

# University Academic Curriculum Vitae

---

## Personal information

- Name: George Santi
- Office: +39 0472014354
  - E-Mail: [gesanti@unibz.it](mailto:gesanti@unibz.it)

## Education since leaving school

- 2000, BS Degree (Laurea) in Physics, University of Milan.
- 2004, MEd (SSIS) in Mathematics, University of Bologna.
- 2005, MEd (SSIS) in Mathematics and physics, University of Bologna.
- 2005, MEd (SSIS) in Special Education, University of Bologna.
- 2006, MS (Corso di Alta Formazione) in Mathematics and Didactics, University of Bologna.
- 2010, PhD in Mathematics Education, Dottorato in Storia e Didattica delle Matematiche, University of Palermo.
- 2015, Master in European Projecting, EUROPACUBE.
- 2018, ASN (National Scientific Habilitation) for Associate Professor, MIUR (Ministry of Education, University and Research): SC 01/A1 SSD MAT/04.

## Present appointment

- Title of appointment: Assistant Professor.
- Start of appointment: July 15<sup>th</sup>, 2018.
- Level of appointment: Pre-tenure (RTD A).
- Employer: Free University of Bolzano.
- Brief description of responsibilities: my research project aims at developing a theoretical framework to overcome learning difficulties in mathematics and devising specific teacher training methodologies.

## Professional experience

From / to	Job title	Name of academic Institution	Academic level	responsibilities
2013/2018	High School Teacher	IIS "E. Majorana" San Lazzaro (BO)		<ul style="list-style-type: none"> <li>• Special education teacher covering scientific subjects, languages and humanities</li> <li>• Member of the headmaster's staff responsible for the school's educational project (PTOF), evaluation (RAV) and improvement of the teaching processes (PdM)</li> <li>• Responsible for the European projects PON and ERASMUS +</li> <li>• Member of the ICT team to realize the national digital school plan (PNSD)</li> <li>• Member of the School Board</li> </ul>
2013/2016	Research collaboration	University of Bologna	Research collaboration	PON projejt: Concorso di Idee per la Ricerca. I-3-FSE-2009-1M. The project aimed at developing a

				theoretical model to predict and categorize students' difficulties in mathematics, analyzing the results of the INVALSI tests
--	--	--	--	---

Awards: 2011, winner of "Premio Bagni", award for researchers in Mathematics Education.

### Experience in academic teaching

- 2019, *Mathematics Education Laboratory*, University of Bolzano, under-graduate students of the Faculty of Education.
- 2015, *Mathematics Education*, University of Bologna, post-graduate courses for prospective high school students TFA, Classe di Concorso A059.
- 2014, *Mathematics Education*, University of Bologna, post-graduate courses for prospective high school students PAS, Classe di Concorso A059.
- 2013, *Mathematics Education*, University of Bologna under-graduate students of the Faculty of Education.
- 2013, *Mathematics Education*, University of Bologna, post-graduate courses for prospective high school students TFA, Classe di Concorso A047 e A049.

### Other academic responsibilities

- PI of the research project OPEN MATH funded by the University of Bolzano.
- Visiting Professor at Laurentian University, Ontario, Canada. February-April 2012.
- Member of the Local Organizers (University of Palermo) of YESS 5 summer school organized by the European Society for Research in Mathematics Education (ERME), Poggio San Francesco (Palermo), August 18-25, 2010.
- Since 2009, member of the organizing committee of the annual conference *Incontri con la Matematica* organized by the NRD, University of Bologna, held in Castel San Pietro (BO).

### Memberships

Membership of the NRD research group of the University of Bologna

### Research and scholarships

- My research interests have focused on the role of semiotics in mathematical thinking and learning. Within the Networking Theories perspective, I have devised a conceptual framework by coordinating three theoretical perspectives: Duval's structural and functional approach, Radford's Theory of Objectification and Godino's Ontosemiotic Approach. This theoretical tool has been used to analyze the relationship between the meaning of mathematical concepts and semiotic devices used both as signs within semiotic systems and mediators of reflexive activity. It allowed us to understand the phenomena of changes/loss of meaning due to semiotic treatments. My research interests focused also on mathematics teaching-learning processes in special education and intuitions. I devised first tentative frames for the study of both research topics.

### Publications

- 1) Santi, G. (2005). Didattica della Matematica: dalla formazione alla professione. In D'amore, B., Sbaragli, S., (ed.), *Didattica della Matematica e processi di apprendimento*. Bologna: Pitagora.
- 2) Santi, G, Sbaragli, S. (2006). XIX Convegno Nazionale: Incontri con la Matematica. *Innovazione Educativa*, 3, 2, 28-30.
- 3) Santi, G., Sbaragli, S. (2007). Semiotic representations, "avoidable" and "unavoidable" misconceptions. *La matematica e la sua didattica*, 1, 105-110.
- 4) Santi, G. Il ruolo della semiotica nella transizione dall'aritmetica all'algebra (2007). In Marazzani I. (ed.), *La matematica e la sua didattica*. Atti del convegno nazionale di Giulianova, 4-5-6 Maggio 2007. Bologna: Pitagora.

- 5) Fandiño, M.I., Santi, G., Sbaragli, S. (2008). *Frazioni*. Bologna: Gedit.
- 6) Santi, G., Sbaragli, S. (2008) *Misconceptions and Semiotics: a comparison*. In Gagatsis, T. (Ed.), *Proceedings of the Conference of Five Cities*, Nicosia, Cyprus, 13-14 september, 2008.
- 7) D'Amore, B., Fandiño Pinilla, M.I., Marazzani, I., Santi, G., Sbaragli, S. (2008). *Le rôle de l'épistémologie de l'enseignant dans les pratiques d'enseignement*. In *Proceedings of Colloque International (with review): "Les didactiques et leurs rapports à l'enseignement et à la formation. Quel statut épistémologique de leurs modèles et de leurs résultats?"*. 18, 19, 20 settembre 2008. Bordeaux (France). Bordeaux: University of Bordeaux 4. Available on DVD.
- 8) Santi, G. (2008). *Concettualizzazione e senso in matematica; la prospettiva semiotica culturale*. In D'Amore B, Sbaragli S. (Eds), *Didattica della matematica e azioni d'aula*. Atti del del convegno "Incontri con la Matematica" 7-9 Novembre 2008. Bologna: Pitagora.
- 9) D'Amore, B., Fandiño Pinilla, M.I., Marzzani, I., Santi, G., Sbaragli, S. (2009). *Il ruolo dell'epistemologia dell'insegnante nelle pratiche d'insegnamento. L'insegnamento della matematica e delle scienze integrate*, 32B, 2, 171-192.
- 10) Santi, G. (2011). *Objectification and semiotic function*. *Educational Studies in Mathematics*, 77, 285-311.
- 11) Santi, G. (2011). *Meaning of mathematical objects: a comparison between semiotic perspectives*. In Pytlak, M., Rowland, T., & Swoboda, E. (Eds), *Proceedings of the Seventh Congress of the European Society for Research in Mathematics Education (CERME – 7)* (2503-2512). Poland: University of Rzeszów.
- 12) Andrà, C., Santi, G. (2011). *A semiotic characterization of intuitions*. In Ubuz B. (Ed.), *Proceedings of the 35th Conference of the International group for the Psychology of Mathematics Education (Vol 4, 113-120)*. Ankara, TK: PME 35.
- 13) Andrà, C., Santi, G. (2011) *Esperienza ed intuizione in matematica: come le rappresentazioni ci aiutano ad apprendere i concetti*. In D'Amore B., Sbaragli S. (Eds.), *Atti del Convegno Incontri con la Matematica XXV*. Bologna: Pitagora.
- 14) Sbaragli, S., Santi, G. (2011). *Teacher's choices as the cause of misconceptions in the learning of the concept of angle*. *International Journal for Studies in Mathematics Education*, 4(2), 117-157. Retrieved from <http://periodicos.uniban.br/index.php/JIEEM/article/view/194/196>.
- 15) Santi G. (2012). *Oggetti matematici, rappresentazioni semiotiche e significato: il problema dei cambi di senso*. *L'Insegnamento della matematica e delle scienze integrate*, 35A-B N.3, 328-348.
- 16) D'Amore, B, Fandiño Pinilla, M.I., Santi, G., Sbaragli, S. (2012). *Some relations between semiotics and didactics of mathematics*. *Mediterranean Journal for Research in Mathematics Education*, 11 (1-2), 35-57.
- 17) Andrà, C., Santi, G. (2013). *Intuitive thinking in a context of learning*. In A. Lindmeier, & A. Heinze (Eds.), *Proceedings of the 37th Conference of the Psychology of Mathematics Education (Vol. 2, pp. 25-32)*. Kiel, Germany: PME.
- 18) Baccaglini-Frank, A., Antonini, S., Robotti, E. & Santi, G. (2014). *Juggling reference frames in the microworld Mak-Trace: the case of a student with MLD*. In Nicol, C., Liljedahl, P., Oesterle, S., & Allan, D. (Eds.), *Proceedings of the Joint Meeting of PME 38 and PME-NA 36 (Vol. 2 pp. 81-88)*. Vancouver, Canada: PME.
- 19) Santi, G., Baccaglini-Frank, A. (2015). *Forms of generalization in students experiencing mathematical learning difficulties*, *PNA*, 9(3), 217-243.
- 20) Bolondi, G., Branchetti, L., Ferretti, F., Lemmo, A., Maffia, A., Martignone, F., Matteucci, M. L., Mignani S., Santi, G. (2016). *Un approccio longitudinale per l'analisi delle prove INVALSI di matematica: Cosa si può dire degli studenti in difficoltà*. In *Concorso di Idee per la Ricerca* (pp. 81-102). Padova: Cleup.
- 21) D'Amore, B., Santi, G. (2018). *Natural language and "mathematics languages": Intuitive models and stereotypes in the mathematics classroom*. *La Matematica e la sua Didattica*, 26(1), 57-82.

- 22) Santi, G. (2018). Book review: Raymond Duval (2018)). Understanding the mathematical way of thinking -The registers of semiotic representation. Cham, Switzerland: Springer. *Didattica della matematica* 1(3), 158.
- 23) Santi, G. (2018). Book review: Bruno D'Amore & Silvia Sbaragli (2018). *La matematica e la sua storia: Dagli ultimi bagliori della Grecia antica alla fine del Medioevo. Volume II.* Bari, Italy: Dedalo. *La matematica e la sua didattica* 26(2), 316-317.
- 24) Santi, G. (2019). Book review. Rosetta Zan & Anna Baccaglioni-Frank (2017). *Avere successo in matematica. Strategie per l'inclusione e il recupero.* Torino: UTET Università. *Didattica della matematica* 6, 179-180.
- 25) Santi, G. (2019). Prefazione al libro: Bruno D'Amore, Martha Isabel Fandiño Pinilla, Ines Marazzani & Silvia Sbaragli (2019). *Le difficoltà di apprendimento in matematica.* Bologna: Pitagora .
- 26) Santi, G. (2019). Translation from English: Radford, L. (2019). Alcune connessioni tra musica e matematica. In B. D'Amore, & S. Sbaragli (Eds), *Didattica della matematica e professionalità docente. Atti del XXXIII Convegno Incontri con la matematica* (pp.39-42). Bologna: Pitagora
- 27) Santi, G. (2019). La didattica della matematica: aspetti epistemologico-fondazionali e ricadute nella pratica d'aula. In B. D'Amore, & S. Sbaragli (Eds), *Didattica della matematica e professionalità docente. Atti del XXXIII Convegno Incontri con la matematica* (pp.39-42). Bologna: Pitagora
- 28) Del Zozzo, & A., Santi, G. (in press). Physical and virtual classroom in the learning of mathematics: analysis of two episodes. *Proceedings of the Eleventh Congress of the European Society for Research in Mathematics Education (CERME11).*
- 29) Bolondi, G., Ferretti, F., & Santi, G. (in press). National standardized tests database implemented as a research methodology in mathematics education. The case of algebraic powers. *Proceedings of the Eleventh Congress of the European Society for Research in Mathematics Education (CERME11).*
- 30) Asenova, G., D'Amore, B., Fandiño Pinilla, M.I., Iori, M., Santi, G. (in press). La teoria dell'oggettivazione e la teoria delle situazioni didattiche: un esempio di comparazione tra teorie in didattica della matematica. *La matematica e la sua didattica.* Bologna: Pitagora.

#### Further data

- December 3, 2019, 3rd FormathDay Conference, Salerno, La valutazione in matematica. Laboratory: Valutare l'insegnamento e l'apprendimento con la robotica educativa. With Agnese Del Zozzo.
- November 29 – December 1, 2019, Speaker at the International Conference: INVALSI data: a research and educational teaching tool. Seminar: Large Scale Assessment (LSA): a tool for mathematics education research.
- November 8, 2019. Invited speaker at the 33<sup>rd</sup> Conference Incontri con la Matematica. Keynote: La didattica della matematica: aspetti epistemologico-fondazionali e ricadute nella pratica d'aula.
- October 19, 2019, BrimaPrimar Workshop, University of Bolzano. Laboratory: Apprendere la geometria istruendo un robot. With Agnese Del Zozzo.
- July 5-15, 2019, Research visit at the Laurentian University, Sudbury, Canada.
- July 1-3, 2019, Training course for in service primary and middle school teachers: Strategia per una didattica efficace with Bruno D'Amore, Martha Fandiño Pinilla, Agnese del Zozzo and Giovanni Nicosia, in collaboration with Anastasis Bologna, Aldini-Valeriani High School, Bologna, and RSDDM group of the University of Bologna. The course was recognized by the Italian Ministry of Education (MIUR).
- April 13, 2019. Speaker at the 2<sup>nd</sup> FormathDay Conference, Bologna, La valutazione in matematica. Laboratory: Valutare l'insegnamento e l'apprendimento attraverso l'analisi di artefatti utilizzati in aula. With Agnese Del Zozzo.
- March 23, 2019. Invited speaker at the national conference "Non temiAMO la matematica". Ravarino (MO), Italy. Lecture: Analisi

semiotica di immagini e modelli nell'apprendimento della matematica.

- November 20-22, 2018, Training course for in service high school teachers. Istituto Superiore Alcide De Gasperi, Borgo Valsugana (TN)
- October 20, 2018 BrimaPrimar Workshop. Laboratory with Agnese del Zozzo: Una lettura didattica dell'uso di artefatti (digitali e materiali) in matematica.
- October 20, 2018 BrimaPrimar Workshop. Laboratory with Agnese del Zozzo: Universal Design for Learning e apprendimento della matematica.
- September 21, 2018: invited speaker at the international conference, *Congreso Internacional de Educación Matemática Nuevos Vientos: La educación matemática: diversos campos de investigación y desarrollo en la actualidad*, organized by Nuevos Vientos, an association networking several universities in Bogotá, Colombia
- September 13, 2018: invited speaker at the *Taller Internacional de Formación de formadores: avances en la investigación en educación matemática y algunas implicaciones en la formación de docentes* organized by RED (a network of universities), Bogotá, Colombia; a series of workshops for universities lecturers in STEM.
- September 12 and September 19, 2018: invited speaker in two workshops on semiotic theoretical perspectives in Mathematics Education, for PhD students of the Universidad Distrital Francisco José de Caldas, Bogotá, Colombia.
- September 6, 2018, speaker at the international conference *ECER*, Bolzano, Italy (with peer review).
- July 9-11, 2018, Training course for in service primary and middle school teachers: *Strategia per una didattica efficace* with Bruno D'Amore, Martha Fandiño Pinilla, Agnese del Zozzo and Giovanni Nicosia, in collaboration with Anastasis Bologna, Aldini-Valeriani High School, Bologna, and RSDDM group of the University of Bologna. The course was recognized by the Italian Ministry of Education (MIUR).
- March 3, 2018, invited speaker at the national conference *Non temiAMO la matematica*. Ravarino (MO), Italy.
- June 18-20, 2015, speaker at the international EDA conference *Dyslexia in different perspectives*, San Marino.
- July 7-12, 2014, Workshop at the summer school organized by AIRDM (Associazione Italiana Ricercatori in Didattica della Matematica), Laceno, Irpino (AV), Italy.

**Language  
competence**

English: very good  
French: basic  
German: basic  
Spanish: basic

Brixen, 19/01/2020

