



In the development of educational programs, we need to involve the students.

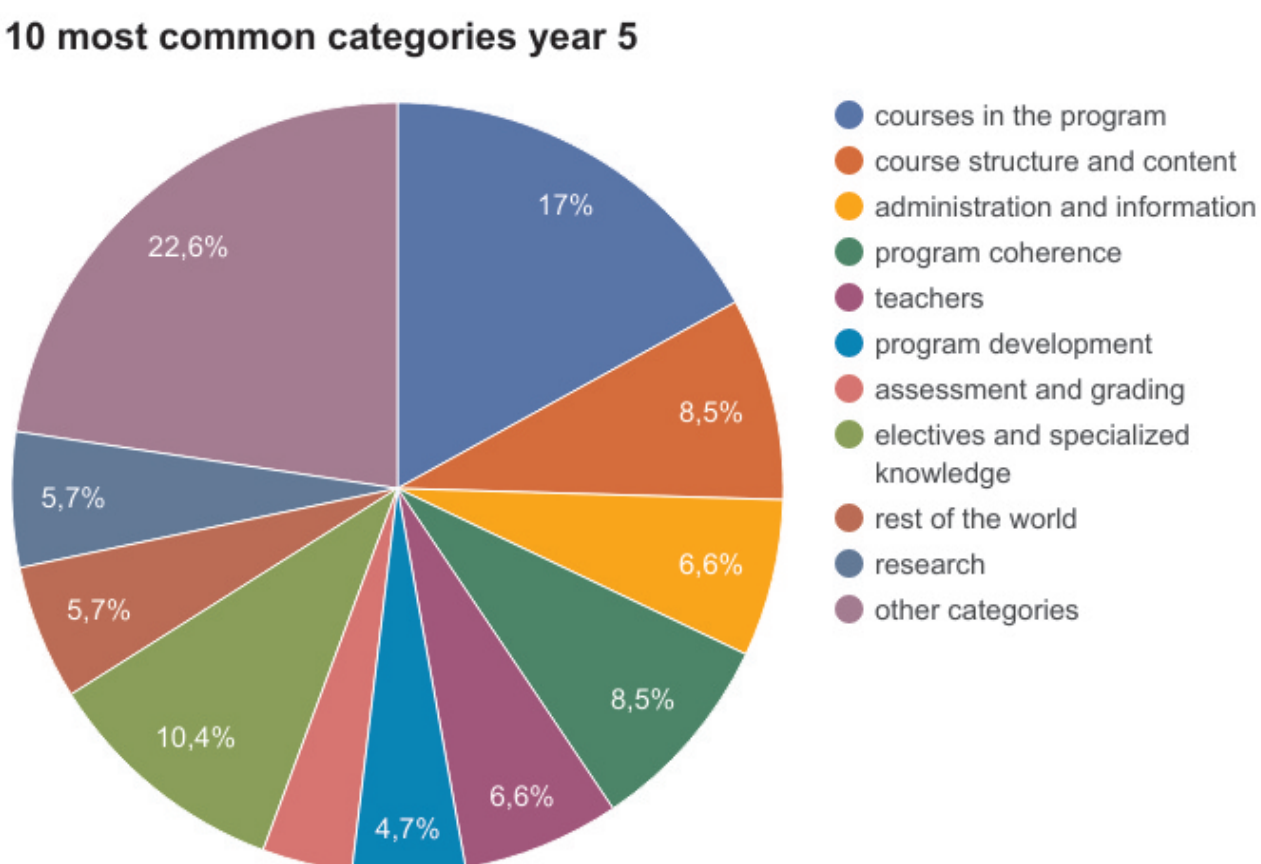
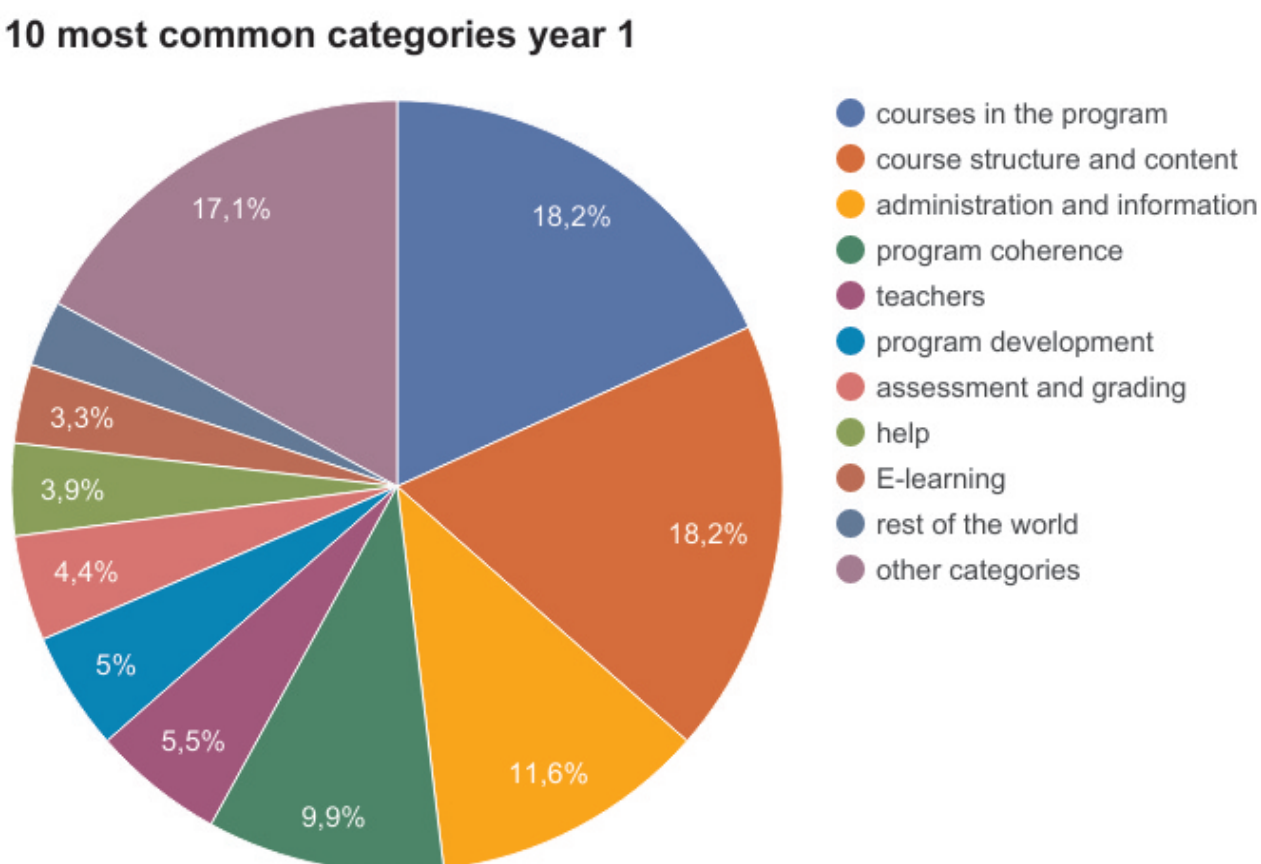
The European Standards and Guidelines (ESG 2015) state: "Programmes are reviewed and revised regularly involving students and other stakeholders".

The Swedish Higher Education Act states "Quality assurance procedures are the shared concern of staff and students at higher education institutions", and "Higher education institutions shall endeavour to enable students to play an active role in the continued development of courses and study programmes".

We therefore need to know how the students perceive that the program should be improved. Using just a few student representatives for this has clear limitations, because they might not be representative of all students. Rowley (1995) argues that *"gathering relevant, representative and useful student opinion is a necessary part of the quality assurance process"*.

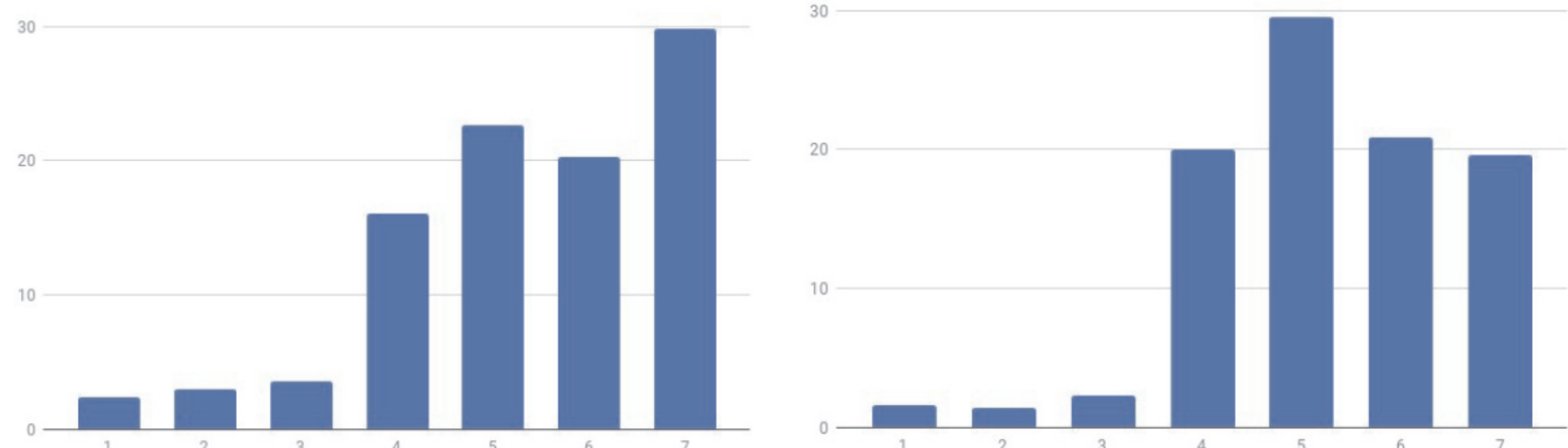
In the Computer Science and Engineering program at KTH, we have a unique opportunity to get input from every active student in the program, through the Program Integrating Course (Kann and Högfeldt 2016). The reason is that one of the intended learning outcomes is "*to critically analyze and reflect on the structure and performance of the program and their own study achievements*".

Year	Quote	Categories	Number of proposals	Category
4	Drop Data Security and Internet Protocols as mandatory courses. They don't feel like being advanced master courses, this would also allow for more elective courses.	K	17,7% K	courses in the program
4	Master students are not ranked once they complete their studies at KTH. For those who plan to pursue doctoral studies after their Master, grades are very important when applying to research institutes abroad. I would like only courses that give only possible grades have to be avoided, as they fall not to the student's benefit, but to the university's. This somewhat limits the students' freedom to choose courses. Unfortunately, I had to discard some extremely interesting courses (such as DD2438) in favour of courses with an A-F final grade. It would be very useful those who plan to take a Ph.D. to achieve a final grade on graduation courses, or at least to obtain A-F grades for each course. For reference, please check the entry requirements of universities abroad (for instance in the US) and see their requirements for Swedish students.	K	11,8% A	course structure and content
5	Have the master thesis project start in period 2, where all preparations etc are done. This would make students try to finish their thesis earlier and any issues could be worked out before it starts in period 3.	K	10,1% A	administration and information
5	For the international version of the master of science in engineering programme, I think the year abroad should be moved to either year 3 or 4.	K	8,7% S	program coherence
2	Switch places of the database courses and the programming paradigms course.	K	11	better coherence between courses
2	Encourage and facilitate the Open studies who selected D to take Java Programming for Python Programmers in the summer.	K	7	better coordination between courses (deadlines, course content etc)
4	Spread out courses more between spring and fall semesters, and preferably have them go both semesters (probably hard to find staff willing to do, so I can see why not). Perhaps move some of the mandatory courses to the spring semester? I've had lots of troubles choosing the courses I'd like because of wrong information about when they are running and (for me) a bias towards the fall semester.	K	5	make computer science connections in math courses
1	In the course Writing in the Engineering Profession we were taught to write and evaluate scientific reports. I would suggest that we are also/should must learn to write something that is more relevant to the engineering profession in the company. It feels like we will not have much use for what we did in the course when we finished the education.	K, M	8	the teacher should be aware of the prerequisites of the course
4	Better and more accessible information on which courses you can take that can be part of ones final degree.	U	5	explain the purpose of the course
4	Easier to learn what courses are available during the master. Generally before each time we are supposed to choose there is a discussion between students on where we can even find information on what we can choose.	A	4	show where the education may lead
4	Better orientation to the international students can be given. About how to use specific KTH systems and etc.	A	3	connect the communication skills course to other courses
4	Since the computer science programme has so many points that the student are free to allocate to courses of their own choice it would be nice to have a bit more assistance in putting together a viable set of courses. Maybe just an online tool which allows you to see how the points are allocated in each period and what courses lead in to which other courses.	S	4	connect the human computer interaction course (mdi) to other courses
4	Clearer structure and interconnectedness between courses to give the students an understanding of how they relate to the learning objective's and each other.	S	4	make the "red thread" visible in each course
4	More introduction and knowledge into what kind of jobs the different tracks will lead to and what is expected from you	S	1	you should be given a mentor who you could talk to
4	I feel like there is lack of communication between courses and administration. For example, every course leader have been surprised by the number of students this year and have had to make quick changes in the course at the last minute.	S	2	teachers should be more interested in the opinions of the students
4	By having some kind of short introduction to the courses for each track. It is hard to get a grasp on the core contents of a course without doing extensive reading or actually taking the course.	S	1	more contact with the prosam seminar group outside of the seminars
5	Tighter connection between courses, maybe joint projects between some courses.	S	1	meet master students in a prosam seminar
5	Have a tool that makes it easier to visualize the education, how courses contribute to certain goals etc? OR visualize the goals for the education and how courses map to those goals, there could be some nice charts etc.	S	1	sustainability and ethics could be discussed in prosam
5	More integrating the courses that are mandatory more into one another. While studying Artificial Intelligence we had a seminar in Vetting on the ethics of AI, Turing tests, sentence and that sort of thing, but there was no connection between the two. I guess it's more flexible as it is right now, but it feels less like a unified program.	S	1	cross-course projects
1	It would be nice if the course coordinators had the ability to put deadlines in a sort of "common calendar" so that we students can get a broader view on the periods "to do". Especially regarding the courses Writing in the Engineering Profession and MDI deadlines have been very unclear.	S	1	make a visualization of the education
1	Make computer science connections in math courses. Had I known how important linAlg is for machine learning, I would have been more motivated to learn everything properly.	S	1	give better assistance in putting together a viable set of courses in the master's program
4	Better and more relevant examination. For example, the course Protocols and principles of the Internet has an written closed book exam that tests many details of the protocols that you have to remember by heart (such as how IPv6's headers looks like). This might not be the best way to test this knowledge, since you in the industry do not have to remember these things, you look it up! This is a problem in the entire KTH education (both in the programs all over the world).	S	1	improve the integration of international students
4	Better more reasonable examination (Project work, P/F exams) to allow students to not fail everything by having a bad day. E.g. an exam that is 100% of the grade, and you have a fever that day, is no fun.	E	1	better introduction to the international students about how to use KTH systems etc.
4	The mandatory courses should have experienced teachers who engage with the students in a good way. He or she shouldn't skip classes, be flustered with the instructions, monotonous in his or her way when lecturing and so on. Find passionate people and I'll be inspired by the course, not demotivated.	L	1	make Swedish students meet more exchange students
1	The sofas outside e.g. Red have metal pieces underneath, scraping the floor. Very sad.	M	1	more centralized information and communication with teachers
4	I do think that there is room for expanding personal choice within the education, and to design evaluation in such a way that it empowers students with agency and a genuine sense of accomplishment.	V, E	1	improve communication between teachers and the administration (regarding e.g. number of expected students)
5	Encourage students to design their code in lab-assignments/projects in a more maintainable way and not just in a ad hoc way.	P	1	have a short introduction to the courses for each track
1	More practical application in working life (even though I know it is not reasonable or cost-effective for the university).	O, T, I, L	1	more defined goals and more collaboration between students of the same track
4	Either have less group project courses or have some kind of course/instructions teaching best practices when working in a group and how to plan a project.	G	2	assessment and grading
4	Firstly, the teacher should require teams to assess their performance regularly not only self-reflection after the project. The other critical element of teamwork success is that all the team efforts are directed towards the same clear goals, the team goals. For example, during the group/team projects ask themselves such questions that "How well are we meeting our goals and expectations? What are we doing well?" "Do we lead away from our original goal?". If it possible, the teacher should randomly pick several groups and attend their meetings.	G	2	more clear wordings of assignments
5	More focus on collaboration, particularly with diverse groups of people	G	1	more clear wordings of assignments in the programming course (inda)
2	Involve areas of current interest more. After my time at KTH I still do not know what a cloud means and its function. Yet it is mentioned constantly in the media and businesses. For example, there could be a flexible course that will cover what is currently of top interest.	MOD	1	more clear wordings of assignments in the operating systems course (os)
5	The quality of the lectures are very varied, often okay, sometimes bad. The format for a couple of courses seems outdated.	MOD, L	1	limit the number of reexaminations
2	Update the course content. Log how the course content has been updated, so we can see how it changed. Have the requirement that there should, in all courses, be a recap of what has developed in the area recently.	MOD, UTV	1	increase the number of exam opportunities
1	I am satisfied with the education, the teachers etc and believe that there is a purpose to all the courses we take, even though I myself do not always see this.	-	1	lab week at Christmas, not only in June
4	More/better detailed feedback on problem solving assignments, proof writing and report writing. Now, mostly it is "this sucks, minus points" as feedback. It teaches me nothing except "try something else next time". Especially with proof writing and report writing.	A	1	design assessment such that it empowers students with agency and sense of accomplishment
4	More feedback on problem solving assignments, proof writing and report writing. Now, mostly it is "this sucks, minus points" as feedback. It teaches me nothing except "try something else next time". Especially with proof writing and report writing.	A	1	less written exams, more practice assessment
4	More feedback on problem solving assignments, proof writing and report writing. Now, mostly it is "this sucks, minus points" as feedback. It teaches me nothing except "try something else next time". Especially with proof writing and report writing.	A	1	more and smaller labs
4	More feedback on problem solving assignments, proof writing and report writing. Now, mostly it is "this sucks, minus points" as feedback. It teaches me nothing except "try something else next time". Especially with proof writing and report writing.	A	1	reasonable assessment - combine graded project work and P/F exam
4	More feedback on problem solving assignments, proof writing and report writing. Now, mostly it is "this sucks, minus points" as feedback. It teaches me nothing except "try something else next time". Especially with proof writing and report writing.	A	1	exams are mostly easier than projects; make them high standards and allow multiple attempts without penalty
4	More feedback on problem solving assignments, proof writing and report writing. Now, mostly it is "this sucks, minus points" as feedback. It teaches me nothing except "try something else next time". Especially with proof writing and report writing.	A	1	have some labs that are meant to be done individually
4	More feedback on problem solving assignments, proof writing and report writing. Now, mostly it is "this sucks, minus points" as feedback. It teaches me nothing except "try something else next time". Especially with proof writing and report writing.	A	1	more formative assessments
4	More feedback on problem solving assignments, proof writing and report writing. Now, mostly it is "this sucks, minus points" as feedback. It teaches me nothing except "try something else next time". Especially with proof writing and report writing.	A	1	more relevant (authentic) forms of assessment
4	More feedback on problem solving assignments, proof writing and report writing. Now, mostly it is "this sucks, minus			



		Students in year					
	Categories	1	2	3	4	5	Total
Selected suggestions for improvement							
1. Improve the course web pages with information about the hand-ins and deadlines.	A	6.0	6.1	6.1	5.7	5.7	5.9
2. Better and more relevant examination.	E	5.7	5.7	5.7	5.6	5.4	5.6
3. Integrate the math courses more into computational thinking. If I had known how important linear algebra is in machine learning, I would have been more motivated to learn algebra properly.	U	5.6	6.0	5.6	5.4	5.4	5.6
4. Let the course coordinators collect all deadlines in a common calendar, so that students get an overview of what to do each period.	A	5.6	5.6	5.6	5.7	5.4	5.6
5. More teaching on practical programming, so that the industry should not think that we are poor at constructing programs in practice.	P & O	5.8	5.7	5.6	5.4	4.8	5.5
6. The program director should put together a list of the changes in the program each year and publish it, so that we do not depend on rumours.	UTV	5.1	5.4	5.4	5.8	5.5	5.4
7. Give us an opportunity to read feedback from other courses. That would make me aware of really good courses that I wouldn't have chosen otherwise.	UTV	5.1	5.0	5.0	5.7	5.5	5.3
8. Encourage students to design their code in lab-assignments/projects in a more maintainable way and not just in an ad hoc way.	P	4.8	5.0	5.3	5.2	5.4	5.1
9. There is too little critique and discussion between students about their work. Peer-feedback in different forms should be more common.	A	4.3	4.3	4.4	3.8	4.3	4.2
10. I would like tighter connection between different courses. for example by joint projects between different courses.	S	4.2	4.4	4.1	4.1	4.0	4.2
11. The doors could be better at closing themselves. It is disturbing with the alarm beeping all the time.	M	3.6	4.2	4.3	3.9	3.5	3.9
12. Increase the difficulty and depth, so that students will learn more.	KRAV	3.0	3.2	3.2	4.2	4.2	3.5

Evaluation of suggestions 2 and 7
on the evaluation scale from 1 (not at all important) to
7 (extremely important)



Comments from students in year 4 and 5 on suggestion 7.

Hearing what other students have said about a course might make or break the decision of me taking a course. To me it's odd that this is not already implemented.

Also please make sure course material from other courses is available! This is incredibly valuable when trying to pick courses, or to learn some stuff from courses one was not able to take. I can see no reason why reading material and lecture notes should not be publicly available. For similar reasons, such material should also be available to people outside of KTH. See https://sv.wikipedia.org/wiki/Tredje_uppgiften

It MUST be easier to find course evaluations, it is virtually impossible for most courses today.

Might kill bad courses quick, maybe before they have a chance to improve,

- It is possible to collect suggestions for improvement and opinions on them from all students.

- Most suggestions are realistic and well founded.

- The distribution of suggestions in topic areas is similar but not identical between first and fifth year students.

- We can see what support and what opposition each suggestion will meet if implemented.

- For each suggestion, we got comments showing possible positive effects or obstacles that we did not think of ourselves.

- We have a very good foundation for deciding whether and when the suggestions should be implemented.

- Feedback to the student group is an important part of the follow up process.

Kann, Viggo, and Högfjeldt, Anna-Karin. "Effects of a Program Integrating Course for Students of Computer Science and Engineering." Proceedings of the 47th ACM Technical Symposium on Computing Science Education, ACM. (2016)

Rowley, Jennifer. "Student feedback: a shaky foundation for quality assurance." *Innovation and Learning in Education* 1.3 (1995):14–20.

Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG). (2015)