashire

Table of Content

1. Introduction

1.1. Background / Task

Focus on kitchen and bathroom safety for generation 60+ with and without disabilities! Develop a Website instead of a Flash Application for accessibility reasons.
1 in 2 Americans 65 years and older has a disability (Paciello, M. G. (2002) Web Accessibility for People with Disabilities) Therefore, accessibility is important at the age of the defined user group.

2. Changes from first UNA / Justification

2.1. Design

The design has not have to be changed a lot (the first design is available in the appendix) Parts I changed are:

- U2, A2, M2: MP3 was useless because the site supports screenreaders anyway. I added a direct link to the print view to show that there is an optimized version for print. I made them look more button like to indicate that they are clickable.
- U4, U4, M4: The first justification had an redundant, hierarchical navigation – I changed that to make it less confusing so there is only one way to access a page and the user can follow a red line without being afraid missing something.
- U8, M8: Gives the user an idea on where to go next – follows the red line of the main navigation. The user does not have to worry about where to go next.

3. Development

3.1. Accessibility / Usability

All issues covered in stage 1 (UNA / Design Justification in appendix) where covered in the website.

3.2. Technology used

- Markup Language
  - XHTML 1.0 Transitional (as recommended by the W3C)
- Graphics
  - PNG / GIF for saving bandwith at buttons / icons
  - JPEG for photos to achieve best quality at lowest resources
- Logic
  - PHP for dynamic loading of content and efficient dev. of the quiz
- Videos
  - FLV (Flash) Video Player as the common used and widely accepted player embedded in websites

Offline Version only

- Autostart
  - To load the software without any user interaction (therefore no further instructions (printed) are needed)
- Server2Go
  - To emulate a Server on the local machine so the site is also useable offline.

3.3. Further Information

- Behaviorism was chosen as the simplest learning theory (Pavlov)
- All photos used are Creative Commons and their authors are available at “Credits”
- An imprint for any legal issues
- Further information for the user (links to products)
- I used very efficient PHP Code to improve loading times of the page

3.4. Programming Approach

I developed a website instead a Flash application as recommended because for the special target group I have chosen, accessibility and usability features which are impossible in Flash are needed. Nielsen, J. (2000)
I used the waterfall model because it has the smallest overhead for such a small one-man development project. I commented code where necessary and ensured that all code is on a industry standard quality level.

4. Evaluation

I have used the following methods to get an impression from different points of view while staying time efficient compared to other methods:

- Expert Review (by Barbara McManus)
- Online Survey / Questionnaire
- Software Tools
- Self Evaluation by given criteria
- Google Analytics

4.1. Expert Review

Barbara McManus (7th Feb. 2008, Preston, UK)

Due to this feedback – I could have improved the educational aspects of the application and minor readability.

I am very happy with all the other comments – it shows that I have covered almost all goals I described in the UNA / Justification but it was only based on my presentation (and that is not was a user experiences)

The list contains all comments written by the expert:

- Php. For elderly people, use of photo to personalise, short video to explain how to use the website
- Colour coded, for contents and for links (along with other standard layout issues)
- W3C standard – AA compliance. Accessibility – increase text size, Alt Text and tool tips used. Videos accessible via subtitles
- Help – context based
- CSS used, printable version (optimised for IE, checked with range of browsers)
- Images – doc copyright
- Online version demonstrated too
- Products advertised to support the elderly – good (marketing and stakeholders)
- Quiz - feedback black on red – check readability, green on black ok. Keep a check on 'trials'
- Included on imprint, credits included (and linked)
- Consider – education – how do you know what they have learned

4.2. Online Survey / Questionnaire

I have written an online questionnaire to let real users evaluate the website. This method is well known and because it was an online questionnaire I was thinking that it reaches the right group of people (those who are already on the internet). So I posted the link to the questionnaire with a small explanation and a very simple task in some online communities. (You will find the questionnaire with the results in the appendix)

The aim of the questionnaire was to find out if the visitors actually recognized any of the special features for accessibility and how they would describe the experience they had with the site (that's what I needed open questions because they probably come up with things it did not think of)

Unfortunately at this evaluation method I could not reach enough people with special needs to really get feedback on most accessibility features.

Interpreting the Results (10 submissions) (see appendix for the questions and results):

1: OK – good example of the people online at elderly communities
2: OK – good difference in their knowledge
3: Unfortunately – no one of the people testing the software had a serious enough special need to test the screenreader capabilities of the site.
4: Fair enough – there was not enough effort putting together serious content but I am fine with the other reactions.
5: They recognized some of the features especially for elderly people but according to the fact the no one with a serious special need submitted the questionnaire – not everything was recognized.
6: Probably because of small bandwiths or computers blocking videos.
7: Maybe because they did not know how long it would take and how difficult it is.
8: See 4.
9: All these answers indicate that the usability / accessibilty features leave a good impression
10: That is true – I did not but enough effort in developing proper content.
11: Just a comment

4.3. Software Tools

There are software tools to check the proper use of Web Standards. I also used a Screenreader to check if it really makes sense what content of the website is read and if the navigation is still usable.

- **World Wide Web Consortium**
  - **XHTML 1.0 Transitional / CSS**

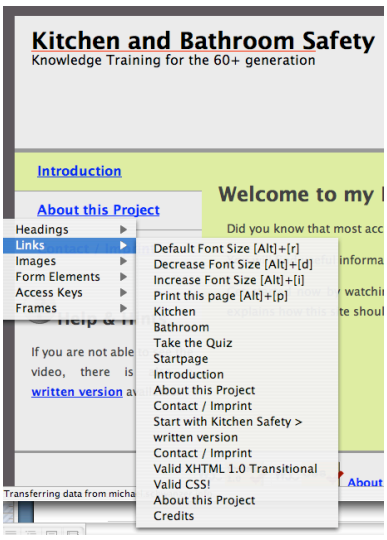
    With the W3C Validation Service I checked the Markup for any issues concerning the XHTML 1.0 Transitional Standard / CSS Standard and validated it.
  - **Web Accessibility Initiative (WAI) A**

    W3C does not provide a validation as they do for XHTML and CSS but I followed their guidelines for it and checked the site after every change. There are some validation tools online at various sources but I would not trust them because they delivered very different results for the site. The guidelines are online here: http://www.w3.org/TR/WCAG10/#Guidelines

    According to W3C (1999), these guidelines explain how to make Web content accessible to people with disabilities.

- **Screenreader**

  (Chen, C. (2008)– CLC FireVox – a Firefox Browser Add-On)
  - Although I have never used a Screenreader before I had no problems navigating through the site while my screen was turned off. According to Chen (2008), it should be no problem to read any page with his software as long as it uses W3C Standards and follows WAI Guidelines. Just by listening to the screenreader reading the content and recommending links to follow, I could easily access the whole site without even seeing it.
  - On the Screenshot on the right, you see how the screenreader opens a special navigation and generats a list of all links used in the site to enable a quick step through.



4.4. Self Evaluation / Given Criteria

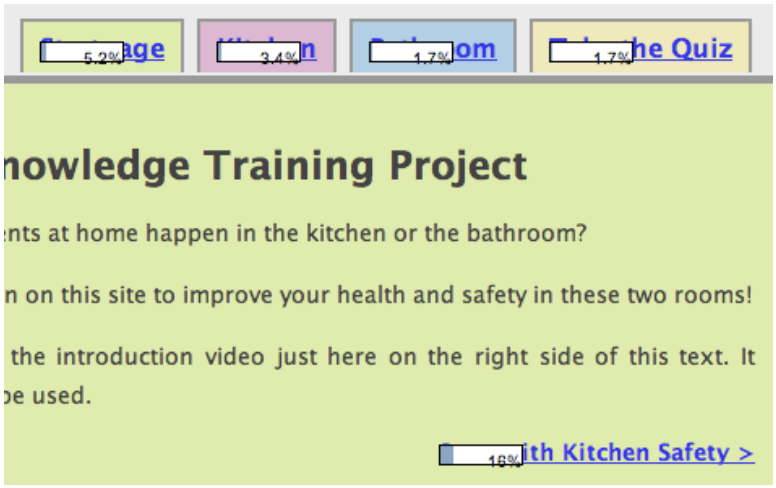
I used this method to see if my implementation also can be proofed by a given criteria for accessible websites by myself. (Without seeing the criteria before the implementation was done)

The criteria I used is online at www.techdis.co.uk and is funded by the Joint Information Systems Committee. The criteria is NOT 100% the same then W3C and therefore they also have some usability criteria I did not cover. I achieved 95 % of their criteria I would say, because I do not have a sitemap or a privacy information page. **The most important things for accessible websites are fulfilled.** Direct Link: http://www.techdis.ac.uk/index.php?p=3_6_20051905120529_10

4.5. Google Analytics

Google Analytics is an online tool to monitor websites. For this website I have used it to monitor the clicks every visitor made on the site. I have chosen the Startpage of the website as the page I wanted to monitor because it got most of the traffic. From there, the clicks where distributed like this (The Screenshot shows how Google Analytics indicates the clickrate):

16 % Start with Kitchen Safety
5,2 % Startpage
3,4 % Kitchen Safety
1,7 % Contact / Imprint
1,7 % Bathroom Safety
1,7 % Take the Quiz
Rest % ---- left site without click



For me it seems that most people got it right and went on with the "kitchen safety" while the title "Startpage" probably was chosen wrong because people did not recognize that they are already on the "Startpage" and clicked it again. "Homepage" is more widely used I guess.

I also tracked their answers to the quiz as well and was surprised how many answers were wrong – but I do not know if they clicked it wrong on purpose. The Screenshots of this tracking are in the appendix

4.6. Critical Evaluation

- I did not put enough effort in developing interesting content
- Not enough effort in implementing proper teaching theories
- Minor naming mistakes due to language differences / translation mistakes

4.7. Evaluation Conclusion

Every feedback I got was very helpful to write this evaluation. Because of Google Analytics I could find out the some interesting things about the habits of visitors that did not come to daylight at all the other methods I used. I did not now that this tool would be that helpful. All the other methods more or less proofed what I expected.

The process of developing was done constantly – only in the end at writing this report it came to some efficiency problems because of unforeseen circumstances.

To sum the evaluation up, the website is almost perfect when it comes to usability and accessibility. But it lacks professional content and a proper assessment tool for elderly people. I learned that it is not hard to develop usable / accessible websites when you stick to a few guidelines from the very beginning.

Bibliography and References

Chen, C. (2006) CLC Fire Vox
http://firevox.clcworld.net/ (accessed 22/02/2008)

Fidgeon, T. (2006) Sitepoint http://www.sitepoint.com/article/improve-usability-older-users (accessed 22/10/2007)

Khan, S. (2007) http://www.bathroomsafety.co.uk/bathroom-safety-for-older-people.html (accessed 22/10/2007)

Kurniawan, S. & Zaphiris, P. (2005) Research-Derived Web Design Guidelines for Older People

Paciello, M. G. (2002) Web Accessibility for People with Disabilities, New York

Nielsen, J. (2008) Flash 99% Bad
http://www.useit.com/alertbox/20001029.html (accessed 22/02/2008)

World Wide Web Consortium http://www.w3.org/ (accessed 22/10/2007)

Appendix

Questionnaire **(Online)**

Kitchen and Bathroom Safety (Knowledge Training for the 60+ generation) WEBSITE EVALUATION

Ladies and Gentlemen - Welcome to the survey about my eLearning Website for the 60+ generation at University of Central Lancashire

The website was built to show the accessibility and usability possibilities to optimize online eLearning to the needs of the 60+ generation.

Click here to start the website: http://michael.schwanzer.info/uclan/CO3707/A2/

Please help me to evaluate the website by surfing through the categories and taking the quiz at the end. (Takes only 5 minutes) (Every information stored is anonym)

Thank you for your time! - If there raise any questions - don't hesitate to contact me: MSchwanzer@uclan.ac.uk

1) How old are you?

- <50
- 50-60
- 60-65
- 65-70
- 70-80
- >80

Divider Bar

2) How would you describe your Computer skills?

	don't know	beginner	advanced	professional
Operating System				
Browser				
Websites				

Divider Bar

3) I you have special needs - which?

Divider Bar

4) How would you describe the website? (choose all that apply)

- easy navigation
- difficult navigation
- clear layout / structure
- loose layout / structure
- fast to load
- slow to load
- interesting content
- boring content

Other (Please Specify):

5) Did you recognize any of the following? (Choose all that apply)

- ☐ Screen Reader Optimization
- ☐ Keyboard Shortcuts / Accesskeys / Tab Index available
- ☐ Subtitles / written version of videos
- ☐ Tooltips
- ☐ Flexible Font Size
- ☐ Optimized Print View
- ☐ Color guided Navigation
- ☐ Big targets
- ☐ Alternative Descriptions for Photos

Divider Bar

6) Was there any content you could not access? (Choose all that apply)

- ☐ Text
- ☐ Images
- ☐ Videos

Divider Bar

*7) Did you take the quiz?

Please Select

Divider Bar

*8) Do you think you have learned something from the content of the website?

Please Select

Divider Bar

9) 3 things you liked most:

10) 3 things you did not like about the website:

Divider Bar

11) Is there anything else you want to tell me?

Submit

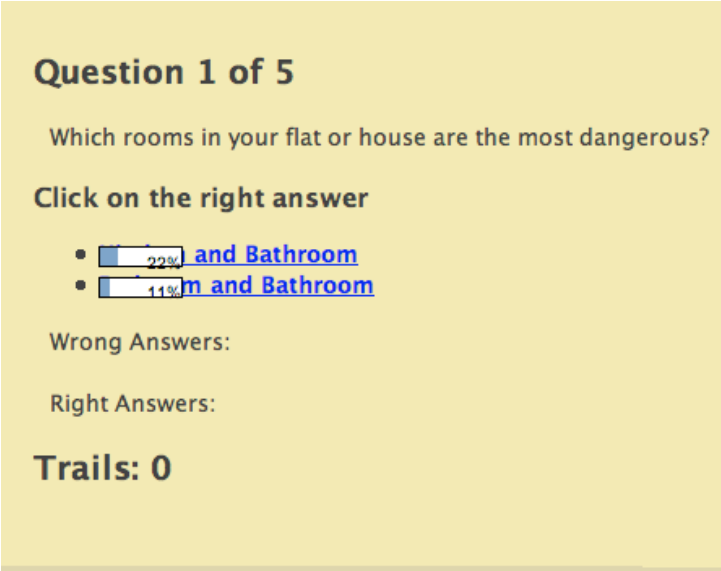
Results

10 people submitted the online survey!

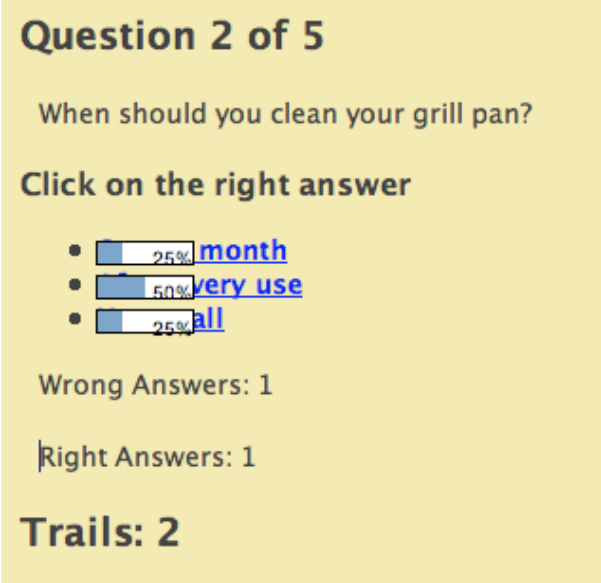
1: Age Range: 2 < 50, 7 <> 50-60, 1 >60
2: OS (4 don't know, 4 beginner, 2 advanced)
Browser (5 beginner, 5 advanced)
Websites (4 beginner, 4 advanced, 2 prof)
3: 3x short-sighted, 1x bad hearing
4: 9x easy navigation / 1x difficult navigation
8x clear layout & structure / 1x loose layout & stucture
7x fast to load / 2x slow to load
3x interesting content / 5x boring content
5: 0x Screen Reader Optimization
2x Keyboard Shortcuts / Accesskeys / Tab Index available
8x Subtitles / written version of videos
7x Tooltips
7x Flexible Font Size
5x Optimized Print View
10x Color guided Navigation
9x Big targets
2x Alternative Descriptions for Photos
6: 0x Text
0x Images
3x Videos
7: 6x yes / 4x no
8: 2x yes / 8x no
9: layout, look and feel, subtitles, videos, web standards, links to further reading
10: poor content
11: Good to know that someone thinks about accessibility

Google Analytics Tracking

Question1

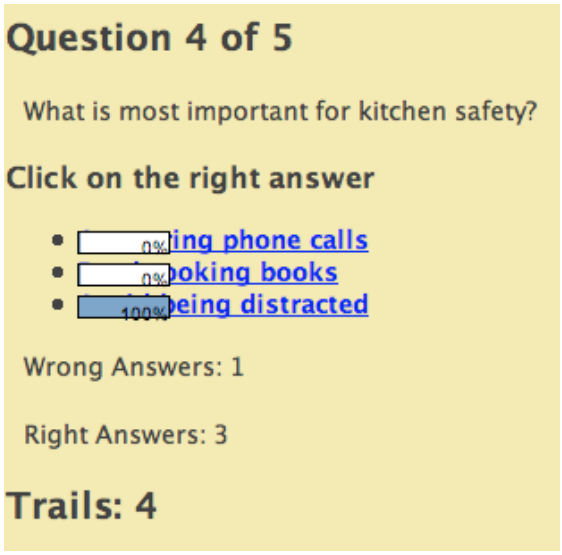


Question2:

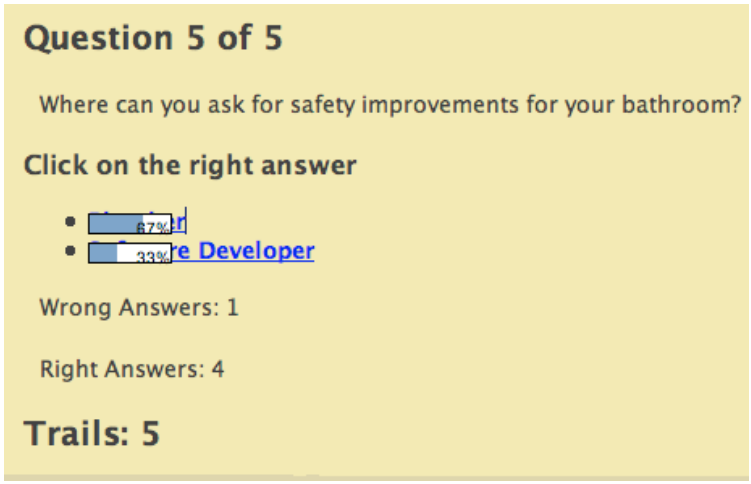


Question3:

Question4:



Question5:



UNA

	Area of interest	Analysis results	justification	Some design implications
	User Group –Elderly people			
1	Age	60+	Bathroom / kitchen very dangerous for older people -> Website No upper age limit!	Keep it simple
2	Gender	Male and Female	Both genders have to use a bathroom. Kitchen Safety is maybe more important for women but the topic should be available for both genders.	Do not design for a particularly gender
3	Disabilities	Blind/Short sighted, Deaf or Hard of Hearing, Physical Disabilities and Motor Impairments	1 in 2 Americans 65 years and older has a disability (Paciello, M. G. (2002) Web Accessibility for People with Disabilities) Therefore, accessibility is important at the age of the defined user group.	Comply with all legal mandates and standards, Use W3C WAI Standards for Webdesign, Publish information also in alternative ways. Consider screen readers! Do not use small fonts! Ensure nothing is relayed by sound alone! Check keyboard usage!
4	Educational Background	No special education	No further education should be needed to access and understand the information	Very different background – use simple language!
5	IT Skills	Everyone who knows how to use a browser	All youngsters have IT skills	Simple navigation / common used layout / Web Standards (W3C)
6	Cultural, Linguistic and Social		The Website is designed for UK based people. There are different issues in other countries	Use English as language set

			e.g. two water tabs, so it is only useful for people living here.	
7	Motivation		Available 24x7 – 'any time, any place, any where'	Availability at home, possibility to print, look up things, fun by taking the quiz
8	Environment	Home	Very different knowledge levels about computers / web browsing! All kinds of access speed / processing power!	No special downloads should be needed. Optimize for small bandwith!
	Other stakeholders			
	Age	Children: 30+/-	Want to make their parents home more safe for them	
		Grandchildren: 15+/-	Show their grandparents how to use computer/internet	
	Gender	Everyone	Male and female alike	
	Disabilities	Every stakeholder	See 3	
	Educational Background	Children	Vary from no qualifications to PhD	Cannot assume any qualification level
		Grandchildren	Low level because of age but maybe computing skills	
	Cultural, Linguistic and Social	Every stakeholder	See 6	
	Motivation	Government	A wider understanding of health and safety issues	Internet as a cheap possibility to reach a lot of people
		Children	Safety for parents	
		Company I work for	Develop a platform for image reasons and promote products	
	Environment		See 8	
	Background Knowledge	Children	Knowledge may differ	Do not make assumptions on the level of knowledge.

	Grandchildren	Knowledge may differ	Do not make assumptions on the level of knowledge.

Accessibility
Optimize to W3C Accessibility Standards (barrier-free)
Optimize for screen readers
Technical
CD with "autostart" of the HTML page in default browser
Online Website
Optimized Print View
Keyboard only usable

Usability
Commonly used Icons / Positions
Colour guided Navigation
Flexible Font Size
Provide larger targets
Avoid fancy font types / italic types for better reading on screens
Avoid technical terms
Links should be identified in a consistent and obvious way
Visited Links should change colour
Links should have a hover effect
Users should not need to install software (Acrobat Reader for example) to access information
Don't rely on color alone
Use markup and stylesheets properly
Clarify natural language usage
Design for device independence
Provide context and orientation information
Provide clear navigation mechanisms
Ensure that documents are clear and simple

Multimedia
Link MP3 files to listen to content
Pictures / Animations (Creative Commons)
Videos with SAMI subtitels

Education
Flat learning curve

The needs

Generation 60+ wants to:

Find out about health and safety topics
Find out about kitchen safety
Find out about danger zones
Find out about making kitchens safer
    Find out about where to get safety products
    Find out about companies which do kitchen safety improvements
Find out about what to do in case of an accident
Find out about their kitchen safety situation with a checklist
Find out about bathroom safety
Find out about danger zones
Find out about making bathrooms safer
    Find out about where to get safety products
    Find out about grab bars
Find out about what to do in case of an accident
Find out about their bathroom safety situation with a checklist
Find out about statistics
Find out about where to get more information about health and safety
Find out about links
Find out about accessibility of this website
Find out about standards used
Find out about the motivation of creating this website

Design Justifications

A = Accessibility, U = Usability, M = Media

U1, A1, M1: Commonly used position, Image with ALT-Text, Logo of Website
U2, A2, M2: Commonly used position – famous icons, Link to MP3 Content
U3: More Information about the content of the Page
U4, U4, M4: Dot indicates current location, hierarchical concept & right side of layout commonly used, sub navigation hidden
U5, A5, M5: Commonly used symbol, same position on every screen, content based, Hints can be links, pictures, etc.
A6, M6: Indicate web standard usage, link to w3c
U7: indicate end of content / page
U8, M8: Quick links from Home to content, buttons with underlined links, colour guided navigation
U9, A9, M9: Content – easy to read font, underline links and use right colour for topic, pictures and animations possible
U10: Content Headline, Keyboard Shortcut
U11, A11, M11: commonly used navigation bar, colour guided, location indication, hover effect
U12, A12, M12: Buttons to step through content
U13, A13: Answers, usable with keyboard and clickable
U14, M14: Feedback
U15, A15. M15: Forward Button to get to next question

U1 A1 M1

Kitchen & Bathroom Safety

Listen to this Site
+ Increase font size
- Decrease font size

U2 A2

U3

Knowledge Training for the 60+ generation

Home | Kitchen | Bathroom | Quiz

U11 A11 M

U4 A4 M4

- Home
- Kitchen
  - Introduction
- Bathroom
  - Introduction
  - Danger Zones
  - Safety Products
  - Summary
- Quiz
- Links

Contact/ Credits

U5 A5 M5

Help & Hints

This is a Helptext which gives you useful hints at every site of this project!

Bathroom Safety Introduction

U10

U9 A9

Keep space heaters, radios, and other electrical products away from bathtubs and sinks.

Keep appliances and their cords away from water. If an appliance falls into the water, don't reach in to retrieve it until you've unplugged the appliance. Don't use the product again until you've had it inspected and repaired by a qualified technician.

Never use or attempt to repair a damaged appliance; always consult a qualified technician.

A6 M6

W3C XHTML 1.0 | W3C CSS | W3C WAI-AA WCAG 1.0

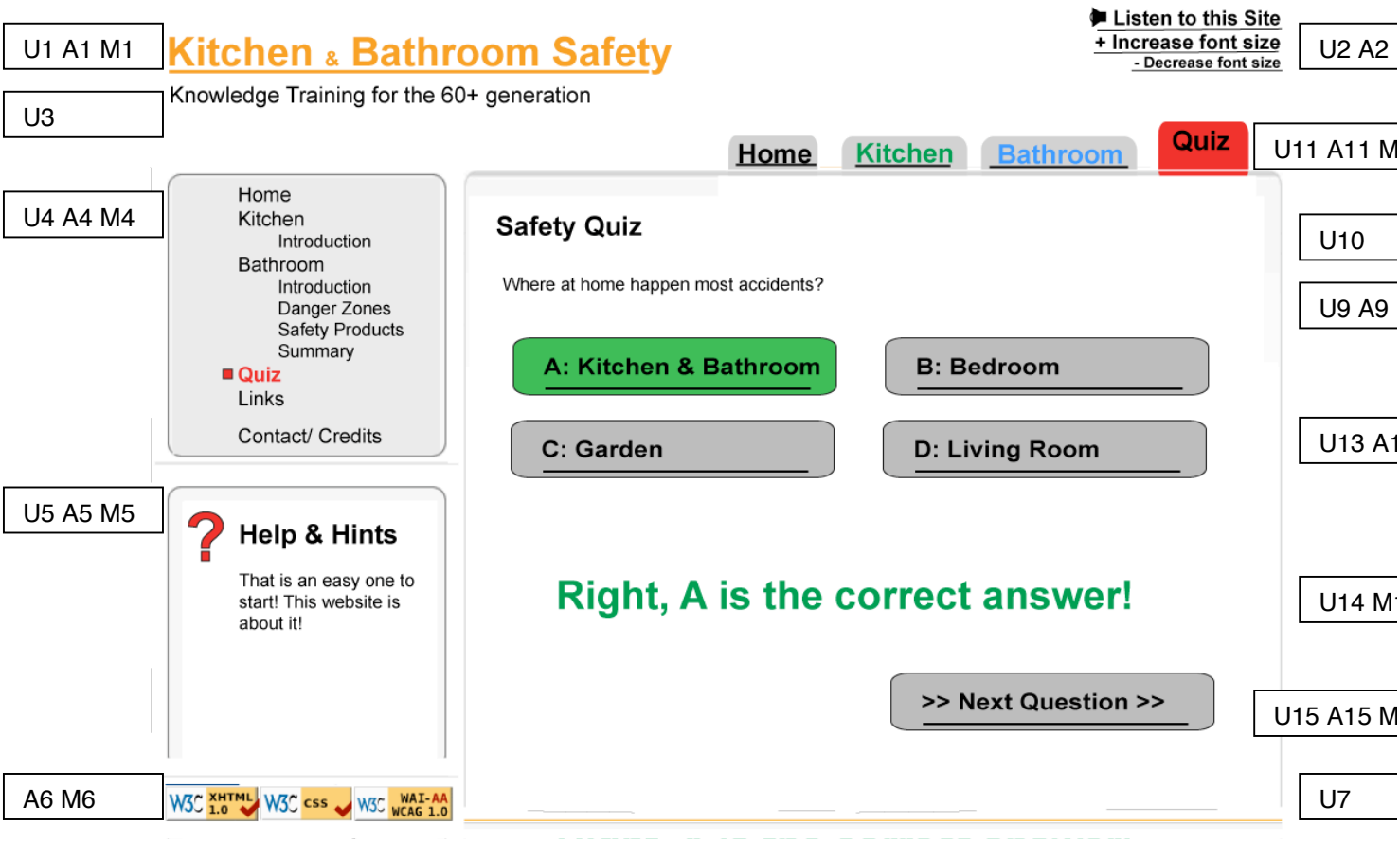
Home
<< Back to Startpage <<

U12 A12 M12

Bathroom
>> Next Safety Topic >>

U12 A12 M12

U7


U1 A1 M1
Kitchen & Bathroom Safety
Knowledge Training for the 60+ generation
U3
Listen to this Site
+ Increase font size
- Decrease font size
U2 A2
Home
Kitchen
Bathroom
Quiz
U11 A11 M
U4 A4 M4
Home
Kitchen
Introduction
Bathroom
Introduction
Danger Zones
Safety Products
Summary
Quiz
Links
Contact/ Credits
Safety Quiz
U10
Where at home happen most accidents?
U9 A9
A: Kitchen & Bathroom
B: Bedroom
C: Garden
D: Living Room
U13 A1
U5 A5 M5
Help & Hints
That is an easy one to start! This website is about it!
Right, A is the correct answer!
U14 M
>> Next Question >>
U15 A15 M
A6 M6
XHTML 1.0
CSS
WAI-AA WCAG 1.0
U7