

# Leveraging Human Factors for Effective Security Training

FISSEA 2012



• Human-  
Computer  
Interaction  
Institute

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Carnegie Mellon

# About the Speaker

• Associate Prof, Carnegie Mellon University, School of Comp Science

• Research and teaching interests:

- Usable privacy and security
- Mobile computing

• Co-author

• Startup

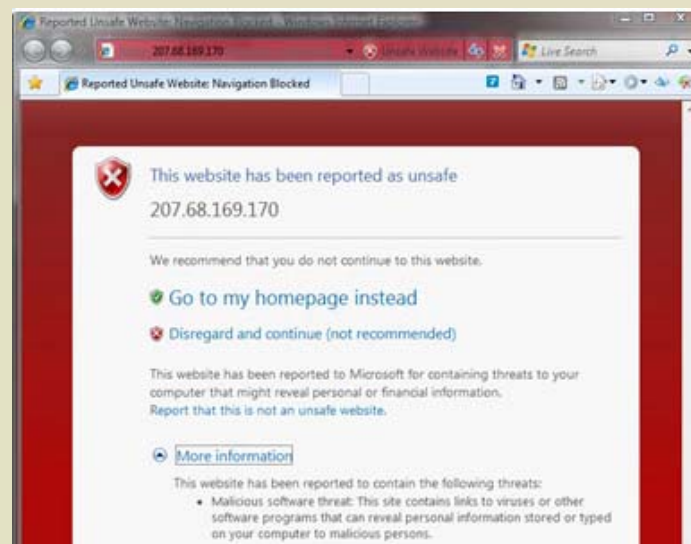
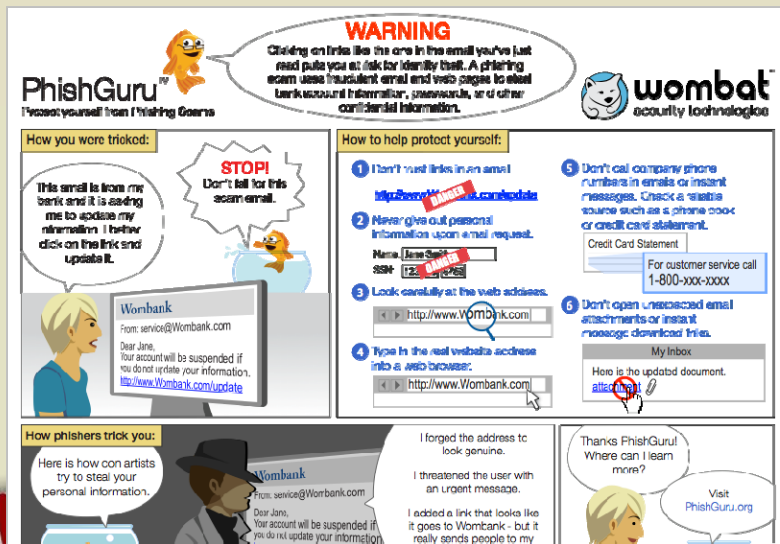


**wombat**  
security technologies



# About this Talk

- Useful for people interested in:
  - How to effectively train people?
  - How to effectively design better user interfaces for privacy and security?
- Two case studies from my research



# Human Element of Security

- People are key part of computer security for every organization
  - Keeping passwords strong and secure
  - Avoiding social engineering
  - Avoiding malware
  - Appropriate use of social networking
  - Keeping mobile devices secure
- Overlooking human element is most common mistake in computer security

# What is Human-Computer Interaction?

Field that seeks to understand the relationship between people & computers

- Designing useful, usable, desirable artifacts
- Understanding how people use systems
- Expanding the ways we can use computers

Combines behavioral sciences, interaction design, and computer science



# Interactions Can Be Successful

iversity : 6



A screenshot of the Amazon.com homepage as it appeared in the mid-2000s. The browser window title is "Amazon.com: Online Shopping for Electronics, Apparel, Computers, Books, DVDs &amp; more - SeaMonkey". The page features a navigation menu on the left with categories like Books, Movies, Music &amp; Games, Digital Downloads, Electronics &amp; Computers, Home &amp; Garden, Grocery, Toys, Kids &amp; Baby, Apparel, Shoes &amp; Jewelry, Health &amp; Beauty, Sports &amp; Outdoors, and Tools, Auto &amp; Industrial. The main content area includes a search bar, a "Hello" message with links for personalized recommendations and new customers, and several promotional banners. One banner introduces the Amazon Kindle, another promotes the Amazon Visa card with a \$30 back offer, and a third advertises TurboTax software. There is also a section for "Large Print Hot New Releases" featuring book covers.

# Interactions Can Also Fail

Activity Tools Help

Proc.Sheet Drawing ItemLed Relevel WhereUsed ReqPlan Full Ledger Prod EnQ Led.Sum ?A

Item Master Bill of Mat. Prod. Plan CA Sales Plan CA Stocks FG Stocks Tab 6

Item Code: 000045B    Descript.: AV 8.00 BLACK\$    Status:

Pu.Unit: MT    Stk Unt: MT    Pu.Conv: 1.00    Pu Ld Dys: 45    Re Ord Lvl:    Order Qty:    Buffer.Stk:    Buyr Cd: L    Exc.Pu%: 11    SCer: 0

Dst.Dys:    Sh.Tl.Day:    Std.Specf:    Max.Pur.Rt:    Std.Rate:    Balance Qty: 2000.000    R.Rate1:    Location: 000000    Pur.A/c:   

Flg: 1    Lvl: 2    Abc Cls: 0    Xyz Cls: 0    Proc.Mtd: B    Lst.Rv#:    Prv PO#: 000010    Prv PO Rt: 100.00    Prv Supplier: F001    Src: 0    Rej.%:   

635	Item Cd	Descript	PU.I	Stk.I	Ord.Qty	Bal.Qty	Pu.L.Dys	Sta
	000045B	AV 8.00 BLACK\$	MT	MT		2000.000	45	
	000047B	AV20B\$	MT	MT		1942.500	42	
	000047R	AV20R\$	MT	MT		1886.280	42	
	000059R	AV10R\$	MT	MT		11849.000	83	
	057039B	AEX0.5B\$	MT	MT		400.000	90	
	057039B/R	AEX0.5B/R\$	MT	MT		1031.000	90	
	057039B/W	AFX0.5B/W\$	MT	MT		1917.000	90	

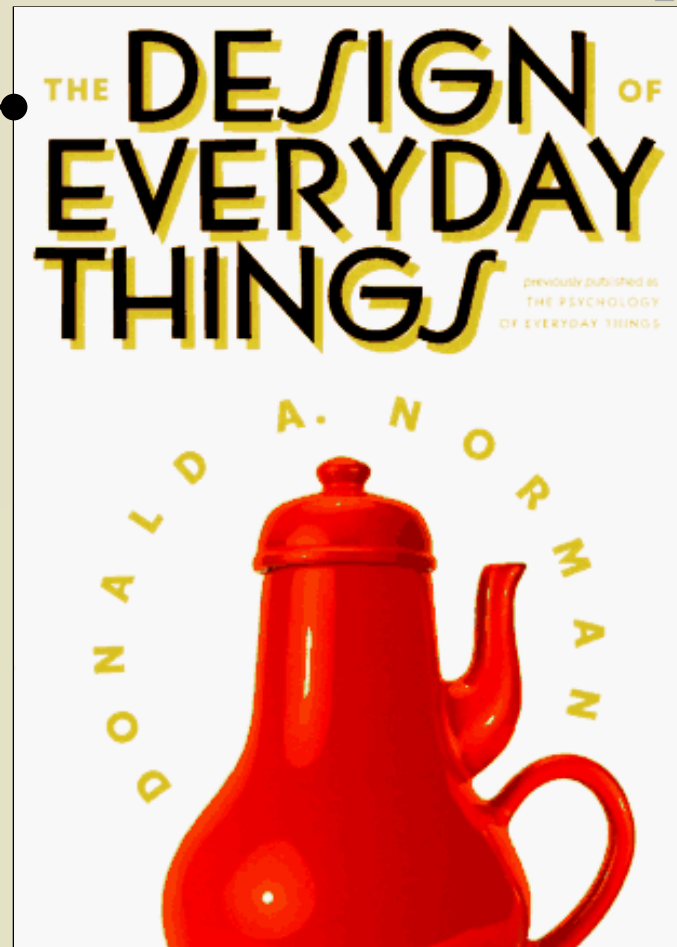
Home PgUp PgDn LnUp LnDn End /+

# Design Principles in 5 Minutes

How do people believe how things work? —

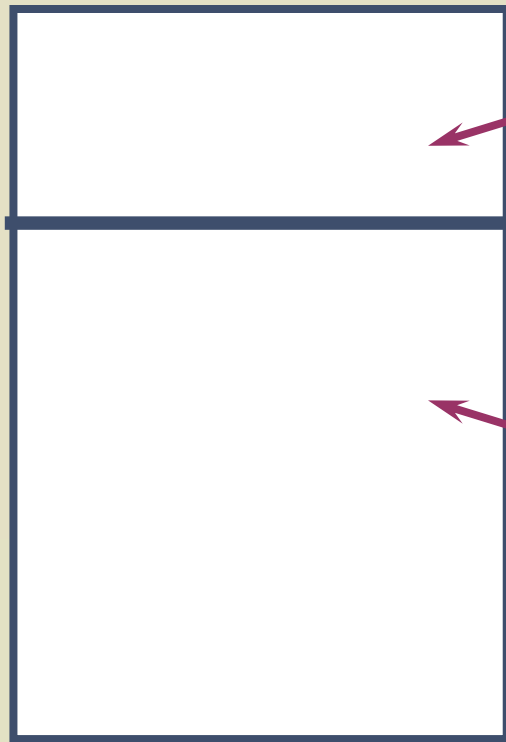
**Mental models** describe how a person thinks something works

Incorrect mental models can make things very hard to understand and use





# Mental Models Example: Refrigerator



Freezer  
(temperature too cold)

Fresh food  
(temperature just right)

# Refrigerator Controls

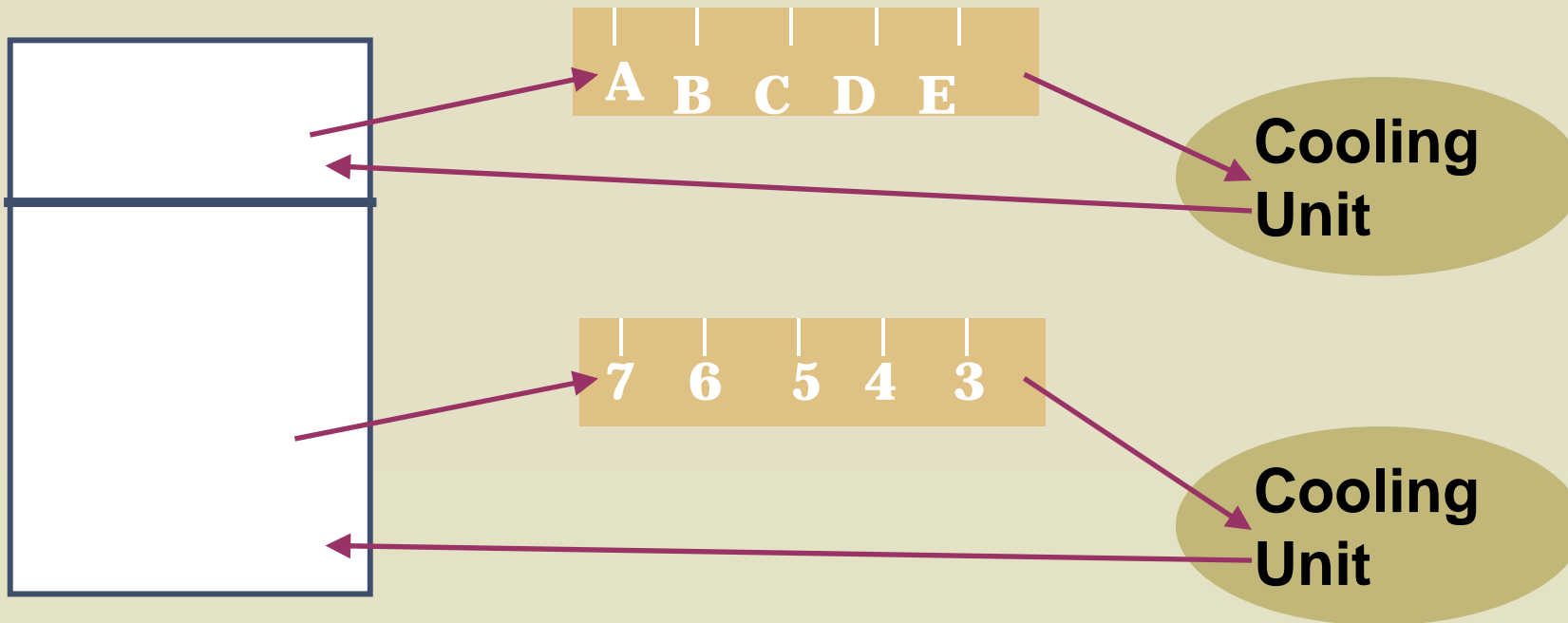
Normal Settings	<b>C</b> and <b>5</b>
Colder Fresh Food	<b>C</b> and <b>6-7</b>
Coldest Fresh Food	<b>B</b> and <b>8-9</b>
Colder Freezer	<b>D</b> and <b>7-8</b>
Warmer Fresh Food	<b>C</b> and <b>4-1</b>
OFF (both)	<b>0</b>

**A B C D E**

**7 6 5 4 3**

What is a typical conceptual model?

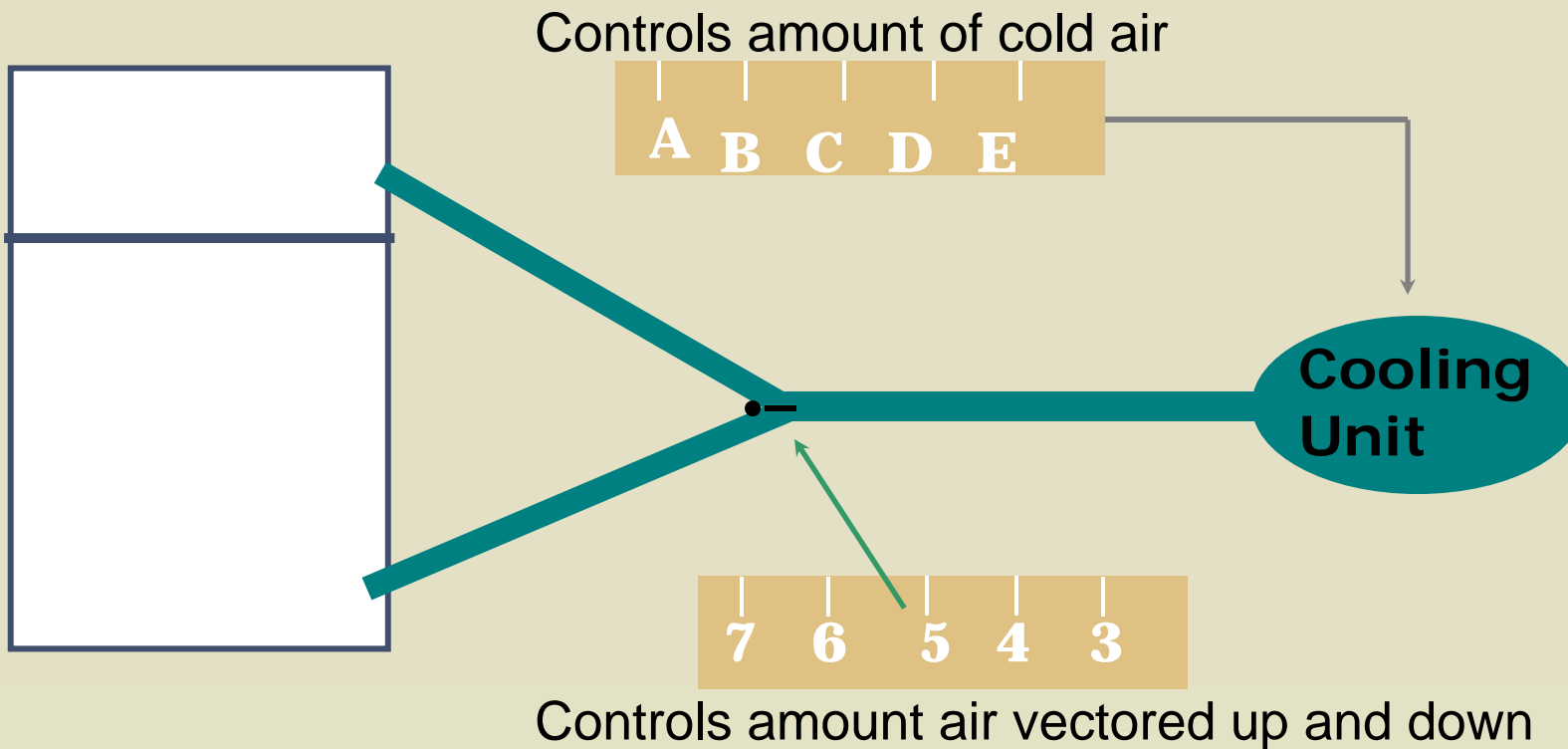
# A Common Conceptual Model



Most people think of independent controls



# Actual Conceptual Model



Now can you fix the problem?

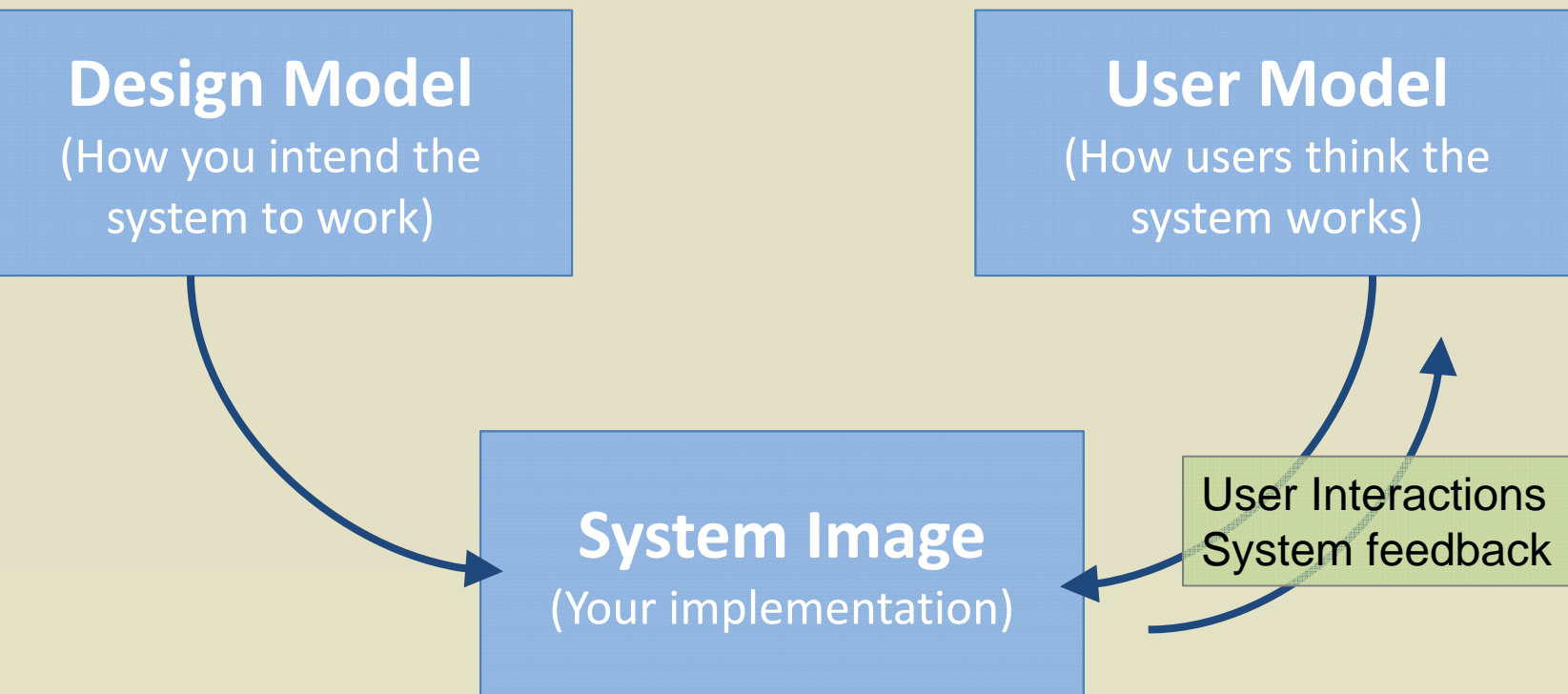
Two general solutions:

- make controls map to user's mental model
- foster a more accurate mental model

# Nissan Maxima Gear Shift



# Three Different Models



Users create a model from what they hear from others, past experiences, and usage – interactions with system image

# Mental Models

People inevitably build models of how things work

- Ex. children and computers
- Ex. you and your car
- Ex. how hackers work (and why)
- Ex. visibility in social networking sites
- Ex. app stores (all apps vetted by Google?)

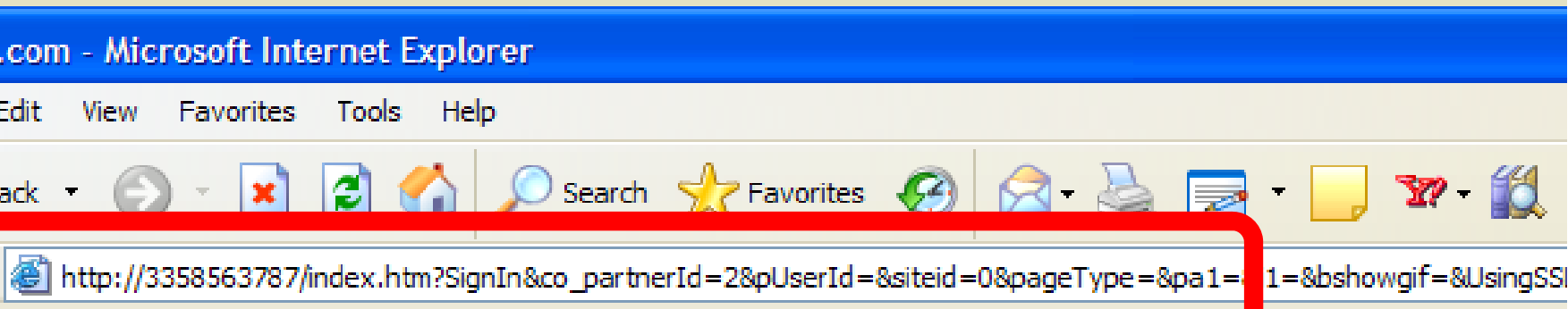


Two options:

- Make the system match people's models
- Foster a better mental model

# Example: Phishing Attacks

- Interviewed 40 people as part of an “email study” (Downs et al, SOUPS 2006)
- Only 55% of participants said they had ever noticed an unexpected or strange-looking URL
  - Most did not consider them to be suspicious





# Example: Phishing Attacks

- 55% of participants reported being cautious when email asks for sensitive financial info
  - But very few reported being suspicious of email asking for passwords
- Knowledge of financial phish reduced likelihood of falling for these scams
  - But did not transfer to other scams, such as an amazon.com password phish



*HERDING CATS.*

# Yes, End-Users Are Trainable

Our research demonstrates users can learn how to protect themselves... if you can get them to pay attention to training

Problem is that today's training often boring, time consuming, and ineffective

- All day lecture, no chance to practice skills
- Or passively watching videos
- Or posters and mugs and calendars
- Raise awareness, but little on what to actually do



# How Do We Get People Trained?

Create "teachable moments"

Micro-games for training (fun)

Use learning science principles throughout

**WARNING**  
Clicking on links like the one in the email you've just read puts you at risk for identity theft. A phishing scam uses fraudulent email and web pages to steal bank account information, passwords, and other confidential information.

**STOP!**  
Don't fall for this scam email.

**How to help protect yourself:**

1. Don't trust links in an email.  
<http://www.Wombank.com/update>
2. Never give out personal information upon email request.  
Name: Jane Smith  
Sent: 12/15/2011
3. Look carefully at the web address.  
<http://www.Wombank.com/>
4. Type in the real website address into a web browser.  
<http://www.Wombank.com/>
5. Don't call company phone numbers in emails or instant messages. Check a reliable source such as a phone book or credit card statement.  
Credit Card Statement  
For customer service call 1-800-XXX-XXXX
6. Don't open unexpected email attachments or instant message download links.  
My Inbox  
Here is the updated document.  
[attach...](#)

**Wombank**  
From: service@Wombank.com  
Dear Jane,  
Your account will be suspended if you do not update your information.  
<http://www.Wombank.com/update>

**Wombank**  
From: service@Wombank.com  
Dear Jane,  
Your account will be suspended if you do not update your information.

I forged the address to look genuine.  
I threatened the user with an urgent message.  
I added a link that looks like it goes to Wombank - but it really sends people to my

Thanks PhishGuru! Where can I learn more?  
Visit PhishGuru.org

Embedded Training

**ROUND 1**    **SCORE: 0**    **LIVES:** 🐟 🐟 🐟    **TIME LEFT: 1 : 28**

<http://202.57.255.177/citizensbank.com/index.php>

**WITH URL REVEAL**    **Micro-Game on Phishing**    **HER FOR HELP**

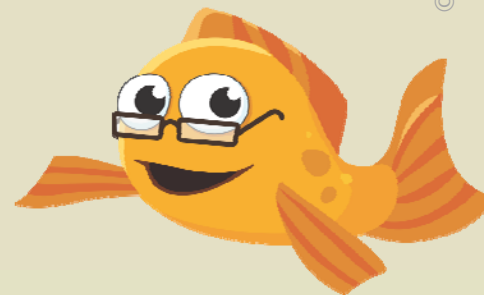
Micro-Game on Phishing

# PhishGuru Embedded Training

Send simulated phishing emails

If recipient falls for it, show intervention that teaches what cues to look for in succinct and engaging format

- Useful for people who don't know that they don't know



Multiple user studies have demonstrated that PhishGuru is effective

Delivering training via direct email not effective



Folder: INBOX [Sign Out](#)

[Addresses](#) [Folders](#) [Options](#) [Search](#) [Help](#) [SquirrelMail](#)

Viewing Messages: 1 to 33 (33 total)

Selected To:   Transform Selected Messages:

<input type="checkbox"/>	Date ▼	Subject
Jones	Mar 12, 2007	<a href="#">Will pick you up in 60 minutes</a>
Li <input type="text" value="fnj@fnj.com"/>	Mar 12, 2007	<a href="#">Conference room #2 - reservation</a>
	Mar 12, 2007	<a href="#">Your IKEA order confirmation</a>
	Mar 12, 2007	<a href="#">Reactivate your eBay account</a>
Allen	Mar 12, 2007	<a href="#">How about lunch together tomorrow?</a>
or Fitzpatrick	Mar 12, 2007	<a href="#">sexy baby and bad erection?</a>
h Dicosta	Mar 12, 2007	<a href="#">tomorrow's meeting rescheduled</a>
ka Berdford	Mar 12, 2007	<a href="#">View my photos on Yahoo! Photos</a>
h Dicosta	Mar 12, 2007	<a href="#">document dropped - your office - please fax</a>
ays Bank	Mar 12, 2007	<a href="#">Update your account information</a>
Williams	Mar 12, 2007	<a href="#">Sushi making party</a>
eng	Mar 12, 2007	<a href="#">[cognix] Dinner menu selection - Annual day</a>
ank	Mar 12, 2007	<a href="#">Citibank Urgent E-mail Verification</a>
Li	Mar 12, 2007	<a href="#">Business cards</a>
	Mar 12, 2007	<a href="#">A warm Hello from Jesse</a>

Subject: Revision to Your Amazon.com Information

[Delete](#)

[Previous](#) | [Next](#)

[Forward](#) | [Forward as Attachment](#) | [Reply](#) | [Reply All](#)

**Subject:** Revision to Your Amazon.com Information

**From:** "Amazon" <service@amazon.com>

**Date:** Mon, March 12, 2007 4:15 pm

**To:** bsmith@cognix.com

**Priority:** Normal

**Subject: Revision to Your Amazon.com Information**

.com.

**Please login and enter your information**

ossible

ow this link to update your personal information:

[www.amazon.com/exec/obidos/sign-in.html](http://www.amazon.com/exec/obidos/sign-in.html)

ete the verification process you must fill in all the required fields)

e. If you don't update your information within next 48 hours , we will be forced to suspend your account until you have the time to contact us by

ate your support and understanding, as we work together to keep amazon market a safe place to trade. Thank you for your attention on this  
tter and we apologize.



## WARNING

Clicking on links like the one in the email you've just read puts you at risk for identity theft. A phishing scam uses fraudulent email and web pages to steal bank account information, passwords, and other confidential information.



### You were tricked:

An email is from my bank and it is asking me to update my information. I better click on the link and update it.

**STOP!**  
Don't fall for this scam email.



#### Wombank

From: service@Wombank.com

Dear Jane,  
Your account will be suspended if you do not update your information.  
<http://www.Wombank.com/update>

### How to help protect yourself:

- 1 Don't trust links in an email.

~~<http://www.Wombank.com/update>~~

- 2 Never give out personal information upon email request.

Name:   
SSN:

- 3 Look carefully at the web addresses.

- 4 Type in the real website address into a web browser.

- 5 Don't call company phone numbers in emails or instant messages. Check a reliable source such as a phone book or credit card statement.

Credit Card Statement

For customer service call  
1-800-xxx-xxxx

- 6 Don't open unexpected email attachments or instant messages downloaded files.

My Inbox

Here is the updated document.  
[attachment](#)

### Phishers trick you:

Here is how con artists try to steal your personal information.



#### Wombank

From: service@Wombank.com

Dear Jane,  
Your account will be suspended if you do not update your information.  
<http://www.Wombank.com/update>

I forged the address to look genuine.

I threatened the user with an urgent message.

I added a link that looks like it goes to Wombank - but it really sends people to my site so I can steal their information and money!

Thanks PhishGuru!  
Where can I learn more?

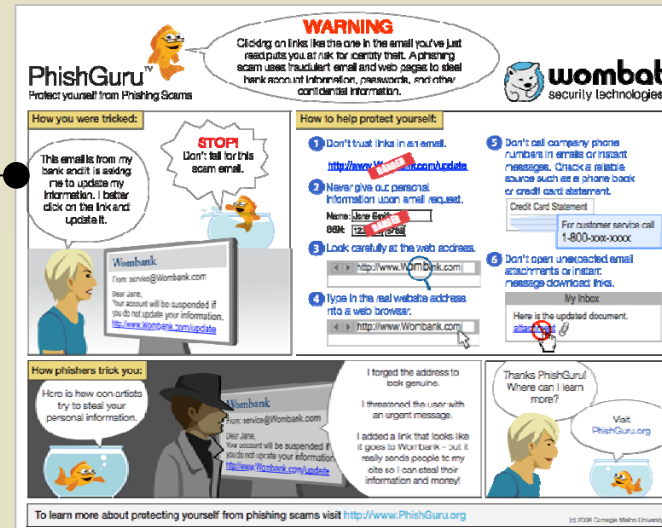
Visit  
[PhishGuru.org](http://PhishGuru.org)





# Learning Science

- Area of research examining learning, retention, and transfer of skills
- Example principles
  - Learning by doing
  - Immediate feedback
  - Conceptual-procedural
  - Reflection
  - ... many others



# Evaluation of PhishGuru



- Is embedded training effective?
  - We've conducted 4 peer-reviewed studies showing embedded training works well
  - Studies showed significant decrease in falling for phish and ability to retain what they learned

• Kumaraguru et al. Protecting People from Phishing: The Design and Evaluation of an Embedded Training Email System. CHI 2007.

• Kumaraguru et al. School of Phish: A Real-World Evaluation of Anti-Phishing Training. SOUPS 2009.

# Results of One Study



Tested 500+ people in one month

- 1 simulated phish at beginning of month, testing done at end of month
- ~50% reduction in falling for phish
- 68 out of 85 surveyed said they recommend continuing doing this sort of training in the future
- “I really liked the idea of sending [organization] fake phishing emails and then saying to them, essentially, HEY! You could've just gotten scammed! You should be more careful – here's how...”

# Can Browser Interfaces Help?

- Modern web browsers come with blacklists and special interfaces for identifying phish
  - Our evaluation of several blacklists show they catch ~80% of phish after 24 hours, not very good in first few hours
- Are these browser interfaces effective?
  - And, what can we learn from them?
  - Science of Warnings from human factors



Internet Explorer - Windows Internet Explorer

http://www.amazonaccounts.net/gp/sign-in.htm Suspicious Website

Edit View Favorites Tools

Sign In

amazon.com

Your Amazon

Your Browsing History

Search Amazon.com

Sign In

What is your e-

My e-mail ad

Cart

ve You endati

Suspicious website

This might be a phishing website.

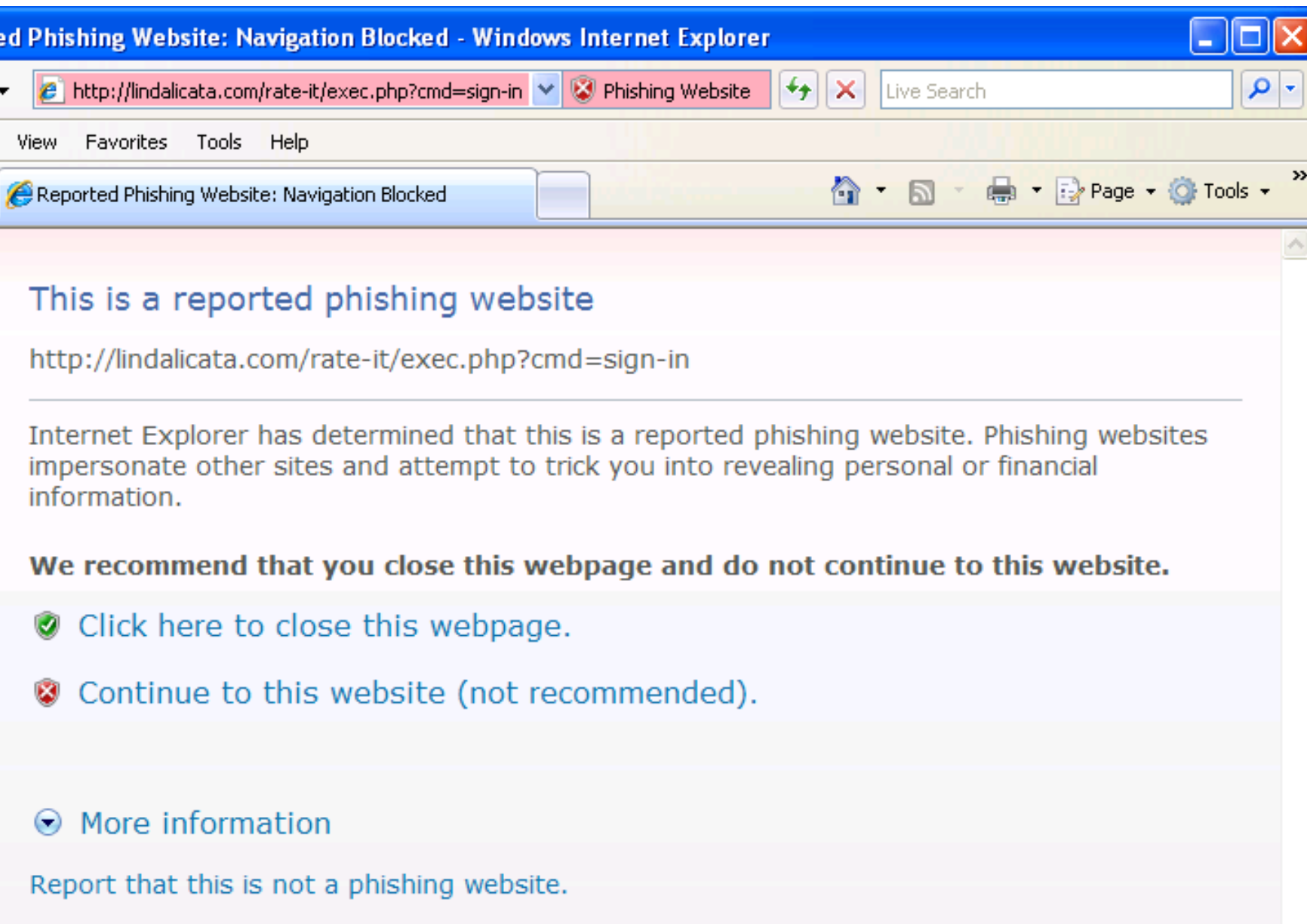
Phishing websites impersonate trustworthy websites for the purpose of obtaining your personal or financial information.

Microsoft recommends that you do not give any of your information to such websites.

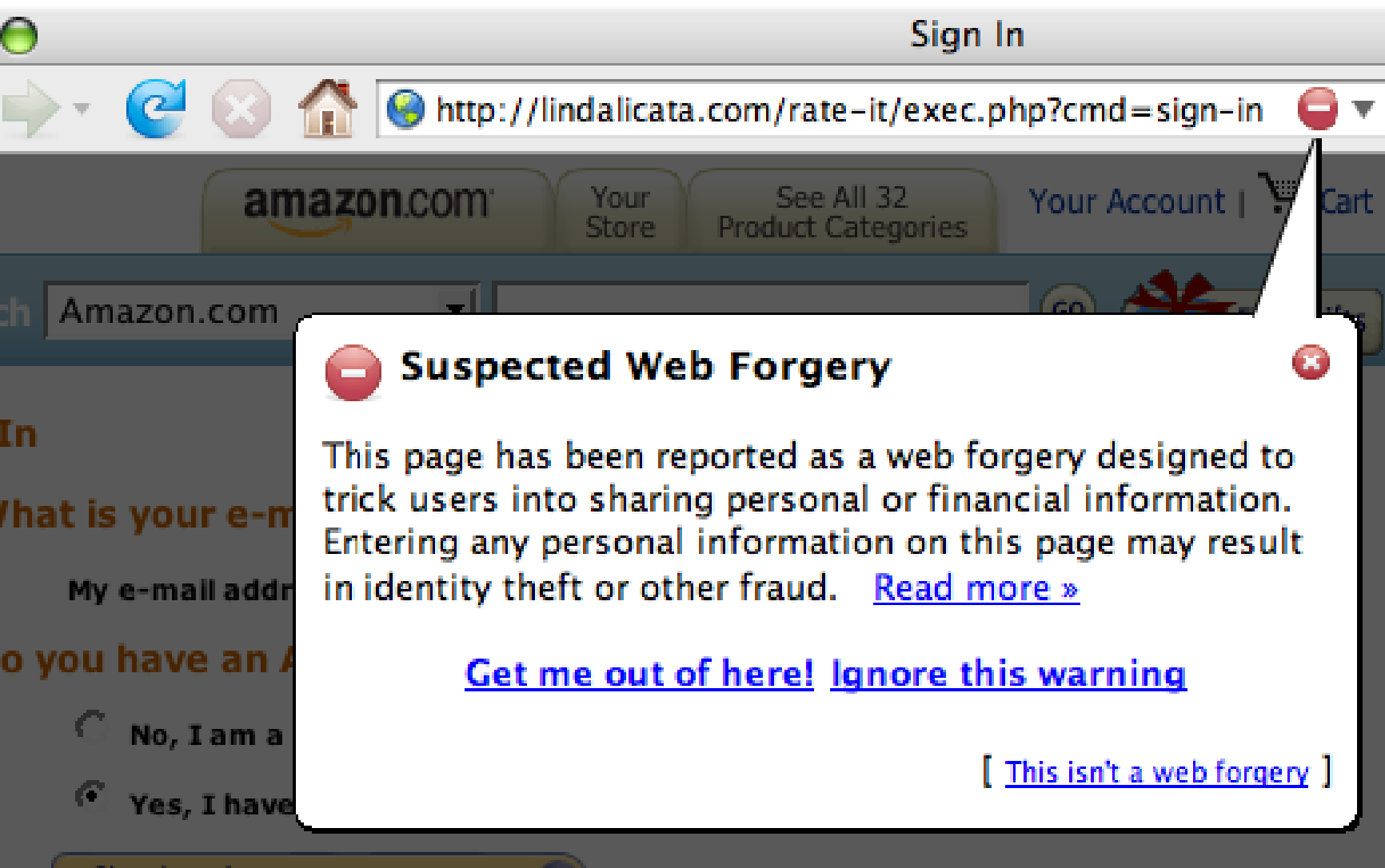
Report whether or not this is a phishing website.

What is Phishing Filter?

## Internet Explorer 7 – Passive Warning



## Internet Explorer 7 – Active Block



# How Effective are these Warnings?

Tested four conditions

- Firefox Active Block
- IE Active Block
- IE Passive Warning
- Control (no warnings or blocks)

“Shopping Study”

- Setup phishing pages and added to blacklists
- Phished users after real purchases (2 phish)
- Used real email accounts and personal info





# How Effective are these Warnings?

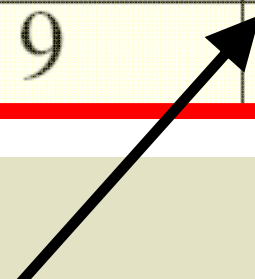
Condition Name	Size	Clicked	Phished
Firefox	20	20	0 (0%)
Active IE	20	19	9 (45%)
Passive IE	10	10	9 (90%)
Control	10	9	9 (90%)

Almost everyone clicked, even those

# How Effective are these Warnings?

No one in Firefox condition fell for our phish  
People in Firefox condition not more technically savvy

Condition Name	Size	Clicked	Phished
Firefox	20	20	0 (0%)
Active IE	20	19	9 (45%)
Passive IE	10	10	9 (90%)
Control	10	9	9 (90%)



# Discussion of Phish Warnings

Nearly everyone will fall for highly targeted and contextualized phish

Passive IE warning failed for many reasons

- Didn't interrupt the main task
- Can be slow to appear (up to 5 seconds)
- Not clear what the right action was
- Looked too much like other ignorable warnings (habituation)
- Bug, any keystroke dismissed

Internet Explorer - Windows Internet Explorer

http://www.amazonaccounts.net/gp/sign-in.htm Suspicious Website

Edit View Favorites Tools

Sign In

amazon.com

Your Amazon

Your Browsing History

Search Amazon.com

Sign In

What is your e-

My e-mail ad

Cart

ve You endati

Suspicious website

This might be a phishing website.

Phishing websites impersonate trustworthy websites for the purpose of obtaining your personal or financial information.

Microsoft recommends that you do not give any of your information to such websites.

Report whether or not this is a phishing website.

What is Phishing Filter?

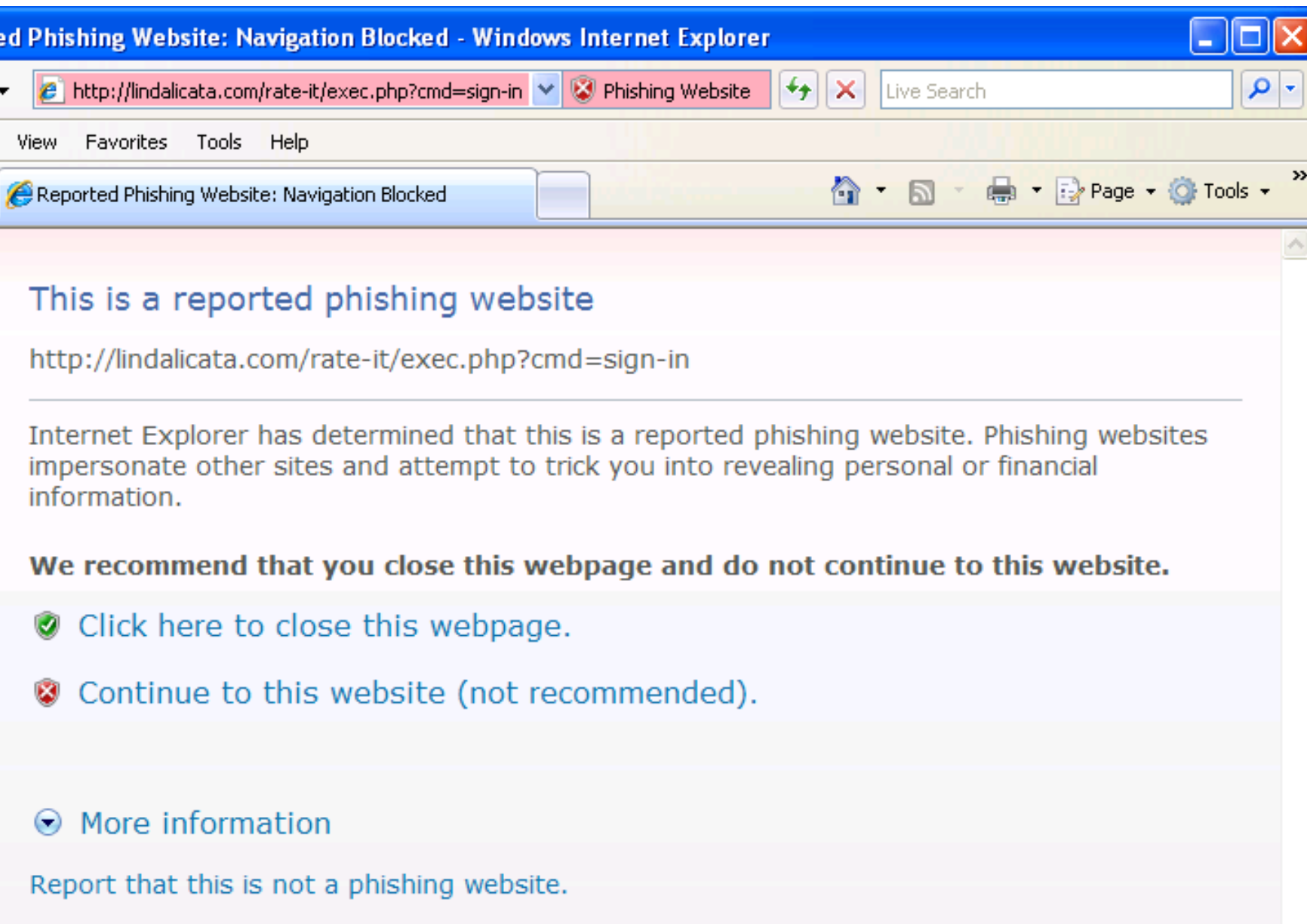
## Internet Explorer – Passive Warning

# Discussion of Phish Warnings

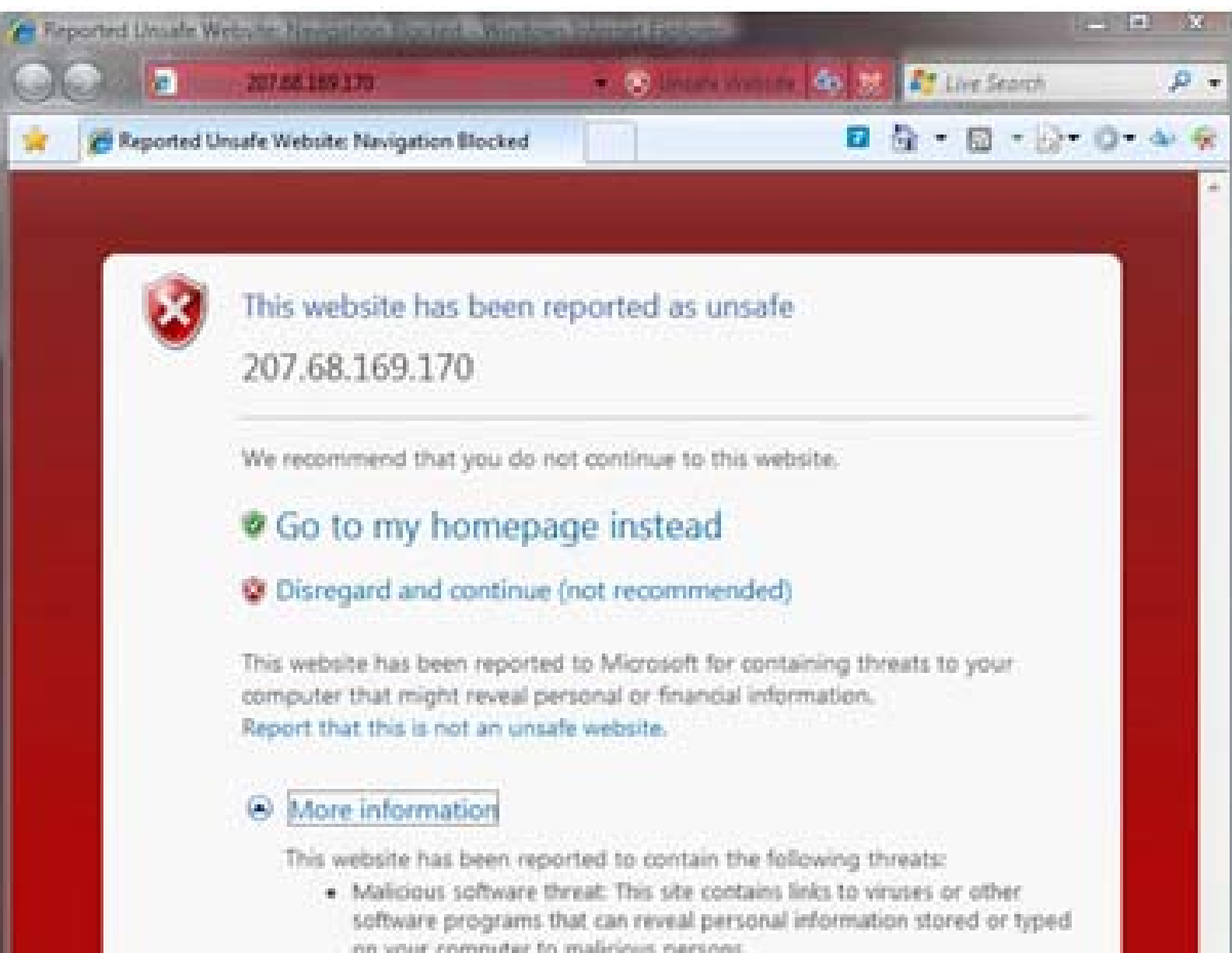
## Active IE warnings

- Most saw the warning, but many did not believe it
  - “Since it gave me the option of still proceeding to the website, I figured it couldn’t be that bad”
- Some element of habituation (looks like other warnings)
- Saw two pathological cases





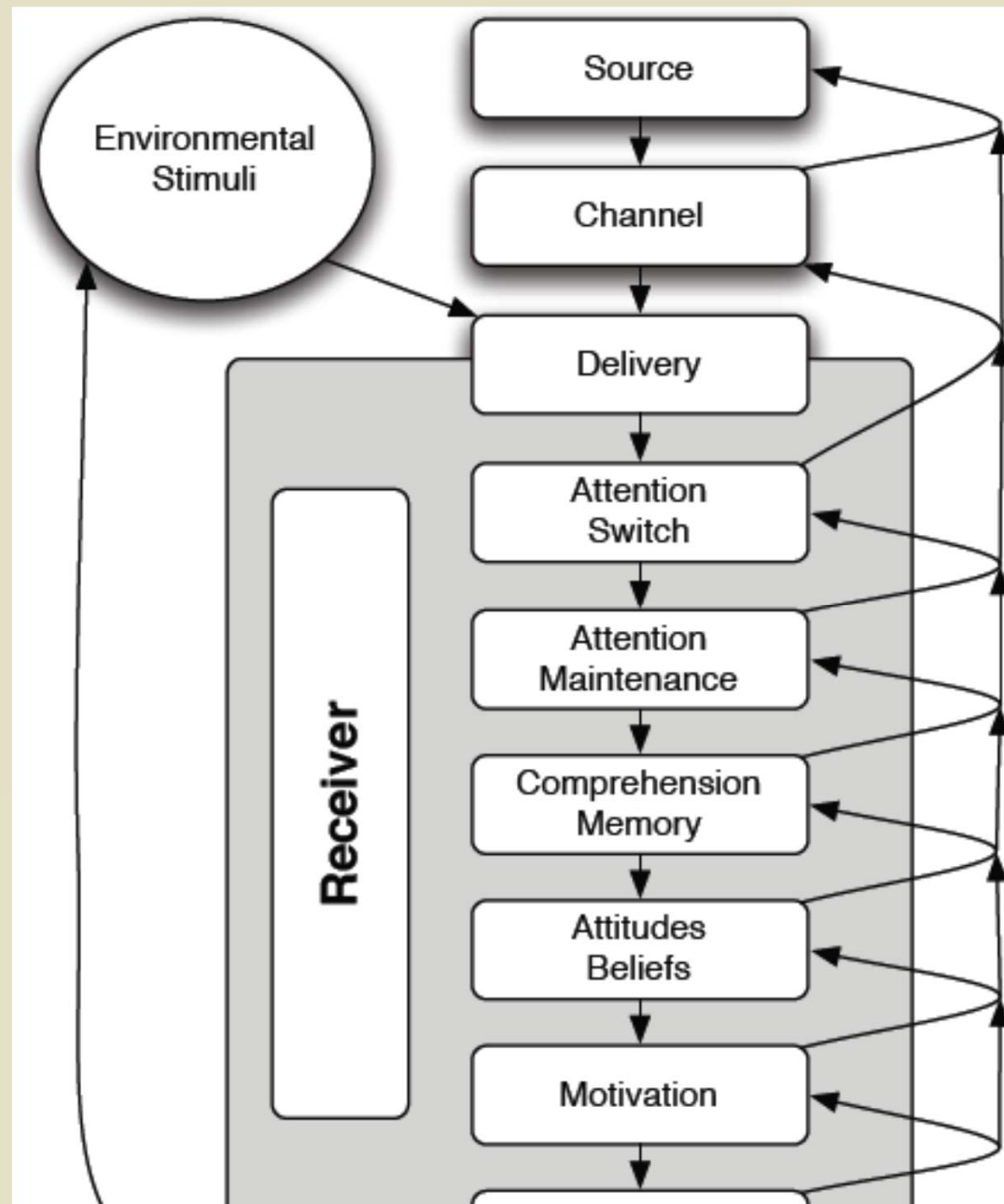
**Internet Explorer – Active Block**



# A Science of Warnings

-HIP model  
for real-world  
warnings

See the warning?  
Understand it?  
Believe it?  
Motivated?  
Can and will act?





# Designing for Path of Least Resistance

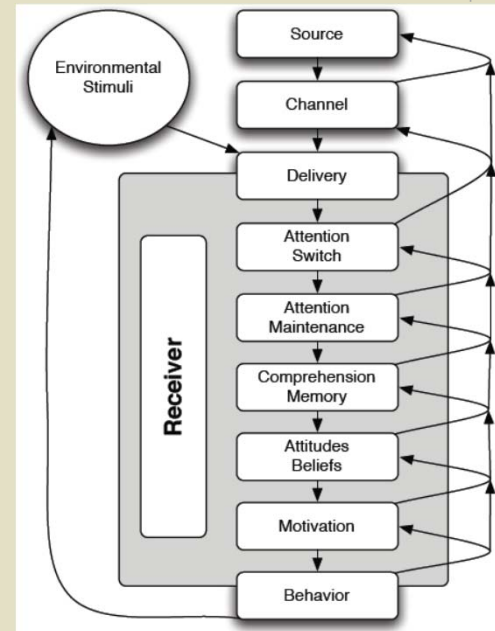
Where possible, make the default behavior safe

- Ex. The two pathological cases
- Assume people won't see, read, believe, or be motivated

Active warnings over passive warnings

- Interrupt people if warning is important
- Need to balance this with habituation

Make important warnings look very different



# Summary



- Human element most overlooked aspect of computer security
  - Ex. phishing scams, passwords, mobile
- Mental models important to design
  - Mismatched models can cause failures
- Security training can work if done right
  - Learning sciences
- C-HIP model for security warnings
  - Do people see, understand, believe, and act on warnings?

# More of Our Research


- Our team does research on:
  - Better password policies
  - Alternatives to passwords
  - Mobile apps, privacy and security
  - Location-based services and privacy
  - Social networking and privacy
  - Configuring firewalls



# More of Our Research



- <http://cups.cs.cmu.edu>
- <http://mcom.cs.cmu.edu>
- <http://cmuchimps.org/>



**Thanks, where can  
I learn more?**

**Find more at  
[wombatsecurity.com](http://wombatsecurity.com)**



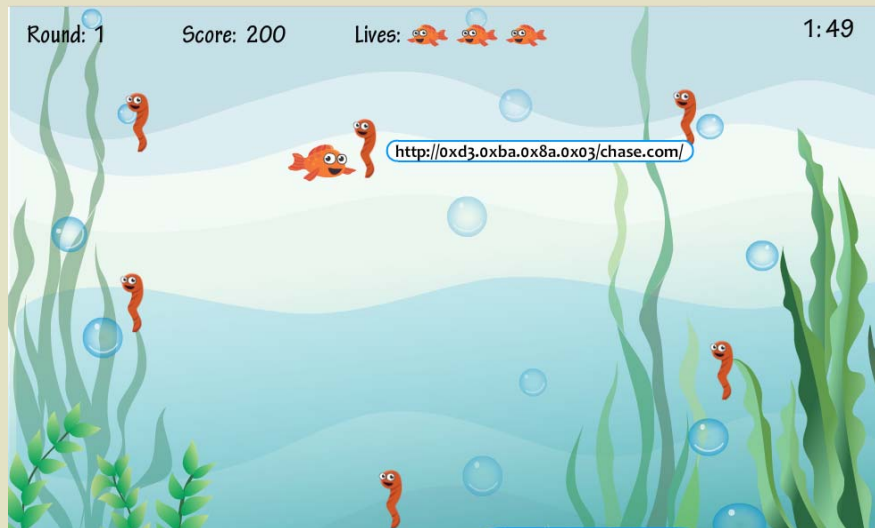
# Micro-Games for Cyber Security

- Training doesn't have to be long & boring
- Micro game format, play for short time
- Two-thirds of Americans played a video game in past six months
- Not just young people
  - Average game player 35 years old
  - 25% of people over 50 play games
- Not just males
  - 40% of casual gamers are women



# Case Study: Anti-Phishing Phil

- Tested Anti-Phishing Phil with ~4500 people
  - Huge improvement by novices in identifying phishing URLs
  - Also dramatically lowered false positives





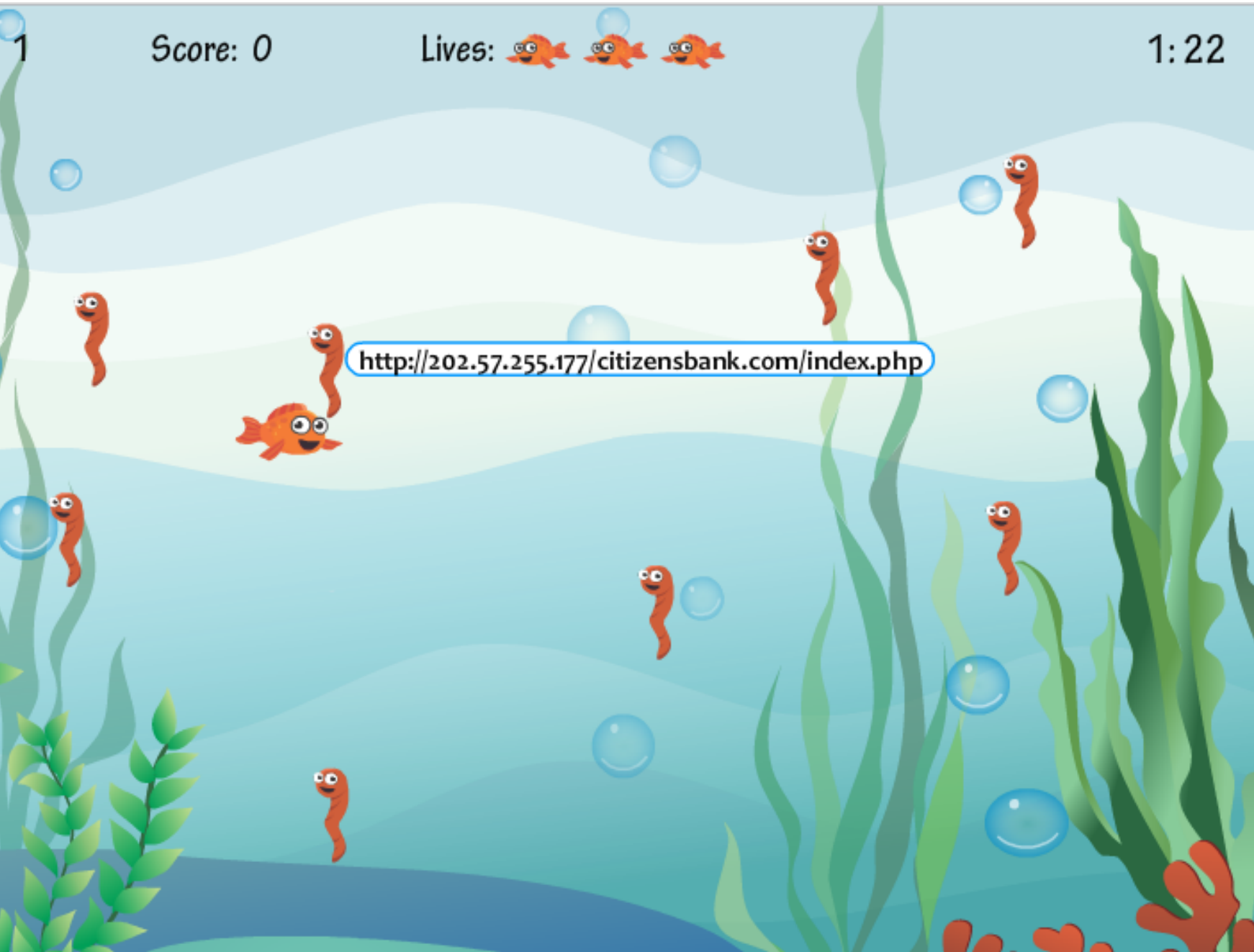
1

Score: 0

Lives: 

1:22

<http://202.57.255.177/citizensbank.com/index.php>

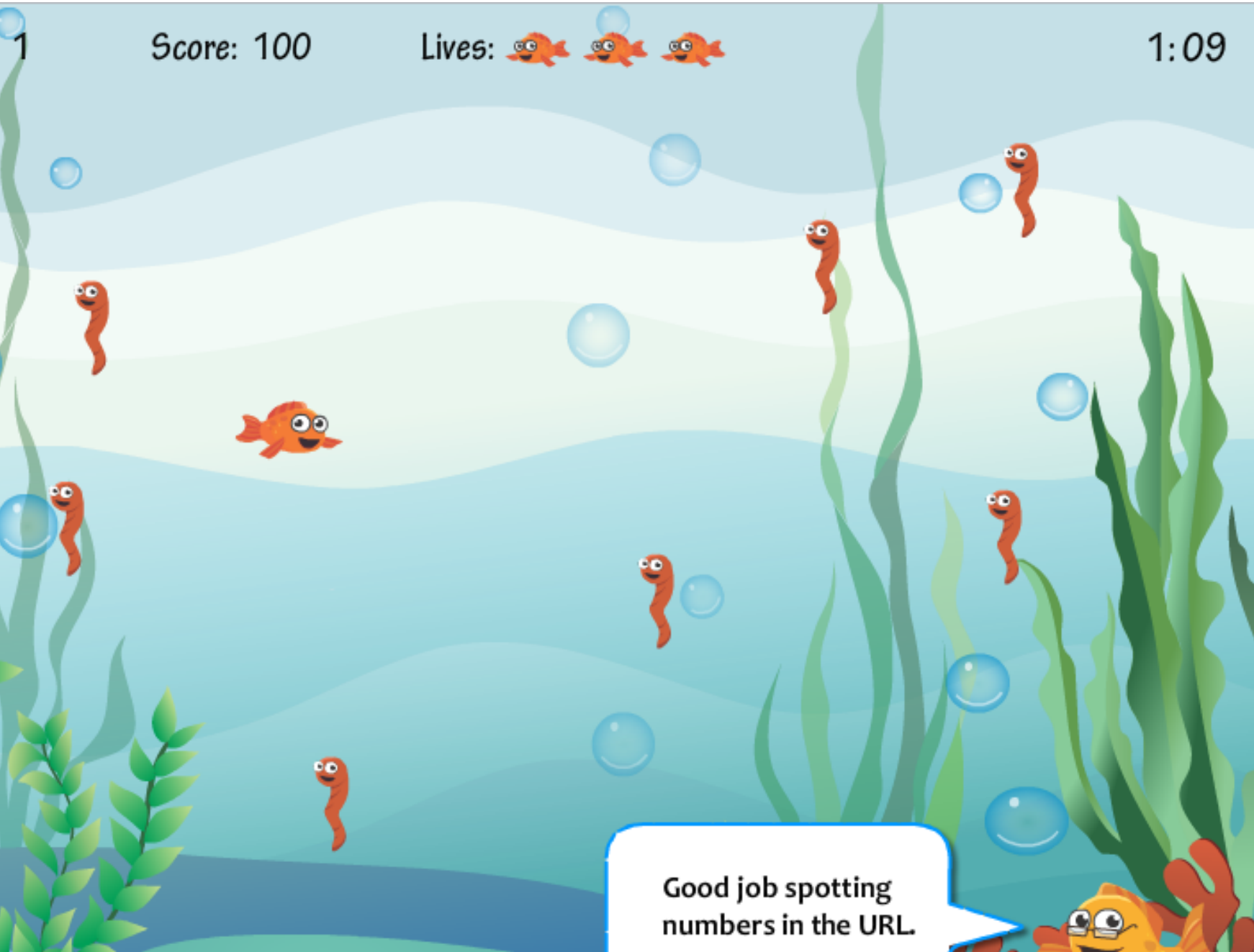


1

Score: 100

Lives: 

1:09



Good job spotting numbers in the URL.

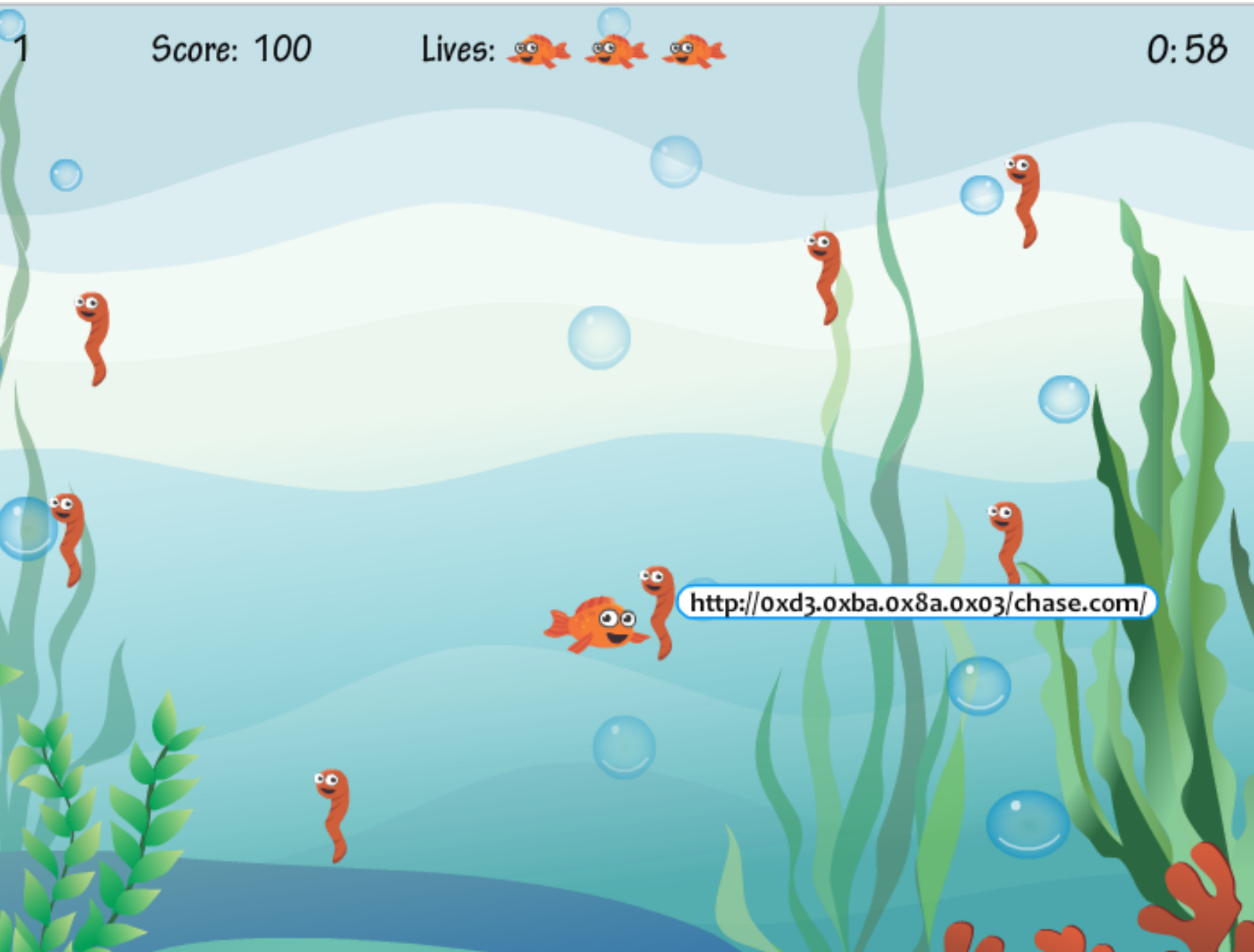


1

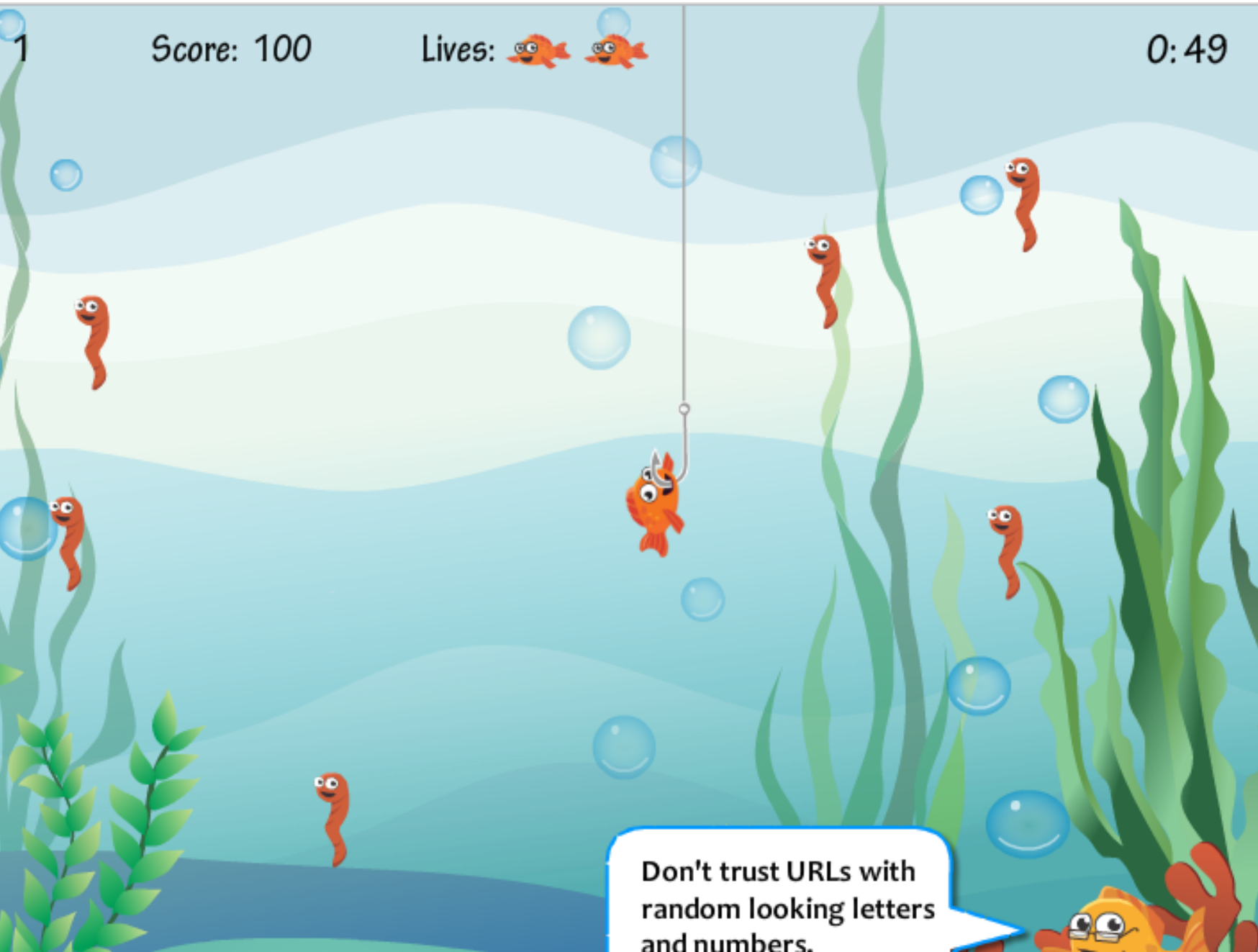
Score: 100

Lives: 

0:58



<http://0xd3.0xba.0x8a.0x03/chase.com/>



Score: 100

Lives:  

0:49

Don't trust URLs with random looking letters and numbers.

# Round 1 Over

Congratulations! You may proceed to the next round.

✓ Correct choice    ✗ Incorrect choice

<http://202.57.255.177/citizensbank.com/index.php>

SCAM ALERT! Don't trust URLs with all numbers in the front.

<http://0xd3.0xba.0x8a.0x03/chase.com/>

SCAM ALERT! URLs with all numbers in the front are usually a scam.

<http://www.citibanking.net>

The real site is citibank.com.

<https://bankus.etrade.com/>

If you are not familiar with this site, google "etrade".

<http://147.46.236.55/PayPal/login.html>

SCAM ALERT! URLs with all numbers in the front are usually a scam.

<https://www.wellsfargo.com>

www.wellsfargo.com belongs to Wellsfargo Bank.

<http://www.citizensbank.com>

citizensbank.com belongs to Citizens Bank.

<https://www.chase.com>

chase.com is part of the J.P. Chase Corporation.

# How to Avoid Online Scams

Site Name

Welcome to Wombank - Windows Internet Explorer

http://www.wombank.com/us/home.htm

Address

wombank

Account type  
Personal Checking

Region  
North America

Continue

Banking Credit Cards Loans Investing

bank from anywhere.

ing

of Deposit

ome Equity

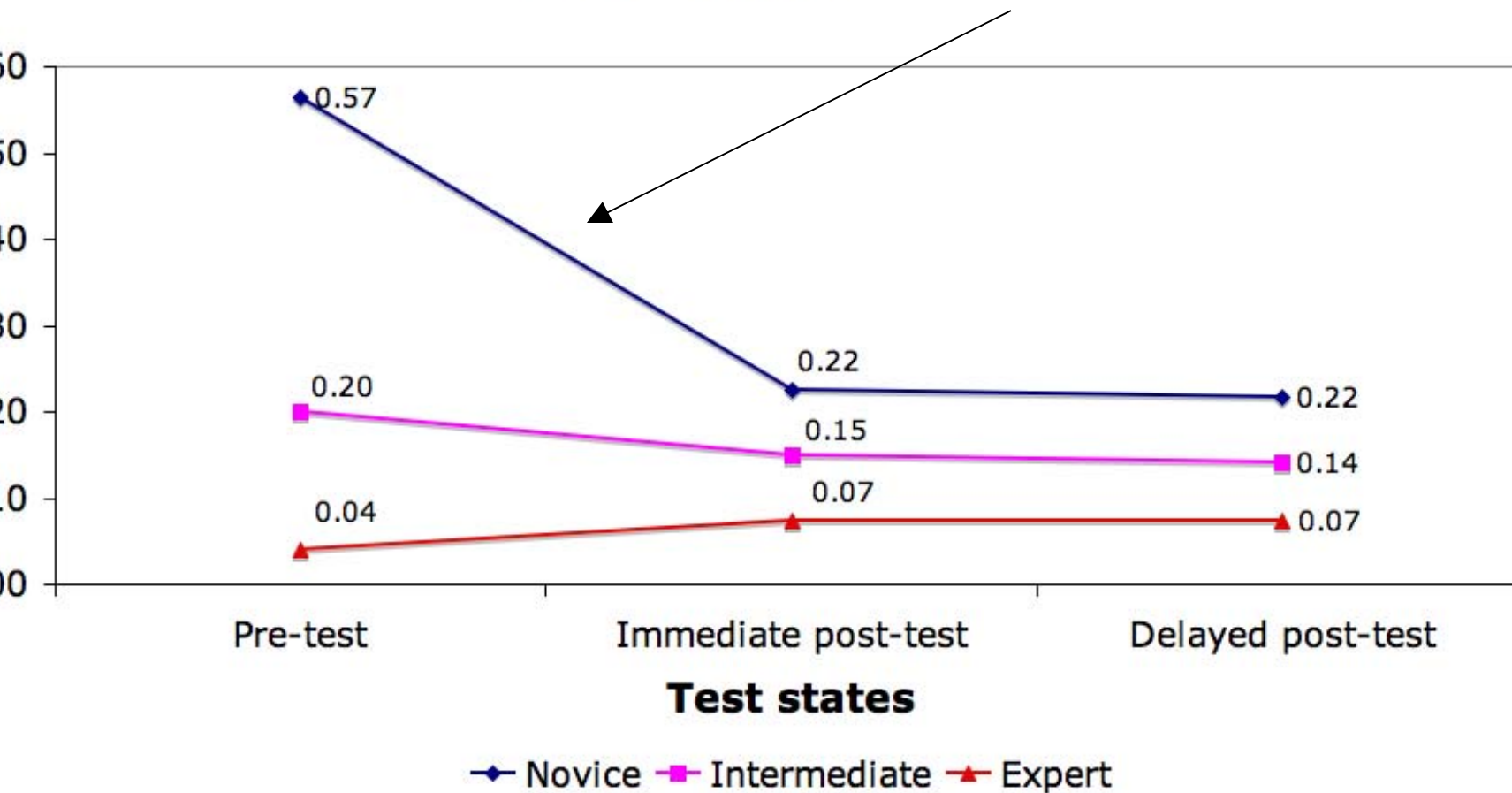
Personal Loans Wealth Management

Money Markets business Cards

Within the address the right hand side is the most important! It shows the site name.

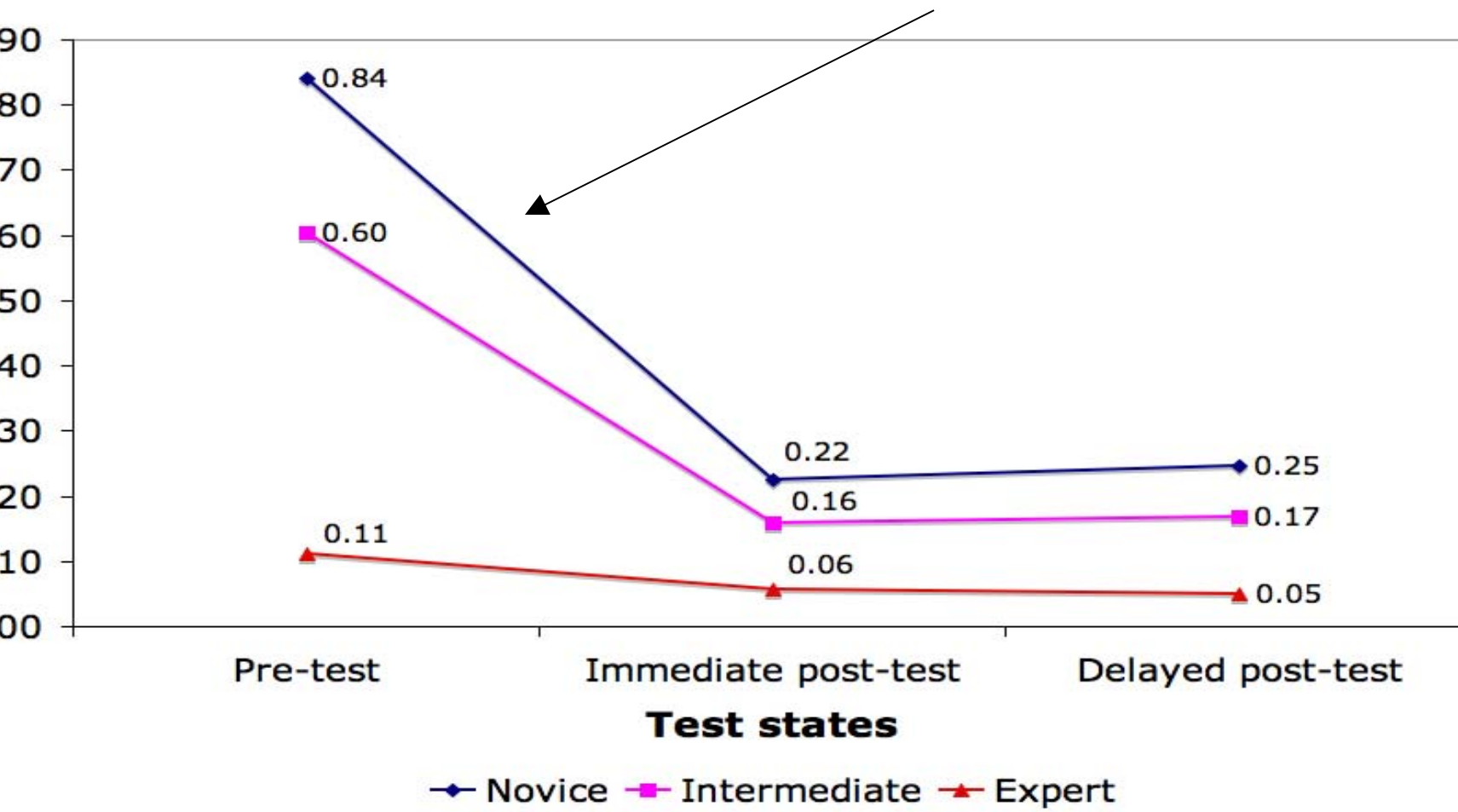
I got it PhishGuru! The name of the site is **wombank.com!**

## False negative



False negatives for users who played Anti-Phishing Phil ("game condition"). False negatives are situations where people incorrectly label a phishing site as legitimate. Novices saw the greatest reduction in false negatives, and retained what they had learned.

## False positive



False positives for users who played the Anti-Phishing Phil game. False positives are situations where people incorrectly label a legitimate site as phishing. Again, novices saw the greatest improvement in reducing false positives, and retained what they had learned.



**Reports** **User Accounts** **Modules**

**Modules**

**Security**

Learn how to avoid phishing emails and other email scams.

**Password Security**



Learn how to create and manage strong passwords.

**Phishing Phil**

Learn how to spot phishing attacks by identifying fraudulent URLs.

**Anti-Phishing Phyllis**



Learn how to recognize phishing emails by identifying red flags.

**Social Networks**

Learn how to navigate social networks safely.

**Smartphone Security**

Learn how to use your smartphone in a ways that protects you and your employer.

**Users**

**Average Score**

**Most-missed Items**

**Welcome, System Administrator!**

Here are some common administrative tasks:

- [Manage module licenses](#)
- [Manage user accounts](#)

**PhishGuru™**

Use the following link to manage your PhishGuru account:

[PhishGuru™](#)

# Example Topic: Email Security



email security

Box  
Sent mail  
Drafts  
Trash

Contacts

wombank  
www.wombank.com  
100 Wombat Way  
Pittsburgh, PA 15213  
724-555-1234

wombazon  
www.wombazon.com  
101 Wombat Way  
Pittsburgh, PA 15213  
724-555-8891

womboyage  
www.womboyage.com  
102 Wombat Way  
Pittsburgh, PA 15213  
724-555-7823

womzai  
www.womzai.com  
103 Wombat Way  
Pittsburgh, PA 15213  
724-555-3298

**To:** Phyllis  
**From:** Human Resources  
**Subject:** Information required

Dear Phyllis,

We are moving our tax records to a new system and need you to **verify your tax information for us**. Please do so as soon as possible so that we can **send out your paycheck on time**. Please reply with the following information filled in:

**Full name:**  
**Soc. Sec. #:**  
**Date of Birth:**  
**Number of dependents:**

Flag - this section indicates a fraudulent email

Ignore - this section is not a fraud indicator

Thank you for your attention in this matter.  
Office of Human Resources

# Example Topic: Passwords



## Passwords

Lesson 2 - Password creation

**Great job!**

Congratulations! Click "Next" to continue...

### Phrase-based passwords

1. Read the provided phrase
2. Use the phrase method to create a strong password
3. Use the "hint" button if you get stuck

three times seven

3X\$sevEn

**strong**

Create two strong passwords to move on!



# Other Training: Social Networks



## Social Networking

Lesson 2 How to spot scams

### 4 ways to Spot scams.



**3.b The message doesn't look "normal"**  
Does the grammar of the message not match how your friend usually writes?



**Bob Sullivan**

"Looking forward to hiking this weekend"

2 hours ago · Like · Comment

**Normal post from Bob.**



**Bob Sullivan**

"I found out who has a crush on me! you can 2!!  
<http://bit.ly/5vOFms>,"

2 hours ago · Like · Comment

**Weird post from Bob.**

*Bob's account has probably been compromised and the message is a scam.*

# Measurable



interactive  
cybersecurity training

Welcome **admin!** [Change Password](#) [Log Off](#)

Home **Reports** User Accounts Modules

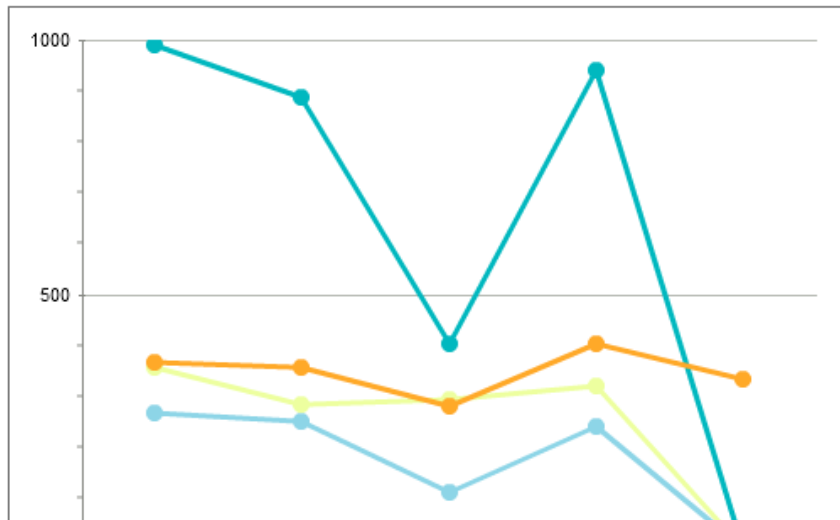
## Reports

- Unique Users
- Average Score
- Most-missed Items
- User Activity

### Home :: Average Score

Module  'From' Date  'To' Date

#### Average Score by Month



# Measurable



interactive  
cybersecurity training

Welcome **admin!** [Change Password](#) [Log Off](#)

Home Reports User Accounts Modules

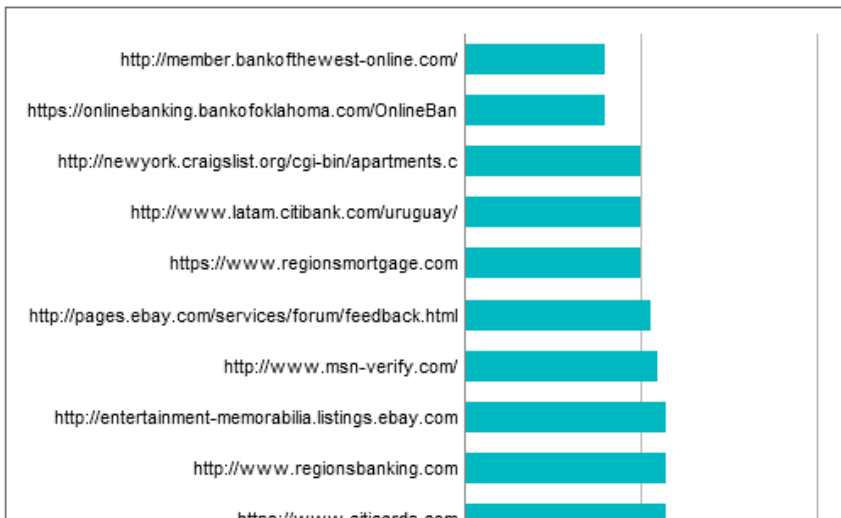
## Reports

- Unique Users
- Average Score
- Most-missed Items
- User Activity

### Home :: Most Missed

Module  'From' Date  'To' Date

#### Most Missed



# Case Study #1: PhishGuru

Canadian healthcare organization  
Three-month embedded training  
campaign

- 190 employees
- Security assessment and effective training in context



# Simulated Phishing Email

Template: My Phish Guru Campaign 05-03-2010

From Name: Yahoo Service Desk

From Address: servicedesk@yahoo.com

Subject: Password Change Alert

*I* **U** ABC | [List Icons] | Format | Font family | Font size | [Color Picker] | **Add Phishing Link**

Dear Yahoo Client,

Our records indicate that you have not changed your account password in the last 90 days, if you do not change your password in the next 5 days, your access to the email system will be terminated. Click the link below to update your password.

<http://www.yahoo.com/password/change.htm>

Sincerely,  
Yahoo Service Desk



# Case Study

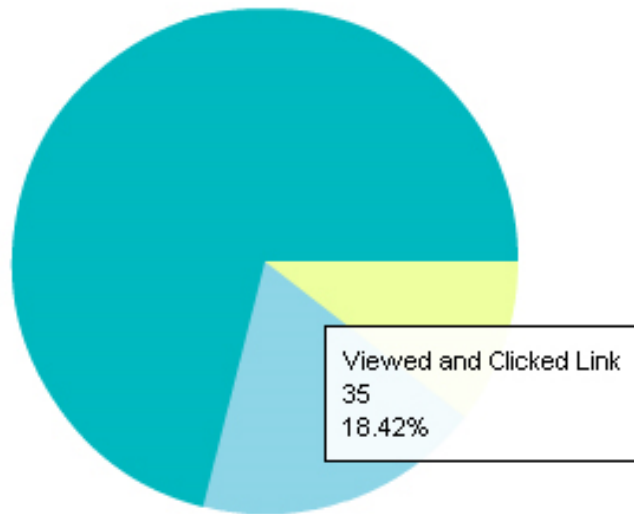
65



[My Account](#) | [Logout](#)

[My Campaigns](#) [New Campaign](#) [Contact Us](#) [Help](#)

## Campaign Responses



No Action Viewed and Clicked Link Viewed Email

## Campaign Statistics

Emails Sent: 190 of 190

Views: 55 of 190 people have viewed or clicked the email.

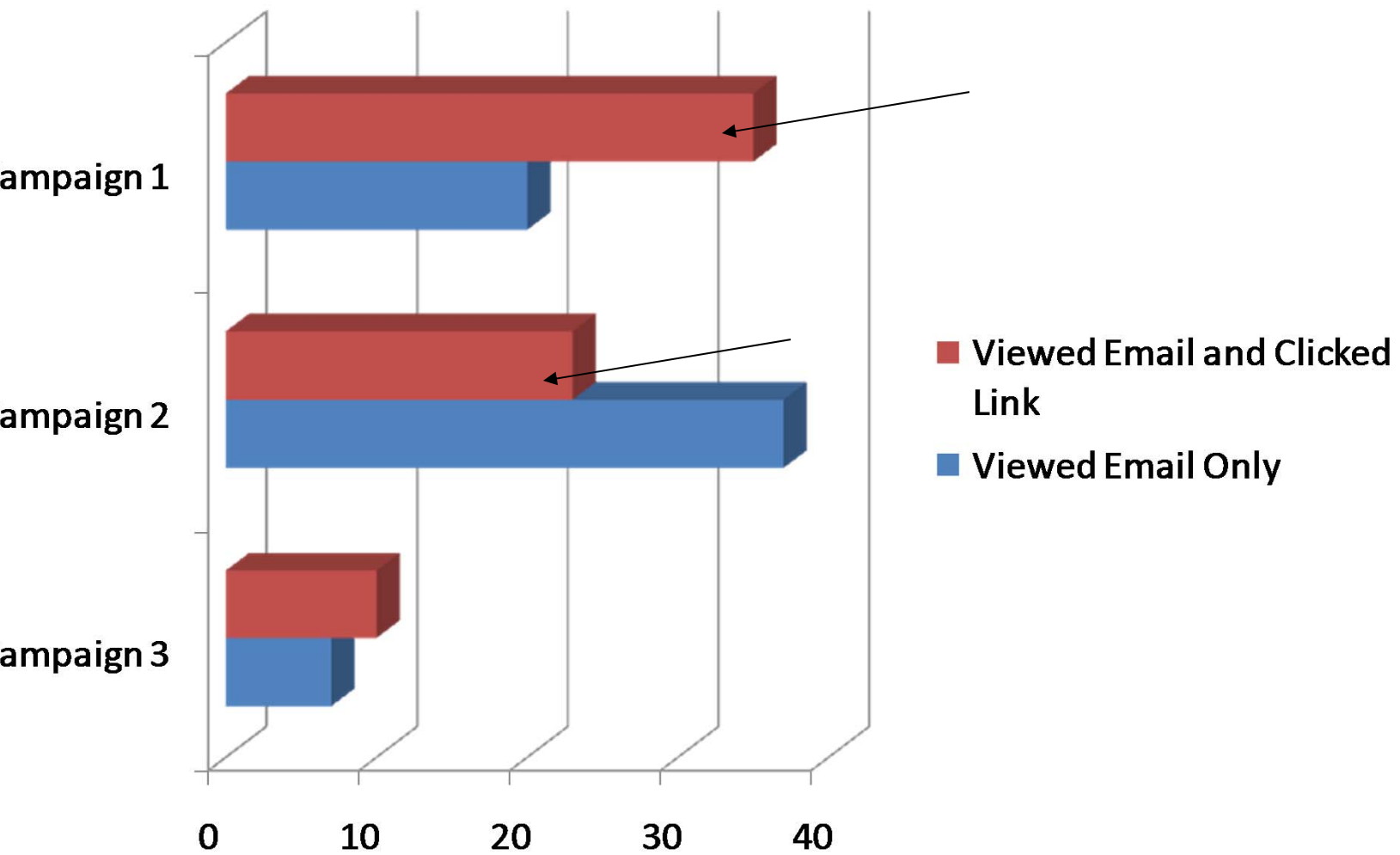
Campaign Start Date: May 04, 2010

Campaign End Date: Jun 01, 2010

# Measurable Reduction in Falling for Phish

	Viewed Email Only	%	Viewed Email and Clicked Link	%	Employees
Campaign 1	20	10.53%	35	18.42%	190
Campaign 2	37	19.47%	23	12.11%	190
Campaign 3	7	3.70%	10	5.29%	189





# Can We Educate End-Users?

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-- An IBM security specialist