

# **IMA 2 - Usability Testing Report**

**Khan Academy**

**([www.khanacademy.org](http://www.khanacademy.org))**

## **Team Delta**

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## **Introduction**

Khan Academy is a not-for-profit educational website intended for all individuals regardless of age. Their mission is to provide educational content free of charge. The major target audiences are elementary school-age children, teachers (parents/coaches), and adults needing remedial education. Topics included in the academy's library are Math, Science, Economics and Humanities.

*EME6208 IM2 - Delta* group conducted usability testing on five different adult learners. These tests were conducted on five separate occasions using five different computers.

## **Methodology**

### **Sessions**

*EME6208 IM2 - Delta* group recruited adult participants that were close friends and relatives. Participants all had no prior knowledge of Khan Academy and had never used its website. Each individual session lasted approximately 10 minutes. During the session, the observer briefly explained to the participant the nature of the test. Each participant was made aware that the website itself was being evaluated and not the participant's ability or knowledge. Also, the observer encouraged the participant to make comments and voice his/her thoughts as they were viewing the website.

### **Participants**

Selected participants were required to be an adult learner (18 years-old and up) and not a current user of Khan Academy.

Participants were tested during the week of February 16, 2014. Of the five participants 3 were female and 2 were male. Two of the participants were between the ages of 30-39; 0 were between 40-49; 2 were between 50-59; and 1 was between 60-69.

### **Evaluation Tasks/Scenarios**

Test participants attempted completion of the following tasks (see attached Observation Forms):

**Task 1:** From the home page, browse for Pre-Algebra

**Task 2:** Locate and click on an instructional video about Negative Numbers

**Task 3:** Complete an exercise (activity)

**Task 4:** Search to find another subject to learn

**Task 5:** Navigate back to the home page

At the end of the Usability test, the observers asked each participant to rate the 5 tasks on a 5-point

Likert Scale with measures ranging from Super Easy to Super Hard (see attached Questionnaires). Questions pertained to the website’s ease of use, learnability, and ease of navigation.

## Results

### Task Completion Success Rate

All 5 participants completed Task 1 (From the home page, browse for Pre-Algebra) and Task 2 (Locate and click on an instructional video about Negative Numbers). We found 80% of participants were able to complete Task 3 (Complete an exercise or activity). All 5 participants were able to complete task 4 (Search to find another subject to learn) and 100% were able to complete Task 5 (Navigate back to the home page).

#### Task Completion Rates

Participant	Task 1	Task 2	Task 3	Task 4	Task 5
1 (Chacon)	√	√	√	√	√
2 (Harris)	√	√	√	√	√
3 (Hill)	√	√	-	√	√
4 (Pablos)	√	√	√	√	√
5 (Stuart)	√	√	√	√	√
Success	5	5	4	5	5
Completion Rates	100%	100%	80%	100%	100%

### Learnability: Time to complete a task successfully

Each group member recorded the time on task for each participant.

**Task 1** required participants to browse for Pre-Algebra from the home page (mean = two minutes and

twenty-two seconds).

**Task 2** required participants locate and click on an instructional video about negative numbers (mean = one minute and twelve seconds).

**Task 3** required participants to complete an exercise activity (mean = one minute and thirteen seconds).

**Task 4** required participants to search to find another subject to learn (mean = one minute and twenty-two seconds).

**Task 5** required participants to navigate back to the home page (mean = one minutes and twenty-three seconds).

Task 1 took the longest time to complete and Task 4 took the shortest amount of time to complete. Completion times ranged from eight seconds to four minutes with most times less than two minutes.

**Time on Task (in minutes:seconds)**

	P1 Chacon	P2 Harris	P3 Hill	P4 Pablos	P5 Stuart	TOT	Avg.
<b>Task 1</b>	2:00	4:00	0:27	1:38	1:03	<b>9:08</b>	<b>2:22</b>
<b>Task 2</b>	1:00	1:00	0:51	1:07	2:00	<b>5:58</b>	<b>1:12</b>
<b>Task 3</b>	0:50	2:48	2:02	0:28	0:36	<b>6:44</b>	<b>1:13</b>
<b>Task 4</b>	1:00	0:13	0:18	1:40	1:00	<b>4:11</b>	<b>1:22</b>
<b>Task 5</b>	0:52	0:08	0:13	1:53	1:22	<b>4:28</b>	<b>1:26</b>

**Errors**

Task 2 (Locate and click on an instructional video about negative numbers) was found to be the activity which produced the most number of errors. This was followed by Task 1 (From the home page, browse for Pre-Algebra), Task 3 (Complete the exercise), and Task 5 (Navigate back to the home page). Task 4 (Search to find another subject to learn) had the lowest number of errors. However out of all 15 errors, none were critical and therefore, did not prevent participants from completing the entire

process.

**Errors**

	<b>P1</b> <b>Chacon</b>	<b>P2</b> <b>Harris</b>	<b>P3</b> <b>Hill</b>	<b>P4</b> <b>Pablos</b>	<b>P5</b> <b>Stuar t</b>	<b>TOT</b>	<b>Avg.</b>
<b>Task 1</b>	0	3	0	1	0	4	<b>0.80</b>
<b>Task 2</b>	0	0	1	3	1	5	<b>1.00</b>
<b>Task 3</b>	0	1	2	0	0	3	<b>0.60</b>
<b>Task 4</b>	0	0	0	1	0	1	<b>0.20</b>
<b>Task 5</b>	0	0	0	2	0	2	<b>0.40</b>

## Summary of Data

The table below displays a summary of the test data. Low completion rates and satisfaction ratings and high errors and time on tasks are highlighted in red.

### Summary of Completion, Learnability (Time on Task), Errors

Task	Task Completion	Learnability (Time on Task)	Errors
1	5	9:08	4
2	5	5:58	5
3	4	6:44	3
4	5	4:11	1
5	5	4:28	2

## Satisfaction

As indicated in the table below, the majority of questionnaire responses were in the “Super Easy” and “Easy” categories. All 5 participants were able to adapt to the website’s navigation and complete almost all tasks.

**Post-Task Overall Satisfaction Questionnaire (Scale from 5 - 1, with 5 being super easy)**

	Super Easy (5)	Easy (4)	Not Easy or Hard (3)	Hard (2)	Super Hard (1)	Mean Rating	Percent Agree
Locating the subject Pre-Algebra	1	2	0	1	0	.8	60%
Finding an instructional video about Negative Numbers	0	3	1	0	0	.8	60%
Completing an exercise (activity)	2	1	0	0	1	.8	60%
Searching for another topic	2	2	0	0	0	.8	80%
Navigating back to the Home Page	3	0	1	0	0	.8	60%

*\*Percent Agree (%) = Super Easy & Easy Responses combined*

## Impressions and Recommendations

*EME6208 IM2 - Delta* group’s overall impression of the site was that it was fairly easy to use and navigate. All members commented that the videos and exercises needed to be better clarified or separated by name, section, or even text color. While the participants did experience errors, these were in large part due to users clicking in wrong areas while getting accustomed to the website.

In the table below, *EME6208 - IMA2 Delta* group members recorded recommendations based on participant’s actions and comments during the usability test. Justifications and severity of the change are listed for each member’s recommended change(s) to the website.

Change	Justification	Severity
<b>Chacon</b> Create a link for the topic	One of the participants had to find the the pre-algebra icon through the search which should be exposed in the home page in a more obvious way.	Moderate
<b>Harris</b> Create a “Start Here” button on the home page.	With the focus of the home page being the login fields, users’ first impression of the site is to create an account. Incorporating a “Start Here” button or a similar feature will enable new users to get started right away with the educational features of the website and not feel pressured to create an account.	Moderate
<b>Hill</b> Create visual tabs for each video subject that makes searching for them easier  Make it easier to find exercises to complete for each lesson (separate videos & exercises)	Having clearly accessible tabs for the user to click on will make finding them much easier. Separating them by color tabs or subject will be more beneficial.  By separating videos and exercises it helps keep the two from being jumbled together. Also indicating videos and activities by separate sections makes them easier to locate.	Moderate  Severe
<b>Pablos</b> Provide uniformity in the LEARN dropdown between	Having consistency in terminology used on a dropdown menu from one screen to another will allow the user to navigate the menu easily and choose	Moderate

<p>start page (Learn &gt; Home) and the page once logged in (Learn &gt; Dashboard).</p> <p>Provide consistency in display of list of lesson when navigating using Search or Learn.</p>	<p>menu items confidently. Also, building some redundancy into each screen for key navigation features (like getting to the Home screen) can be useful (i.e., a Home link at the very bottom of each screen).</p> <p>Searching for a lesson topic yields a list of lessons similar to a Google search, while Learn organized the lessons in a hierarchy by topic. When searching, it was not clear which Negative Numbers lesson was part of the Pre-Algebra topic.</p>	
<p><b>Stuart</b></p> <p>Create a link to Home that is not inside the “Learn” menu</p> <p>Make the video play buttons more apparent (color differentiation or other change)</p>	<p>Having a clear and obvious way to return to the Home page is imperative in website development. Easy navigation should be paramount in website layout.</p> <p>While the video play icons were easy to find, all of the icons looked very similar and it can be confusing to someone who is not technically savvy or uses the internet for video playback frequently.</p>	<p>Moderate</p>

## Conclusion

Most study participants found khanacademy.org to be an easy-to-navigate, feature-rich website. Recommendations that were made by participants did not impact the majority of the site usability; continuous improvement of content presentation and minor navigation updates would ensure that all students, from early adult to non-traditional, continue to experience this well-planned, learner-centered website.

## Attachments

Please refer to the following documents for all participants data collected in the observations.

Observation Form

Participant Name: Begona Arrospide

Observer Name: Jennifer Chacon

Observer Script:

Hi, Begona Arrospide. Thank you for volunteering today to help us test out a website called khanacademy.org.

We are testing the website to see how it works and if it can be improved upon for users like you. Keep in mind we're testing the *site*, not you. So, don't worry about making mistakes, just have fun and try your best to follow the directions I give you.

You will be given five tasks to complete. I'm going to ask you as much as possible to try to think out loud: to say what you're looking at, what you're trying to do, and what you're thinking. Please be aware that we do not want to risk leading you through the tasks, so although we strongly encourage you to think out loud and ask questions during the process, we will not answer your questions during testing. We will, however, jot your questions down and answer them after you have completed all five tasks.

Before we begin, do you have any questions?

Let's begin.

Task	Start Time	End Time	Errors	Comments
From the home page, browse for <b>Pre-Algebra</b> (sign-in not required)	907	909		Had to find with the search bar , I couldn't see any obvious link outside
Locate and click on an instructional video about <b>Negative Numbers</b>	910	911		
Complete an exercise (activity)	913	913		
Search to find another subject to learn	913	914		Multiplying positive and negative numbers
Navigate back to the home page	914	9145		

## Observation Form

**Participant Name:** Terry B., age 60

**Observer Name:** April Harris

Observer Script:

Hi, Terry B.. Thank you for volunteering today to help us test out a website called khanacademy.org.

We are testing the website to see how it works and if it can be improved upon for users like you. Keep in mind we're testing the *site*, not you. So, don't worry about making mistakes, just have fun and try your best to follow the directions I give you.

You will be given five tasks to complete. I'm going to ask you as much as possible to try to think out loud: to say what you're looking at, what you're trying to do, and what you're thinking. Please be aware that we do not want to risk leading you through the tasks, so although we strongly encourage you to think out loud and ask questions during the process, we will not answer your questions during testing. We will, however, jot your questions down and answer them after you have completed all five tasks.

Before we begin, do you have any questions?

Let's begin.

Task	Start Time	End Time	Errors	Comments
From the home page, browse for <b>Pre-Algebra</b>  (sign-in not required)	0:00	4:00	3	Due to the login fields being the focus of the home page, the user had a difficult time locating the subject. After many clicks, the participant finally clicked on the <i>Learn</i> drop-down menu and chose to <i>Browse All</i> subjects.  Participant's statements included: "If sign-in not required, how do I get in?" and "Need a <i>Start Here</i> button."
Locate and click on an instructional video about <b>Negative Numbers</b>	0:00	1:00	0	Participant stated, "None state 'video', so assume all are videos." Noticed the arrow "play" icon.

Complete an exercise (activity)	0:00	2:48	1	Participant commented, "Assume stars are exercises since arrow are videos."
Search to find another subject to learn	0:00	0:13	0	Participant found another subject by using the <i>Learn</i> drop-down menu and selected <i>Biology</i> . Did not notice the search field at the top of the window.
Navigate back to the home page	0:00	0:08	0	Participant got there quickly by using the <i>Learn</i> drop-down menu.

## Observation Form

Participant Name: Tammy Mackins, age 33

Observer Name: Thomas Hill

Observer Script:

Hi, Tammy Mackins. Thank you for volunteering today to help us test out a website called khanacademy.org.

We are testing the website to see how it works and if it can be improved upon for users like you. Keep in mind we're testing the *site*, not you. So, don't worry about making mistakes, just have fun and try your best to follow the directions I give you.

You will be given five tasks to complete. I'm going to ask you as much as possible to try to think out loud: to say what you're looking at, what you're trying to do, and what you're thinking. Please be aware that we do not want to risk leading you through the tasks, so although we strongly encourage you to think out loud and ask questions during the process, we will not answer your questions during testing. We will, however, jot your questions down and answer them after you have completed all five tasks.

Before we begin, do you have any questions?

Let's begin.

Task	Start Time	End Time	Errors	Comments
From the home page, browse for <b>Pre-Algebra</b> (sign-in not required)	0:00	0:27	0	
Locate and click on an instructional video about <b>Negative Numbers</b>	0:00	0:51	1	Difficulty locating at first, had to search around a little
Complete an exercise (activity)	0:00	2:02	2	Searching the wrong information, got lost in the search process. Needed help locating
Search to find another subject to learn	0:00	0:18	0	
Navigate back to the home page	0:00	0:13	0	

### Observation Form

Participant Name: Francisco Pablos

Observer Name: Lisa Pablos

Observer Script:

Hi, **Francisco**. Thank you for volunteering today to help us test out a website called khanacademy.org.

We are testing the website to see how it works and if it can be improved upon for users like you. Keep in mind we're testing the *site*, not you. So, don't worry about making mistakes, just have fun and try your best to follow the directions I give you.

You will be given five tasks to complete. I'm going to ask you as much as possible to try to think out loud: to say what you're looking at, what you're trying to do, and what you're thinking. Please be aware that we do not want to risk leading you through the tasks, so although we strongly encourage you to think out loud and ask questions during the process, we will not answer your questions during testing. We will, however, jot your questions down and answer them after you have completed all five tasks.

Before we begin, do you have any questions?

Let's begin.

Task	Start Time	End Time	Errors	Comments
From the home page, browse for <b>Pre-Algebra</b> (sign-in not required)	8:00pm	8:1:38 <b>(1:38)</b>	1	Initially tried to use Search rather than Learn.
Locate and click on an instructional video about <b>Negative Numbers</b>	8:02	8:03:07 <b>(1:07)</b>	3	Difficulty finding the video and wasn't sure how to launch it.
Complete an exercise (activity)	8:04	8:04:28 <b>(:28)</b>	0	Was able to complete a pre-algebra exercise very quickly.
Search to find another subject to learn	8:06	8:07:40 <b>(1:40)</b>	1	Initially used Learn rather than Search to find a lesson. Searched for Geometry.
Navigate back to the home page	8:09	8:10:53 <b>(1:53)</b>	2	Scanned to the bottom of the website. Could not locate "Home Page". Eventually used Learn to go to Dashboard.

## Observation Form

Participant Name: Kristin R., age 32

Observer Name: Amy Stuart

Date: Monday, February 17, 2014

Observer Script:

Hi, Kristin R.. Thank you for volunteering today to help us test out a website called [khanacademy.org](http://khanacademy.org).

We are testing the website to see how it works and if it can be improved upon for users like you. Keep in mind we're testing the *site*, not you. So, don't worry about making mistakes, just have fun and try your best to follow the directions I give you.

You will be given five tasks to complete. I'm going to ask you as much as possible to try to think out loud: to say what you're looking at, what you're trying to do, and what you're thinking. Please be aware that we do not want to risk leading you through the tasks, so although we strongly encourage you to think out loud and ask questions during the process, we will not answer your questions during testing. We will, however, jot your questions down and answer them after you have completed all five tasks.

Before we begin, do you have any questions?

Let's begin.

Task	Start Time	End Time	Errors	Comments
From the home page, browse for <b>Pre-Algebra</b> (sign-in not required)	7:43	7:44 (1:03 total)	0	
Locate and click on an instructional video about <b>Negative Numbers</b>	7:44	7:46 (2:00 total)	1	Took me a sec to notice a play button for videos

Complete an exercise (activity)	7:48	7:48 (0:36 total)	0	Got lucky and saw this right away on the right hand side
Search to find another subject to learn	7:49	7:49 (1:00 total)	0	Very easy
Navigate back to the home page	7:50	7:50 (1:22 total)	0	This was not obvious, I figured home link would be on main tool bar, not under tab

Observer's Name: Jennifer Chacon

Participant's Name: Begona Arrospide

1. How easy or hard was it to find the subject Pre-Algebra?

Super Easy

Easy

Not Easy or Hard

Hard

Super Hard

2. How easy or hard was it to find an instructional video about Negative Numbers?

Super Easy

Easy

Not Easy or Hard

Hard

Super Hard

3. How easy or hard was it to complete an exercise (activity)?

Super Easy

Easy

Not Easy or Hard

Hard

Super Hard

4. How easy or hard was it to search for another topic?

Super Easy

Easy

Not Easy or Hard

Hard

Super Hard

5. How easy or hard was it to navigate back to the home page?

Super Easy

Easy

Not Easy or Hard

Hard

Super Hard

Observer's Name: April Harris

Participant's Name: Terry B., age 60

1. How easy or hard was it to find the subject Pre-Algebra?

Super Easy  
 Easy  
 Not Easy or Hard  
 Hard  
 Super Hard

2. How easy or hard was it to find an instructional video about Negative Numbers?

Super Easy  
 Easy  
 Not Easy or Hard  
 Hard  
 Super Hard

3. How easy or hard was it to complete an exercise (activity)?

Super Easy  
 Easy  
 Not Easy or Hard  
 Hard  
 Super Hard

4. How easy or hard was it to search for another topic?

Super Easy  
 Easy  
 Not Easy or Hard  
 Hard  
 Super Hard

5. How easy or hard was it to navigate back to the home page?

Super Easy  
 Easy  
 Not Easy or Hard  
 Hard  
 Super Hard

Observer's Name: Thomas Hill

Participant's Name: Tammy Mackins, age 33

1. How easy or hard was it to find the subject Pre-Algebra?

- Super Easy
- Easy
- Not Easy or Hard
- Hard
- Super Hard

2. How easy or hard was it to find an instructional video about Negative Numbers?

- Super Easy
- Easy
- Not Easy or Hard
- Hard
- Super Hard

3. How easy or hard was it to complete an exercise (activity)?

- Super Easy
- Easy
- Not Easy or Hard
- Hard
- Super Hard

4. How easy or hard was it to search for another topic?

- Super Easy
- Easy
- Not Easy or Hard
- Hard
- Super Hard

5. How easy or hard was it to navigate back to the home page?

- Super Easy
- Easy
- Not Easy or Hard
- Hard
- Super Hard

Observer's Name: Lisa Pablos

Participant's Name: Francisco Pablos, age 53

1. How easy or hard was it to find the subject Pre-Algebra?

- Super Easy
- Easy
- Not Easy or Hard
- Hard
- Super Hard

2. How easy or hard was it to find an instructional video about Negative Numbers?

- Super Easy
- Easy
- Not Easy or Hard
- Hard
- Super Hard

3. How easy or hard was it to complete an exercise (activity)?

- Super Easy
- Easy
- Not Easy or Hard
- Hard
- Super Hard

4. How easy or hard was it to search for another topic?

- Super Easy
- Easy
- Not Easy or Hard
- Hard
- Super Hard

5. How easy or hard was it to navigate back to the home page?

- Super Easy
- Easy
- Not Easy or Hard
- Hard
- Super Hard

Observer's Name: Amy Stuart

Participant's Name: Kristin R., age 32

1. How easy or hard was it to find the subject Pre-Algebra?

Super Easy

Easy

Not Easy or Hard

Hard

Super Hard

2. How easy or hard was it to find an instructional video about Negative Numbers?

Super Easy

Easy

Not Easy or Hard

Hard

Super Hard

3. How easy or hard was it to complete an exercise (activity)?

Super Easy

Easy

Not Easy or Hard

Hard

Super Hard

4. How easy or hard was it to search for another topic?

Super Easy

Easy

Not Easy or Hard

Hard

Super Hard

5. How easy or hard was it to navigate back to the home page?

Super Easy

Easy

Not Easy or Hard

Hard

Super Hard