



Candidate Brief for the position of:

**Post-doctoral/
Senior Post-doctoral Researcher
Spatial Ability in STEM Education**

(Fixed-Term Specified Purpose contract, up to 5 years)

Reference 165a/2020

Recruiting Difference; Reflecting Diversity

**Infinite
Possibilities**

TU Dublin at a glance

The new University – formed by a merger of Dublin Institute of Technology (DIT), Institute of Technology Blanchardstown (ITB) and Institute of Technology Tallaght (ITT)

- Ireland's largest university with over 28,000 Students
- Over 3,000 International Students
- Over 3,000 staff members of academic, administrative and support staff
- Annual budget circa €200 Million
- Only University in Ireland to offer programmes from Level 6 to Level 10 on the qualifications framework
- Over 150 Sports & Student Societies
- Over 1,000 Research Community
- 3 Incubation Centres

For further detail, please see <http://www.tudublin.ie/>

TU Dublin – A New University for A Changing Ireland

TU Dublin is Ireland's first Technological University - an exciting new milestone in Irish Higher Education. With campuses in Dublin City, Tallaght and Blanchardstown, it spans the largest population centres of Ireland's capital city. Building on the rich heritage of its founding organisations - DIT, IT Blanchardstown and IT Tallaght – TU Dublin will be inclusive and adaptable, creating educational opportunities for students at all stages of their lives.

Academic excellence in science, the arts, business, engineering and technology converge in TU Dublin to create the leaders of tomorrow. Our 28,500 students learn in a practice-based environment informed by the latest research and enabled by technological advances, with pathways to graduation from Apprenticeship to PhD.

Our thriving research community is engaged in applying innovation and technology to solve the world's most pressing challenges, collaborating with our national and international academic partners and our many networks in industry and civic society.

Dedicated staff offer an inclusive and welcoming learning experience and TU Dublin students develop as socially responsible, open-minded global thinkers who are ambitious to change the world for the better. As graduates, they will be enterprising and daring in all their endeavours, ready to play their part in transforming the future.

College of Engineering and Built Environment

The College of Engineering & Built Environment at TU Dublin is the largest provider of higher education in Ireland in the relevant disciplines. The College offers a range of unique and innovative programmes in a modular format over a variety of levels that include apprenticeship, degrees, master's degrees and doctoral education. The College aspires to be a leader in education and learning in the sustainable planning, design, engineering, construction and management of modern infrastructure and the environment. The College strives to deliver relevant high quality curricula and content to all students using innovative approaches to learning and assessment. A significant emphasis is placed by the College on the professional recognition of its programmes and on providing graduates with a skill set and knowledge that is closely aligned with the needs of industry and the professions.

Research: The College conducts research across a broad range of disciplines, with a research portfolio supported by a broad spectrum of funding agencies, such as Science Foundation Ireland; Enterprise Ireland; the Higher Education Authority; the Irish Research Council for Science, as well as the European Commission, the Fulbright Commission and industry.

The College has a number of research centres and groups and a broad range of research collaborations in Europe and internationally. College research activity is focused on a number of signature areas including STEM (Science, Technology, Engineering and Mathematics) Education Research. CREATE (Contributions to Research in Engineering and Applied Technology Education) is a large STEM education research group which currently has 13 PhD students. It has secured funding from several sources and collaborates with researchers in Ireland, Europe, USA, Australia and elsewhere. CREATE was established in the early 2000s and has hosted several high profile Fulbright scholars over the last decade.

Engagement: The College is committed to fulfilling its engagement mission with a diverse range of stakeholders including internal TU Dublin colleagues, international partners, the wider educational community, industry, public sector, professional bodies, research partners/research funders and the wider community and society at large.

Apprenticeship: The College and TU Dublin has a major involvement in and commitment to apprenticeship education and training and over the years has played an important role in its development. As a testament to the quality of provision in this area, over many years apprentices from the College have consistently taken first place or have been highly ranked in National and Worldskills competitions.

About SellSTEM

SellSTEM is project funded under Marie Skłodowska-Curie Innovative Training Network 2020. Worth just over €4M, It will train a new generation of early stage researchers (ESR) to bring fresh thinking to the twin issue of low enrolment and gender imbalance in STEM education and careers by addressing deficits in spatial ability among young people across Europe. A key factor of intelligence, spatial ability is strongly related to achievement in and attraction towards STEM learning yet is underdeveloped among many young people in Europe. The large gender gap in spatial ability in favour of males means girls are over-represented in the low spatial ability group and more disadvantaged in STEM learning. TU Dublin is the coordinator of SellSTEM.

In this project, 15 ESRs across 10 universities in Europe will be recruited and trained to collect spatial ability data from children in Europe, measure their relation to academic performance and career choice and analyse interaction by gender, region and socioeconomic status. ESRs will create ways to develop spatial ability among children through online learning, tactile activities, integrated with other subjects and through project-based learning including maker space workshop. ESRs will work with teachers and teacher educators to identify barriers and enablers to developing spatial ability so they can provide sustainable classroom solutions to increase the spatial ability of children beyond existing levels. Education policy and curriculum design will be critiqued against latest research on cognitive development. Improved policies and curricula will be produced along with strategies to change teacher education and teaching practice. Guides for teachers to assessing spatial ability and classroom teaching activities for different age groups will be developed so teachers can assess and promote growth in spatial ability especially among girls. SellSTEM ESRs will produce new knowledge and methods to promote spatial development, increase STEM enrolment and reduce gender imbalance and help to open up an important research topic in Europe. In this way, SellSTEM will directly support the EU agenda for growth and jobs both now and into the future.

Job Description

Role Overview

The successful candidate for this position will be expected to take a leading role in the execution of SellSTEM. With support from the Principal Investigator (PI) and supervisors in the consortium, the candidate will contribute to the research work, ensure that all deliverables are achieved to a sufficient standard and in a timely manner, proactively support the progress of work packages, engage with ESRs as needed, proactively contribute to the communication and dissemination of the project outputs and sustain SellSTEM into the future by securing further funding opportunities. TU Dublin will coordinate the 'SellSTEM' MSCA ITN project worth €4.04M which will run for 48 months beginning Jan 1, 2021. **It is hoped that the successful candidate can take up this position and be available to work as close to the beginning of the project as possible.**

Principal Accountabilities

- Manage and conduct a specific programme of research and scholarship under the leadership of the PI
- Undertake research and produce research papers and articles on the SellSTEM research programme.
- Disseminate the outcomes of this research through talks, conferences and peer-reviewed journals.
- Keep up to date with the state of the art in the SellSTEM research area and contribute to training seminars for ESRs at summer schools and network meetings.
- Seek new areas of research and prepare and submit research bids and proposals that will sustain the SellSTEM research programme and CREATE into the future.
- Manage and coordinate mandatory reporting, including project deliverables, to the funding agency and ensure these are completed to a high standard and in a timely manner
- Organise and attend meetings of the Project Management Committee, and ensure that any recommendations made by it are addressed.
- Help organise network training events, summer schools, conferences and visits by the external advisory board.
- Communicate the outcomes of the research to various stakeholders including the public, policy makers and the teaching community
- Represent the research team internally and externally as required.
- Manage associate and other staff assigned to the programme.
- Where appointed to do so by TU Dublin, supervise or co-supervise graduate research students with a lead supervisor.
- Play an active role in innovation, knowledge and technology transfer activities.
- Participate fully in the wider research and scholarly activities of the CREATE Research Group, University, College and School.
- Engage in appropriate training and professional development opportunities as required by the Principal Investigator and TU Dublin.
- Carry out any other duties within the scope, spirit and purpose of the job as requested by the PI or Director of the College/School.
- Comply with all TU Dublin policies and regulations, including those in relation to Research Ethics and Health and Safety.

A Senior Post-doctoral Researcher is also required to:

- Be proactive in the conduct of the research and be expected to use their own initiative,
- Subject to experience, mentor Post-doctoral Researchers.
- Proactively seek opportunities for further funding

Person Specification

The ideal candidate will demonstrate the appropriate mix of knowledge, experience, skills, talent and abilities as outlined below:

Knowledge and Experience

- A PhD qualification in Spatial Ability in STEM or a closely related area of Cognitive Psychology or STEM education research (**essential**)
- Evidence of a research profile and publication record within the requisite subject area (**essential**)
- Knowledge of a broad range of quantitative and qualitative research techniques and methodologies (**essential**)

Criteria for a Senior Post-doctoral Researcher

- Successfully completed at least one Post-doctoral Fellowship or equivalent in the public or private Sector (**essential**)
- Effective written and verbal communication skills with ability to present complex information effectively to a range of audiences. The ideal candidate will demonstrate the appropriate mix of knowledge, experience, skills, talent and abilities
- A track record of excellent project management in large research networks or teams including the supervision of doctoral students (**desirable**)

Skills, talents & abilities

- Commitment to high quality research
- Excellent analytical and problem-solving skills, including the ability to assess and evaluate concepts/theories in order to develop original solutions and particular knowledge of, and expertise in, research methodologies.
- Excellent report-writing skills with a track record of journal and conference publications.
- Ability to communicate effectively with specialists and non-specialists alike.
- Self-motivated and able to manage own workload.
- Ability to work under pressure, to prioritise tasks effectively and deliver to tight deadlines.
- Experience of using Microsoft Office and other relevant software packages including those for quantitative and qualitative data analysis.
- Ability to work effectively as part of a team.

Eligibility to compete

This is a mentored research training post and, is, therefore not open to applicants who have previously availed of or benefitted from a similar mentoring or training post within the University. It is expected that the appointee will complete mentored training research training with the University which will cease on expiry of the fixed-term specified purpose. The expectation is that successful appointee will, at that point, further their knowledge and development in a different research environment.

Former Public Service employees:

Eligibility to compete may be affected where applicants were formerly employed by the Irish Public Service and previously availed of an Irish Public Service Scheme including:

- Incentivised Scheme for Early Retirement (ISER)
- Department of Health and Children Circular (7/2010)
- Collective Agreement: Redundancy Payments to Public Servants

Applicants should ensure that they are not precluded from re-engagement in the Irish Public Service under the terms of such Schemes. This is a non-exhaustive list and any queries should be directed to an applicant's former Irish Public Service Employer in the first instance.

Terms and Conditions of Employment

A full statement of terms and conditions of employment will be given to the successful applicant in accordance with Terms of Employment (Information) Acts 1994 and 2001.

The main terms and conditions of employment are as follows:

Tenure

This post is offered on a fixed-term specified purpose wholetime basis for up to 5 years with initial funding in place until 31/12/2024. The post will run from the date of employment until the end of the fixed term specified purpose or until the funding for the post comes to an end, whichever is the sooner. The initial funding is in place for a 48 month period beginning January 1st, 2021 and ending December 31st, 2024.

Location

This post is currently located in TU Dublin – City Campus Kevin Street. Based on current plans, the Kevin Street campus will have moved to Grangegorman by January 2021 or shortly thereafter. Before this transfer the location of this post may vary at the discretion of the President.

For further information please see www.dit.ie/grangegorman

Salary

The successful candidate will be appointed Point (01) of the Post-doctoral Researcher salary scale i.e. €41,025 gross per annum or Point (01) of the Senior Post-doctoral Researcher salary scale i.e. €45,942 gross per annum. Remuneration may be adjusted from time to time in line with Government pay policy. Incremental credit may apply in line with University Policy.

Hours of work

A 39 hour working week is in operation. This can be reviewed by collective agreement, with the Minister for Education & Skills, Ireland. Having regard to the nature of the work, attendance outside these hours may be required from time to time. Given the international composition of the consortium, network meetings and events will be held every 6 months at different locations in Europe and the successful candidate will be expected to travel to these locations for several days per event.

Probation

The terms of the University's Staff Induction and Probation Policy will apply.

Annual Leave

Annual Leave and Public Holidays shall be granted as per the Holidays (Employees) Act 1973 and Organisation of Working Time Act 1997. The annual leave entitlement for this post is 25 days per annum this is inclusive of the University closure days.

Retirement

The appointee will not be entitled to join the Education Sector Superannuation Scheme; however the University has a PRSA in place. A PRSA is a straightforward pension product that was introduced in 2003 by the Pensions (Amendment) Act 2002. It is a contract between an individual and the authorised PRSA provider in the form of an investment account that can be used to save for retirement.

Sick Leave

This appointment is subject to the University's Sick Leave Policy for Officers of the University.

Other conditions:

Nature of the post

The post will be on a fixed-term specified purpose basis for up to 5 years, initial funding in place for 48 months subject to the terms of the provisions of the Technological Universities Act 2018.

External Funding

This contract post is a fully “externally funded post” as envisaged by the Employment Control Framework for Higher Education Sector’ published by the Higher Education Authority pursuant to the Moratorium on Recruitment and Promotions in the Public Service as a currently implemented by the Government. It is a condition of this contract that if such external funding ceases or if the University is obliged to terminate the post for other reasons outside of its control (such as State policy), a redundancy will arise in respect of this position.

Application Form

Applications will be accepted through the online application service at www.tudublin.ie/vacancies. A CV will be required in addition to the application form. All correspondence from the University regarding your application will be by email. Please ensure that the security filters on your email provider will accept emails from TU Dublin.

Closing Date

The closing date for applications is **5pm (IRISH TIME)** on November 12, 2020. Late applications will not be accepted.

It is anticipated that interviews for this post will take place on the **December 16, 2020**. The interview assessment will be approx. 60 minutes in length and will include a presentation of 10 minutes duration. The topic of this presentation will be as follows:

“Making STEM education and careers more attractive to young people and girls in particular – is the solution to improve their spatial ability?”

Contact information

For further information about this post please contact: Dr Gavin Duffy, gavin.duffy@tudublin.ie.

For queries regarding the application process, please contact Rosemary Okafor at (01) 220 5175 between 9.30 and 5.00pm, Monday to Friday or email rosemary.okafor@tudublin.ie.

Further Information for Candidates

Canvassing will automatically disqualify.

Late applications will not be accepted.

You are also advised that you can only submit one application per competition. Should you have any issues with your submission, please contact us.

Shortlisting of applicants may take place, on the basis of information supplied in the application form.

It is University policy to seek two written references which are to the satisfaction of TU Dublin from your referees, one of whom must be your current or most recent employer. Candidates are advised to please ensure the nominated referees are aware of this requirement.

TU Dublin is an equal opportunities employer and is committed to the employment policies, procedures and practices which do not discriminate on grounds such as gender, civil status, family status, age, disability, race, religious belief, sexual orientation or membership of the travelling community.

In accordance with TU Dublin's Protection of Children and Vulnerable Adults policy, all candidates applying for a post will be required to disclose previous convictions or pending prosecutions on the Application Form. Candidates applying for a position in a Designated Area will be required to undergo Garda Vetting as part of the selection process. Decisions regarding appointments may be made by University Management based on the candidate's declaration.

The University may require candidates to undertake a pre-employment medical with an Occupational Health Physician. Normally pre-employment medicals are required for positions with a duration of one year or more. The primary purpose of the pre-employment medical is to assess an individual's fitness for a particular position or occupation with regard to the requirements for that post. TU Dublin will have regard to its obligations under the Disability policy to make reasonable accommodation for a candidate.

A conditional offer of employment may be made to the successful candidate(s) **subject to** submission and verification of required evidence of qualifications, professional experience, references, pre-employment medical, Garda Vetting as appropriate. No appointment will be made unless Human Resources verify a candidate's academic qualifications and/or evidence of professional experience required for the role. In this regard, where a qualification and/or professional experience is an essential criterion, candidates will be required to provide original academic transcripts, parchment and original statements from previous employers. The cost incurred by an applicant for requesting an academic transcript will not be covered by the University. The University reserves the right to verify documentation with the relevant bodies/employers.

Appointees are also required to furnish:

- as evidence of age, a certified extract from a Public Register of Birth or passport;
- Proof of PPS Number (e.g. social services card);