



UMEÅ UNIVERSITET

Final report: 5KE165VT21 Foundations of Chemistry

Unit code: 5KE165

Name of course: Kemins Grunder/Foundations of Chemistry

Credits: 15 hp

Pace: 100%

Semester: Spring 21 (18/01/21 -- 23/3/21)

Unit coordinator: William Siljebo

Delivery (campus/online-remote): Online (due to COVID-19)

Indicate if the unit is part of a program:

Part of BS in Life Sciences (Fall)/ BS Biotechnology (Spring). Elective in the Teacher and Bio/Geo programmes.

Number of registered students	89 students registered. 88 present for intro (48 TYCBT, 20 NGBIG, 9 LYAGY, 3 LISC, 8 other/none)* ca 50-55 students attended lectures 68 students completed the labs. 86 % passed the exam after the regular exam + resit.	
Number of responses on unit evaluation	55 responses (30 TYCBT, 11 NGBIG, 7 LYAGY, 3 LISC, 4 other)	
Final Grade Exam / Course	#	%
Fail (U)	14 / 32	16 / 36
Pass (G)	18 / 17	20 / 19
High Pass (VG)	8/ 6	9 / 7
Grade 3	21 / 20	24 / 22
Grade 4	11 / 10	12 / 11
Grade 5	4	4
Completes	57 (+3*)	64 (+3*)
Incompletes	32 (15**)	36 (17**)
TYCBT Biotechnology NGBIG Bio. and Earth Science LYAGY Teacher/Secondary LISC Life Science	*students who passed the final but not the lab course. Included in 'Incompletes'.	**students who neither sat the final nor finished the lab course. Collected from LADOK 25/9/2021.



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Course evaluation

<<See appendix>>

Comment by unit coordinator:

Comments and ratings are overall very positive, which is likely in response to the considerable work that has been put into improving the course over the past few years.

Ratings of individual sections/lecturers have been removed from the appendix (2 pages). Those responses are summarized here: all sections received average ratings above 3 (out of 5). Two sections had significant numbers of dissatisfied students. Based on the comments by the students two factors were important: 1) technical issues during one section which adversely affected the pace of the lecture and 2) the use of powerpoint when lecturing online.

Several different modes of delivery were used and compared during this course -- a flipped classroom without any lectures, digital whiteboard lectures, and powerpoint lectures. Flipped learning had more very satisfied students than any other approach, but also had more dissatisfied students than when lectures were delivered by whiteboard. Both were, however, appreciated.

It is clear that students generally prefer either flipped learning or whiteboard lectures, and that this divides students. The recommendation would thus be that each teacher chooses the approach that better suits their subject and style of teaching.

One of the main reasons for introducing a flipped classroom with daily problem solving sessions in small groups was to address the issue of the social environment in an online course. In spite of this the students did NOT feel part of a community. It is unclear what -- if anything -- can be done to address this.

Full text responses have been removed from the appendix (14 pages). Those responses are summarized below under 'summary of comments by the students'.

Different forms of student surveys were conducted throughout the course, using menti and google forms, and the responses were shared with the students during the course.

The following factors also impacted the ratings:

* Several different modes of teaching were explored during the course: flipped learning without lectures (F1-3), lectures with a digital whiteboard (F4-5) and lectures with mainly powerpoint (F6-7).

* The final was reduced from the normal six to four hours, and while the exam was reduced in scope in response to this many students still felt that time was insufficient



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Summary of comments by the students:**Q: 'What aspects of the course are you MOST satisfied with?'**

Common responses:

Flipped classroom, the structure, the videos, daily quizzes, enthusiasm and dedication by the teachers, the topics covered were useful/interesting, that lectures were recorded.

Q: 'What aspects of the course are you LEAST satisfied with?'

Virtual labs, the exam had too many questions/took too long to complete, too much to learn during 10 weeks, too hard to balance labs and lectures.

Q: 'Anything else you'd like to add?'

The canvas forum was hard to navigate, better to divide the final into several parts, hard to concentrate during long online lectures, tutorials were sometimes rushed, daily /short/ quizzes were good, improve videos in some cases, having days off between sections was appreciated.

Many comments regarding how long the final took to complete relative to the time available.

Summary of changes introduced after the last time the course was delivered

- F1-3 was flipped and delivered without giving any lectures. Instead videos, quizzes, workshops, discussion groups, daily feedback and question times were used.
- A 'day off' whenever switching lecturers was introduced to give students time to catch up

Summary of suggested changes prior to the next time the course is delivered

Technical issues need to be addressed somehow, e.g. by setting aside an hour when each lecturer gets to try out different functionalities in Zoom in the presence of an audience.

Final report created 25/9/2021, by William Siljebo and Andy Ohlin



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Appendix.
Course evaluation 5KE165HT20

Comments by students have been removed. Data that identifies individual teachers has been removed.

Course evaluation 5KE165 VT21

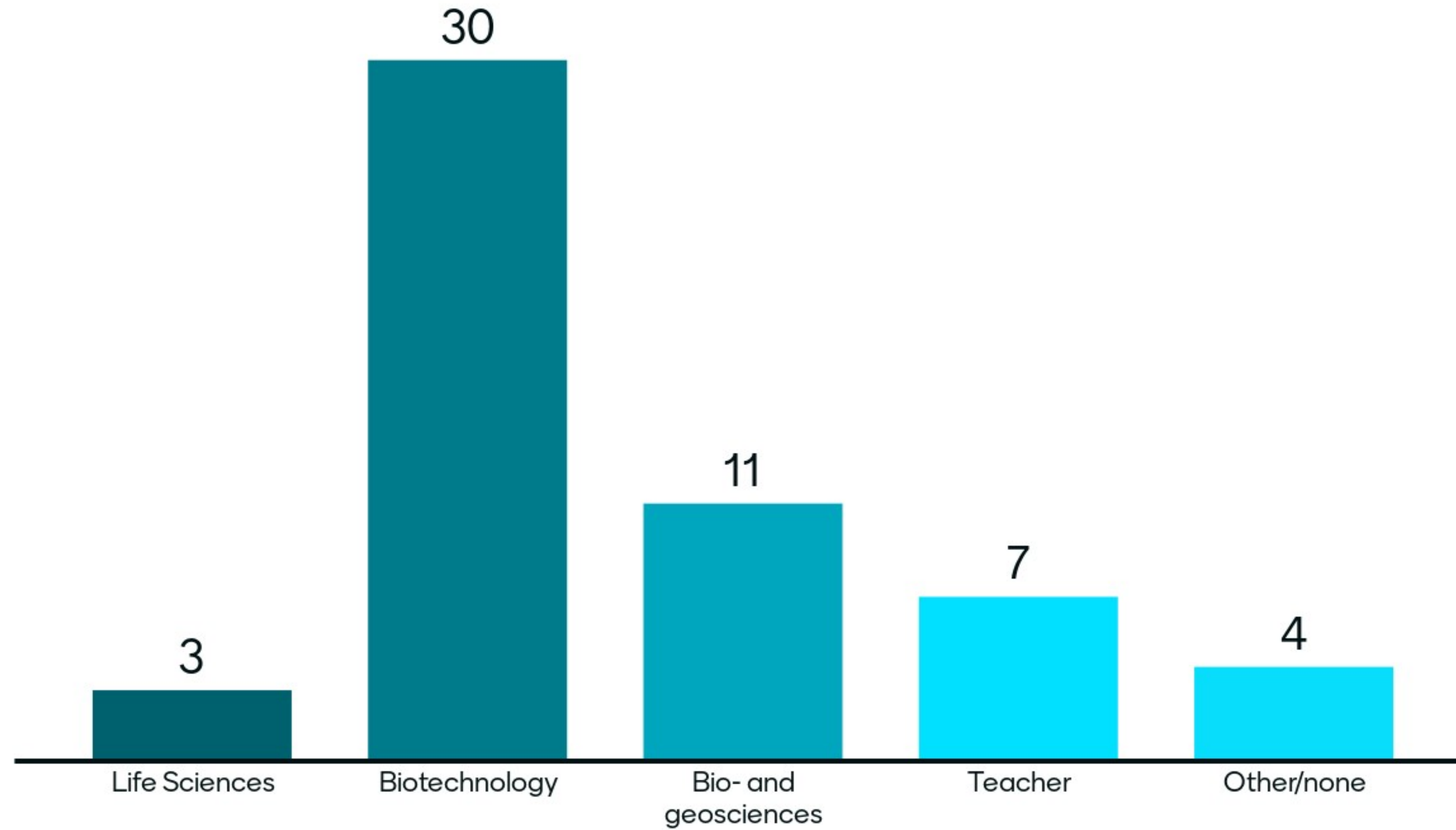
Teaching in a pandemic poses special challenges. Make sure to answer all the questions to the best of your ability so that we can improve the course, and also so that we take the right lessons with us from 20/21 in terms of how to do hybrid teaching.

There are 14 pages, including this one. Most questions use a slider or are multiple choice. The last three slides have opportunities for you to enter text

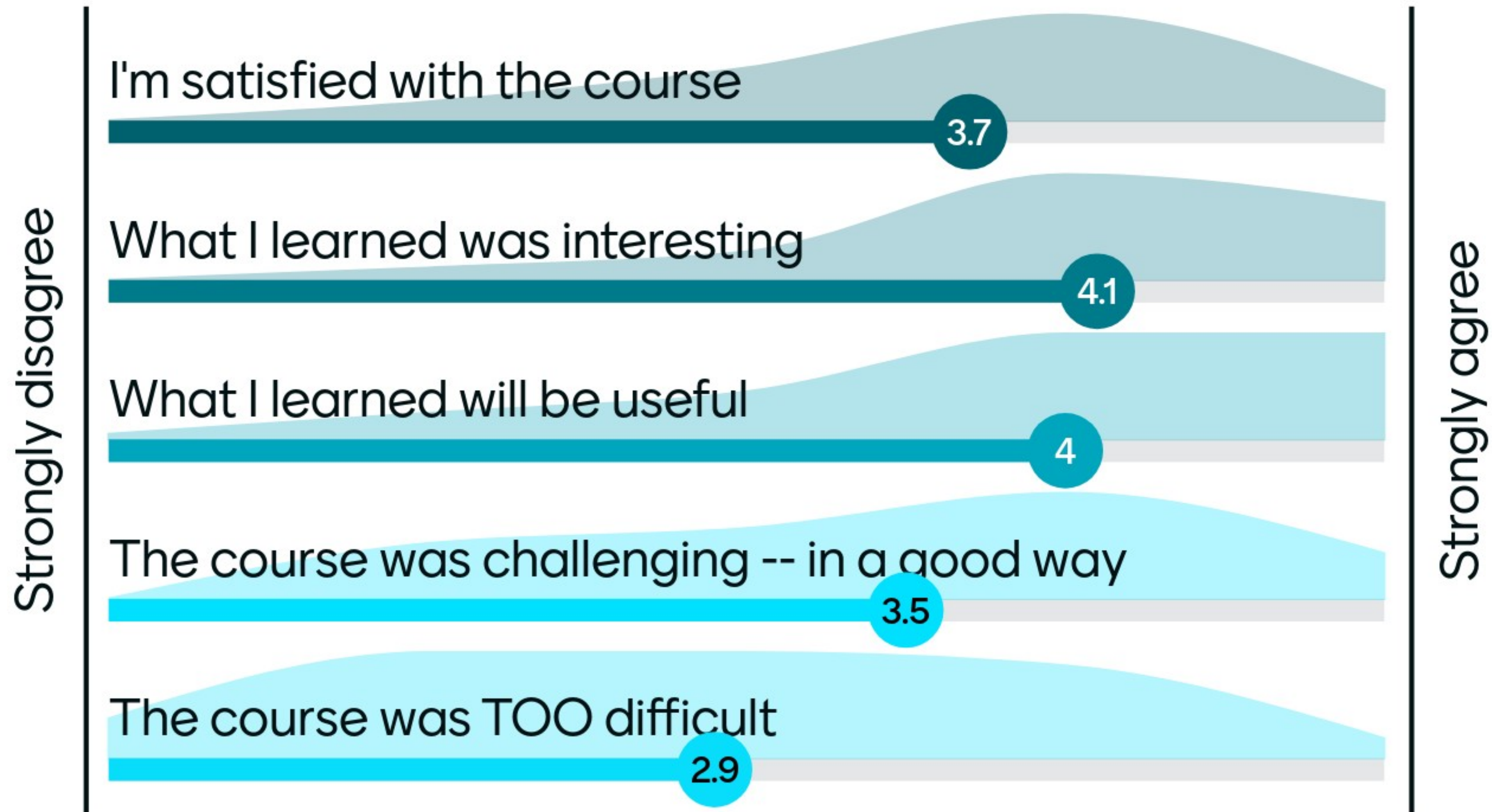
Thank you!

William, Andy, Michael and Solomon

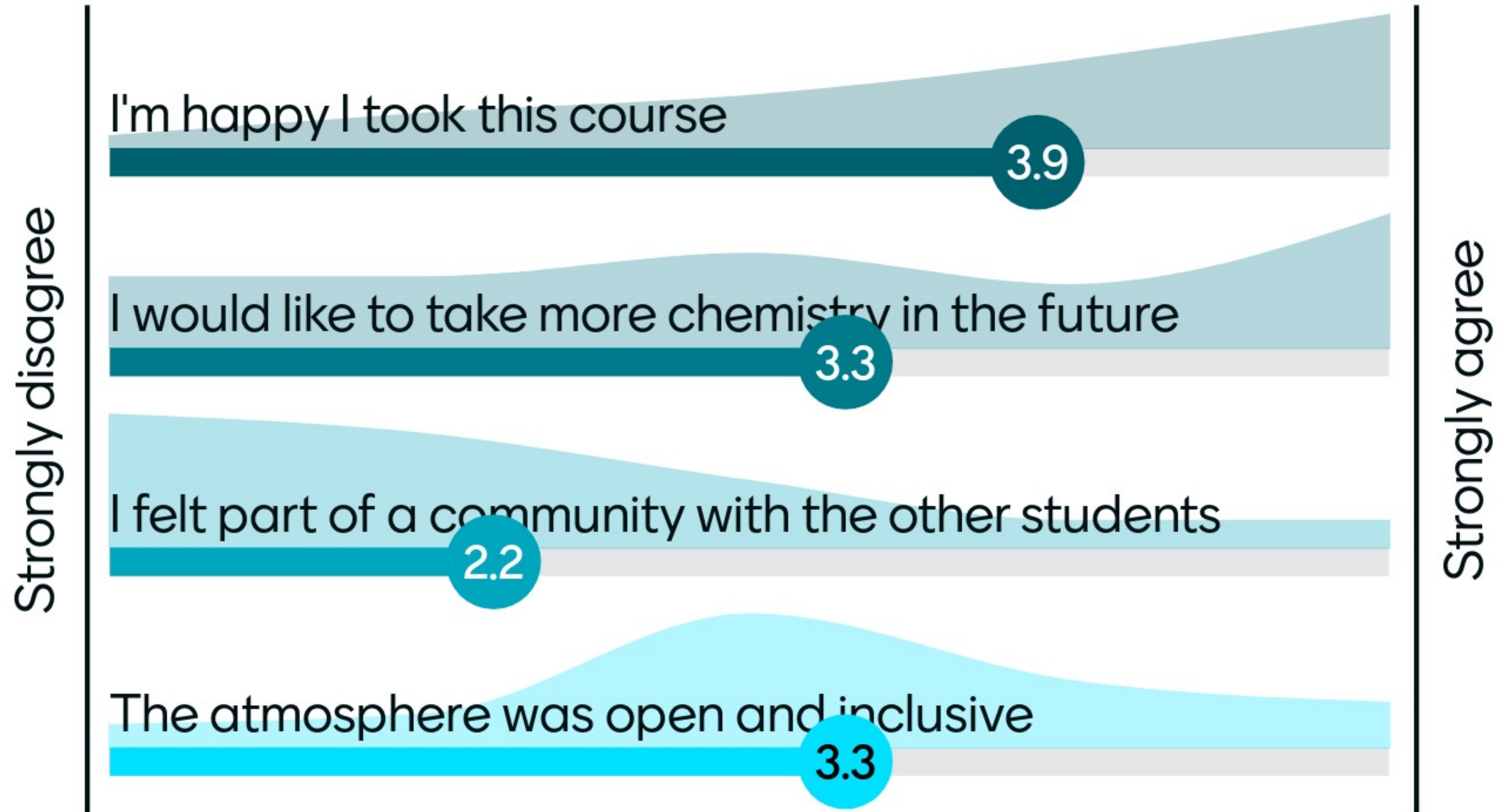
Which program are you in?



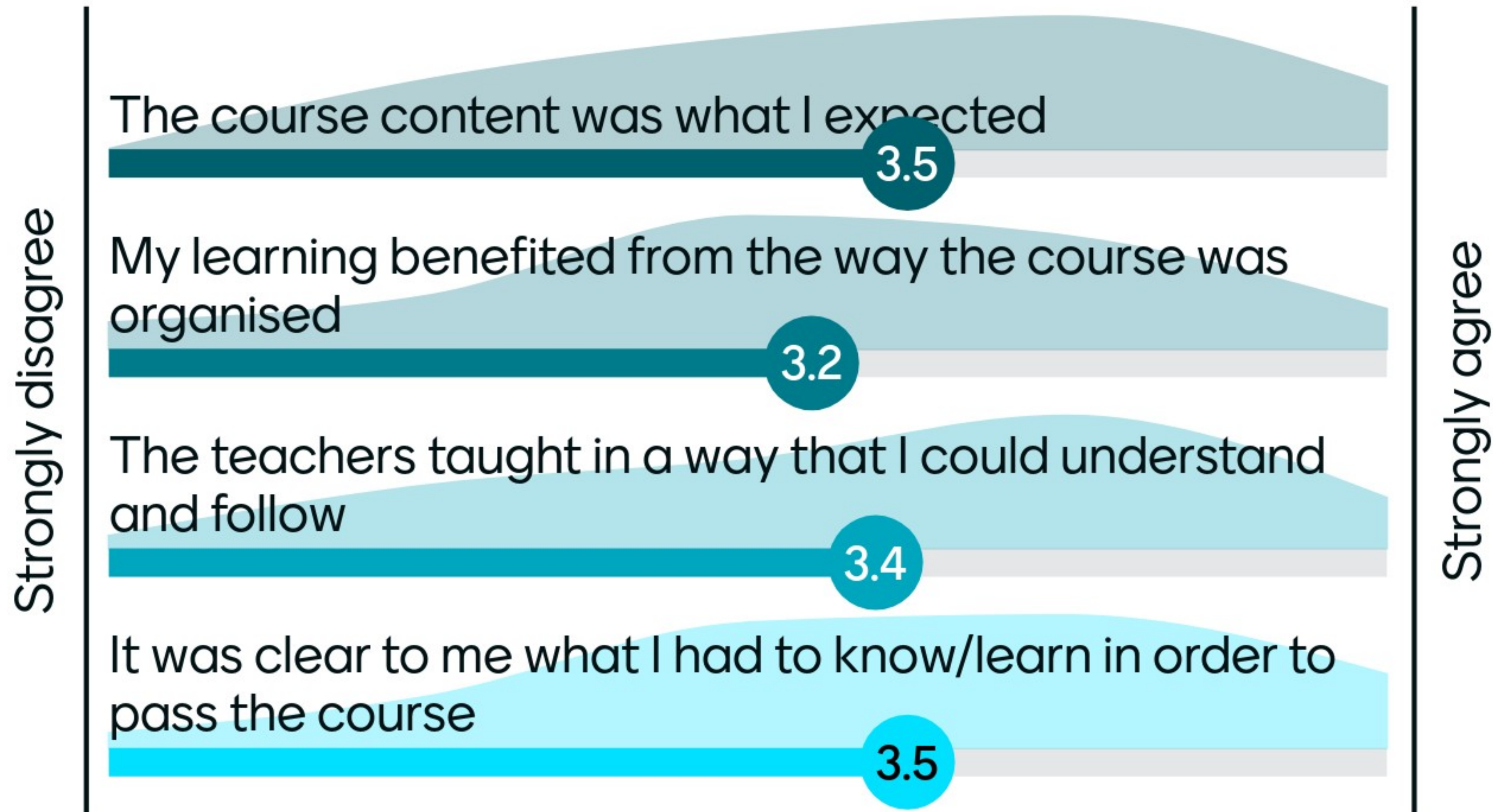
Course-specific questions



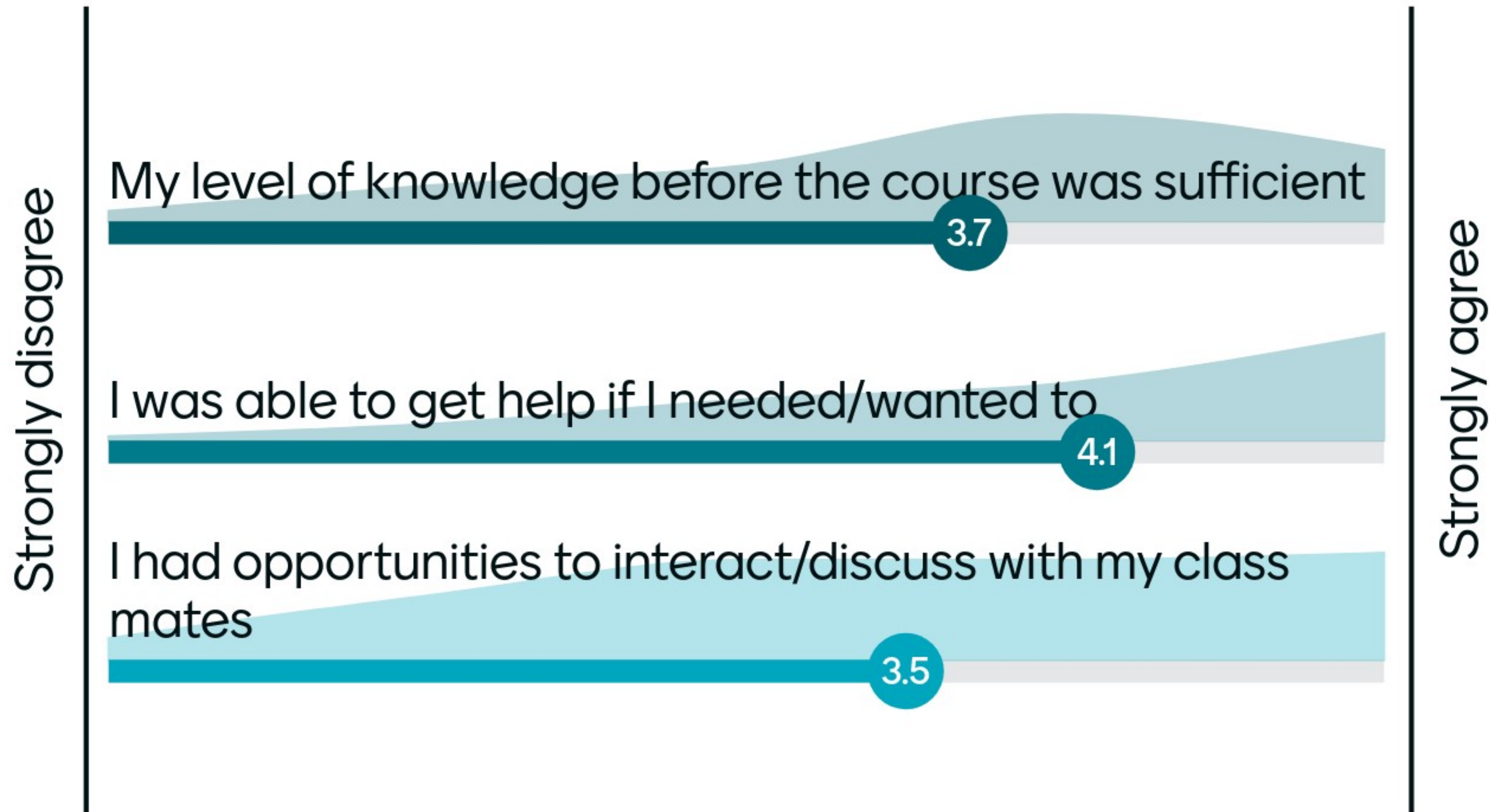
Course-specific questions



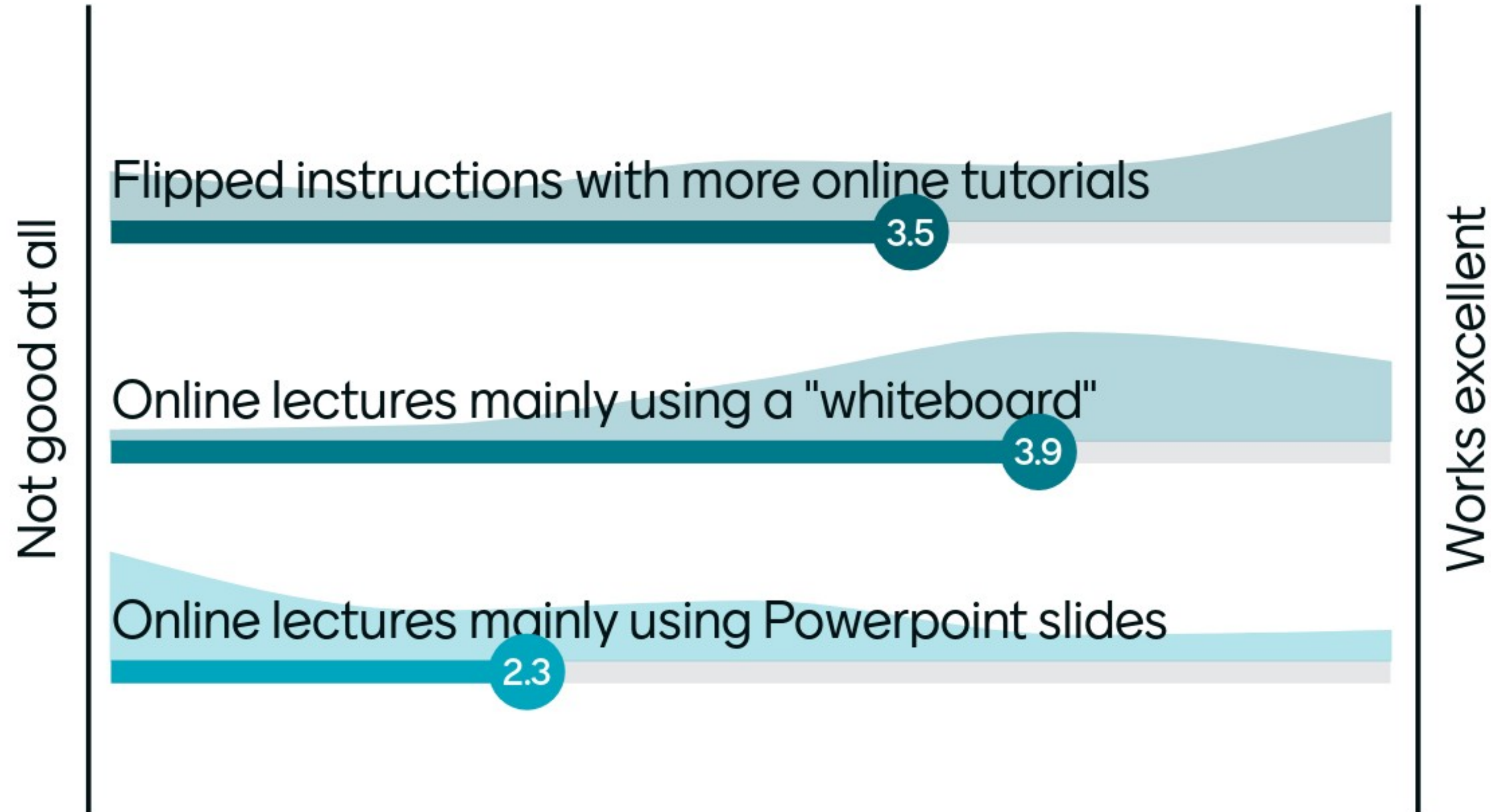
Course-goals and understanding



Time, Pre-requisites, Situation



Which sort of online teaching works well for you?



Rating of resources

