

Motivational Instructional Design

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Abstract

This paper outlines the redesign of an instructional product to include motivational strategies. The instructional product is a web site developed to help users navigate an online database warehouse.

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Introduction

This past year I have been working with a Syracuse University research group, the Transactional Records Access Clearinghouse (TRAC). They have offered web access to their database warehouse since the late 1980's. Throughout this time various attempts have been made to offer help pages and tutorials for how to use their database tools to access the information available. The TRAC staff have not been satisfied with these materials and they are not widely used by their users, though nothing else exists to assist them.

I designed and developed the new TRAC Help web site to aid users of the TRAC database warehouse. For the purpose of this paper, I will evaluate and re-design portions of the site, incorporating motivational strategies.

Audience Analysis

The audience of the TRAC web site, as described by the TRAC staff, consists of primarily news reporters, lawyers, and librarians (academic, law, government, etc.). The site is basically divided into two (2) distinct parts. The public access site, trac.syr.edu (2005), is organized by federal government agency (DHS, FBI, DEA, IRS, ATF) and provides easy access to TRAC's published reports, topic spotlights, and other information, mostly about federal government issues. This portion of the site is accessible by anyone at anytime. The subscription site, tracfed.syr.edu (2005), offers direct dynamic access to a wide range of federal data concerning enforcement, staffing, spending, and other matters. This portion of the site is accessible to individual and corporate site license subscribers. These subscribers are the "bread and butter" for TRAC and are the primary target audience. Unfortunately, the primary source for information concerning this audience is derived from the experience and perceptions of the

TRAC staff. I was not able to conduct much of a front-end analysis. The TRAC staff felt that surveying the audience would prove fruitless and wanted more immediate results in terms of an tangible instructional product.

For the purpose of this paper, I take another look at the audience from a motivational perspective. For this analysis, I refer to John Keller's ARCS model of instructional design (1987) in which motivation is concerned with the users in regards to **A**ttention, **R**elevance, **C**onfidence, and **S**atisfaction. I've worked with TRAC now for about one (1) year. I have had limited direct contact with the web site users, however I have observed staff interactions with the subscribers. Primarily the interactions I have observed have been with subscribers who are reporters from various newspaper, radio, or television organizations. Some other observations have included librarians, either from a law library or from a research department at a news organization or large legal office. A large number of users have little or no experience with databases and varying experience with web navigation. It has been a pretty consistent concern of the TRAC staff, that users don't even know simple navigational cues such as the "hand" symbol indicating where to click on a web site containing various active links. This needs to be considered in terms of confidence and satisfaction elements. It also brings up some possible issues surrounding gaining the users' attention. In regards to relevance, the users have come to the TRAC site with a "need" for information regarding something about the government. The user is not even necessarily sure whether or not the information can be obtained from the TRAC web site. So, the information they want, gives relevance to their usage of the TRAC site, however, separate attention needs to be addressed to the relevance of their using the TRAC Help. Again, the TRAC staff has the perception that most of their users are reporters, short on time, wanting quick, easy, access to "the story" behind the data. This is a definite challenge to provide

and at times is not at all what the user gets. Often they just get a bunch of numbers, and they have to “create” the story behind them. These are the kind of issues that needed to be addressed by the TRAC Help. In designing and developing the TRAC Help, we had to acknowledge that this was a great deal of information, and it was just plain complicated to attain and therefore seemingly just as complicated to explain to users. TRAC Help turned into a site of its own, really, with an entire table of contents and various references back to related portions of the public and subscription sites. Specifically, I want to address the two Quickstart Guides (TRAC, 2005), or job aids, that were created as a quick and easy alternative to get new users started using the site(s).

In Figure 1, I have provided a summary of a motivational analysis of the audience, referring to the elements of the ARCS model (Keller, 1987). Basically, the audience analysis presents a real challenge for creating effective instructional materials. I perceive the audience to be highly motivated to obtain the desired information, but not necessarily motivated to do what is necessary to get the information. I think their desire would be to verbally tell someone what information they want and to have someone hand it to them. Unfortunately, that is *not* the kind service that TRAC provides nor is it cost effective or feasible given their staffing. Quite an instructional challenge indeed.

Audience Motivational Analysis	
Attention	Attention / interest for the web site content is high. Learning how to use the web site is desired but there may also be lack of patience for learning how to use the tools. Users want quick and easy. Need to keep this in mind. Potentially they are novice computer users - certainly a wide range of computer literacy or lack there of.
Perceived Relevance	Again, relevance of the web site content is high, but using the online tools may be very low. These are potentially low computer usage individuals and learning new tools that may never be used again may not be a priority.
Confidence	Confidence is varied. TRAC staff perceive many users to be computer illiterate so their confidence can be very low in terms of using the web and the database tools. Potentially these database tools are not common use tools so there can be a great deal of anxiety over using them.
Satisfaction Potential	Satisfaction is gained in obtaining the desired information from the database. Using the instructional materials to learn how to use these tools will increase satisfaction. No real feedback opportunity exists.

Figure 1 Audience motivational analysis according to Keller's ARCS model of instructional design.

Motivational Objects and Assessment Plan

Initially, I decided on three (3) objectives for the TRAC Help web site. TRAC Help will help users: (1) Determine what information is available through TRAC (the public access site) and TRACFED (the subscription access site), (2) Decide where to go to find the data needed, and (3) Learn how to use the tools effectively to create customized analysis.

First, I want to discuss the instructional design objectives as they apply to motivation. In Figure 2, I show the sub-categories of the ARCS model of instructional design (Keller, 1987) with corresponding motivational objectives and measures.

Attention		
Sub Categories	Motivational Objectives	Motivational Measures
A1: Perceptual Arousal - capture interest	Users will demonstrate an interest in using the TRAC Help pages to determine what information is available, where the information can be found within the public access and subscription sites, and how the data mining tools can be used to obtain the desired data from the TRAC data warehouse.	Self report, usage statistics from the web logs, and decrease in the number of help calls overtime.
A2: Inquiry Arousal - stimulate attitude for inquiry		
A3: Variability - maintain attention		
Relevance		
Sub Categories	Motivational Objectives	Motivational Measures
R1: Goal Orientation - meet learners needs	Users will demonstrate a desire to learn how to determine what information is available, where the information can be found within the public access and subscription sites, and how the data mining tools can be used to obtain the desired data from the TRAC data warehouse.	Self report, usage statistics from the web logs, and decrease in the number of help calls overtime.
R2: Motive Matching - provide appropriate choices, responsibilities, and influences		
R3: Familiarity - tie instruction to the learner experience		
Confidence		
Sub Categories	Motivational Objectives	Motivational Measures
C1: Learner Requirements - build positive expectation of success	Users will express a higher degree of confidence in their ability to navigate the public access and subscription sites to determine what information is available, where the information can be found within the public access and subscription sites, and how the data mining tools can be used to obtain the desired data from the TRAC data warehouse.	Self report.
C2: Success Opportunities - enhance belief in competence		
C3: Personal Control - learners see success as based on own efforts and abilities		
Satisfaction		
Sub Categories	Motivational Objectives	Motivational Measures
S1: Natural Consequences - provide for use of acquired skill / knowledge	Users will indicate that the TRAC Help was effective in helping them to determine what information is available, where the information can be found within the public access and subscription sites, and how the data mining tools can be used to obtain the desired data from the TRAC data warehouse.	Self report.
S2: Positive Consequences - reinforcement of success		
S3: Equity - anchoring a positive feeling about accomplishments		

Figure 2 Motivational objectives and assessments for the instructional design of TRAC Help.

Motivational Strategies

In Figure 3, I show the potential motivational strategies that could be used to accomplish the instructional design objectives for the TRAC Help pages using Keller's ARCS model of design (1987). These strategies can be employed throughout the entire TRAC Help site to encourage the motivation of the users. For the purpose of this paper I will illustrate only how they apply to the Quickstart Guides (TRAC, 2005).

Attention	
Sub Categories	Motivational Strategies
A1: Perceptual Arousal - capture interest	Audio-visual effects, absence of distractions, active responding, brief instructional "chunks", consistent screen format, functional integration, use of "animation" only to support the instruction
A2: Inquiry Arousal - stimulate attitude for inquiry	
A3: Variability - maintain attention	
Relevance	
Sub Categories	Motivational Strategies
R1: Goal Orientation - meet learners needs	Clearly defined goals / stated importance, create a personal experience, graphic illustrations, use of relevant examples in proper context
R2: Motive Matching - provide appropriate choices, responsibilities, and influences	
R3: Familiarity - tie instruction to the learner experience	
Confidence	
Sub Categories	Motivational Strategies
C1: Learner Requirements - build positive expectation of success	Clearly defined goals / stated importance, mention prerequisite skills / knowledge / attitudes (s/k/a) necessary for success, match learning requirement to prereq. s/k/a, provide multiple entry points into the instructional sequence, use a menu-driven structure, provide user-control, immediate / convenient access to the menu(s), exit control and pacing control
C2: Success Opportunities - enhance belief in competence	
C3: Personal Control - learners see success as based on own efforts and abilities	
Satisfaction	
Sub Categories	Motivational Strategies
S1: Natural Consequences - provide for use of acquired skill / knowledge	Transfer to subsequent task(s), structure and content consistency
S2: Positive Consequences - reinforcement of success	
S3: Equity - anchoring a positive feeling about accomplishments	

Figure 3 Motivational strategies for the instructional design of TRAC Help.

Final Design

In Figure 4, I show the original Quick Start Guide, available through 2004. This guide was available as a *PDF* file (TRAC, 2005. Retrieved 8/8/05 from <http://trac.syr.edu/guides/quickstart.pdf>). It was a fourteen page document consisting of all text. There were no graphics illustrating the context of the document. This document was basically very discouraging to use by the user and the TRAC staff did not like it either.

[The Quick-Start Guide to TRAC and TRACFED

The Transactional Records Access Clearinghouse (TRAC) is a nonpartisan data gathering, data research and data distribution organization associated with Syracuse University. Its mission:

To provide the American people with comprehensive information they need to fairly judge the effectiveness of the federal government.

Using data obtained from many government organizations largely through the Freedom of Information Act, TRAC has built a democracy oversight tool of unprecedented accuracy, magnitude, and ease of use.

TRAC was established in 1989 as a research center at Syracuse University. It has offices there, and in Washington, D.C. TRAC is supported by Syracuse University, subscriber fees, and numerous charitable foundations. For a complete list of TRAC's foundation supporters, customer case studies or to learn more about these philanthropic organizations, follow the [About Us](#) link on our home page.

TRAC maintains two Web sites – one is a free public site, the other is a data warehouse known as TRACFED. Both can be accessed from TRAC's public site and home page at: <http://trac.syr.edu>

Public Site

As a public service, TRAC maintains a free online destination that offers data, statistics and reports on six Federal enforcement agencies. The TRAC public site is arranged by agency and features data sets, stats, historical essays and maps for the following agencies: Customs, INS, ATF, DEA, FBI and the IRS. Each of these Sites is updated periodically. These updates are frequently accompanied by TRAC Special Advisories.

The public site is a good starting point for users who are unfamiliar with TRAC or simply wish to obtain a broad overview of agency activity. The public site's [TRAC at Work](#) link provides summaries and examples of how reporters, lawmakers, researchers and other users have used TRAC data.

Figure 4 The original Quick Start Guide to TRAC and TRACFED available through 2004.

In Figure 5, I show the first draft of the new Quickstart Guide. This first draft was released in development to the TRAC staff for evaluation and comment. It was noted that the background image created a distraction; the text did not stand out enough or was hard to read, some wording needed to be revised, and it was hard to focus one's attention on the relevant information. The one unanimous comment was the effectiveness of a one page document for ease of use.



A unique web-based source for complete, authoritative and understandable information about federal government enforcement.

Quickstart Guide

trac.syr.edu

For access to:	Select:
<p>Published Reports Topics include terrorism, IRS, civil rights, environment, and more Recent reports and archives</p>	<p>Click the TRAC-REPORTS icon on trac.syr.edu</p> <p>Recent Reports Archives</p>
<p>Spotlight Reports Access to data on which the report was based Direct dynamic access to the data warehouse <input type="checkbox"/> (Spotlight only subscription available.)</p>	<p>Spotlight Choose from the different reports available.</p>
<p>Federal Enforcement Agency Investigative Data Latest Figures - What is the agency doing nationally? District Enforcement - What is the agency doing in your area?</p>	<p>Click the desired agency icon.</p> <p>Latest Figures District Enforcement Choose from the different reports available.</p>

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Figure 5 First draft of the TRAC Quickstart Guide, retrieved from development files, dated 6/20/05.

In Figure 6, I show the TRAC Help Introduction page, <http://tracfed.syr.edu/trachelp/index.shtml>. This page is the entry point for the TRAC Help web site. It explains what users can expect from the site in general and the help pages. Users access the individual help pages through a menu that appears on all pages throughout TRAC Help. Specifically the Quickstart Guides (TRAC, 2005) are suggested as starting points near the bottom of this introduction page. This page also contains the instructional / learning objectives to gain the attention of the user. I show this page merely to point out how the user is first introduced to the TRAC Help pages.

TRAC Help

Introduction

Transaction Records Access Clearinghouse (TRAC) is a data gathering, data research, and data distribution organization associated with Syracuse University. Transactional refers to data about the activities of the federal government from the federal government's Freedom of Information Act (FOIA) is our massive data warehouse (more information.)

TRAC's general data procedures are to (1) obtain the data (requires background research on agency information systems, informal requests, formal FOIA requests, and sometimes lawsuits), (2) run statistical validity checks, and (3) prepare the data for entry into the warehouse (includes initial preparation to interpret codes, merge files, and more, plus monthly update preparation of searching for and adding new codes, linking records, etc.).

TRAC's Websites (URL, internet address):

- TRAC (trac.syr.edu) is a free public web site that provides easy access to TRAC's published reports, spotlights, and other information, mostly about federal enforcement issues.
- TRACFED (tracfed.syr.edu) is a subscription site offering direct dynamic access to a wide range of federal data concerning enforcement, staffing, spending, and other matters.

Website Navigation:

- Most graphics are clickable – look for the "hand" symbol when the cursor hovers over an active link.
- Click on **TRAC Help** above if you want to return to this page.

As you use this TRAC Help website, links to the **TRAC** and **TRACFED** websites open in new browser windows so that you can continue to view the help pages while you refer to the actual site. Links within these TRAC Help pages will open in the same browser window so that you can browse from page to page.

TRAC Help will help you:

- Determine what information is available through **TRAC** and **TRACFED**
- Decide where to go to find data you need
- Learn how to use the tools effectively to create customized analysis

Suggested starting points:

- [TRAC Help table of contents](#)
- [Quickstart: TRAC public access site.](#)
- [Quickstart: TRACFED subscription site.](#)
- [How to use the TRAC Help "SHOW ME" tutorial movies.](#)
- [How to create a TRAC Internet shortcut on your desktop.](#)

TRAC
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Figure 6 TRAC Help current introduction page on <http://tracfed.syr.edu/trachelp/>.

In Figure 7, I show the existing TRAC and TRACFED Quickstart Guides currently on the TRAC Help web site. These Quickstart Guides are laid out in a format consistent with the instructional / learning objectives showing 1) what information is available, 2) where to find the data needed, and 3) how to use the tools. It is these quickstart guides that I suggest applying additional motivational strategies to.

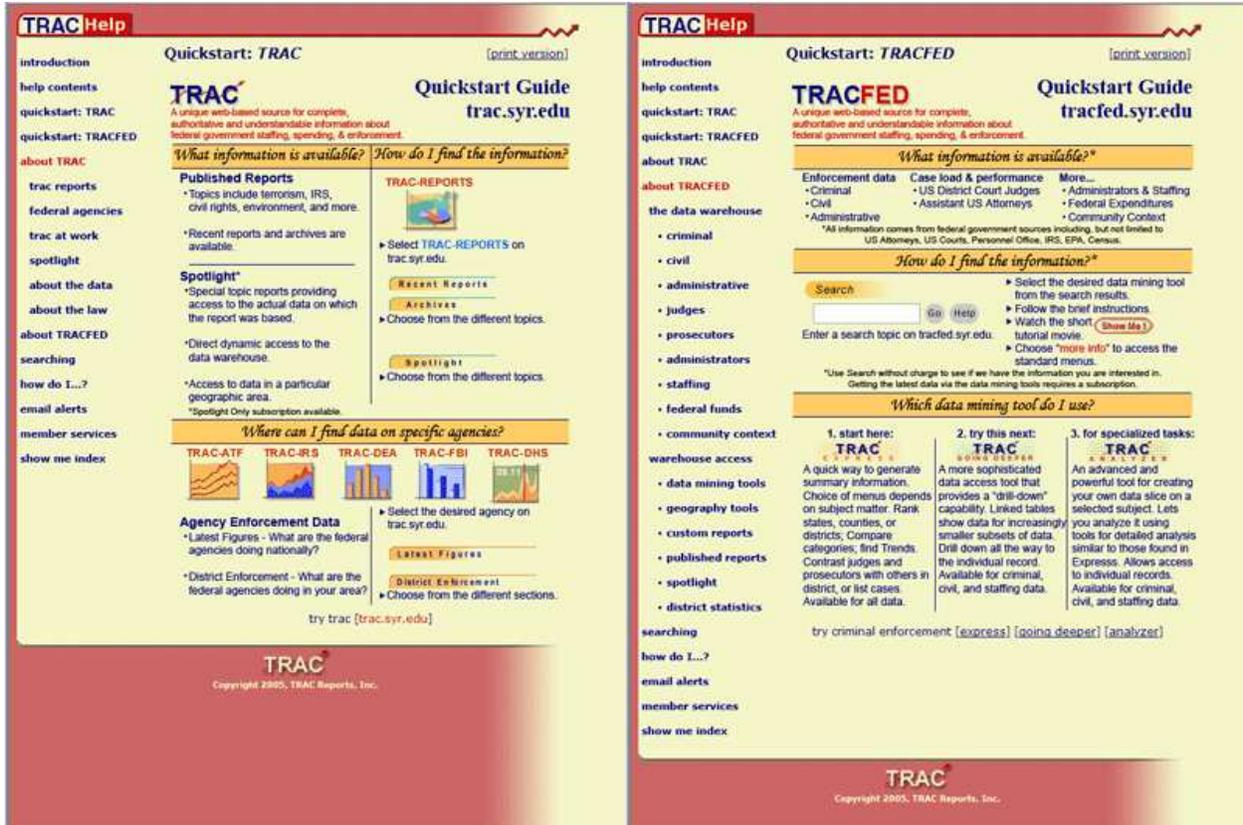


Figure 7 TRAC Help Quickstart Guides for the public access and subscription sites.

Potentially, these quickstart guides will be one of the most used pieces of the entire TRAC Help web site. The TRAC staff wanted a “quick and dirty” one page job aid for users. The web site includes a print version in *PDF* format that the user can print out for reference later. The individual sections of this one page “image” are also clickable, linking the user to corresponding topics within the TRAC Help web site (i.e. clicking on the TRAC-REPORTS icon in this quickstart guide links the user to the help page regarding TRAC Reports, clicking on the description of Spotlight takes them to help on Spotlight, etc.).

Additionally, these guides should perhaps list the prerequisites skills, knowledge, and attitudes required. This gives the user a starting point. It will perhaps inform them of the fact that this is a data warehouse and that by its very nature it is complex information and complex tools are needed to access the data. This is information that may help the perceptions of the user in ease of use of the web site and how important the help section may be to their success in navigating the data. Success is hard to determine in this situation without the use of some sort of self report tool. It is highly suggested that an evaluation plan be implemented to survey and / or interview a select group of existing and new users to determine usage of the help pages.

Conclusion

To conclude, motivational elements are important to include in instructional design of materials. It is also useful to use these elements to analyze existing materials and shed some light on areas that may have been overlooked.

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