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# *Applied Use of a Health Communications Model to Generate Interest in Learning*

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***Abstract***

*Educators are regularly challenged to design instruction that motivates learners. If interest is lacking, the challenge can be even greater. Tailoring is a message design technique that could help to stimulate interest and consequently, motivation to learn. Effective tailoring requires the formal assessment of learner characteristics and the integration of those characteristics into a given message. Knowing which elements to tailor, however, should not be left to guesswork. This article describes how a health communications framework guided the design and development of three tailored lesson introductions. A step-by-step description of the framework, how it was used, and the resulting product are shared.*

## Introduction

"What's the point?" "But when will I ever need to know this?" "What does this have to do with me?" Questions like these are often asked by students uninterested in performing a suggested learning task. If personal interest in a given task is lacking or situational interest has not been generated, educators may find students unmotivated to learn a given concept, practice a suggested skill, or adopt a suggested attitude. Unfortunately, according to Lipstein and Renninger (2006), many educators do not know or do not recognize their potential role in generating student interest. Consequently, a teacher's instruction may unnecessarily be less effective and the learning task may be undervalued by students.

Interest, according to Linnenbrink and Pintrich (2002), can be personal or situational. "Personal interest," they state, "is thought to be somewhat stable over time and partially a function of individual preferences as well as aspects of the task" (p. 318). Situational interest, on the other hand, "is based entirely on the features of the learning context and may be short-term or long-lasting" (Linnenbrink & Pintrich, 2003, p. 319). Although situational interest may only be short-term, its effects do not go without significance. Schiefele (1999), in a review of 14 studies on situational interest, found a significant correlation between situational interest and text learning. Learners, in finding the content of a text to be interesting, had consequently gleaned more from what they had read. Also to be considered, Hidi and Harackiewicz (2000) point out there are many topics and skills taught in school for which students may not have pre-existing interests. For this reason, as well as the complexity of trying to appeal to each learner's unique interests makes the generation of situational interest a more feasible approach to generating motivation to learn.

When should and by what means can educators generate situational interest? Regarding when, because an educator ideally needs to capture his or her audience from the start of instruction, a lesson's introduction is the ideal place to generate situational interest. A student who only becomes motivated to learn midway through a lesson may miss out on critical or foundational concepts presented in the beginning. Regarding the means, one of the ways by which situational interested is generated, according to Hidi and Renninger (2006), is through personal relevance. While a learner may not have a deep existing personal interest in a topic, he or she may be interested in learning when a task is relevant to his or her life. Tailoring may afford educators a practical solution to increase relevancy.

## Tailoring

Tailoring, is a message design technique that incorporates formally assessed audience characteristics into the content of a message, thus making the content of the message personally relevant (Kreuter & Wray, 2003). Assessed characteristics may include, but are not limited to, sociodemographic, behavioral, motivational, and psychosocial factors as well as physical characteristics. Strecher and Kreuter (1999) explain the rationale for using tailoring as a process. By tailoring materials, unessential information is eliminated; what remains is more personally relevant. When information is relevant, it is more likely to be processed thoughtfully, and thus, is more successful in guiding a person to make a suggested behavior change (Kreuter, Oswald, Bull, & Clark, 2000; Latimer, Katulak, Mowad, & Salovey, 2005; Petty & Cacioppo, 1981; Strecher & Kreuter, 1999).

The key to an effective tailored message lies in strategically identifying which elements to tailor and how best to manipulate them. Simply addressing someone by their first name or using a font or color background that appeals to the user may not be enough to generate situational interest. The remainder of this article shares a formative evaluation in which a health communications model was applied to the design and development of tailored lesson introductions. These lesson introductions would later be used in a larger study to generate motivation to learn a potentially undervalued but necessary skill. A summary of that study is shared in the next section.

## A Theory-Based Message Design Framework

The communications model used to guide the design and development of three tailored lesson introductions was the Persuasive Health Message (PHM) Framework (Witte, 1995). The *Persuasive Health Message* (PHM) framework is a theory-based message design process that helps educators strategically identify audience beliefs to change, reinforce, and introduce within the context of a message. According to Witte (1995), the PHM Framework is rooted in three different persuasion theories: the Theory of Reasoned Action (Fishbein & Ajzen, 1975), the Elaboration Likelihood Model (Petty & Cacioppo, 1986) and the Extended Parallel Process Model (Witte, 1992). Each of these three theories and their relationship to the PHM Framework are briefly described next.

The Theory of Reasoned Action (Fishbein & Ajzen, 1975) proposes that a person's behavior is predicted by intentions, which are predicted by that person's attitude toward the behavior and subjective norms. The researchers argue that to change a behavior, you must identify and change the underlying set of beliefs. In the PHM framework, audience's beliefs and salient referents are assessed characteristics used to develop an audience profile. This profile helps to guide the design and development of appropriately tailored messages.

The Elaboration Likelihood Model (Petty & Cacioppo, 1986) emphasizes information and the relationship between information processing and behavior change. The researchers proposed messages are processed either peripherally or centrally. Peripherally processed messages use low level cures such as attractiveness and credibility to process to guide decisions. Such messages are not thoughtfully processed. Centrally processed messages contain relevant and/or important information. These messages are thoughtfully processed and are more likely to be considered. The PHM framework strives to guide the design of messages that are centrally processed.

Finally, the Extended Parallel Processes Model (EPPM) (Witte, 1992), the third theory, plays an extensive role in PHM framework generated messages. The EPPM suggests people exposed to a threat tend to respond in one of three ways: *danger-control*, *fear-control*, or *low/no threat-control* (Gore & Bracken, 2005; Morrison, 2005; Witte, 1994, 1998). One's state is determined via responses to risk assessment questions. These questions ask participants to rate their agreement with statements about the severity of and their susceptibility to a given threat, their self-efficacy to perform a suggested response, and the response efficacy of a suggested response (i.e., how likely the suggested response will prevent the threat).

To determine one's risk response state, the added sum of their threat severity and susceptibility assessment responses are subtracted from the added sum of their self and response-efficacy assessment responses. [(Self-efficacy + response-efficacy) – (threat severity + threat susceptibility)]. This score is referred to as the *critical value*. If the critical value is a positive number (i.e., their efficacy level is higher than the perceived threat severity or susceptibility), then the target audience is in a state of danger control. If it is a negative number (i.e., their efficacy levels are lower than the sense of threat or susceptibility), then the target audience is in a state of fear control. If the critical value is a low number (a 1 or 2) *and* their threat and efficacy responses are low (<3), then the audience is in a state of low/no threat control (Witte et al., 2006).

Each of the response states is associated with a different behavior (Witte et al., 2006). Danger-control behaviors include learning more about the threat or taking action to reduce or eliminate the threat. Conversely, fear-control behaviors usually include a form of message rejection and little action. Finally, low or no-threat control responses usually result in no action. Of the three response states, the danger control state is the preferred state from an educator's perspective (Witte et al., 2001). Individuals in a state of danger-control are more likely to adopt a suggested response. Thus, it is the goal of the PHM framework to guide the design of messages that move individuals to a state of danger control, or maintain them in that state if they are already there. This goal is accomplished by addressing threat and efficacy perceptions in message design and development.

Although the PHM Framework has primarily been used to design motivating messages for health and safety education (McDaniel, Casper, Hutchinson, and Stratton, 2005; Witte, 1995; Witte, Peterson, Vallabhan, Stephenson, Plugge, Givens, et al., 1992), the framework can be used strategically to solicit a suggested instructional behavior or to propagate a suggested belief through the generation of situational interest. For example, the three tailored lesson introductions developed in this formative evaluation served as the intervention for a larger study investigating the impact of tailored lesson introductions on motivation and cognitive achievement (Banas, 2007, 2008). In that study, pre-service teacher education students were surveyed regarding their threat and efficacy perceptions about the risks associated with not recognizing and then using poor quality information from the internet and the act of learning how to evaluate websites as a suggested response. Responses were used to calculate their risk response state (whose name was not disclosed, but rather numbered 1, 2, and 3). Depending on their risk response state, students were given an internet address to a web page containing the appropriate tailored lesson introduction. Control group risk response states were also calculated, but they were directed to the existing standard lesson introduction rather than a tailored introduction. After reading the introductions, students were directed to an online tutorial made available through Xavier University, Cincinnati, Ohio. The tutorial, entitled "Evaluating Websites" (http://www.xu.edu/library/xututor/evaluating/ index.cfm), teaches learners how to locate reliable and relevant internet resources.

Results of the tailored introduction study (Banas, 2007, 2008) indicated significantly higher levels of motivation

amongst experimental group participants, particularly in regards to self-reported task attraction $t(96) = 3.425$, $p < .001$; $d = .737$). Positive trends were also noted for self-reported task relevancy, $t(96) = 2.212$, $p < .05$; $d = .450$, and cognitive performance $t(93) = 1.729$, $p < .10$; $d = .424$). Cognitive performance was measured by the score earned on the existing post-tutorial quiz. In light of these results, the PHM Framework could assist educators of areas other than health to stimulate motivation to learn.

## The PHM Framework: Step By Step

Effective messages, according to the PHM Framework (Witte, 1995), require attention to two primary factors—constants and transients. *Constants* are the structural components that appear in every message, regardless of the issue. These structural components include threat severity and susceptibility, self-efficacy to perform the recommended response, the efficacy of recommended response, the message and source cues, and an audience profile. *Transients*, on the other hand, refer to the situation and audience specific content written into the constant structures. This content is derived from collected information about the target audience, their beliefs, and their salient referents.

Transients, according to Witte, Meyer and Martell (2001), are best uncovered via formative research. To conduct formative research following the protocol of the PHM Framework, Witte et al. (2001) suggest taking three primary steps. These steps include: 1) Determine audience, goals, and objectives; 2) Determine salient beliefs, salient referents, and message preferences; and 3) Analyze results and develop the message(s). Each of these steps and how they were applied to develop the tailored lesson introductions for a lesson about website evaluation are described next.

### Step One: Determine Audience, Goals and Objectives

Step One is a foundational step. Knowing one's audience, goals, and objectives will drive the content (i.e. transients) of a message for a given audience and situation. In the case of this formative evaluation, the goal is to prevent harm that could stem from not recognizing and then using poor quality information found on the internet. While the Internet offers an endless supply of advice to those who seek it, no government authority is responsible for the evaluation and regulation of information found, leaving online information seekers to their own self-defense. Despite the potential risks involved with making decisions based on information found on the internet, a study conducted by the Pew Internet and American Life Project by (Fox & Rainie, 2002) indicates that 75% of online health seekers rely only on common sense or a casual protocol to validate information. In light of this information, it appears that knowing how to or actively practicing website evaluation is a undervalued skill. For this reason, the objective of the tailored lesson introductions was to generate situational interest in learning how to evaluate websites.

Regarding the audience, the selected target population was college students. As young adults, college students, for the first time, are responsible for their own well-being and they may turn to the Internet as a source of information (Escoffery, Miner, Adame, Butler, McCormick, & Mendell, 2005). Thus, it is necessary for these young adults to be equipped with the website evaluation skills that will help them to discern poor quality from high quality information.

With university Institutional Review Board approval, fifty students from a 2006 drug education course at a Midwestern university were selected as the sample population. Not random, but rather was a sample of convenience, these students were enrolled in the author's class. Thirty-eight students of the fifty potential students volunteered without a reward or consequence. Of these, 92% (35) were under the age of 27. Twenty-five were female and thirteen were male. Twenty-nine students were undergraduates, three were graduates, and six were students-at-large.

### Step Two: Determining Salient Beliefs, Referents, and Message Preferences

Step Two of the PHM requires the message designer to survey a small sample of the target audience to uncover salient beliefs, norm referents, and message preferences. To collect data, a questionnaire was constructed (see Appendix). Many of the questions were derived from the questionnaire template published in Witte's et al. (2001) *Effective Health Risk Messages: A Step-by-Step Guide.* These questions (or more specifically their *format*, due to the fill-in-the-blank nature of the template) had been tested for validity and reliability in previous message design studies including Witte (1995). Open-ended questions probed participants to dispel perceptions about using the Internet to locate health information, their attitudes and beliefs about learning website evaluation skills, who would be in support of (or against) learning these skills, and perceived benefits of and barriers to learning.

Closed-ended questions required students to rate their agreement (on a Likert scale of 1 to 7) with statements about their *susceptibility* to and the *severity* of threats stemming from not learning how to evaluate websites. Students also rated their agreement with statements about the ability of the suggested response to prevent the threat (*response-efficacy*) and their perceived personal ability to practice the suggested response (*self-efficacy*). The purpose of these questions was to identify their risk response state, previously cited to be inherent to the Extended Parallel Process Model (Witte et al., 2001) and the PHM Framework.

The last data to be collected in Step Two of the PHM Framework relates to message cues and the audience profile. According to Green and Witte (2006), message cues are those variables that indirectly influence the processing of a message. Message cue variables in my questionnaire were specific to the type of message they preferred (comic, entertaining, real story, etc.). Audience profile questions were about age, gender, frequency of internet use to locate health information,

and the type of health information researched on the Internet. (Regarding the latter two components, health was emphasized to complement better the PHM Framework).

## Step Three: Analyzing Results and Developing Messages

The final step of the PHM Framework includes three components: an analysis of the data collected in Step Two, the development of prototypical target audience members, and the design of tailored messages for those members.

### *Analyzing Results*

Risk response results indicated response-efficacy ($M$ = 4.9; $SD$ = 1.70) and self-efficacy ($M$ = 5.92; $SD$ = 1.34) scores were higher than threat severity ($M$ = 2.65; $SD$ = 2.66) and susceptibility ($M$ = 2.74; $SD$ = 1.44) scores. See Table 1. When the mean sample threat scores (5.39) was subtracted from the mean sample efficacy scores (10.82), the result was a positive number (5.43) greater than 1 or 2. This means that the sample, as a whole, appeared to be in a state of danger control (threat is low and efficacy is high). These individuals felt confident about learning how to evaluate websites and they felt that learning how to evaluate websites could prevent negative consequences stemming from not recognizing poor quality information. They also felt that the risks associated with not recognizing poor quality information on the internet and their susceptibility to those risks was low. Recalling that a danger control state is ideal from an educator's point of view, the objective of a lesson introduction tailored for this audience would be to maintain participants in that state and to motivate a suggested response.

Table 1
*Threat and efficacy perception scores*

| | *N* | *M* | *SD* | *SE* |
|---|---|---|---|---|
| Susceptibility to threat | 38 | 2.74 | 1.45 | .23 |
| Severity of threat | 38 | 2.66 | 1.62 | .26 |
| Response efficacy | 37 | 4.95 | 1.70 | .28 |
| Self-efficacy | 38 | 5.92 | 1.34 | .22 |

Despite finding the audience was in a state of danger control, it would be a disservice to the concept of tailoring not to investigate whether other response states were present. When the risk response states were calculated for each individual, it was revealed that the majority, 75.6% ($N$ = 28) of participants were in a state of danger control; but, the other two risk responses states were present. Of the remaining, 18.9% ($N$ = 7) were in a state of low /no control (low efficacy, low threat perceptions), and 5.4% ($N$ = 2) were in a state of fear control (low efficacy, high threat perception). This meant there was a need to develop not one, but three different prototypical members (one for each of the response states), and consequently three different tailored lesson introductions. A chi-square goodness of fit test revealed that these response state variations were significantly different, $X^2(2, n = 37) = 35.243$, $p < .001$.

Other factors in need of analysis were preferred message type, frequency of internet use, most commonly researched health topics (for the purpose of building relevant examples), perceived barriers and benefits, and salient message referents. Regarding preferred message type rankings (with 1 being the highest rank), results indicated that most of the sample would pay greater attention to a realistic ($M$ = 1.89), emotional ($M$ = 2.97), or scary ($M$ = 3.83) message over an entertaining ($M$ = 3.97) or research-based message ($M$ = 4.08). As for frequency of researching health information on the Internet, 10.8% of participants research daily, 37.8% weekly, 27% monthly, and 24.3% a couple of times per year.

Table 2
*Chi-Square Test:Variation in reported threat and efficacy perception scores*

| | | | | | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| | *t* | *df* | *p* | *MD* | Lower | Upper |
| Susceptibility to threat | 11.67 | 37 | .000 | 2.74 | 2.26 | 3.21 |
| Severity of threat | 10.14 | 37 | .000 | 2.66 | 2.13 | 3.19 |
| Response efficacy | 17.71 | 36 | .000 | 4.95 | 4.38 | 5.51 |
| Self efficacy | 27.17 | 37 | .000 | 5.92 | 5.48 | 6.36 |

Regarding commonly researched health topics on the Internet, 89.1% indicated they research particular illnesses or conditions; 83.7% indicated they research issues related to nutrition, weight loss, or exercise; and 59.4% indicated they research sensitive health topics. Time/laziness (25%) was identified as the primary barrier to learning website evaluation skills. The most frequently mentioned benefits included greater confidence in information found (48%), improved internet research techniques (18%), and the prevention of the adverse effects stemming from poor quality or mismatched information (15%). Finally, teachers (24%) and parents (16%) were cited as the primary salient referents.

### *Designing the Message*

Participants had indicated that their preferred message type was "realistic." To pay heed to this preference, the message tone was kept conversational, a scenario was given to place the information in context, and relevant examples that included commonly researched health topics were provided. To counteract the perceived barrier of "time," the word "quick" was used to describe the lesson. Building upon one of the identified benefits, the message mentioned that learning how to evaluate websites would help them to become wiser and healthier consumers of information.

Recalling that the objective of the tailored introductions was to generate situational interest in learning how to evaluate websites, the introductions were designed to move learners into or maintain learners in a state of danger control (the risk response state in which one is most likely to take action). Because all three risk response states were identified as present in the selected audience, a tailored lesson introduction was needed for each state.

Introduction I addressed individuals in the fear-control processing state. See Figure 1. The message focused on increasing the individual's response and self-efficacy toward the recommended response. This was done by emphasizing the simplicity of and the outcome from learning website evaluation skills. Because the perceived threat in a fear-control response state is already higher than the perceived efficacy, the threat was mentioned, but without alluding to severe consequences. Finally, the message attempted to eliminate barriers to take action by providing an opportunity to learn the suggested response: learning how to evaluate websites.

Introduction II addressed individuals in the danger-control processing state See Figure 2. These individuals' efficacy perceptions were strong enough to counteract their threat perceptions, but they needed continued motivation to practice self-protection and reminders about the severity of the threat. To make the threat more serious, but not enough to push them into a fear-control state, this introduction in-

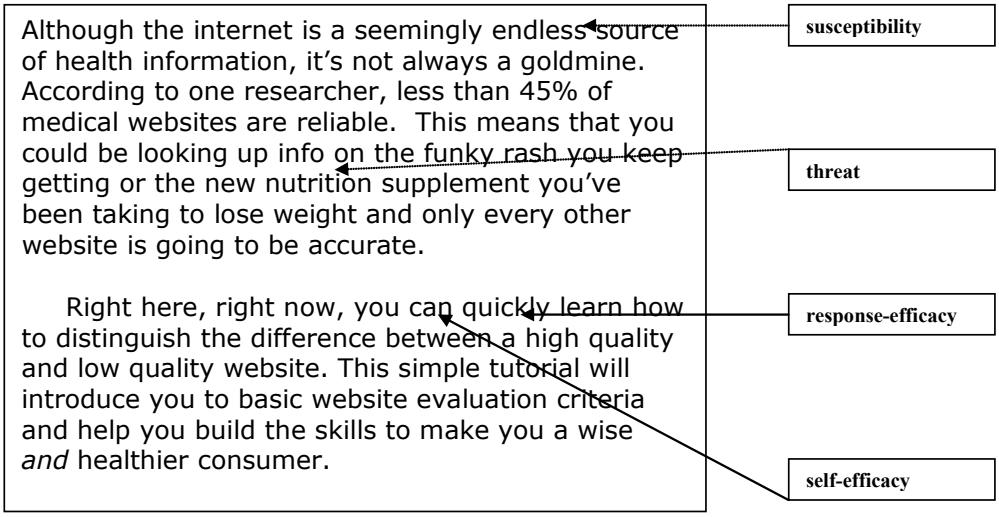


*Figure 1*: Introduction I. Figure 1: Introduction I.

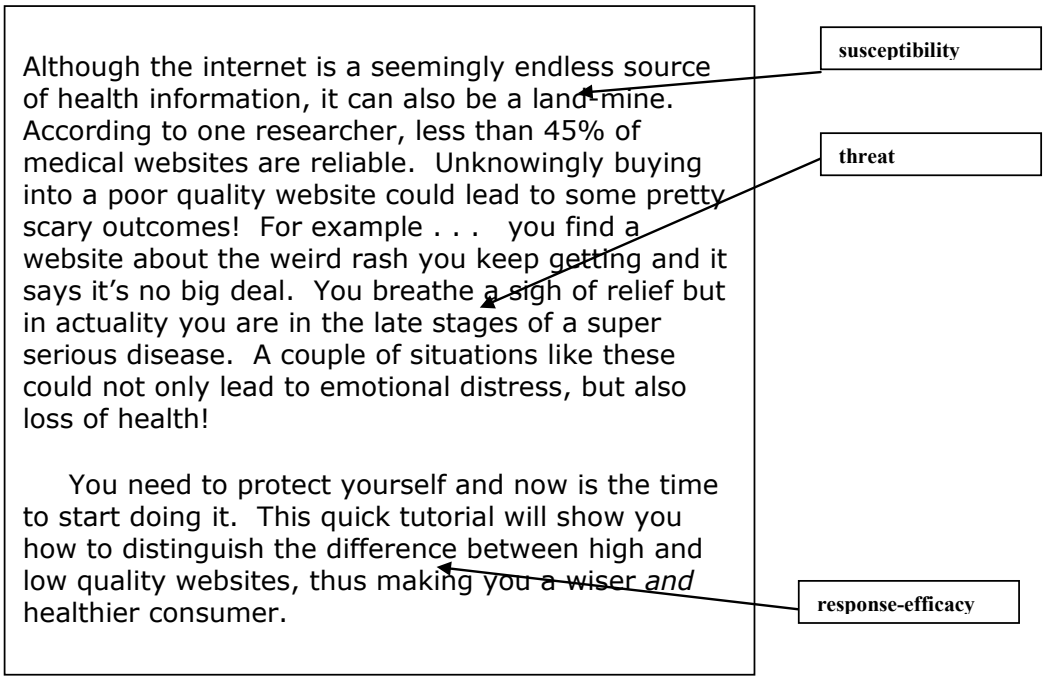


*Figure 2*: Introduction II.

dicated that the negative consequences could be worse than imagined, but offered a solution.

Introduction III addressed individuals who had low threat and efficacy. See Figure 3. These individuals needed to be convinced of the threat severity and their susceptibility; it also needed to increase their perceptions of efficacy. To make the threat more serious, the stakes for not learning how to evaluate websites were raised by mentioning the negative consequences that could happen to a family member, in addition to oneself. To increase feelings of susceptibility, this claim was added: "Are you confident that you can recognize the 55% of medical websites that are unreliable?" To increase perceptions of response efficacy, the introduction indicated that there was an effective solution.

Developed under the strategic guidance of the PHM framework, these messages were now ready to be used to stimulate situational interest to learn website evaluation skills.

### *Delivering The Message*

With the tailored lesson introductions designed, they were now ready to be used as the intervention in a larger study about the impact of tailored lesson introductions on motivation and cognitive performance (Banas, 2007, 2008). As indicated earlier, experimental group participants were exposed to an appropriately tailored lesson introduction based on their risk response states. The risk response states of control group participants were also determined; however, these individuals were only exposed to the standard lesson introduction. Results indicated significantly higher levels of motivation amongst the experimental group, particularly in terms of task attraction. Positive trends were also noted for perceived task relevancy and cognitive performance on the post-lesson quiz. A significant relationship between task attractiveness and task relevancy with learning intentions was also noted, indicating that attractive, relevant learning materials may be associated with improved learning behaviors.

## Conclusion

While the time or effort it takes to tailor instruction or components of instruction might first appear as costly, the benefits may be well worth those costs. Such efforts are particularly needed in electronic learning environments where disconnect may exist between learners and educators. Additionally, if one considers the wide variety of vital messages learners are exposed to every day, the need to differentiate is imperative. Using a theory-based communications framework, like the Persuasive Health Message Framework

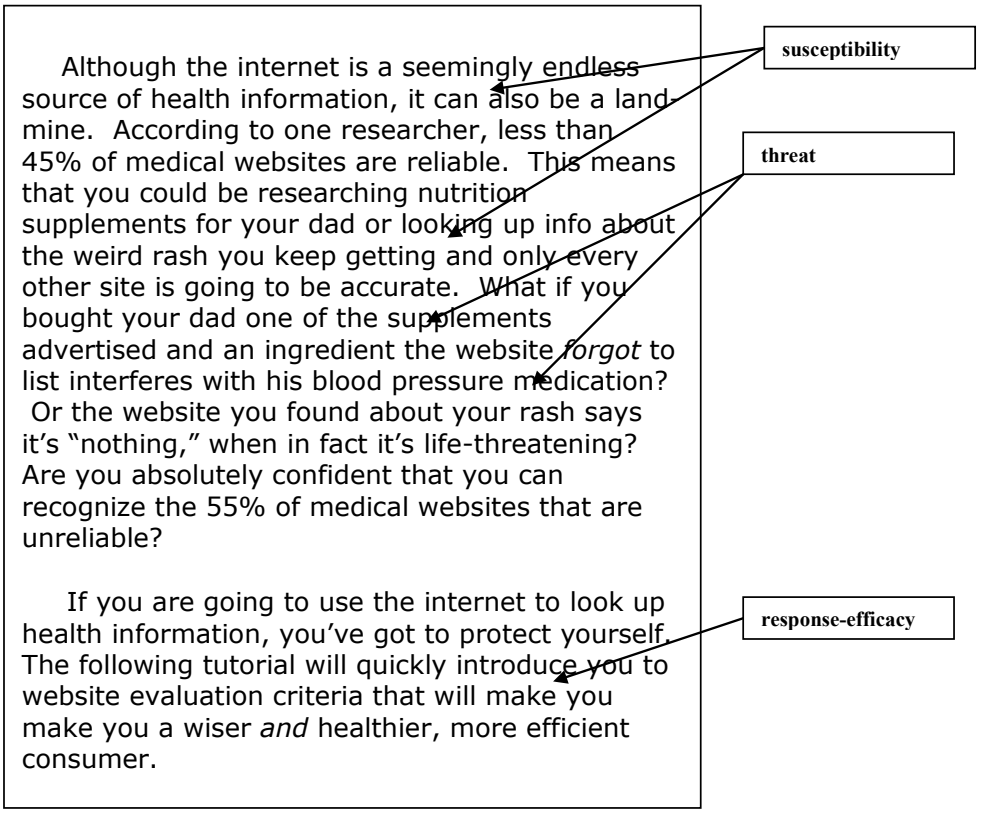


*Figure 3*: Introduction III.

(Witte, 1995; Witte et al., 2001), helps to build confidence into the predicted outcome of such efforts. In doing so, the answers to "What's the point?", "But when will I ever need to know this?" and "What does this have to do with me?" can be answered within the context of instruction. By using tailored lesson introductions, learners will know the answers to these questions before instruction even begins.

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## Appendix

### Open-ended Questions to Determine Salient Beliefs about the Threat, Appropriate Recommended Responses and Salient Referents

1. Have you or someone you know ever used the Internet to look up health information? (If yes, proceed to question 1a1 and answer all questions that follow. If no, proceed to question 1b1.)

   1a1. Describe some, if any, of the positive experiences in using the Internet as a source of health information.

   1a2. Describe some, if any, of the negative experiences in using the Internet as a source of health information.

   1b1. What, do you imagine, could be some of the positive aspects of using the Internet to locate health information?

   1b2. What, do you imagine, could be some of the negative aspects of using the Internet to locate health information?

2a. With regards to Internet-based health information, what would be the advantages of completing an online tutorial that teaches you how to identify a high quality website? [attitude toward the recommended response; perceived benefits]

2b. With regards to Internet-based health information, what would be the disadvantages of completing an online tutorial that teaches you how to identify a high quality website? [attitude toward the recommended response]

3. With regards to completing an online tutorial that would teach you how to identify a high quality website, is there anyone in particular who would be in support of OR against you learning this skill? What is relationship of those individuals to you and why would they be for/against you learning how this skill? [salient referents]

4. What, if anything, would keep you from learning how to identify high quality health information websites if taught this skill in an online tutorial? [perceived barriers]

### Closed-ended Questions to Determine Perceptions of the Threat and Recommended Response

5. I am at risk for experiencing negative health effects due to decisions I make or actions I take based on health information found on the Internet. [perceived susceptibility]

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Strongly Disagree | | | | | | Strongly Agree |

6. The chances of me experiencing *serious* negative health effects due to decisions I make or actions I take based on health information found on the Internet are great. [perceived severity]

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Strongly Disagree | | | | | | Strongly Agree |

*(Appendix continued on following page.)*

*(Appendix continued from previous page.)*

7. Learning how to identify high quality health information websites would prevent negative health effects due to decisions I make or actions I take based on health information found on the Internet. [perceived response efficacy]

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Strongly Disagree | | | | | | Strongly Agree |

8. Given the opportunity, I could easily learn how to identify high quality health information websites. [perceived self-efficacy]

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Strongly Disagree | | | | | | Strongly Agree |

**Additional Audience Variables to Determine**

9. Do you have access to the internet? If yes, is that access in a public or private setting?

10. Do you use the internet as a source of health information? If yes, how often do you use the internet as a source of health information? Check one.

___Daily
___Weekly
___Monthly
___A couple of times per year
___Never

11. What kinds of health issues/topics have you used the internet for as a source of information. (Check all that apply).

___Information about a particular illness or condition
___Looked for information about nutrition, exercise, or weight control
___Looked for information about prescription drugs
___Gathered information before visiting my doctor
___Looked for information about alternative or experimental treatments or medicines
___Looked for information about a mental health issue like depression or anxiety
___Looked for information about a sensitive health topic that is difficult to talk about
___Looked for information about a particular doctor or hospital
___Diagnosed or treated a medical condition on my own with consulting my doctor

12. Which type of educational message is most likely to catch and hold your attention? Please rank in order from most to least, with "1" being the most likely and "7" being the least likely.

___Messages that state research
___Entertaining message
___Comic-type message
___Message using stories of real people's experiences
___Message that influences me emotionally
___Scary message
___Other type of message_____

*(Appendix continued on following page.)*

*(Appendix continued from previous page.)*

**General Demographic Data**

13. What is your age?

___17-22
___23-27
___28-32
___33-37
___38-42
___43-47
___48-52
___53-57
___58-62
___63 and up

**14. Gender?**

___Male
___Female