

Valentin Roussel | PhD student

Institut Français de l'Éducation – Lyon – France

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Member of the Association for Research in Mathematical Education (ARDM)

I am a PhD student at the S2HEP laboratory, in Lyon, and I work under the direction of Jana TRGALOVA. My work covers three areas of research : educational sciences, mathematics and computer science. My main research interests are in mathematical modeling, information and communication technologies for education (ICT,) teacher education, and critical thinking.

Research interests

- **Educational sciences**
 - The notion of model in mathematics : teacher education and epistemology of the notion.
 - Deconstructing the neuromyths
 - Critical thinking in mathematics class
- **Computer science and ICT**
 - Cellular automata
 - Algorithms
 - Good coding practices
- **Mathematics**
 - Experimental Mathematics
 - Bayesian statistics
 - Dynamic systems

Education

Academic qualifications.....

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|---|---------------------|
| ○ University of Lyon | Lyon, France |
| ○ <i>Ph.D, Applied Mathematics and Mathematical Applications</i> | <i>2019–2022</i> |
| ○ École Normale Supérieure de Lyon | Lyon, France |
| ○ <i>Master, Didactics and epistemology of sciences</i> | <i>2017–2019</i> |
| ○ University of Lyon | Lyon, France |
| ○ <i>Licence/Bachelor, Computer Science and Applied Mathematics</i> | <i>2015–2017</i> |

Related trainings.....

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|---|-----------------------------|
| ○ University of Lyon | Lyon, France |
| ○ <i>Certificate, Industrial Systems Management (ISM certification)</i> | <i>2020-2021 (80 hours)</i> |
| ○ <i>Research and Development Management; Business strategy</i> | |
| ○ Institut Français de l'Éducation | Lyon, France |
| ○ <i>Training, Collaborative works between actors of education and research</i> | <i>2019 (3 jours)</i> |
| ○ Institut Français de l'Éducation | Lyon, France |
| ○ <i>Training, Helping and sustaining teachers in priority education</i> | <i>2019 (3 days)</i> |

- **University Johann Wolfgang Goethe of Frankfurt** **Frankfort, Germany**
Academic exchange, MoMaTrE– Mobile math Trails in Europe Intensive program *2019 (2 weeks)*
- **École Polytechnique** **Paris, France**
Short training, How to write and publish a scientific article *2018 (1 week)*
- **Institut Français de l'Éducation** **Lyon, France**
Short training, Mathematical problems to search, experiment and manipulate *2018 (2 days)*
- **Institut Français de l'Éducation** **Lyon, France**
Short training, Personnalisation des apprentissages dans un environnement numérique *2018 (4 days)*
- **Scientific district of la Doua** **Lyon, France**
Certificates, Computer Certificates and Internet Level 1 and 2 (Teacher) *2018 (2 x 3 months)*
- **Faculty of Medicine Lyon-Est** **Lyon, France**
Certificate, Civic Prevention and Rescue, level 1 *2018 (2 jours)*

Professional experience

Research.....

- **Sciences, Société, Historicité, Éducation et Pratiques (S2HEP) laboratory** **Lyon**
Contractual Ph.D student *2019–2022*
 Young researcher, my work focuses on teacher education, science mediation and education science.
- **Research Institute for Mathematics Education of Lyon (IREM)** **Lyon**
Adjunct *2019–2022*
 Integration into the IREM MathCityMap group as part of the MASCE3 project : MASCE3 is an Erasmus + project funded over 3 years and in which the IREM group is the French partner. The objective of the project is to allow teachers to fully integrate geolocated mathematical rallies into their teaching practices in connection with official programs.
- **Sciences, Société, Historicité, Éducation et Pratiques (S2HEP) laboratory** **Lyon**
Introductory internship *2019 (6 months)*
 Internship in research groups, introduction to research methodologies, information monitoring, support for the production and production of the Master 2 thesis.
- **University Johann Wolfgang Goethe of Frankfurt** **Frankfort**
Intensive study program *2019 (2 weeks)*
 Development of didactic engineering for the MathCityMap european project, cycle of conferences around the teaching and didactics of mathematics, supervision of "Mathematical Rallies".

Education science et computer science.....

- **University of Lyon** **Lyon**
Trainer - co-supervisor *December 2019*
 Trainer and co-supervisor of mathematical rallies as part of the European Math City Map project
- **Institut national supérieur du professorat et de l'éducation** **Lyon**
Educational engineer, trainer *2019-2020 (1 year)*
 Teacher trainer – update up to come
- **Institut Français de l'éducation – Department of digital mediation of knowledge** **Lyon**
Educational engineer, CDD *2019 (4 months)*
 Integration in the European Horizon 2020 NEXT-LAB research project, development of ILS (Inquiry Learning Spaces), contribution to educational productions and publications, teacher training in the use of ILS.

- **Maison des Mathématiques et de l'Informatique** **Lyon**
Educational engineer *2018 (3 months)*
 Teacher, facilitator - Organization and animation of mathematical extension workshops for primary classes, sensitization workshops for mathematics programs for parents.
- **Orange** **Lyon**
Web developer, CDD *2017 (3 months)*
 Intranet and web application design for the Ericsson Support team
- Seasonal employment cumulated.....
- **S.A CTR-LG** **Bourg-en-bresse**
Maintenance and handling technician, CDDs *2014–2016 (9 months)*

Computer skills

- **Web** : PHP, CSS, HTML, relational algebra
- **Frameworks** : Bootstrap, LaTeX, Zotero, MySQL, R, Eclipse, Jupyter , Github
- **Programming languages** : Python, C, C++

Languages

- English : C1 (Fluency, autonomy) (6 months of experience abroad)
- Espagnol : A2 (Elementary)

Resources and scientific activities

In progress (research projects and academic resource projects).....

- **Roussel,V. (2022 ?), La modélisation en mathématique dans la formation des enseignants. Approche TICE, démarche d'investigation, contraintes institutionnelles et évolutions curriculaires internationales : quels besoins pour les enseignants ?** Thesis supervised by Jana TRGALOVA ; researches supported by the French Institute of Education in Lyon and the National Institute of Higher Education and Teaching.
- **Roussel,V. (2019), Esprit critique, mathématiques & éducation : ressources didactiques et pédagogiques pour une intégration de l'esprit critique en classe de mathématiques - une étude au troisième cycle.** Master thesis (M2) supervised by Jana TRGALOVA ; researches supported by the French Institute of Education in Lyon.
- **Roussel,V. (2018), TICE & logiciels de géométrie dynamique : pratiques et invariants didactiques des situations d'apprentissage.** Master thesis (M1) supervised by Jana TRGALOVA; regional survey supported by Christian MERCAT, director of IREM Lyon.

Publications.....

- Update up to come

Seminars.....

- **Mathematical collective of the Academy of Lyon** **INSPE - Academy of Lyon**
Invited as young researcher (with a communication) *December 2019*
 Seminar organized by Mathias FRONT, the mathematics collective brings together first and second degree trainers, IENs, IA-IPRs, active researchers from the Academy of Lyon, all involved in the teaching of mathematics. During this seminar, I lead an intervention on the theme "Exercising critical thinking in mathematics class"

- **The didactical challenge of dynamic geometry environments** Institut français de l'éducation
Invited as young researcher (with a communication) Novembre 2019

Seminar organized by Luc TROUCHE around environments of dynamic geometry : resources, choice of teachers and knowledge at stake. During this seminar, I lead an intervention on the theme "Dynamic geometry, critical thinking and modeling: convergence of results and perspectives of thesis".

- **Creuset d'Analyse des recherches collaboratives** Institut français de l'éducation
External contributor 2019-2020 (4 sessions)

The Collaborative Research Analysis Crucible (CRaC) is a seminar to better understand the processes at work in research conducted in collaboration with educational actors. I step in this seminar, proposing an external analysis on a corpus on the theme: "Passers, mediators, brokers: what roles, what actions to facilitate the contribution of each to the production of knowledge in collaborative research?".

- **Thinking and transforming spaces in the digital age** Lycée la Martinière Duchère
Invited as young researcher Octobre 2019

Seminar organized by the DANE of Lyon in partnership with ENS Lyon, Ifé, the Canopé network, the University of Cergy Pontoise and La Martinière Duchère.

- **Digital technology at the service of educational differentiation** Institut français de l'éducation
Trainer, lecturer Juin 2019

How can trainers support teachers in using a digital platform to design personalized learning content and integrate it into their daily teaching? During this hackathon, I step in as a trainer and give a talk on "Differentiation: From a Knowledge-Based Education to a Student-Centered Education?". I propose in particular a historical and sociocultural analysis of the French educational currents.

- **Creuset d'Analyse des recherches collaboratives** Institut français de l'éducation
Observer 2018-2019 (4 sessions)

The Collaborative Research Analysis Crucible (CRaC) is a seminar to better understand the processes at work in research conducted in collaboration with educational actors.

Conferences.....

- **Le climat change...alors ?** Institut français de l'éducation
Event organizer Juin 2019

In partnership with the Association for Science and Transmission of the Critical Mind (ASTEC), the French Institute of Education organized a conference-debate with Thomas DURAND, scientific mediator of the YouTube channel "La Tronche en Biais "and Scientific Director of ASTEC ; Marie DEGREMONT, expert political scientist ; Samuel MORIN, climate expert and contributor to the IPCC report ; and Lionel SCOTTO D'APOLLONIA, socio-epistemologist expert.

Congresses.....

- **CFEM-ARDM national seminar** Paris
Invited as young researcher (with a communication) Novembre 2019

Seminar on mathematics didactics of the ARDM and CFEM-ARDM symposium on november 21 and 22 in Paris. I proposed a communication around a poster on the theme "Critical thinking in mathematics class".

Educational and digital resources.....

- **ROUSSEL, V (2019)** Introduction à l'inférence bayésienne - Cours 1 : Axiomatisation. Master. France. 2019. **hal-02315970** : a mathematical and epistemological exploration of the concept and main mechanisms at work in Bayesian thought. Keywords: Methods and statistics, epistemology, education.
- **ROUSSEL, V (2019)**, Introduction à l'inférence bayésienne - Cours 2 : le théorème de Bayes. Master. France. 2019. **hal-02315971** : a mathematical and epistemological exploration of the concept and main mechanisms at work in Bayesian thought. Keywords: Methods and statistics, epistemology, education.