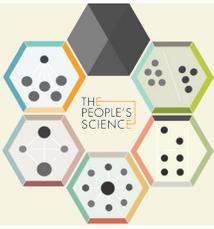


# TILT

twenty-first century  
information  
literacy  
tools



WORKSHOPS & TRAINING



# THE PEOPLE'S SCIENCE

## ABOUT US

In the past 20 years, we've seen more accessible content available than ever before, yet attitudes towards and understanding of science have not changed.

It doesn't have to be that way. Scientific evidence is playing a growing role in our personal and collective decision-making. We believe that an informed and empowered citizenry is crucial to overcoming the challenges that we face as people, as nations, and as a global community.

It can be challenging for the public, educators, and policy makers to distinguish between sensational and informed claims without training, support, and access. Scientists and non-scientists face a growing cultural gap that is bad for all of us.

The People's Science is designed to reduce this gap, through a centralized, interactive collection of projects that are accessible, empirically informed, and built on the foundation of collaboration between researchers, designers, educators, and the public.

**We are a 501(c)3 non-profit that is dedicated to providing equitable access points and educational tools to inform individual decision-making, foster self awareness, and facilitate systemic change.**

**Our mission is to improve the relationship between science, society, and the individual. Through the strategic design of complementary initiatives, we aim to provide practical tools that are technically, financially, and psychologically accessible to all.**

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## CONTACT INFORMATION

To learn more, please visit us online at [www.thepeoplesscience.org](http://www.thepeoplesscience.org).

For all general inquiries, please email [hello@thepeoplesscience.org](mailto:hello@thepeoplesscience.org).



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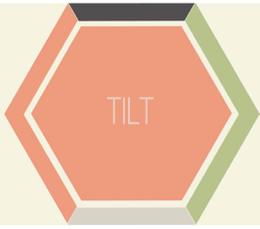
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# PACKET CONTENTS

The goal of this packet is to introduce collaborators, educators, and sponsors to the TILT project's mission and frameworks. This is designed to be a synthesis rather than a comprehensive guide. If you have any additional questions about a particular component or would like to work with us to deliver this content to your community, please contact us directly to discuss how we can best meet your needs.

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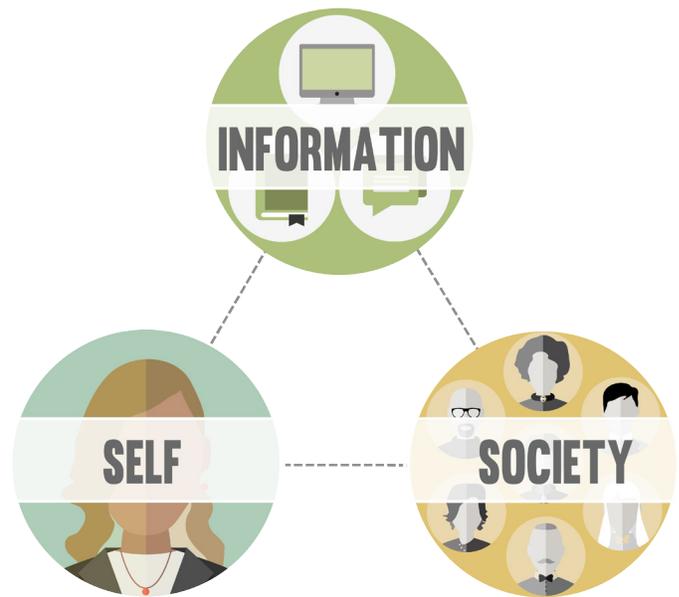
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# WHAT IS TILT?

The general public is becoming increasingly expected to navigate scientific evidence in their personal, professional, and political decision making. With the rise of new technology, the available information on any given topic is unregulated, varied, and highly accessible. In addition, our rate of collective learning is higher than ever, resulting in a dynamic knowledge landscape. As such, the skills and strategies for interacting with and applying modern information must be taught alongside an understanding of self, society, and the nature of science and media. Unfortunately, few lifelong learning opportunities exist to address these needs.

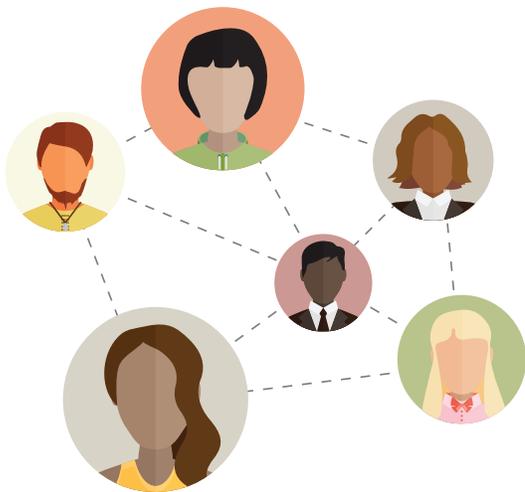
The Twenty-first century Information Literacy Tools (TILT) program is foremost an empirically-derived theoretical framework that characterizes the core competencies of contemporary information literacy. This includes scientific, media, and digital literacy components. Inspired by the latent potential of a single domino, we believe that each of these competencies, once mastered, has the potential to have a tremendous impact on an individual's global approach to and beliefs about themselves, others, and new information.

By blending strategies from the learning sciences, educational technology, psychology, and instructional design, TILT supports a number of curricula, workshops, and multi-media modules aimed at making these core competencies engaging and accessible. We partner with experts from across fields to develop a refined resource with a singular mission: promote the skills we need to build the world we want.



# WHO IS TILT FOR?

TILT is for everyone who interacts with self, society, or information. That being said, every context is unique, and as such, different contexts may require awareness of distinct mechanisms and strategies. All of our programs offer (i) a comprehensive demonstration of the current issues, (ii) insights into the nature of self, society, and information, and (ii) practical strategies for navigating the 21st century landscape. However, the specific goals, case studies, and approaches can be tailored for the following groups:



## Educators

Educators are constantly bombarded with unregulated tools, strategies, and products to improve their classroom. At the same time, they are uniquely driven to improve their methods and optimize the success of their students. This can make it difficult to critically analyze popular claims stemming from seemingly credible sources. We focus on major issues within education, and rather than taking decisive positions on these issues, we prepare educators to become empowered curators of relevant knowledge and resources in their classrooms.

## Policymakers

There is a clear gap between contemporary evidence and many guiding policies. Evidence is constantly updating, and our political infrastructure often lags behind empirical progress. At the same time, policymakers themselves face the challenge of sifting through compellingly crafted information from a wide range of sources, and coming to decisions based on provisional evidence. From local to international policymakers, we focus on best practices for negotiating competing evidence with real world needs, selecting and synthesizing sources for the self and others, and taking an active role in uprooting inertial policies in light of new evidence.

## Business Leaders

The business world is prone to sensationalized claims from unsubstantiated sources. While often benign, these claims can result in distraction, counterproductive practices, and misattribution of resources. We focus on core business themes such as interpersonal communication, leadership, creativity, infrastructure, and motivation to prepare non-profit and business leaders and entrepreneurs to develop evidence-savvy strategies in the face of claims that may hurt or hinder the success of themselves and their company.

## General Public

With health decision-making, navigating relationships, assessing ethical and personal risks of budding technologies, and socioscientific issues covering the ballots, the members of the general public are expected to be a well-oiled information sifting machine. It's essential that we support critical everyday consumerism, as well as an analytical disposition to complement the emotions present in political and personal decisions. We highlight real world issues such as juvenile justice, technology, mental illness, and social movements to embed essential 21st century competencies within the contexts that require them. We tailor our content to three developmental groups: adolescence, adulthood, and seniors.

## GUIDING PRINCIPLES: CONTENT

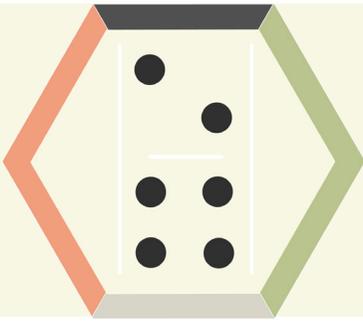
Our content covers challenging, sometimes controversial topics. In many cases, our users and attendees have not been exposed to these ideas before, and have little patience for wasted time. As such, it's important for us to get TILT content right. Our content is carefully crafted with consideration of the individual's psychological, technical, and conceptual needs. In addition, we strive to provide exciting, useful, credible, and challenging concepts in alignment with the following goals:

- 1 REAL WORLD RELEVANCE.**  
When libraries were the primary source for knowledge, information literacy programs emphasized critical research skills based on the available tools and challenges of libraries themselves. Today, with information sources all around us, it's essential that we update and prioritize these programs with an emphasis on the contexts that require them today: internet, news, media, pop culture, sales, and conversation.
- 2 SYNTHESIZED ACROSS PERSPECTIVES.**  
We believe that collaboration results in the best content. Our team of developers and advisors includes seasoned educators, designers, leaders in professional development, neuroscientists, psychologists, writers, and evaluation experts all dedicating their time, energy, and expertise to create truly necessary lesson plans. We believe the end result is a nuanced reflection not only of multiple perspectives, but the insights that come along with each.
- 3 RESEARCH-DRIVEN.**  
Many researchers from such fields as (i) Public Understanding of Science (ii) Science, Technology & Society, (iii) Social Psychology, and (iv) Political Science have studied the cultural, cognitive, and psychological barriers to informed communities who are prepared to integrate novel evidence into their decision making. We synthesize research from across these and other related fields to build well-balanced, evidence forward programs that are grounded in what we know right now.
- 4 ITERATIVE AND FEEDBACK-DRIVEN.**  
All of our workshops and materials are the results of years of development, focus groups, and pilot testing to refine our approach and messages. We believe self awareness is key to growth, and we take evaluation of our programs very seriously. As a result, our materials are constantly updated and refined to optimize use of cutting-edge research and learner experience.
- 5 BALANCED AND POLITICALLY NEUTRAL.**  
We do not strive to deliver conclusions on specific issues, but rather to facilitate responsible evaluation and decision-making. As such, while we do not necessarily avoid controversial topics, we present available evidence for multiple stances whenever possible. We present tools, strategies, and expert insights as guidance, but feel strongly that as a resource for all we need to avoid ostracizing those who access our materials. We instead empower individuals to to come to their own informed conclusions.

## GUIDING PRINCIPLES: TRAINING

All of our materials and workshops are delivered based on best practices from across pedagogical and learning science research. We foster a training community that abides by the following guidelines when presenting TILT materials across modalities:

- RESOLVING COGNITIVE DISSONANCE REQUIRES TIME... AND SPACE.**  
Many points ask individuals to reflect on their own biases and misconceptions. Telling a student they're wrong if they push back on these materials is likely to reinforce their original perspective. We focus on being patient and supportive. We use inclusive phrases like "that may be true too, however the evidence doesn't currently support it", to make sure they feel validated, and thus more open to change when we make the point again.
- SHOW, DON'T TELL.**  
It's easy to tell someone what they're "doing wrong", but it's unlikely to get us very far. Instead, we spend more time with the examples and research studies that show students how others have made mistakes. We let them tell us where people went wrong, so that they're the ones discovering the patterns we want them to see. We find that this is much less likely to trigger a defensive response.
- BUILD A TEAM MENTALITY**  
It's essential to normalize these patterns so that people do not feel like we're calling them inferior in any way. We talk about our personal experiences misunderstanding ideas or getting attached to a false conception. We acknowledge how big of a problem this continues to be and encourage them to help us brainstorm ways to change the culture. It's important that we make them feel like part of the team; they are!
- EMPHASIZE YOUR TAKE-AWAYS ACROSS MODALITIES**  
Each unit is densely packed with content. At the beginning of each, we focus on three major take aways. Knowing that students will not remember everything we say, we try to work these three take aways into as many parts of the lesson as possible. The more repetition, the more likely these ideas are to feel familiar and comfortable to students moving forward.



# TILT CORE COMPETENCIES OVERVIEW

Based on several years of research and iteration, we have developed a theoretical framework to characterize the six skills and sensibilities we believe are essential for navigating the Information Age.

## THREE LEVELS OF INFLUENCE

The competencies address three levels, which represent distinct, albeit not mutually exclusive, factors of modern life which can affect our interaction with information:

- Culture/Society:** Norms, group memberships, media, societal influences and institutions that shape our knowledge and access
- Individual/Self:** Personal habits of mind that filter our integration of new information.
- Information/Science:** Characteristics of information itself, such as context, organization, or presentation, which may influence our interaction with it.

## TWO DIMENSIONS: SKILLS & SENSIBILITIES

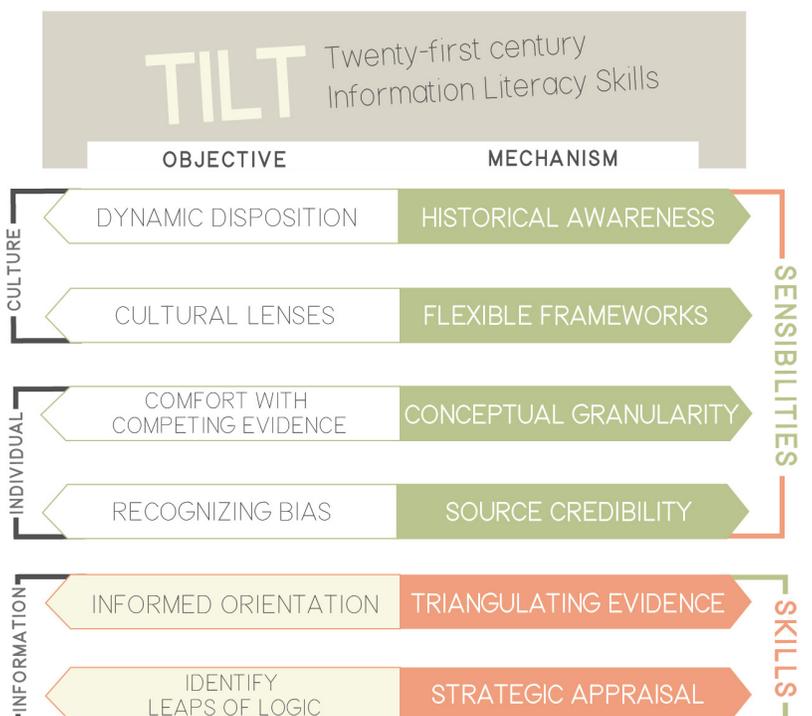
Critical evaluation of contemporary information requires both specific strategies as well as general dispositions. While these often overlap, we have delineated them to better conceptualize their role in the informed individual's approach.

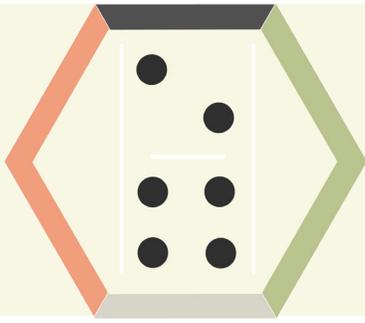
## DECONSTRUCTING OBJECTIVES & MECHANISMS

In the TILT model, **Objectives** represent the goal behavior or awareness of an informed 21st century citizen. **Mechanisms** represent the psychological, scientific, or cultural construct that must be considered in order to achieve the goal.

These are often highly integrated, meaning as one increases their awareness of a given mechanism, their progress towards a given objective tends to increase.

The TILT model serves as a guiding framework for development of curricula, training, and resources that capture and deliver focused content. The model itself is not explicitly taught, except in cases of training individuals who will go on to train others.





# TILT CORE COMPETENCIES OVERVIEW

## DECONSTRUCTING OBJECTIVES & MECHANISMS

- 1 OBJECTIVE:** Maintain a dynamic disposition by accepting the progressive nature of information and remaining open to new evidence.  
**MECHANISM:** Foster historical awareness by examining the often controversial and socially complex trajectories of familiar constructs.
- 2 OBJECTIVE:** Consider the role of cultural lenses in the interpretation of information and the proliferation of new ideas.  
**MECHANISM:** Develop flexible frameworks that enable perspective-taking and consideration of group-specific biases as they influence the rendering of evidence.
- 3 OBJECTIVE:** Cultivate comfort with competing evidence by acknowledging informed debate as a critical, nuanced step towards replication, refinement, and eventual consensus.  
**MECHANISM:** Increase conceptual granularity through honing the ability to deconstruct oversimplified claims by breaking them into and evaluating their component sub-claims.
- 4 OBJECTIVE:** Practice recognizing bias by accepting it as an inherent, unavoidable attribute of the self and the individuals charged with collecting, interpreting, and disseminating information.  
**MECHANISM:** Evaluate source credibility for common access points in the information dissemination cycle.
- 5 OBJECTIVE:** Develop an informed orientation to ensure clarity of how specific evidence is situated in the broader landscape of relevant knowledge.  
**MECHANISM:** Understand triangulating evidence from across sources as a key step towards drawing informed conclusions.
- 6 OBJECTIVE:** Identify leaps of logic when assessing the credibility and validity of conclusions.  
**MECHANISM:** Use strategic appraisal techniques to critically evaluating the logical alignment between key elements of an argument.

## TRANSLATING THE MODEL FOR THE PUBLIC: THE CRAFTI MINDSET

We believe in creating layers of knowledge, such that anyone can access it regardless of their starting point. To accomplish this, we prepare a range of materials aimed at different groups, prior knowledge, and goals. Along these aims, we have translated our theoretical framework into a **21st Century Information Mindset**, which we call **CRAFTI**.

**CRAFTI** is based on the six core competencies, presented in a way that first lays conceptual foundations and builds towards actionable solutions. The CRAFTI Mindset synthesizes the TILT model for the general public, as seen below:

KEEP IT  
**CRAFTI**

A SCIENTIFIC MINDSET

FOR THE 21ST CENTURY

**C**URIOS  
**R**EFLECTIVE  
**A**CTIVE  
**F**LUID  
**T**ACTICAL  
**I**NFORMED

# DYNAMIC DISPOSITION HISTORICAL AWARENESS

**DIMENSION:** Sensibilities

**CRAFTI MINDSET:** Fluid

## OVERVIEW OF PROBLEM SPACE:

In school, we're taught to memorize facts and figures. Textbooks present static snapshots of what we know, and the process of science is presented as something that will provide you with a clear cut answer. Unfortunately, science in the real world is merely the best strategy we have for understanding phenomena over time. That means, along the way, it's ridden with cultural influences, noise, and error.

It's essential for an informed individual to understand that science changes, and the fact that it changes does not necessarily mean that our ideas were once based on bad science. Often, inaccurate conclusions stem from a limitation of methods, resources, or prior knowledge that interacts with our expectations.

We focus on developing what we call a **Dynamic Disposition**, or the ability to maintain an open mind, utilize evidence as available, and update as new information converges or diverges from the status quo.

We use **Historical Awareness**, or case studies from the evolution of commonly held scientific beliefs, to work towards such dispositions.

## PRIMARY TAKEAWAYS:

- Science is provisional: it's curiosity with a strategic plan.
- Culture shapes what we can see.
- Resources limit what we can know.

## SAMPLE EXERCISES:

**Famous Figures:** Individuals are introduced to a series of seemingly absurd claims alongside famous, well-respected intellectuals and scientists from across history. As groups attempt to identify the matches, we analyze the underlying factors that may have contributed to the misconceptions.

## SAMPLE REFERENCES:

- Höttecke, D., Henke, A. & Riess, F. Implementing History and Philosophy in Science Teaching: Strategies, Methods, Results and Experiences from the European HIPST Project. *Sci & Educ* 21, 1233–1261 (2010).
- Medin, D. L. & Bang, M. The cultural side of science communication. *Proceedings of the National Academy of Sciences* 111, 13621–13626 (2014).



# CULTURAL LENSES FLEXIBLE FRAMEWORKS

**DIMENSION:** Sensibilities  
**CRAFTY MINDSET:** Informed

## OVERVIEW OF PROBLEM SPACE:

Science as an institution is filled with barriers, both internally and externally. Jargon, paywalls, context, and technical knowledge can create challenging gaps between science and society. Within science, disciplinary lenses and the culture of a particular field can produce miscommunications and limited information exchange.

To navigate these challenges, it's important for people to understand the decentralization of scientific questions and the ways in which a given field's methods and culture can shape its approach to a question.

We focus on developing what we call a sense of **Cultural Lenses**, or the ways in which a particular set of norms, beliefs, attitudes, and expectations can craft a field's approach to and interpretation of information.

To this end, we cultivate **Flexible Frameworks**, or the ability to understand the seed of a concept while also appreciating the nuance added to it by distinct cultural and disciplinary perspectives.

## PRIMARY TAKEAWAYS:

- The same word carries different meanings across fields.
- Every discipline has its own lens.
- The yellow belt problem: The dangers of knowing a little.

## SAMPLE EXERCISES:

**Panel of Experts:** Groups are assigned a particular role, including the biography and experiences of a researcher from a particular fields. After reading their analysis of a given piece, the groups debate a specific topic from the perspectives of their assigned lens.

## SAMPLE REFERENCES:

- Scharrer, L., Britt, M.A., Stadtler, M., Bromme, R. Beyond one's own understanding: How text comprehensibility affects laypeople's decision about scientific claims. Proceedings of the 34th Annual Conference of the Cognitive Science Society 1-6 (2012).
- Ridenour, L. Boundary Objects: Measuring Gaps and Overlap Between Research Areas. Knowledge Organization 43, 1, 44-55 (2016).



# COMFORT WITH COMPETING EVIDENCE

## CONCEPTUAL GRANULARITY

**DIMENSION:** Sensibilities

**CRAFTI MINDSET:** Curious

### OVERVIEW OF PROBLEM SPACE:

Individuals tend to pick a side and spend a tremendous amount of time arguing why their side is right. At the same time, when new evidence emerges, individuals often fail to update, or believe the new evidence undermines the credibility of the scientific process. In doing so, our culture tends to oversimplify and politicize scientific claims rather than evaluating the evidence for measurable hypotheses. For example, GMOs and Gender Differences are much more complicated than a simple "Pro" or "Against" stance.



It's essential for people to learn to consider the validity of multiple seemingly competing ideas. Debates play a crucial role in science, and it is very important for the public to reject overconfident conclusions to better recognize where a complex idea is in its life cycle.

We aim to increase individuals' **Comfort with Competing Evidence**. This means recognizing the different scientific mechanisms and time scales that result in tentative conclusions that may still be useful.

To increase such comfort, we aim to increase **Conceptual Granularity**. We define this as the degree to which you can break down an idea into its measurable component parts, or what we call "prime ideas".

### PRIMARY TAKEAWAYS:

- Debates fuel progress: Science depends on competing evidence.
- Analysis depends on conceptual granularity.
- Application depends on synthesis.

### SAMPLE EXERCISES:

**Plotting Attitudes:** Individuals assess how much they agree with and care about a low granularity claim. They then evaluate real world evidence for a number of distinct subclaims, plotting the distribution of their assessments and resulting in a complex, nuanced map of the original claim's prime ideas.

### SAMPLE REFERENCES:

- Duit, R. & Treagust, D. F. Conceptual change: A powerful framework for improving science teaching and learning. *International Journal of Science Education* 25, 671–688 (2003).
- Fischhoff, B. & Davis, A. L. Communicating scientific uncertainty. *Proceedings of the National Academy of Sciences* 111, 13664–13671 (2014).

# RECOGNIZING BIAS

## SOURCE CREDIBILITY

**DIMENSION:** Sensibilities

**CRAFTI MINDSET:** Reflective

### OVERVIEW OF PROBLEM SPACE:

Information passes through many filters prior to being put to use. In order to effectively grapple with new information, individuals must have an up-to-date understanding of the nature of these filters, including the research lab, the press, pop culture, personal media, and conversation.

Across these levels, information interacts with personal biases that all humans share. It's essential that we understand these biases and how they shape knowledge - not so we can avoid them, but so we can effectively navigate them.

To this end, we work towards **Recognizing Bias**. This means accepting the unavoidable and prevalent nature of the biases embedded in the self, society, and information.

As a tool for doing so, we evaluate **Source Credibility**. By deconstructing sources in terms of their goals and strategies, we can develop a sense of the biases inherent within and across them.

### PRIMARY TAKEAWAYS:

- Bias is not inherently a bad word.
- The opposite of bias is not objectivity, it's chaos.
- It's important to get comfortable with bias so that you can recognize it.
- Dissemination of information is like a game of telephone.

### SAMPLE EXERCISES:

**Trust or Bust:** We present claims from across credible and non-credible sources. Groups must evaluate the credibility of these claims based on the sources and framing alone, similar to what happens in daily life.

### SAMPLE REFERENCES:

- Caulfield, T. Popular media, biotechnology, and the 'cycle of hype'. 1-23 (2014).
- Gauchat, G. Politicization of Science in the Public Sphere: A Study of Public Trust in the United States, 1974 to 2010. *American Sociological Review* 77, 167-187 (2012).
- Sinatra, G. M., Kienhues, D. & Hofer, B. K. Addressing Challenges to Public Understanding of Science: Epistemic Cognition, Motivated Reasoning, and Conceptual Change. *Educational Psychologist* 49, 123-138 (2014).



# INFORMED ORIENTATION TRIANGULATING EVIDENCE

**DIMENSION:** Skills

**CRAFTI MINDSET:** Active

## OVERVIEW OF PROBLEM SPACE:

While developing the appropriate context for information is important, it's also important that the complicated nature of information not become paralyzing. Information, and scientific evidence in particular, is one of society's most useful assets for personal, professional, and political decision making.

To this end, it's important the people take an active role in curating and integrating new information into their world view. This may be for a specific project, a health decision, or resolving interpersonal conflict. While it's impossible to become an expert in everything, it is important to know the tips and skills for navigating bias and becoming a competent outsider.

To effectively integrate evidence into your life, it's important to actively seek an **Informed Orientation**. This refers to knowing the landscape of a given topic and understanding the major players and controversies.

An effective, flexible strategy for approximating the dialogue around a given claim is **Triangulating Evidence**, or systematically seeking information that helps you identify the parameters of a problem space.

## PRIMARY TAKEAWAYS:

- We have to actively seek out "no"s.
- Triangulate across study, source, and lens.
- Look for qualifying contexts.

## SAMPLE EXERCISES:

**Active Synthesis:** A realistic real world problem is presented to groups. One at a time, actual sample claims are presented on that particular topic. Each piece of evidence adds nuance, contradicting ideas, or converging evidence for the one prior. At specific intervals, groups must decide what action to recommend.

## SAMPLE REFERENCES:

- Jarman, R. & McClune, B. Developing students' ability to engage critically with science in the news: identifying elements of the "media awareness" dimension. *The Curriculum Journal* 21, 47-64 (2010).
- Venturini, T. Building on faults: How to represent controversies with digital methods. *Public Understanding of Science* 21, 796-812 (2012).



# IDENTIFY LEAPS OF LOGIC

## STRATEGIC APPRAISAL

**DIMENSION:** Skills

**CRAFTI MINDSET:** Tactical

### OVERVIEW OF PROBLEM SPACE:

Most people who are of voting age or older completed formal schooling before the internet and modern technology served as a primary source of information. These tools have fundamentally changed the way we access knowledge, including more direct access to original scientific resources and academic materials.

At the same time, perceptions of quality are often based on perceived credibility instead of systematic logic.. With the inundation of unregulated information, it's crucial to have a critical personal method for evaluating the merits of claims outside of your personal expertise.

The ultimate goal is to swiftly be able to **Identify Leaps of Logic**. That means knowing enough about what claims, methods, limitations, and data should look like to recognize when something is off.

This ability takes time to become an automatic process. We believe the best starting point is explicit **Strategic Appraisal**, or evaluating evidence based on clearly defined factors that predict its credibility.

### PRIMARY TAKEAWAYS:

- Utilize evaluation heuristics.
- Always check for alignment.
- Mastery is a lifelong process.

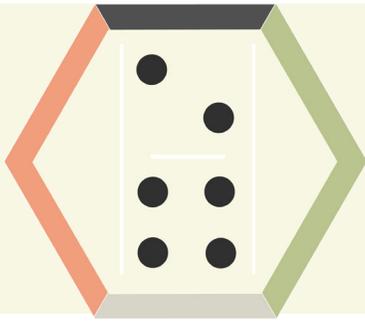
### SAMPLE EXERCISES:

**Constructing Logic Models:** After going through samples of good and bad quality evidence, groups work together to construct usable rubrics and systems that target a personal or professional goal. These rubrics should be actionable and sourced from across the lessons.

### SAMPLE REFERENCES:

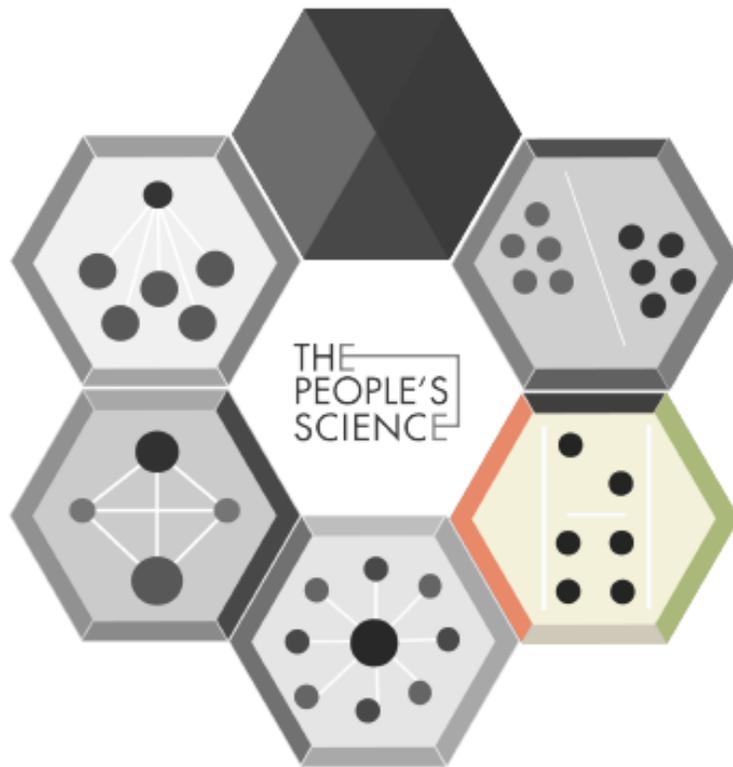
- Bromme, R. & Goldman, S. R. The Public's Bounded Understanding of Science. *Educational Psychologist* 49, 59-69 (2014).
- Polman, J. L., Newman, A., Saul, E. W. & Farrar, C. Adapting Practices of Science Journalism to Foster Science Literacy. *Sci. Ed.* 98, 766-791 (2014).





# TILT TRAINING & WORKSHOPS

science is for everyone.



Our goals with our workshops and training options are twofold: (i) to make engaging and intensive scientific, digital, and media literacy development accessible to everyone, and (ii) to support the development of The People's Science public initiatives. To this end, we offer specialized program rates based on the needs and size of your particular group. All workshops are catered to either **educators, policymakers, business leaders**, or a specific age group within the **general public**.

While we are happy to further tailor our materials and approach to your particular goals and needs, we broadly offer three types of training and workshops:

**ONE-DAY WORKSHOPS:** Intensive overview of concepts and applications.

**THREE-DAY WORKSHOPS:** Conceptual and applied overview, as well as facilitated evaluation and design thinking.

**WEEKLONG WORKSHOPS:** Tailored for individuals who will take these resources and pass them on to others, these training sessions cover all of the materials of the three-day workshops, as well as presenting strategies and research for effectively teaching the TILT framework to others.



# ONE-DAY WORKSHOPS

Our one-day workshops provide an opportunity for us to tailor TILT content to a particular group's interests, needs, and goals. We embed the core competencies in real world case studies, current issues, and resources that are relevant to each of our special interest groups (educators, policymakers, business leaders, and general public).

One-day workshops are intensive, eight hour days with conceptual, interactive, and discussion components.

## PREPARATION

Prior to facilitating the workshop, we ask that the organizational team complete a brief questionnaire outlining the objectives of the group and prior knowledge. This allows us to customize content to resonate with a particular community.

## STRUCTURE: CORE COMPETENCIES OVERVIEW

All of our one-day workshops are roughly divided into four components. These components are designed to present the information across modalities and encourage multi-dimensional learning. We have refined the workshop based on attendee feedback and pedagogical research to be as engaging and effective as possible.

The six core competencies of the TILT model, often presented using the CRAFTI framework, each includes the following elements:

**35% CONCEPTUAL OVERVIEW:** This is the lecture portion of the workshop. Structured more like a TED talk than an academic lecture, examples and primary takeaways are presented with a heavy emphasis on narrative and visuals.

**30% INTERACTIVE EXERCISE:** We believe that experience is a powerful learning device. As such, we've designed and collected interactive exercises that both immerse the attendees in central themes, and provide an opportunity to engage with these ideas in a novel way.

**20% PRACTICAL APPLICATION:** Specific case studies and scenarios are presented for facilitated analysis and discussion at the individual, small group, and full group levels.

**15% DISCUSSION:** Time is put aside to make sure community-specific questions are addressed. This is a flexible, free form section that includes Q&A and discussions based on themes that were particularly salient or challenging for the group.

**RESOURCES:** Once all six competencies have been presented using the components described above, we focus on providing an overview of long-term free and exclusive resources available to attendees.

## COSTS & FLEXIBILITY

Costs for one-day workshops vary depending on the size of the group and level of customization.

We offer discounted rates for non-profits and large groups. All profits are folded back into the development of additional resources to address the barriers between science and society, many of which are free for public use. Please be in touch with us to discuss your group's needs.



# THREE DAY WORKSHOPS

Our three-day workshops extend upon the materials from the Core Competencies Overview and provide additional, hands-on components. This is best suited for those who want practice putting these skills and sensibilities into action with personal guidance from our team.

## PREPARATION

As we spend much more time working with attendees during these workshops, we request that each individual fill out a form about their specific goals and challenges ahead of time. This allows us to get a sense of our attendees and tailor our guidance and support throughout the workshop. These workshops also require a small bit of “homework” inbetween each day, which will be assigned during the training. All attendees must have access to a device with internet access for Days 2 & 3 of the workshop.

## STRUCTURE

We have structured our three-day workshops to build from conceptual foundations to autonomous application. Our goal is to ensure that all attendees leave these workshops prepared for the challenges they’ll face when attempting to navigate and integrate new information into their daily lives.

### **DAY 1: CORE COMPETENCIES (8 hours)**

The workshop begins similarly to the one-day workshop. For more detailed information on how this day is structured, see the “One-Day Workshop” section of this packet. Attendees are given reference materials to review and prepare for the following day’s activity.

### **DAY 2: THEORY TO ACTION | SYNTHESIS FOR THE SELF (5 hours)**

Attendees are divided into groups based on issues of significance to them. Using a synthesized rubric from the prior day’s exercise as well as intensive, hands-on guidance from the TPS team, groups investigate, critically analyze, and evaluate the merits of a given claim. This culminates in a report being created and presented by each group as well as reflections on the process. The goal of this day is to put these strategies into action using only the materials and resources available to you in daily life.

### **DAY 3: DESIGN THINKING | STRUCTURE FOR OTHERS (5 hours)**

Translation from research to application can be daunting, as it requires that you first understand a collection of evidence, but then also be able to structure it for others to understand. We begin with an “Influencers” training session which introduces core translation skills. We then extend on the prior day’s work as each group designs an actionable solution that they can take back to their daily life. We use a “design thinking” approach, which is highly iterative, with formative assessment and fast paced feedback woven throughout the experience.

## COSTS & FLEXIBILITY

Costs for three-day workshops vary depending on the size of the group and level of customization.

We offer discounted rates for non-profits and large groups. All profits are folded back into the development of additional resources to address the barriers between science and society, many of which are free for public use. Please be in touch with us to discuss your group’s needs.



# WEEKLONG WORKSHOPS

Our model emphasizes the value of decentralizing these ideas and cultivating hubs for change. In some cases, our attendees want more than just to learn these concepts for themselves. We are happy to prepare trainers across our special interest industries (education, policy, business) to both tackle these ideas and learn to effectively pass them along to others. Upon successful completion of this week, we provide our trainees with all of the materials, files, and resources they need to make TILT presentations their own, understand the underlying philosophies, and bring them back to their home communities.

## PREPARATION

As we spend much more time working with attendees during these workshops, we request that each individual fill out a form about their specific goals and challenges ahead of time. This allows us to get a sense of our attendees and tailor our guidance and support throughout the workshop. These workshops also require a small bit of "homework" inbetween most days, which will be assigned during the training. All attendees must have access to a device with internet access for the majority of the workshop.

## STRUCTURE

Our weeklong intensive training workshop covers all of the materials of the one- and three-day workshops, as well as training on our program's pedagogical strategies, underlying theoretical frameworks, use, optimization, customization of the materials, and troubleshooting common challenges. All attendees have a training kit that is built upon throughout the week.

### DAY 1: CORE COMPETENCIES (8 hours)

See One-Day Workshop section of this packet for full description.

### DAY 2: CORE COMPETENCIES TRAINING (5 hours)

We break down the theories underlying the model as well as pedagogical strategies. Attendees complete exercises to practice implementing training content.

### DAY 3: THEORY TO ACTION | SYNTHESIS FOR THE SELF (5 hours)

See Three-Day Workshop section of this packet for full description.

### DAY 4: THEORY TO ACTION | SYNTHESIS FOR THE SELF (5 hours)

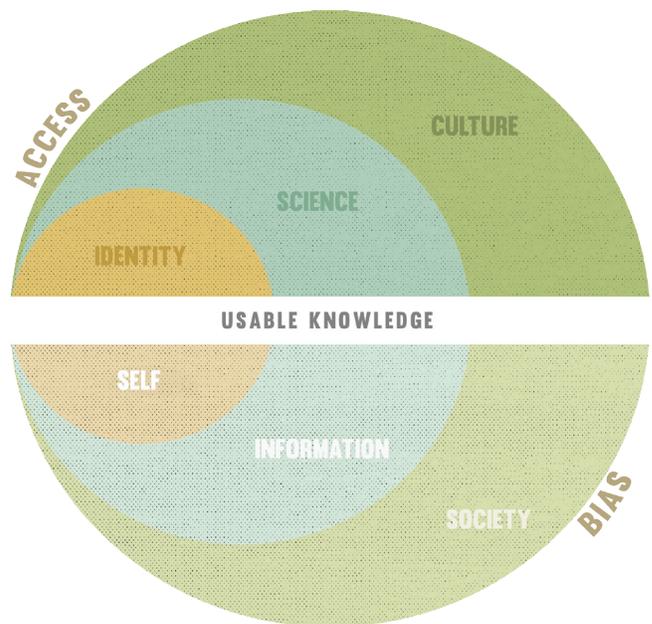
Attendees take turns taking on the role of facilitator and digging more deeply into the strategies for evaluating evidence.

### DAY 5: DESIGN THINKING | STRUCTURE FOR OTHERS (5 hours)

See Three-Day Workshop section of this packet for full description.

### DAY 6: DESIGN THINKING | STRUCTURE FOR OTHERS (5 hours)

Attendees take turns taking on the role of facilitator and digging more deeply into the strategies for applying evidence.



## COSTS & FLEXIBILITY

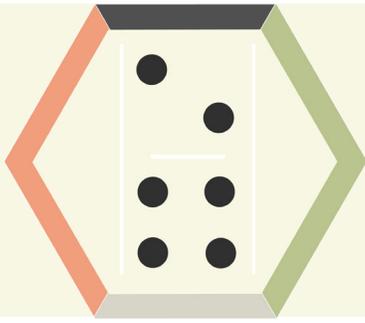
Costs for weeklong workshops vary depending on the size of the group and level of customization.

We offer discounted rates for non-profits and large groups. All profits are folded back into the development of additional resources to address the barriers between science and society, many of which are free for public use. Please be in touch with us to discuss your group's needs.

**Please note:** Custom workshops are also available for an additional cost. We pack our workshops with content, and extended workshops are available for groups interested in diving more deeply into particular competencies and research evaluation or application strategies.

## TILT CERTIFICATION

Successful completion of this program qualifies individuals to become certified TILT Trainers. Interested individuals can complete the optional assessment after completion of the program at no additional cost. Please inquire for additional information.



# TILT MEASURING SUCCESS

As a data-driven organization, we believe in constantly improving our resources based on feedback and assessments. We also understand the value that this data may have for communities and organizations. To this end, we offer the following, depending on the needs and preferences of each group:

**Note: all assessments are anonymized unless other arrangements are made and permissions granted.**

## BASELINE ASSESSMENTS

We believe it's difficult to evaluate where you end up without knowing where you started. We provide brief assessments that we ask attendees to complete prior to beginning the program. When possible, we ask that attendees complete these questionnaires digitally.

## QUALITATIVE ASSESSMENTS

In three-day and weeklong workshops, we also offer qualitative evaluation of work throughout the experience. Attendee discussion and work is evaluated using a TPS rubric.

## SUMMATIVE ASSESSMENTS

At the beginning of each workshop, students are given a workbook with two goals: allow them to take notes throughout the session for their own keeping, and assess their knowledge and experience of each core competency. Students are given short breaks between each segment to stretch and complete a tailored set of questions, allowing them to respond immediately to each concept. The workbooks are designed so that students can remove and submit their assessments, while still having their personal notes and resources to leave with.

A final summative assessment is completed at the end of three-day and weeklong workshops. In addition to on-site assessments, we request that attendees complete a second summative assessment digitally three months prior to completing the workshop.

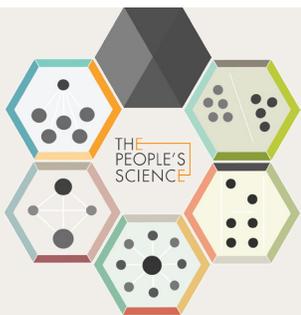
## WORKSHOP FEEDBACK

In addition to understanding technical knowledge and skill development, we also collect information on the quality of the experience for attendees. We keep these surveys brief and use this to improve the experience for future workshops.

## REPORTS

For each event, the collected data is processed, analyzed, and written into a report. This report is divided by assessment type and primary takeaways. These reports are anonymized and used by TPS for use in papers and funding opportunities. We are also happy to tailor and customize these reports for organizations that host a TILT workshop so that you may better understand the progress and current status of your particular group. Individual, anonymized data is also available upon request.

Please note: All requests and agreements regarding collection and use of feedback and survey data must be established prior to workshop approval.



# ADDITIONAL RESOURCES

The People's Science mission is to make as many resources as possible freely available to the public. We build platforms that curate and centralize existing resources, offer cutting-edge scientific content, facilitate discussions between researchers and the public, and leverage educational technology to make dissemination and learning as easy as possible.

**All profits from The People's Science training and workshops are folded back into the development of these resources, which are available to all.**

Check out some of our ongoing projects below:

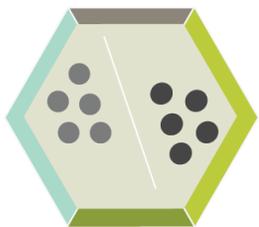


## The Archive

**Starting a conversation between scientists & the public.**

Scientists can keep track of the latest research across fields through scientific journals, but the public is often limited to what is picked up by the popular press.

The Archive is an online platform that supplements journalism and peer-review by providing lay summaries of individual papers written by the scientists themselves. Readers are encouraged to engage in dialogue around each piece.

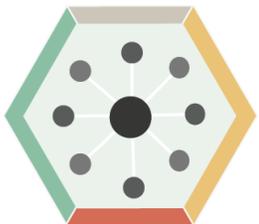


## SciHive

**Collaborative Science Sourcing**

Science communication has a curation problem. The responsibility is put entirely on the public to determine high from low quality content. We can do better.

SciHive is the Yelp of scientific content. Starting with psychology and neuroscience, we're collecting resources from all across the web to be organized and rated by experts and the public alike. Together, we can make sure everyone has the power to put good science first.

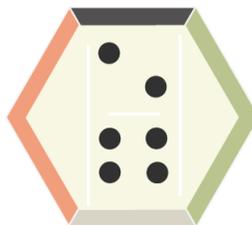


## BeeClub

**Empowering Curious Communities**

Changes a group effort. We're building a toolkit and curriculum that can be made available to any group or university club. These TPS Chapters are like extended family: we provide support, resources, and advice on how to effectively promote responsible integration of research in your hometowns.

Our goal is to decentralize the effort and make it easy for everyone to make a difference in the communities that they know best.

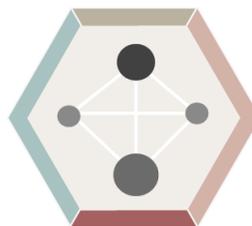


## TILT

**Twenty-First Century Information Literacy Tools**

In addition to the tailored, intensive training described in this packet, the TILT team is currently working towards offering online modules that cover the basics of the core competencies.

This web program will provide interactive, customizable exercises for teaching the core skills and dispositions of an informed citizen and engaged member of the public. We're making it simple to keep up in a complex world.



## #ShareYourScience

**Resources for Researchers**

We talk a big game about the role of researchers in science communication - but often, even engaged scientists don't know where to start.

We've centralized resources from across the web to bring researchers the training and opportunities they need to be successful advocates for their work. We're building workshops and seminars that synthesize the best practices, so researchers are prepared to play an active role in the increasingly consequential sharing of science... and we're building the community to sustain it.

You can learn more about these initiatives or donate to the effort by visiting [www.thepeoplesscience.org](http://www.thepeoplesscience.org)

For more information or to discuss your group's needs, please email us at: [hello@thepeoplesscience.org](mailto:hello@thepeoplesscience.org)