



What Is Excellent Education and How Can We Achieve It in a Transition

Downloaded from: <https://research.chalmers.se>, 2025-02-23 08:45 UTC

Citation for the original published paper (version of record):

Byström, F., Isaksson Hallstedt, S. (2024). What Is Excellent Education and How Can We Achieve It in a Transition. Proceedings Chalmers Conference on Teaching and Learning 2024: 57-65.
<http://dx.doi.org/10.5281/zenodo.13255085>

N.B. When citing this work, cite the original published paper.

What Is Excellent Education and How Can We Achieve It in a Transition

Fredrik Byström
frebyst@chalmers.se

Sophie Isaksson Hallstedt
sophie.hallstedt@chalmers.se

April 11, 2024

Abstract

Chalmers University of technology stands before a transition. It has a long-term goal of being recognized as one of Europe's leading technical universities by year 2041, as well as a short-term objective of consolidating its two campuses into a single location. Using a workshop and the authors' own reflections, this paper addresses educational challenges for successfully transitioning and presents suggested actions to counter said challenges. Main challenges identified revolve around producing a higher quality education for more students with fewer working hours and financial support, as well as challenges regarding teaching-faculty's time, knowledge and incentive. Suggested actions include effectivizing time, managing large classes, valuing teaching faculty, alternative teacher positions of employment, and achieving excellent education with limited resources.

Keywords English: *Excellent education, resource-efficient education, transformation, technical university*

Sammanfattning

Chalmers tekniska högskola står inför en framtida transformation. Dels jobbar Chalmers mot en vision att bli ett av de ledande tekniska universiteten i Europa till 2041, och dels genomförs en plan att i närtid göra en sammanslagning av Chalmers båda campus. Båda dessa strategiska förändringar kan innebära potentiella utmaningar som diskuterades i en workshop och som sammanfattas i denna rapport tillsammans med författarnas egna reflektioner. Huvudsakliga utmaningar som identifierades kretsar kring att leverera en högre kvalitet på utbildning till fler studenter med färre arbetstimmar och ekonomiska resurser, samt utmaningar kring lärares tid, kompetens och incitament. Föreslagna åtgärder inkluderar att effektivisera tidsåtgång, hantera stora klasser, värdera lärare, alternativa anställningsformer för lärare, och att uppnå excellent utbildning med begränsade resurser.

Keywords svenska: *Excellent utbildning, resurseffektiv utbildning, transformation, tekniskt universitet*

1 Introduction

Chalmers University of Technology (Chalmers) is a high-performing technical university, scoring well on international rankings regarding for example industry collaboration (CWTS Leiden Ranking, 2024) and education (Chalmers - A, 2024). Chalmers offers educational programs at both Bachelor's and Master's level.

Chalmers recently published a new vision with corresponding objectives announcing its ambition to become one of Europe's leading technical universities by the year 2041 (Chalmers - B, 2023), a vision which raises the ambition of the Bachelor's and Master's education to excellent levels. In addition, Chalmers two separate campuses will be merged in the autumn of 2025 when the Lindholmen campus will move the vast majority of its educational operations to the Johanneberg campus. This move encompasses roughly 2500 students (Chalmers - C, 2024) and is internally predicted to result in larger class sizes, as some programs will be merged and some courses might be shared between programs.

2 Questions to answer

Based on the output from a workshop and the authors own reflections, this paper aims to answer the following questions:

- What are some of the thoughts, concerns and wishes related to education amongst Chalmers staff regarding the 2041 vision and the campus move?
- What are some strategies that could be utilized to help Chalmers achieve the goal of excellent education in 2041, as well as managing the merge of the two different campuses?

3 Method

A workshop was held during the 2024 Chalmers KUL event ("Chalmers Conference on Teaching and Learning") (Chalmers - D, 2024), where 25 participants ranged from senior professors, deans of education, junior teachers, to study counselors. This one-hour workshop started off with the authors presenting the context of the workshop (the 2041 vision and the campus merge). This was followed by dividing participants into five groups of five colleagues discussing one of three different topics (see below) for roughly 30 minutes. The workshop was concluded with a joint discussion with all groups in which notes were taken by the workshop organizers (the paper authors).

The context presented regarding the 2041 vision was the vision itself:

- "A globally outstanding university of technology, for a better world." (Chalmers - B, 2024)

As well as two of the four associated objectives that either directly or indirectly related to teaching (Chalmers University of Technology, personal communication, June 22, 2022):

- "Improve both the quality and effectiveness of education so that, through its content and format, it addresses current and future societal challenges innovatively and relevantly."
- "Chalmers has developed its culture of building leadership, employeehip and values, as well as operations support and environments, that, together, support and stimulate the development of academic activity."

Additionally, the staff members were reminded of the campus merge encompassing roughly 2500 students.

The three discussion topics discussed in groups of five were:

- Discussion topic 1 (two groups of five) – What is excellent education? What are the essential elements that maintain the education at an excellent level? (Now and in 20 years)
- Discussion topic 2 (two groups of five) – How can we provide preconditions for teachers to deliver excellent education? (Now and in 20 years). What current strengths can we build upon? What weaknesses and risks are there, and how shall we avoid them?
- Discussion topic 3 (one group of five) – How does teaching and the way we deliver it need to change? What is meant by resource-efficient? Does resource-efficient and excellent education go hand-in-hand?

4 Results

Preface: The workshop was highly successful in regards to engagement and activity of participants, but less so in regards to keeping the participants focused on answering their specific discussion topic. For that reason, results of the workshop are not presented by discussion topic but rather as a unified body of information. Additionally, the authors would like to remind the reader that these are the subjective thoughts of a gathering of individuals rather than objective facts or official stances. Furthermore, due to the voluntary nature of the event, the reader should expect a bias in participant responses as it is reasonable to expect that faculty passionate about teaching are overrepresented.

The discussions covered a wide range of topics, encompassing everything from career paths at Chalmers to student housing and the functionality of public transport. A full list of statements can be found in Appendix (A). However, many statements were re-occurring or revolving around a similar topic. The authors have identified two major topics which are presented below.

Participants repeatedly highlighted a seeming contradiction between goals and available means. In their understanding, Chalmers aims to increase the quality of education whilst having larger student groups, fewer faculty members, and less financial resources per student, as mentioned by for example UKÄ (2024). Participants put heavy emphasis on a concern for managing large student groups, where they meant that quality in education is difficult to achieve in large student groups (for example as hinted to by Kara et al. (2021)) and that faculty, many of whom are used to teaching smaller groups, simply do not know how to manage larger classes in an excellent way.

Participants interpret Chalmers to be lacking systems to enable teachers to achieve excellent teaching. In their view, teachers need:

- Time - Teachers need time...
 - ... to improve course structure and content.
 - ... to update content of courses based on recent developments and technological advances.
 - ... to actually execute courses once they are planned and developed. Worth noting is that many participants voiced displeasure specifically with administrative tasks taking a lot of time.
- Knowledge - Teachers need...
 - ... knowledge regarding how to deliver excellent education in large class sizes.
 - ... opportunities to update and build knowledge within their subject matter.
- Incentive - Teachers need...
 - ... monetary incentives for being high-performing teachers.

- ... rewards for participating in pedagogical courses.
- ... an attractive career path in general for being a teacher. Many participants voiced concerns that teaching-staff are seemingly valued less than research-staff.

5 Reflections and proposed actions

Based on the results from the workshop as well as reflections from the authors, this chapter presents an analysis as well as corresponding proposed actions for several key points brought up during the workshop.

Time spent on administrative tasks - In regard to time available for teaching, many participants raised the suggestion to employ administrative staff to perform administrative tasks (as opposed to having the teachers themselves perform such tasks). The authors would like to build on this by suggesting the implementation of AI (maybe even interactable chatbots) to ease the administrative burden of faculty.

- Action - Map out what activities are regarded as "administrative tasks" (which do not require pedagogical or significant subject-matter knowledge) and can be performed by entities other than the teachers themselves. Evaluate which of these tasks are realistically performable to a high level of automation by AI, and which actions are better suited to be managed by human administrative staff. Create an estimate of time and money saved by a possible re-distribution of administrative tasks.

Managing large classes - Many teachers expressed concerns regarding a lack of competence in managing large student groups whilst maintaining excellent education.

- Action - Create a Chalmers-internal CLS-course (Chalmers - E, 2023) on specifically managing large student groups, where teachers who are expected to manage large student groups have prioritized enrollment.
- Action - Gauge interest in a collaboration with other high-performing universities that are successfully managing large student groups. For example, where Chalmers receives help in managing large student groups and in return acts as a testing area to try new pedagogical strategies or methods.

Teaching needs to be valued - Concerns have been raised about the interpreted low incentives for pursuing a teaching career at Chalmers, where pedagogical staff are interpreted to be generally lower-valued than research staff. The authors reflect that undervaluing teaching comes as a natural consequence of the hiring practices of the university, where a vast majority of faculty are employed primarily as researchers who are obliged to contribute with departmental service hours (including teaching). In other words, the positions themselves advertise teaching as being secondary. Chalmers seems to be aiming for a continuation of this status quo, and seems to strive towards fulfilling education needs by employing excellent researchers who are to provide excellent education as a secondary activity.

The authors argue that performing excellent research does not equate to performing excellent teaching, and that striving to always achieve both qualities in new hires or in competence development is not realistically feasible. Instead, the authors argue to allow for more pure research positions, partially to not deter excellent researchers who have no interest in teaching, and partially to not force faculty to do that which they have no desire to do. In short: Let people do what they're good at; fill pedagogical working hours with those who are both willing and excellent at pedagogy.

- Action - Investigate establishing a new norm with standard-track faculty where teaching is not part of the expected institution service.

Junior teachers - As a long-term strategy of acquiring talent, the authors recommend making it easier for departments to hire junior teachers. Currently, there is no position at Chalmers that facilitates recruitment of students as full-time permanently employed teachers after their Bachelor's or Master's graduation. Arguably, the two closest available positions are "part-time fixed-term teacher" (SWE: "timlärare") which is nominally neither full-time nor permanent, and "lecturer" (SWE: "tekniklektor") which requires several years of industry experience to qualify. The only other option (that the authors are aware of) is to employ via a PhD, i.e. following the typical researcher's path where teaching is regarded as a secondary activity.

- Action - Create a new "junior lecturer" position at Chalmers to more easily recruit young talent with a high potential for pedagogical excellence, for example students who have been employed part-time as teacher's assistants and have performed beyond expectations.

Maintaining subject-knowledge via part-time employment - While being an excellent teacher may not necessarily make one an excellent researcher, it can be argued that excelling in research will enhance one's teaching abilities. Excellent teaching entails up-to-date and relevant teaching, something that requires constant competence development. The traditional way of maintaining subject knowledge is to have teaching be performed by active researchers, who are thus always updating their knowledge. This approach does however come with drawbacks as previously mentioned, i.e. regarding teaching to be a secondary activity.

An alternative way of achieving up-to-date knowledge is by introducing "part-time lecturer" and "part-time senior lecturer" as an established and advertised form of employment. This could allow lecturers to work e.g. 50% at Chalmers and 50% in industry, practicing what they teach and thus continually updating their subject-matter knowledge. As an added benefit, this setup would entail that Chalmers would not be paying wages to staff members for subject-matter competence development, as that would be done via practice in industry. Additionally, this type of employment could serve to be attractive to industry employees who wish to work with teaching but not doing so full-time (similar to for example in-house company educators).

- Action - Investigate benefits, drawbacks, and feasibility of introducing "part-time lecturer" and "part-time senior lecturer" as recruitable positions.

Contradiction between goals and available means - Participants expressed confusion regarding the seeming contradiction between raising educational quality for a greater number of students whilst decreasing the available resources (both in terms of number of faculty and money). The authors would, however, like to highlight that "better education for more students using less faculty and with less money" is not necessarily an impossible contradiction, but might instead be a call for a different solution to solve the wish. The only problem is that we do not yet know what this solution is.

6 Conclusion

Chalmers stands before a dual-transition, both to become a leading European technical university by 2041, and to keep excellence in education when two campuses merge into one. Workshop participants have identified possible roadblocks to succeeding in these transitions: a seeming contradiction between increasing the quality of education with decreasing resources; as well as a lack of teachers' time, certain types of knowledge, and incentive to perform excellent teaching.

Proposed actions are identified to overcome these roadblocks, which include: offloading administrative tasks from teachers to AI and administrative staff, teaching teachers how to manage large classes, fostering a culture to value teaching even more than currently, and easing the employment of both junior and part-time teachers. The authors suggest implications of implementing proposed actions to be the focus of a future study.

References

- Chalmers - A. (2024, 21st March). *Chalmers education - best in Europe*. <https://www.chalmers.se/en/current/news/chalmers-education-best-in-europe/>
- Chalmers - B. (2023, 30th November). *Vision and long term strategy*. <https://www.chalmers.se/en/about-chalmers/organisation-and-governance/vision-and-strategy/>
- Chalmers - C. (2024, 25th April). *Project A unified campus at Johanneberg*. <https://www.chalmers.se/en/about-chalmers/chalmers-campuses/project-a-unified-campus-at-johanneberg/>
- Chalmers - D. (2024, 4th April). *KUL 2024 – Chalmers konferens om undervisning och lärande*. <https://www.chalmers.se/aktuellt/kalender/kul-2024-chalmers-konferens-om-undervisning-och-larande/>
- Chalmers - E (2023, 30th November). *Language, communication and learning*. <https://www.chalmers.se/en/departments/cls/education/>
- CWTS Leiden Ranking. (2024, 29th April). *CWTS Leiden Ranking 2022*. <https://www.leidenranking.com/ranking/2022/list>
- Kara, E., Tonin, M., Vlassopoulos, M. (2021). Class size effects in higher education: Differences across STEM and non-STEM fields. *Economics of Education Review*, 82. <https://doi.org/10.1016/j.econedurev.2021.102104>
- Universitetets Kanslers Ämbetet. (2024, 23rd April). *Ökade kostnader för högskolor och universitet 2023*. <https://www.uka.se/om-oss/nyheter/nyhetsartiklar/2024-04-23-okade-kostnader-for-hogskolor-och-universitet-2023>

Appendix A – Full list of participant statements by discussion topic

Discussion topic 1 – What is excellent education? What are the essential elements that maintain the education at an excellent level? (Now and in 20 years)

- Students should be able to use their knowledge when they graduated.
- Teacher-student time should be maximal. Be close to the student to see if they actually learn and develop.
- Students should get general competences (personal development, self-leadership, and more)
- Active learning.
- Student know what they should know after their education
 - The three-year programs and all maritime programs shall work after their graduation
 - The five-year program shall be more theoretically capable
- Students should grow as people, more than just subject matter.
 - Chalmers meets the students' need to grow.
- Social study environment, including integrating new students.
- Students should want to be physically on campus. E.g. good study spaces, good lecture halls. Automatically uploading blackboards notes to online?
- Student accomodation is important.
- Västtrafik and public transportation should work well so students can easily come to campus.
- Premises are good, material is good, technology is good.
- Lecture / teacher time should be used optimally.
- Synergy between programs, sharing courses between programs (scale) and have smaller specific courses for program-specific subjects.
- We need to be dynamic with our courses, everything is updating and changing in the world.
- Ensure the amount of content in courses doesn't diminish over time (one person has experienced a diminishing amount of content in courses over the years).
- International students are more used to longer study days.
- If we have infinite resources:
 - Smaller student groups
 - More formative assessment
- Resource-effective:
 - How does one utilize teacher
 - High-quality examination process.
 - Feedback is important, especially in year 1.
 - Less administration performed by teachers.
- Student – Teacher time maximized
- Optimal usage of teaching time, class time, etc.
- Student can actually use their knowledge after graduation.
- Students have learned general competences.
- Integrating international students and a positive study-social environment.
- Good teachers.
 - Continually developing teachers.
- Sign of success: We have attractive alumni.

Discussion topic 2 – How can we provide preconditions for teachers to deliver excellent education? (Now and in 20 years). What current strengths can we build upon? What weaknesses and risks are there, and how shall we avoid them?

- Teachers should have the time to deliver courses.
- We need time to re-work courses to be updated with the recent development.
- What is the career path for a teacher?
- What is the reward for taking pedagogical courses?
- How do teachers get a higher salary?
- Teachers - We are excellent, top in Europe.
- Have employable roles for just teaching.
- Time for developing courses and not just teaching the course.
- Educate teachers on how to teach large class-sizes well.
- Multi-disciplinary teaching teams where it's not just researchers and not just teachers.
- Teacher-only roles need to have time to develop their own competences (e.g. by research projects etc).
- Difficult to maintain excellence in education if student number increases (if you don't have course-development).
- The most important: Teaching-staff is valued lower.
- It's a strength to have teachers who both teach and research.
- Better (more structured?) hand-overs of courses so that knowledge isn't lost.
- Collaboration between courses in the same program (or even different programs).
- Value educating higher and make room for course-development.
- Educate staff in how to better hold large courses.
- Administrative tasks removes time from educating, for example Canvas, cooking rooms, etc. Perhaps we can be more resource-effective with more admin-staff?
- We recruit good researchers at Chalmers, but the educational qualities of them are not prioritized. Including PhDs?
- Lower administrative burden.
- Students - Use students in peer assessment, to help assess others.
- AI - Teachers can use AI in the future to get insight into specific student's progression.
- AI - Use AI as a TA in the future?
- Big program-wide red thread progression between courses and between teachers (and between teachers in the same course or same subjects).
 - We need "teacher teams"

Discussion topic 3 – How does teaching and the way we deliver it need to change? What is meant by resource-efficient? Does resource-efficient and excellent education go hand-in-hand?

- Different class sizes.
- In huge courses, students primarily have contact with the PhD TAs, not with the examiner.
 - Continuity. If we rely on PhDs to teach, we have to re-teach our TAs all the time when they leave.
- Lectures in the entire course, but split the large course into smaller groups. And even perhaps groups of groups.
- Shift the responsibility of learning from the teacher to the student.
- More incentives for students being more prepared before coming to a class (flipped-classroom), e.g. bonus points with quizzes.

- For the humongous courses, we need two examiners with equal responsibility and shared workload.
- Research-input. Be available in the classroom.
- Balance between research and teaching.
 - Expectation.
 - Swedish vs English.
- Looking outwards: Integrate the international students
- Demands on the students should be maintained (i.e. don't lower our expectations of students).
- Evaluation system.