

INTRODUCTION

MISSION: The Center for Advancing STEM Teaching, Learning & Evaluation was created to enhance the rigor and quality of STEM education research and increase the number of outreach initiatives at RIT while fostering collaboration between STEM educators and education researchers across the Institute.

VISION: To achieve our mission we

- support RIT discipline-based STEM education researchers in their scholarship. CASTLE will create connections between researchers and research communities, foster collaborative and interdisciplinary research and facilitate faculty grant-writing. CASTLE will facilitate group activities such as journal clubs, research group meetings and other community-building practices.
- nurture a community of faculty, administrators, and staff interested in STEM education and pedagogy. CASTLE will facilitate dialog about evidence-based practices, discipline-based education research, and methods of assessment and evaluation.
- establish a robust and sustainable infrastructure that transforms STEM educational practices, supports discipline-based education research, and promotes PreK-20 faculty recruitment, preparation, professional development, and outreach.
- foster innovations in education by integrating an interdisciplinary community of scholars; promoting, sustaining, and evaluating reform efforts; advocating for diversity and access; and influencing policy, fundraising, and public outreach.

Administrative Structure:

The Center Director is responsible for maintaining CASTLE policies and developing and implementing a strategic vision. The Director is responsible overseeing all financial and staff matters (exceptions may be negotiated), and reports to their immediate academic supervisors (School Head and Dean) and the Vice President of Research. The Director appoints non-Core Member affiliates, including internal and external research/project and program affiliates. The Director convenes the annual assembly and sets its agenda.

An Assistant Director of Research (ADR) will coordinate all activities related to education research and scholarship. The ADR is charged with outreach within RIT, identifying potential new research affiliates and raising visibility and awareness of CASTLE scholarship support across the university. Examples of activities could include, but are not limited to: meeting with faculty, School Heads, Deans, SRS, and Foundations Relations to identify potential affiliates or funding streams or organizing STEM Education Research Symposia to raise awareness of ongoing research activities.

An Assistant Director of Programs will supervise Center programs such as the Learning Assistant and IMPRESS programs. The Assistant Director of Programs is responsible for raising awareness across the university of CASTLE programs, meeting with students, faculty and staff as needed. The ADP is also charged with developing sustainable funding models for CASTLE programs, and may assist in supervising staff.

The director and assistant directors will be chosen by vote of Center core members. The term for the Director is five years, renewable by member vote. The term for Assistant Directors is three years.

CORE RESEARCH & PROGRAMMATIC STRENGTHS

The Center will maintain, support, foster, and grow programs in five key areas:

1. Discipline-based Education Research (DBER): CASTLE will support faculty across the Institute conducting discipline-based STEM Education Research. This includes the Science

& Math Education Research Collaborative (SMERC) and other emerging faculty and groups that conduct rigorous discipline-based education research on issues involving postsecondary student learning. Researchers will be distinguished by a track record of peer-reviewed publications and external funding.

2. Scholarship of Pedagogy: CASTLE will support faculty efforts on pedagogical scholarship, evaluation and assessment, and foster innovation in the classroom.
3. Educational Transformation: The Center will promote and foster innovative curricula for national dissemination. Examples within the College of Science include LivePhoto, Interactive Video Vignettes, and Explorations in Physics. The Center will aggressively seek external funding for these and other projects.
4. Exposing undergraduate and graduate students to teaching experiences and transforming pedagogies: CASTLE will take an active role in preparing the next generation of STEM teachers. Examples of activities include the RIT *Learning Assistant* program to recruit and prepare future secondary school teachers and interfacing with students in the physics MS program.
5. Education and Careers of Groups Historically Excluded Identities in the STEM Disciplines: CASTLE will promote programs that support the Education and Careers of Groups Historically Under-represented in the STEM Disciplines. This includes the Inclusive Excellence initiative (IE), which seeks to create an inclusive environment across the natural sciences, and the Women in Science (WISe), which seeks to engage women in the sciences and mathematics by offering information, equity and collaboration opportunities. The Center will help coordinate IE and WISe activities and support efforts to secure additional funding.

AFFILIATION TYPES

CASTLE affiliation is open as the following:

- *Core Members*: For RIT faculty/staff whose primary activities most closely align with CASTLE, involvement may be written into faculty plans of work, and their department head may solicit a letter from the CASTLE Director to include in their annual review. Core members participate in the selection of the Center Director and Assistant Directors and the admission of new core members.
- *Research/Project Affiliates*: RIT faculty/staff may affiliate on a per-project basis. This most typically involves a grant or other project in which a faculty/staff member is working in collaboration with other CASTLE affiliates on the specified project. As membership is attached to specific projects, affiliation is assumed to expire upon project completion unless otherwise negotiated.
- *Program Affiliates*: Directors of affiliated RIT programs (e.g. SMERC, WISe, LA) may be considered affiliates in a capacity as liaison between the Center and their respective program.
- *External Research/Project Affiliate*: Non-RIT personnel may affiliate on a per-project basis. This most typically involves a grant or other project in which a person is working in collaboration with other CASTLE affiliates on a specified project. As membership is attached to specific projects, affiliation is assumed to expire upon project completion unless otherwise negotiated.

Affiliated projects will be indicated as such on the Proposal Review Form and be eligible for OVPR Center of Excellence F&A return. The decision to affiliate a project with CASTLE requires the approval of both the faculty PI and the CASTLE director.

Expectations/Responsibilities (R: Required, O: Optional, N: No)	Core	Research/ Project	Program	External
Maintain scholarship in STEM Education	R	R	R	R
Vote to elect Director/Asst. Directors, admit new core members	R	N	N	N
Contribute content for Center annual report	R	R	R	R
Affiliate appropriate external grants with CASTLE on RIT Proposal Routing Form	R	R	R	R
Attend Annual Business Meeting	R	O	O	O
Attend ad-hoc planning meetings/retreats	R	O	O	O
Attend appropriate Center seminars, group meetings, etc...	R	O	O	O
Benefits				
Solicit formal letters for tenure/promotion	Y	Y	Y	Y
Annual budget requests from Center Operating money	Y	N	N	N
Ad-hoc budget requests	Y (priority)	Y	Y	Y
Reserve CASTLE Space	Y (priority)	Y (limited)	Y (limited)	Y (limited)

EXPECTATIONS

Core members are expected to:

- Maintain scholarship in STEM Education, including foundational research (scholarship of discovery), curriculum development or classroom practice (scholarship of pedagogy)
- Help guide CASTLE's development through regular attendance at seminars and planning retreats.
- Contribute content to CASTLE's annual report summarizing their past year's activities.
- Affiliate external grants with CASTLE and provide information on research awards and activities for regular reporting to the OVPR
- Participate in the budget discussions and submit (collectively) an annual *Activities Budget*

Research/Project and Program Affiliates are expected to:

- Attend seminars and planning retreats as appropriate
- Affiliate external grants with CASTLE and provide information on research awards and activities for regular reporting to the OVPR
- Provide regular updates on program activities to the Center director
- Contribute content to CASTLE's annual report summarizing activities over the past year

External Research/Project Affiliate are expected to:

- Attend seminars and planning retreats as appropriate
- Affiliate external grants with CASTLE and provide information on research awards and activities for regular reporting to the OVPR
- Provide regular updates on program activities to the Center director
- Contribute content to CASTLE's annual report summarizing activities over the past year

ANNUAL BUSINESS MEETING

The Center will hold an Annual Business Meeting, announced to all members no less than 2 weeks in advance. Attendance at the meeting is expected of Core Members and welcomed of others. The Agenda of the meeting shall include:

- **Budget:** Prior to the Business Meeting the Center Assistant Directors will solicit from members budget requests for the following year. These will be discussed at the Business meeting and a prioritized list generated for consideration by the Director and Assistant Directors. Examples of acceptable requests include funds for external speakers, equipment, student researchers, or workshop or program support, although this list is not comprehensive.
- **Center Membership:** The Director will present an updated list of current members, including Core, Project/Research, Program and External Affiliates for discussion.
 - Core faculty are eligible to vote on Center decisions, including strategic plans, elections for director or other center positions, and request resources from the center director.

JOINING THE CENTER

Core Members

RIT faculty/*Staff* can become core faculty in two ways:

1. By accepting an invitation: Invitations to existing RIT faculty may be given by consensus decision of other core faculty.
2. By application: RIT faculty may submit a request to the director to join as a CASTLE core member. The application may either be in written form consisting of a CV and short statement of scholarship activities or verbally at a meeting attended by a majority of existing core members. Core members will then review and discuss the application with the Director and Assistant Directors, who will make the final decision on membership.

Research/Project Affiliates

RIT faculty/*staff* become project affiliates through direct discussion with the Center Director. It is expected that most project affiliates will have an external funding proposal affiliated with the Center as indicated on the Proposal Routing Form.

Program Affiliates

Faculty become program affiliates through their leadership of CASTLE-affiliated programs such as SMERC, WISE, SMASH, etc.

External Research/Project Affiliates

Non-RIT personnel become project affiliates through direct discussion with the Center Director. Appointments are made by the supervising College or Office of the Vice-President for Research (OVPR) with approval from the supervising Academic Unit as appropriate. It is expected that most external affiliates will have an externally funded proposal affiliated with the Center, either routed through RIT directly (and indicated on the Proposal Routing Form) or through another institution with significant spending through CASTLE.

The CASTLE Director will present the list of all members and affiliates to Core Members annually for review. Core members not meeting associated expectations may have their membership revoked by majority vote of other Core Members. Other Affiliates may have their affiliation revoked at the Director's discretion.

BUDGET

Core Members will meet annually to prepare an annual budget request to the Center for academic year activities. Budgets should be submitted by June 30th. The Center Director and

Assistant Directors will collectively decide on which requests to approve. In case consensus cannot be reached, the final decision rests with the director. Examples of reasonable group requests include funds for external speakers, equipment, student researchers, or workshop or program support, although this list is not comprehensive.

Individual faculty or affiliated projects may submit ad hoc budget requests at any time. These will be reviewed by the relevant Assistant Director and decided by the Director and Assistant Directors. Examples of appropriate requests include equipment, student support, programmatic support and partial support of post-doctoral researchers as part of grant proposals.

BENEFITS OF CENTER MEMBERSHIP

Center will support in identifying and fostering interdisciplinary collaborations for its members. The core members with funded research affiliated to CASTLE can receive multiple benefits: research programming support (students), grant writing consultants, networking with research partners, travel support, peer evaluation of proposals, and seed funding for new targeted grant proposal collaborations. Core faculty are eligible to vote on Center decisions, including strategic plans, elections for director or other positions, and request resources from the director. Members may also receive administrative assistance from Center Staff for accounting, scheduling events and other administrative tasks. These benefits are dependent on the grant activity at a given point in time and, as such, should be considered fluid.

Access to CASTLE Space

Access to CASTLE spaces (offices, meeting rooms, common labs, etc.) is available to all CASTLE affiliates as follows:

- *Core Members* may reserve space for any reason at any time.
- *Program and Project-Affiliates* may reserve space for CASTLE-affiliated program/project-related activities at any time.
- *Program and Project-Affiliates* may reserve space for non-CASTLE-affiliated program/project activities one week in advance.
- Unreserved space is available to all affiliates at the moment of need.