



Kursanalys - KTH¹

Formulär för kursansvarig.

Kursanalysen utförs under kursens gång.

Nomenklatur: F – föreläsning, Ö – övning, R – räknestuga, L – laboration, S – seminarium)

KURSDATA Obligatorisk del ²

Kursens namn	Kursnummer
Adaptive signal processing	EQ2400
Kurspoäng och poäng fördelat på exam-former	När kursen genomfördes
6	p3 VT16
Examination	
•PRO1 - Projekt, 1,0 hp, betygsskala: P, F	
•PRO2 - Projekt, 1,0 hp, betygsskala: P, F	
• TENA - Skriftlig tentamen, 4,0 hp, betygsskala: A, B, C, D, E, FX, F	
Kursansvarig och övriga lärare	Undervisningstimmar, fördelat på F, Ö, R, L, S
Magnus Jansson (responsible, lecturer)	F24
Arash Owrang (Teaching assistant)	Ö14

Antal registrerade studenter 22

Prestationsgrad efter 1:a examenstillfället, i % 83%

Examinationsgrad efter 1:a examenstillfället, i % 83%

MÅL

Ange övergripande målen för kursen

See course plan

Ange hur kursen är utformad för att uppfylla målen

12 lectures to give an overview of the theory. 7 problem solving sessions led by a TA to illustrate problem solving techniques. This is fewer sessions than in most other courses with the motivation to give more time to students' own practicing of problem solving. Computer exercise material is provided (but not scheduled in class) to practice computer based problem solving and to illustrate theory. Examination consists of 2 projects where semipractical problems should be solved by computer based tools and reported by computer code, demo, and oral presentation in groups of 2 students. The projects also serve the purpose of getting students active during the course. Written exam in the end. The last couple of years we also added weekly voluntary homework assignments on problem solving. Again, with the purpose of promoting students' active learning.

Eventuellt deltagande i länkmöte före kursstart

¹ Instruktioner till kursanalysformulär sist i dokumentet

² Rektors beslut: <http://www.kth.se/info/kth-handboken/II/12/1.html>

Synpunkter från detta

Kursens pedagogiska utveckling I

Beskriv de förändringar som gjorts sedan förra kursomgången. (Berätta även för studenterna vid kursstart)

New project assignment material. We continued using the voluntary weekly homework problems giving bonus points to the exam. Since we have few tutorials we want to stimulate students to start doing problem solving on their own during the entire course period.

Kontakt med studenterna under kursens gång

Studenter i årets kurs-nämnd:	Namn	E-post <small>(lämnas blank vid webbpublicering)</small>
	None except in class	

Resultat av formativ mittkursenkät Only contact with students in class and using KTH social/email.

Resultat av kursmöten

Kontakt med övriga lärare under kursens gång

Kommentarer

Kursenkät; teknologernas synpunkter Obligatorisk del ³

Att komma ihåg:

- 1) Uppmana, mha kursnämnden, till ifyllande av kursenkät i anslutning till / just efter slutexaminationen
- 2) Delge kursnämnden enkäten
- 3) Publicera enkäten under en kortare tid

Period, då enkäten var aktiv 22/03/2016 - 08/04/2016

Frågor, som adderades till standardfrågorna This year we used the LEQ standard questionnaire.

Svarsfrekvens 77% (17 av 22 aktiva studenter)

Förändringar sedan förra genomförandet

Helhetsintryck Very good

Relevanta webb-länkar Course homepage: <https://www.kth.se/social/course/EQ2400/>

Kursansvarigs tolkning av enkät

Positiva synpunkter It appears the students liked most of the course. See scores and comments in the evaluation. Projects are very appreciated.

Negativa synpunkter See eval. No strong negative feedback but minor suggestions for improvements.

Var kursen relevant i förhållande till kursmålen? Yes

Syn på förkunskaperna Adequate

Syn på undervisningsformen Mostly good.

Syn på kurslitt/kursmaterial Mostly positive

Syn på examinationen Projects are considered very useful. Examination is honest, fair and relevant.

³ Rektors beslut: <http://www.kth.se/info/kth-handboken/II/12/1.html>

Speciellt intressanta
kommentarer

Synpunkter från övriga lärare efter avslutad kurs

Vad fungerade bra

Vad fungerade mindre bra

Resultat av kursnämndsmöte efter examination

Studenternas sammanfattn.

Förslag till förändringar

Länk till kursnämndsprot.

Kursansvarigs sammanfattande berättelse

Helhetsintryck See comments under the course evaluation

Positiva synpunkter

Negativa synpunkter

Syn på förkunskaperna

Syn på undervisningsformen

Syn på kurslitt/kursmaterial

Syn på examinationen

Kursens pedagogiska utveckling II ⁴ Obligatorisk del

Hur förändringarna till denna kursomgång fungerade	The voluntary homeworks still seem to work rather well. We also continued using oral presentation/examination of projects.
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Förändringar som bör göras inför nästa kursomgång	Better activation of students in class. Perhaps update computer exercise material. Try to make projects more diverse.
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Övrigt

Kommentarer

⁴ Rektors beslut: <http://www.kth.se/info/kth-handboken/II/12/1.html>

Instruktioner till kursanalysformulär

- 1) Kursanalysformuläret fylls i interaktivt; fälten expanderar automatiskt.
- 2) Fyll i fälten inom en månad efter kursens slut. (Viktigt krav från KTH!)
Skicka sedan till studierektor (som vidarebefordrar till prefekt och programansvarig).
- 3) Försök att ge så kompletta uppgifter som möjligt.
Tänk på att kursanalysen är ett hjälpmedel inte bara för teknologerna, utan även för Dig som lärare.
- 4) Med ”prestationsgrad” avses antalet presterade poäng hittills på kursen (inlämningsuppgifter, projektuppgifter, laborationer etc.) dividerat med antalet möjliga poäng för de registrerade studenterna. Med ”examinationsgrad” avses antalet studenter av de registrerade, som klarat samtliga kurskrav.
Kurssekreteraren hjälper gärna till här.
- 5) Kontakten med studenterna:
 - Etablera kursnämnd under kursens första vecka (minst två studerande, gärna genusbalanserad).
 - Lämplig bonus till kursnämndsdeltagarna är fri kurslitteratur.
 - Om kursnämnd ej kan etableras, skall sektionens studienämndsordförande (SNO) kontaktas genast (se www.ths.kth.se/utbildning/utbildningsradet.html för kontaktuppgifter).
 - Kursnämnden skall sammanträda under kursens gång, exempelvis i halvtid. Har mittkursutvärdering genomförts, skall den diskuteras då.
 - Kursnämnden skall även ha ett möte efter det att studenterna har besvarat kursutvärderingen och kursnämndens studenter fått tillgång till resultaten. Undantaget är kurser i period fyra, där mötet bör ske direkt efter examinationen är avslutad för att analysen skall vara klar innan sommaren.
 - Under det avslutande kursnämndsmötet bör studenterna föra protokoll. Detta protokoll skall kursansvarig få senast en vecka efter mötet.
 - Det är kursansvarigs ansvar att kalla till kursnämndsmöten.

Slutligen, tänk på:

- det är viktigt att kursanalysen tydligt *visar utvecklingen av kursens kvalitet* från ett läsår till nästa.
- möjligheten att lägga ut kursanalysen på kurshemsidan.
- spara kursanalysen till förberedelsearbetet inför nästa kursomgång.

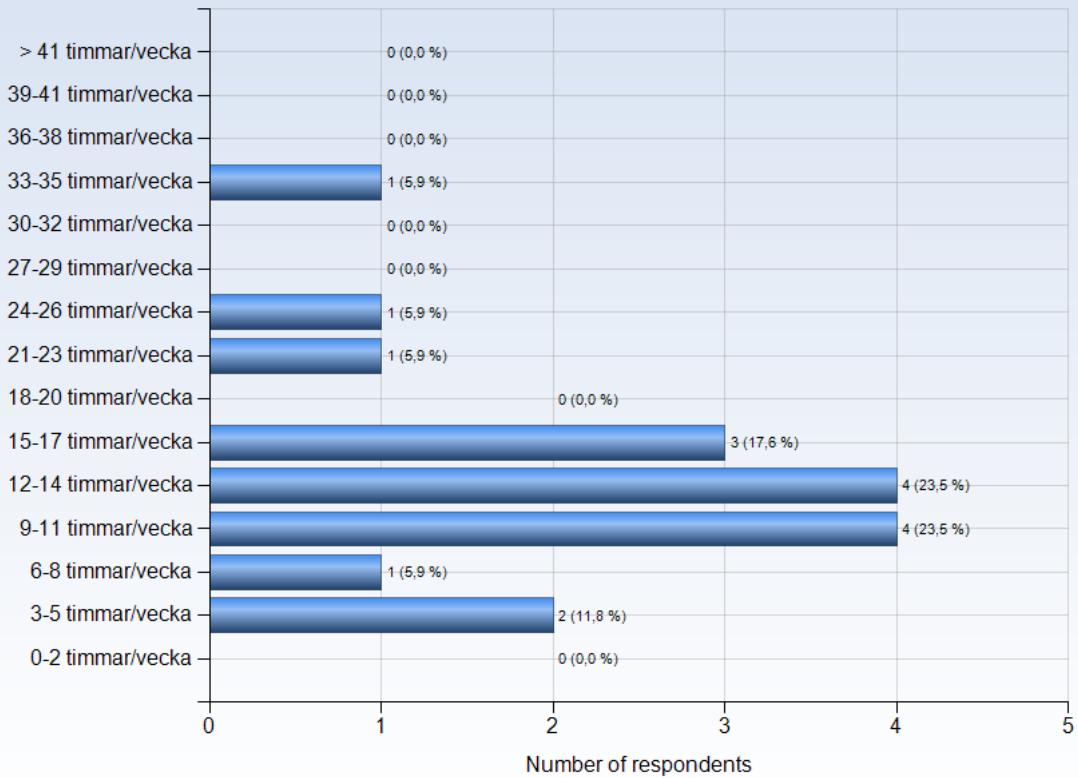


EQ2400 - 2016-03-21

Antal respondenter: 25
Antal svar: 17
Svarsfrekvens: 68,00 %

ESTIMATED WORKLOAD

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



Comments

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

Actually I like learning this course because all materials are very explicit.

Homework took around 3 hours



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:

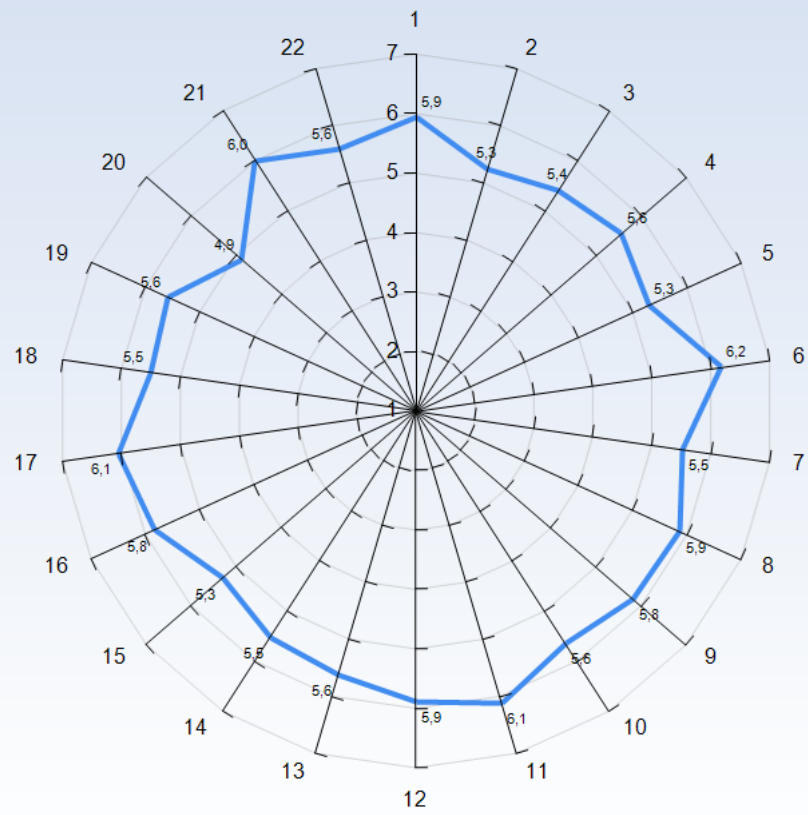
1 = No, I strongly disagree with the statement

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 v3.1.3

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. I understood how the course was organized and what I was expected to do (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 choices

- 19. I was able to learn in a way that suited me (m)
- 20. I had opportunities to choose what to do (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, intriguing or important
- b) We can speculate, try out 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 yet supportive environment
- d) We feel that we are part of a community and believe that other people have faith 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 sufficient background knowledge to manage the present learning situation
- g) We can learn inductively by moving from specific examples and experiences to general principles, rather than the other way around
- h) We are challenged to develop a proper understanding of key concepts and successively create a coherent whole of the content
- i) We believe that the work we are expected to do will help us to reach the intended learning outcomes
- j) We can try, fail, and receive feedback in advance of and separate from any summative judgment of our efforts
- k) We believe that our work will be considered fairly and honestly
- l) We have sufficient time to learn and devote the time necessary to do so



m) We believe that we are in control of our own learning, not manipulated

n) We can work collaboratively 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.

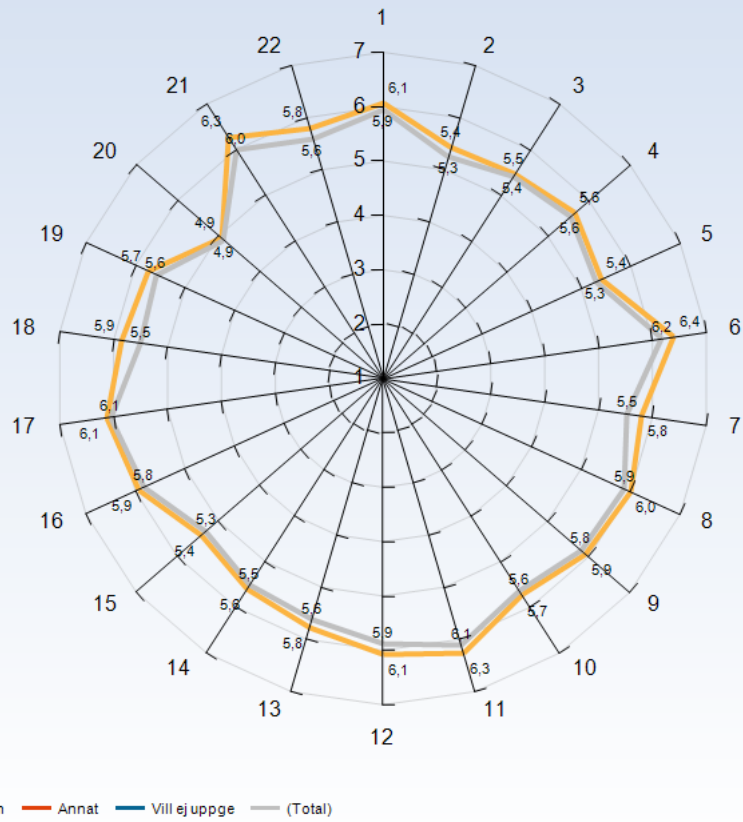
Biggs J. & Tang, C. (2011). *Teaching for Quality Learning at University*, Chapter 6, pp. 95-110. Maidenhead: McGraw Hill.

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.

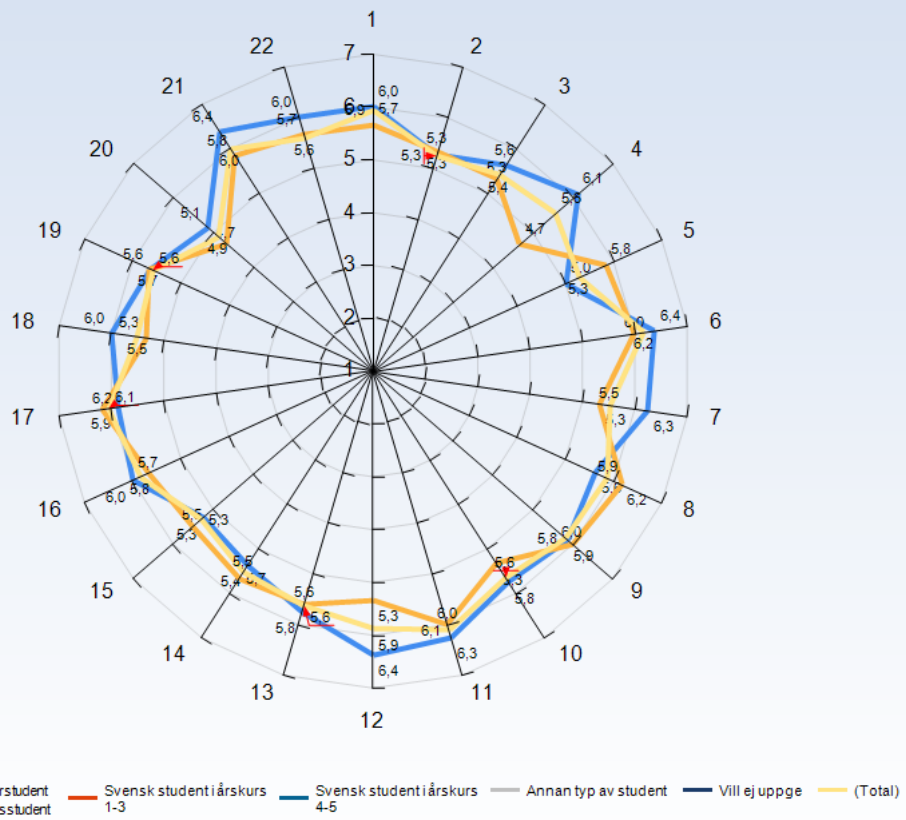
Ramsden, P. (2003). *Learning to Teach in Higher Education*, Chapter 6, pp. 84-105. New York: RoutledgeFalmer.

Average response to LEQ statements - per gender



Comments

Average response to LEQ statements - per type of student



Comments



GENERAL QUESTIONS

What was the best aspect of the course?

What was the best aspect of the course? (I worked: 3-5 timmar/vecka)

Comparing the different methods through the projects

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

Projects and textbook (lecture notes)

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

I like the teacher's lecture style with all handwriting notes on the blackboard. And the teacher is so helpful and patient that I am really appreciated.

Two group projects are the best aspect of this course since they allow me to apply algorithms in order to adaptively obtain the model parameters. Then, I can see how to practically implement the algorithms and apply them to recover the filtered sound.

Projects

The projects

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

Projects, help a lot to understand the lectures.

The projects with a practical application was kind of fun.

What was the best aspect of the course? (I worked: 15-17 timmar/vecka)

Interesting topics and projects

Learning how to make the filters adaptive.

Kalman Filters

What was the best aspect of the course? (I worked: 21-23 timmar/vecka)

The organization of the course was very very good

What was the best aspect of the course? (I worked: 24-26 timmar/vecka)

The two projects were best way to learn course.

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

Projects and home works!

What would you suggest to improve?

What would you suggest to improve? (I worked: 3-5 timmar/vecka)

Maybe present other techniques and aspects of numerical optimisation instead of only focusing on filters

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

I think the topic of the project can be more specific.

Spend more time on adaptive filter

I felt like some of the chapters on the adaptive techniques left out some information/did not go into sufficient depth

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

The Kalman filtering part could have been bigger.

What would you suggest to improve? (I worked: 15-17 timmar/vecka)

The homework projects are too similar maybe some work with images instead, replace 1 homework with something creative.

Also relate some (maybe spectral estimation?) problems from the ones in EQ2300 digital signal processing so you can tie the courses together in a big signal processing package, maybe apply some concepts from that course to this one or something like that.

Maybe more problem solving in class

What would you suggest to improve? (I worked: 21-23 timmar/vecka)

Difficult to say, I would say try to add one more project.

What would you suggest to improve? (I worked: 24-26 timmar/vecka)

Course book should have more examples for better understanding.

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

Tutorials can be improved little.



What advice would you like to give to future participants?

What advice would you like to give to future participants? (I worked: 3-5 timmar/vecka)

The projects are interesting work on them and the course will be simple

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

Just follow the steps and try your best, it will be a good result.

Work hard on projects and get your concepts clear from the beginning.

Use the projects as a way to learn the contents of the course

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

Start the project as soon as possible and make sure you truly understand.

Start early on the projects.

What advice would you like to give to future participants? (I worked: 15-17 timmar/vecka)

It is best to understand the course alongside problems.

What advice would you like to give to future participants? (I worked: 21-23 timmar/vecka)

Enjoy

What advice would you like to give to future participants? (I worked: 24-26 timmar/vecka)

Its a mathematical course. Study Hard!!

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

Work on the home works properly and don't get scared of equations!

Is there anything else you would like to add?

Is there anything else you would like to add? (I worked: 9-11 timmar/vecka)

The Ta is really helpful for me because I am always asking questions.

No

-

Is there anything else you would like to add? (I worked: 15-17 timmar/vecka)

Good course

No

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

Thank you to the teaching staff! Very considerate prof.

SPECIFIC QUESTIONS



RESPONSE DATA

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

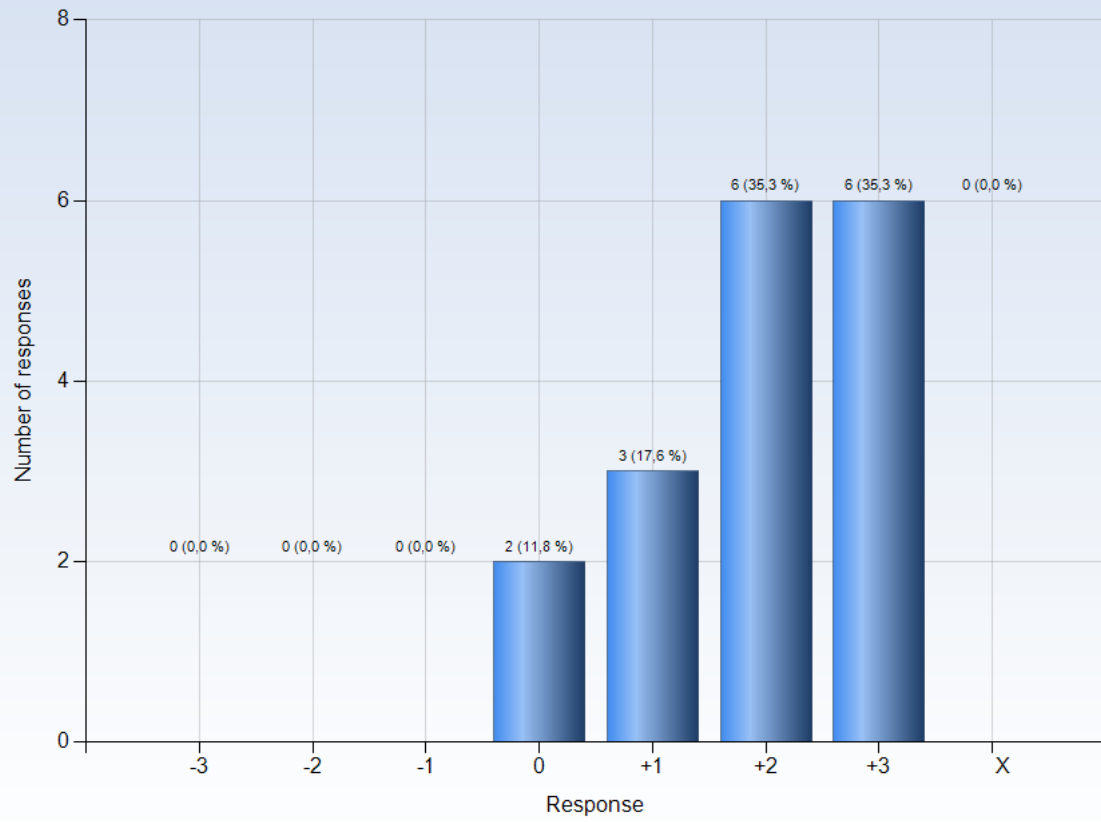
-3 = No, I strongly disagree with the statement

0 = I am neutral to the statement

+3 = Yes, I strongly agree with the statement

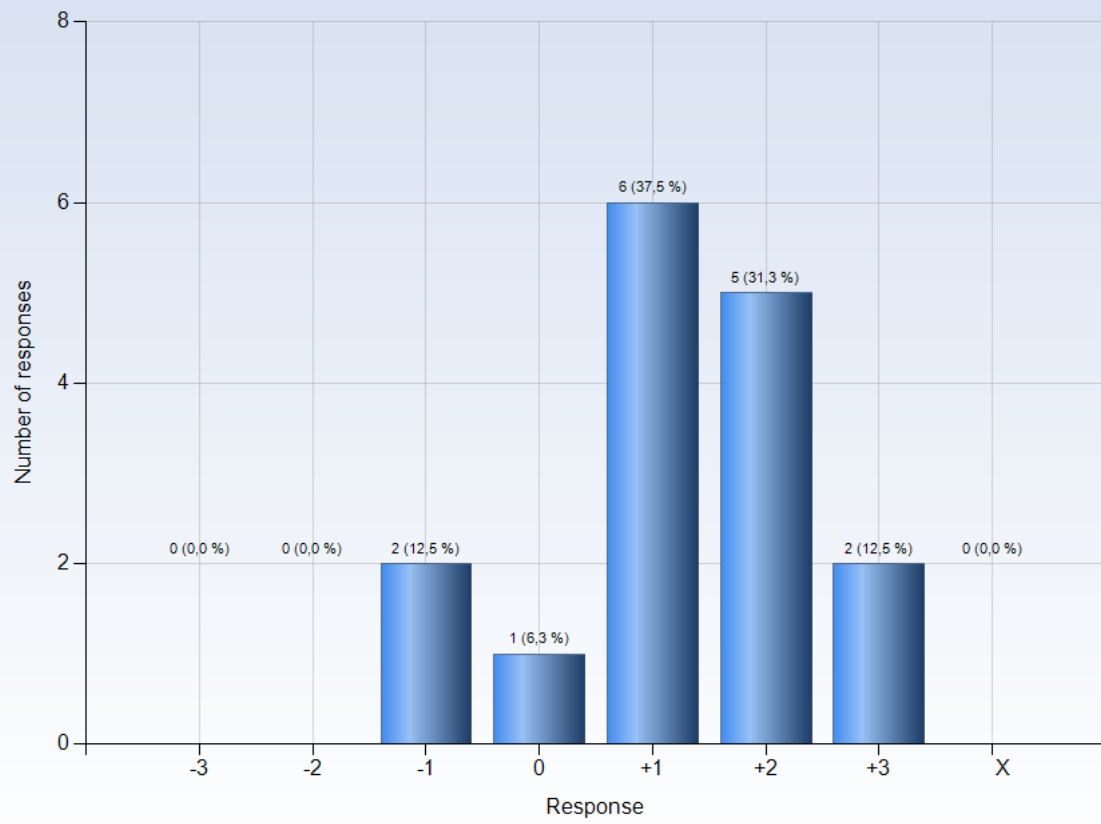
X = I decline to take a position on the statement

1. I worked with interesting issues



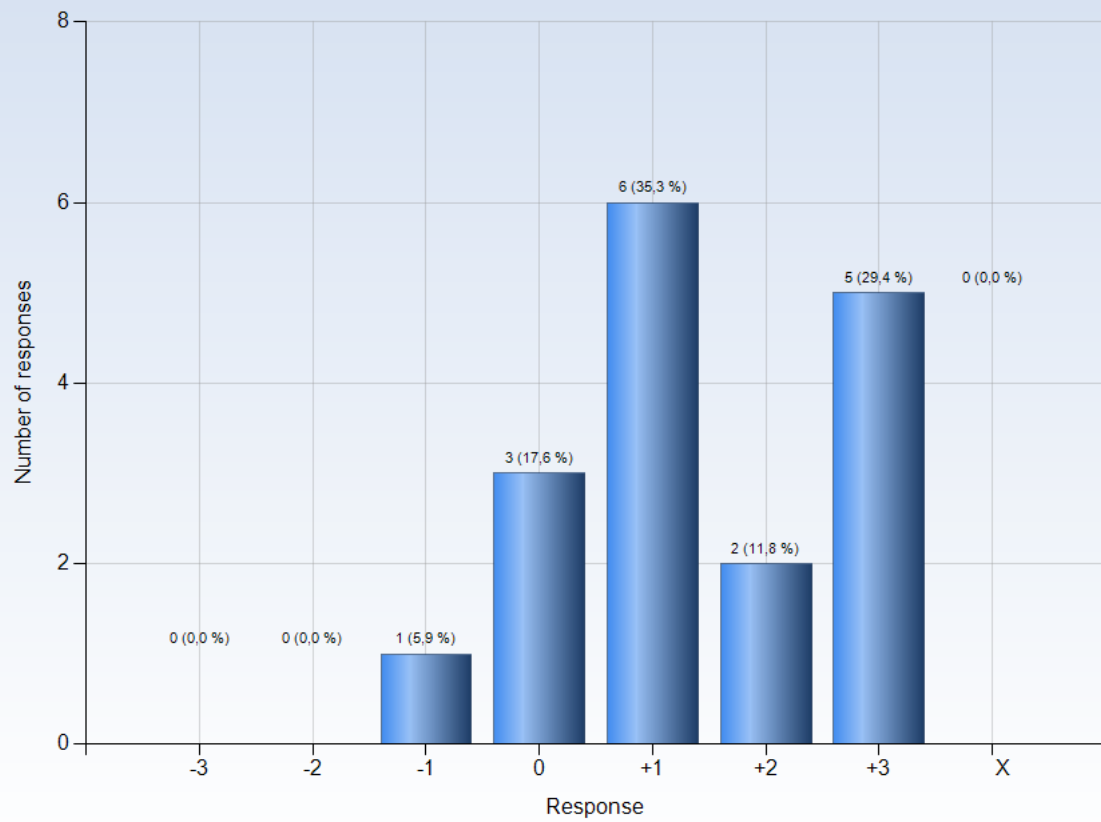
Comments

2. I explored parts of the subject on my own



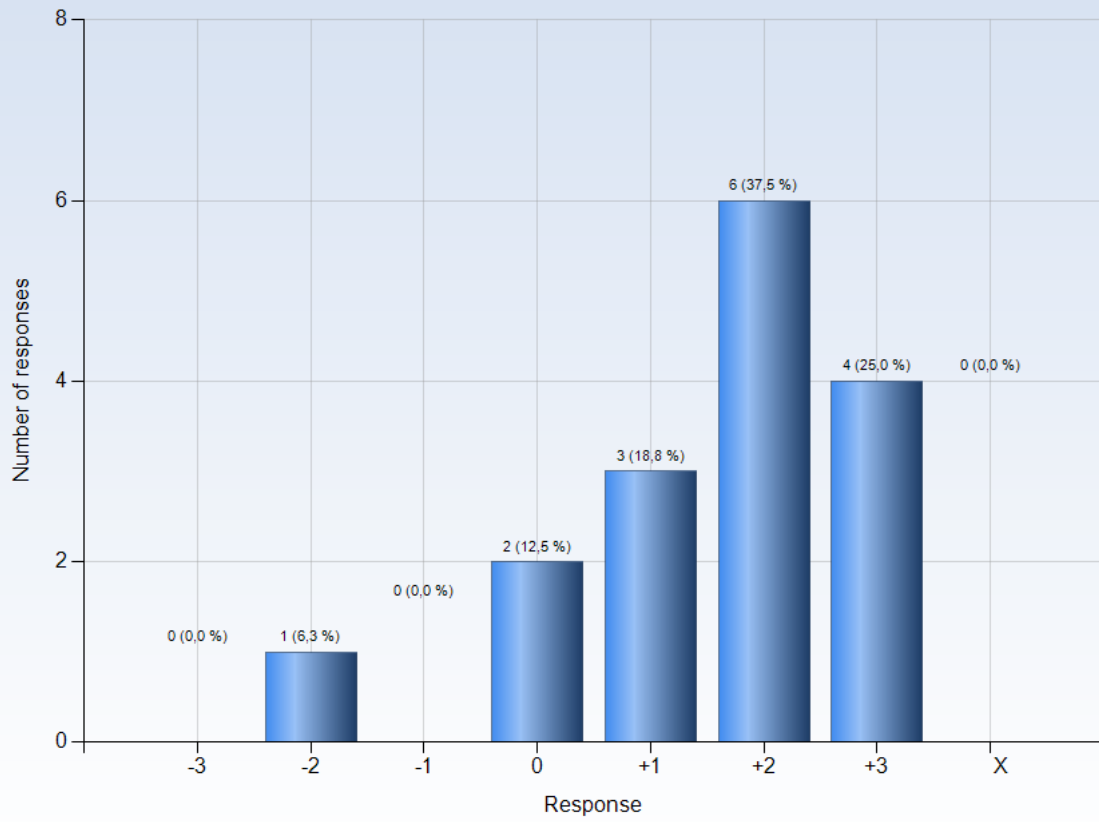
Comments

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



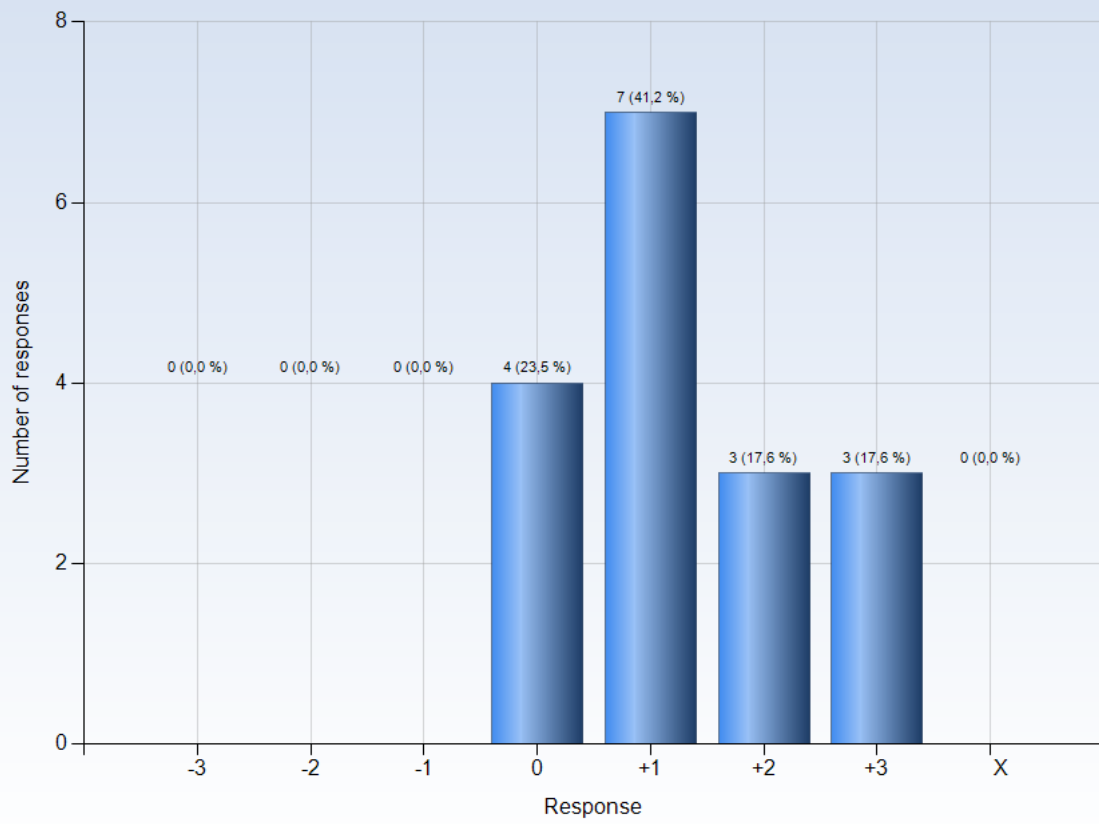
Comments

4. The course was challenging in a stimulating way



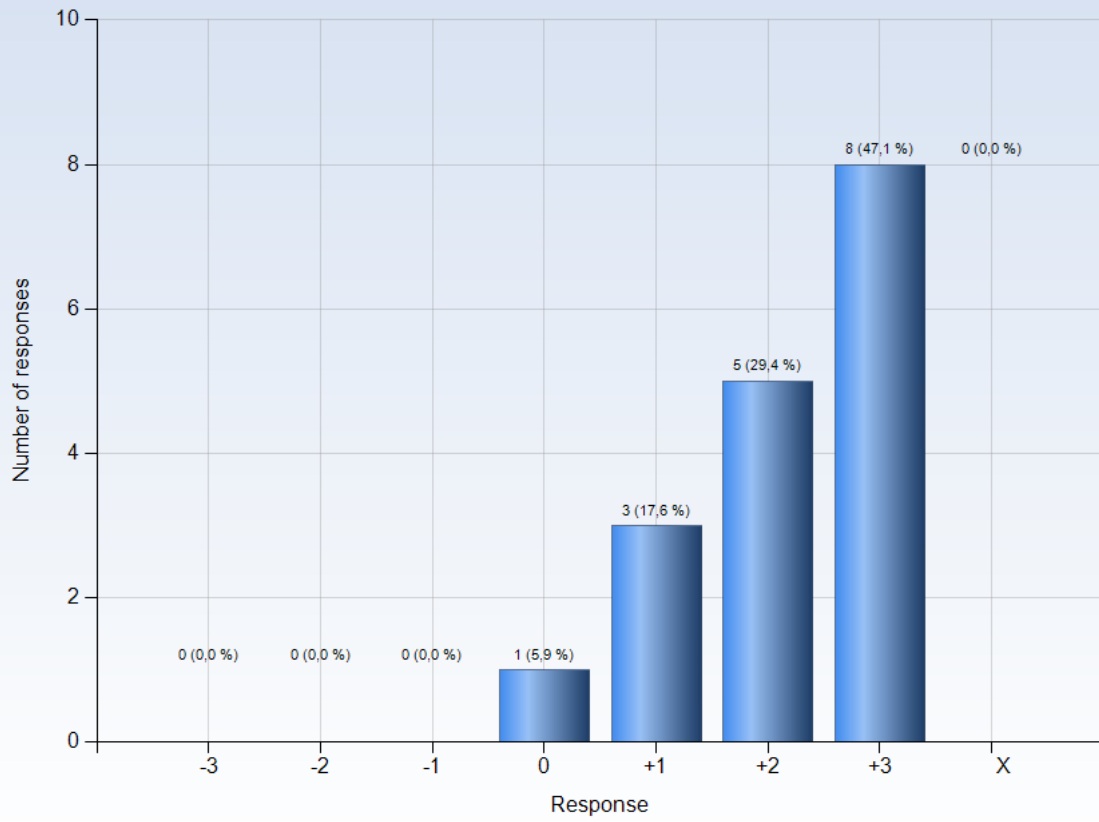
Comments

5. I felt togetherness with others on the course



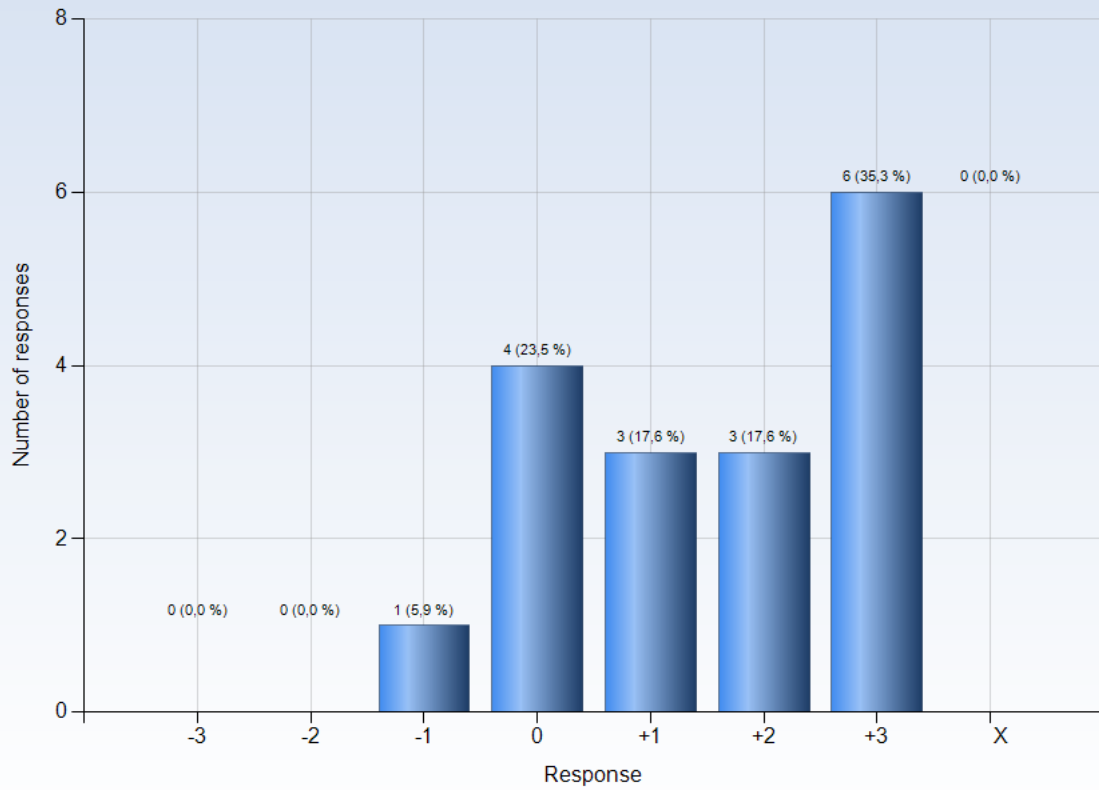
Comments

6. The atmosphere on the course was open and inclusive



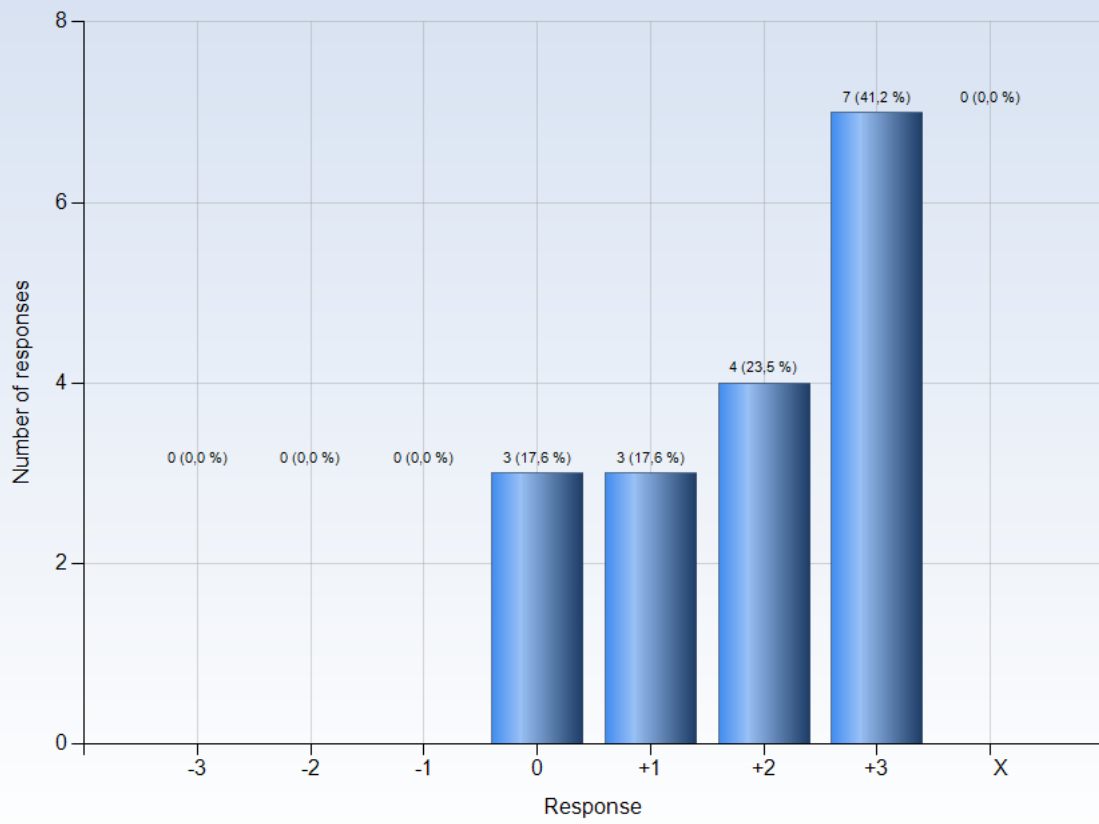
Comments

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



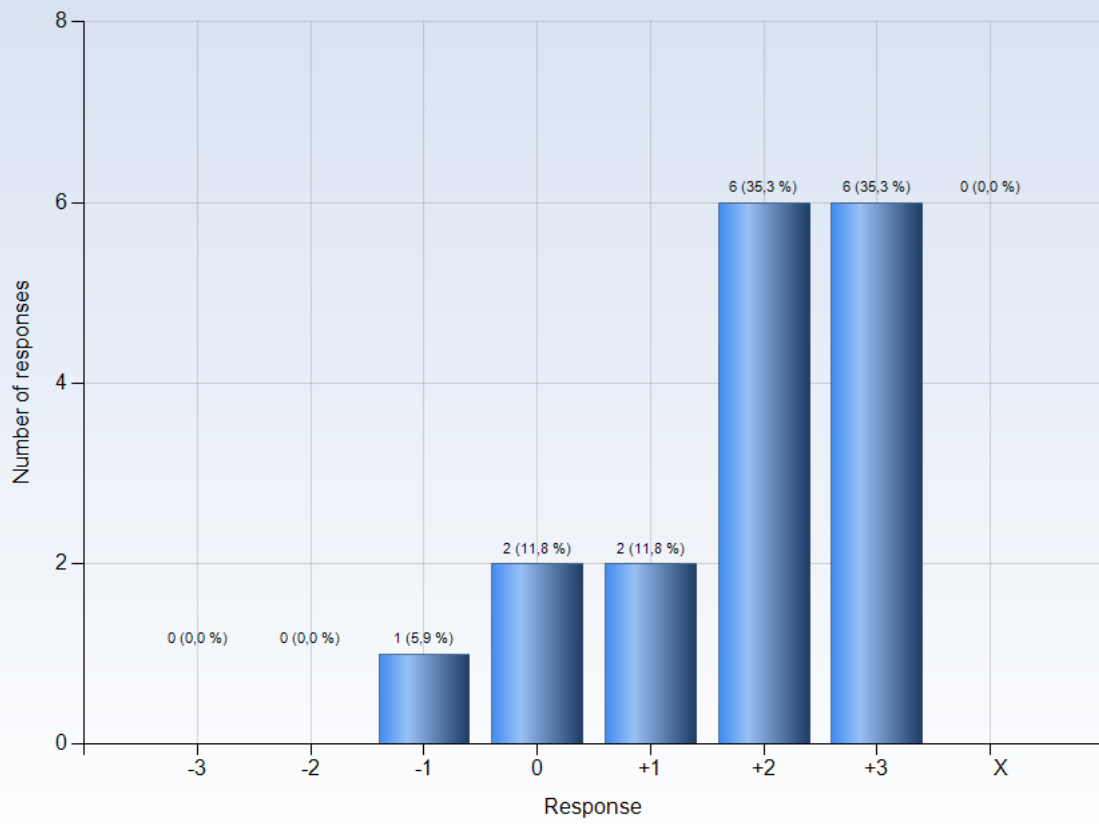
Comments

8. I understood how the course was organized and what I was expected to do



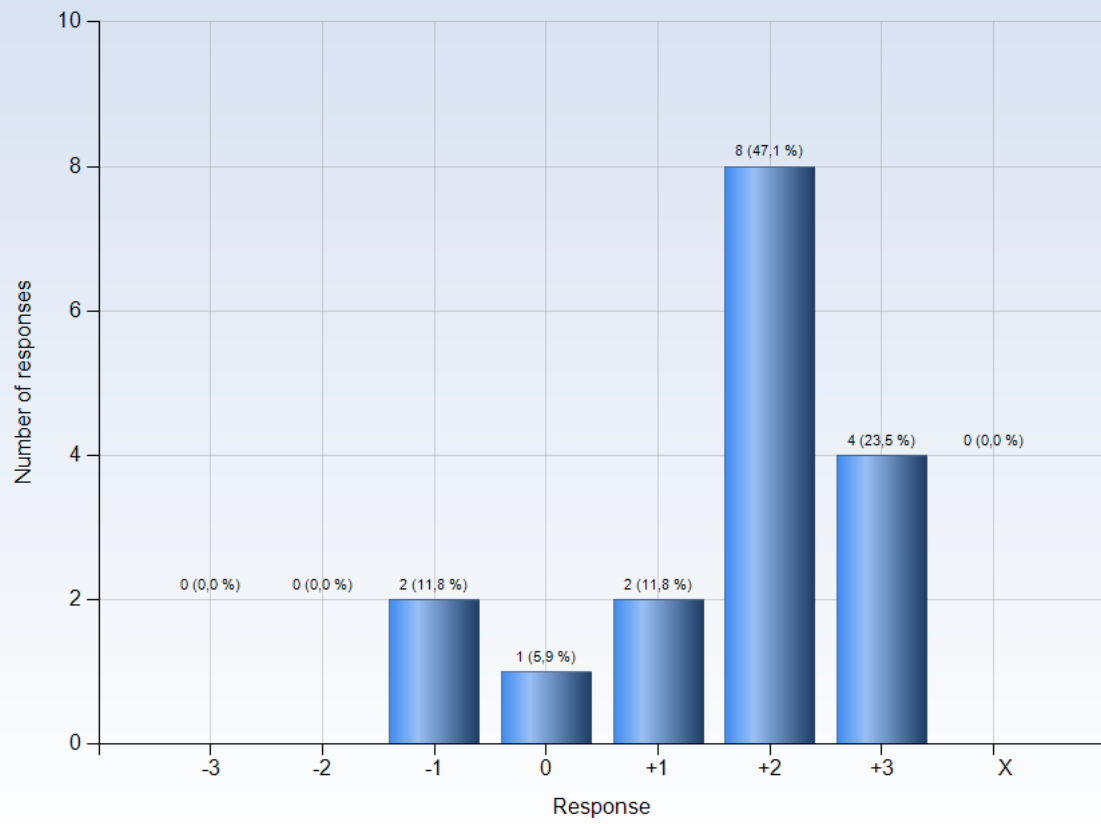
Comments

9. I understood what the teachers were talking about



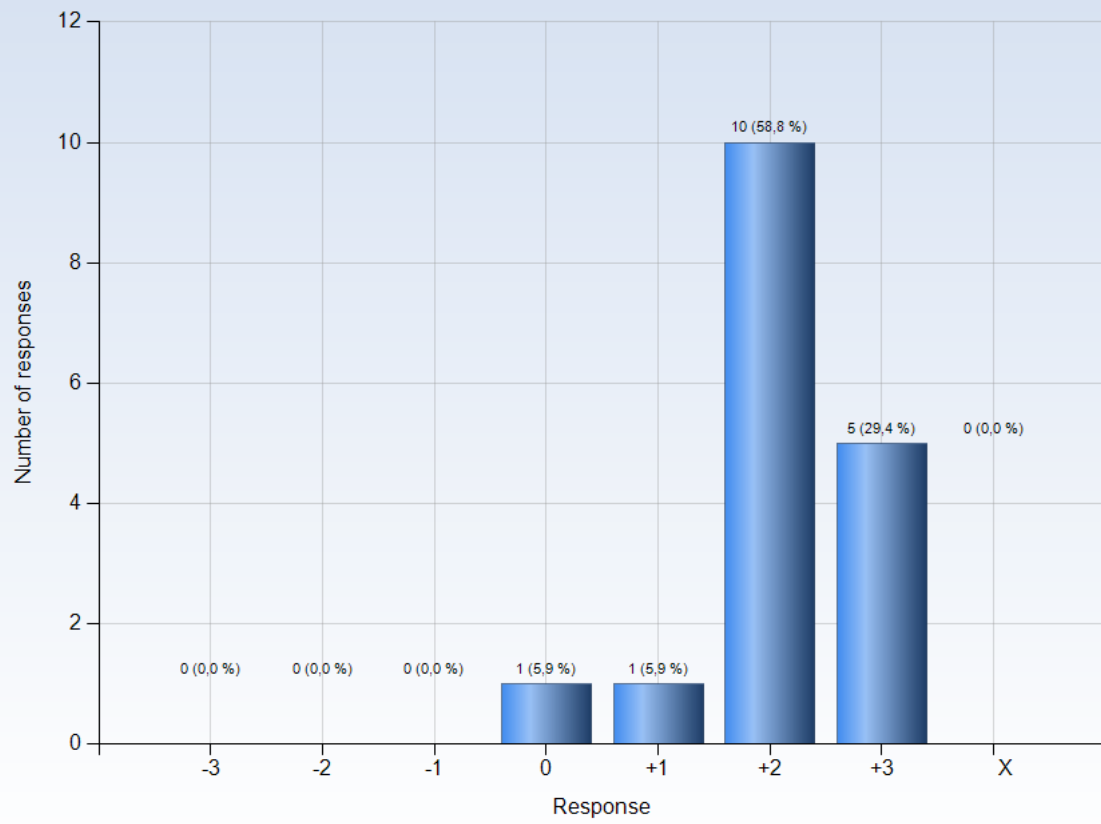
Comments

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



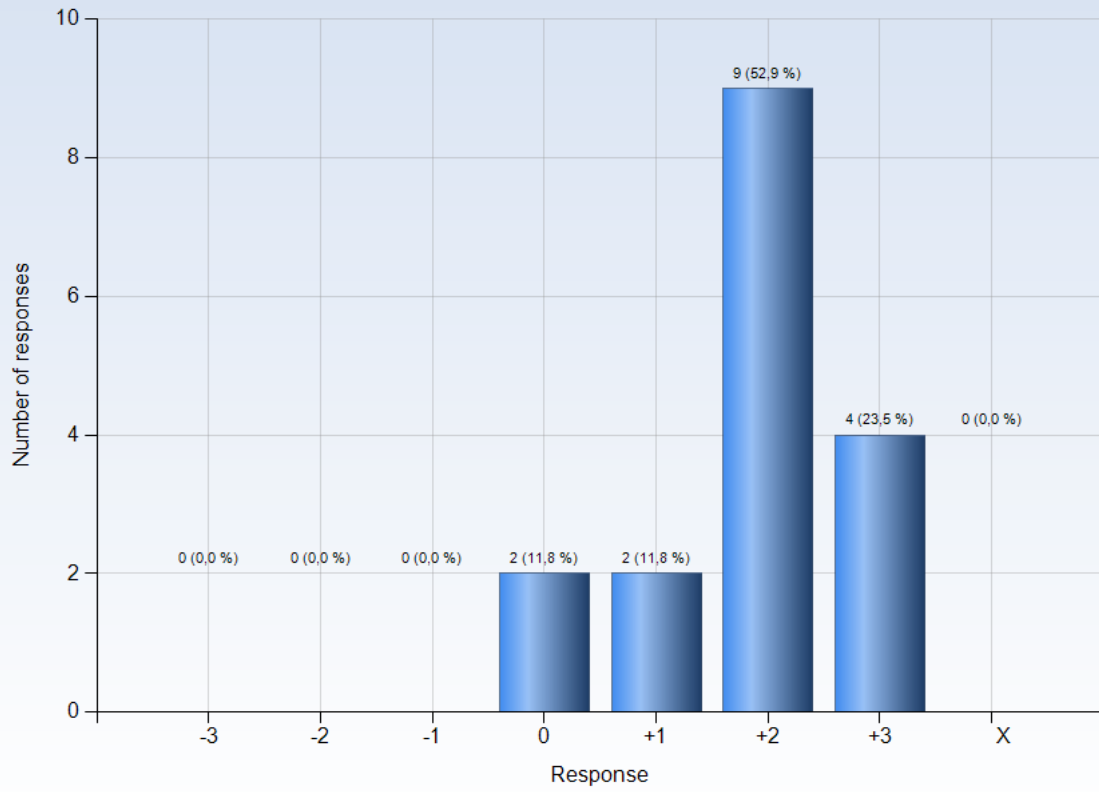
Comments

11. Understanding of key concepts had high priority



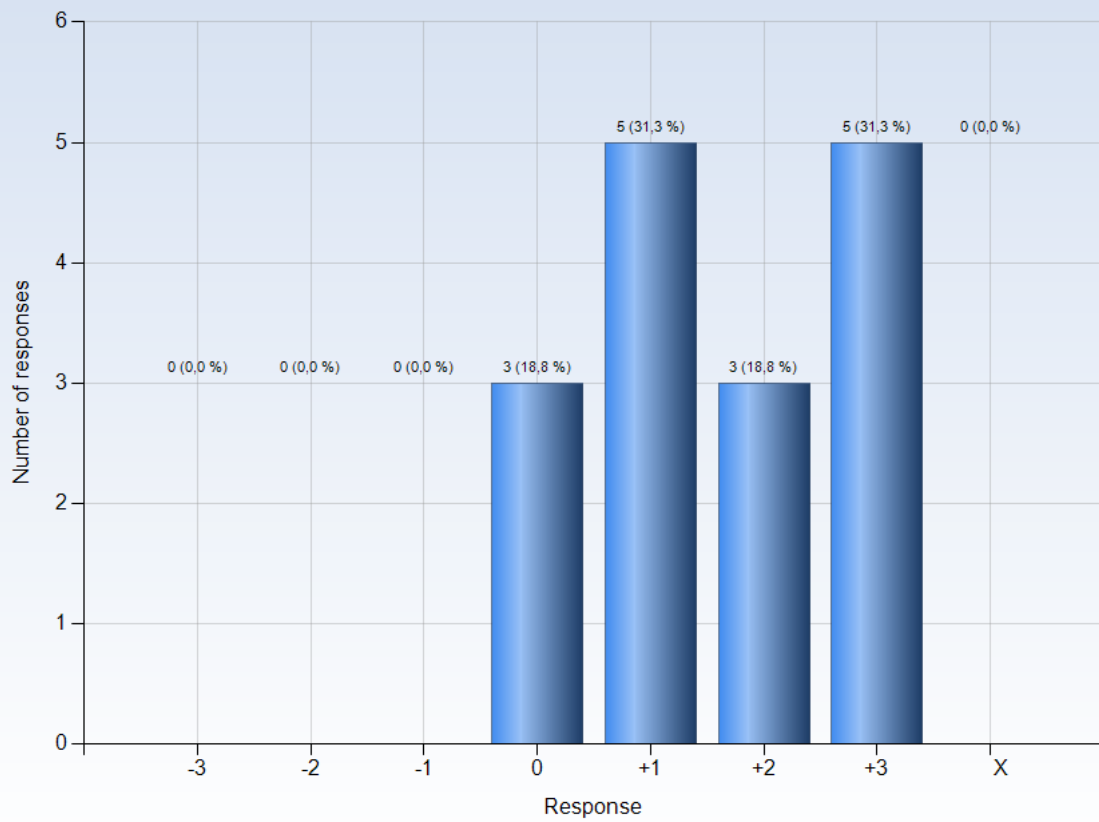
Comments

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



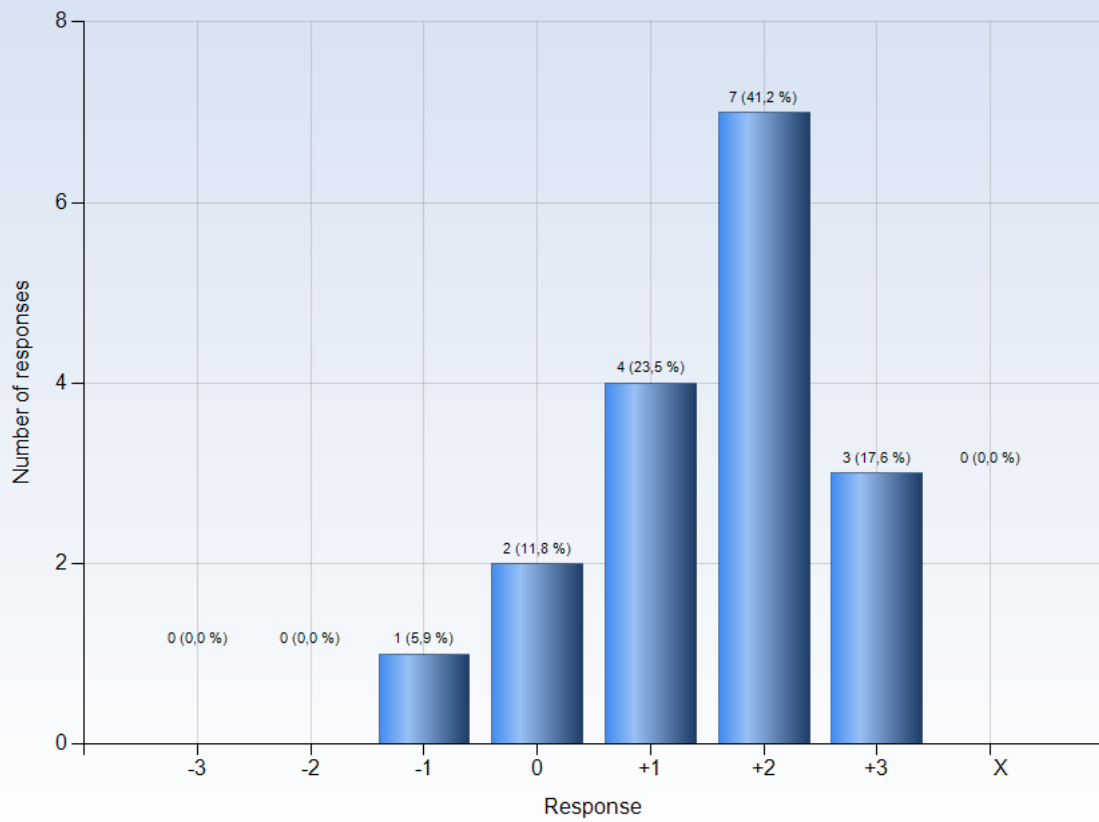
Comments

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



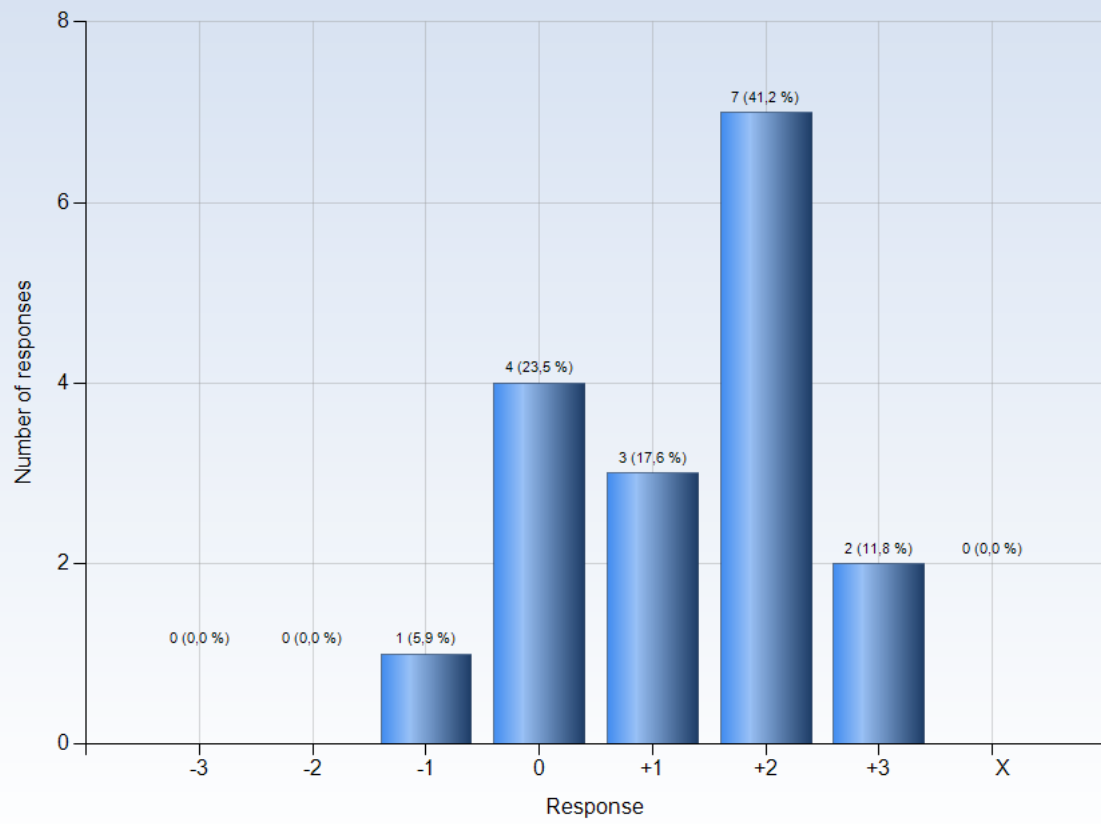
Comments

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



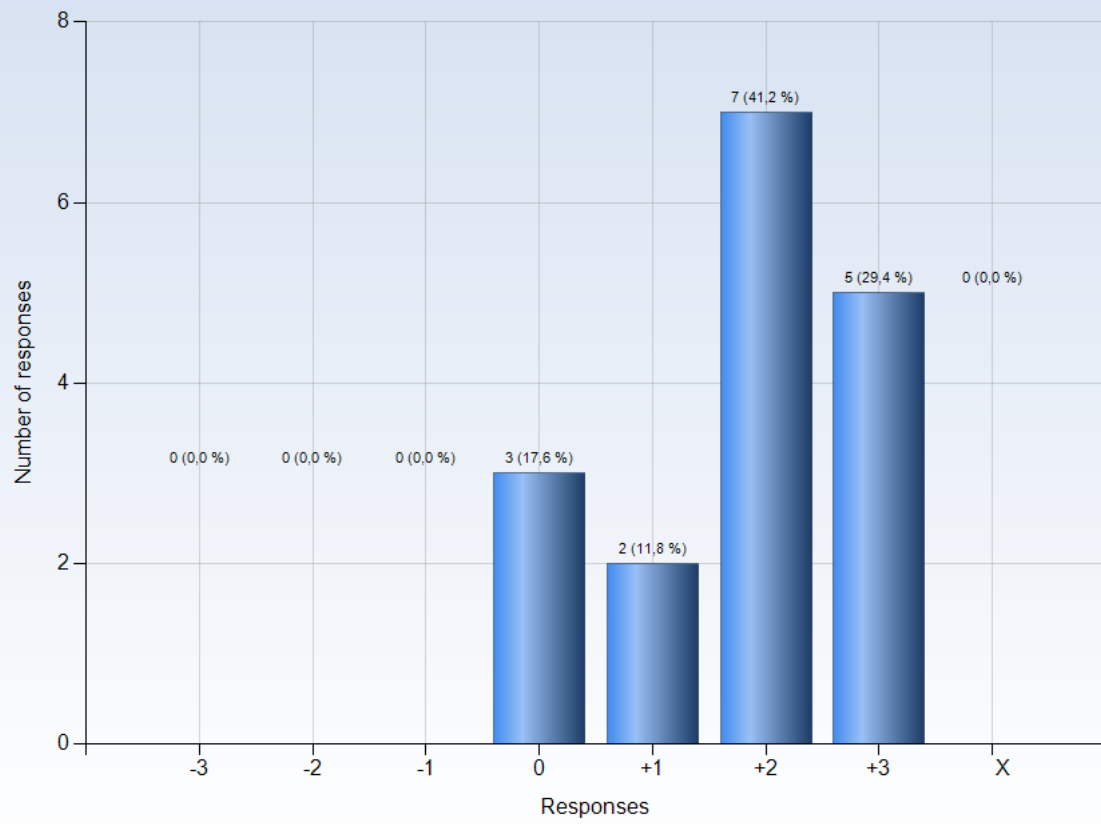
Comments

15. I could practice and receive feedback without being graded



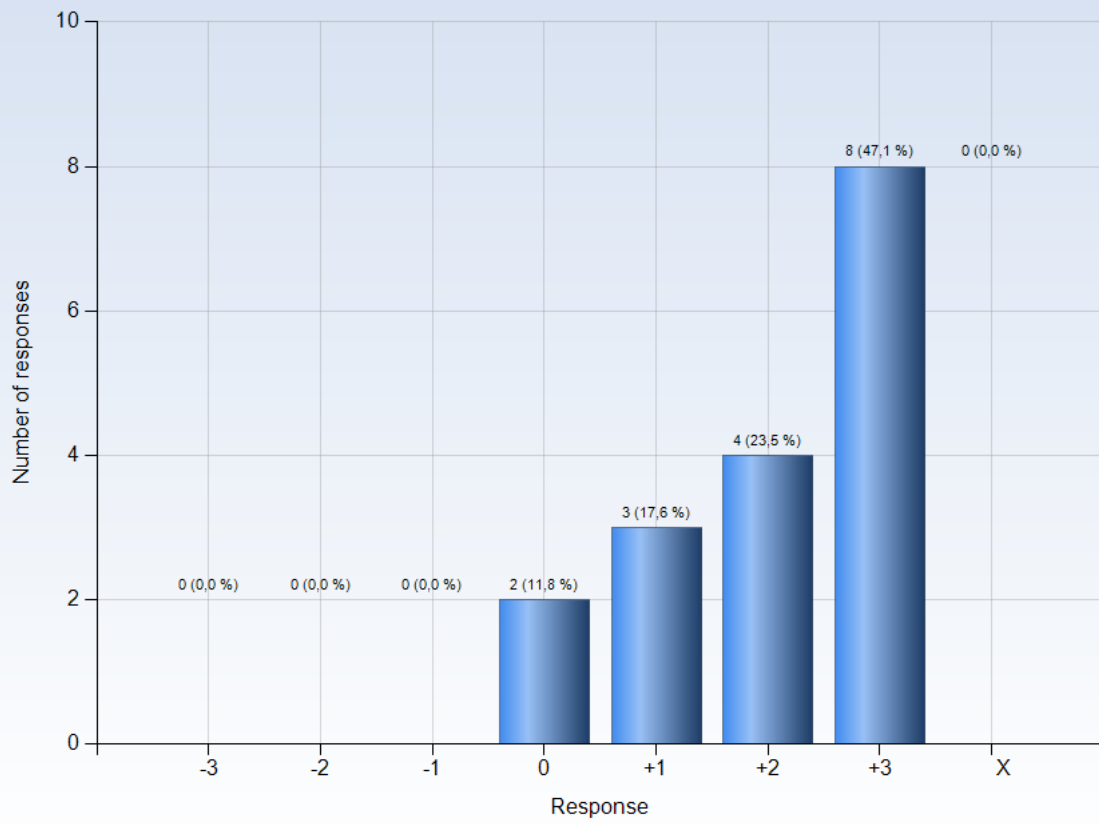
Comments

16. The assessment on the course was fair and honest



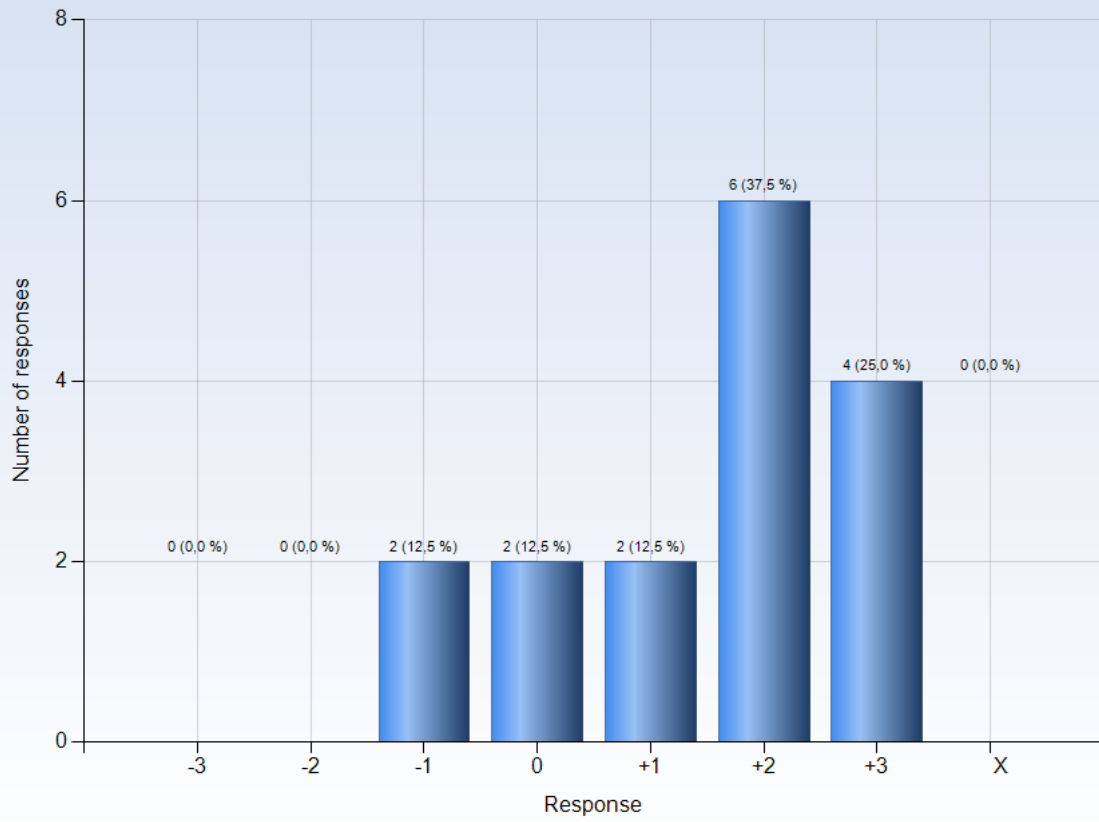
Comments

17. My background knowledge was sufficient to follow the course



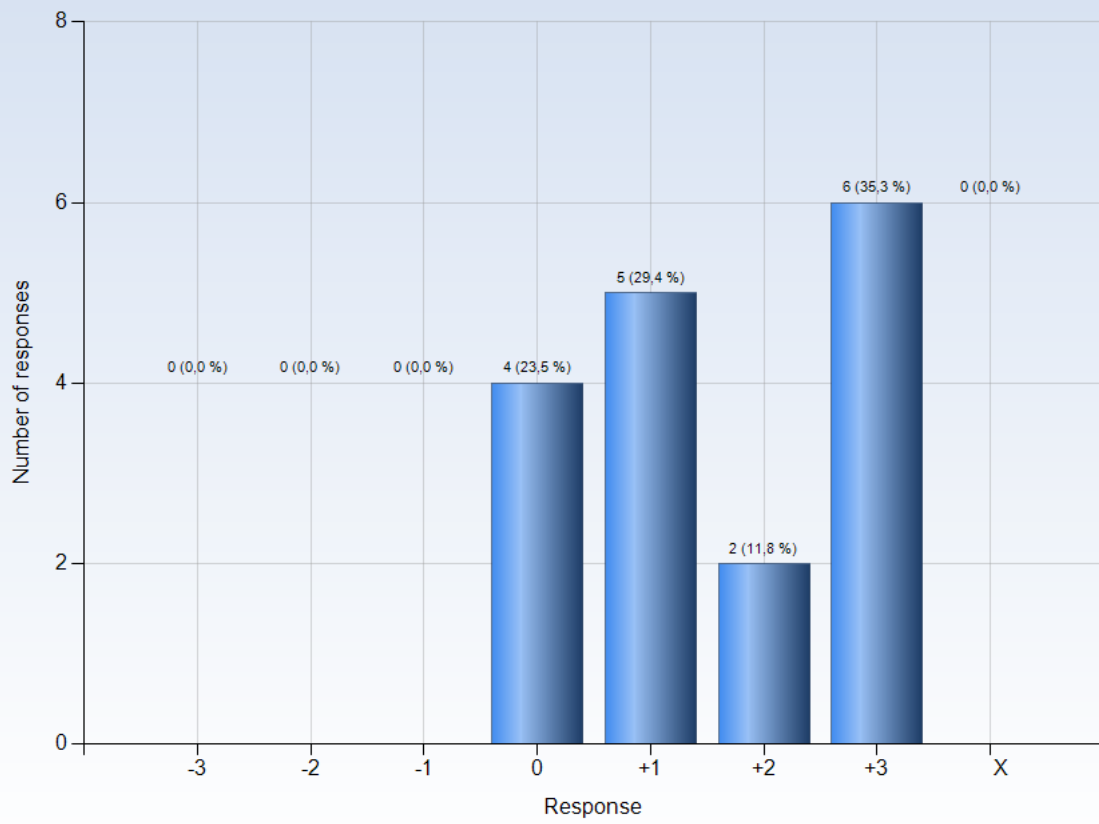
Comments

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



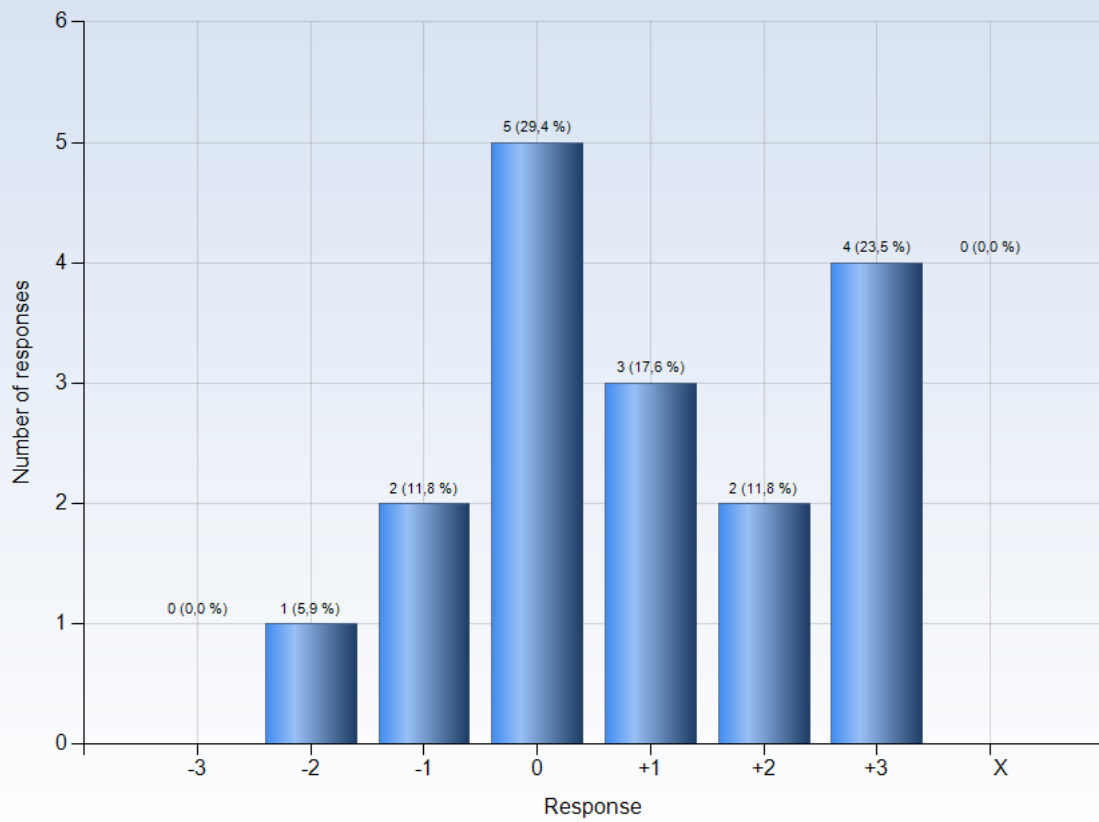
Comments

19. I was able to learn in a way that suited me



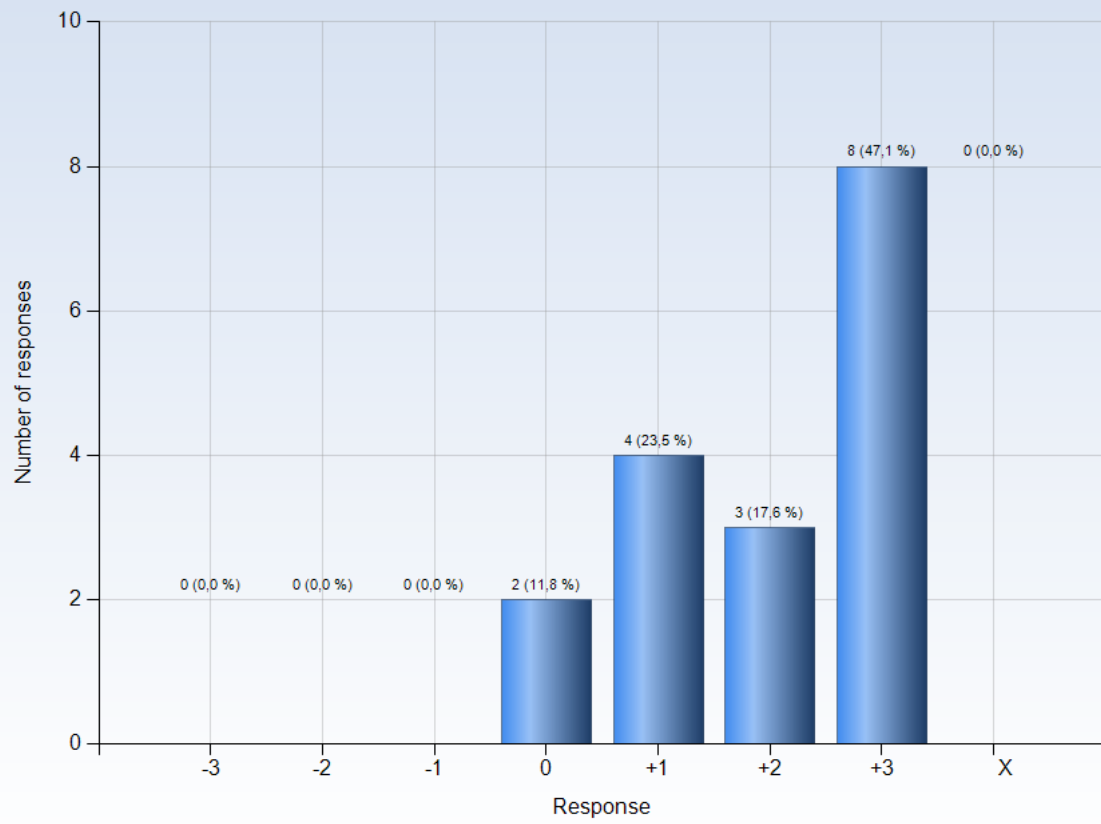
Comments

20. I had opportunities to choose what to do



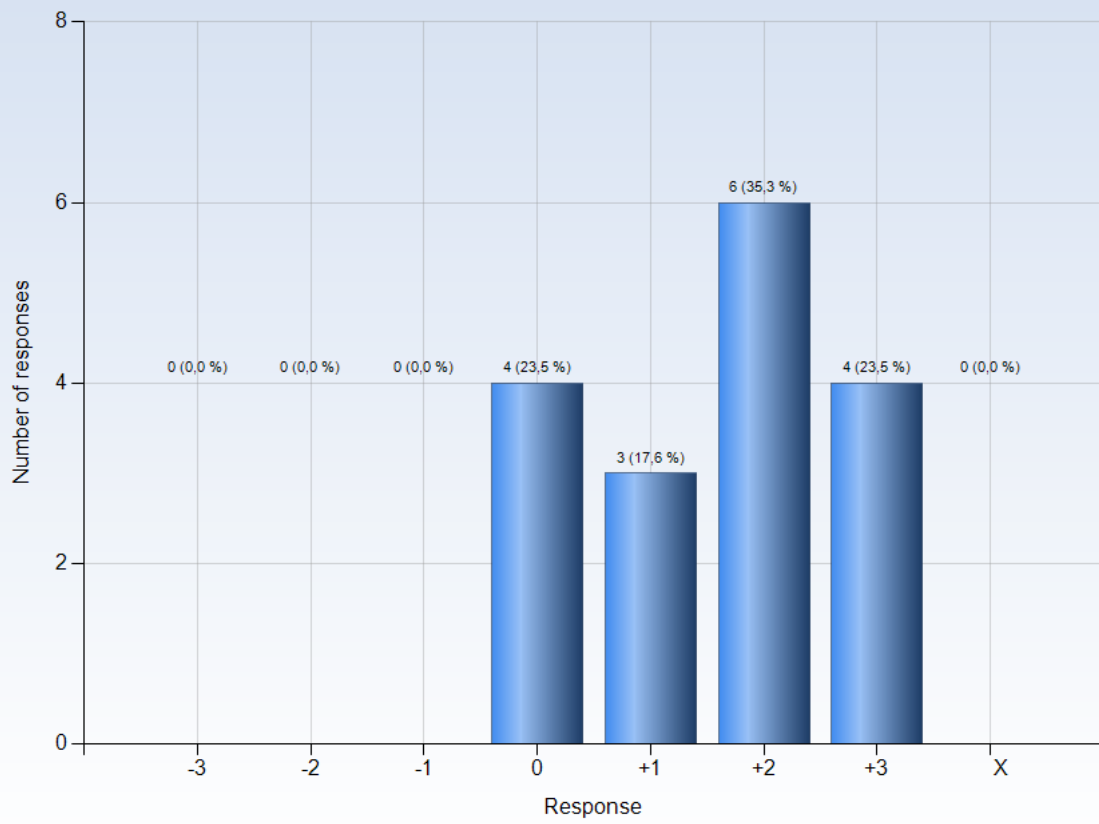
Comments

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