

CURRICULUM VITAE

SUE ALLEN

ADDRESSES:

National Science Foundation
4201 Wilson Blvd, Room 885
Arlington, VA 22230

Exploratorium:

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San Francisco, CA 94123
Telephone: (415)-353-0471

EDUCATION:

Ph.D., Graduate Group in Science and Mathematics Education (SESAME), U.C.
Berkeley, May 1994

M.Sc., Astrophysics, University of Cape Town, South Africa, 1986

B.Sc. Honours, Theoretical Physics, University of Cape Town, South Africa,
1981

B.Sc. Physics, Mathematics, Applied Mathematics, Rhodes University,
Grahamstown, South Africa, 1980.

HONORS AND AWARDS:

James S. McDonnell Post-Doctoral Fellowship, 1994 - 1996

Constance Dorothea Weinman Scholarship, 1989 and 1990

George C. and Helen N. Pardee Scholarship, 1988

University of California Regents Graduate Fellowship, 1988

Margaret Flanagan Scholarship, 1986 - 1988

Myer Levinson Scholarship, 1981 - 1982

Rhodes University Foundation Scholarship for most outstanding graduate, 1981

Southern Life Prize for Mathematics, 1981

Council for Scientific and Industrial Research Scholarship, 1981 - 1983

Joseph Stone Bursary, 1981

Trevor Williams Scholarship, 1980

Academic Honours, Rhodes University, 1980

Alexander Ogg Prize in Physics, 1980

Trevor Williams Prize in Physics, 1978, 1979

Rhodes University Scholarship, 1979 - 1980

RESEARCH AND EVALUATION EXPERIENCE:

- 8/08 – present Program Director, Division of Research on Learning in Formal and Informal Settings, National Science Foundation. On leave from the Exploratorium, served as a Visiting Scientist, Engineer, and Educator (VSEE), overseeing peer-review panels, awards, and a portfolio of projects in several programs, including Research and Evaluation on Education in Science and Engineering (REESE), Faculty Early Career Development (CAREER) and Informal Science Education (ISE). Contributed to the writing of new solicitations and other communications with the field, led a program-level evaluation planning team, served as DRL liason with NASA.
- 9/97 – 7/08 Director of Visitor Research and Evaluation at the Exploratorium in San Francisco. Oversaw all aspects of visitor studies, educational research and evaluation on all projects involving the museum's public space. Supervised other researchers, evaluators and volunteers. Oversaw use of exhibit floor for research purposes by researchers from other museums and universities.
- 9/96 - 3/97 In-house evaluation coordinator for the Exploratorium on the "California Framework Project." This ambitious project explored the roles that a science museum can play in assisting science education reform in the schools. Designed and implemented interviews and questionnaires with visitors and teachers as part of an extensive piece of formative evaluation. Recruited, supervised and trained volunteer interviewers to assist in giving feedback to the developers. Performed extensive documentation as part of this project, in an attempt to record pivotal insights and lessons learned in the development process.
- 9/94 - 9/96 Educational researcher at the Exploratorium. Conducted in-depth research on a small number of exhibits, exploring ways to use labels to encourage visitors to engage in deeper reasoning about the science embodied in an exhibit. In addition, conducted research on the nature and impact of the Teacher Institute summer workshops, which provide in-service professional development for middle and high school teachers. Conducted several informal evaluations of exhibits, and worked with exhibit development staff to dramatically expand front-end and formative evaluation practices.
- 6/92 - 12/93 Graduate student researcher for Professor Barbara White on ThinkTools project, UC Berkeley. The project aims to teach middle school students a Newtonian model of force and motion, using computer modeling tools.

Contributed to software design, curriculum development, assessment design and data gathering in classrooms.

- 1/91 - 5/92 Graduate student researcher on Video Portfolio Project at ETS, with Dr John Frederiksen. Worked as videographer in classrooms, and liason with teacher groups reflecting on their own teaching practice in weekly video clubs. Also helped design rubrics for judging teaching performance.
- 9/87 - 12/90 Research assistant for Institute for Research on Learning, working with Dr Roy Pea. The project explored high school students' learning in geometrical optics, using a computer simulation environment and hands-on activities. Contributed to software and curriculum design, data gathering and analysis.
- 12/86 - 8/89 Research assistant for Institute of Cognitive Science, working with Professor Fred Reif, UC Berkeley. The project explored university students' understanding of the concept "acceleration".
- 1/84 - 6/84 Researcher on PLATO Learning Management as a course controller in physics, Rhodes University, South Africa. Designed and implemented a sophomore course on vibrations and waves.
- 1/82 - 12/83 Research assistant with Professor Brian Warner, Department of Astronomy, University of Cape Town, South Africa. Observed and analyzed rapid oscillations in cataclysmic variable stars.

TEACHING EXPERIENCE:

- 2005 Lecturer at University of California, Berkeley, School of Education. Taught graduate-level, action-oriented course on thinking and learning in science to Ph.D. students and Masters/Science-Credential students.
- 2000 - 2008 Guest lecturer at John F. Kennedy University, Department of Museum Studies. Topics include evaluation, educational theory, and learning in informal environments.
- 2/84 - 6/85 Junior lecturer in undergraduate physics at Rhodes University, South Africa. Taught introductory physics, classical mechanics, vibrations and waves, statistical physics, spectra, to students at all levels. Courses included theory and laboratory components.
- 2/84 - 9/84 Physics and mathematics teacher in EWE and Grahamstown People's Program for black high school students.

2/81 - 12/82 Teaching assistant for Introductory Physics 1M, University of Cape Town, South Africa.

RESEARCH INTERESTS

Learning in informal settings
 Scientific inquiry
 Studies at the intersection of research and practice
 Research & evaluation methods
 Diagrammatic representations

PROFESSIONAL AFFILIATIONS

Visitor Studies Association (Board member 1997-1999)
 Museum Education Roundtable

REVIEW EXPERIENCE

American Journal of Physics
 Journal of Interpretive Research
 Curator
 AERA Annual Conference
 VSA Annual Conference
 James S. McDonnell Foundation Awards
 Informal Science Education Awards, National Science Foundation
 ROLE Awards, National Science Foundation
 REC-REESE Awards, National Science Foundation
 Canadian Journal of Science, Mathematics, and Technology Education
 Museums & Social Issues

PRINCIPAL INVESTIGATOR

2003 – 2007 *Facilitating group scientific inquiry using science museum exhibits*, National Science Foundation award #REC-0411826.

2000 - 2004 *Finding significance: Studying the role of personal meaning making in visitors' exhibit experiences*, National Science Foundation award #ESI-0072917.

CO-PRINCIPAL INVESTIGATOR

2003 – 2007 *Listening: Making sense of the sonic soup*, National Science Foundation award #ESI-0307925.

ADVISOR

2002 – 2004 *Developing and testing of a tool for judging excellence in science museum exhibitions*. Primary funding: National Science Foundation. Principal Investigator: Beverly Serrell, Serrell & Associates, Chicago.

2004 – 2007 *The TEAMS collaborative*. Primary funding: National Science Foundation. Principal Investigator: David Goudy, Montshire Museum of Science, Norwich, Vermont.

2005 – 2007 *A study of the relationship between learning style and preference for online informal activities*. Principal Investigator: David Schaller, Educational Web Adventures, St. Paul.

EVALUATION CONSULTANT

2004 Established Allen & Associates, independent evaluation consultant

2004 – 2007 Served as external summative evaluator for *Round and Round*, San Jose Children's Discovery Museum, National Science Foundation award.

EXPERT COMMITTEES WITH ASSOCIATED PUBLICATIONS

2006 – 2009 National Academies NRC Consensus Study Committee on Learning Science in Informal Environments. Resulting publication: *Learning Science in Informal Environments: People, Places, and Pursuits*. Washington DC: The National Academies Press.

2007 – 2009 National Academies NRC Volume on Learning Science in Informal Environments: Practitioner Volume.

2007 - 2008 National Science Foundation invited participant in ISE Evaluation Workshop (2007).
Resulting publication: Friedman, A. (Ed.). (March 12, 2008). *Framework for Evaluating Impacts of Informal Science Education Projects* [Online]. (Available at: http://insci.org/resources/Eval_Framework.pdf).

MONOGRAPH

Allen, S. (2004). *Finding significance*. San Francisco, CA: Exploratorium. (Excerpts available online at <http://www.exploratorium.edu/partner/significance>)

BOOK CHAPTERS AND ARTICLES

Allen, S. (2009). Secrets of Circles: Evaluation of a trilingual exhibition. *ASTC Dimensions*. (in press).

Allen, S. & Gutwill, J.P.(2009). Creating a program to deepen family inquiry at interactive science exhibits. *Curator: The Museum Journal*, (in press).

Allen, S., Gutwill, J, Perry, D.L., Garibay, C., Ellenbogen, K.M., Heimlich, J.E., Reich, C.A., & Klein, C. (2007). Research in museums: Coping with complexity. In J.H. Falk, L.D. Dierking, & S. Foutz (Eds.), *In principle, in practice: Museums as learning institutions* (pp.229-245). Lanham, MD: AltaMira Press.

Serrell, B. & Allen, S. (2006). Broader use of guidelines for judging excellence in exhibitions. In B. Serrell, *Judging exhibitions: A framework for assessing excellence* (pp. 149-153). Walnut Creek: Left Coast Press.

Allen, S. (2004). Designs for learning: Studying science museum exhibits that do more than entertain. *Science Education*, 88(Suppl. 1), S17-S33.

Allen, S., & Gutwill, J. (2004). Designing with multiple interactives: Five common pitfalls. *Curator: The Museum Journal*, 47(2), 199-212.

Allen, S. (2004). What does evaluation have to do with best practices? In K. McLean & C. McEver (Eds.), *Are we there yet? Conversations about best practices in science exhibition development* (pp. 30-32). San Francisco: Exploratorium.

Allen, S. (2003). Studying learning in museums [Review of the book *Perspectives on Object-Centered Learning in Museums*]. *American Journal of Psychology*, Fall, 488-494.

Allen, S. (2002). Looking for learning in visitor talk: A methodological exploration. In Leinhardt, G., Crowley, K., & Knutson, K. (Eds.). *Learning Conversations in Museums* (pp. 259-303). Mahwah, NJ: Lawrence Erlbaum.

Gutwill-Wise, J. & Allen, S. (2002). Finding significance: Testing methods for encouraging meaning-making in a science museum. *Current Trends in Audience Analysis*.

Allen, S. (2000). How is writing a good set of questions like designing a good exhibit? *Visitor Studies Today!*, II(3), 17-18.

- Coleman, G. & Allen, S. (1998). Component analysis of a successful multimedia exhibit, *Current Trends in Audience Analysis*.
- Garcia-Luis, V. & Allen, S. (1998). Answering visitors' orientation questions: an evaluation of two sign formats, *Current Trends in Audience Analysis*.
- Allen, S. (1997). Using scientific inquiry strategies in exhibit explanations. *Science Education*, 81(6), 715-734.
- Allen, S. (1997). Sociocultural theory in museums: Insights and suggestions, *Journal of Museum Education*, 22(2&3), 8-9.
- Reif, F. & Allen, S. (1992). Cognition for interpreting scientific concepts: a study of 'acceleration', *Cognition and Instruction*, 9(1), 1-44.
- Allen, S. (1991). Optics: The Gaussian formula and the elusive fourth principal ray. *American Journal of Physics*, 60(2), 160-163.
- Reif, F. and Allen, S. (1990). Interpreting and teaching scientific concepts: a study of 'acceleration', *Berkeley Cognitive Science Report No 62*..
- Pea, R.D., Sipusic, M., & Allen, S. (1990). *Seeing the light on optics: Classroom-based research and development of a learning environment for conceptual change*. To appear in the book resulting from the 7th Annual Tel Aviv Workshop on Human Development: Development and Learning Environments
- Warner, B., O'Donoghue, D. and Allen, S. (1985). Rapid oscillations in CPD-4801577. *Monthly Notices of the Royal Astronomical Society*, 212, 9P.
- McHardy, I.M., Pye, J.P., Fairall, A.P., Warner, B., Cropper, M. and Allen, S. (1984). Identification of 3A 0729+103 with an intermediate polar-type cataclysmic variable. *Monthly Notices of the Royal Astronomical Society*, 210, 663.
- Allen, S. (1984). PLATO as a course controller. *Teaching at Rhodes*, 1(2), 4.

PRESENTATIONS AND WORKSHOPS

- Allen, S. (2009, April). *Video-based evidence of learning as a process*. Invited presentation, G. Brown Goode Smithsonian Education Lecture series, Washington DC.
- Shouse, A., Bell, P., Allen, S., & Noam, G. (2009). *Learning science across places and pursuits: The contributions of informal environments*. Poster presented at the American Educational Research Association, San Diego, CA.
- Allen, S., Bell, P., Childress, J., Crowley, K., Garibay, C., Norby, S., Schweingruber, H., Shouse, A., Shuler, S., & Ucko, D. (2009, February). *Learning science in informal*

environments: People, places, and pursuits. A new report from the National Research Council. Panel presentation for the Research Dissemination Forum of the National Science Resources Center, Washington, DC.

- Allen, S. , Gutwill, J., Cohen, T., & Zrymiak, L. (2008, October). *Digging deeper at exhibits: Tools for building visitors' experimentation skills.* Session presented at the meeting of the Association of Science-Technology Centers, Philadelphia, PA.
- Allen, S., DeSena, A., Friedman, A., Garibay, C., Korn, R., Dierking, L.D., Flagg, B., & Campbell, P. (2008, October). *Introducing NSF's new framework for planning and evaluating impacts.* Session presented at the meeting of the Association of Science-Technology Centers, Philadelphia, PA.
- Allen, S., Friedman, A., Garibay, C., & Koutsika, G-G. (2008, July). *Discussing NSF's new framework for planning and evaluating impacts.* Session presented at the annual meeting of the Visitor Studies Association, Houston, TX.
- Klinger, A. & Allen, S. (2008, July). *Tools and methods behind a rigorous video-analysis research project.* Poster presented at the annual meeting of the Visitor Studies Association, Houston, TX.
- Allen, S. & Gutwill, J. (2008, March). *Teaching families to do scientific inquiry in science museums: An experimental study.* Paper presented at the meeting of the American Educational Research Association, New York, NY.
- Allen, S. (2007, August). *Group inquiry by visitors at exhibits.* Paper presented at the Bay Area Institute of the Center for Informal Learning and Schools, San Francisco, CA.
- Allen, S. (2007, August). *Multicultural and multilingual issues: Selected insights from a summative evaluation of the Secrets of Circles exhibition.* Paper presented at the Bay Area Institute of the Center for Informal Learning and Schools, San Francisco, CA.
- Gutwill, J. & Allen, S. (2007, July). *Group inquiry by visitors at exhibits.* Paper presented at the meeting of the Visitor Studies Association, Ottawa, Canada.
- Allen, S. (2007, May). *Group inquiry by visitors at exhibits: The GIVE project.* Invited presentation at the Physics Education Seminar, University of Maryland.
- Allen, S. (2006, Oct). *Conducting evaluation in informal learning environments: Challenges and techniques.* Invited presentation at the annual meeting of NIH Science Education Partnerships Awards, Salt Lake City.
- Allen, S., Wilson, E., & Gutwill, J. (2006, August). *Group inquiry by visitors at exhibits.* Paper presented at the meeting of the Visitor Studies Association, Grand Rapids, MI.
- Allen, S. (2006, August). *Audience research and evaluation: Are the challenges really new?* Session panelist at the meeting of the Visitor Studies Association, Grand Rapids, MI.

- Allen, S. & Barriault, C., (2006, May). *Evaluation master class: Hot new trends in assessing visitor learning*. Invited presentation at the meeting of the Canadian Association of Science Centers, Ottawa, Canada.
- Allen, S. & Barriault, C., (2006, May). *Evaluation overview: Making evaluation work for you*. Invited presentation at the meeting of the Canadian Association of Science Centers, Ottawa, Canada.
- Allen, S. (2006, April). *Promoting and assessing inquiry through exhibit investigations with a museum educator*. Paper presented at the meeting of the National Association for Research in Science Teaching, San Francisco, CA.
- Allen, S. (2005, May). *Some thoughts on what practitioners want to know from research*. Invited panelist at the National Academies NRC Board on Science Education Meeting, The Status of Research on Learning in Informal Settings, Washington DC.
- Allen, S. (2004, September). *Recent research on museum interactives*. Session presented at the meeting of the Association of Science-Technology Centers, San Jose, CA.
- Allen, S. (2004, September). *Research on the role of personal context in meaning-making in science museums*. Session presented at the meeting of the Association of Science-Technology Centers, San Jose, CA.
- Allen, S. (2004, September). *Faking it: Powerful educational strategy or damaging deception?* Invited panelist, session presented at the meeting of the Association of Science-Technology Centers, San Jose, CA.
- Allen, S., & Gutwill, J. (2004, August). *Spanning the gap between research and practice*. Session presented at the Bay Area Institute of the Center for Informal Learning and Schools, San Francisco, CA.
- Allen, S. (2004, August). *To partition or not to partition: A study of the impact of walls on visitor behavior at an exhibit cluster*. Paper presented at the meeting of the Visitor Studies Association, Albuquerque, NM.
- Allen, S. (2004, July). *Exploratorium visitor research and evaluation*. Paper presented at the meeting of the California Association of Museums, Santa Rosa, CA.
- Gutwill, J., & Allen, S. (2004, March). *Recent work from the Exploratorium's Visitor Research & Evaluation Group*. Invited presentation for the Colloquium series of the Psychology Department, University of California, Santa Cruz, CA.
- Allen, S. (2003, October). *Comments on museum evaluation*. Paper presented at the Measuring Results Symposium of the Coevolution Institute, San Francisco, CA.

- Allen, S. (2003, October). *To wall or not to wall: The effects of enclosing a cluster of exhibits*. Paper presented at the meeting of the Association of Science-Technology Centers, St. Paul, MN.
- Allen, S. (2003, September). *The role of explanation in informal learning environments*. Paper presented at the Bay Area Institute of the Center for Informal Learning and Schools, Santa Cruz, CA.
- Allen, S. (2003, August). *Comparing exhibit enhancements for encouraging meaning-making in a science museum*. Poster presented at the meeting of the Visitor Studies Association, Columbus, OH.
- Allen, S. (2003, May). *Assessing the impact of regular visits by regular visitors*. Paper presented at the meeting of the American Association of Museums, Portland, OR.
- Allen, S. (2003, May). *The 'Finding Significance' project: Testing methods for encouraging personal meaning-making*. Paper presented at the meeting of the American Association of Museums, Portland, OR.
- Allen, S. & Gutwill, J. (2003, April). *Studying exhibits that intrigue, engage and inform: Research and evaluation at the Exploratorium*. Invited presentation for the Colloquium series of the Cognition & Development Area, Graduate School of Education, University of California, Berkeley, CA.
- Allen, S. & Gutwill, J. (2003, April). *Assessing techniques for facilitating meaning-making by science museum visitors*. Paper presented at the meeting of the American Educational Research Association, Chicago.
- Allen, S., McLean, K., Gutwill, J., Koterwas, T., & Perry, D. (2002, October). *Studying visitor meaning-making at exhibits*. Session presented at the meeting of the Association of Science-Technology Centers, Charlotte, NC.
- Allen, S. (2002, October). *A review and critique of the literature on learning styles*. Paper presented at the meeting of the Association of Science-Technology Centers, Charlotte, NC.
- Allen, S. (2002, August). *Testing methods for encouraging meaning-making in a science museum*. Paper presented at the meeting of the Visitor Studies Association, Cody, WY.
- Allen, S. (2001, August). *The 'Finding Significance' Project*. Paper presented at the meeting of the Association of Science-Technology Centers, Phoenix, AZ.
- Allen, S. (2001, August). *Evidence of learning in visitors' conversations*. Paper presented at the meeting of the Association of Science-Technology Centers, Phoenix, AZ.
- Allen, S., Garcia-Luis, and Gutwill, J. (2000, 2001, 2002). *Improving your skills at phrasing questions*. Workshops presented at the meeting of the Visitor Studies Association.

- Allen, S. (2000, August). *Cases from the cutting edge*. Session presented at the annual meeting of the Visitor Studies Association, Boston, MA.
- Allen, S. (2000, April). *Froggy talk: Lenses on conversation*. Poster presented at the meeting of the American Educational Research Association, New Orleans.
- Allen, S. (1999, October). *The joy of prototyping*. Paper presented at the meeting of the Association of Science-Technology Centers, Tampa, FL.
- Allen, S. (1998, October). *The Framework Project: An evaluator's perspective*. Paper presented at the meeting of the Association of Science-Technology Centers, Edmonton, Canada.
- Garcia-Luis, V. & Allen, S. (1998, August). *Flip signs and video tracking: learning about visitor orientation*. Paper presented at the meeting of the Visitor Studies Association, Washington, D.C.
- Coleman, G. & Allen, S. (1998, August). *Just bells and whistles? Stripping one multimedia exhibit to its bare essentials*. Paper presented at the meeting of the Visitor Studies Association, Washington, D.C.
- Allen, S. (1998, January). *Applying cognitive science research to a science museum*. Invited paper presented at the meeting of the American Association of Physics Teachers, New Orleans.
- Allen, S. (1997, October). *The Exploratorium's Framework project: Themes as an organizing principle*. Workshop presentation at the meeting of the Association of Science-Technology Centers, St. Louis, MO.
- Allen, S. (1997, April). *Making sense of novel phenomena: How visitors make and shape explanations*. Invited paper presented at the meeting of the American Association of Museums, Atlanta, GA.
- Allen, S. (1996, October). *Exploring alternatives to labels that 'tell'*. Paper presented at the meeting of the Association of Science-Technology Centers, Pittsburgh, PA.
- Allen, S. (1996, October). *Revise it! Formative evaluation as an iterative process*. Paper presented at the meeting of the Association of Science-Technology Centers, Pittsburgh, PA.
- Allen, S. (1996, August). *Helping visitors understand: Is a single explanation the best way?* Paper presented at the meeting of the Visitor Studies Association, Estes Park, CO.
- Allen, S. (1996, January). *Teachers as students: Inside a teacher workshop at the Exploratorium*. Invited paper presented at the meeting of the American Association of Physics Teachers, Reno, NV.

- Allen, S. (1995, October). *Open-ended exhibits: how do we know they work?* Invited panelist at session presented at the meeting of the Association of Science-Technology Centers, San Diego, CA.
 - Allen, S. (1995, March & May). *Videotaping your own classroom*. Tutorial workshop presented at the San Francisco Unified School District's Science Professional Development Days.
 - Allen, S., White, B.Y., and Frederiksen, J.R. (1995, April). *An emphasis on perception: Teaching image formation using a mechanistic model of vision*. Paper presented at the meeting of the National Association for Research in Science Teaching, San Francisco.
 - Allen, S., White, B.Y., and Frederiksen, J.R., (1995, April). *Teaching scientific concepts with transparent detector models: An example from optics*. Presented at the meeting of the American Educational Research Association, San Francisco.
 - White, B.Y., and Allen, S. (1993, October). *ThinkerTools II: Scientific inquiry and modeling*, Presentation at the Grantees' Meeting, Program in Cognitive Studies for Educational Practice, James S. McDonnell Foundation, Palo Alto, CA.
 - Allen, S. (1993, January). *New Insights into an old 'misconception': Image located on a mirror's surface*. Paper presented at the meeting of the American Association of Physics Teachers, New Orleans.
 - Reiner, M., Pea, R.D., Allen, S., Sipusic, M. and Goldman, S. (1990, April). *Conceptual change through collaborative thought experiments*. Paper presented at the meeting of the American Educational Research Association, Chicago.
 - Allen, S. & Hammer, D. (1990, January). *Qualitative video analysis*. Tutorial workshop presented at the meeting of the American Association of Physics Teachers, San Antonio, TX.
 - Allen, S. & Sipusic, M. (1990, January). *Making sense of geometrical optics: Meaning construction and repair*. Paper presented at the meeting of the American Association of Physics Teachers, San Antonio, TX.
 - Pea, R.D., Sipusic, M., & Allen, S. (1989, July). *Conceptual difficulties in reasoning with geometrical optics diagrams*. Invited session on Conceptual Difficulties and Strategies of Intervention at the meeting of the American Association of Physics Teachers, San Luis Obispo, CA.
-