



# Smithsonian

Science Education Center

## Network for Socio-Scientific Thinking Contextualization for NESST Members

Note: The contextualization below is just one example what these terms could mean for NESST Members; it does not represent the experiences of all.

Key Terms		Context
Term	Definition	What does this mean for . . . /Why is this term important to . . . ?
<b>Complexity Theory</b>	Complexity theory tries to explain and understand how and why interactions between objects and systems develop and change, as well as the influence these relationships have on objects and systems which initially appear to have no connection to the primary relationship being observed.	Complexity theory represents a common language and point of understanding among NESST members to talk about our shifts in understanding about the interconnected systems around us and our place in relationship to those systems. It also can support our ability to <a href="#">take action</a> on <a href="#">socio-scientific issues</a> and within the systems we are connected to, as our work together continually changes our ways of knowing and being in the world, creating an <a href="#">emergent</a> ripple effect.

Glossary compiled by Smithsonian Science Education Center's Network for Socio-Scientific Thinking (NESST)

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<b>Emergence</b>	<p>Emergence refers to the phenomena of a new or unique behavior or dynamic arising from the interaction of two objects or systems which does not occur otherwise. Emergence is surprising and <a href="#">complex</a> because this new characteristic is not present in the individual object/systems separately.</p> <p><i>Examples: cultural gestures like the handshake, wicked problems like climate change, or questions of existence, like human consciousness</i></p>	<p>We, and the systems we are part of, are always changing (in other words, always becoming different). What happens as a result of that becoming-different is known as "emergence." It's not a strategy, not a project; it is a way of thinking and living.</p>
<b>Global Citizenship Education (GCED)</b>	<p>GCED frames learning in a way to encourage a sense of global and local belonging and awareness of the world's <a href="#">complexity</a> and interconnectedness and collective, inclusive action-taking for a just, peaceful, and sustainable future.</p>	<p>As NESST members increase their own awareness of <a href="#">complexity</a> and develop skills for collective <a href="#">action-taking</a>, they become better poised to investigate and critically think about the global and local systems they belong to, how their sense of/learning about <a href="#">complexity</a> affects their whole being, and how they embody their learning in the spaces they belong to.</p>
<b>Scientific Literacy</b>	<p>Scientific literacy means having a solid grasp of scientific ideas and how they apply to real-life situations. It involves understanding scientific facts, thinking critically about scientific claims, and using evidence to make informed choices. Being scientifically literate helps you appreciate science and make sense of the world around you.</p> <p><i>Examples: Using data to make informed choices about health/environmental/technological decisions</i></p>	<p>Scientific literacy to a group like NESST means recognizing the importance of scientific knowledge and critical thinking skills in today's society. It involves the NESST membership promoting the understanding of scientific concepts, encouraging scientific inquiry, and developing the ability to apply scientific reasoning. These NESST members strive to enhance educational practices that foster scientific literacy for all learners.</p>

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<b>Social Justice</b>	<p>Social justice means ensuring fairness and equality for all members of society. It involves addressing and correcting systemic inequalities and discrimination based on factors like race, gender, socioeconomic status, and more. Social justice aims to create a society where everyone has equal access to opportunities, resources, and rights, promoting a just and inclusive community.</p> <p><i>Examples: healthcare equity, criminal justice reform, access to education</i></p>	<p>To the NESST membership, their role in social justice is recognizing and addressing systemic inequities within the education system. It involves NESST advocating for policies and practices that ensure equal access to quality education, dismantling barriers, promoting inclusivity, embracing diversity, and empowering all students - and their teachers - to reach their full potential, regardless of their social or economic background.</p>
<b>Socio-scientific Issues</b>	<p>Socio-scientific issues (SSI) are topics which bring science together with other fields, often to respond to a moral or ethical dilemma. These issues require an understanding of science/scientific skills in order to engage with them in an informed way and better support community decision-making and societal values around the topic.</p> <p><i>Examples: climate change, genetic engineering, animal testing, and vaccination policies</i></p>	<p>Socio-scientific issues encompass multiple dimensions, including scientific, but also social, political, cultural, and historical. From a socio-scientific perspective, we (and the world around us) are all connected. We don't exist as individual people, but as systems of humans-places-things-nature-ideas-times. We are also interdependent: for example, our lives are dependent on trees to produce oxygen, and the trees are dependent on humanity to ensure they grow and thrive. Because we are part of these connected systems, we are always influencing each other and the world around us. This means that we, and the systems we are part of, are always changing (in other words, always becoming different).</p>

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<b>Student Action-taking</b>	<p>Student action-taking refers to the ability of students to intentionally generate action for themselves and their community based on what they have experienced and learned. Action-taking increases students' sense of agency, and continued action-taking helps students move from simply executing actions to putting considered actions into place.</p> <p><i>Examples of places for student action-taking: school projects, volunteering, extra-curriculars, personal goal-setting, convincing family members to make alternative lifestyle choices</i></p>	<p>NESST members view student action-taking as an important way for young people to build capacity for and apply skills in <a href="#">scientific/data literacy</a>, perspective-taking, and collaboration. Informed decision-making is one way youth can engage with the community using inquiry and <a href="#">socio-scientific</a> thinking and expand the process to others.</p>
<b>Transdisciplinary Learning</b>	<p>Transdisciplinary learning utilizes real-life contexts, situations, and problems as the entry point for learning, and asks students to draw on tools, skills, and ways of knowing from multiple disciplines and cultures. In this way, students learn how to transfer skills and knowledge systems to any situation they encounter, regardless of how that topic is framed in traditional education.</p> <p><i>Examples: Climate Change Education, Social Justice Education</i></p>	<p>NESST's membership is intergenerational, multicultural, and spans various disciplines and our work is on <a href="#">complex, socio-scientific</a> problems. Therefore, we rely on transdisciplinary learning as a foundation of this network.</p>

Want to know more? Find out what each term means in the context of the following roles: [Educators](#) [Researchers](#) [Youth](#)

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