

Module 1 - Content Strategies

Research Transcript

[0:00-0:17] Let's Do Chemistry Pilot Workshop

Welcome to the Module 1: Content strategies. My name is Marta, and I am one of the researchers for the Let's Do Chemistry project. If you have not already done so, please complete the introduction module prior to watching this video.

[0:18-1:03] Design strategies framework overview

As a quick reminder, in the introduction video, we previewed the design strategies framework that was developed as part of this project. This framework includes two types of strategies that can be intentionally designed into an activity; content and format. In this module, I will be focusing on the content strategies, in the left column, that support interest, relevance, and/or self-efficacy, which we learned about from the research connected with the Let's Do Chemistry kit activities. Just as a reminder, content strategies are the topics, information, or concepts that visitors discuss, think about, or hear about during an activity.

[1:04-1:27] Design strategies related to chemistry attitudes

Before we dive into the specific content strategies, we want to give you some perspective about how content and format broadly play into increasing visitor attitudes. You may notice on the upcoming graph that percentages for each area do not equal 100% as visitors may have talked about both content and format.

[1:28-1:58] Design strategies related to chemistry attitudes (with graph)

Overall, we saw that content strategies were most important for increasing visitors' feelings that chemistry is relevant. For interest, we saw that the difference between how many people talked about content or format strategies was much smaller, suggesting that content was about as important as format for feelings of interest. And for self-efficacy format strategies are standing out as more important.

[1:59-2:27] Final framework—content strategies

Revisiting our framework we teased in the introduction, we identified specific content strategies that seemed to support interest, relevance, or self-efficacy around chemistry. For this module we are going to focus on the content strategies we found to be effective, based on our research findings. A copy of this framework and our definitions are available in the research handout for this module.

[2:28-4:05] Content strategies: How to read our graphs

Throughout this section we will be sharing information about each of the content strategies, including a definition for the strategy, a graph that shows how frequently visitors attributed a design strategy to their increased feeling of interest, relevance, or self-efficacy, and an example from our visitors, from their response to the question “what about the activity made you feel that way?”

Definitions for each strategy are based off how the team was originally thinking about content for the original framework, as well as common responses that emerged from visitors’ answers. The research team used these definitions to analyze visitors’ responses to the question asking them to explain “what about the activity made them feel more interested in chemistry, that chemistry was more relevant, or that they were more confident understanding, talking about, or doing chemistry”

On the right you will see a graph, representing what percentage of visitors attributed their increased interest, in yellow, relevance, in green, or self-efficacy, in blue to that particular strategy. As the responses were open-ended, visitors had a wide variety of responses so in some cases the percentages you see in this graph might be small. Just as a note, we excluded from our framework any strategy mentioned by 5% or fewer visitors. We have included the sample sizes on the slides, which ranged from 176-207 responses for each question, to help put the percentages in context.

[4:06-5:03] Content strategies: Connections to everyday life

The first content strategy we will share is including connections to everyday life; this strategy seems to be important for all three attitudes but to varying degrees. This type of content includes information that helps a visitor make an explicit connection between the concepts in the activity and their own life or personal experiences. We saw that including connections to everyday life was very important for Relevance, as you can see in green, somewhat important for interest, as indicated in yellow, and while it did come up for self-efficacy, as you can see in blue, it seemed to be less important. One visitor brought

up connections to their everyday life when talking about things they recognized in the activity from home, such as mac and cheese or lipstick. The activity they tried, Nature of Dye, was about dyes, cochineal, and pH.

[5:04-5:57] Content strategies: Chemistry concepts

Another strategy that seems to be important for all three attitudes, is including chemistry concepts. Chemistry concepts refer to information about a basic concept, term, or idea of chemistry, or an explanation about the mechanism(s) behind a concept the visitors are learning about, such as a phenomenon that they are witnessing or discussing. We saw that this was important for all three attitudes, though slightly more often mentioned by visitors for interest and self-efficacy. In one activity, Nature of Dye, as you can see, the visitor shares that they learned a little bit about the pH scale. And in another activity, Rocket Reactions, the visitors learned about the how air was pushing the cap off a container that contained water, citric acid, and baking soda.

[5:58-6:47] Content strategies: Applications and uses

Applications and uses is a content strategy that seems to be important for relevance and interest. While this area has some overlap with connection to everyday life, this content is more specifically information about [human]made products or technologies that are created using chemicals or chemistry. We saw that using this strategy was very important for relevance, somewhat important for interest, and does not appear to be important for self-efficacy, as fewer than 5% of people mentioned it. The quote is from an activity, Build a Battery, during which visitors explored voltaic pile batteries. Visitors like this one talked about various other applications of batteries, such as ones that are used in cars or phones.

[6:48-7:47] Content Strategies: Connections across STEM topics

Another strategy important for interest and relevance was including connections across STEM topics. This includes content information that helps a visitor make a connection between chemistry and another STEM field or understand chemistry's role within those other STEM disciplines (i.e. biology, physics, animal physiology, etc.). The graph shows that while this was not a major strategy, connections across STEM topics did have some influence for interest and relevance if it was built into the activity. We saw that it was somewhat important for relevance and interest, but does not appear to be important for

self-efficacy. For example, visitors might recognize how using their sense of smell (a biology concept) relates to the molecular shape of that scent (a chemistry concept), as this visitor talked about after trying Chemistry Makes Scents.

[7:48-8:38] Content strategies: Societal issues

The last content strategy that is included in our framework is including societal issues. This is information about how the activity relates to or could be connected to a societal issue. Looking at the graph, you can see that this might not be as influential a strategy, although you have to consider that with hands-on activities, sometimes even topics that are built in don't always get brought up during an interaction, which may have been the case with some of our activities that tried to incorporate societal issues. We see that societal issues might play a role with relevance but do not appear to be important for interest or self-efficacy. In one activity, What's in the Water, a visitor talked about the connections that were made to their environment, as can be seen in this quote.

[8:39-9:07] Content strategy findings: Summary (slide 1)

To summarize, here are our main findings about content strategies and connections to chemistry attitudes, as shared in our final framework. The data showed that visitors felt the content included in an activity was especially important to increasing their interest and understanding of relevance. You will remember this from the first graph that we showed at the beginning of this module with the dark blue/green bars.

[9:08-9:30] Content strategy findings: Summary (slide 2)

There were several particular content strategies to consider when creating or modifying an activity. As seen in the first two graphs we shared for the individual strategies--connections to everyday life and chemistry concepts--were shown to boost all three interest, relevance, and self-efficacy around chemistry.

[9:31-9:42] Content strategy findings: Summary (slide 3)

And, in some of the later graphs we saw--applications and uses and connections to other STEM concepts-- were shown to boost interest and relevance.

[9:43-10:20] Final framework—content strategies

From these findings, we created the final framework for content strategies that would support interest, relevance, or self-efficacy around chemistry. This framework indicates the strategies that connect with different outcomes and can help as you plan your activities. You can find a copy of the framework in your Content Module packet, along with definitions and examples for each of these strategies, to use as you modify your activity to support the attitude outcomes you choose. Thank you for watching the Module 1: Content strategies video.