



Report - SK2760 - 2018-11-10

Respondents: 1
Answer Count: 1
Answer Frequency: 100.00 %

Please note that there is only one respondent to this form: the person that performs the course analysis.

Course analysis carried out by (name, e-mail):

Muhammet Toprak (toprak@kth.se)

COURSE DESIGN

Briefly describe the course design (learning activities, examinations) and any changes that have been implemented since the last course offering.

The course is designed to give a general background to the students about chemical concepts, atomic and molecular models, inter- and intra-molecular forces, Lewis structures, 3D molecular forms, polarity concept and molecular orbital theory. Various solution chemical synthesis techniques for nanomaterials (including solution thermodynamics, solubility equilibria, precipitation, sol-gel synthesis, micro emulsion synthesis, electrochemistry, solution reduction) are presented in detail, followed by real examples from relevant literature. Three assignments are given after some critical learning modules are completed. Students (individual or group of two) are given a project topic on nanomaterials, on which they are required to perform a detailed literature survey, on its significance and various physical and chemical fabrication routes, which is handed in as the final project report and presented orally before the peers.

THE STUDENT'S WORKLOAD

Does the students' workload correspond to the expected level (40 hours/1.5 credits)? If there is a significant deviation from the expected, what can be the reason?

Students seem to have dedicated less time than expected. This could be due to the fact that the pace of course was slow to make sure students from diverse backgrounds can follow the concepts properly to manage the course content with a good level of comprehension. Most of the material was classroom teaching followed by assignments. The students participation was very high in the class and they interacted actively with the teacher most of the time to discuss the unclear points in their mind. This may have also caused less time spent outside of the classroom.

According to the polar diagram majority of students feel that their background was appropriate to follow the course and they have regularly spent time to reflect what they have learnt in the class.

THE STUDENTS' RESULTS

How well have the students succeeded on the course? If there are significant differences compared to previous course offerings, what can be the reason?

Students have done fairly good on the course. All have passed.

OVERALL IMPRESSION OF THE LEARNING ENVIRONMENT

What is your overall impression of the learning environment in the polar diagrams, for example in terms of the students' experience of meaningfulness, comprehensibility and manageability? If there are significant differences between different groups of students, what can be the reason?

Students' response are very positive and content with the course based on their responses, summarized in the polar diagram. There is no significant difference between the responses of male and female students, or Swedish and international students.



ANALYSIS OF THE LEARNING ENVIRONMENT

Can you identify some stronger or weaker areas of the learning environment in the polar diagram - or in the response to each statement - respectively? Do they have an explanation?

The time students have spent on the course should be increased. Students are content about the teaching environment based on their responses given to specific questions. 59% of the students responded the questionnaire. All respondents feel that they worked with interesting issues (Q1); majority (70%) think that the course was challenging in a stimulating way (Q4); 90% find the course open and inclusive (Q6); 80% feel the ILOs helped them to improve their learning (Q7); 80% think that the course was designed to support their learning (Q8); All understood the course content (Q9) and they were able to learn from concrete examples (Q10); 80% of the students think that the course activities helped them to achieve ILOs effectively (Q12); 90% feel that their background was sufficient to follow the course (Q17); and that they were able to learn in a way that suited them (Q19). Besides all identify that the support was available whenever they needed (Q22). Although they assess themselves having sufficient background knowledge to follow the course (Q17) they have regularly spent time to reflect what they have learnt (Q18).

ANSWERS TO OPEN QUESTIONS

What emerges in the students' answers to the open questions? Is there any good advice to future course participants that you want to pass on?

Questions and Some of the answers are copied below:

- I really loved how the prof built the foundations from the ground and then built on that, improving our understanding right from the basics.

What was the best aspect of the course?

- The content is very interesting
- The best aspect of the course was the pace, the assignments and the regular feedback on them. I really liked how the problems were discussed and solved in the class.
- I have personally found the lectures dynamic and interesting. Specially, I would highlight the huge number of examples/research on the topic. Sometimes, I get the feeling that the courses just stick to a book and give some theoretical knowledge... However, I have found that some nice ideas which are not easy to find explicitly in books were given in class.
- The interaction with the teacher during the course. It was very easy to ask questions and get a good answer from him.
- The analysis of up-to-date articles and related ability to understand and making one's own ideas.
- The best aspect of the course is the possibility to learn through assignments. These make you understand really what the topic is about, and makes you reflect on different issues of the course.
- Doing a research with a subject that we were interested helped me to learn more about it and also we had to read several articles to find the best ones for our presentation and that helped to review some other related articles as well.

What would you suggest to improve?

- A bit more advanced content in terms of nanotechnology...
- I think it was good overall-no suggestion...
- Maybe make the atomic orbitals, lewis structure a bit shorter since for 1st or 2nd year masters this should already be known. This would allow to see more than just sol-gel and micro emulsion techniques which is actually the real interest of this course. Thus spending more time on really chemical methods to synthesise nanomaterials than on the reminders of orbitals and lewis structure and solubility.

What advice would you like to give to future participants?

- Attend lectures and start with the project as soon as they can
- Try to start working in the project at early stages.
- Follow all the lectures and start the project as soon as possible
- To be open and not being afraid to ask things
- Start their project earlier than it is expected. Always be ready to ask for feedbacks in the sessions that is allocated for this purpose.

PRIORITY COURSE DEVELOPMENT

What aspects of the course should primarily be developed? How could these aspects be developed in the short or long term?

It seems that the time students spent on the course can be further improved. A good strategy will be distribution of reading material before and after classes to assure preparation of students, along with more challenging assignments. A questionnaire and a diagnostic test will be implemented in the first lecture to establish the level of the course and depth to spend in fundamental concepts. Online quizzes maybe implemented in the class-hour to follow the students' understanding and give quick feedback without any grading.



OTHER INFORMATION

Is there anything else you would like to add?

No.

Course data 2018-12-10

SK2760 - Chemistry of Nanomaterials, HT 2018 TNTEM

Course facts

Course start:	2018 w.35
Course end:	2018 w.43
Credits:	7,5
Examination:	INL1 - Assignment 1, 0.5, Grading scale: P, F INL2 - Assignment 2, 0.5, Grading scale: P, F INL3 - Assignment 3, 0.5, Grading scale: P, F LAB1 - Laboratory work, 0.5, Grading scale: P, F RAPP - Project Report, 2.0, Grading scale: A, B, C, D, E, FX, F TENA - Exam - oral, 3.5, Grading scale: A, B, C, D, E, FX, F
Grading scale:	A, B, C, D, E, FX, F

Staff

Examiner:	Muhammet Toprak <toprak@kth.se>
Course responsible teacher:	Muhammet Toprak <toprak@kth.se>
Teachers:	Muhammet Toprak <toprak@kth.se>
Assistants:	Carmen Vogt <carmenma@kth.se>

Number of students on the course offering

First-time registered:	0
Total number of registered:	16

Achievements (only first-time registered students)

Pass rate ¹ [%]	<i>There are no course results reported</i>
Performance rate ² [%]	<i>There are no course results reported</i>
Grade distribution ³ [%, number]	<i>There are no course results reported</i>

1 Percentage approved students

2 Percentage achieved credits

3 Distribution of grades among the approved students

SK2760 - Chemistry of Nanomaterials, HT 2018

Doktorand

Course facts

Course start:	2018 w.35
Course end:	2018 w.43
Credits:	7,5
Examination:	INL1 - Assignment 1, 0.5, Grading scale: P, F INL2 - Assignment 2, 0.5, Grading scale: P, F INL3 - Assignment 3, 0.5, Grading scale: P, F LAB1 - Laboratory work, 0.5, Grading scale: P, F RAPP - Project Report, 2.0, Grading scale: A, B, C, D, E, FX, F TENA - Exam - oral, 3.5, Grading scale: A, B, C, D, E, FX, F
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Assistants:	Carmen Vogt <carmenma@kth.se>

Number of students on the course offering

First-time registered:	0
Total number of registered:	1

Achievements (only first-time registered students)

Pass rate ¹ [%]	<i>There are no course results reported</i>
Performance rate ² [%]	<i>There are no course results reported</i>
Grade distribution ³ [% , number]	<i>There are no course results reported</i>

1 Percentage approved students

2 Percentage achieved credits

3 Distribution of grades among the approved students

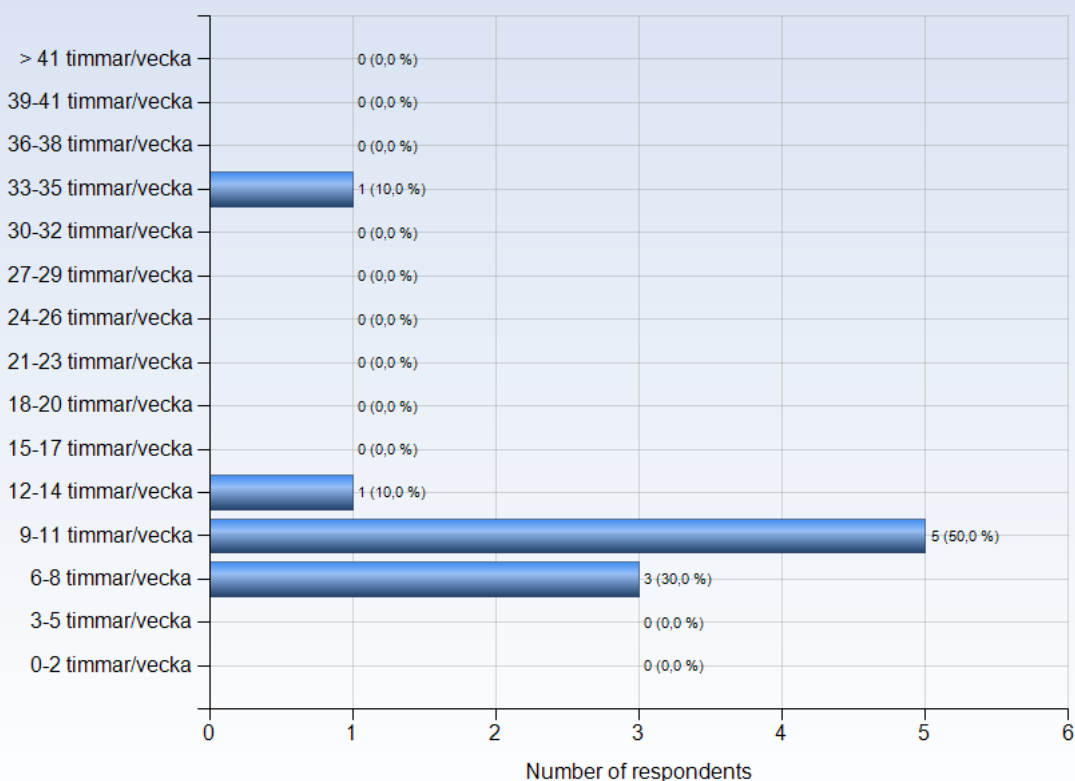


SK2760 - 2018-10-12

Antal respondenter: 17
Antal svar: 10
Svarsfrekvens: 58,82 %

ESTIMATED WORKLOAD

On average, how many hours/week did you work with the course (including scheduled hours)?



Comments

Comments (I worked: 6-8 timmar/vecka)

I think it would be better having more lectures, and using parts of these to do examples of exercises. Sometimes the 2 hours of class felt very long, because it was all theoretical.

The course was not very intensive, was at an easy to understand and to follow pace.

The workload of the assignments was about 4h each. For the project report we needed about 12 effective h individually and about 6 h in group.

Comments (I worked: 9-11 timmar/vecka)

The lecturer is enthusiastic and always willing to discuss with students.

The first assignment was maybe to big compared to the other two assignments. Moreover, the workload of the three assignments together is not far from the workload of the project yet it is worth 1.5 ECTS to 6 so it does not really reflect the relative importance although I guess that the expectations are not the same for the assignments and the project work.

Jag behöver oftast mindre timmar än andra, och tycker kursen tog en 50% ansträngning. Perfekt!

Comments (I worked: 12-14 timmar/vecka)

The hours spent are in accordance with the course, the balance is fair.



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:

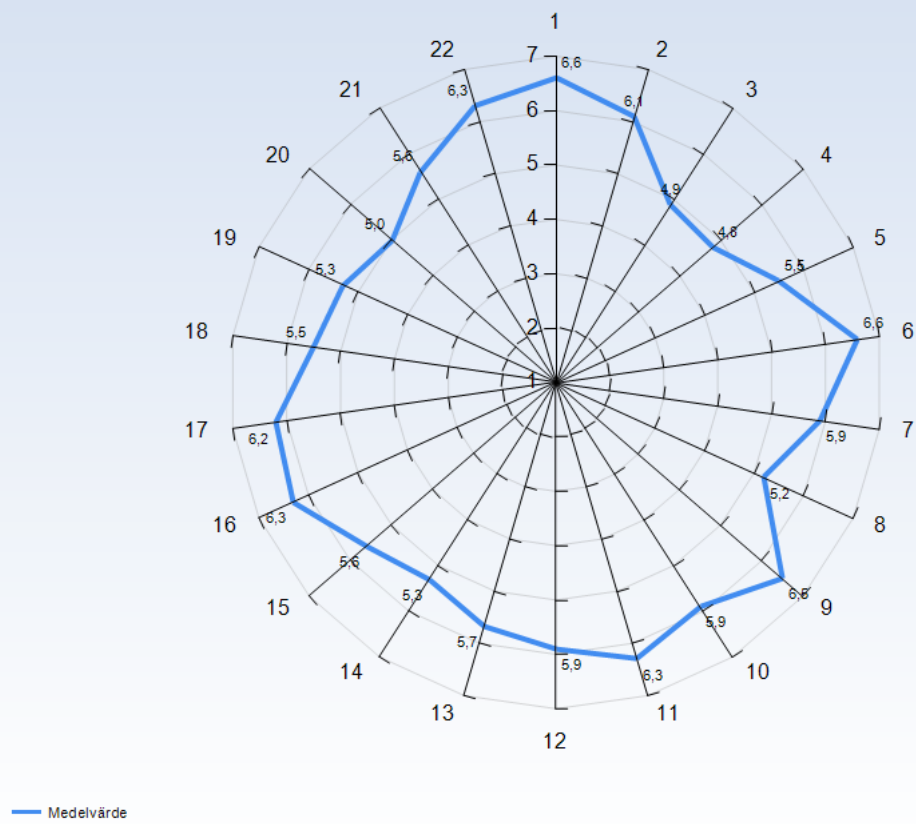
1 = No, I strongly disagree with the statement

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.

Average response to LEQ statements - all respondents





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.

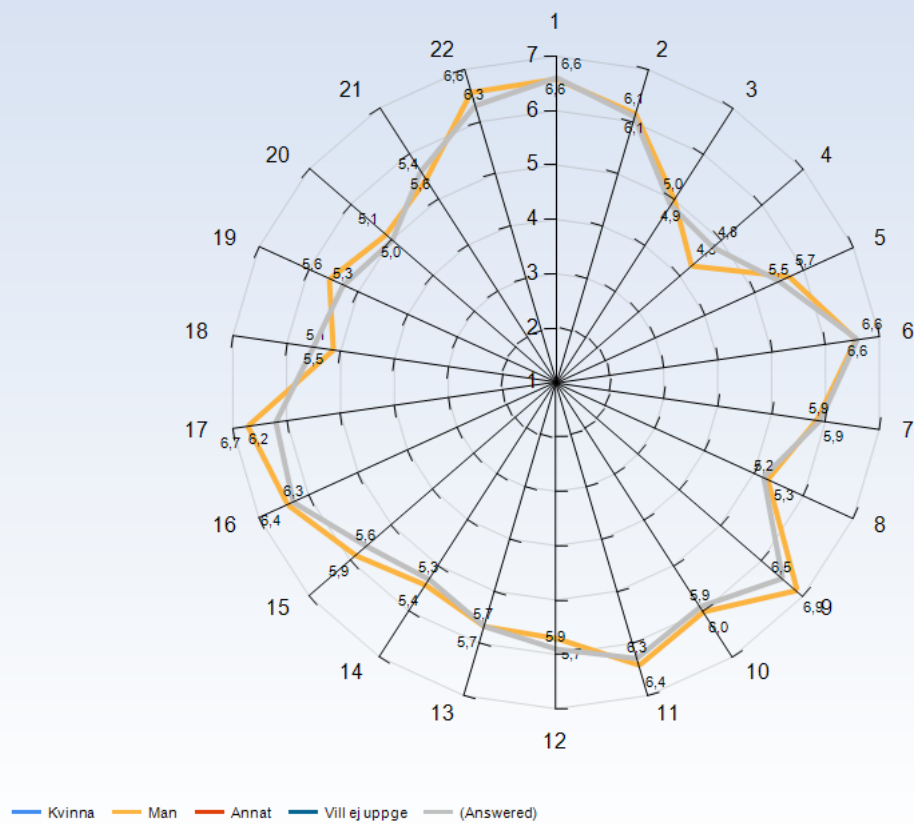
Biggs J. & Tang, C. (2011). *Teaching for Quality Learning at University*, Chapter 6, pp. 95-110. Maidenhead: McGraw Hill.

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.

Average response to LEQ statements - per gender



Comments

Comments (I am: Kvinna)

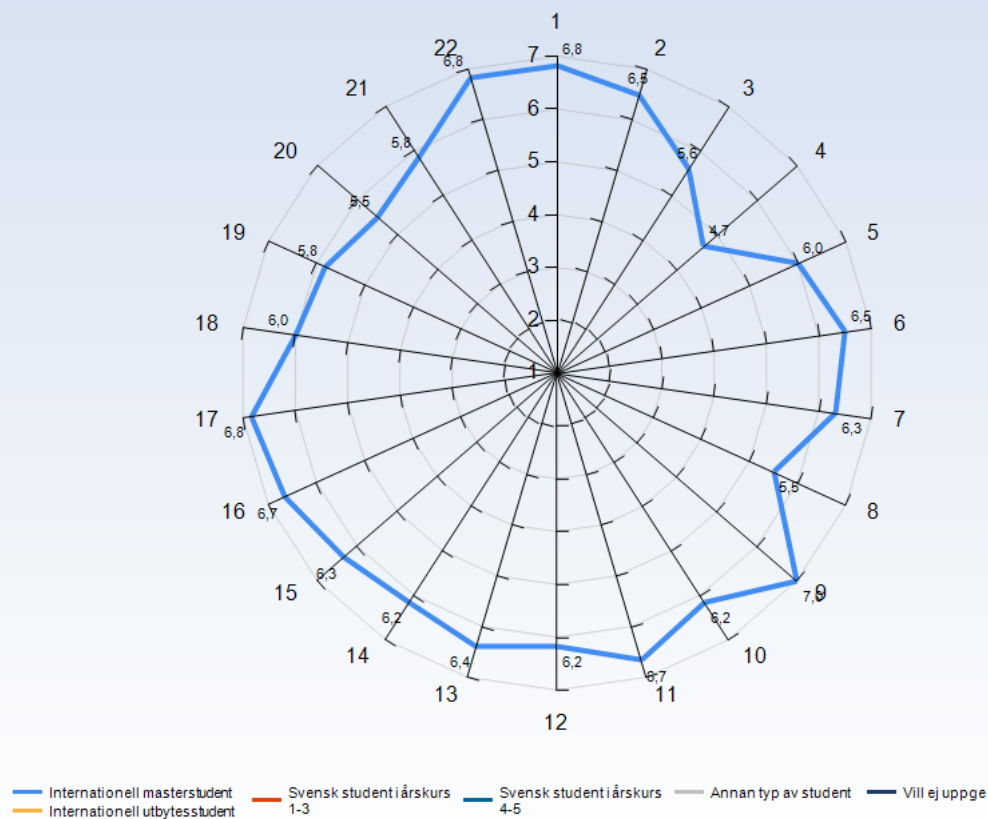
I believe there were no gender distinctions during the course

No comments. I think everyone was evaluated equally in this course regardless of their gender.

Comments (I am: Man)

Doesn't change anything

Average response to LEQ statements - per type of student



Comments

Comments (I am: Internationell masterstudent)

I believe there were no distinctions

There is not a lot of room for chemistry within the nanotech program, thus, in my opinion this course is really interesting to learn about things that are not commented anywhere else.

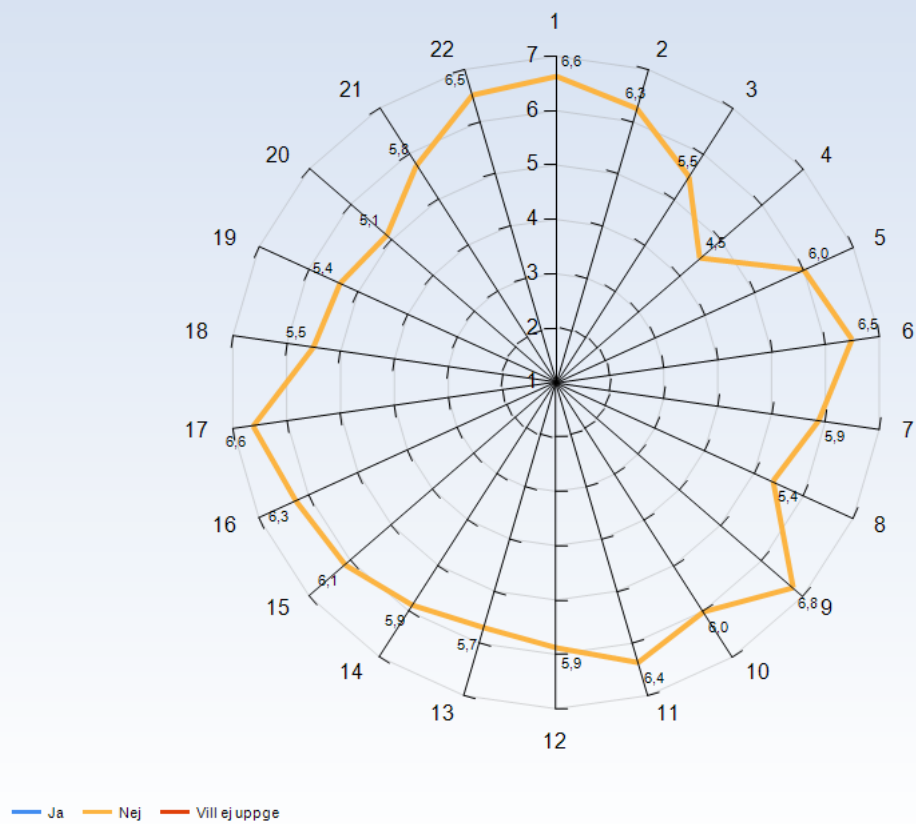
Comments (I am: Internationell utbytesstudent)

No problems to follow the course and for understanding the topics.

Comments (I am: Svensk student i årskurs 4-5)

Jag studerar halvtid, en kurs i taget.

Average response to LEQ statements - per disability



Comments

Comments (My response was: Ja)

Jag kämpar med ptsd, utmattningssyndrom och har vissa autistiska drag som påverkar hur jag lär mig.



GENERAL QUESTIONS

What was the best aspect of the course?

What was the best aspect of the course? (I worked: 6-8 timmar/vecka)

The content is very interesting

The best aspect of the course was the pace, the assignments and the regular feedback on them. I really liked how the problems were discussed and solved in the class.

I have personally found the lectures dynamic and interesting. Specially, I would highlight the huge number of examples/research on the topic. Sometimes, I get the feeling that the courses just stick to a book and give some theoretical knowledge... However, I have found that some nice ideas which are not easy to find explicitly in books were given in class.

What was the best aspect of the course? (I worked: 9-11 timmar/vecka)

It was easy to follow

The interaction with the teacher during the course. It was very easy to ask questions and get a good answer from him.

The analysis of up-to-date articles and related ability to understand and making one's own ideas.

What was the best aspect of the course? (I worked: 12-14 timmar/vecka)

The best aspect of the course is the possibility to learn through assignments. These make you understand really what the topic is about, and makes you reflect on different issues of the course.

What was the best aspect of the course? (I worked: 33-35 timmar/vecka)

Doing a research with a subject that we were interested helped me to learn more about it and also we had to read several articles to find the best ones for our presentation and that helped to review some other related articles as well.

What would you suggest to improve?

What would you suggest to improve? (I worked: 6-8 timmar/vecka)

Dividing the lectures into a theoretical part and a practical part

I would love if the course can be made a little more challenging!

I felt like it would be nice to add more lectures within the course in order to learn more.

Additionally, I found that surfing through the literature while doing the project was a nice way to learn things in your own. Thus, maybe changing the assignments for another small project would be nice but the assignments were useful to go again through the lectures and implant the knowledge acquired more deeply.

What would you suggest to improve? (I worked: 9-11 timmar/vecka)

A bit more advanced content in terms of nanotechnology, since 80% of the course was just our high school chemistry

Maybe make the atomic orbitals, lewis structure a bit shorter since for 1st or 2nd year masters this should already be known. This would allow to see more than just sol-gel and micro emulsion techniques which is actually the real interest of this course. Thus spending more time on really chemical methods to synthesise nanomaterials than on the reminders of orbitals and lewis structure and solubility.

The initial structure of the lectures. The introductory topics took too much time while a higher focus on synthesis methods would be welcome.

What would you suggest to improve? (I worked: 12-14 timmar/vecka)

I think that the course is well organized

What would you suggest to improve? (I worked: 33-35 timmar/vecka)

I think it was good overall-no suggestion. The only suggestion I can give is that it's better to have the presentation in two or more sessions rather than one long session.

What advice would you like to give to future participants?

What advice would you like to give to future participants? (I worked: 6-8 timmar/vecka)

Attend lectures and start with the project as soon as they can

Try to start working in the project at early stages.

What advice would you like to give to future participants? (I worked: 9-11 timmar/vecka)

Follow all the lectures and start the project as soon as possible

What advice would you like to give to future participants? (I worked: 12-14 timmar/vecka)

To be open and not being afraid to ask things

What advice would you like to give to future participants? (I worked: 33-35 timmar/vecka)

Start their project earlier than it is expected. Always be ready to ask for feedbacks in the sessions that is allocated for this purpose.



Is there anything else you would like to add?

Is there anything else you would like to add? (I worked: 6-8 timmar/vecka)

I really liked taking the course.

Is there anything else you would like to add? (I worked: 33-35 timmar/vecka)

No

SPECIFIC QUESTIONS

RESPONSE DATA

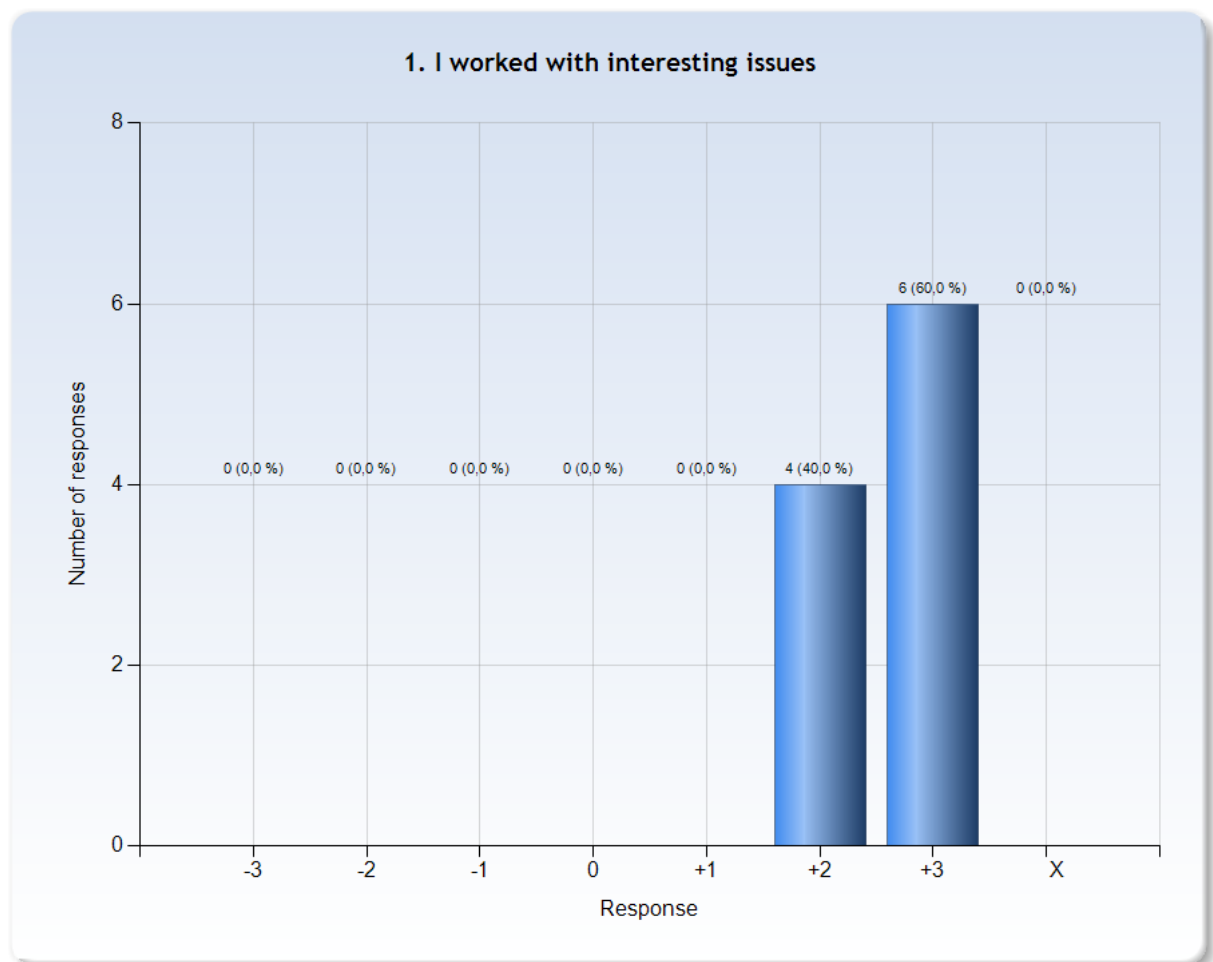
The diagrams below show the detailed response to the LEQ statements. The response scale is defined by:

-3 = No, I strongly disagree with the statement

0 = I am neutral to the statement

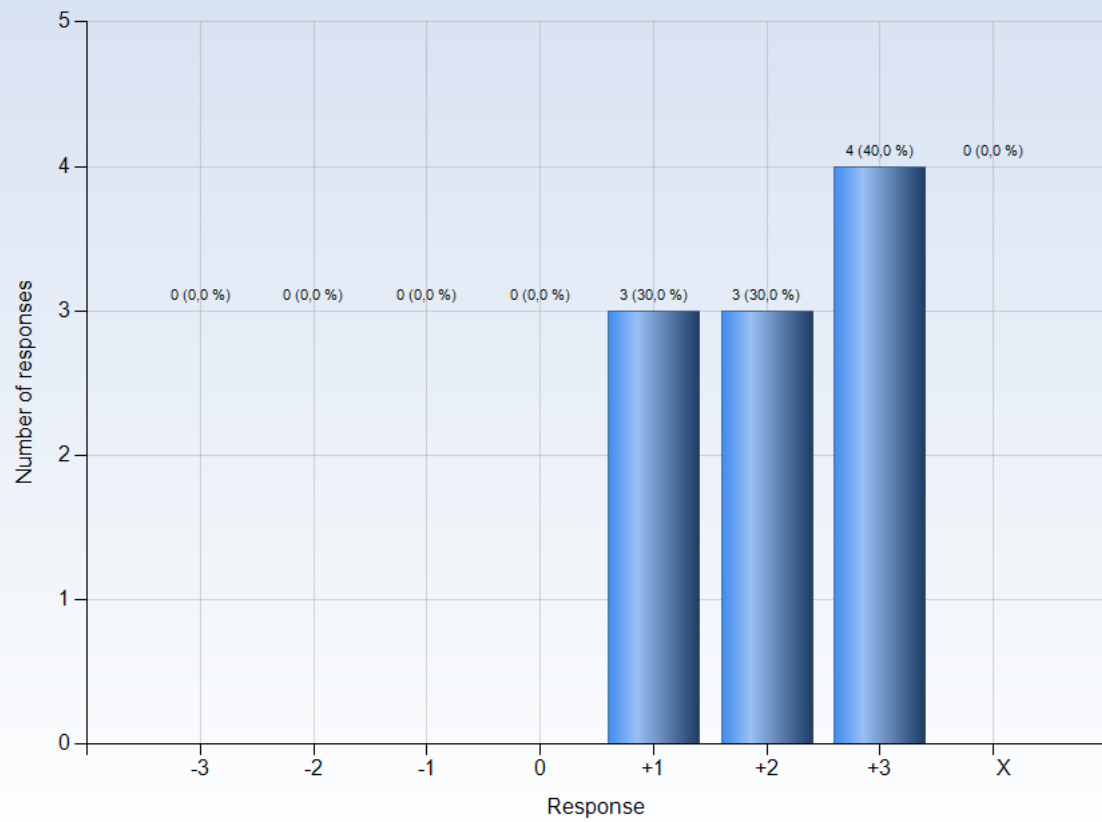
+3 = Yes, I strongly agree with the statement

X = I decline to take a position on the statement



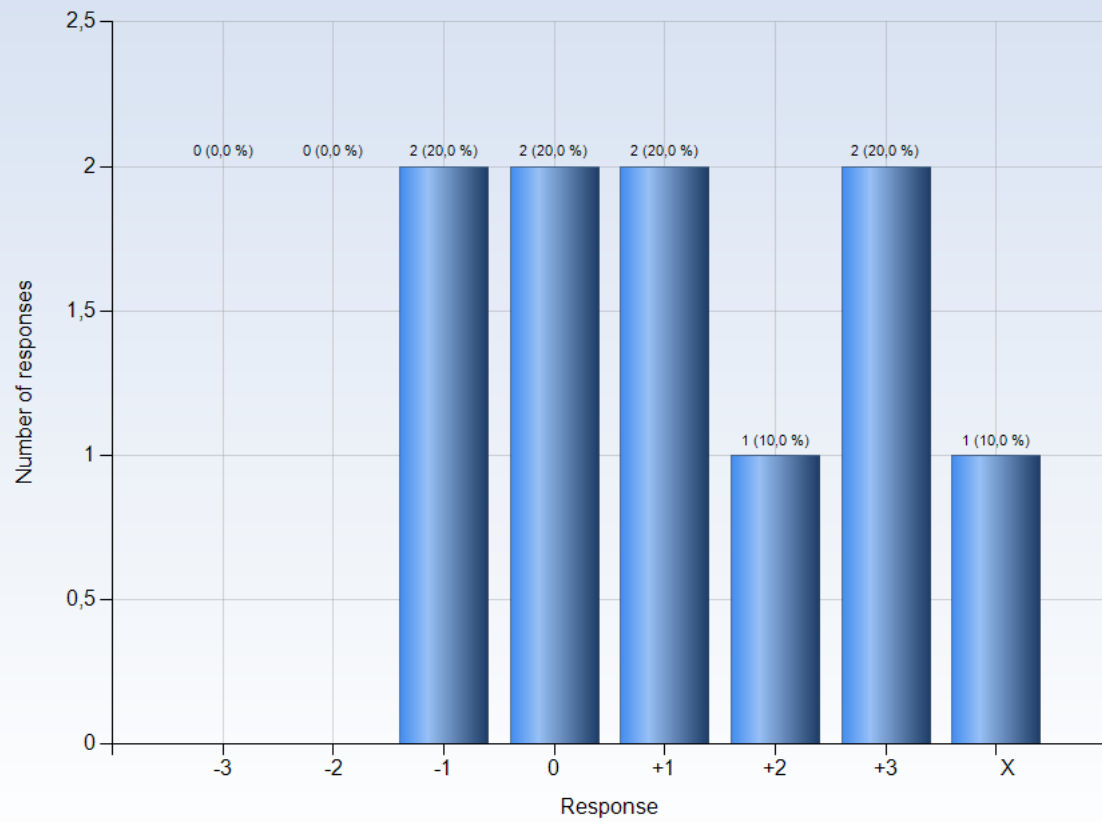
Comments

2. I explored parts of the subject on my own



Comments

3. I was able to learn by trying out my own ideas

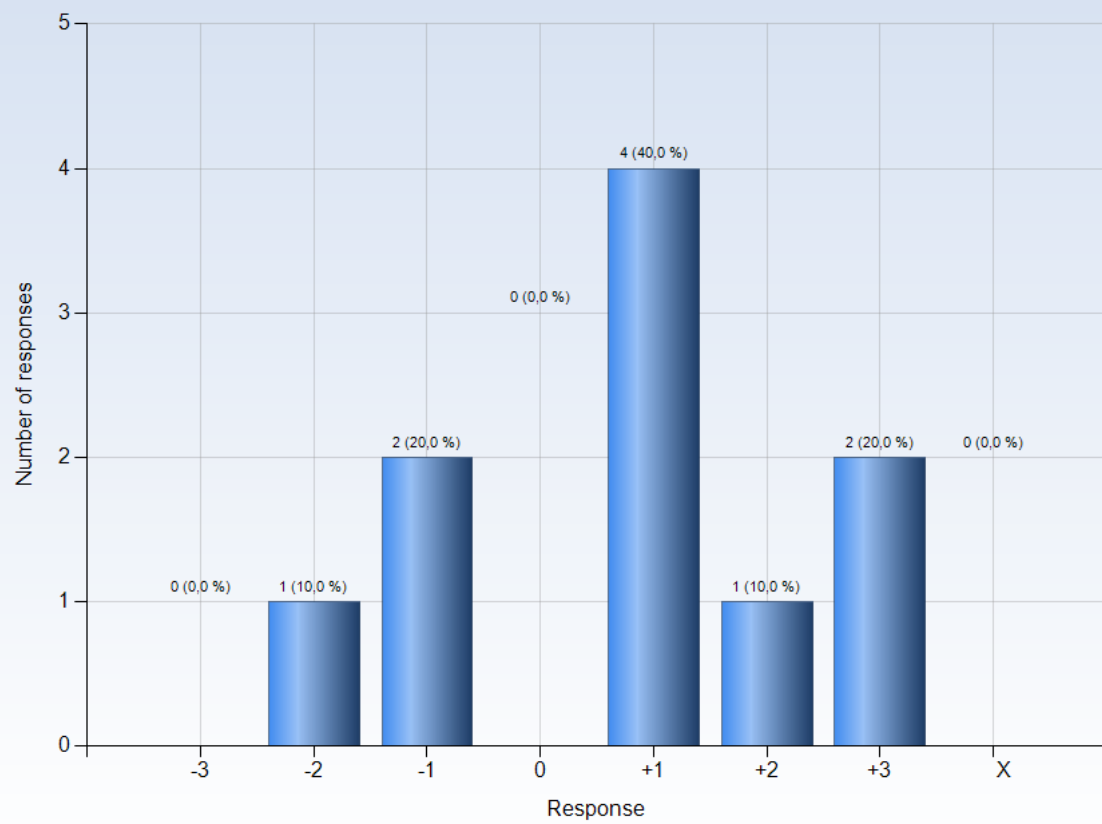


Comments

Comments (My response was: -1)

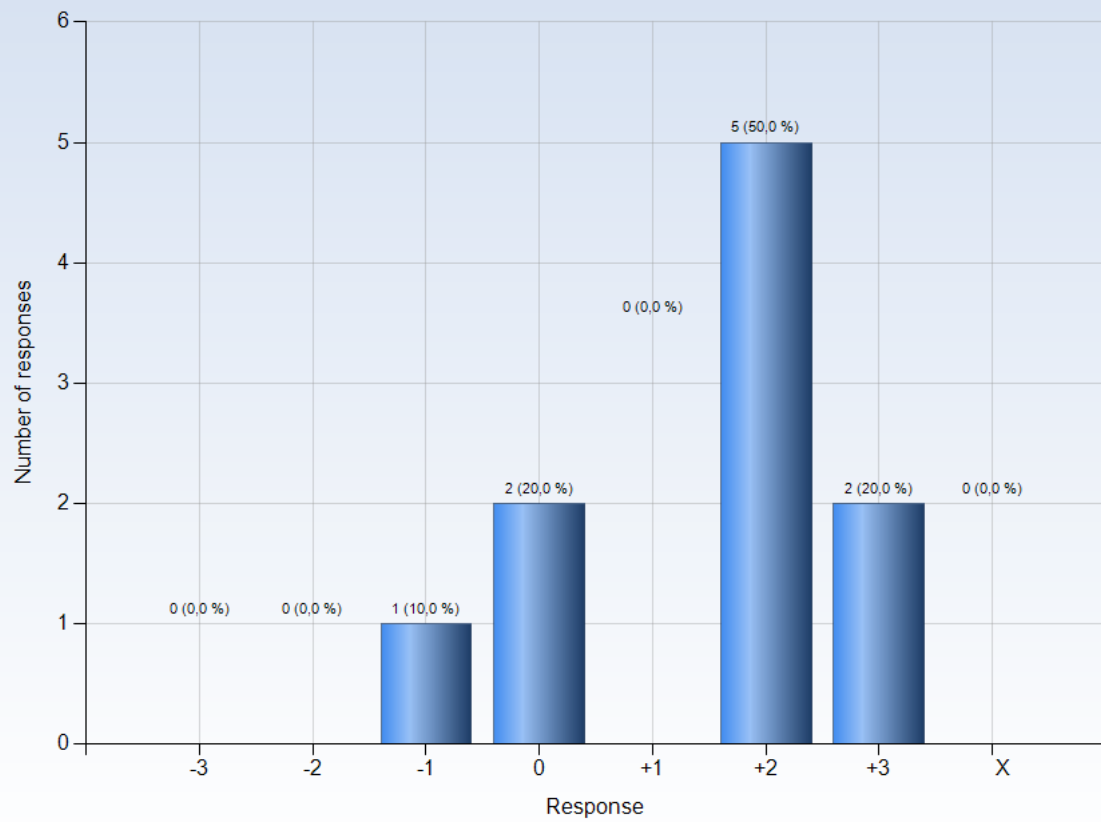
Fanns inte tid

4. The course was challenging in a stimulating way



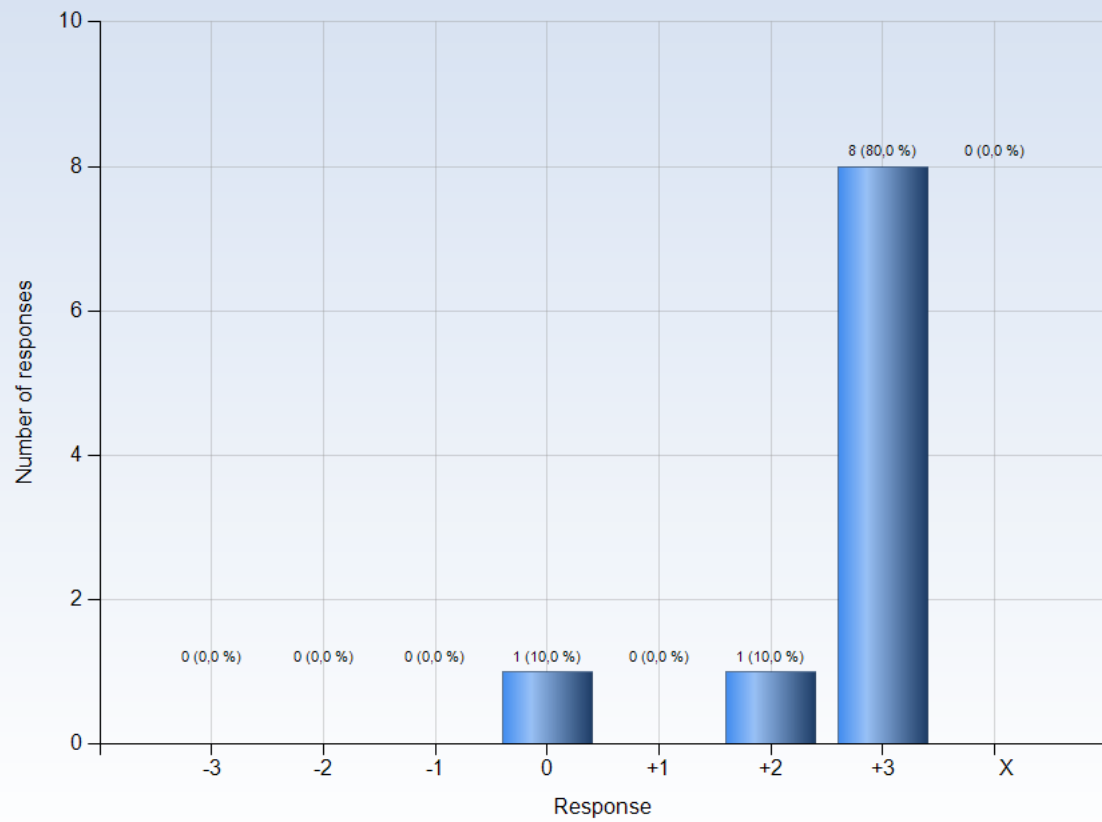
Comments

5. I felt togetherness with others on the course



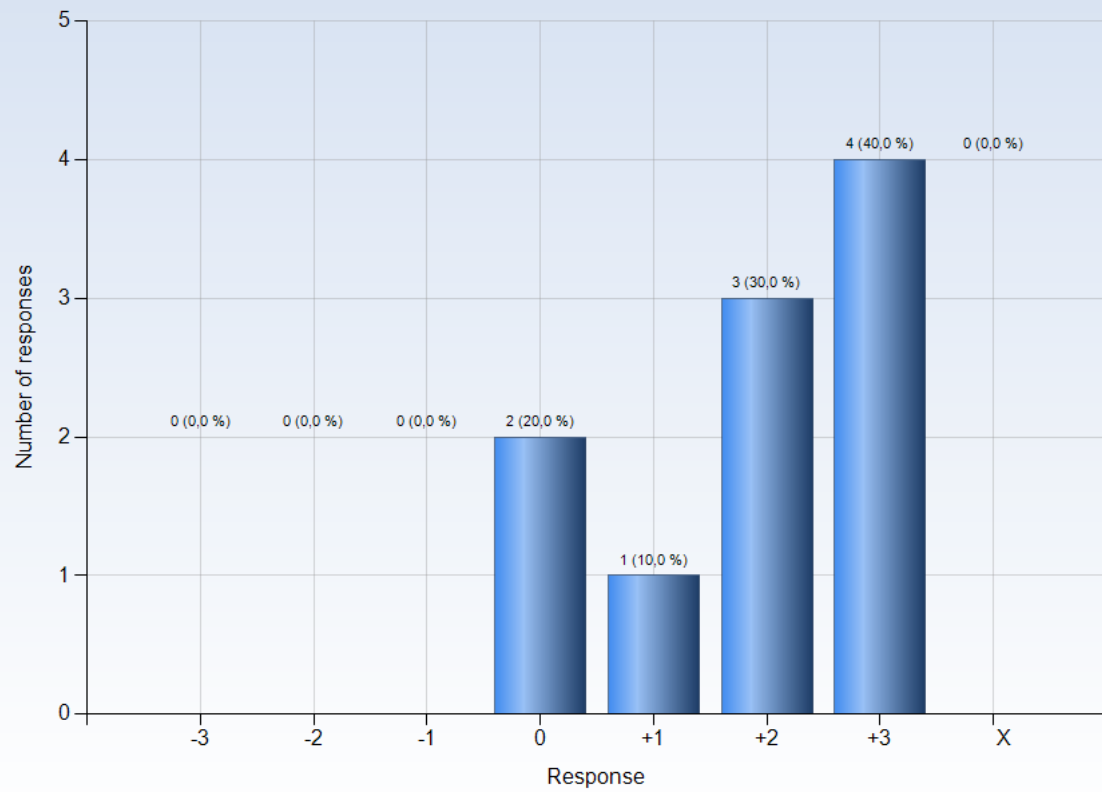
Comments

6. The atmosphere on the course was open and inclusive



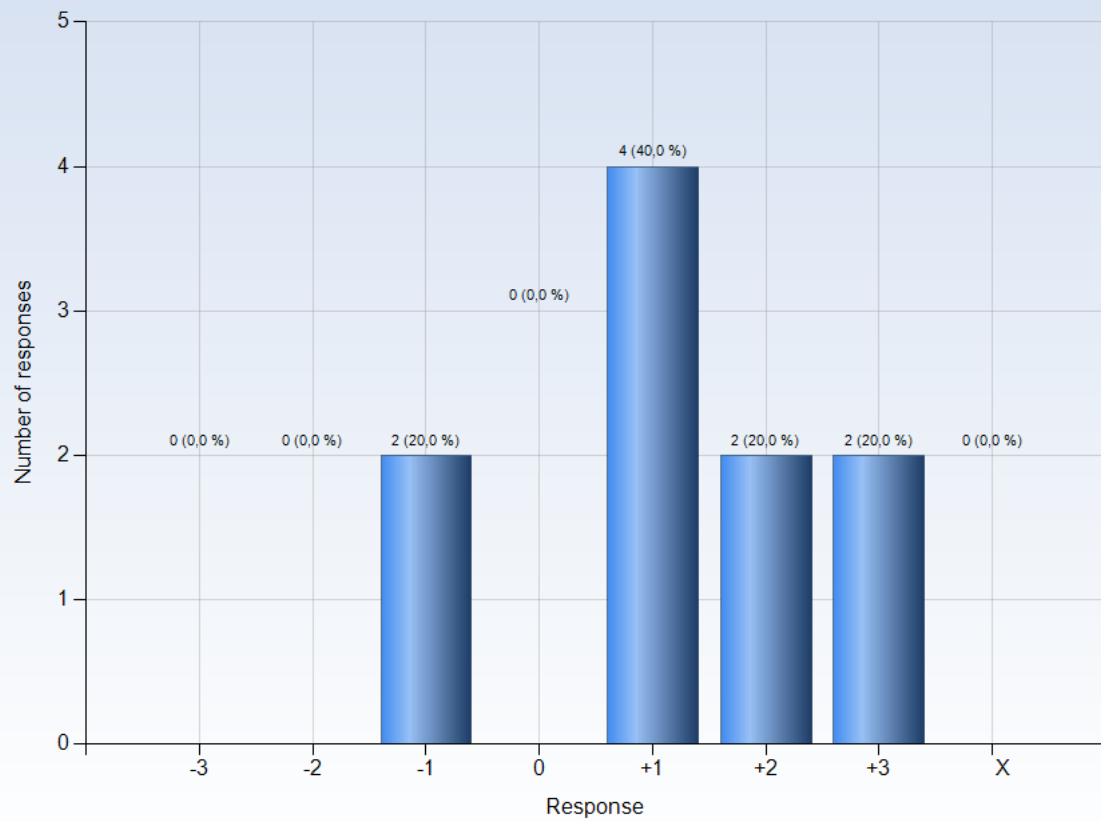
Comments

7. The intended learning outcomes helped me to understand what I was expected to achieve



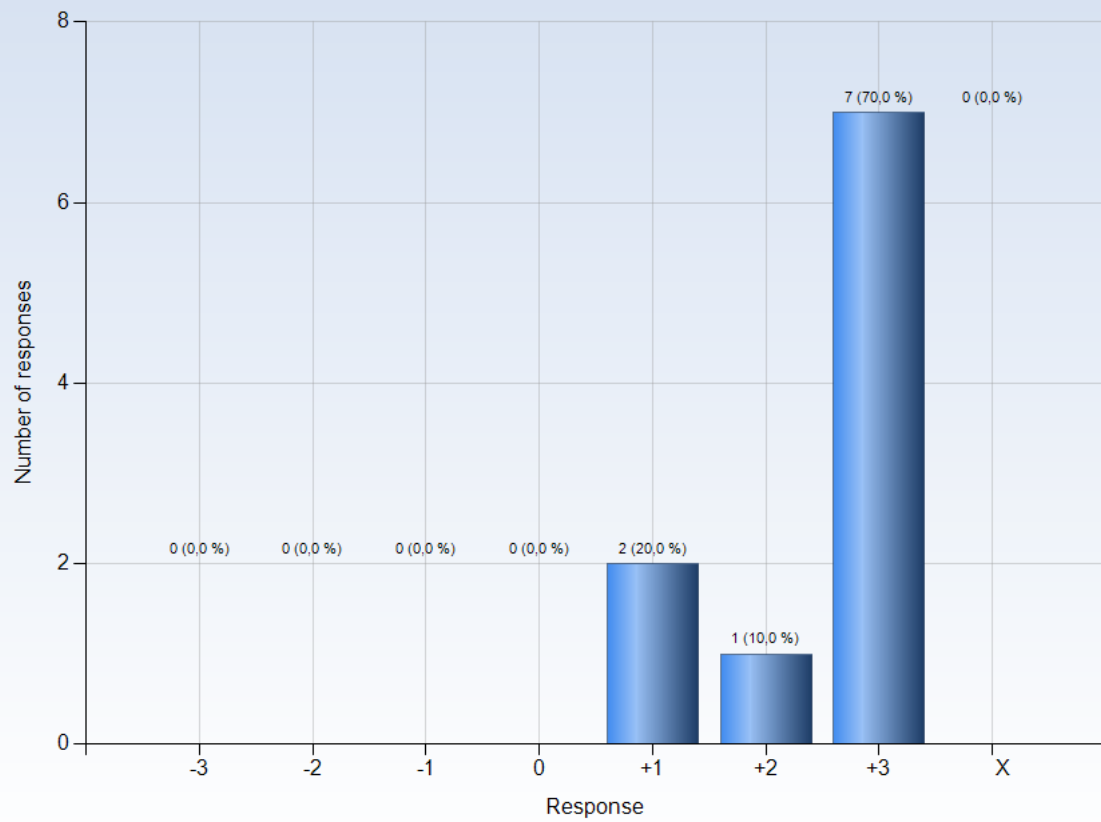
Comments

8. The course was organized in a way that supported my learning



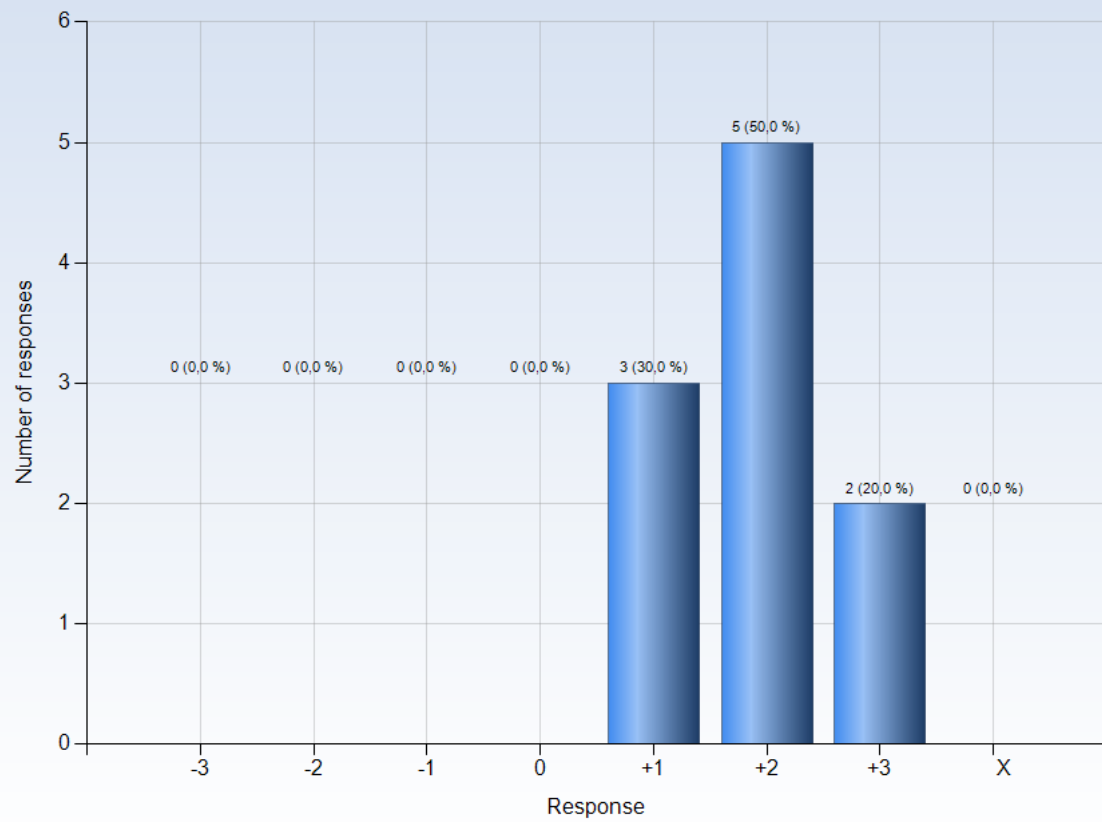
Comments

9. I understood what the teachers were talking about



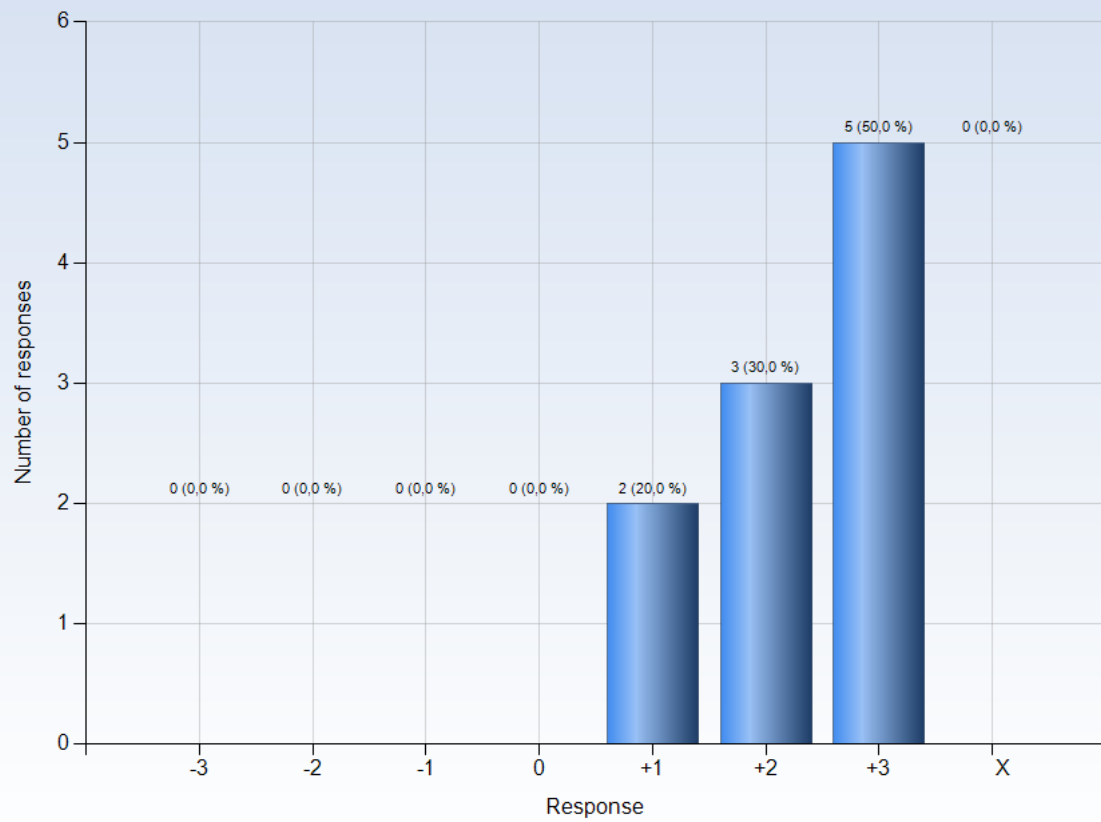
Comments

10. I was able to learn from concrete examples that I could relate to



Comments

11. Understanding of key concepts had high priority

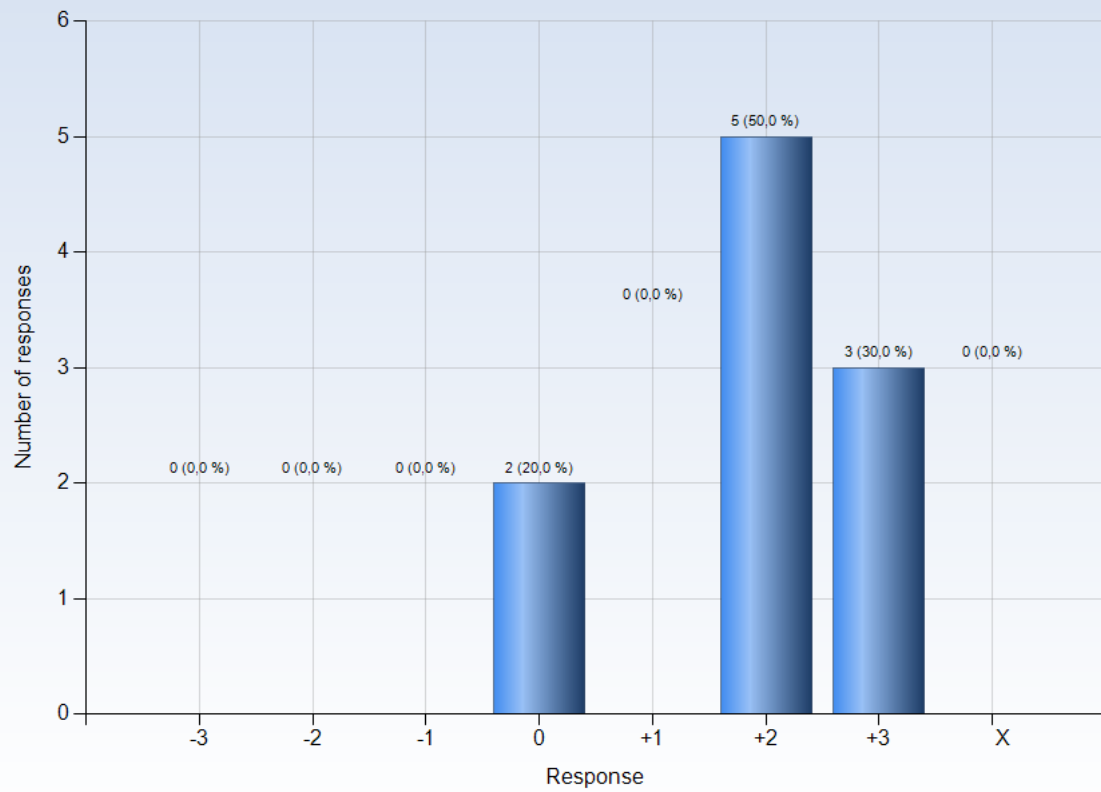


Comments

Comments (My response was: +3)

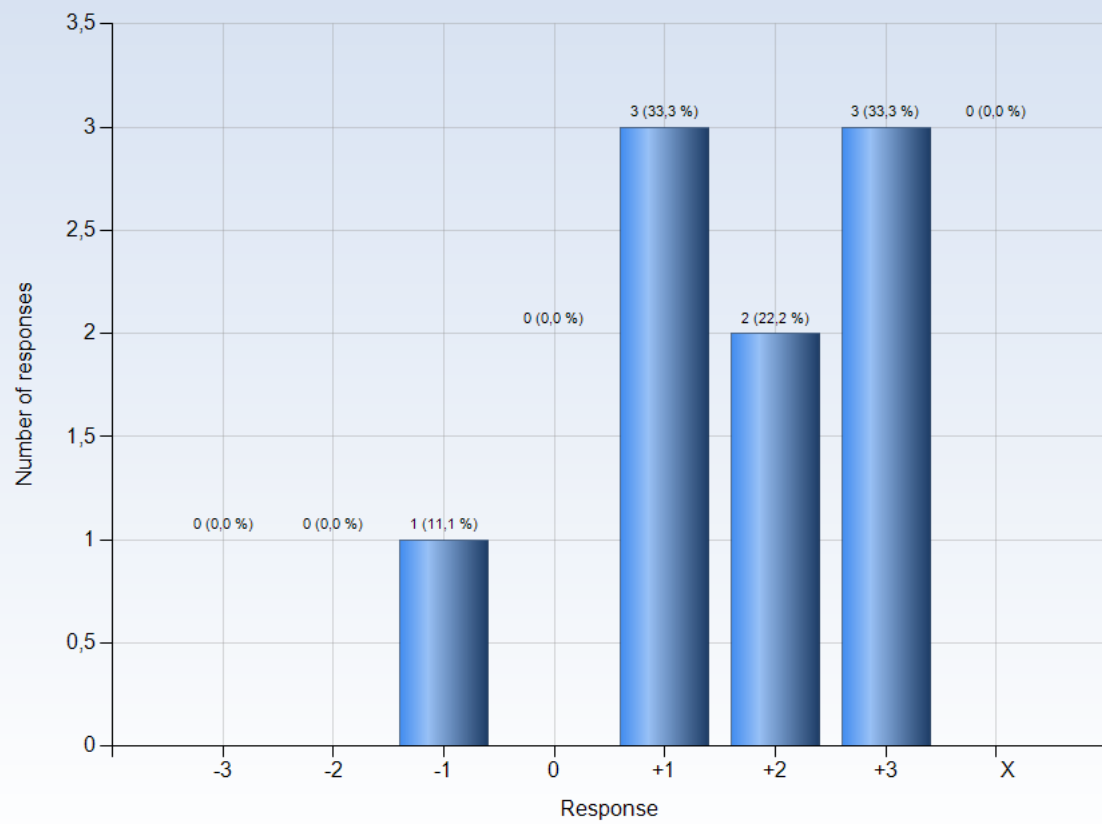
I really loved how the prof built the foundations from the ground and then built on that, improving our understanding right from the basics

12. The course activities helped me to achieve the intended learning outcomes efficiently



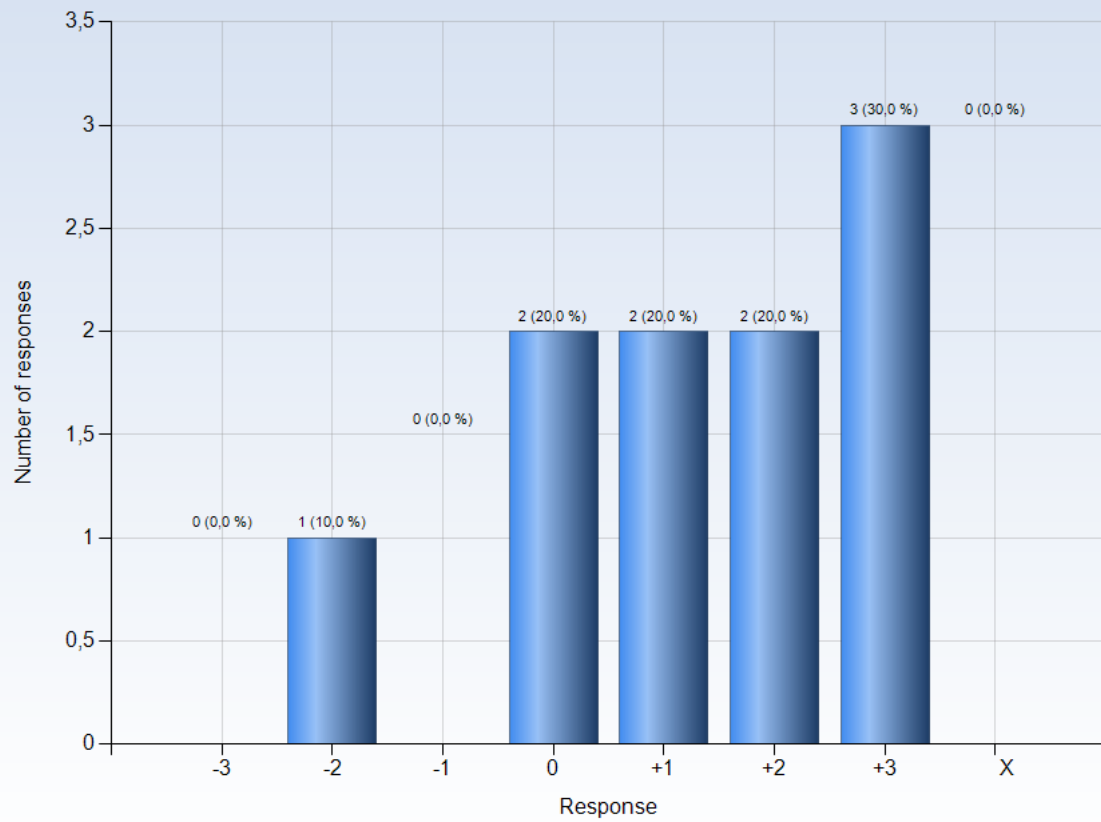
Comments

13. I understood what I was expected to learn in order to obtain a certain grade



Comments

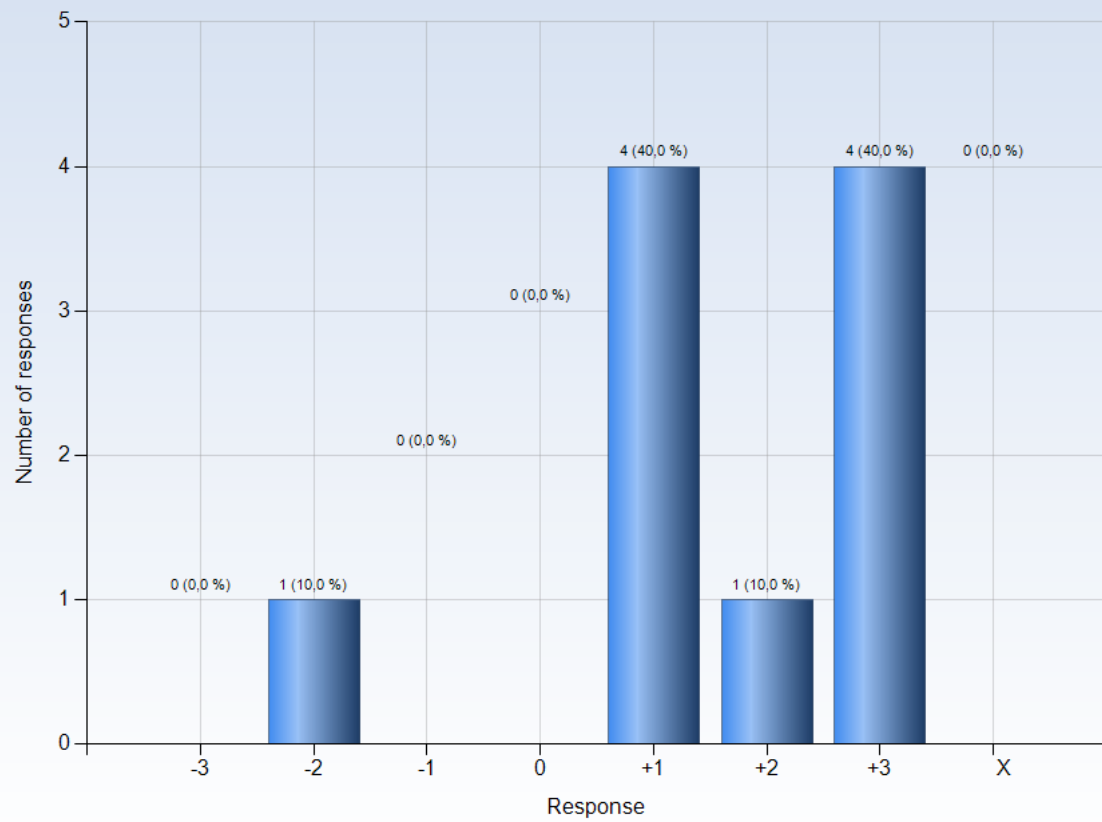
14. I received regular feedback that helped me to see my progress



Comments

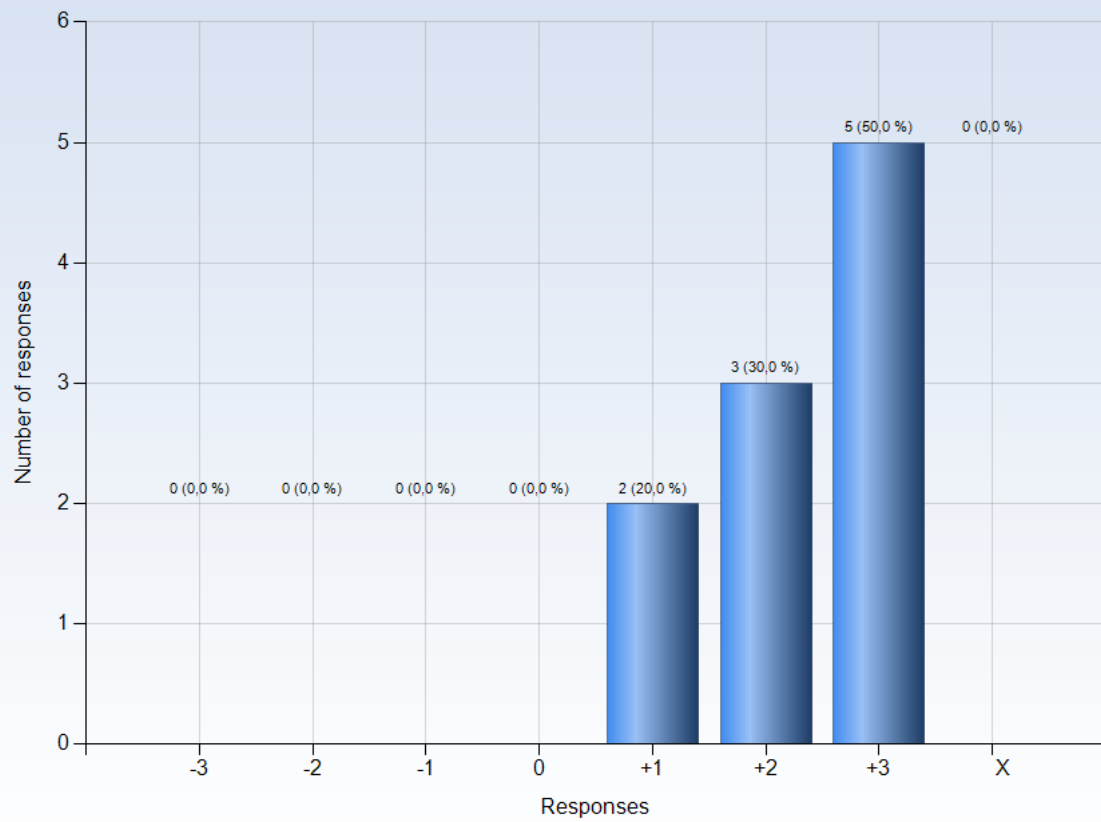
Comments (My response was: -2)
Att få se rättning av assignment vore bra

15. I could practice and receive feedback without being graded



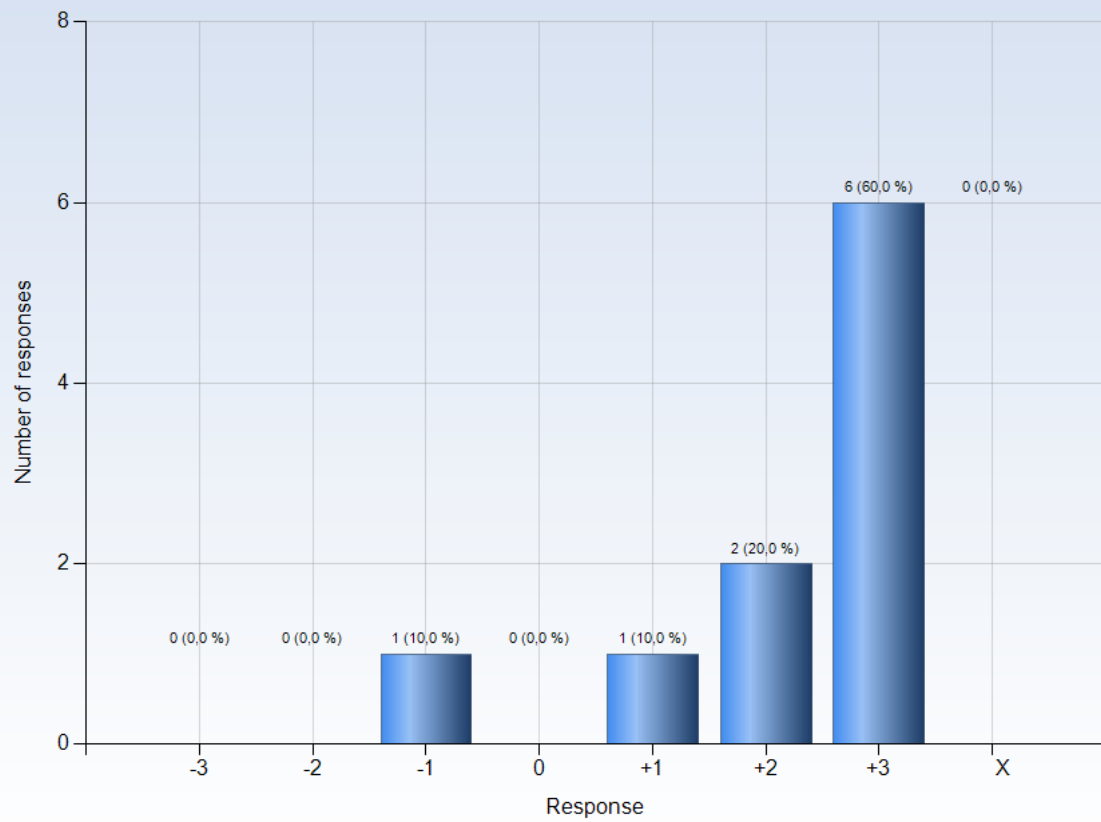
Comments

16. The assessment on the course was fair and honest



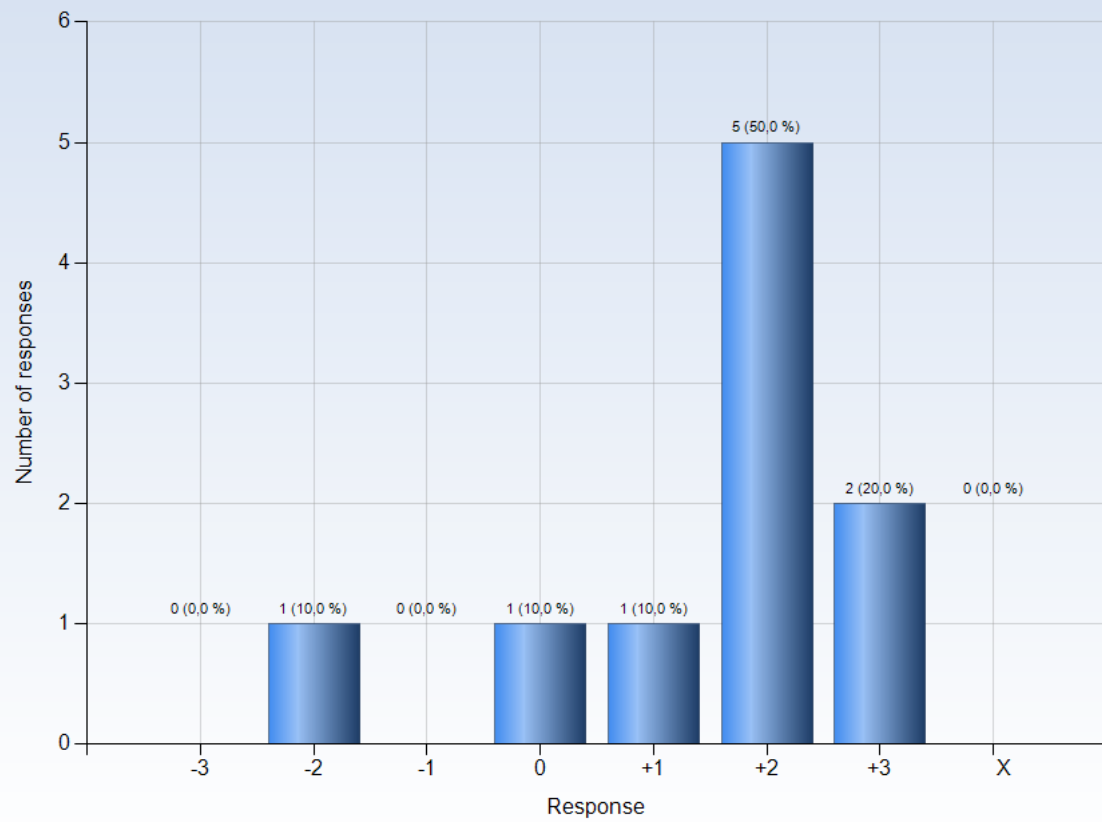
Comments

17. My background knowledge was sufficient to follow the course



Comments

18. I regularly spent time to reflect on what I learned

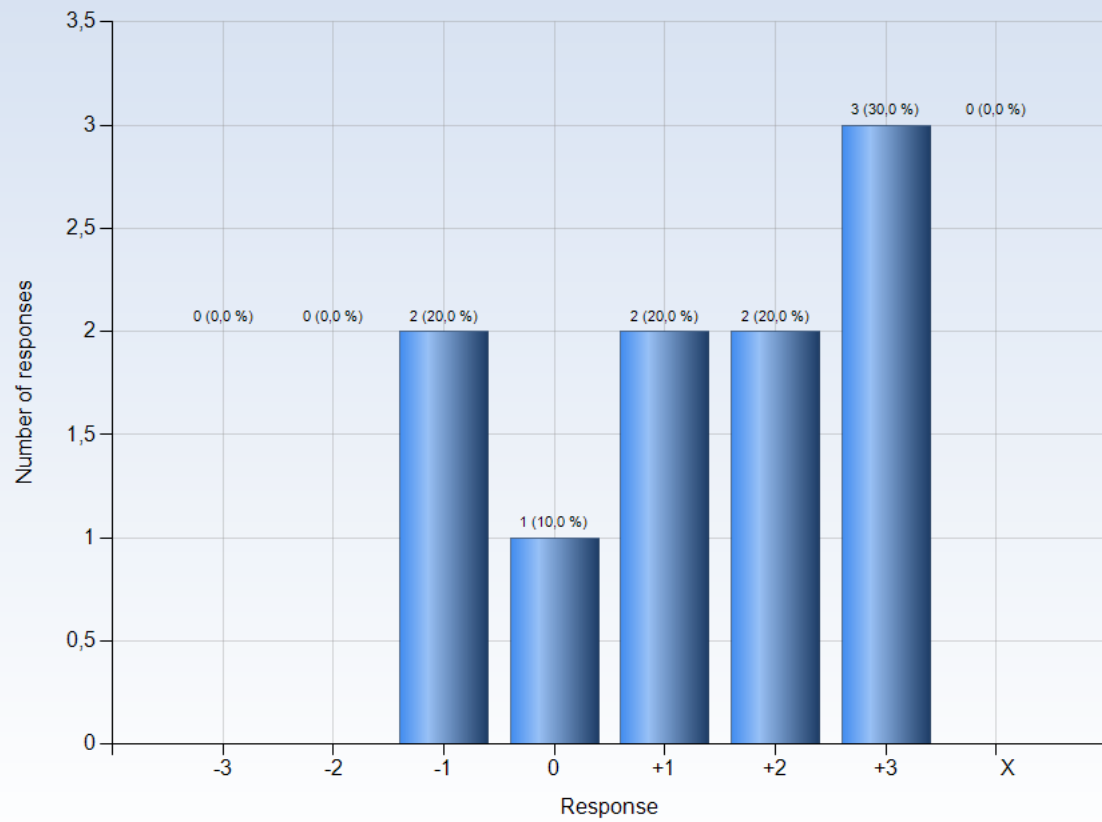


Comments

Comments (My response was: +3)

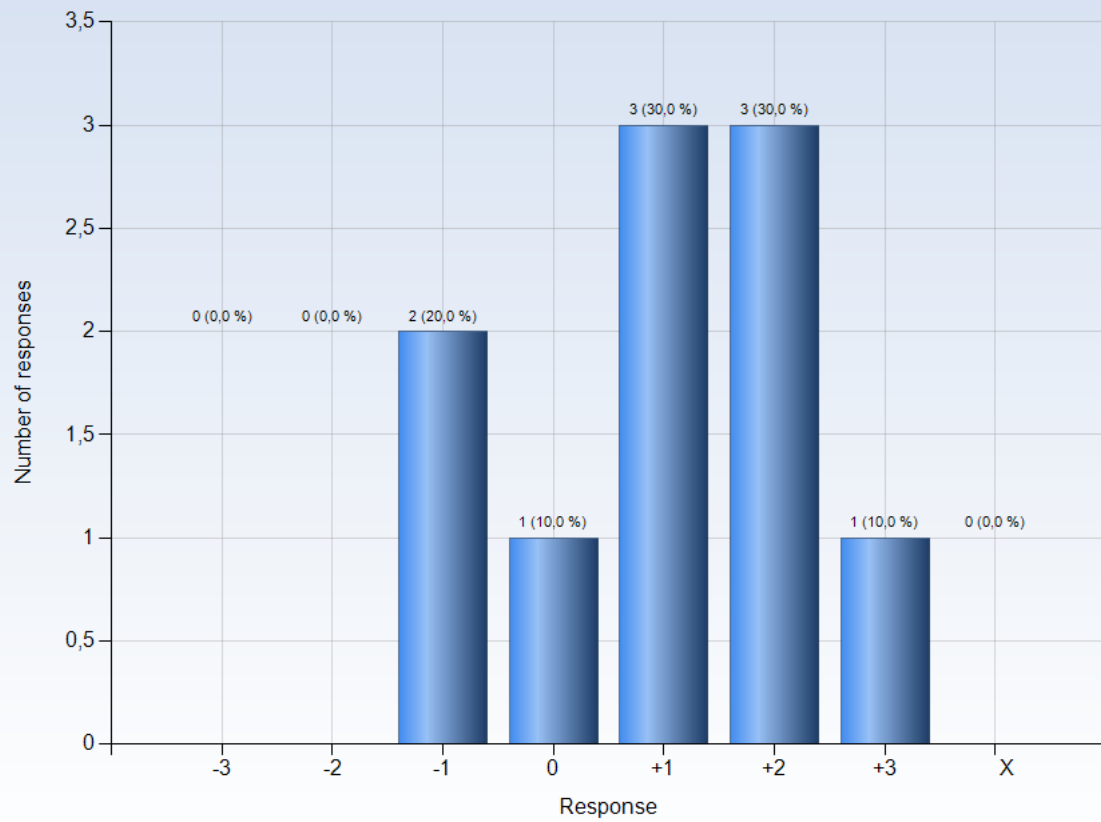
The assignments helped!

19. The course activities enabled me to learn in different ways



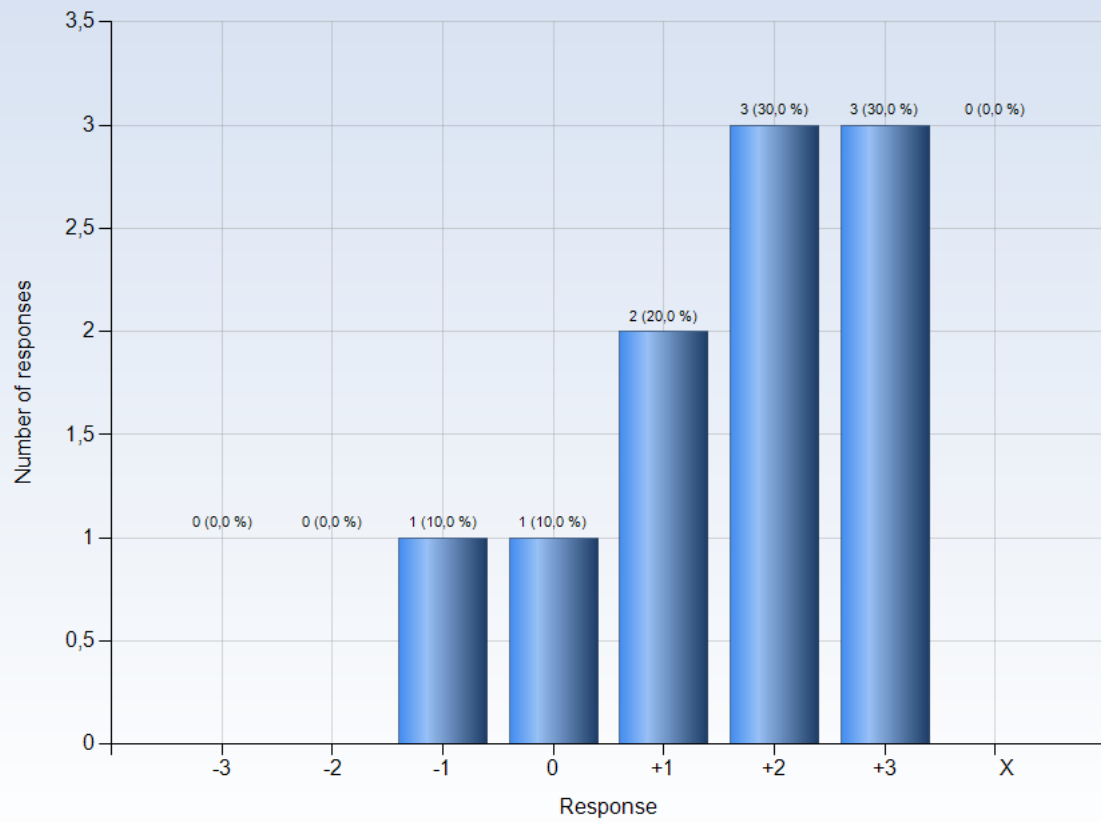
Comments

20. I had opportunities to influence the course activities



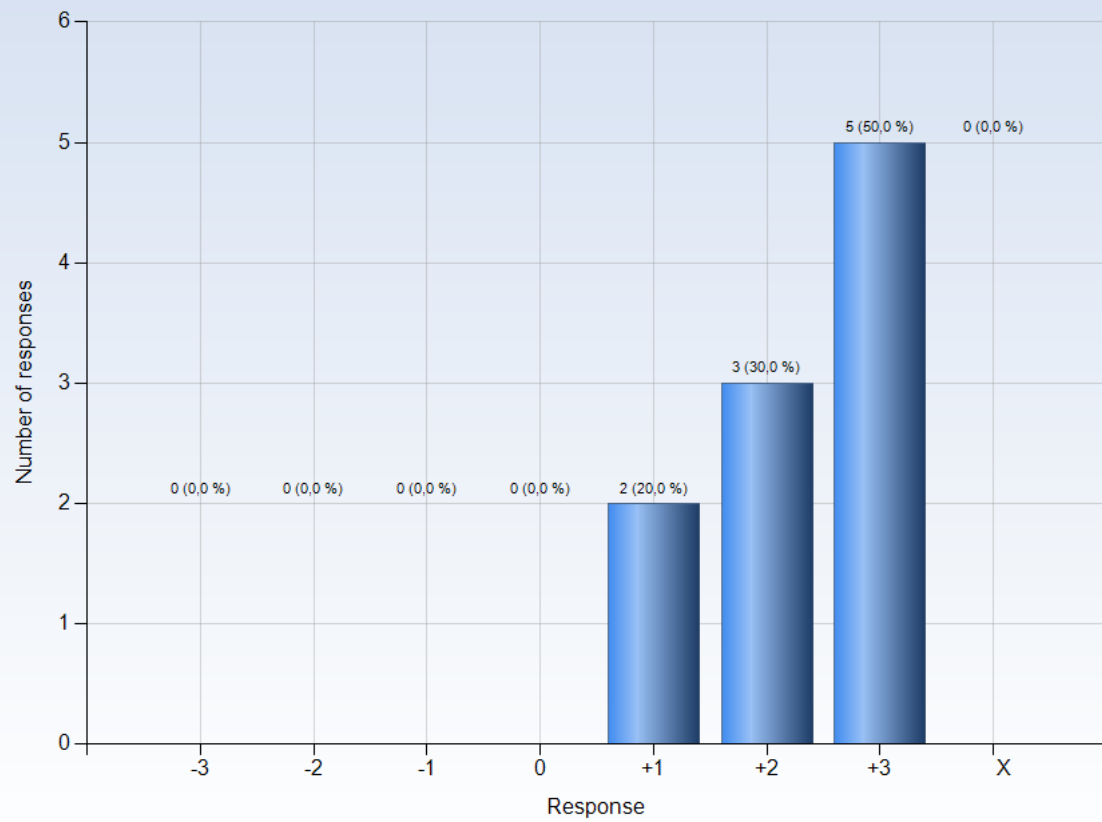
Comments

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



Comments

22. I was able to get support if I needed it



Comments