DD1354 VT24 Course Analysis

Modsim 6.0hp

DD1354 crosses mathematics, programming, visualisation and simulation. In order to pass the course, students must pass four lab assignments (P-F), complete a project that they specify themselves (A-E) and pass an exam (P-F).

Summary of course aspects

Online video lectures accompanying by a hybrid flipped classroom/lecture summary and lab approach was used. Each lab and lecture took place both physically on KTH campus and via Zoom: students could attend as they wished.

No major changes were made to course materials or structure.

For the first time in the course, all teaching assistants were female.

Overview of course evaluation comments

Aspect	Feedback and action
There were many positive comments in relation to the general philosophy of the course with respect to getting students exciting about mathematics, programming and nature with a view to supporting *active* and *lifelong* learning	Thank you for the many positive comments.
The exam was too easy	Feedback about the pedagogical purpose of the labs, project and exam were provided throughout the course. The exam is not meant to be difficult, but rather make students take the concept of reflecting about their project work more seriously (as well as validating their knowledge of the lab work).
Project reports would be very helpful for better understanding project requirements	Provided previous project reports can sometimes be a difficult decision, as they might imply a 'right' way to do things. No report is ever perfect. However, in future course rounds, we will provide some exemplar reports to compliment the many blogs and source code already available for providing project ideas and helping students to understand requirements.

Details

Many aspects in relation to feedback about the course, as well as ratings via the course evaluation were similar this year to the last course round, 2023 with all responses close to 6/7 or 7/7. Overall, students appreciated the fun and practical nature of the course: *"The practical elements of this course were very interesting, entertaining and instructive, as they provided a great visual and active learning experience"* and *"It made physics into a fun subject"*. Students appreciated the ability to choose their own topic of interest for the project: *"I like the fact that you get to explore whatever topic you want".* The only notable changes in

overall course evaluation scoring from the 2023 course round were increases in categories 15 and 19, relating to receiving feedback without being graded and course activities enabling the students to learn in different ways.

In contrast to previous years in which feedback about the lab tasks was more mixed, feedback via the evaluation about the labs this year was generally more positive. No changes were made to the lab assignment materials or cohort profile, so this may be because of enhanced communication efforts of the course team to explain the pedagogical rationale behind the labs i.e. as scaffolding to enable students to gain skills in the course topics and software prior to embarking on the open-ended project. We will continue to communicate meta-pedagogical aspects of the course to students in order to try to frame the rationale behind our teaching approach to them, something that we feel complements the existing use of ILOs.

Despite the good scoring, comments made it apparent that more tuning in the course is still needed. Especially, comments made it apparent that some students struggled with the difficulty level of the project. Since the project is defined by the students, who receive iterative feedback from the course team, project difficult typically relates to being able to specify a feasible project in an area new to the students that is possible to do in a relatively short timeframe. While we expect this to be challenging (it has been an important motivator for creating the course and can be thought of as a meta-ILO of the course), and advise the students appropriately, two main comments were apparent this year that suggest improvements for next course rounds:

(1) The report contents were highlighted in several comments as an aspect that students struggled to clearly understand. While 54 previous student projects are made available in the form of blogs, videos and source code, currently reports are not made available. For future course rounds, we will consider making example A-grade report examples available to students in addition to the other already available project materials.

(2) Students start the project later in the course than they should and then have a large increase in workload intensity. At the moment, the course is structured in two stages involving lab work as a first stage and project work as the second stage. However, specifying the project details is an activity that students often underestimate and leave too late. For future iterations of the course, we will restructure in order to present project specification materials and feedback earlier in the course. While it has been possible to pitch ideas and receive feedback earlier in the course already, the existing course structure perhaps implies a starting point that is too late for many of the students in the course.

In relation to gender, participants identifying with male and female provided feedback and their ratings across LEQ areas were similar. The main outlier was point 12 in relation to ILOs helping the students to effectively achieve course outcomes. Most likely this issue again relates to the project and project specification aspect of the course, but it is difficult to query further. It is also important to note that both TAs in course team this year were female. TAs with specific characteristics are not actively sought after/recruited in the course, but rather voluntarily approach the course responsible. It is hoped that increased participation of all genders in the course, whether as students or the course team, will make it as appealing and supportive as possible for a full, diverse range of participants, regardless of gender, starting skill level, etc.

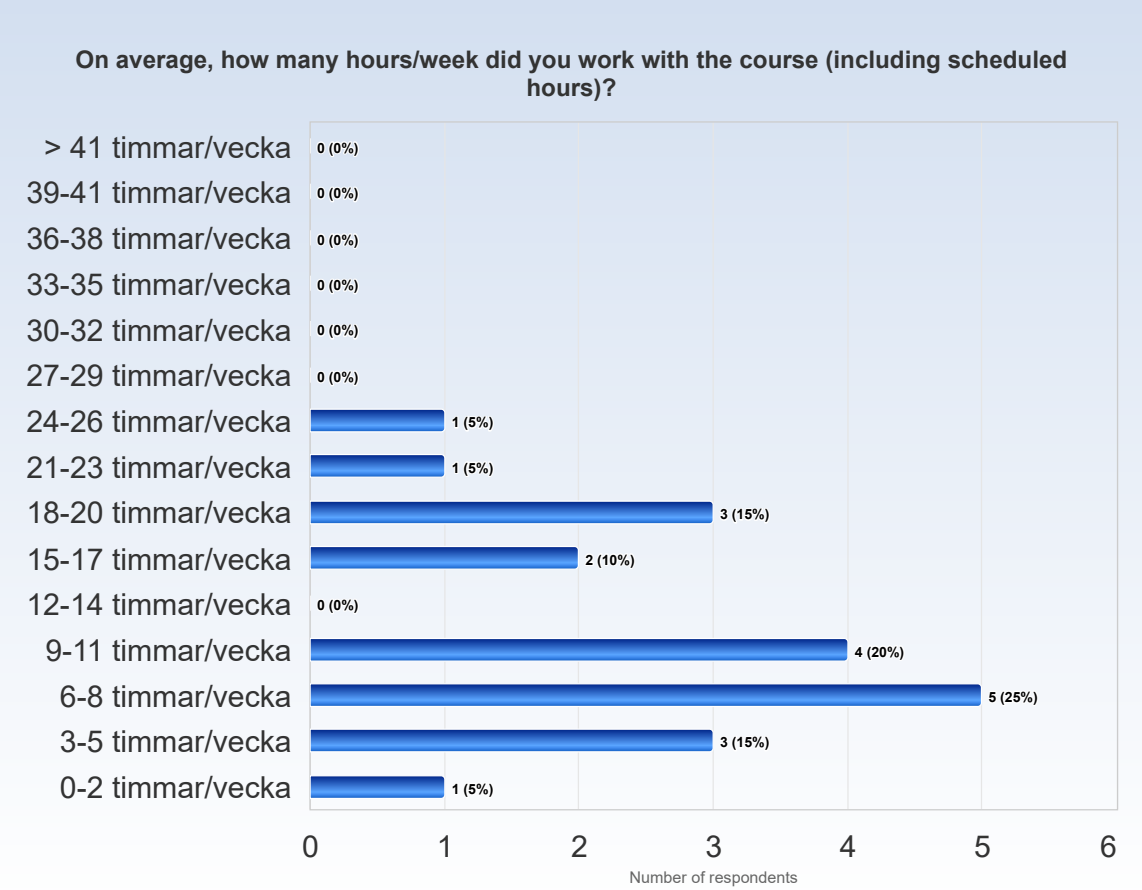
The course team again conducted a drive this year to try to obtain feedback from as many course participants as possible. This worked well with 35 total evaluation responses, giving a very good representation for the cohort and leading to higher certainty that feedback provided is representative of the whole cohort rather than a vocal minority. It provides a good

basis for making appropriate changes to future course rounds with a view to improving student experience for all students.

DD1354 - 2024-03-13

Antal respondenter: 30
Antal svar: 20
Svarsfrekvens: 66,67 %

ESTIMATED WORKLOAD



Comments

Comments (I worked: 9-11 timmar/vecka)
Most work went into the project, as well as the labs, increasing to about 5 hours a day by the last week two weeks.
-

Comments (I worked: 15-17 timmar/vecka)
A lot more towards the end of the course, less in the begginning

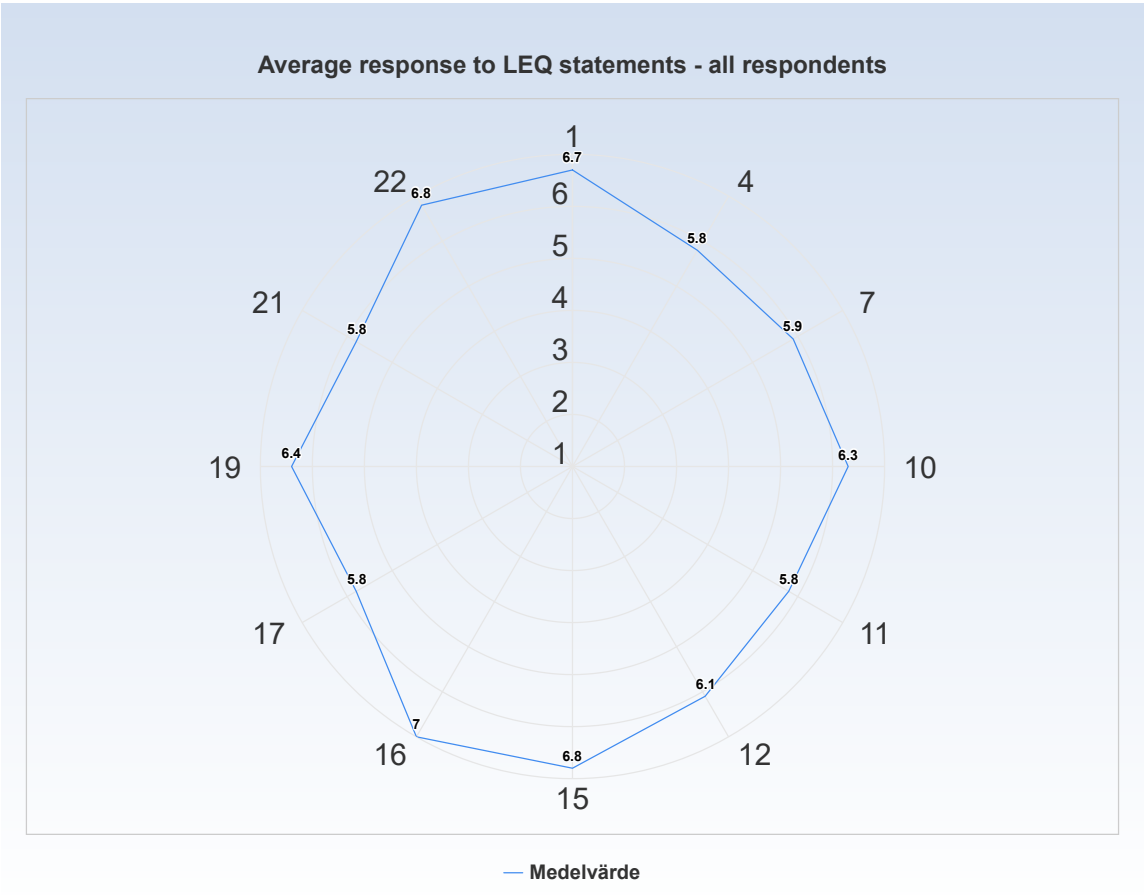
Comments (I worked: 18-20 timmar/vecka)
At first it was a low workload then when the project started the workload skyrocketed
More time towards project.

LEARNING EXPERIENCE

The polar diagrams below show the average response to the LEQ statements for different groups of respondents (only valid responses are included). The scale that is used in the diagrams is defined by:

1 = No, I strongly disagree with the statement
4 = I am neutral to the statement
7 = Yes, I strongly agree with the statement

Note! A group has to include at least 3 respondents in order to appear in a diagram.



KTH Learning Experience Questionnaire v3.1.4

Meaningfulness - emotional level

Stimulating tasks

1. I worked with interesting issues (a)

Exploration and own experience

2. I explored parts of the subject on my own (a)
3. I was able to learn by trying out my own ideas (b)

Challenge

4. The course was challenging in a stimulating way (c)

Belonging

5. I felt togetherness with others on the course (d)
6. The atmosphere on the course was open and inclusive (d)

Comprehensibility - cognitive level

Clear goals and organization

7. The intended learning outcomes helped me to understand what I was expected to achieve (e)
8. The course was organized in a way that supported my learning (e)

Understanding of subject matter

9. I understood what the teachers were talking about (f)
10. I was able to learn from concrete examples that I could relate to (g)
11. Understanding of key concepts had high priority (h)

Constructive alignment

12. The course activities helped me to achieve the intended learning outcomes efficiently (i)
13. I understood what I was expected to learn in order to obtain a certain grade (i)

Feedback and security

14. I received regular feedback that helped me to see my progress (j)
15. I could practice and receive feedback without being graded (j)
16. The assessment on the course was fair and honest (k)

Manageability - instrumental level

Sufficient background knowledge

17. My background knowledge was sufficient to follow the course (f)

Time to reflect

18. I regularly spent time to reflect on what I learned (l)

Variation and participation

19. The course activities enabled me to learn in different ways (m)
20. I had opportunities to influence the course activities (m)

Collaboration

21. I was able to learn by collaborating and discussing with others (n)

Support

22. I was able to get support if I needed it (c)

Learning factors from the literature that LEQ intends to examine

We tend to learn most effectively (in ways that make a sustained, substantial, and positive influence on the way we think, reflect, act or feel) when:

a) We are trying to answer questions, solve problems or acquire skills that we find interesting, exciting or important

b) We are able to speculate, test ideas (intellectually or practically) and learn from experience, even before we know much about the subject

c) We are able to do so in a challenging and at the same time supportive environment

d) We feel that we are part of a community and believe that other people have confidence in our ability to learn

e) We understand the meaning of the intended learning outcomes, how the environment is organized, and what is expected of us

f) We have adequate prior knowledge to deal with the current learning situation

g) We are able to learn inductively by moving from concrete examples and experiences to general principles, rather than the reverse

h) We are challenged to develop a true understanding of key concepts and gradually create a coherent whole from the content

i) We believe that the work we are expected to do will help us to achieve the intended learning outcomes

j) We are able to try, fail, and receive feedback before, and separate from, each summative assessment of our efforts

k) We believe that our work will be considered in an honest and fair way

l) We have sufficient time for learning and devote the time needed to do so

m) We believe that we have control over our own learning, and not that we are being manipulated

n) We are able to collaborate with other learners struggling with the same problems

Literature

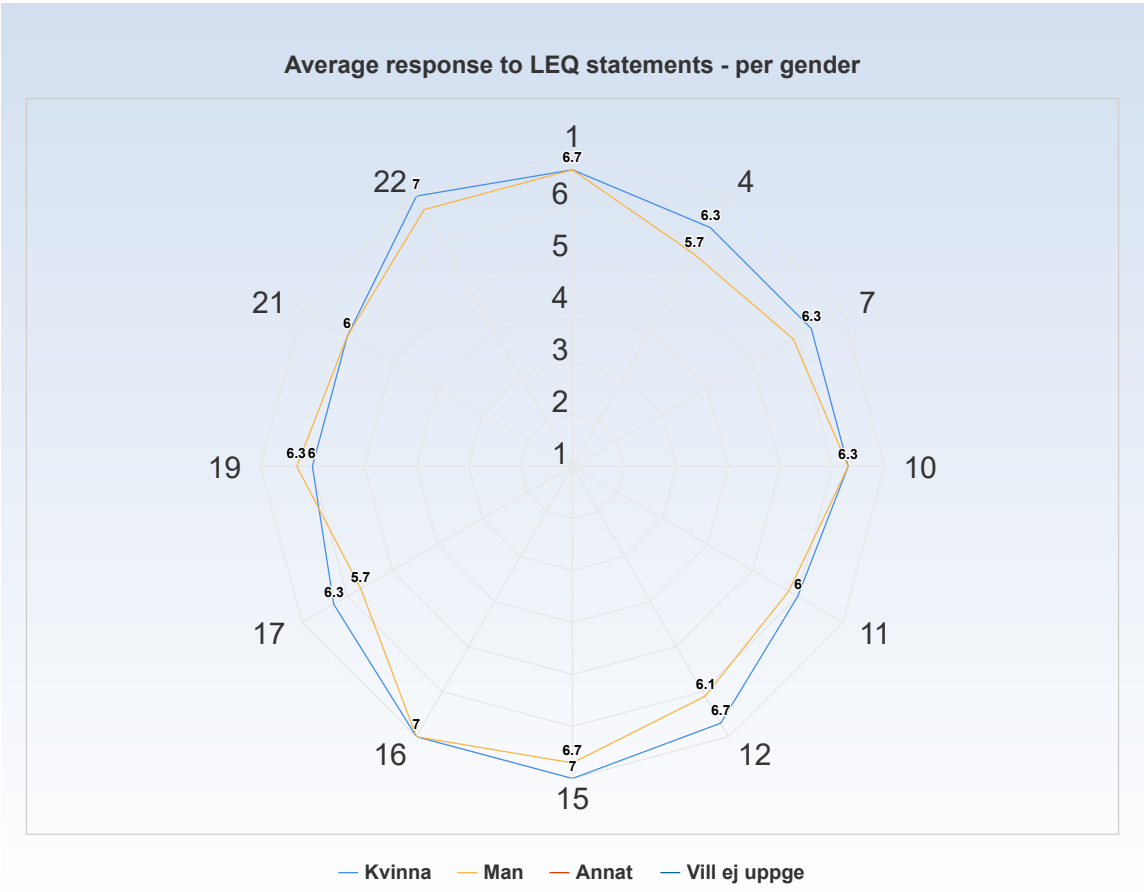
Bain, K. (2004). *What the Best College Teachers Do*, Chapter 5, pp. 98-134. Cambridge: Harvard University Press.

Biggs J. & Tang, C. (2011). *Teaching for Quality Learning at University*, Chapter 6, pp. 95-110. Maidenhead: McGraw Hill.

Elmgren, M. & Henriksson, A-S. (2014). *Academic Teaching*, Chapter 3, pp. 57-72. Lund: Studentlitteratur.

Kember, K. & McNaught, C. (2007). *Enhancing University Teaching: Lessons from Research into Award-Winning Teachers*, Chapter 5, pp. 31-40. Abingdon: Routledge.

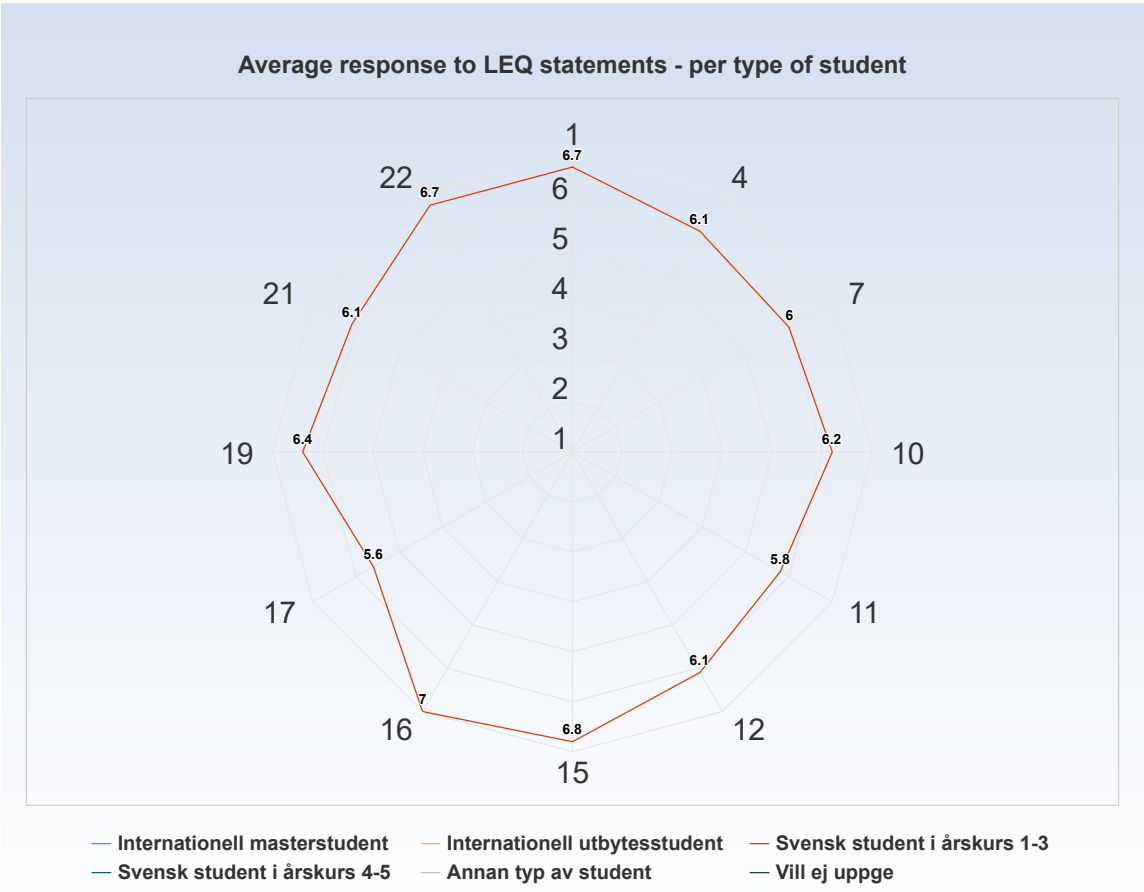
Ramsden, P. (2003). *Learning to Teach in Higher Education*, Chapter 6, pp. 84-105. New York: RoutledgeFalmer.



Comments

Comments (I am: Vill ej uppge)

-



Comments

Comments (I am: Svensk student i årskurs 1-3)

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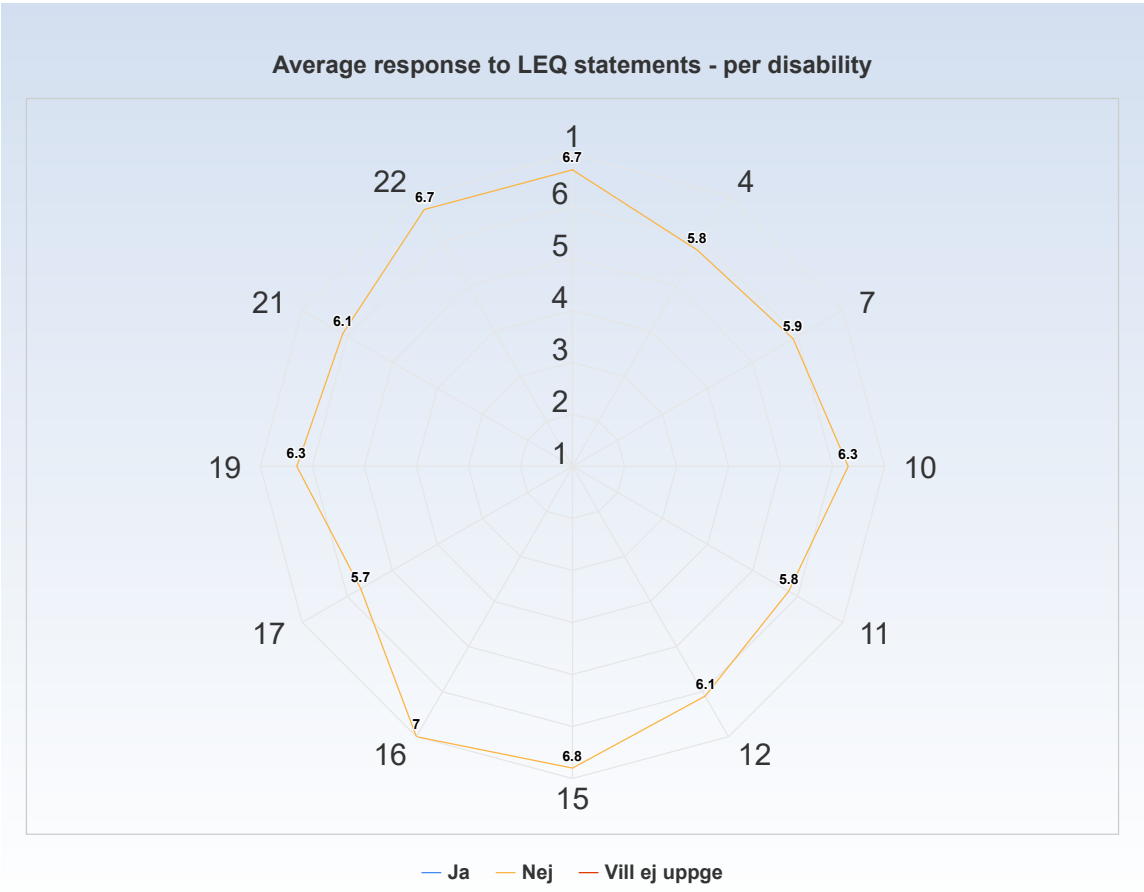


Comments

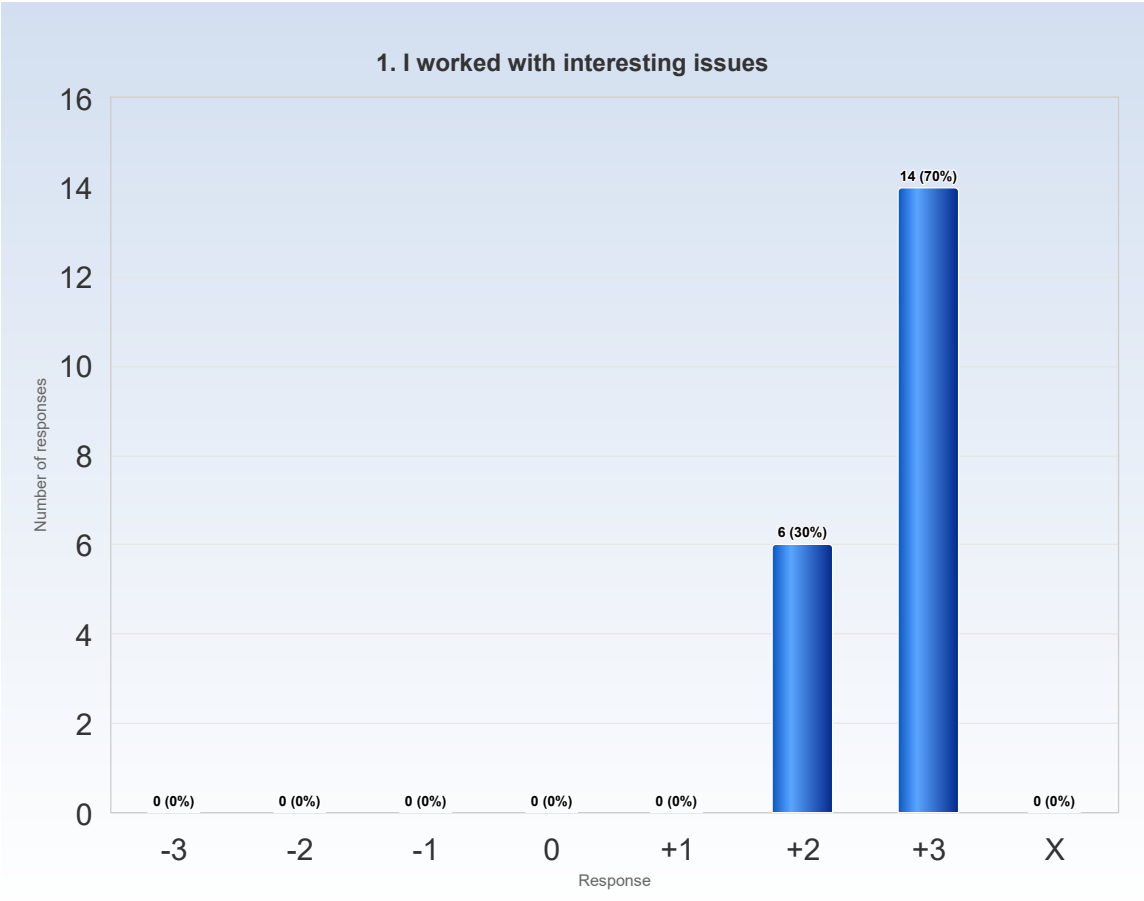
Comments (My response was: Nej)
-
Jag ser ingen anledning till att funktionsnedsatta skulle ha särskilda svårigheter med just denna kurs.

RESPONSE DATA

The diagrams below show the detailed response to the LEQ statements. The response scale is defined by:

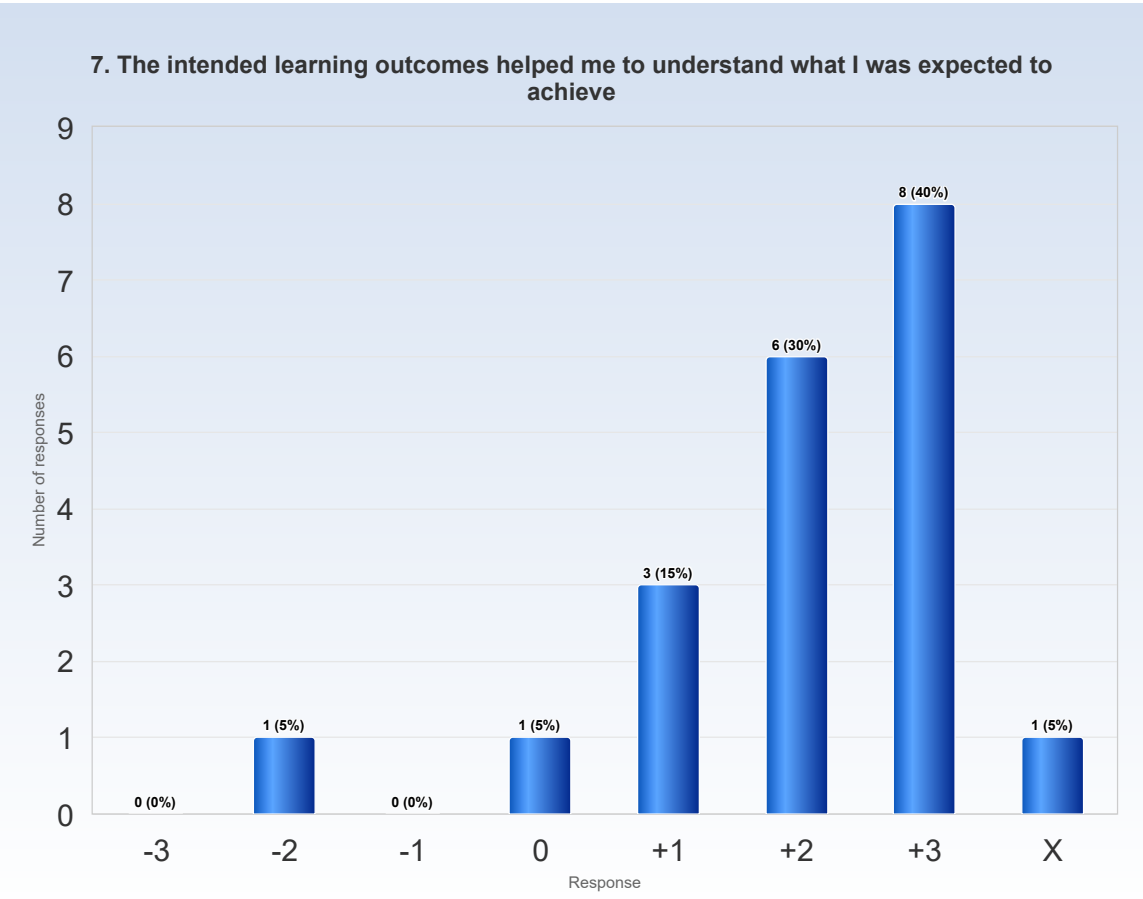
-3 = No, I strongly disagree with the statement
0 = I am neutral to the statement
+3 = Yes, I strongly agree with the statement

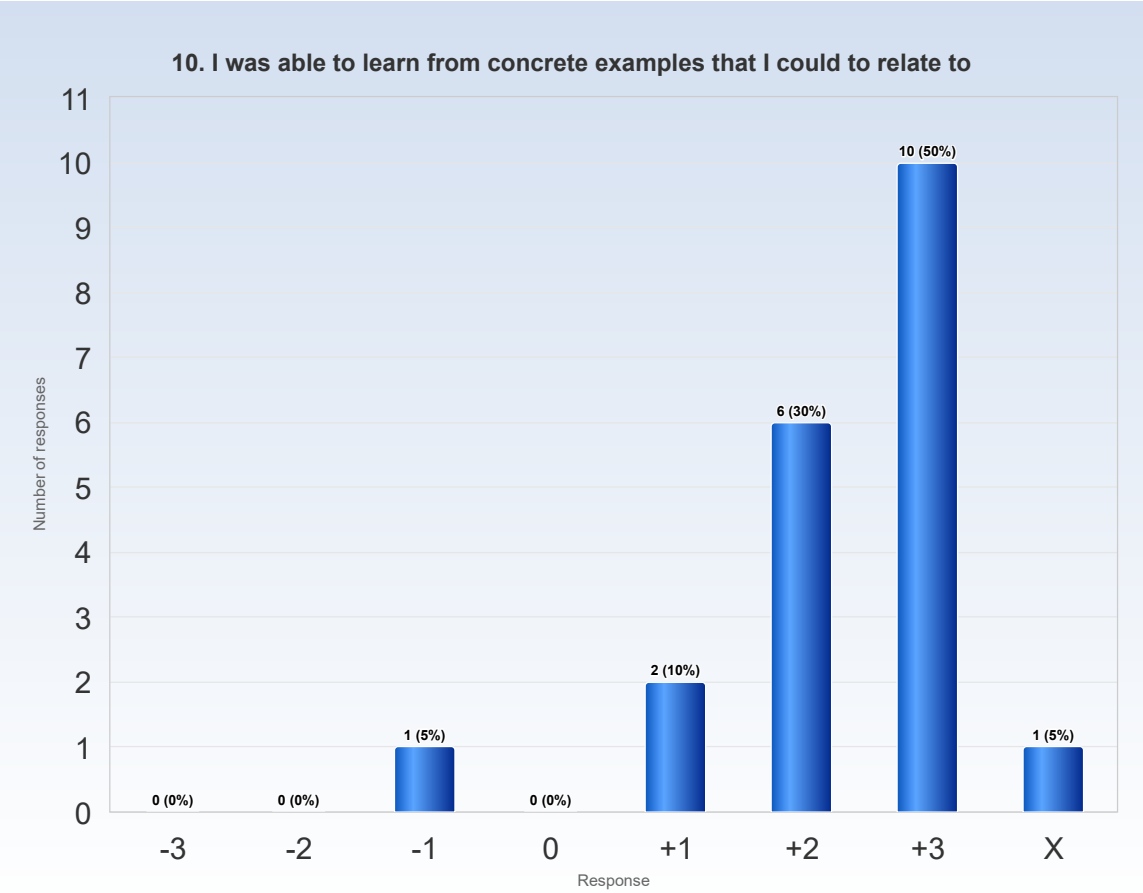
X = I decline to take a position on the statement



Comments

Comments (My response was: +3)
project

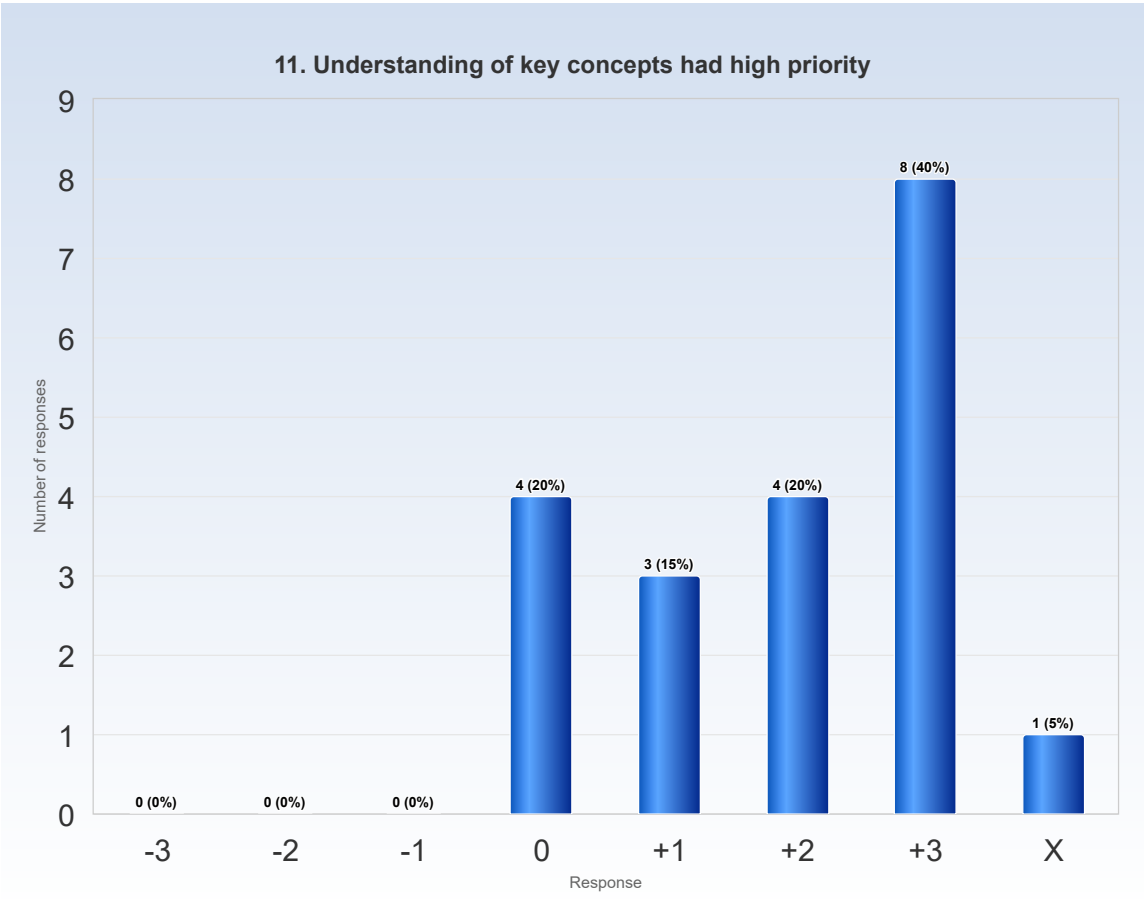

7. The intended learning outcomes helped me to understand what I was expected to achieve
Number of responses
0
1
2
3
4
5
6
7
8
9
0 (0%)
1 (5%)
0 (0%)
1 (5%)
3 (15%)
6 (30%)
8 (40%)
1 (5%)
-3
-2
-1
0
+1
+2
+3
X
Response

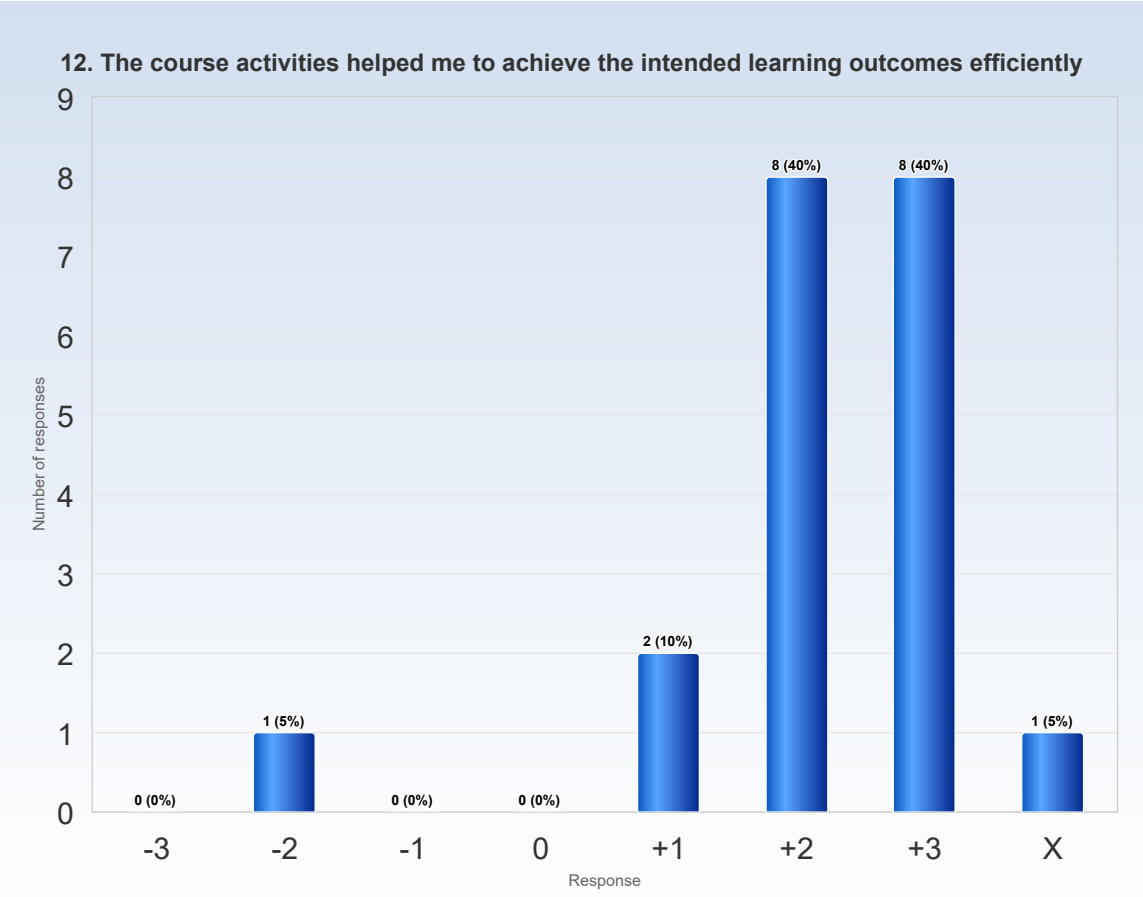


Comments

Comments (My response was: -1)
I would have appreciated it if there was example project reports to look at

Comments (My response was: +1)
Lite mer material på canvas hade hjälpt förstå vissa delar Bättre

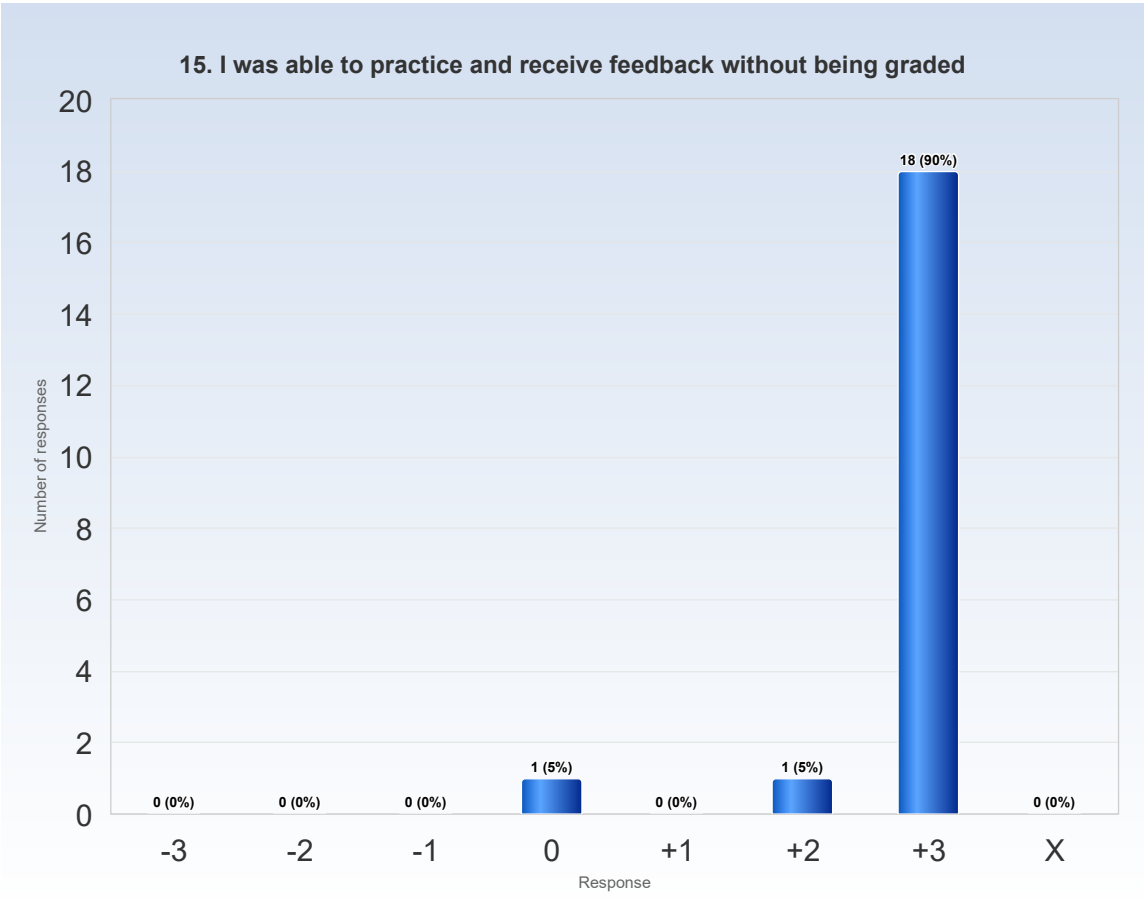

11. Understanding of key concepts had high priority
Number of responses
0
1
2
3
4
5
6
7
8
9
0 (0%)
0 (0%)
0 (0%)
4 (20%)
3 (15%)
4 (20%)
8 (40%)
1 (5%)
-3
-2
-1
0
+1
+2
+3
X
Response

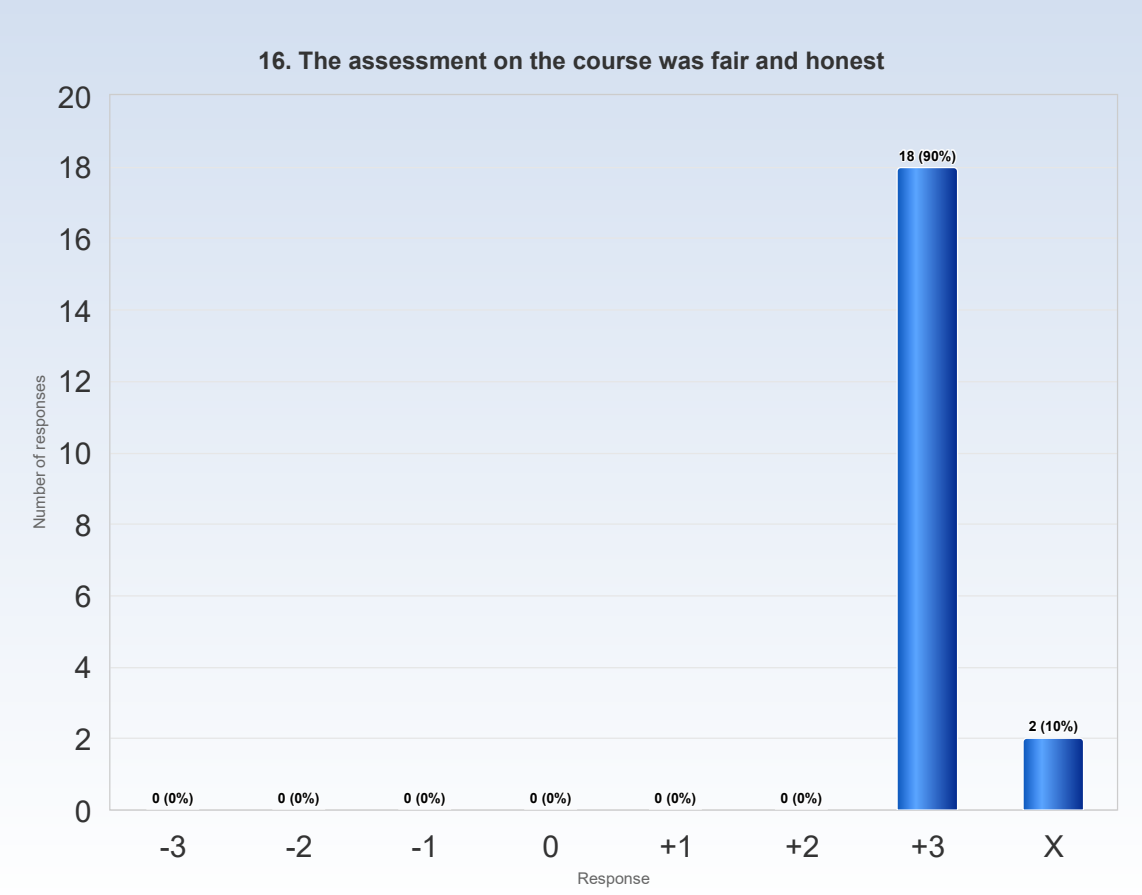


Comments

Comments (My response was: -2)

I had a hard time understanding what I was expected to do in the project, the scope and what it should contain etc.

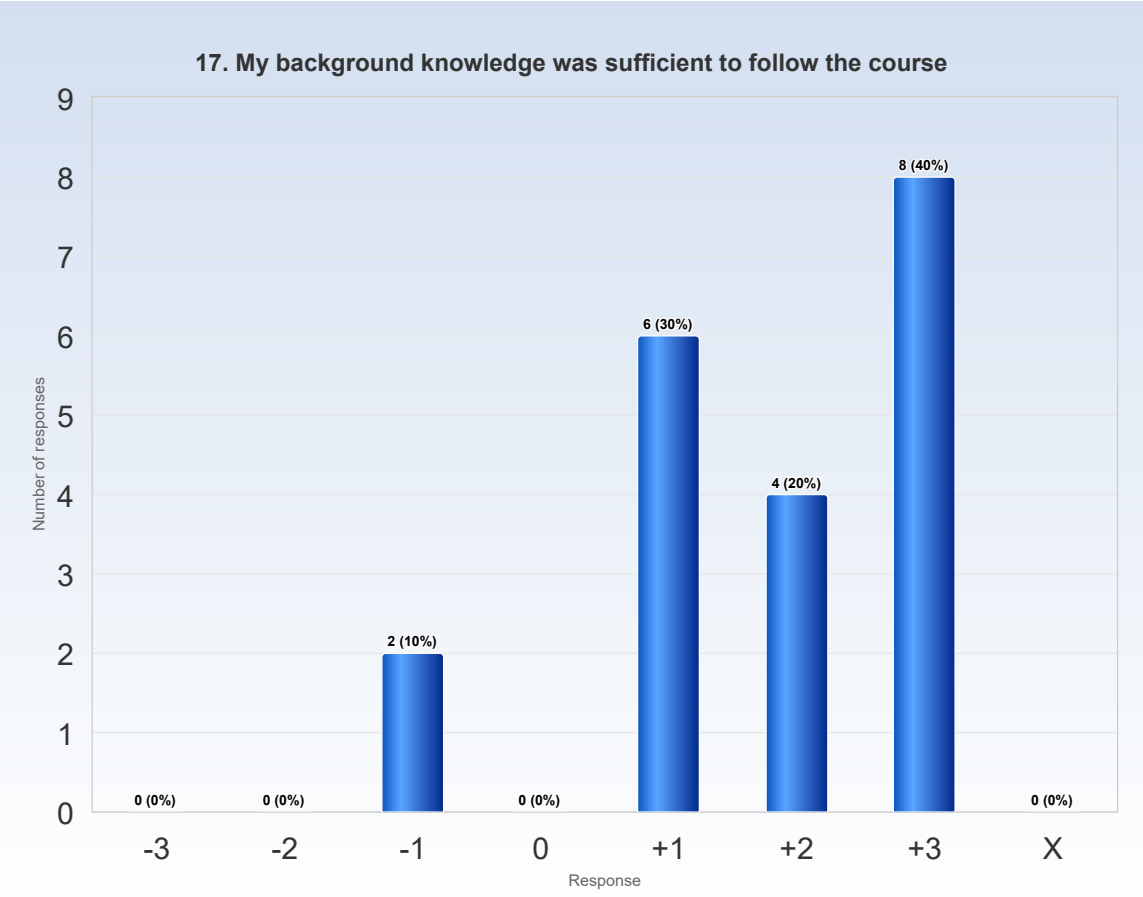

15. I was able to practice and receive feedback without being graded
Number of responses
20
18
16
14
12
10
8
6
4
2
0
0 (0%)
0 (0%)
0 (0%)
1 (5%)
0 (0%)
1 (5%)
18 (90%)
0 (0%)
-3
-2
-1
0
+1
+2
+3
X
Response



Comments

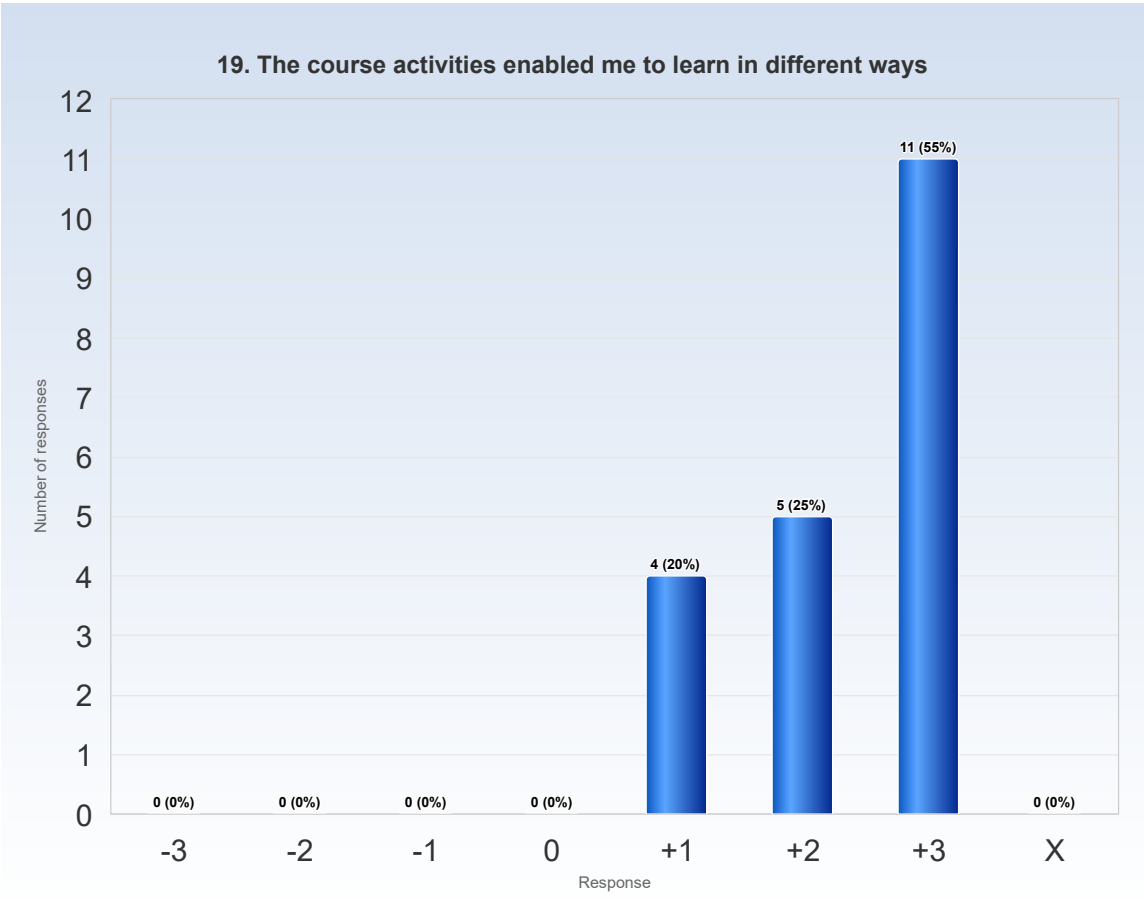
Comments (My response was: +3)
The results/grades aren't in just yet, but from what the course responsible has told us students, it does feel like it'll be a honest and fair grading.
Canvas tentan var väldigt lik den tidigare man kunde hitta i Canvas, så upplevdes ganska lätt

Comments (My response was: X)
Not assessed yet
Haven't recieved assessment on the project yet



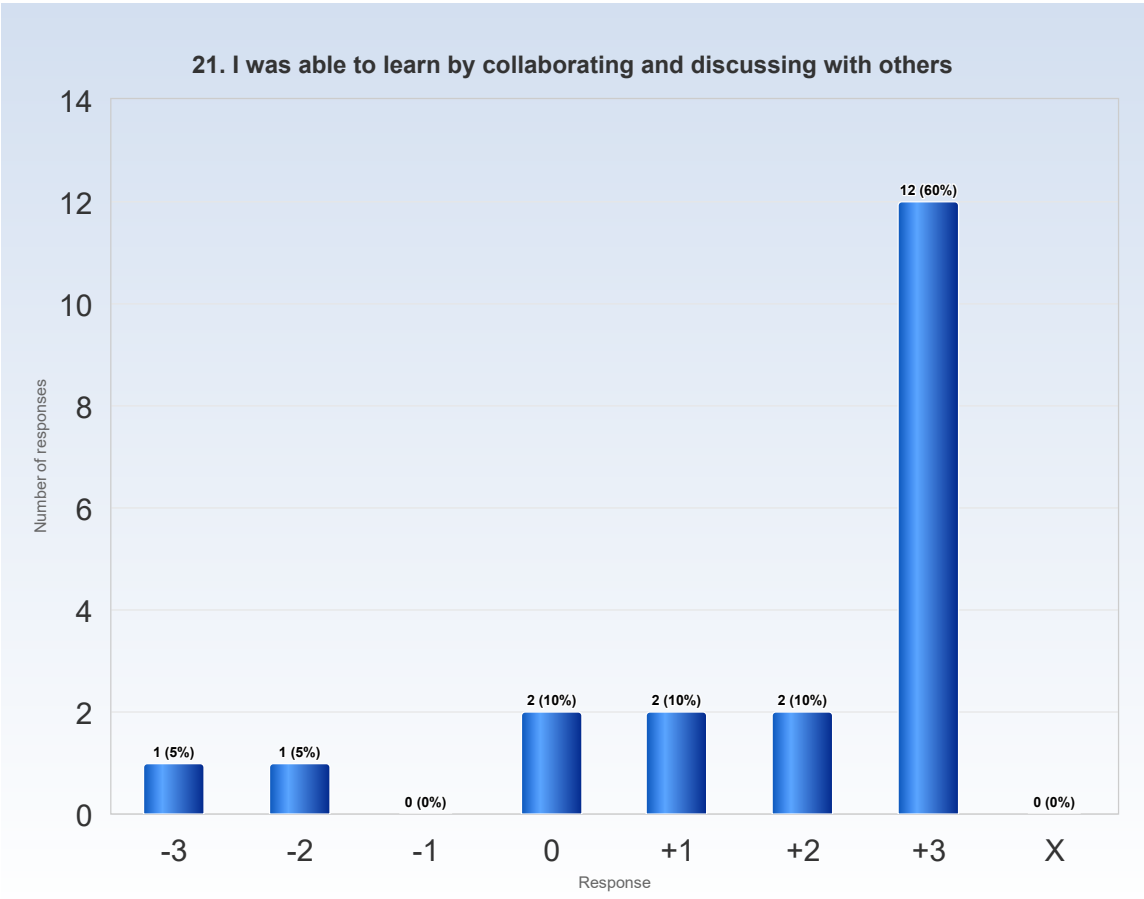
Comments

Comments (My response was: +1)
It was nice with timestepping methods repitition
Some of us students have not studied the course about numerical methods, yet are still able to take this course, so we had to put time into learning those relevant to this course.
Vissa fysiska begrepp under föreläsningarna var tuffa. Speciellt inom fluid simulation



Comments

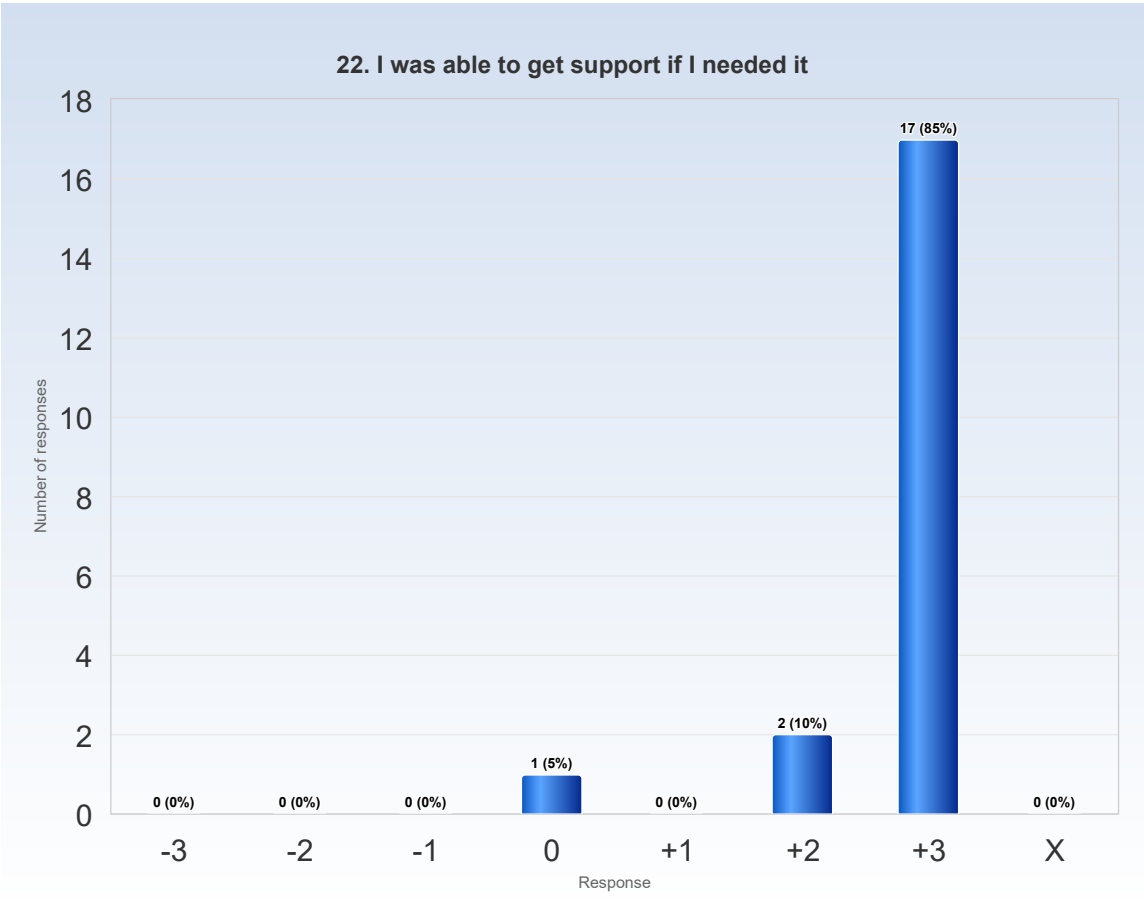
Comments (My response was: +3)
unity



Comments

Comments (My response was: -3)
I was mostly home on Zoom.

Comments (My response was: +3)
hard to find partner


22. I was able to get support if I needed it
Number of responses
18
16
14
12
10
8
6
4
2
0
0 (0%)
0 (0%)
0 (0%)
1 (5%)
0 (0%)
2 (10%)
17 (85%)
0 (0%)
-3
-2
-1
0
+1
+2
+3
X
Response