



Educational Science and Technology
University of Twente

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Summary

Standard 1. Intended learning outcomes

The panel found that the master's programme EST at the University of Twente is based on a clear vision and has a unique profile, with much freedom for students to tailor the programme to their own interests and ambitions, and special attention given to technology and design. The intended learning outcomes fit the master's level as prescribed by the Dublin descriptors and are geared to the expectations of the labour market. The employment sector committee is an asset to the programme and may help keep it up to date.

Standard 2. Teaching-learning environment

The panel has seen many laudable aspects of the EST teaching and learning environment. The entry requirements guarantee that students are well-prepared when they embark on the programme. They are consistently granted maximum freedom to choose their own learning paths, which is one of the discerning traits of this programme. The curriculum holds a good balance between theory and practical assignments and allows students to comply with the intended learning outcomes. The panel finds there is a good quality culture, with many moments of evaluation and adaptation of the programme where necessary. The course material is up to scratch. The fact that the programme is offered in English fits with the international niche of the programme and the international contexts in which students should be able to operate. The lecturers are knowledgeable, enthusiastic, and engaged. Student support and supervision are generous and well-organized. The programme has a high pace but is feasible. The thesis trajectory takes up a large part of the curriculum and is now mainly geared towards the role of researcher.

Standard 3. Student assessment

The panel is of the opinion that the EST programme has a well-designed and well-functioning assessment system. There is an overall assessment plan with a wide variety of assessment forms that are explicitly aligned with the intended learning outcomes and clearly communicated with the students. In most cases, two colleagues look at the tests and test results. The assessment of final projects is carefully and meticulously set up, with a distinct build-up of the final mark according to a detailed set of rubrics. Personal, qualitative feedback on the final project is always given, but sometimes only orally. The panel finds that the examination board is well organized and in control of assessment quality.

Standard 4. Achieved learning outcomes

The panel is impressed with the high level of theses produced in the EST programme. They demonstrate beyond a doubt that the students realize the intended learning outcomes and are of the required master's level. Alumni are generally satisfied with the programme and highly employable in different sectors.

Score table

The panel assesses the programme as follows:

MSc Educational Science and Technology

Standard 1: Intended learning outcomes

meets the standard

Standard 2: Teaching-learning environment

meets the standard

Standard 3: Student assessment

meets the standard

Standard 4: Achieved learning outcomes

meets the standard

General conclusion

positive

Prof. D. (Douwe) Beijaard, chair

Drs. Mariette Huisjes, secretary

Date: 27 June 2023

Introduction

Procedure

Assessment

On 27 and 28 March 2023, the master programme Educational Science and Technology of the University of Twente was assessed by an independent peer review panel as part of the cluster assessment Educational Sciences (Onderwijswetenschappen). The assessment cluster consisted of 9 programmes, offered by Rijksuniversiteit Groningen, Maastricht University, Universiteit Twente, Radboud Universiteit Nijmegen, Open Universiteit, Universiteit Utrecht and Universiteit van Amsterdam. The assessment followed the procedure and standards of the NVAO Assessment Framework for the Higher Education Accreditation System of the Netherlands (September 2018).

Quality assurance agency Academion coordinated the assessment upon request of the cluster Educational Sciences. Peter Hildering and Fiona Schouten acted as coordinators for the cluster, and Peter Hildering (Groningen, Nijmegen and Utrecht), Mariëlle Klerks (Maastricht and University of Amsterdam), Mariette Huisjes (Twente) and Jessica van Rossum (Open University) acted as secretaries in the cluster assessment. They are all certified and registered by the NVAO.

Preparation

Academion composed the peer review panel in cooperation with the institutions and taking into account the expertise and independence of the members as well as consistency within the cluster. On 3 November 2022, the NVAO approved the composition of the panel. The coordinator instructed the panel chair on 8 December 2022 on his role in the site visit according to the Panel chair profile (NVAO 2016). The full panel was also informed about the assessment framework, the working method and the planning of the site visits and reports.

The programme composed a site visit schedule in consultation with the coordinator (see appendix 3). The programme selected representative partners for the various interviews. They also determined that the development dialogue would be organized in the form of thematic sessions during the site visit. A separate development report was made based on these sessions.

The programme provided the secretary with a list of graduates over the period 2019-2022. In consultation with the coordinator, the panel chair selected 15 theses per programme. He took the diversity of final grades and examiners into account, as well as the various focal areas. Before the site visit, Academion received the relevant documentation from the programme, consisting of an extensive set of current documentation pertaining to the four standards of assessment that, together with a description of the organization and SWOT analysis, served as self-evaluation report. This included a comprehensive analysis of the programme's strengths and weaknesses, and a separate and independent student chapter along with the required appendices. An overview of these materials can be found in Appendix 4.

The panel members studied the information and sent their findings to the secretary. The secretary collected the panel's questions and remarks in a document and shared this with the panel members. In a preliminary meeting on 17 March 2023, the panel discussed the initial findings on the documentation and the theses, as well as the division of tasks during the site visit.

Site visit

During the site visit, the panel interviewed various programme representatives (see appendix 3). The panel also offered students and staff members an opportunity for confidential discussion during a consultation hour. No consultation was requested. The panel used the final part of the site visit to discuss its findings in an internal meeting. Afterwards, the vice-chair publicly presented the preliminary findings.

Report

The secretary wrote a draft report based on the panel's findings and submitted it to the coordinator at Academion for peer assessment. Subsequently, the secretary sent the report to the panel for feedback. After processing this feedback, the secretary sent the draft report to the programme management in order to have it checked for factual irregularities. The secretary discussed the ensuing comments with the panel chair and changes were implemented accordingly. The panel then finalised the report, and the coordinator sent it to the University of Twente.

Panel

The following panel members were involved in the cluster assessment:

- Prof. dr. Douwe Beijaard, emeritus professor of Professional Learning at Eindhoven University of Technology (chair);
- Prof. dr. Bram De Wever, associate professor of Learning and Instruction at Ghent University;
- Prof. dr. Katrien Struyven, professor at the School for Educational Sciences at Hasselt University;
- Dr. Nynke Bos, lector Teaching, Learning & Technology at Hogeschool Inholland;
- Prof. dr. Martin Valcke, professor of Educational Sciences at Ghent University;
- Prof. dr. Jo Tondeur, professor of Educational Innovation and Technology at Free University of Brussel;
- Prof. dr. David Gijbels, professor of learning and instruction at Antwerp University;
- Prof. dr. Piet Van den Bossche, professor of Learning in Organizations at Antwerp University and professor of Team Learning at Maastricht University;
- Prof. dr. Wilfried Admiraal, professor of Technology-Enhanced Teaching and Learning at Oslo Metropolitan University;
- Eline Pothoven, BSc Educational Sciences, Utrecht University (student member);
- Juliette de Groot, BSc Educational Sciences, University of Amsterdam, (student member).

The panel assessing the Educational Science and Technology programme at the University of Twente consisted of the following members:

- Prof. dr. Douwe Beijaard, emeritus professor of Professional Learning at Eindhoven University of Technology (chair);
- Prof. dr. Bram De Wever, associate professor of Learning and Instruction at Ghent University (vice-chair);
- Dr. Nynke Bos, lector Teaching, Learning & Technology at Hogeschool Inholland;
- Prof. dr. Piet Van den Bossche, professor of Learning in Organizations at Antwerp University and professor of Team Learning at Maastricht University;
- Eline Pothoven, BSc Educational Sciences, Utrecht University (student member).

Shortly before the site visit, it became clear that panel chair Douwe Beijaard could not attend the site visit to Twente due to personal circumstances. He had already studied the theses and information file, provided his findings and chaired the preliminary meeting on 17 March. Bram De Wever stepped in as vice-chair during

the site visit. The contributions of prof. Beijaard were included in the questions asked during the site visit. He also read and commented on the panel report after the site visit.

Information on the programme

Name of the institution:	Universiteit Twente
Status of the institution:	Publicly funded institution
Result institutional quality assurance assessment:	Positive
Programme name:	Educational Science and Technology
CROHO number:	60023
Level:	Master
Orientation:	Academic
Number of credits:	60 EC
Specialisations or focal areas:	Formal Education (EDU) Human Resource Development (HRD)
Location:	Enschede
Joint programme:	Dual degree with Ludwig-Maximilians-University in Munich, Germany
Mode(s) of study:	Full-time, part-time
Language of instruction:	English
Submission date NVAO:	1 November 2023

Description of the assessment

Organization

The master's programme in Educational Science and Technology (EST) at the University of Twente is situated in the Faculty of Behavioural, Management and Social Sciences. The programme can either be taken full-time or part-time. Part-time students take the courses together with full-time students, but take one or two courses per block instead of three. They draw up a suitable individual part-time programme in consultation with the study adviser from the programme. Because students in the full-time and part-time variant follow the same education, the assessments in this report relate to both variants.

The teaching staff comes from the department of Learning, Data-analytics & Technology and is divided over four sections of this department: Teacher Development; Instructional Technology; Educational Science; and Cognition, Data, and Education. The programme is supported by the educational service centre of the faculty and profits from a variety of services provided by the university. The programme management is in the hands of the programme director, the programme coordinator, and the study adviser, who together form the management team. The programme has three graduation coordinators: one for students interested in projects related to human resources development, one for those interested in education-related projects that focus on learning and instruction, and one for those interested in education-related projects that are closely related to either professional development of teachers or data in education. The programme management receives advice from the programme committee and the examination board. It has strong bonds with the study & alumni association Komma, and also with graduates of the programme. The latter connection is mainly shaped via the employment sector committee, which consists of members that are active in the field.

Standard 1. Intended learning outcomes

The intended learning outcomes tie in with the level and orientation of the programme; they are geared to the expectations of the professional field, the discipline, and international requirements.

Findings

Vision

The master's programme EST at the University of Twente prepares students for three potential professional roles in educational science and technology: designer, researcher, and consultant. By selecting courses, students may focus on one specific role, but all students will become familiar with each of these roles during the programme. Cutting through the three roles, the programme has two focal areas: formal education, with an emphasis on the school context, and human resources development, with a focus on nonprofit organizations and business and industry. Students can arrange a study plan that mainly focuses on one of the focal areas, or they can design a study plan that combines both.

The panel found that with the three roles and two focal areas, the University of Twente offers a rich, varied, and flexible programme to students who wish to become 'academic professionals' and that fits well with the requirements of the professional field.

Intended learning outcomes and profile

The intended learning outcomes of the EST programme involve five aspects: domain orientation, design competency, research competency, advice competency, and academic reflection. The intended learning outcomes follow the domain-specific frame of reference drawn up for all educational science programmes in the Netherlands. A detailed description of the intended learning outcomes can be found in Appendix 1.

The panel finds that the intended learning outcomes are in line with national and international requirements through their connection to terms of the domain-specific frame of reference, which are in turn connected to the Dublin descriptors. They connect to both practice and academic reflection on processes and products and represent the three roles that the programme leads up to. The intended learning outcomes therefore fit the programme. Nevertheless, the panel also thinks that they are rather generic and could do more justice to the programme's specific profile. Although the programme is called Educational Science and Technology, for instance, technology as such is not explicitly mentioned in the intended learning outcomes. The panel learned during the site visit that this has been a topic of debate. The previous assessment panel encouraged the EST programme to elaborate on the intended learning outcomes so that they better reflect the unique character of EST. As a reaction to this advice, the lecturers in the programme refined its vision and mission together. This led to an informative and articulate *mission, vision, and values* document, dating from 2019. It also led to the operationalization of technology in all the courses. However, the management has chosen not to incorporate this refined vision into the intended learning outcomes. The programme management told the panel this is because they prefer to leave the role of technology open, seeing technology as a means, not an end. Although the panel agrees with this point of view, it considers it a missed opportunity if the intended learning outcomes are not clarified along the lines of the vision document. On the role of technology, for instance, the programme already has a vision in place. This can perhaps be further honed by the discussion that is currently being held at the faculty level with the aim of developing a vision of technology in relation to management, behavioural, and social sciences. Using this vision to make the intended learning outcomes more specific will help communicate the programme's distinct profile to (prospective) students and make it easier to align the curriculum to the intended learning outcomes. The panel therefore recommends adapting the learning outcomes in this respect.

Connection to the professional field

The domain-specific frame of reference – on which the intended learning outcomes of the EST programme are based – stipulates the connection of each programme to educational science as an academic discipline and to the professional field. Furthermore, to ensure that the programme is geared towards the demands and expectations of the professional field, the management team regularly consults the employment sector committee. Members of this committee have diverse backgrounds and all work in a wide range of jobs based on a background in educational science.

The panel has established that the programme is well geared towards the expectations of the professional field. The panel appreciates the role of the employment sector committee, which systematically anchors the programme in the professional field. Precisely because it has such an important role in keeping the programme up to date, the panel recommends ensuring that this committee comprises relevant expertise for both focal areas and each of the three roles the programme has chosen. Its membership should also be regularly refreshed and include recent graduates from Twente or other programmes to keep abreast of the latest developments. The panel therefore recommends formalizing this throughput – which now comes about in a natural way, as the panel heard – for instance by instigating a fixed term of office.

Considerations

The panel found that the master's programme EST at the University of Twente is based on a clear vision and has a unique profile, with much freedom for students to tailor the programme to their own interests and ambitions, and special attention given to technology and design. The intended learning outcomes fit the master's level as prescribed by the Dublin descriptors and are geared to the expectations of the labour market. The employment sector committee is an asset to the programme and may help keep it up to date. To better communicate the programme's unique profile and facilitate alignment with the curriculum, the panel recommends making the intended learning outcomes more specific in this regard.

Conclusion

The panel concludes that the programme meets standard 1.

Standard 2. Teaching-learning environment

The curriculum, the teaching-learning environment and the quality of the teaching staff enable the incoming students to achieve the intended learning outcomes.

Findings

Curriculum and teaching methods

Within boundaries, EST students may choose their own learning paths. They can choose to take the programme as full-time or part-time students, and they can choose to start in September or February. All enrolling students are expected to attend the biannual introduction day. During this day, presentations are held on the courses and the final project, and students select the electives they want to take. By the end of the day, they draw up their individual study plans.

All students take the mandatory 10 EC course titled 'Trending topics in educational science and technology'. Subsequently, they choose four elective courses, each 5 EC. In each quartile, at least one elective is offered that is more focused on human resources development and one that is more focused on formal education. Partly parallel to the coursework, students start with the conceptualization of their final project within the first few weeks of the programme. They do so by working in groups on their research proposal in the course 'Research proposal EST' (5 EC), which is scheduled four times a year. The actual research and writing of the thesis involve 25 EC and are carried out after or parallel to the last course(s). In addition to the regular programme, a two-year joint programme, Learning Sciences and Technology with the Ludwig Maximilians University in Munich, Germany, is offered. For this joint programme, which is set up as a dual degree, students spend their first year in Munich and their second year in Twente. Upon completion of the joint programme, students gain two MSc degrees: an MSc degree in Learning Sciences from Ludwig Maximilians University and an MSc degree in Educational Science and Technology at the University of Twente. The UT provides the EST diploma based on the course elements taken at the UT, which cover all intended learning outcomes of the programme.

The programme offers a combination of an academic and a practical approach, thus shaping academic professionals. The programme's vision is that this is best realized through the following principles:

- Skills should be learned by offering them in an integrated way. Therefore, each course promotes the development of multiple skills at the same time. There are no separate research courses, design courses, advice courses, or reflection courses.
- Theoretical and practical learning support one another. Courses therefore have strong theoretical components as well as assignments to which to apply them.

- Authentic tasks build real-world skills. Assignments are therefore very often based on real problems from practice; this helps develop skills as well as orient students towards potential final projects and future career choices.
- Tailored learning works best. Depending on their background, future goals, and time limits, students may therefore plan (to a certain extent) their own learning path.

The panel finds that the EST programme is based on an articulate vision. It highly appreciates this, in particular the tailored learning, which offers students every chance to shape the programme to their own interests. The panel finds this a unique and attractive aspect of the programme which fits well with the breadth and variety of the professional field. This freedom that is at the heart of the programme is reflected in the intended learning outcomes and consistently carried through in the courses. Not only may students freely choose their own courses; within the courses as well, they have many chances to choose cases or tailor assignments to personal interests. The panel found during the site visit that students also highly appreciate these possibilities.

In the courses, theoretical and practical learning support each other. Courses have strong theoretical components as well as assignments in which to apply them. As mentioned above, these assignments are often based on real problems or issues from practice which provide a direct link with the professional field. Many courses in the programme, therefore, employ problem-and-challenge-based learning and require students to learn collaboratively. The content of individual courses is constantly adjusted to keep it up to date and comply with student evaluations. Annually, the management team draws up a programme development plan with goals for the next year.

The panel finds some aspects of the curriculum admirable. One such an aspect pertains to the way students may choose their own learning paths in accordance with their interests, backgrounds, and ambitions. Naturally, in shaping the programme, students (who shape their individual programmes), their study adviser (who supports them), and the management team (who sets the boundaries) must always guard a precarious balance between, on the one hand, the freedom that is worth preserving and, on the other hand, the unity and coherence of the programme, which is also desirable. What effectively holds the programme together is a shared focus on the two focal areas and three roles within educational science and technology as well as the shared course on trending topics. According to the panel, making the intended learning outcomes more specific (see standard 1) will put more pressure on this balancing act because the demands on the curriculum will be more explicit. The challenge to meet both demands may and should be taken as a positive tension, which makes the programme unique and interesting. In this sense, the panel encourages the programme to remain on the same focal area, even though this requires effort. Another admirable aspect is that with course evaluations, course screenings, informal lunches of students and lecturers, and an exit survey, there is good quality control, and the programme is continually improved and updated.

The panel studied the material of the courses. This convinced the panel that the courses are of the appropriate master's level and enable the students to comply with the intended learning outcomes. With a well-balanced mix of theoretical components and practical assignments, the didactic methods align well with the programme's vision. The students are also quite happy with the courses. They confirmed that within each of the courses, all three roles (researcher, designer, and consultant) are covered, so they can familiarize themselves with them. The course 'Trending topics in educational science and technology' holds a special position within the curriculum because it is the one mandatory course that all students take, and substantively it is the cornerstone of the programme. The panel finds the present content of this course satisfying; it provides a good overview of contemporary themes in research related to the field of educational science and technology. The panel recommends aligning the topics in this course with the new intended

learning outcomes once these have been specified (see Standard 1). In particular, the panel thinks that an introduction to design-based research deserves a place in this course.

Concerning the joint programme with Munich, the panel finds that it is an interesting option on paper, but very few students actually choose to take the joint programme. They told the panel that it is logistically difficult to arrange due to the cost and difficulty of finding housing in Munich. Other difficulties are the specific entry requirements LMU is asking for and the Dutch tuition fees that are significantly higher than the German fees. If the programme management attaches importance to the joint programme option, the panel recommends to eliminate some of the above-mentioned practical obstacles to make it more attractive. Alternatively, if the management team is not convinced of the added value, the joint programme may be dropped.

Language of the programme

Since the start of the EST master's programme, its language has been English. This decision was taken based on the conviction that the field of educational sciences is internationally relevant, and therefore the specialized EST programme should be offered in an international context. All (non-native English speaking) lecturers are required to take a UT English Proficiency Assessment before they can teach in the programme. The university offers optional courses to improve the staff's language proficiency when necessary.

The panel considers the choice of English to be well motivated. English is the dominant language in the academic field of educational science and technology, and graduates in each of the three roles should be able to operate in an international context. There is sufficient attention paid to the language skills of the teaching staff. Furthermore, the panel appreciates the truly international and diverse population within the programme, with students from all over the world, not only from Europe. This international classroom adds to the teaching-learning environment of the students, allowing them to learn from other contexts.

Feasibility and thesis trajectory

Admission criteria for the programme are both formal (e.g. a bachelor's degree or equivalent thereof) and content related: sufficient knowledge and skills concerning the domain of educational science and technology, research methodology, and research techniques. Students who apply for admission to the programme are assessed, and those who do not meet the entry requirements must complete the 30-EC premaster's programme (partially or fully).

The panel finds that students feel well prepared for the programme. Students who took the premaster were enthusiastic about it and felt that it prepared them well for the courses.

Students typically take from one to two years to complete the programme; 10–20% of full-time students complete the programme within the nominal time of one year, 60–70% within two years. The panel heard that delays are, in many cases, the students' choice. They either intentionally lengthen the programme by taking extra courses or acquire a job before graduating. Students confirmed this view, but they also said that the programme has a very fast pace. The curriculum was said to be intensive but manageable, with the thesis trajectory being the highest hurdle to overcome. The panel suggests making some changes to this trajectory. The suggestions made by the panel (see below) will, potentially, not only improve feasibility but also create a better fit between the programme and the three roles that its students are prepared for.

As it is, the thesis trajectory is shaped as follows. Each student must carry out a research project that relates to a real-life problem. The trajectory starts with the research proposal course in which students write a plan for their final project. This includes research questions, key concepts, and methodology. The final project

may be situated in the context of an organization outside of the UT. All final projects imply a research or design component including empirical, evaluative, and reflective aspects grounded in a theoretical and scientific framework. In practice, a large majority of students perform classic experimental research. Before taking the research proposal course, students are matched with a supervisor. They make their choices regarding the project in consultation with one of the programme's graduation coordinators, the prospective UT supervisor, and (in case of an external project) the educational organization or company in which the project is situated.

The panel heard that a publishable academic article is the goal at which the theses aim; this high ambition is not surprising given the quality of the theses it read. However, the panel is of the opinion that the different roles for which the programme trains justify different final projects. Whereas the present thesis trajectory is a good preparation for the role of researcher, for the roles of designer and consultant, the academic bar may be set too high, and according to the panel too much emphasis is placed on classic experimental research. For students who aim to be designers or consultants, (part of) the 25 EC could be put to better use in, for instance, a design-based research project or an internship combined with a thesis. The panel recommends maintaining the present thesis trajectory as an option while offering alternative options for students who do not wish to become researchers. For students who aim to be consultants, an internship with clearly defined learning goals and an external co-supervisor could be combined with a less demanding thesis for fewer ECs than the present one.

For design-based research, students meet many obstacles, the panel found. Students who did not take the premaster (which, as students told the panel, has a good module on design-based research) do not feel sufficiently equipped to carry out such a project; there is a lack of good examples, and the exact requirements are not clear. This holds students back from choosing to do design-based research for their final project, which the panel finds regrettable. Design-based research could be better embedded in the programme. Clear standards should be set, and it could, for instance, be made possible to execute design-based research in teams with students from other faculties. This would create an opportunity to learn how to communicate with other disciplines and build a project together, a skill that is in great demand in the professional field. By opening up several options, the final half of the programme can become a playground where students learn to take on the role of their choice. The panel is convinced that differentiating between the three roles will give the programme more leverage and strengthen its profile.

Support

Students are supported in many ways: on the programme level, the faculty level, and the UT level. The EST programme has its own study adviser, and during the thesis trajectory, students have their own supervisor. The faculty has an international student support officer and a study adviser for those who would like to talk about personal matters with someone outside their programme. The university has student counselling facilities with various forms of individual support as well as courses and workshops.

In a programme with so much to choose from, support is even more important than in regular programmes, and the programme management seems to be aware of this. The panel finds that support for the EST programme is generously given and well organized. During the thesis trajectory, for instance, students meet one-on-one with their supervisor every two to three weeks. In spite of the support offered, some students feel daunted in the first quartile of the programme, where they are supposed to choose a thesis topic while they have only just begun with their studies. They feel this decisive moment comes too early, and they fear making choices they will later regret. The panel recommends that the programme addresses this issue. Additionally, some students feel isolated while they are working on their theses—usually alone and for a period of at least six months. At the time of the site visit, the programme had developed plans to address

this by facilitating modes where students can support each other during the thesis trajectory, for instance in tutor groups that form online communities. The panel thinks that this is an excellent idea.

Teaching staff

The EST programme has a core team of around 28 lecturers, all active researchers with expertise in different research areas, and a larger group of supervisors for the final project. With a current student population of approximately 50, the programme has a very favourable staff-student ratio. All teaching staff must meet high standards; for instance, they must meet the nationally acknowledged university teaching qualification (in Dutch: BKO) within three years of their employment and a C1 or C2 level of proficiency in English. Those lecturers who are involved as examiners are required to hold a PhD. Six of the lecturers in the EST programme possess or are studying for the senior university teaching qualification (in Dutch: SKO). There are many additional opportunities for teachers to develop in their teaching and supervision, for instance through the faculty's teaching academy.

The panel finds that the expertise, engagement, and enthusiasm of the lecturers are some of the strongest assets of the EST programme. This impression is based on the discussions the panel had with lecturers during the site visit and on the opinions voiced by students, who highly praised their lecturers. They feel the lecturers are there for them despite their high work pressure (most lecturers teach in several programmes and do research as well). Lecturers and students seem to form a small, closely-knit community within a large university, which contributes to students' well-being and capacity to learn. There are many moments for discussion and consultation between the lecturers. The panel finds these meetings valuable so long as they lead to decisive action when needed. It recommends ensuring that topics do not stay in the discussion phase for too long. In doing this, the programme could capitalize on the lecturers' enthusiasm by learning from good practices that are already there and deserve to become more widespread. For instance, the courses oriented towards human resources development are exemplary in 'getting the outside world in', through guest lectures and authentic assignments.

Considerations

The panel has seen some laudable aspects of the EST teaching and learning environment. The entry requirements guarantee that students are well-prepared when they embark on the programme. They are consistently granted maximum freedom to choose their own learning paths, which is one of the discerning traits of this programme. The curriculum holds a good balance between theory and practical assignments and allows students to comply with the intended learning outcomes. The panel finds there is a good quality culture, with many moments of evaluation and adaptation of the programme where necessary. The course material is up to scratch. The fact that the programme is offered in English fits with the international niche of the programme and the international contexts in which students should be able to operate. The lecturers are knowledgeable, enthusiastic, and engaged. Student support and supervision are generous and well-organized.

The programme has a high pace but is feasible. The thesis trajectory takes up a large part of the curriculum and is now mainly geared towards the role of researcher. The panel recommends that the programme offers alternative trajectories for those students who wish to become designers or consultants. Differentiating between the three roles will give the programme more leverage and strengthen its profile.

Conclusion

The panel concludes that the programme meets standard 2.

Standard 3. Student assessment

The programme has an adequate system of student assessment in place.

Findings

Assessment of courses

The EST programme uses a variety of assessment types in the different courses. This is determined by the lecturers, who know best how to assess the knowledge and skills for their own courses. The programme management monitors whether there is a balance in the different types of assessment across the courses, for example group versus individual work, written exams versus assignments. Many assignments are based on real-world problems. Students can learn about the exact form of assessment in the course description in the programme's catalogue and on the Canvas page for the course. Lecturers use assessment forms, scoring guidelines, and/or rubrics that are also shared with the students beforehand. The programme has an overall assessment plan which provides an overview of all courses in the EST programme, to what extent the courses contribute to the intended learning outcomes, and how this is assessed.

The panel found that the EST programme has a well-balanced and varied assessment programme which is clearly communicated to the students. The variety of assessment forms (individual and group assessments, written exams, advice reports and individual reflections, designing a lesson cycle) makes the programme challenging and interesting for the students. It also reflects the different roles that the programme leads up to. The assessment plan makes sure that there is a coherence between each of the courses and the intended learning outcomes, which is recommendable. The panel heard that in the large majority of cases, the tests and test results are overseen not only by the lecturer who is responsible for the course but also by a colleague. In some cases, it is difficult to find a colleague with suitable expertise, and a second opinion is then skipped if there is no dilemma or doubt concerning the assessment. Although it concedes that the integrity of assessment has never been questioned, the panel recommends formalizing the application of this so-called 'four eyes principle'. This means finding a solution for those cases where suitable expertise cannot be found for maximum transparency and accountability.

Assessment of final projects

The final projects are assessed by the supervisor and a second examiner. They are guided in this process by detailed rubrics. Both first do the assessment individually and then discuss the grade. Should the difference between the supervisor's and second examiner's assessment be too large, mediation by a third party can be called in. The supervisor and second examiner use an assessment form for the content, which contains the following elements: problem statement and theoretical framework, research methods and analysis, conclusion, reflection and discussion (50%), written report (20%), and process (20%). A separate assessment form concerns the oral presentation and defense of the end results during the final meeting with the supervisor and second examiner: the colloquium (10%).

The way the final projects are assessed struck the panel as careful and meticulous, with a distinct build-up of the final assessment and clear rubrics. While overviewing some of the assessment forms, the panel noted that in some cases they only contained quantitative information and lacked qualitative feedback. During the site visit, the panel heard that qualitative feedback is always given, but sometimes only orally. It recommends capturing such feedback, for instance, in a short summary on the assessment forms. Alternatively, an audio recording of the oral feedback may also be added to the assessment form. This will make the assessment more comprehensible and help students review how they can improve themselves.

If the panel's recommendation to differentiate between types of final projects is followed, it would, in the panel's view, be advisable to differentiate between the assessment forms for these projects as well. Some fundamental assessment criteria related to the intended learning outcomes are the same for all final projects, but on top of these, the assessment criteria could branch out according to the type of project that is chosen. For example, a design-based research project should meet different criteria than a classic experimental research project or an internship in combination with a lighter, more consultancy-oriented thesis. Particularly in the case of design-based research, it is vital, according to the panel, to state explicitly what the minimum requirements are. It would be a fruitful exercise to discuss what these criteria should be, in the eyes of the staff. They could for instance (but not necessarily) be: making a good analysis of available sources; providing argumentation for the design and theoretical assumptions; selecting practices, experiences, etc. that may form the basis for the development of a coherent set of design principles; and ensuring a methodologically sound and scientifically justified evaluation of a design in often small-scale contexts. In addition, it should be clear what is expected in terms of the nature, frequency, and quality of the iterations inherent in developing a good design. To underpin these explicit criteria, it will be inspiring to provide and discuss some good examples. Such actions to stimulate students to do design-based research will help to strengthen the programme's unique profile.

Examination board

The EST programme is under the purview of the examination board for behavioural sciences, which is one of the four examination boards of the faculty and safeguards the assessment quality according to a regularly updated protocol. The board meets monthly and, amongst other things, determines whether a student has fulfilled the requirements with regard to knowledge, insight, and skills. In order to do so, the examination board reads, checks and discusses documents and reports and checks the qualifications of examiners. The required level necessary to receive a degree in the EST programme is described in the Education and Examination Regulations. This document consists of general regulations for all master's programmes in the Faculty of Behavioural, Management and Social Sciences with a specific appendix for the EST programme. Once a year, the examination board meets with the programme management of EST in the so-called safeguarding assessment quality meeting, where topics on assessment, including the assessment plan, are discussed.

Based on its meeting with the examination board and the board's annual reports, the panel concludes that the examination board is well organized and in control of assessment quality, with regular checks and balances and monthly meetings. If students file a complaint about an exam or treatment by a lecturer, or if lecturers submit a suspicion of fraud or plagiarism by a student, the examination board holds hearings with both parties and investigates the matter. Representatives of the examination board for the faculty told the panel that it is quite satisfied with the functioning of the EST programmes and that it hardly ever receives a complaint about this programme.

Considerations

The panel is of the opinion that the EST programme has a well-designed and well-functioning assessment system. There is an overall assessment plan with a wide variety of assessment forms that are explicitly aligned with the intended learning outcomes and clearly communicated with the students. In most cases, two colleagues look at the tests and test results. In exceptional cases, a second opinion is skipped if there is no dilemma or doubt. Although the integrity of assessment has never been questioned, the panel recommends formalizing the four eyes principle. The assessment of final projects is carefully and meticulously set up, with a distinct build-up of the final mark according to a detailed set of rubrics. Personal, qualitative feedback on the final project is always given, but sometimes only orally. The panel recommends adding this feedback to the assessment form in some form or another. It is also recommended that the

programme considers diversifying the assessment criteria for final projects if different forms of projects are allowed. The panel finds that the examination board is well organized and in control of assessment quality.

Conclusion

The panel concludes that the programme meets standard 3.

Standard 4. Achieved learning outcomes

The programme demonstrates that the intended learning outcomes are achieved.

Findings

Prior to the site visit, the panel studied 15 final project reports (master theses) from the EST programme. This selection included one project from the joint programme with Munich and three projects from students in the part-time variant. The panel is impressed with their high level. The theses are generally strong on analysis, methodologically robust, and based on a sturdy theoretical framework and extensive data. This impression is confirmed by the fact that in each semester, some EST master's theses are submitted for publication in academic journals. Without a doubt, the theses display the intended learning outcomes and are of the required master's level. They are also lengthy. Students could be stimulated to be more succinct as this is called for in many professional fields.

The alumni to whom the panel spoke were satisfied with the programme. This is also the general impression of the national alumni survey, where a majority of respondents would choose the Twente EST programme again if they were offered a second chance. Even after graduation, the alumni form a community with the students in the vibrant study association Komma, which is famous for its activities among educational professionals far beyond the direct circle of the University of Twente. Students also meet alumni through the course 'Trending Topics'. All the alumni have found employment in research, education, or industry. From the fact that quite a few students find a job even before their graduation, it is apparent that alumni from the EST programme at the University of Twente are much sought-after by the professional field.

Considerations

The theses produced in the EST programme demonstrate beyond any doubt that the students realize the intended learning outcomes and are of the required master's level. Alumni are generally satisfied with the programme and highly employable in different sectors.

Conclusion

The panel concludes that that the programme meets standard 4.

General conclusion

The panel's assessment of the master's programme in Educational Science and Technology is positive for both the full-time and part-time variant.

Development points

1. Make the intended learning outcomes more specific to better communicate the programme's unique profile and facilitate alignment with the curriculum. This specification should be reflected in the key course 'Trending topics in educational science and technology'.
2. Investigate whether the practical obstacles for students to participate in the joint programme with Munich can be eliminated.
3. Maintain the present trajectory for final projects, but offer alternatives for those students who wish to focus on the role of designer or consultant besides being researchers. Diversify or adapt the assessment criteria in accordance with these different professional perspectives.
4. Formalize the four eyes principle in the composition of courses assessment.
5. Capture qualitative feedback and add it to the assessment forms for the final projects.
6. Stimulate students to be succinct when writing their master's theses.

Appendix 1. Intended learning outcomes

1. *Domain orientation:* Graduates have a firm and broad overview of education and of the specialty areas within, and specific expertise in one of the specialty areas that can be used productively and creatively in various related professional contexts.
2. *Design competency:* Graduates are able to systematically frame up, fill in, augment, evaluate, and implement designs to support learning environments in various education and training contexts.
3. *Research competency:* Graduates are able to systematically collect, analyse, and interpret research data, to draw conclusions there from, and on the basis of that advise or decide regarding possible alternatives and activities to be conducted, particularly in a design context.
4. *Advice competency:* Graduates are able to advise (educational) organisations, in part based on the three competencies mentioned above, with regard to the implementation of better and more efficient learning environments and organisational as well as policy related arrangements for learning and teaching.
5. *Academic reflection:* Graduates are able to critically reflect on processes, resulting products, and achieved results from systematic and well-chosen scientific, socialcultural, and ethical perspectives in such a way as to contribute to the professional development of the educational specialist and to a broadening and/or deepening of the scientific subject area.

Appendix 2. Programme curriculum

Fulltime variant

Quartile 1A		Quartile 1B		Quartile 2A		Quartile 2B	
Trending topics in educational science and technology 201200034 (10 EC)							
Team learning at work 201500010 (5 EC)		HRD & Technology in a live context 201600126 (5 EC)		Regulation and facilitation of workplace learning 201200031 (5 EC)		Leadership and organisational change 201200032 (5 EC)	
Designing learning & performance support 191970340 (5 EC)		4CID for complex learning 202200054 (5 EC)		Innovative technology-based learning environments 201400002 (5 EC)		Teacher learning and development 201200027 (5 EC)	
Learning and Instruction * 192914040 (5EC)				Learning and Instruction 192914040 (5EC)		Educational measurement 201500149 (5 EC)	
		Research Proposal EST 201200035 (5 EC)		option to start Research Proposal later (when you have FP) [note: study delay!]			
Info FP	Find a FP	Final Project EST 201200036 (25 EC)					

* Retake of block 1A is in block 2A, not in 1B!

Global talent management 201500086 (5 EC)		HRM and innovation 201500087 (5 EC)	
		HRM and technology design 201500088 (5 EC)	

Parttime variants (1,5 or 2 year)

Year 1				½Year 2	
Quartile 1A	Quartile 1B	Quartile 2A	Quartile 2B	Q. 1A	Q. 1B
Trending topics in educational science and technology 201200034 (10 EC)					
Team learning at work 201500010 (5 EC)	HRD & Technology in a live context 201600126 (5 EC)	Regulation and facilitation of workplace learning 201200031 (5 EC)	Leadership and organisational change 201200032 (5 EC)	Team learning at work 201500010 (5 EC)	HRD & Technology in a live context 201600126 (5 EC)
Designing learning & performance support 191970340 (5 EC)	4CID for complex learning 202200054 (5 EC)	Innovative technology-based learning environments 201400002 (5 EC)	Teacher learning and development 201200027 (5 EC)	Designing Learning & performance support 191970340 (5 EC)	4CID for complex learning
Learning and Instruction * 192914040 (5EC)		Learning and Instruction 192914040 (5EC)	Educational measurement 201500149 (5 EC)	Learning and Instruction * 192914040 (5EC)	
		Research Proposal EST 201200035 (5 EC)		option to start Research Proposal later (when you have FP) [note: delay!]	
Info FP		Info FP	Find a FP	Final Project EST 201200036 (25 EC)	

* Retake of block 1A is in block 2A, not in 1B!

Global talent management 201500086 (5 EC)		HRM and innovation 201500087 (5 EC)		Global talent management 201500086 (5 EC)	
		HRM and technology design 201500088 (5 EC)			

Year 1			
Quartile 1A	Quartile 1B	Quartile 2A	Quartile 2B
Trending topics in educational science and technology 201200034 (10 EC)			
Team learning at work 201500010 (5 EC)	HRD & Technology in a live context 201600126 (5 EC)	Regulation and facilitation of workplace learning 201200031 (5 EC)	Leadership and organisational change 201200032 (5 EC)
Designing learning & performance support 191970340 (5 EC)	4CID for complex learning 202200054 (5 EC)	Innovative technology-based learning environments 201400002 (5 EC)	Teacher learning and development 201200027 (5 EC)
Learning and Instruction * 192914040 (5EC)		Learning and Instruction 192914040 (5EC)	Educational measurement 201500149 (5 EC)
		Info FP	

* Retake of block 1A is in block 2A, not in 1B!

Global talent management 201500086 (5 EC)		HRM and innovation 201500087 (5 EC)	
		HRM and technology design 201500088 (5 EC)	

Global talent management 201500086 (5 EC)		HRM and innovation 201500087 (5 EC)		Global talent management 201500086 (5 EC)	
		HRM and technology design 201500088 (5 EC)			

Year 2			
Quartile 1A	Quartile 1B	Quartile 2A	Quartile 2B
	Research Proposal EST 201200035 (5 EC)	option to start Research Proposal later (when you have FP) [note: study delay!]	
Info FP	Final Project EST 201200036 (25 EC)		

Core Course	Extra -elective courses from preferred partner - approved by Examination Board. (max. 2 to be taken by a student)
Elective courses	
Research Proposal	
Final Project	

Appendix 3. Programme of the site visit

Monday March 27		
12.00	12.15	Welcome
12.15	13.15	Preparation panel (incl. lunch)
13.15	14.00	Session with staff responsible for content
14.00	14.15	Break
14.15	15.15	Session with students and alumni
15.15	15.30	Break
15.30	16.30	Session with teachers and Examination Board
16.30	17.30	Internal deliberation and completion
Tuesday March 28		
09.00	09.15	Walk in
09.15	10.00	Theme session Life-long learning
10.00	10.15	Break
10.15	11.00	Theme session Hard tech in EST
11.00	11.15	Break
11.15	12.00	Theme session Digital testing
12.00	13.00	Break and internal deliberation panel members (incl. lunch)
13.00	13.30	Final session with staff formally responsible
13.30	15.00	Drafting preliminary findings and preparing oral report
15.00	15.30	Oral report provisional assessment (incl. drinks)

Appendix 4. Materials

Prior to the site visit, the panel studied 15 theses. Information on the theses is available from Academion upon request. The panel also studied other materials, which included:

- SWOT analysis
- Student chapter
- Report previous accreditation 2017

- Intended learning outcomes MSc
- Domain Specific Framework of Reference
- EST Programme Guide
- Curriculum overview
- Study plan form
- Overview joint programme and cooperation agreement with Munich
- Course descriptions
- UT Language Policy
- Graduation page
- Overview teaching staff
- Course evaluations
- Results course and theses screenings
- Exit survey
- Assessment plan
- Annual Reports of the Examination Board
- Education and Examination Regulations (EER)