# Effective learning and student collaboration in the international classroom at TU/e - Study 1 (preliminary study)

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Research done by:

Shakila Sewnarain Sukul – Department of Industrial Engineering & Innovation Sciences

Ruurd Taconis – Eindhoven School of Education

Ad Kleingeld – Department of Industrial Engineering & Innovation Sciences

Sonja Rispens – Department of Industrial Engineering & Innovation Sciences

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# Introduction

Currently, research groups at TU/e have staff members from various countries and roughly 30% of the staff is non-Dutch. This number is likely to grow, due to policy but also since over 40% of the tenured staff is international. Just below 60% of the PhD students are international.

Concerning bachelor and master students two groups of international students are distinguished: exchange students and 'international students' – staying to study at TU/e for a longer period of time and preparing for a bachelor's and/or master's degree at TU/e. The main focus is on the latter group of students. Currently, 9% of the bachelor students and 21% of the master students at TU/e are 'international students'. The group of international students comprises students from European (EEA: European Economic Area; the EU countries plus Iceland, Lichtenstein, and Norway) countries (roughly 2/3) and non-EEA students (roughly 1/3).

Recently, TU/e has formulated its policy on the TU/e international classroom (Working group International Classroom, 2019). The ambition for internationalization is that at least 20% of the incoming bachelor students and at least 35% of the incoming master students come from outside the Netherlands. In addition, the aim is that more than 90% of all TU/e students will have a substantial international experience during their studies. The policy defines 'International Classroom' as: a learning space of a group of students in which

- *different nationalities with different cultures are represented,*
- *the common instruction language is English, which is not the first language of most students present,*
- *students and staff engage in and appreciate diverse and multicultural teams, and*
- *the diverse learning environment is (created) such that it enables students to gain international and multicultural experience and enhances the education quality.*

This preliminary study was conducted to provide input for the main study that will investigate the factors that influence satisfaction and learning outcomes of international students and domestic students in Challenge-based Learning teams at TU/e as has been identified in the report justifying these studies (Taconis, Kleingeld, & Rispens, 2019).

The input for this preliminary study is background information that was obtained from TU/e staff who are closely working with international students and domestic students and are aware of their current situation and issues. This input was obtained via three different sub-studies on different levels. Firstly, the directors of education have been interviewed to obtain a general picture. In addition to this, an overview of courses that can be used for the next study will be given. Secondly, academic study advisors have been interviewed to gather more in-depth information. Thirdly, the responsible lecturers of the courses identified in the first step have been contacted to verify the suitability of these courses for Study 2 and to find out how challenge-based their courses are. This provided us with the final additional insights that could be used to design the main study up in an efficient way.

Making an inventory of the international classroom at TU/e entails a quantitative overview of the actual degree of internationalization per subject (or course), of the issues apparently occurring, and of the way in which these are currently dealt with. Moreover, it entails the qualitative description of the formation, collaboration and guidance of student groups. This study is exploratory and employs a mixed method approach combining (Denzin, 2012): analysis of administrative data, document analysis and interviews.

## Scope of this study

The main focus of this study is to identify which courses are interesting for the next study to be conducted at the classroom level. However, the information obtained from the level of the directors of education and the academic advisors is useful to grasp the full picture and provide context for the main study.

The available time for setting up, conducting and reporting on this study was approximately 170 hours; therefore, this study had a time restriction.

## Study 1:  Interviews with directors of education

The aim was to identify courses that would be suitable for the next study. The first attempt to identify these was via Osiris, but this did not result in reliable information. When testing the filters it turned out that quite some courses were not found in the selection because of the way they are registered in Osiris. It happens, for example, that courses that contain group work are not identified as such, e.g. because only the final grade has to be registered. in Osiris. In addition, because of protecting the privacy of students it is not possible to create overviews that would show where students are from and what their performance was.
Therefore, it was decided to approach the directors of education of the study programs with the highest percentage of international students. Because of the way in which international students are distributed across the study programs, it was decided to find a way to select the study programs that would be interesting to approach.

### Method

In the first step, all the currently existing study programs of the TU/e were taken into account. This included both the master and the bachelor programs. The BI-tool was used to analyze data regarding the distribution of international students across the different study programs. The academic year that was analyzed to see how many international enrollments had been registered was 2018-2019. A study program was selected for this study if it seemed that there are enough internationals, such that for analysis in the next study there would be enough international students in the groups that some significant effect would be measured.

The following approximation was used to determine a cut- off point. Taking into account potential multilevel characteristics of the main study (i.e. students nested within groups within courses) and outcomes at the group level, more than 5 groups should contain internationals in order to meet minimum requirements for multilevel analysis. In considering the output of the BI- tool the initial cut-off point was 21% non-Dutch students. Later on, the Operations Management and Logistics master was also included because it turned out there were more international students than originally thought, as well as exchange students. Because it was hard to establish clearly what type of (international) students attend the courses the study program was still included and the information provided was as useful as the other study programs.
The output obtained from the BI resulted in the following study programs with at least 21% international students (see Table 1). The educational Directors and Study advisors of these programs have been approached and have participated in the current study. As can be seen, most study programs are master programs, which is in line with the higher percentage of internationals in the master program.

This selection of study programs (Table 1) represents less than half of the study programs that are currently offered by the TU/e. In the columns, it can be seen what the number and percentage of Dutch students, students from European (EEA) countries and non-EEA students is.

Table 1. Selected study programs with the distribution of type of students

| Study Program | Dutch | | EEA | | Non-EEA | | Grand Total |
|---|---|---|---|---|---|---|---|
| M Automotive Technology | 58 | 41% | 8 | 6% | 75 | 53% | 141 |
| M Sustainable Energy Technology | 52 | 50% | 14 | 13% | 38 | 37% | 104 |
| M Computer Science and Engineering | 194 | 57% | 52 | 15% | 94 | 28% | 340 |
| M Systems and Control | 77 | 61% | 11 | 9% | 38 | 30% | 126 |
| M Electrical Engineering | 166 | 66% | 21 | 8% | 64 | 25% | 251 |
| M Industrial Design | 133 | 78% | 21 | 12% | 17 | 10% | 171 |
| M Operations Management and Logistics | 373 | 93% | 8 | 2% | 21 | 5% | 402 |
| M Science and Technology of Nuclear Fusion | 25 | 68% | 9 | 24% | 3 | 8% | 37 |
| M Architecture, Building and Planning | 480 | 84% | 42 | 7% | 47 | 8% | 569 |
| B Computer Science & Engineering | 614 | 77% | 135 | 17% | 48 | 6% | 797 |
| B Electrical Engineering | 653 | 79% | 104 | 13% | 72 | 9% | 829 |
| B Architecture, Urbanism & Building Sciences | 589 | 79% | 100 | 13% | 52 | 7% | 741 |
| B Industrial Design | 528 | 90% | 41 | 7% | 17 | 3% | 586 |

After this selection, the relevant courses would be selected. The criteria that were used are that a course should contain group work and there should be some group component in the course. The aim of approaching study programs of which the distribution of international students was already known, was to maximize the number of relevant and interesting courses in the most effective way.

The directors of education of these programs had been approached but not all of them were able to meet for a short interview. However, these directors participated by sending the course codes via email. A total of six directors of education have participated in a short interview, the aim of which was to find out which courses would be suitable for Study 2. In addition to this, they were asked about what they could tell about the international students that are currently in their study program and about plans regarding the future and number of international students.

## Results
The following points were mentioned.

- The study programs that have more experience with international students and staff also appear to be more inclusive and aware of the needs and problems of international students.
- However, it varies per director how much they knew in detail about the problems and needs of international students. Half of them mentioned that cultural differences explain the different attitude that international students sometimes have compared to the attitude of Dutch students. For example, international students sometimes seem to be less proactive because of the way they have been taught so far in their home country; they were expected to await the orders of their lecturers instead of coming up with ideas themselves (like they are usually expected to behave here at TU/e). This observation was based on their own experiences, as most of them have taught courses or are still teaching courses.

- There are some courses with a high number of international students in study programs that have a low number of international students. These are expected to be mainly exchange students (this conclusion implies that the BI tool does not provide complete and reliable statistics)[1]. This should be taken into account for future research.

Finally, almost no director was aware of the vision TU/e has about the desired percentages of international students in a few years. Therefore, awareness among directors of education should be raised regarding the TU/e 2030 strategy.

## Selection of relevant courses within the study programs

As has been mentioned, one of the most important deliverables of this study is the selection of courses. Most of these courses are mandatory courses to increase the chance that the identified distribution of Dutch and international students holds, but the expectation is that the selected electives also have a high number of international students. (These courses have been confirmed by the academic advisors as well and sometimes the list was extended by courses they suggested.)
In the following tables, the proposed courses per study program have been listed. For each table between brackets the distribution of the type of students has been included with the following format: (Dutch students (%), EEA (%), Non-EEA (%), Grand total). This distribution is different for the Graduate and Bachelor program. Therefore, therefore BSc and MSc are listed separately.
The courses usually have groupwork or have assignments in which they have to make a design, which results in the same setting as groupwork. The percentages of groupwork and group size greatly vary, but these factors will be discussed elaborately in study 3.

### Basic courses TU/e

Firstly the core courses given to all the students in the bachelor program were analyzed. It turned out that Calculus (2WAB0/2WBB0/2WCB0) and Applied physics (3NAB0/3NABB0) do not have group work that requires collaboration between students, so these courses are not relevant for the next study. The following three courses do involve groupwork.

#### USE basic: Ethics and history of technology (0SAB0)
The group sizes really depend on the subscription of the students themselves. It depends on the casus how many people are grouped together (e.g. 13,36,48). After this they do try to mingle the internationals.

#### Data Analytics (2IAB0)
At first they look at the timeslot in which there is time. The groups are made based on surname. As this course is only given for the third time there is no real method that is applied for group formation, it was random so far.

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[1] This discrepancy was confirmed later on with the questionnaire completed by lecturers who are responsible for the courses. At least 60% of the teachers said there were international exchange students in their course, while the average percentages of international students in these study program were low.

*Robot and Design (4WBB0)*

The groups are formed by firstly looking at faculty (selecting people from different faculties per group), then the people who are doing it for the second time are spread across the groups and finally the internationals are distributed. They are distributed such that at least two students are in one group so they do not feel like a lone burden for the group to talk English.

## Industrial Design

MSc: (133 (78%), 21 (12%), 17 (10%), 171)
BSc: (528 (90%), 41 (7%), 17 (3%), 586)

| Study phase | Course code | Course Name | ECS | quartile | contact information |
|---|---|---|---|---|---|
| MSc | DCM110 | A Designer Perspective on IoT | 5 | 3 | j.w.frens@tue.nl |
| MSc | DPM110 | Project 1 Design | 20 | 1&2 or 3&4 | M.M.L.H.Nelissen-Heuvelings@tue.nl |
| MSc | DDM150 | User Experience Theory and Practice | 5 | 3 | j.h.eggen@tue.nl |
| BSc | DCB210 | Intercultural Design | 5 | 4 | c.l.v.d.bremen@tue.nl |

Table 2. Selected courses for Industrial Design

## Architecture, Urbanism and Building sciences

MSc: (480 (84%), 42 (7%), 47 (8%), 569)
BSc: (589 (79%), 100 (13%), 52 (7%), 741)

Table 3 . Selected courses for Architecture, Urbanism and Building sciences

| Study phase | Course code | Course Name | ECS | quartile | contact information |
|---|---|---|---|---|---|
| BSc | 7N1X0 | BAU Studio 1 | 5 | 1 | W.Hilhorst@tue.nl |
| BSc | 7NN8X0 | Multidisciplinair project 1 | 5 | 1,3 | T.T.Veeger@tue.nl |
| BSc | 7NN9X0 | Multidisciplinair project 2 | 5 | 2,4 | T.T.Veeger@tue.nl |
| MSc | 7QX1M0 | Masterproject 1 Architecture | 10 | 1&2 | M.H.P.M.Willems@tue.nl |
| MSc | 7QX2M0 | Masterproject 2 Architecture | 10 | 3&4 | r.p.j.roorda@tue.nl |
| MSc | 7QW1M0 | Masterproject 1 Urbanism | 10 | 1,2,3 | M.W.Musch@tue.nl |
| MSc | 7QW2M0 | Masterproject 2 Urbanism | 10 | 3&4 | M.W.Musch@tue.nl |

## Computer Science and Engineering

MSc: (194 (57%), 52 (15%), 94(28%), 340)
BSc: (614 (77%), 135 (17%), 48 (6%), 797)

| Study phase | Course code | Course Name | ECS | quartile | contact information |
|---|---|---|---|---|---|
| BSc | 2IOA0 | DBL HTI + Webtech | 5 | 4 | m.burch@tue.nl |
| BSc | 2107O | DBL Embedded systems | 5 | 3 | p.j.l.cuijpers@tue.nl |
| BSc | 2IOI0 | DBL Process mining | 5 | 3 | b.f.v.dongen@tue.nl |
| BSc | 21PE0 | SEP (Software/web engineering project) | 10 | 1,3,4 | l.j.a.m.somers@tue.nl |

| | | | | | |
|---|---|---|---|---|---|
| MSc | 2IMP20 | Generic language technology | 5 | 4 | m.g.j.v.d.brand@tue.nl |
| MSc | 21MP15 | Software project management | 5 | 4 | m.g.j.v.d.brand@tue.nl |
| MSc | 2IMM15 | Web information retrieval and data mining | 5 | 3 | j.vanschoren@tue.nl |
| MSc | 2IMP30 | System Design Engineering | 5 | 4 | i.barosan@tue.nl |
| MSc | 2IMN25 | Quantitative evaluation of ES | 5 | 2 | p.j.l.cuijpers@tue.nl |

Table 4. Selected courses for Computer Science

## Electrical Engineering

MSc: (166 (66%), 21 (8%), 64 (25%), 251)
BSc: (653 (79%), 104 (13%), 72 (9%), 829)

| Study phase | Course code | Course Name | ECS | quartile | contact information |
|---|---|---|---|---|---|
| BSc | 5AID0 | DBL Autonomous Vehicles Conquering the World) | 5 | 2 | m.c.w.geilen@tue.nl |
| BSc | 5XFA0 | DBL Rock Your Baby | 5 | 2 | t.j.tjalkens@tue.nl |
| BSc | 5XIB0 | DBL Venus Exploration | 5 | 4 | m.nabi@tue.nl |
| BSc | 5XWF0 | DBL Wireless Charging | 5 | 4 | g.tibola@tue.nl |
| BSc | 5XIA0 | DBL Energy Challenge | 5 | 2 | B.J.D.Vermulst@tue.nl |
| BSc | 5XSC0 | DBL Electronic Differential | 5 | 1 | M.C.F.Donkers@tue.nl |
| MSc | 5LEF0 | System integration project | 10 | 3&4 | v.cuk@tue.nl |
| MSc | 5LMDO | Selected topics in systems and control | 2,5 | 4 | p.m.j.vandenhof@tue.nl |
| MSc | 5CSA0 | MODELING DYNAMICS | 5 | 1 | s.weiland@tue.nl |
| MSc | 2DME20 | NON LINEAR optimization | 5 | 1 | j.c.m.keijsper@tue.nl |
| MSc | 5CKB0 | Projectmanagement | 2,5 | 2 or 4 | J.H.M.Doreleijers@tue.nl |

Table 5. Selected courses for Electrical Engineering

## Industrial Engineering and Innovation Sciences

MSc: (373 (93%), 8 (2%), 21 (5%), 402)

| Study phase | Course code | Course Name | ECS | quartile | contact information |
|---|---|---|---|---|---|
| MSc | 1JM21 | Designing effective performance management systems | 5 | 4 | p.a.m.kleingeld@tue.nl |
| MSc | 1BM130 | Design of Data-Driven Business Operations | 5 | 4 | YQZhang@tue.nl |
| MSc | 1CM140 | Design of operations planning and control systems | 5 | 4 | W.L.v.Jaarsveld@tue.nl |
| MSc | 1BM100 | Design of Service Operations | 5 | 4 | YQZhang@tue.nl |
| MSc | 1CM130 | Design for Transport and Logistics | 5 | 4 | v.j.c.lurkin@tue.nl |

Table 6. Selected courses for Industrial Engineering and Innovation Sciences

## Automotive

MSc: (58 (41%), 8 (6%), 75(53%), 141)

| Study phase | Course code | Course Name | ECS | quartile | contact information |
|---|---|---|---|---|---|
| MSc | 4AT100 | Automotive systems engineering project | 10 | 3&4 | i.barosan@tue.nl |
| MSc | 0HM310 | Automotive human factors | 5 | 1 | r.h.cuijpers@tue.nl |

Table 7. Selected courses for Automotive

## Sustainable Energy Technology

MSc: (52 (50%), 14 (13%), 38 (37%),104)

| Study phase | Course code | Course Name | ECS | quartile | contact information |
|---|---|---|---|---|---|
| MSc | 5LEF0 | System integration project | 10 | 3&4 | v.cuk@tue.nl |
| MSc | 4EM70 | Sustainable energy sources | 5 | 2 | M.F.M.Speetjens@tue.nl |

Table 8. Selected courses for Sustainable Energy Technology

## Systems and control

MSc: (77 (61%), 11 (9%), 38 (30%), 126)

| Study phase | Course code | Course Name | ECS | quartile | contact information |
|---|---|---|---|---|---|
| MSc | 5SC26 | Integration Project SC | 5 | 4 | s.weiland@tue.nl |
| MSc | 4CM00 | Control Engineering | 5 | 1 or 3 | G.Witvoet@tue.nl |

Table 9. Selected courses for systems and control

## Science and technology of nuclear fusion

MSc: (25 (68%), 9 (24%), 3 (8%), 37)

| study phase | Course code | Course Name | ECS | quartile | contact information |
|---|---|---|---|---|---|
| MSc | 3MF501 | Smarter than ITER? | 2,5 | 4 | r.j.e.jaspers@tue.nl |
| MSc | 3MF503 | Stellarators | 2,5 | 3 | r.j.e.jaspers@tue.nl |
| MSc | 3MF504 | Deployment of Fusion Energy | 2,5 | 2 | r.j.e.jaspers@tue.nl |
| MSc | 3MF505 | Hands-on PlasmaLab | 2,5 | 2 | r.j.e.jaspers@tue.nl |
| MSc | 3MF506 | Design of a fusion power plant: System engineering and Nuclear technology | 2,5 | 4 | r.j.e.jaspers@tue.nl |

Table 10. Selected courses for Science and technology of nuclear Fusion

To conclude, a total of 9 master programs and 4 bachelor programs have been selected among six responsible faculties, resulting in 48 courses. This concludes the description of the first deliverable of this preliminary study.

# Study 2: Interview with academic study advisors

The aim was to identify the common challenges and problems that international students face when studying at the TU/e. It seemed that academic study advisors would be aware of several situations, such that they would be able to provide this study with useful input.

## Method

Interviews with educational counsellors and teachers were semi-open (Emans, 2002). The interview started with a very open question on the meaning of the internationalized student population on the counsellors work. These interviews addressed three themes. (1) Education: Starting with an open question on the situation of internationals (and non-internationals) in various subjects and workgroups and moving towards group work, labs and internship in particular. (2) Formal issues: Starting with an open question concerning procedures, guidelines, community, and policies and their interaction with the international (and non-international) students. Then moving forward to issues particularly focused at: specific regulations (e.g. study-progress demands), examinations/grading, and academic counseling (e.g. organization, commonly occurring issues). (3) International community: Again starting with an open question yielding the opportunity to bring forth the aspects of international community apparently most salient. Further questions address: satisfaction of both international and non-international students with the international community, integration, inclusion, language issues, student association, and representation in boards.
The used interview format has been added as Appendix A.  The format was somewhat based on the interviews with the directors of education but mainly on the outcomes of the panel meeting data (Working group International Classroom, 2019). This data also contained the information that led to the proposed categorization ( that was later also emergent from the data).

For this study, a total of eight study advisors have been interviewed. The aim of these distinct areas was to structure the interview in such a way that relevant and diverse information could be gathered. Also, as already mentioned it was confirmed in these interviews that the courses listed as result in Study 1 are indeed suitable for the next study.

After the interviews, the answers and points were coded and counted. In the first column of each table, the number represents how many times it mentioned, with the maximum being 8. The issues that have been formulated are paraphrased to the extent that they accurately represent the point that was being made but minimize the number of different ways this same thing could have been said.

## Results

Tables 11 to 13 contain the issues mentioned within the three themes. As can be seen, some issues are only mentioned once. Considering the range of study programs and the difference in years of experience with international students a low frequency should not be interpreted as a less important point. Further research is needed to examine the degree to which the issues are present more precisely.

**Educational**. These questions were focused on the educational aspect of the presence of international students. This also included observations regarding the Dutch students related to international students.

| Frequency | Educational Issues |
|---|---|
| 6 | In English-language lectures, some questions are still asked and answered in Dutch. Although this may only pertain to a small part of the lecture, it gives internationals an excluded feeling. |
| 4 | Sometimes Dutch students have a higher workload because the prerequisite knowledge of international students is not on the same level (lower). |
| 4 | When Dutch students have an appointment with the study advisor, they do not mention international students as part of their problems/reasons for requesting the appointment. |
| 2 | Groups should be actively mixed such that internationals and Dutch students have to work together. |
| 2 | Honor students are usually internationals (no concrete numbers were provided, however). |
| 1 | Mentor group contains international and Dutch students on purpose. |
| 1 | Lecturers do not want to mix groups to avoid that possible problems that might arise will be attributed due to the fact that students could not choose their own group. |
| 1 | Lecturers should follow an English course to provide education with a proper level of English. |
| 1 | Because of an international staff at the level of study advisor (including study advisors who are not from the Netherlands), problems for international become evident much quicker at a higher level. |
| 1 | Master students are different from bachelor students because they have already finished one degree and therefore have clearer expectations of what studying is all about. For international students, this experience in another country may lead to conflict with how the lecturers expect them to work here in the Netherlands because this is a different university. |
| 1 | Sometimes Dutch students have a higher workload at times such as the Christmas break because internationals often travel home for the holidays and do not have time for homework. |

Table 11. Academic study advisor: observed educational issues

**Formal**. These questions were mainly about the formal facilities that are provided by the TU/e. What are the rules and regulations for the international students and how are their needs and problems taken into account?

| Frequency | Formal issues |
|---|---|
| 4 | The exam committee understands that being an international student can have effects on study progress. Although there is no specific procedure or policy, typically they are taken into account more carefully or quickly because of the financial impacts study progress issues can have for the students. |
| 4 | The pressure on international students from the IND (immigration and naturalization service) to obtain 30 credit points is underestimated. (So, if these students do not obtain 30 credit points in one academic year they will lose their visa for studying in the Netherlands). |
| 4 | Because of cultural differences, the international students do not tell academic advisors in time how grave their problems are, which means that problems cannot be prevented but only remedied somewhat afterwards. (Problems such as dealing with a death in the family, mental illness, loneliness, financial pressure, cultural pressure.) |
| 3 | The respondents state that for the exam committee everyone is the same: there is no special regard for the fact that students are internationals. |
| 2 | Academic study advisors are notified by lecturers when internationals students might have problems. |

Table 12. Academic study advisor: observed formal issues

**Community**. These questions were especially about the social aspect of the life of the international students. This also includes aspects of their life that are not directly influenced by the TU/e but the potentially undesirable effects of them not spending their time in beneficial ways.

| Frequency | Community issues |
|---|---|
| 5 | Internationals prefer to work with international students and Dutch students prefer to work with Dutch students. |
| 5 | International students who feel alone, which happens a lot, are sent to Cosmos but they are usually not very enthusiastic about Cosmos. Some advisors were not able to provide an explanation for this, but some attributed it to the fact that these international students do not drink alcohol and are therefore not convinced that they will meet people there who they will like or that it will be fun for them with a non-alcoholic drink. |
| 4 | In informal settings the language commonly used is Dutch, which makes it difficult for international students to engage in informal conversations. This contributes to them feeling excluded. |
| 4 | There should be more attention for introducing internationals to Dutch customs and habits (including how students are supposed to behave in class, e.g. they are allowed to ask questions and question their lecturer's viewpoints) |
| 3 | International students find it hard to approach Dutch students to make friendships. It is unclear why exactly, but some mentioned that international students tend to misinterpret friendliness of Dutch students during a course as friendship but after that course they realize that they are not friends! After this realization, they feel kind of left alone and do not really know how to approach Dutch students. |
| 3 | Considering the adoption of a buddy system, in this system, international students are assigned to specific Dutch students. These Dutch students are being paid for their job, they are expected to introduce and include the international students and make sure they can build their social circle and feel welcome. |
| 2 | International students who feel alone are introduced/sent to TINT (life questions association). |
| 2 | Because of cultural differences, students try to negotiate about their grades or about the high tuition fees (an example is that students have been reported request their teacher to give them a higher grade or an extra resit because they are paying extra-high tuition fees). |
| 2 | For master students a difficulty in becoming friends with Dutch students it that Dutch students already have established groups of friends e.g. during their preceding Bachelor. |
| 1 | The interviewees believe that study associations include international students in committees. (In a later stage we may lookup figures and percentages on this.) |
| 1 | There should be more social gatherings that are easily accessible such as the Christmas market. |

Table 13. Academic study advisor: observed community issues

Finally, these are some observations and points made by the academic study advisors that could not really be categorized. Sometimes they were mentioned straightforward but sometimes they were kind of implied or if asked they would most probably agree with it, and therefore it was hard to add a column with an accurate count. These are listed in Table 14.

| |
|---|
| International students have difficulties with integration and that this is a serious problem that needs to be addressed and solved |
| Dutch students are unaware of how easily they are excluding international students and they should be made aware of this |

| |
|---|
| Dutch students are not aware of the pressure that is on international students (cultural, financial, for visa). Therefore they just assume that internationals are super motivated but do not realize why |
| Outside the TU/e, there are more problems, e.g. housing is very difficult for internationals because house owners just want Dutch students |
| When looking at international students, it is easier for EU students to integrate than it is for non-EU students |

Table 14. Final uncategorized observations

## Exchange student contact person

To find out if there is a big difference between international students who come here for a full program and exchange students who are here for a short time, one contact person was interviewed,

In contrast to the previously mentioned social loneliness that is experienced by international students who come here for a full program, exchange students who are here for a short time usually have a great time and a lot of friends. An important reason is that exchange students tend to become friends with each other and hang out a lot together from the introduction on. A good introduction is the basis for their close social circle.
However, it is widely known that some of these students are less motivated to pass all their courses. This has several reasons, e.g. they want to travel around or they do not need all their course to finish their study program in their home country. Further research should be done regarding the exact numbers of exchange students and how it influences the general picture that Dutch students have of international students.

To conclude, the conversations with the academic study advisors resulted in an overview with important points that provided us additional insights into educational, formal, and community aspects of the International Classroom. As can be seen, there are additional aspects that are outside the immediate reach of the TU/e that influence the international students e.g. the 30 credits needed for a visa. Therefore it is important for the TU/e to decide how far (outside the TU/e campus) they are able to go in providing help for these students.

# Study 3: Questionnaire among responsible lecturers regarding the courses

As the courses had already been selected and additional insights were gathered, the final study focuses on the level of the lecturer and how the presence of international students influences their teaching methods.

## Method

To examine whether and how the presence of internationals has an influence on the way a lecturer designs and carries out the course, a survey was sent to the responsible lecturer of the courses.

This questionnaire included some general questions about the course, e.g. which percentage of the final grade is based on group work or the average number of students per group.
Then some questions were included on how the groups are formed and the lecturers were asked.

Regarding the strategies that teachers use in the international classroom, the following information was used. Dalglish (2006) distinguishes four main strategies that teachers employ in international classrooms: (1) Exclusion: international students are excluded or cultural differences are ignored; (2) Assimilation: international students are expected to behave as domestic students do, without being offered special assistance, (3) Integration: International students' need for assistance (e.g., due to (supposedly) not possessing all required skills) is recognized and responded to; (4) Mutual adaptation: The reality and desirability of multiculturalism is recognized and, as such, international students are considered to be a resource in the learning process.
The lecturers were asked which strategy is adopted by them and following this they were asked to recall their positive/negative experiences with international students.

This was followed by asking how challenge-based their course is. The following description was used to provide a clear definition: 'Central to challenge-based learning is that students acquire knowledge by engaging in real-life challenges: seeking out and applying knowledge, individually or in groups. In this process, the professor is a coach for finding the right knowledge (TU/e Strategy 2030). '

Finally, the lecturers were asked whether we would be allowed to approach them and their students for further research.

## Results

Having established the relevant courses, the 48 lecturers have been invited to participate in a short questionnaire. A total of 23 lecturers have responded. However, after the first questions that were asked to filter on the aspects groupwork and international students, 22 respondents actually filled out the complete survey. This included two respondents who were responsible for an additional 6 courses, but as they have been approached per course and they only filled it once it might be assumed that the biggest part of their strategy, experience and vision is the same. Therefore, it can be concluded that 19 lecturers did not respond, 6 responses would have been kind of similar, leaving a final response of n = 22 (46%).

The following statistics were the result of this questionnaire. In Figure 1 it can be seen what percentage of final course grade is based on the group assignment. In Figure 2 it can be seen what the average number of students per group is.
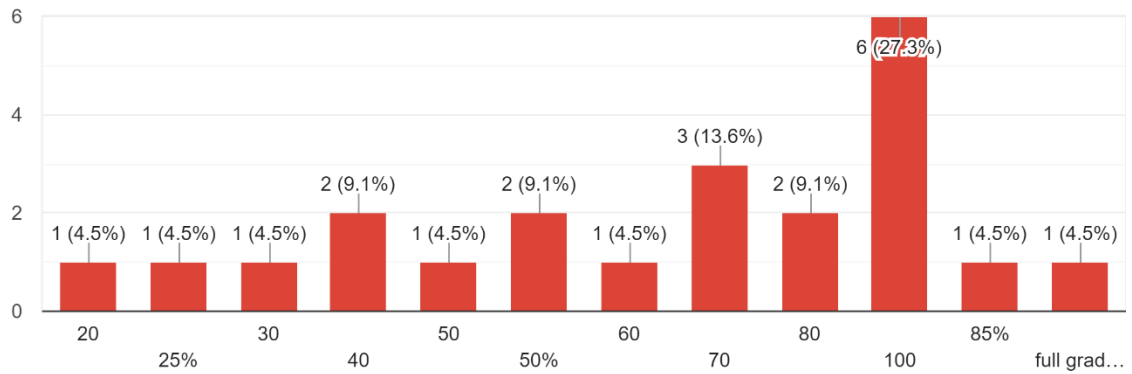
Figure 1. Percentage of the final course grade that is based on the group assignment
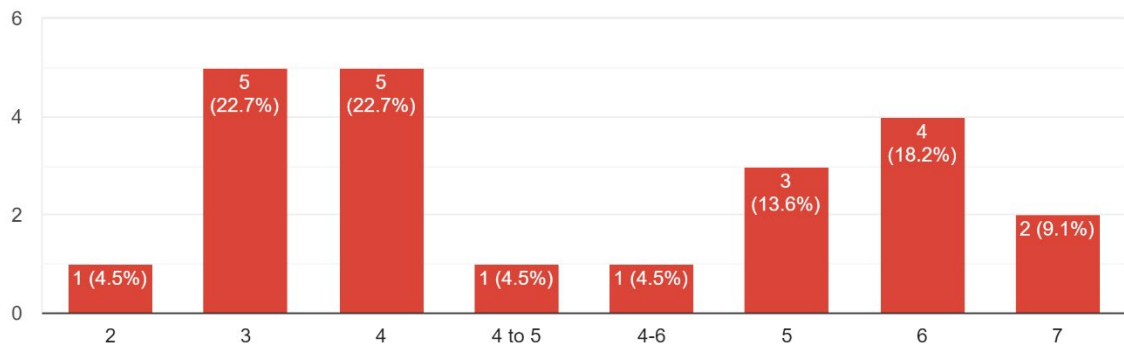


Figure 2. The average number of students per group

After these questions, it was confirmed that there are international students in the courses, for this study it was important to verify this but the graphs do not show anything from which new conclusions can be drawn and therefore are not included.

Following these questions, Figure 3 shows who is responsible for forming groups. In this Figure red means that restrictions apply but students are responsible for forming their groups (so for 18.2%) and green means that there is at least one or more criteria but the lecturer is responsible for forming the groups (so for 22.7%).

**Legend:**
- Students are allowed to compose their own group
- Students are allowed to compose their own group, but restrictions apply
- The groups are composed by me (or a another lecturer, teaching assistant),…
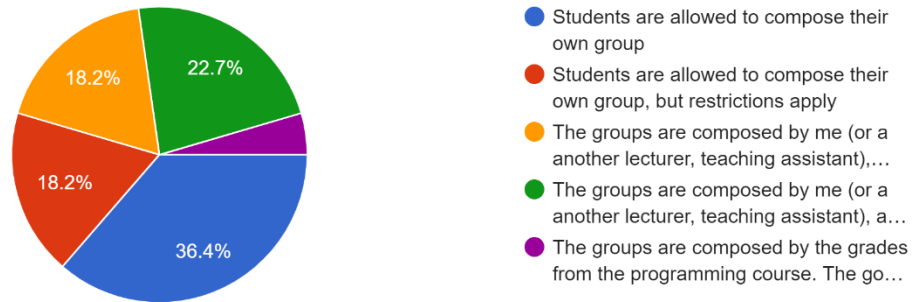- The groups are composed by me (or a another lecturer, teaching assistant), a…
- The groups are composed by the grades from the programming course. The go…

Figure 3. Who is responsible for forming groups

The mentioned restrictions that apply are summarized in Table 15.

| Frequency | Restrictions |
|---|---|
| 1 | Mixed in background. |
| 1 | Group size. |
| 1 | A mutual interest in project topic. |
| 1 | Different specializations present in each group with at least one Dutch-speaking student. |

Table 15. Restrictions for forming groups, students are responsible for forming groups

The criteria that are used are summarized in Table 16.

| Frequency | Criteria |
|---|---|
| 2 | Mixing international and Dutch students. |
| 1 | Use team roles test to put different characters in one group. |
| 1 | Mixing based on gender. |
| 1 | Students with similar grades that were the same for a preparatory course. |

Table 16. Criteria for forming groups, the lecturer is responsible for forming groups

As can be seen in Figure 4, the presence of international students is always acknowledged but most lecturers do not deploy activities aiming at harvesting on the international heterogeneity of the group/groups.



**Legend:**
- International students are excluded or cultural differences are ignored
- International students are expected to behave as domestic students do, they do not receive special assistance
- International students' need for assistance is recognized and responded to
- International students are considered to be a resource in the learning process
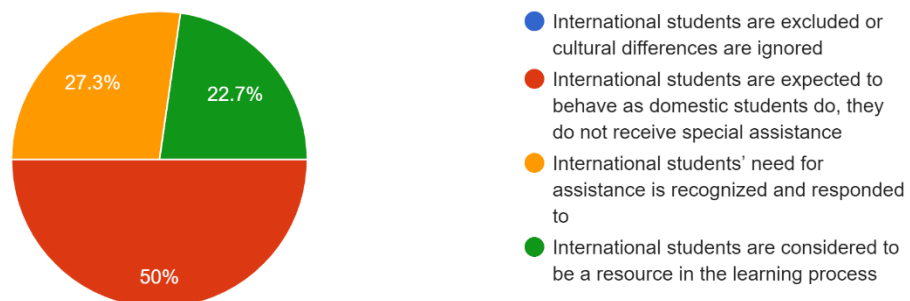
Figure 4. The strategy used by the lecturers regarding the international classroom

When asked about the positive consequences of having international students in their course the following advantages were named.

| Frequency | The positive consequences of having international students |
| --- | --- |
| 9 | Cultural diversity and the positive effects of it. |
| 6 | Bring new perspectives and knowledge. |
| 3 | The lecturer cannot name an advantage. |
| 2 | Motivated students. |
| 1 | Raise the level of English for Dutch students as well. |
| 1 | All students are the same. |

Table 17. Frequency table with positive consequences of having international students

When asked about the negative consequences of having international students in their course the following advantages were named.

| Frequency | The negative consequences of having international students |
| --- | --- |
| 6 | The language barrier (the level of their English is lower than the level of Dutch students or sometimes they just cannot express themselves that well because English is not their native language). |
| 6 | More time is spent on integrating the international students in the ways of working here (causing teachers to spend some more time on providing them with feedback instead of equal time distribution among Dutch and international students). |
| 2 | Exchange students have less experience (or motivation) in order to contribute effectively to group work. |
| 2 | All students are the same. |
| 1 | Writing skills are lower. |
| 1 | Really more individual guidance is needed |
| 1 | Clustering of nationalities. |
| 1 | The lecturer cannot build on pre-knowledge because they are from different universities. |
| 1 | Sometimes inputs are only available in Dutch which makes them difficult to understand for internationals. |
| 1 | Practical issues regarding exchange students (like which courses they should take while they are here). |

Table 18. Frequency table with the negative consequences of having international students

Finally regarding whether the courses are challenge based, the answers vary from no to yes and everything in between that. Most of the teachers find it hard to classify their course but either say that it is pretty much challenge-based because the assignments are based on real-life cases or even provided by companies. On the other hand, a lot of teachers admit that they do not have the resources (time and staff) to make their course challenge-based. So, most teachers consider their courses to be somewhere between to some extent and to a large extent challenge-based.

| Frequency | How challenge based the course is |
| --- | --- |
| 6 | To some extent |
| 5 | Yes |
| 5 | To a large extent |
| 2 | Understaffed to achieve this |
| 2 | Do not know |
| 1 | Half |
| 1 | No |

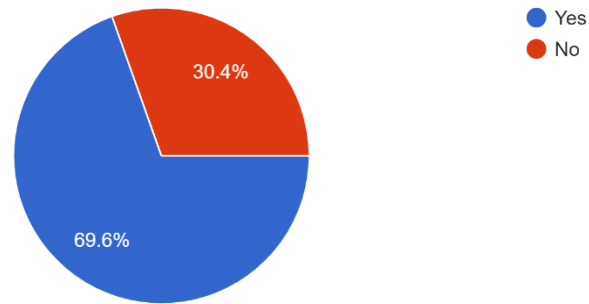Table 19. How challenge-based the course is

Figure 5. Are we allowed to approach students for the next study?

When asked if we are allowed to approach the students of these courses for the following study not everyone agreed (as can be seen in Figure 5), however in the comments they mentioned that they are willing to participate if they are involved. Some lecturers even offered that the questions could be added to the course evaluation questionnaire that is mandatory and sent to the students anyway.

To conclude, the questionnaire that was sent out to the lecturers resulted in some insights into the degree of (challenge-based) group work in their courses, their general strategy in dealing with international students, as well as advantages and bottlenecks they perceive in this setting.

# International classroom outside of the study programs

## Innovation Space

TU/e Innovation Space is a community that develops and facilitates interdisciplinary hands-on challenge-based learning, engineering design and entrepreneurship. The standard language at Innovation Space is English and there are a lot of internationals there. An estimated 35-50% of the students and staff who are there are internationals.

It was made clear that internationalization has not been an aim of innovation space and neither will this become a specific aim of it. However, there also is no preference for domestic students. They are only interested in the skills and motivation of a person and how well this fits with the person they are looking for to fill in an empty position. This will continue to be their aim, and if this happens to be an international then so be it but it will not be the aim of innovation space to have a certain percentage of internationals.

No issues have been mentioned that are occurring in the international community of innovation space.

# Discussion and conclusion

When the TU/e wants to increase the number of international students they need to take a lot into account.

Firstly, make sure that the Dutch students (and teachers) understand the value of international students and make sure they are aware of they can include these students by making small changes. Raising this awareness also goes for the lecturers and they could help a lot with achieving this awareness by the way they set up their course. TU/e is challenged to motivate & equip the staff and students to actively build and sustain an inclusive international community. This seems needed to successfully increase the number of international students. Concerning difficulties the language barrier was one of the most mentioned problems and should this be solved, it would greatly reduce how excluded internationals feel. The use of English as the official language at TU/e per January 2020 is a first step to achieve this. Concerning advantage, commonly mentioned are the cultural diversity and the broadening of perspectives and knowledge.

Secondly, respondents share the perception that there should be much more attention to and time available for introducing international students to the TU/e. This introduction should include becoming acquainted with the Dutch culture, with the working and communication style that is appropriate, and what the teachers do and do not expect of them. It should also provide them with resources when they realize they do not have enough pre-knowledge and how they can build their new social life here.

The questionnaire results show that teachers have an *assimilation* approach (or at best an *integration* approach) pertaining to international students in their courses (Dalglish, 2006). This perception is at risk of unintendedly being a 'recipe loading all burden of the international classroom on the shoulders of the international students'.

This report has provided the main findings of a preliminary study on the presence and features of the international classroom at TU/e. The objective of the main study is to obtain insight into the factors that have an impact on the effectiveness of nationally/culturally diverse student teams in challenge-based education at TU/e programs. As such, it will primarily focus on group processes within specific courses (a long list of which has been identified in this preliminary study) and the way teachers can positively influence this.

Although it will not be the focus of the main study, It cannot be stressed enough how important it is to carefully set up the supporting system that will help with the increasing number of international students to prevent a concomitant increase of the problems identified in this report. These will be at the cost of these students but also may increase the pressure on the current staff of the TU/e in undesirable ways.

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# Appendices

## Appendix A. Used format for academic study advisors

| | Open | Explicit questions … | | Variables |
|---|---|---|---|---|
| Education | Can you tell me how the presence of international students affects your work? | | | Are they here? Are there problems? Are there advantages? |
| | What about internationals in the various courses/projects etc. | Internationals and lectures | | |
| | | Internationals and groupwork | What courses contain group work? | I am aware of the following courses…, do you agree? |
| | | | How do you encounter such situations in your work? | |
| | | | International students are particularly valued for their high skills/knowledge concerning ….. | |
| | | | Group formation: how ➔ Everybody happy with that | |
| | | | Opportunity for Internationals in groups | |
| | | | Problems that Internationals experience in group work | |
| | | | Do you see a relation of CBL with internationals? (describe) | |
| | | Labs | | |
| | | Internships | | |
| | | General | Same as Dutch? (for all questions) | |
| Formal | Guidelines, procedures, policy | Do you know the regulations that apply for internationals? | Specialized academic advisor? | |
| | | | What about BSA? | |
| | | Is there an appointed contact person for issues that are specifically experienced by internationals? | | |
| | | International students with personal issues? | | |
| | | How are international students represented in the board | Equally represented? | |
| | | Examinations: | Grading: Examination committee guarantees Int. and other students get equivalent grades. | |
| Community | What about the international community at your department? | Do all students show that they are happy in the international community? | | |
| | | Dutch students complain about… (or are happy) | How does that compare to each other? | |
| | | International students complain about… (or are happy) | | |

| | | | | |
|---|---|---|---|---|
| | | What about the internationals in relation to the student associations? | | |
| | | I think we could/should change… | | |
| | | Tackling barriers:<br>- Language<br>- Cultural | | Difficulties using diaries? |
| | | | | Students feeling offended by 'Dutch directness'? |
| | | | | Students interpreting short mail messages as overly direct or compelling? |
| | | | Grading of Internationals and Dutch students | Interactions feel Dutch students have an advantage when being graded ('we do the work, they get the grades') |
| | | | | A student who is disappointed by the habit of Dutch teachers to give relatively low marks |
| | | | | **Are surprised by Dutch classmates who dare to question the teacher's authority** |
| | | | | Are confused by the teacher asking questions to the student believing the teacher himself doesn't know the answer. |
| | | | | Feel uneasy during group discussions and withdrawing. |
| | | | | International students have difficulties to understand the value/need for 'Volunteering and cooperation' |
| | | | | Do not understand that student-parties take place during the week/ when and where Dutch social gatherings take place |
| | | Language barriers | Do teachers check whether instructions of other messages are understood correctly by international students? | |
| | | | What are the rules/regulation regarding the spoken language in a course? | |
| | | | Not preparing everything in good English | |
| | Inclusion | Internationals are welcome | Internationals feel welcome… | |

| | | | Do you know of any incidents that could have made international students feel discriminated against? | |
| --- | --- | --- | --- | --- |
| | | Are you satisfied with the attitude taken by all community members? | Reluctance in connecting?<br>• Lecturers<br>• Students | Teacher and other actively guard equality? |
| | | | Is there a need to take away biases? How? | |
| | | What is the mindset regarding international students? | How describe? Enthusiasm? Neutral?  Fear? Disinterest? Extra effort? Why bother? | |
| | | How is the international community valued? | By whom? Dutch/internationals? Students/lecturers? | |
| | | | How, for what? | Stress that this is important for future workplace |
| | | | Different cultures bring new perspectives | |