Michael I. Swart

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Professional Profile

A learning scientist with backgrounds in the human development and the arts whose work in research, design and teaching focuses on understanding the multisensory mechanisms through which our perceptions become our conceptions for developing fun, interactive experiences that give agency for exploration and creativity across mediascapes to inclusively empower learners in constructing their own understandings.

www.michaelswart.com

Education, Game Design, UX/IX Design & Research, Teaching & Project Management

The University of Wisconsin - Madison (Madison, WI) **Jul. 2017 – Current**

Research Scientist, Department of Educational Psychology

- Lab Director and Lead Researcher for MJ Nathan, Ph.D., Prof. of Learning Sciences & Educational Psychology
  - Game Designer & Researcher for *The Hidden* Village, a web-based motion capture game platform
  - Research Director for *The Hidden Village,* including: IRB compliance, MMSD District Liaison, Principal and Teacher Liaison, Participant Recruitment, Scheduling, Testing, Data Collection & Processing
  - Lead Researcher for Data Design, Collection, Analysis and Management
  - Designing Assessment in Qualtrics and Supervised Data Collection, Data Analysis/Analytics
  - Publishing and Presenting our work in Journals, Conferences and to 3rd Parties for Buy-in/Participation
  - Co-Authoring Grant submissions for AR-based AI-integrated gaming environments for STEM learning

Current Advisor, Fmr. Assistant Director, James S. McDonnell Foundation (JSMF) "Teachers as Learners"

- Domain Expert and Assistant to Director (Professor Mitchell Nathan, Ph.D.) and Susan Fitzpatrick, Ph.D.
  - Evaluated Research Grant Proposals for $40M program of 16 Interdisciplinary Research Teams for Teacher Education, Pre-Service Prep, Professional Development, Coaching & Certification
  - Advisory Board Member and Coordinator
  - *JSMF Representative* for funding NGO collective (e.g., Foundations including Gates, Spenser, Joyce, Walton, Dell, etc.) for determining investment priorities for Teaching & Learning Sciences Programming & Technologies

MathShifu, Inc. (San Diego, CA) **Jan. 2017 – Jun. 2017**

Director, Game Design & Development

- UI/UX-Designer
  - Conceptualized the ludology of the game, including narrative arc, player goals, leveling, UX and UI
  - Designed wireframes, rapid prototyping and support documents for the Art & Programming Depts.
- Curriculum Content Writer
  - Authored Curriculum in accordance with learning objective as well as Common Core Standards
  - Integrated mathematical content (fractions and algebraic thinking) into game w/ focus on game-play.
- UX Management
  - SOWs, deliverables, budget, scheduling
- Researcher for Play-Testing
  - Designed qualitative and quantitative efficacy evaluations of game play Alpha & Beta Delivery
  - Evaluated educational value by designing and conducting quantitative randomized controlled trials.

Teachers College, Columbia University (New York, NY) **Sep. 2009 – Nov 2016**

NSF Doctoral Research Fellow

- Lead Researcher for the development of the tutor-game, *Mobile Mathematics Movement* (M3) partnership w/ WNET-13, The PBS Affiliate in NYC and producer of *Cyberchase*
  - Awarded NSF Cyberlearning Exploratory Grant – $550K (Co-Author)
  - UI/UX Designer for *M3*, a digital-tablet tutor-game for learning mathematical fractions integrating physical movements into narratives from PBS's Emmy Award Winning *Cyberchase* (Storyboarding, Mock-ups, Wireframes, Asset Design, Animatics, Scripting, Alpha/Beta Testing
  - Supervised and directed budgets, SOW, contracts, RFPs for Dev Shops, Proposal Review, Production
  - Instructor for NYC After School Programs participating in the M3 Program (IRB, NYCDOE, PS/MS Liaison)
  - Coordinator for M3 Afterschool Programs (recruitment, enrollment, scheduling)
  - Curriculum Developer for M3
  - Data Collection and Analysis for qualitative (Focus groups, semi-structured clinical interviews) and quantitative and big-data analytics (Data mining, feature engineering, analytics)

Research Associate, Institute for Learning Technologies

- Completed 3 research projects:
  - Rhythmatics (PC game applet using online rhythm to learn math
  - Paths in Life (PC game navigating robots around obstacles to teach geometry
  - Fishing Lines (PC game navigating a fisherman's boat along the number line to number magnitude, identity, arithmetic)

Adjunct Professor, Department of Mathematics, Science & Technology

- MSTU 4133: Cognition and Computers – A graduate level class designed to explore the field of Cognitive Science and how the metaphor of the brain as a computer drives advent educational technology.

Course Assistant & Instructor, Department of Human Development

- Grading, Discussion Sections for *Cognition and Learning*, for Dr. Barbara Tversky

Graduate Assistant, Department of Human Development

- Writer /Editor/Creative Director for HUDN Magazine (writing, photography, illustration, pagination).

Sesame Workshop (New York, NY) **July 2008 – Dec. 2008**

Digital Media Intern

- UX Designer for digital shorts for international mobile users.
- Curated clips from archives and edited segments for mobile user content.
- Consulted on pedagogical approaches for new projects.

Tiny Tots Sports (San Diego & Los Angeles, CA) **Sep. 2004 – June 2005**

Montessori Physical Education Instructor

- Co-Developed and instructed children on a progressive curriculum incorporating elements of balance, agility, movement, and perspective (through sports) to explore handedness, hemispherical dominance and development.

Film Production, Photography, Graphic Arts, UX Design, Advertising & Non-Profit Fundraising

AMT (Los Angeles, CA; New York, NY) **June 2003 – Sep. 2012**

Freelance Director, Art Director, Studio Artist, Production Coordinator, Key Set Production Assistant

NEW YORK

- Created, developed, produced design materials and technologies for Michael Flutie's Office (MFO), JEC Reunion and iGeneration;
- Production and Stage management for non-profits Urban Zen, Agent of Change

LOS ANGELES

- Created, developed, coordinated and produced films, television, commercials and music videos for many different production companies

Films (Digital):
Big Brother Does Good (Dir.,Shoot,Ed.)
The DooHood Games (Dir., Shoot,Ed.)
Doogood Hooliday Season (Dir., Shoot)
The Hunting of the President (Shoot)

Commercials/ Music Videos:
2nd AD - Easter Seals – "Angels" w/ Marlee Matlin,
Wal-Mart – "Summer", Vega4 – "Life is beautiful",
Asst. Coord. - Titleist w/ John Cleese,
Nutrigrain – "Horse"
Key Prod. Asst. - Nelly Furtado - "Say It Right",
Ludacris feat. Mary J. Blige - "Runaway Love", RHCP - "Desecration Smile", GoDaddy - "Superbowl", Chili's - "Pepper", Verizon - "Roadtrip", Cadillac - "Fuqua"

The Doogood Conservatory (San Diego, CA) **April 2003 – Dec. 2007**

Vice-President of Communications

- UX/UI for organization's website/multimedia materials.
- Videographer for events and community outreach.
- Directed media for over 30 programs located nationwide and 3 international programs.

ALSAC/St. Jude Children's Research Hospital (National Offices: TN, CA, NY) **August 1999 – 2017**

Public Speaker & Fundraiser, Major Gifts Department

- Spoke as Nation-wide representative of the hospital to crowds ranging from ~25 to 2500 persons in a wide range of forums (college auditoriums, sporting events, boards of directors, community leaders, etc.) to raise millions of dollars amongst individual and major donors, planned giving and community organizations
- Graphic Artist for Promotions, Collaterals, RFPs

Vivendi Universal (San Diego, CA) - michaelswart.com/menu.html **July 2002 – April 2003**

UX/UI Designer/ Graphic Artist

- Designed, created and produced websites and advertising campaigns for corporate holdings, major label artists including:

Websites:
Rollingstone.com
EMusic.com
MP3.com
MP4.com
EMusic Feature Pages

Ad Campaigns:
Artists: U2: Beautiful Day, Alanis Morrisette Nappy Roots, 50 Cent, Madonna: Die Another Day, Foo Fighters, Sean Paul, CKY, Coldplay, N.O.R.E., Steve Earle

Multi-Media:
Cody Chestnut Tour,
SXSW CD Sampler,
Must Have Music,
Nashville Star,
Listening Party,
MP3.com "New Track Attack

Hill | Holliday (Boston, MA) **May 2001 – Aug. 2001**

Externship: PR Digital Archivist/Junior Creative

- Writer, Storyboard Illustrator for Creative Pitch for *Marshall's Department Store*
- Created Digital archive of Agency-wide Clippings Database

Target Dept. Stores (Minneapolis, MN) - michaelswart.com/portfolio/cb/cb.html **June 2000**

Writer/Illustrator

- Authored and illustrated children's coloring book sponsored by Target.

St. Jude Children's Research Hospital (Memphis, TN) **Sep. 1999 – June 2000**

Graphic Artist

- Designed, created, and produced collaterals and fundraising proposals on behalf of ALSAC for clients that included: Ranger Boats, Keebler Foods, Nimitz Oil, Coors Brewing, Convention 2000, SASCO, Walgreens, National Auctioneers Association, Country Cares Radiothon.

Musician - michaelswart.com/music/music.html

Drums & Percussion (San Diego & Los Angeles, CA; New York, NY) **June 2003 – June 2016**

- Ferrari Truck, Ferrari Truck (Behaving like Animals EP; 2016); Live at Arlene's Grocery (2013)
- Mary Magdelen, DEMO EP (2004)
- The Buzzkill Romantics, Self-Titled LP (2003)
- The Bad Apples, Self-Titled LP (2002)

Educational History

Columbia University Teachers College (New York, NY)

PhD	Cognitive Science in Education	**2017**
MPhil	Masters of Philosophy	**2016**
EdM	Educational Psychology: Cognitive/Behavioral/Developmental Analysis	**2015**
MA	Cognitive Science in Education	**2011**

The University of Virginia (Charlottesville, VA)

BA	Psychology w/Distinction	**2001**
BA	Cognitive Science w/Distinction	**2001**
Minor	Studio Art	**2001**

Skills

- Memberships & Editorial Journal and Conference Reviewer: American Educational Research Association (AERA), International Society for the Learning Sciences (ISLS,) Psychology of Mathematics Education – North American (PME-NA), Cognitive Science (CogSci), Journal of Experimental Psychology (JEP)
- Admin: Microsoft Word, Excel, Access, and PowerPoint; Google Apps & Drive, Workflow Platforms (e.g., Atlassian)
- Design: Adobe CS incl. Premiere, Photoshop, Illustrator, In Design, InVision
- Statistical: R, SPSS, Rapid Miner, EEG, fMRI, Eye-Tracking, PsychoPY
- Programming: HTML, Pascal, CSS, MatLab, UNITY 3D
- Videography & Photography: Film/Digital SLR; Video 12/15/24/30p
- Video/Audio Production & Editing: Apple Final Cut Pro, Adobe Premiere

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Interests

- Drumming, painting, drawing, photography, videography, editing, writing, singing, bicycle building, sports (cycling, skateboarding, tennis, frisbee, football, golf, baseball), yoga, culinary and dancing

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Academic Curriculum Vitae

Teachers College Columbia University, New York, NY **3.90 G.P.A.**

Coursework:

Cognitive Sciences: Spatial Thinking, Visual Explanations, Psychology of Language and Reading, Psychology of Media, Cognition and Learning, Cognitive Development, Cognition and Computers, Educational Psychology, Adv. Seminar on Motivation, Doctoral ProSeminar, Adv. Seminar in Cognitive Development, Development of Creativity, Adv. Seminar: Case Studies in Creativity, Adv. Seminar: Critical Review of Current Topics in Educational Psychology, Development in Atypical Contexts; Eye-Tracking Training

Neuroscience: Brain and Behavior I & II, Adv. Seminar on Neuroplasticity, Neuroimaging: EEG, Neuroimaging: fMRI, Current Topics in Neuroscience and Education

Statistics: Probability and Statistical Inferences, Applied Regression Analysis, Linear Models in Experimental Design, Multivariate Analysis I, Core Methods in Educational Data Mining (Audit), Feature Engineering (Audit)

Research: Psychological Measurement, Research Methods in Social Psychology, Research Practicum in Educational Psychology, Cognition, and Learning, Research Practicum in Educational Media, Research Practicum in Semiotics, Graphical Depiction and Gestural Communication, Research Practicum for *Mathemantics*

Journal Publications

Vitale, J.M., Black, J.B., and **Swart, M.I.** (2013). Applying Grounded Coordination Challenges to Concrete Learning Materials: A Study of Number Line Estimation. Journal of Educational Psychology, 105(4).

Vitale, J.M., **Swart, M.I.**, Black, J.B. (2014). Integrating intuitive and novel grounded concepts in a dynamic geometry learning environment. Computers & Instruction, 72, 231-248.

Nathan, M.J., & **Swart, M.I.** (2020) Materialist epistemology lends design wings: Educational design as an embodied process. Educational Technology Research and Development, https://doi.org/10.1007/s11423-020-09856-4.

Nathan, M. J., *Schenck, K., *Vinsonhaler, R., Michaelis, J., +**Swart, M.**, & **Walkington, C.** (2020). Embodied geometric reasoning: Dynamic gestures during intuition, insight, and proof. *Journal of Educational Psychology*, *113*(5), 929-948.

Walkington, C., Nathan, M.J., Wang, M., **Swart, M.I.**, Holcomb-Webb, K., Schenck, K.E, & Washington, J. (Under Review). Collaborative problem posing of geometric movements in a motion capture game. Journal for Research in Mathematics Education.

Swart, M.I., Schenck, K.S., Xia, F., Kim, D., Grondin, M., Kwon, O.H., Walkington, C., and Nathan, M.J. (2023). Directed Actions, Pedagogical language and Gesture in an embodied digital intervention for geometry learning.

Swart, M.I., Yang, J., Lowes, S. (in Prep). Creating a tool for assessing motivation, interest, self-efficacy and learning.

Swart, M.I., Vitale, J.M., Kornkasem, S., Nathan, M.J., and Black, J.B. (In Prep) Causality in design-based research on games in education through randomized experiments.

Swart, M.I., Vitale, J.M., Kornkasem, S., Nathan, M.J., and Black, J.B. (In Prep) Design lessons for embodied interventions in learning mathematical fractions.

Conference Papers, Presentations & Posters:

Harris, R., Fadjo, C., Carson, E., Hallman, G., **Swart, M.I.** (2009): Creativity in video game design as pedagogy. SIGGRAPH Talks

Vitale, J. M., Black, J. B., & **Swart, M. I.**, (2011). Promoting development of geometry concepts: Interfacing multiple embodied representations with a computer game. Proceedings of the 33rd Annual Conference of the Cognitive Science Society. Austin, TX: Cognitive Science Society.

Swart, M.I. (2013). M3: Utilizing Gestural Conceptualizations of Mathematical Fractions on Mobile Devices. Teachers College Academic Festival. New York, NY.

Swart, M.I., Friedman, B., Vitale, J.M., Kornkasem, S. and Black, J.B.B. (2014). Mobile Movement Mathematics: Designing a digital tablet tutor for FrActions. NYC Subway Summit on Cognition and Learning. New York, NY.

Swart, M.I., Friedman, B., Vitale, J.M., Kornkasem, S., Hollenberg, S., Lowes, S., Nankin, F., Sheppard, S. and Black, J.B.B. (2014). Mobile Movement Mathematics: Exploring the gestures students make while explaining FrActions. 2014 Annual Meeting of the American Educational Research Association. Philadelphia, PA.

Swart, M.I., Friedman, B., Vitale, J.M., Kornkasem, S., Lowes, S., Sheppard, S. and Black, J.B. (2014). The M3 Project: Math Movement and Mobile Games. Teachers College Academic Festival. New York, NY.

Swart, M.I., Friedman, B., Vitale, J.M., Kornkasem, S., DiQuallo, K., Sheppard, S. and Black, J.B.B. (2015). Mobile Movement Mathematics: Situating Embodied Learning of Fractions using narrative and gesture in a digital tablet environment. NYC Subway Summit on Cognition and Learning. New York, NY.

Swart, M.I., Friedman, B., Vitale, J.M., Kornkasem, S., and Black, J.B.B. (2015). Mobile Movement Mathematics: Gestures improve Student's Performances on Mathematical FrActions. APS National Conference, New York, NY.

Swart, M.I., Vitale, J.M., Friedman, B., Kornkasem, S. & Black, J.B. (2015). M3-Situating Embodied Learning: Embedding Gestures in Narratives to learn Mathematical Fractions in a digital tablet environment. Proceedings of the Annual Conference of Cognitive Science, July 2015. Pasadena, California.

Swart, M.I., Vitale, J.M., Friedman, B., Kornkasem, S. & Black, J.B. (2015). Mobile Movement Mathematics (M3): Discussing Iterative (re)Design of a Digital Tablet Tutor-Game for Learning Fractions. Proceedings of the Games for Learning Summit, July 2015. Madison, Wisconsin.

Swart, M.I., Friedman, B., Kornkasem, S., Lee, A., Lyashevsky, I., Vitale, J.M., Sheppard, S., Black, J.B., (2016). A Design-Based approach to Situating Embodied learning of Mathematical fractions using Narratives and Gestures in a tablet-based game. 2016 Annual Meeting of the American Educational Research Association. Washington, DC.

Swart, M.I., Kornkasem, S., Hachigian, A., Colon-Costa, N., Black, J.B., Vitale, J.M., DiQuallo, K., Sheppard, S. (2016). ¡¿Embedding Gestures into Narrative Tutor-games to learn Fractions?! International Conference on Meaningful Play 2016. East Lansing, MI.

Swart, M.I., Kornkasem, S., Hachigian, A., Colon-Costa, N., Black, J.B., Vitale, J.M., DiQuallo, K., Sheppard, S. (2017). ¡¿When it's the Gesture that Counts?! 2017 Annual Meeting of the American Educational Research Assoc. San Antonio, TX.

Swart, M.I., Kornkasem, S., Hachigian, A., Colon-Costa, N., Black, J.B., Vitale, J.M., DiQuallo, K., Sheppard, S. (2017). ¿From Abstract to Concrete? Evidence for designing learning platforms that adapt to user's proficiencies. 2017 Annual Meeting of Cognitive Science Society. London, UK.

Kornkasem, S., **Swart, M.I.**, Black, J.B. (2018). Developing spatial thinking skills using multimedia perceptual models. *2018 Annual Meeting of the International Society for Spatial Cognition.* Rome, ITALY.

Nathan, M.J. & **Swart, M.I.** (2018). What makes math hard? 2018 *Play Make Learn Conference*. Madison, WI.

Walkington, C., **Swart, M.I.**, Nathan, M.J. (2018). Kinecting Geometry Concepts Using Gestures in Gaming. *2018 Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Greenville, SC.*

Schenck, K.E., **Swart, M.I.**, Binzak, J.V., McGinty, J., Michaelis, J.E., Kwon, O., Visonhaler, R., Nathan, M.J., and Walkington, C. (May, 2019). Connecting to Geometric Proof Concepts using Gestures. Poster presented at NSF Embodied Design for Mathematical Imagination and Cognition Workshop, Madison, WI.

Xia, F., Nathan, M.J., Schenck, K.E., **Swart, M.I.**, Kwon, O., Michaelis, J.E., Binzak, J.V., McGinty, J., Visonhaler, R., and Walkington, C. (May, 2019). Examining the Effects of Geometric Scaffolds on Gesture Production. Poster presented at NSF Embodied Design for Mathematical Imagination and Cognition Workshop, Madison, WI.

Schenck, K.E., **Swart, M.I.**, Vinsonhaler, R., Kwon, O., Binzak, J.V., McGinty, J., Xia, F., Walkington, C., and Nathan, M.J. (February, 2019). Observing Grounded and Embodied Cognition for Geometry Proofs: A Case Study. Poster presented at the annual University of Wisconsin-Madison Education Research Poster Fair, Madison, WI.

Schenck, K.E., Michaelis, J.E., **Swart, M.I.**, Xia, F., Nathan, M. J., and Walkington, C. (April, 2020). Mathematical Knowledge is Embodied: Synergistic Contributions of Gesture and Speech During Geometry Proof Production. Paper presented at the annual American Educational Research Association Conference, San Francisco, CA.

Xia, F., Nathan, M. J., **Swart, M.I.**, Schenck, K.E., and Kwon, O. (April, 2020). Does Click Matter? The Role of Text and Diagram on Geometric Reasoning and Gesture Production. Poster presented at the annual American Educational Research Association Conference, San Francisco, CA.

Swart, M.I., Schenck, K., Xia, F., Kwon, O.H., Vinsonhaler, R., Walkington, C., Nathan, M.J. (2020). Grounded and embodied cognition for intuition and proof playing a motion-capture video game. 2020 *International Conference of the Learning Sciences.* Nashville, TN.

Swart, M.I., Nathan, M.J., Fitzpatrick, S., Dolezak, B., et al. (2020). Teachers Learning to Promote Classroom Discourse, Equity, Agency, and Engagement. 2020 *International Conference of the Learning Sciences.* Nashville, TN.

Swart, M.I., Schenck, K.E., Xia, F, Kwon, OH, Kim, D. , Walkington, C., and Nathan, M.J. (2020). Embodiment as a Rosetta Stone: Collective Conjecturing in a Multilingual, Limited English Proficiency Classroom with a Motion Capture Geometry Game. 2020 *International Conference of the Learning Sciences.* Nashville, TN.

Kirankumar, V., Sung, H., **Swart, M.I.**, Kim, D., Xia, F., Kwon, O.H., Walkington, C., Nathan, M.J. (2021) Embodied Transmission of Ideas: Collaborative Construction of Geometry Content and Mathematical Thinking. 2020 *International Conference of the Learning Sciences.* Bochum, GER.

Kim, D., **Swart, M.I.**, Schenck, K.E. & Nathan, M.J. (2021). Grounded and embodied proof production: Are gestures and speech enough to produce deductive proof?. *Proceedings of the 2021 International Conference of the Learning Sciences*. Bochum, Germany.

Swart, M.I., Schenck, K.E., Xia, F., Kim, D., Kwon, O.H., Nathan, M.J. & Walkington, C. (June, 2021). Embodiment as a Rosetta Stone: Collective Conjecturing in Multilingual Classroom Using a Motion Capture Geometry Game. *Paper presented at the annual North American Chapter of the International Group for the Psychology of Mathematics Education Conference*. Mazatlan, Sinaloa, Mexico.

Sung, H., **Swart, M.I.,** & Nathan, M. J. (2021). Enhancing K-12 Pre-service Teachers' Embodied Understanding of the Geometry Knowledge through Online Collaborative Design. In proceedings of the *43rd Annual Meeting of North American Chapter of the International Group for the Psychology of Mathematics Education*, Philadelphia, PA.

Swart, M.I., Kirankumar, V., Sung, H., Xia, F., Kim, D., Kwon, O., Walkington, C., Schenck, K., & Nathan, M. J. (2021). Embodied Transmission of Ideas: Mathematical Thinking Through Collaborative Construction of Geometry Video Game Content. In proceedings of the *43rd Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, Philadelphia, PA.

Xia, F., **Swart, M.I.**, Kim. D., & Nathan, M.J. (2021). Eliciting Predictive Behaviors to Support Embodied Mathematical Cognition: Socially-distanced experimentation in the time of COVID-19. Paper presented at the *Annual Meeting of the American Educational Research Association.*

Schenck, K.E., Kim, D., **Swart, M.I.**, & Nathan, M.J. (April, 2022). With no universal consensus, spatial system perspective affects model fitting and interpretation for mathematics. [Paper presentation]. *American Educational Research Association Conference*, San Diego, CA, United States.

Xia, F., Schenck, K.E., **Swart, M.I.**, & Nathan, M.J. (April, 2022). When conceptualization gets moving: Exploring how directed actions complement gestural insights for generating geometric reasoning. [Paper presentation]. *American Educational Research Association Conference*, San Diego, CA, United States.

Sung, H., **Swart, M.I.**, & Nathan, M. J. (April, 2022). Teaching teachers teaching students: How embodied cognition can help pre-service teachers assess students' mathematical thinking. [Paper presentation]. *American Educational Research Association Conference*, San Diego, CA, United States.

Xia, F., Schenck, K.E., **Swart, M.I.**, & Nathan, M.J. (2022). Directed actions scaffold gestural insights in geometric reasoning. In J. Oshima (Ed.) *Proceedings of the 2022 International Conference of the Learning Sciences*. Hiroshima, Japan.

Xia, F., Schenck, K.E., **Swart, M.I.**, & Nathan, M.J. (2022). The role of action-prediction in embodied mathematical reasoning. In J. Oshima (Ed.) Proceedings of the *2022 International Conference of the Learning Sciences*, Hiroshima, Japan.

*Nathan, M.J., Walkington, C., **Swart, M.I**., Designs for Grounded and Embodied Mathematical Learning. In J. Oshima (Ed.) *Proceedings of the 2022 International Conference of the Learning Sciences*. Hiroshima, Japan.

Sung, H., **Swart, M.I., & Nathan, M. J. (2022). Methods for analyzing temporally entangled multimodal data. In J. Oshima (Ed.) *Proceedings of the 2022 International Conference of the Learning Sciences*. Hiroshima, Japan.

Schenck, K.E., **Swart, M.I.**, Hubbard, E.M., & Nathan, M.J. (July, 2022). Expanding understandings of embodied mathematical cognition in students' fraction knowledge.[Poster presentation]. *Annual meeting of the Cognitive Science Society, Toronto, Canada.*

Grondin, **M., Swart**, M.I., Xia, F., Nathan, M.J. (2022) Assessing Engineering Students' Embodied Knowledge of Torsional Loading Through Gesture. 2022 *Annual Meeting of the American Society for Engineering Education*. Minneapolis, MN.

Fogel, A., **Swart, M.I.**, Grondin, M., Nathan, M.J. (2022). Grounded Embodied Learning using online motion-detection in The Hidden Village. In Iyer, S. et al. (Eds.) *Proceedings of the 30th International Conference on Computers in Education.* Asia-Pacific Society for Computers in Education.

Grondin, M., **Swart, M.I**., Kim, D., Raymond, C., Huggett, C., Pandey, A., De Leon, C., Morrell, M., Xia, F., Nathan, M.J. (2023) Embodying Engineering students' knowledge through gesture. *American Educational Research Association Conference*, Chicago, IL, United States.

Swart, M.I., Schenck, K.S., Xia, F., Kim, D., Grondin, M., Kwon, O.H., Walkington, C., and Nathan, M.J. (2023). Students' geometric thinking in an interactive Narrative Game. *American Educational Research Association Conference*, Chicago, IL, United States.

Sung, H., Kim, D., **Swart, M.I.,** .& Nathan, M.J. (2023) Multimodal Behavior Analysis: Two Patterns of Collaborative Construction of Embodied Knowledge. Proceedings for the Annual Meeting for the Cognitive Science Society, Sydney, Australia.

Grondin, **M., Swart**, M.I., Xia, F., Nathan, M.J. (2023) How Do Student's Use *Annual Meeting of the American Society for Engineering Education*. Baltimore, MD.

Awards

*Best Design Paper, ICLS 2022,

**Best Student Paper, ICLS 2022;

Dean's Grant Award, 2012 "Sensory and Propositional Encoding & Memory Retrieval of Paired-Associate Works of Art";
National Science Foundation Cyberlearning Grant- Exploratory Phase $550K Award "Mobile Movement Mathematics (M3;
Dissertation Research in partnership with WNET-13 NYC PBS Affiliate & Emmy Award winning *Cyberchase*)"

Scholastic Extracurricular Activities

President of Teachers College Student Senate '09-'11, Communications Officer – Interschool Governing Board of Columbia Student Government '09-'11, Chair TC GoGreen Committee '10-'12, TC Senate Student Life Committee, TC Senate Diversity Committee, TC Senate Institutional Affairs Committee, Committee for Community and Diversity at Teachers College, President and Provost Committee of Columbia, Musician- "Ferrari Truck"

The University of Virginia, Charlottesville, VA **3.74 G.P.A.**

Upper Level Coursework:

Neural Mechanisms of Behavior, Cognitive Neuroscience of Aging, Psychobiology Lab Practical, Psychology of Art, Psychology of Pleasure, Psychology of the Minority Family, Developmental Psycholinguistics, Dr. Michael Kubovy and Dr. Dave VanValkenburg Audiology Research Lab, Advanced Studies in Digital Media; Psi Chi Honors Society:

Extracurricular Activities:

Brown College Student Government Representative (3, 4), Black Voices (3, 4), Madison House Volunteer (2, 3, 4), UVa Pep Band (2-4) Transfer Student Peer Advisor (3, 4), FORCE (3, 4), Contributor: The Declaration
Employment: Teaching Assistant – Art Department (3, 4), Newcomb Hall Building Attendant (3, 4), UVa Catering (3)

Pine View School for the Gifted, Osprey, FL **3.83 *uw*G.P.A.**

Honors Societies & Awards

Mu Alpha Theta, Phi Beta Chi, National Honors Society; JC Penny National Golden Rule Award, Rotary Outstanding Youth Citizen Award

Work & Extracurricular Activities

Publix Supermarkets (9-12), Health Care Careers Club (Founder, President, 9-12), Teen Line (Co-Founder, Board Member 9-12), Teen Court (9-11), Student Government: Treasurer (9-10), Intramural Sports (9-12)