NARST
A worldwide organization for improving science teaching and learning through research

CALL FOR PROPOSALS
2020 NARST Annual International Conference
Portland Marriott Waterfront Hotel
1401 SW Naito Pkwy, Portland OR 97201
Reservations desk: 844-256-8169
15 March – 18 March 2020

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Theme— School, Community, Citizenship: Science Education across Places and Contexts

People learn science in many environments. Initially, the home is where children have their first experiences with scientific phenomena when they notice hot water cooling, the vapor on the bathroom mirror, the sugar that disappears when added to hot water and toy cars that stop moving after they bang into each other. Outside, children see water flowing in a river or down the street, birds on the ground or in a tree, spiders on leaves and bees on flowers. The exchanges between adults and children about these phenomena constitute the premises of science education, and continue throughout people's lives with parents, siblings, friends, children and grandchildren. Schooling makes it possible to examine and grasp these real-life science experiences in formal laws, processes and theories.

School science education, in its various forms, has always attempted to connect students with science to spark students' interest and enthusiasm and to enable them to acquire a deep understanding of what science is and how science is done. Throughout the years, science education research has shown that teaching isolated science concepts and focusing on structures of disciplines distance students from science, whereas learning science in real life contexts about phenomena first rather than laws and theories enhances students' attitudes and dispositions toward science. In order for science to be more relevant to student life it has to be taught in real life contexts and involve the student community in large.

The idea of 'community' can be interpreted in different ways, all of which are relevant to science education. The community can be defined as the people around us who are breathing the same air, drinking the same water and who are exposed to the same environmental hazards that need to be studied before concerted action can be taken. Community institutions such as science centers, museums, public parks and zoos provide places and different contexts for learning science. Unlike schools, these institutions enable multi-generational interaction on and about science. Communities when defined as social contexts in which people act to reduce inequalities, support each other and be united, constitute a context for dealing with public health issues, and the affordances and dangers of technologies such as wind turbines, radiation, smart and clean transportation, etc.

Learning science, in different places and contexts aims at bridging between schools and out-of-school settings and eliminating the boundaries between age groups since we learn with others at home, in and across communities. A child in rural Canada, Russia or China can watch the same TED lecture as a child in New York City, Beijing or London. Different communities across the world are struggling with the impact of pesticides on public health worldwide. Although in most countries concentrations do not exceed legislative thresholds "safe limits" may underestimate the real health risk as in the case of the simultaneous exposure to two or more chemical substances which occurs in real-life conditions. Do different communities have the same access to organic food? This is simply a small but telling instance of how science, agriculture and public health are related to social justice within and across communities.

To encourage the public to take an active part in setting the agenda for safe food, water, air and transportation; in order to be able to protect our children from dangerous diseases and safeguard the ecosystems that support human life on Earth, we need to involve people of all ages, backgrounds and geographical locations in science and the scientific endeavor. Citizens can take steps by becoming community activists, as members of NGOs, participants in science communication events, and as citizen scientists who are genuinely involved in doing science. All these forms of citizenship can promote science education for life, health and prosperity.

Program Strands

The 2020 NARST program will feature sessions focused on 15 Program Strands and delivered in several session formats. Persons wishing to be on the program must identify the *Strand* that most closely aligns with their proposed topic. The 15 NARST Strands and their descriptions are listed in the following table:

2020 NARST Strands and Descriptions

Strand 1. Science Learning, Understanding and Conceptual Change How students learn for understanding and conceptual change.
Strand 2. Science Learning: Contexts, Characteristics, and Interactions Learning environments, teacher-student and student-student interactions, and factors related to and/or affecting learning.
Strand 3. Science Teaching--Primary School (Grades preK-6): Characteristics and Strategies Teacher cognition, content knowledge, pedagogical knowledge, pedagogical content knowledge, instructional materials and strategies.
Strand 4. Science Teaching--Middle and High School (Grades 5-12): Characteristics and Strategies Teacher cognition; content knowledge, pedagogical knowledge, pedagogical content knowledge, and instructional materials and strategies.
Strand 5. College Science Teaching and Learning (Grades 13-20) Instructor cognition, content knowledge, pedagogical knowledge, pedagogical content knowledge, student understanding and learning, and conceptual change at postsecondary level.
Strand 6. Science Learning in Informal Contexts Learning and teaching in museums, outdoor settings, community programs, communications media and after-school programs.
Strand 7. Pre-service Science Teacher Education Pre-service professional development of teachers, pre-service teacher education programs and policy, field experience, and issues related to pre-service teacher education reform.
Strand 8. In-service Science Teacher Education Continuing professional development of teachers, in-service teacher education programs and policy, and issues related to in-service teacher education reform.
Strand 9. Reflective Practice Teacher inquiry, action research, self-study practices, and transformative education.
Strand 10. Curriculum, Evaluation, and Assessment Curriculum development, change, implementation, dissemination and evaluation, including alternative forms of assessment of teaching and learning.
Strand 11. Cultural, Social, and Gender Issues Equity and diversity issues: sociocultural, multicultural, bilingual, racial/ethnic, and gender equity studies.
Strand 12. Educational Technology Computers, interactive multimedia, video and other technologies.
Strand 13. History, Philosophy, Sociology, and Nature of Science Historical, philosophical and social issues of science as related to science education.
Strand 14. Environmental Education Ecological education, experiential education, education for sustainable development, and indigenous science.
Strand 15. Policy The construction, interpretation, and implementation of science education policies and reforms at the local, regional, national, or international levels.

Program Formats

Stand-Alone Paper *by individual author or co-authors.*
Traditional presentation format allows for 15-20 minutes of individual presentation time (typically, four papers are scheduled per session for 90 minutes total and will be grouped by Strand co-coordinators by theme) in a theater-style setting.

Related Paper Set *by multiple authors or co-author groups.*
Groups of authors/co-authors must submit a set of four to five papers for presentation in a single 90-minute time block in the program. The proposal must show clearly the topic focus of the set. Papers within a set will be judged holistically. The group submitting the set will be required to identify their own presider (and possible discussant) for the session and will decide on the time allocations within the 90-minute block for presentations and discussion.

Interactive Poster Paper *by individual or co-authors.*
A single author or a group of co-authors may prepare a paper for presentation in an interactive poster format. Authors are required to have copies of their paper available for dissemination. Poster session presenters will be grouped with other poster presenters from the same Strand for a 90-minute time block. Many posters will be scheduled at the same time, so individuals can interact with the presenters, and move to other posters in the same session.

Symposium *by multiple presenters.*
Groups of participants may propose a symposium on a topic or issue. The proposal must involve four to ten participants and explicitly relate to the Strand title and description. The goals of the symposium should be clear and focused, as should the role of each participant and his/her topic. Symposium sessions will have a 90-minute time block in the program. Symposium proposals must be submitted as a single document; they may not contain individual papers. The group submitting the set will be required to identify their own presider (and possible discussant) for the session and will decide on the time allocations within the 90-minute block for presentations and discussion.

The Co-Chairs of the Program Committee (President Tali Tal and President-Elect Eileen Parsons) have the final decision in the assignment of presentation format; they may place proposed presentations into session types for which they were not submitted. If the proposer does not want the format assigned, the proposer will have the opportunity to withdraw the proposal.

Presentation Limitations (Number and Originality)

NARST limits the number of times a person can appear as first author at the conference. The rules are that an author may be:

1. First author on only one stand-alone paper *or* a paper within a related paper set.
2. First author on only one interactive poster paper.
3. Presenter in only one symposium.
4. Secondary author on any number of stand-alone, related paper set, and/or interactive poster papers.

The on-line system will not allow a submitter to make any more submissions than those that meet these guidelines. Please note that if you **make more than one entry as first author in a category of presentation,** the system will delete the earlier submission you entered for that same category.

NARST proposals submitted for presentations at the Annual International Conference MUST be original work that has not been / will not be presented at any other conference (e.g., AERA, ASERA, ASTE, ESERA). Additionally, it is not acceptable to submit the same proposal to be presented in multiple

formats (i.e., stand-alone paper and poster paper). Please ensure you submit an original proposal and to one program format only.

Proposal Submission Process

To begin the submission process, go to http://narst.org/abstracts2020/. This URL is the home page for conference proposals. **If you are a NARST member**, you may log on with your NARST membership login information. You may change any personal information by clicking on Update Profile. **If you are not a NARST member**, you will need to create an account and enter your identifying information, institution, telephone number, fax number, and e-mail address. Enter your e-mail address for your username and select a password that you will remember.

Please note: the email address provided in your member profile or your non-member account will be used for all official correspondence, including (but not limited to) the NARST Annual International Conference program. If you do not want your email address included in the NARST Annual International Conference program, then there is a button to click when entering your proposal to indicate this preference.

*At the **Abstracts and Proposals Home Page,** under **User Tasks**, you have the following links:*

- **2020 NARST Call for Proposals** (PDF format).
- **Add New Paper / Edit Papers** allows you to select a category of proposal submission and submit your proposal. You may also edit your proposal from this link.
- **Volunteer to Review Proposals and Preside.** Several of the Strands need ample numbers of thoughtful reviewers; you are urged to volunteer for the strand that best corresponds with your research expertise. Please indicate if you also wish to be a conference session presider.
- **View a List of Strands** leads to a list of NARST Program Strands, their titles and descriptors.
- **2019-2020 Strand Co-Coordinators** links to the contact information for the program committee leadership and Strand co-coordinators for each of the 15 Strands.
- **Program Formats** leads to descriptions of the different program formats available to presenters.
- **Reviewer Rating Sheet** indicates the criteria used by reviewers in the peer review process.

Under *User Tasks* when you select **Add New Paper / Edit Papers**, you will be given four format choices: Stand-Alone Paper OR Related Paper Set (*the system forces you to select one of the two since you can be first author on only one*), Interactive Poster Paper, and Special Symposium. Select the type of paper you wish to begin working on and click on the button at the bottom that says **Continue**. There is a **Reset** button as well if you wish to change the type of proposal you want to enter.

Once you select the type of proposal you want to work on, you will be taken to a web page where you will enter the information about your proposal. After you have submitted all mandatory information, the system will allow you to come back to the proposal to revise it at any time until the August 15, 2019 deadline. <u>**Please note that you may only post once for each type of entry; otherwise, the system will delete (by writing over) the proposal you posted originally.**</u>

Entering Proposal Information into the Web Site

Stand-Alone Paper. Enter the **title** of the paper (limit 15 words). Next select your proposal type: **Research Paper** or **Theoretical Paper**. Since we cannot always accommodate the type of session every proposer would like, please indicate if you are willing to present as an Interactive Poster Paper instead. Add up to 10 authors to your proposal. For each author, use the "Lookup Names" button to locate the correct information for the author. If the person you wish to add is not in the NARST database, then you

will be able to enter the name and affiliation manually. Enter an abstract of up to 200 words (about 1200 characters) in the Abstract box. If your proposal is accepted into the program, then this abstract will be used in the program book exactly as entered. Therefore, please watch for accuracy and check for any stray characters or unintended formatting that might appear if you pasted the abstract from a Word file. Next, you will be asked to upload a PDF file of your proposal (five pages maximum—see formatting guidelines below). Continuing down the submission form, select the **Strand** to which you are submitting, then select two **Content Key Words** and one **Methodological Key Word** to help with assigning appropriate reviewers. Finally, click on **Submit Stand-Alone Paper Information** at the bottom of the page. You may come back to edit the proposal at any time until August 15, 2019. When you re-enter the submission system, you will find a link to your previous submission at the top of the post-login page. Any changes made after the initial submission will overwrite the previous version.

Related Paper Set. Enter an **overall session title** (limit 15 words). Next select your proposal type: **Research Paper** or **Theoretical Paper**. For each individual paper in the set, enter a **title** and add up to 10 authors per paper (with their role). For each author, use the "Lookup Names" button to locate the correct information for the author. If the person you wish to add is not in the NARST database, then you will be able to enter the name and affiliation manually. Enter Then an **overall session abstract** of up to 200 words (about 1200 characters) in the Abstract box. If your proposal is accepted into the program, then this abstract will be used in the program book exactly as entered. Therefore, please watch for accuracy and check for any stray characters or unintended formatting that might appear if you pasted the abstract from a Word file. Next, you will be asked to upload **one** PDF file of your proposal (10 pages maximum—see formatting guidelines below) that includes an overall summary of your Related Paper Set and descriptions of individual papers. Continuing down the submission form, select the **Strand** to which you are submitting**,** then select two **Content Key Words** and one **Methodological Key Word** to help with assigning appropriate reviewers. Finally, click on **Save Related Paper Set Information** at the bottom of the page. You may come back to edit the proposal at any time until August 15, 2019. Any changes made after the initial submission will overwrite the previous version.

Interactive Poster Paper. Enter the **title** of the paper (limit 15 words). Next select your proposal type: **Research Paper** or **Theoretical Paper**. Since we cannot always accommodate the type of session every proposer would like, please indicate if you are willing to present as a stand-alone paper instead. Add up to 10 authors to your proposal**.** For each author, use the "Lookup Names" button to locate the correct information for the author. If the person you wish to add is not in the NARST database, then you will be able to enter the name and affiliation manually. Enter an abstract of up to 200 words (about 1200 characters) in the Abstract box. If your proposal is accepted into the program, then this abstract will be used in the program book exactly as entered. Therefore, please watch for accuracy and check for any stray characters or unintended formatting that might appear if you pasted the abstract from a Word file. Next, you will be asked to upload a PDF file of your proposal (five pages maximum—see formatting guidelines below). Continuing down the submission form, select the **Strand** to which you are submitting, then select two **Content Key Words** and one **Methodological Key Word** to help with assigning appropriate reviewers. Finally, click on **Save Interactive Poster Paper Information** at the bottom of the page. You may come back to edit the proposal at any time until August 15, 2019. Any changes made after the initial submission will overwrite the previous version.

Symposium. Enter the **title** (limit 15 words) of the symposium. Next select your proposal type: **Research Paper**, **Theoretical Paper**, or **Both Research and Theoretical**. Add up to 10 authors to your proposal (with their role in the session). For each author, use the "Lookup Names" button to locate the correct information for the author. If the author you wish to add is not in the NARST database, then you will be able to enter the name and affiliation manually. Then, type into the abstract box an **overall abstract** of up to 200 words (about 1200 characters). If your proposal is accepted into the program, then

this abstract will be used in the program book exactly as entered. Therefore, please watch for accuracy and check for any stray characters that might appear if you pasted the abstract from a Word file. Next, you will be asked to upload **one** PDF file of your proposal (10 pages maximum—see formatting guidelines below) with an overall summary of your symposium. You will then click on a radial button indicating the **Strand** to which you are submitting; select two **Content Key Words** and one **Methodological Key Word** to help with assigning appropriate reviewers. Finally, click on **Save Symposium Information** at the bottom of the page. You may come back to edit the proposal at any time until August 15, 2018. Any changes made after the initial submission will overwrite the previous version.

**When submitting your proposals, please take care that you or your co-authors enter names exactly the same way each time. This can be best accomplished by using the Lookup Names function in the proposal submission format. Using this function avoids scheduling conflicts and guarantees a conflict-free conference timetable. It also allows a consistent list of names in the program. If a presenter's name is not in the NARST database, then ensure the name is entered exactly the same way each time to avoid schedule conflicts.

All proposals submitted to NARST go through a **masked, peer-review process**. Masked, peer-review means you are **required** to remove **any** identifiers of the names of the authors in the proposal, including the institution from which you conducted the study. **NOTE: Proposals that do not meet these criteria will not be reviewed.**

Formatting for Submission of Proposal

- ❖ *Paper or Poster* submission by individual author or co-authors. There is a maximum of five pages (including references).
- ❖ *Related Paper Set* submission by multiple authors or co-author groups. There is a maximum of 10 pages (including references). This should begin with a summary of the entire set describing how all of the papers are related, and then provide details of each individual paper integrated into one document.
- ❖ *Symposium* submission by multiple presenters. There is a maximum of 10 pages (including references). This should include a description of the overall session topic or issue in one document and indicate how the session will run (e.g., panel discussion followed by group discussion).

To prepare the text for your proposal, **please ensure that pages are single-spaced with 1" (2.54 cm) margins all around, and in font no smaller than 12 on US Letter size paper (8.5" x 11")**. This is crucial for the reviewer reviewing process, as larger paper size will not print. If you usually use A4 paper, please convert to US letter size as you finalize your proposal, *before* converting to a PDF format for submission. *In your proposal, address the five criteria that are part of the review process: (a) subject/problem; (b) design/procedure; (c) findings and analysis; (d) contribution to the teaching and learning of science; and (e) how the paper will contribute to the interests of NARST members.* See Reviewer Rubric at the end of this document for a more complete description of the review criteria.

Please note: These page limitations apply only to the proposal, not to the length of the paper presented at the NARST Annual International Conference.

Confirmation of Submission

Once you have finished filling out your registration form and completed the proposal upload, you will receive a confirmation message on the Web screen. Each person on the proposal will be sent an e-mail confirmation provided his or her email information is in the NARST system. Only the proposal submitter will be able to track the proposal on their Abstract Submission Home Page, which will have a

confirmation number for each type of proposal submitted. Keep this number in your records in the event you need to inquire about your proposal submission.

Submission Deadline

The submission deadline is 5:00 pm YOUR local time on August 15, 2019 (the annual NARST proposal submission deadline).

In recent years, 92% of proposals are submitted in the final 72 hours. We request your cooperation in adhering to this submission deadline as a friendly and reasonable approach to ensure that the number of users in the final hours will be significantly reduced from that experienced in previous years. In essence, by completing your proposal not later than 5:00 pm your local time you will avoid experiencing sluggishness on the system, as well as ensure that others have a pleasant submission experience. We thank you in advance for your compliance with this deadline.

Requirements for First Authors

All first authors need to be present at the conference to present the paper or poster. The **first author must register for the Annual International Conference by the close of the Advance Registration period. Advance Registration will close 21 February 2020 (three weeks in advance of the conference)**. First authors who do not register by the 21 February deadline will have their presentation removed from the conference program. It is the responsibility of each first author to comply with this requirement. **You will not be contacted in the event you do not register by the deadline.** The last step before submission requires that you agree to to register by the deadline or have your presentation removed from the program.

Requirement of Presented Paper, Poster, or Symposium

All presenters – and all conference attendees - are required to register for the NARST Annual International Conference. If you present either a paper *or* a poster, you are required to have a paper (following the publication guidelines detailed in the Publication Manual of the American Psychological Association, 6th Edition, 2010) for distribution either at your presentation or through a personal link. NARST no longer has a deadline for the voluntarily submission of papers to be included on either the *NARST Conference* CD or as a link to the electronic program. It is each author's responsibility to provide access to a paper associated with the presentation.

Volunteering to Be an Reviewer or Presider

Please consider volunteering to be a reviewer (for peer review of proposals for the program) or presider (to facilitate discussion during sessions at the conference) by checking the appropriate box and Strand on the Web page where you uploaded your proposal. You have this option when you register as a new user, or you may edit this information if you already have a user name and password. You may volunteer for more than one Strand. Careful peer review is crucial to the quality of the Conference; thoughtful presiders can contribute to interactions at conference sessions. Both reviewers and presiders are leadership roles that may contribute to your professional development.

Presentation Needs in Portland, OR

One LCD projector and screen is provided in each concurrent session presentation room throughout the conference. Computers, speakers, and other presentation devices are not provided, so you will need to make your own arrangement for the presentation of electronic material.

Present a Modified NARST Presentation at NSTA

The NARST Research Committee is soliciting proposals for NARST-sponsored sessions at the following four National Science Teachers Association (NSTA) conferences: (1) 2021 National Conference (Chicago, Illinois, April 8-11, 2021); and (2) 2020 Regional Conferences at (a) Pittsburgh, Pennsylvania (October 29-31, 2020); (b) New Orleans, Louisiana (November 19-21, 2020); and (c) Phoenix, Arizona (December 10-12, 2020). When you are submitting your NARST proposal, you will have the opportunity to indicate your interest in presenting a practitioner's version of your NARST presentation at one of these NSTA meetings. A limited number of sessions will be available. The Research Committee will make final decisions about which proposals will be invited to participate at the NSTA meetings.

If you are interested in presenting a version of your proposed NARST session at one of these conferences, please provide the additional information requested, including an abstract of up to 200 words addressing the following six criteria that the NARST Research Committee has developed for NARST-sponsored presentations at NSTA meetings.

1.   Addresses theme(s) relevant for the teaching and learning of science.
2.   Bridges gaps between theory and practice and/or research and practice.
3.   Addresses concerns and needs of practitioners.
4.   Is interactive and designed to engage the practitioner audience (for workshop proposal).
5.   Provides materials or ideas that can be used with little or no modification by teachers, teacher educators, or administrators.
6.   Has a title and abstract that will attract a wide audience @ NSTA (i.e., written for a teacher audience).

NARST Proposal Review Rubric

For each category, three criteria are required. Given the constraints of the 5-page limit for individual paper and poster proposals (10 page limit for related-paper sets and symposia), please assign a numerical rating using the following descriptors as a guide:

5	**Highly evident:**	Proposal provides clear, substantive, and coherent evidence of **all** criteria
4	**Adequately evident:**	Proposal adequately describes **all** criteria in the category.
3	**Mostly evident:**	Proposal adequately describes **2 out of 3** criteria in the category
2	**Somewhat evident:**	Proposal adequately describes **1 out of 3** criteria in the category
1	**Not evident**	Proposal **does not** adequately describe **any** of the criteria in the category

Additionally, please make sure that you explain your numerical ratings by responding to the rubric questions with constructive feedback identifying the proposal's strengths and weaknesses in the text boxes provided. Answering Yes or No to the criteria questions is not considered acceptable feedback. With respect to proposals for related paper sets and symposia, we ask that your comments reflect the quality of *each* of the papers included in the proposal in addition to your summative recommendation and underlying rationale for the proposal as a whole.

Subject/Problem

1. Is there a clear focus for the study?
2. Does the proposal include a clear rationale for the study?
3. Does the proposal describe the model, theoretical framework, or philosophy of the study?

Design or Procedure

Empirical Studies
1. Does the proposal clearly describe the methodology (theory of method)?
2. Does the proposal clearly describe the research methods, design, and study context?
3. Are the methodology, procedure, and design appropriate for the study and clearly aligned with the problem?

Non-Empirical Studies (e.g., conceptual or position papers, reviews of literature)
1. Does the proposal clearly describe the approach used to develop the argument or conduct the review?
2. Are the ideological/philosophical positions of the author and sources made clear?
3. Does the proposal include an appropriate range of literature?

Analyses and Findings

Empirical Studies
1. Do the data analyses appear to be appropriate, coherent, complete, and aligned with the research questions?
2. Are the arguments or interpretations supported by the data and linked to prior literature?
3. Does the proposal discuss alternative interpretations, bias, reliability, or validity as appropriate?

Non-Empirical Studies (e.g., conceptual or position papers, reviews of literature)
1. Do the syntheses of ideas appear to be appropriate, coherent, and complete?
2. Are the arguments or interpretations supported by evidence?
3. Does the proposal discuss alternative interpretations, counter-arguments, or bias, as appropriate?

Contribution

1. Do the conclusions add to, refine, or refute theoretical constructs?
2. Do conclusions contribute valuable insights and have implications into teaching/learning/researching science education?
3. Does the proposal clearly address, and have implications for, equity issues related to NARST's goal of helping all learners achieve science literacy, including, <u>but not limited to</u>, race, sex, gender expression, ethnicity, socioeconomic status, access, ability, sexual orientation, language, national origin, and/or religion?

Cohesiveness* (*Related Paper-Sets ONLY*)
1. Are all of the papers in the set focused on a similar concept/theme?
2. Do all papers contribute new information to the set, making a meaningful strongly-related whole?
3. Are all papers contributing high quality information leading to a rigorous and comprehensive understanding of the theme?

General Interest

1. Does the content of the presentation promise to be of general interest to NARST members interested in this strand?
2. Is the content presented in a way that will be meaningful to NARST members interested in this strand?
3. Does the paper promise to be of interest to the education community at large?

Overall Rating (1-not recommended; 5 highly recommended)

To ensure NARST has high quality presentations at this year's conference, please only recommend that proposals be accepted for presentation if your ratings are appropriately high and supportive of this recommendation.