

Faculty of Science and Engineering (FSE)

Institute for Science Education and Communication (ISEC)

Profile Report Mathematics Education
Didactiek van de Wiskunde

Discipline: Mathematics and Science Education
Level: Tenure Track Assistant Professor
Fte: full time (1.0 fte)

1. Scientific discipline

This profile report concerns a Tenure Track Assistant Professor position in Mathematics Education at the Institute for Science Education and Communication.

2. Vacancy

This position is opened by the Board of the Faculty (FB ref: JK/gl/17/00446) and will be embedded in the Institute for Science Education and Communication. The position falls within the framework of 'Career Paths in Science 3' ('Bèta's in Banen 3'). Please see the information at the web page for criteria and conditions.

3. Selection Committee (proposed)

Prof. Dr. Martin Goedhart (ISEC/FSE, chair)
Prof. Dr. Lucy Avraamidou (ISEC/FSE)
Prof. Dr. Petra Rudolf (Graduate School of Science and Engineering/FSE)
Prof. Dr. Ernst Wit (Johann Bernoulli Institute/FSE)
Prof. Dr. Klaas van Veen (Faculty of Behavioral and Social Science/UG)
Prof. Dr. Paul Drijvers (Freudenthal Institute/Utrecht University)
Ms Kristel Lok, BSc (student EC master/FSE)
drs. Marlies Beuvink (HR, advisor)

4. Research area

The candidate will conduct research in the field of mathematical reasoning (MR) at secondary and post-secondary levels. This theme is related to the research of ISEC on literacy and argumentation.

In mathematics teaching the emphasis is often laid on the solution of mathematical exercises (procedural knowledge and skills) instead of a systematic development of MR (more or less equivalent terms are: mathematical thinking and mathematical understanding) among learners. MR comprises, for instance, logical and statistical reasoning, problem solving and mathematical proof. The aim of the research the candidate will conduct is to gain insights into the development of different forms of mathematical reasoning, to develop research-informed curricula for mathematical reasoning, and to develop adequate evaluation methods of MR. Connecting to the experience and expertise in the research institute, the candidate will explore reasoning by senior high school and undergraduate students through quantitative and qualitative methods, and develop innovative teaching and learning strategies to foster students' reasoning.

5. Embedding in the institute

The Institute for Science Education and Communication (ISEC) is part of the Faculty of Science and Engineering (FSE). The research of the Institute focuses on mathematics and science education, and science communication. The current research portfolio of the Institute includes research projects on mathematical reasoning in integration tasks, mathematical proof, the use of mathematics in physics, scientific literacy, argumentation, socio-scientific issues, science identity, and out-of-school science. Further, the institute works on various projects about academic literacy (reading and writing of science text). The institute has expertise in the use of quantitative and qualitative research methods (observation, interviewing, classroom discourse) and in design-based research.

6. Local and (inter)national position

Research of ISEC is conducted in collaboration with the Undergraduate School of Science and Engineering (USSE) and regional high schools that collaborate with the FSE.

Researchers of ISEC have a strong international reputation and position in the fields of science and mathematics education as evidenced by participation in EU projects, publications in renowned journals and conferences, memberships of editorial boards and service on the boards of various international scientific associations, etc. Within the University of Groningen ISEC collaborates with the institute for Teacher Education of the Faculty of Behavioral and Social Sciences, the faculty outreach center *ScienceLinX*, and with Dutch and foreign research groups in mathematics and science education. In the Netherlands, research groups in mathematics education from different universities form a strong collaborative community. At a national and local level, researchers collaborate with teachers and curriculum developers on innovation of mathematics education both in secondary and post-secondary level.

7. Expected contribution to research

The candidate is expected to carry out an internationally recognized research program in Mathematics Education by setting up his/her own research group. He/she is expected to contribute significantly to scholarship through his/her research and other scholarly activities, seek external funding, publish in refereed journals, and present at professional meetings. The candidate should have a continued record in top professional journals in the field as well as experience in securing and/or participating in externally funded projects. The candidate should demonstrate communication and interpersonal skills necessary for effective research collaboration with a diverse community of students and faculty.

The candidate will supervise PhD students according to the guidelines of the Graduate School of Science and Engineering.

8. Expected contribution to teaching

The candidate is expected to contribute to the teaching of the international master program of Science Education and Communication of the FSE. He/she will contribute to teaching existing courses, as well as to the development of new courses. The candidate is expected to supervise students in their research and design projects in science communication and education. The candidate may contribute to other relevant programmes of the Faculty, e.g. in science communication courses. During the first 6 years of the appointment the tenure-track assistant professor will devote at most 30% of the total time to teaching-related tasks. Once tenure has been obtained, these tasks amount to 40%.

9. Expected contribution to the organisation

The candidate is expected to have an active interest and to provide a positive contribution to the management and organizational tasks of the institute. At the level of the FSE, the candidate will contribute to the organization of the faculty, for example by participating in working groups and committees, in the fields of teaching, research and management. The candidate will participate in relevant national and international organizations.