

The importance of motivation: How to make your students motivated

Group 1

Anitha Thillaisundaram

Ismail El Korde

Omar Vazquez Rueda

Pablo Macías Torres

Abstract

In this project, we explore factors affecting students' motivation during their time at university. Motivation comprises of two parts: intrinsic motivation and extrinsic motivation. While intrinsic motivation is exhibited when doing an activity for its inherent satisfaction, extrinsic motivation refers to doing an activity to attain an instrumental value. Here we investigate both types of motivation and the relative importance of each. We also conduct a survey to evaluate what are the motivation levels of students at Lund University. Lastly, we discuss and propose suggestions for university teachers to increase their students' motivation.

Introduction

Every one of us has likely, at a certain point in our lives, stumbled on people saying something like, "When I was a child, I always wanted to become an astronomer, but then in high school, I was demotivated by the bad practices of physics teaching". Undoubtedly, during this person's childhood, this person felt a genuine interest in studying astronomical objects. This type of behaviour during early childhood reflects the nature of *intrinsic motivation*. According to Ryan and Deci (Ryan & Deci, 2000), intrinsic motivation refers to the inherited tendency that lead humans to explore, learn, take up challenges that extend and exercise one's capacities. However, in this example, the non-adequate guidance and possibly the lack of the right supportive environment or *extrinsic motivation* led to diminished intrinsic motivation.

Extrinsic motivation is driven by external factors such as social pressure or environmental elements. For example, imagine that you are asked to give a presentation on behalf of your collaboration on Friday afternoon for the following Monday morning. You feel tempted to say no, but you accept such a task in the end. Here, the motivation is that saying "no" will lead to losing future opportunities within your collaboration or even a penalty. Extrinsic motivation can lead to adopting activities that are not interesting and possibly acquiring new behaviours. The motivation for these new behaviours can range from an unwillingness to passive compliance to active personal commitment. These different responses reflect the degree of *internalisation* and *integration* of the requested behaviour. Internalisation refers to taking in a value or regulation, while integration alludes to transforming that regulation into one's own.

In this project, we analyse motivation in its two variants: intrinsic and extrinsic. We examine the factors that can nurture and prolong intrinsic and extrinsic motivation within the frame of Self-Determination Theory (SDT) (Deci & Ryan, 1985). Here, self-determination theory suggests that a person is motivated to grow and develop when the three universal psychological needs, *competence*, *connection*, and *autonomy*, are fulfilled. SDT considers what motivates a person at various times, thus views motivation as a more fluid concept. Furthermore, we aim at providing examples of increasing intrinsic and extrinsic motivation that can be applied in higher education teaching and learning to provoke a deep engagement in learning.

Part 1: Intrinsic Motivation

We begin by quoting the following description of intrinsic motivation (Ryan & Deci, 2000):

“Perhaps no single phenomenon reflects the positive potential of human nature as much as intrinsic motivation, the inherent tendency to seek out novelty and challenges, to extend and exercise one’s capacities, to explore, and to learn.”

Being intrinsically motivated is to have a natural inclination to master and explore, and to be spontaneously interested, which are qualities that are essential to the cognitive and social development of human beings, and intrinsic motivation also delivers a large source of enjoyment and vitality throughout one’s life (Csikszentmihalyi & Rathunde, 1993; Ryan, 1995).

By definition, intrinsic motivation stems from the person themselves (Ryan & Deci, 2000). Examples of intrinsic motivation are an interest in a given subject or a desire to become (more) knowledgeable (Biggs & Tang, 2007). Intrinsically motivated people, as compared to extrinsically motivated people, demonstrate more interest, excitement and confidence, which results in an enhanced creativity, performance and general well-being (Deci & Ryan, 1991; Sheldon et al, 1997; Ryan, Deci & Grolnick, 1995).

Although intrinsic motivation might be seen as an innate ability, it can be enhanced or diminished by the learning environment conditions (Zhang et al., 2021). For example, giving the students the possibility to select between different topics for an assignment will increase their sense of autonomy, and will most likely end up in motivated students that put more effort into learning a matter of their interest. Similarly, asking the students open questions with no clear yes/no answer that presents them with moderate challenges will provide the students with the optimum conditions for enhancing their motivation towards learning. These scenarios promote the student’s intrinsic motivation, as they are encouraged to acquire new knowledge simply by the pleasure of learning something new of interest. It is usually up to the teachers to generate the optimal learning conditions for enhancing the students’ intrinsic motivation, ensuring that the interest of the students are fulfilled as this might positively feedback into the overall motivation of the classroom (relatedness in SDT).

In this context it is also important to know how the students perceive their abilities, and the feeling of control they have, as this is closely related to their motivation. A student can identify with the “growth mindset” concept (Dweck, 2008), referring to a student’s mindset where the goals achieved are the results of their own effort, contrary to the “fixed mindset” where students feel that they have no control over their success. As a teacher, making the student think they have a “growth mindset” helps the students as this will help to unlock the learning potential of the students. However, this is not achieved by neglecting the “fixed mindset” concept, but rather acknowledging we are a mix of both (Dweck, 2015). As teachers, we should appreciate their work, and not just their goals, guide them through the learning process while keeping them motivated to the learning process. This is in line with the feeling of autonomy having to be accompanied with the feeling of competence for a student to see their behaviour as self-determined by intrinsic motivation.

Part 2: Extrinsic Motivation

Organismic Integration Theory (OIT) (Deci & Ryan, 1985), a subtheory of STD, aims to differentiate forms of extrinsic motivation. It deals with factors that either enhance or diminish internalisation and integration. Deci and Ryan proposed to divide extrinsic motivation into four different types. Figure 1 shows such a division.

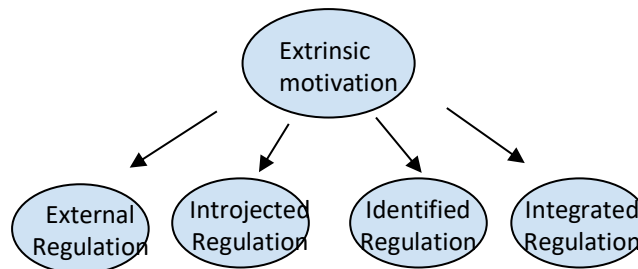


Figure 1. Division of extrinsic motivation into different types.

The first type of extrinsically motivated behaviours is known as *externally regulated*. This type is characterised by acting to satisfy an external demand or reward. For example, this category includes students that only do their homework for the very reason not to fail a course.

The second type of motivated behaviour is *introjected regulation*. This type of regulated behaviour in which people act to avoid guilt, shame or anxiety. Ego enhancements are also involved in this type of regulated behaviour. For example, such behaviour is motivated to avoid self-ridicule or to appear knowledgeable.

The next in line type of extrinsic motivation is *regulation through identification*. This type of motivated behaviour is observed when for example, the student reflects a conscious valuing of a regulation. In this case, the student accepts the action or regulation as relevant.

The final form of extrinsic motivation is *integrated regulation*. Integration occurs when identified regulations have been evaluated and assimilated with one's other values.

It is worth noting that some studies have investigated the relationship between extrinsic motivation and learning effectiveness. Such a study (Zaccone & Pedrini, 2019) was conducted on a group of 1491 students attending STEM related courses. They found that, in contrast to intrinsic motivation which has been shown to have a positive impact on learning effectiveness, extrinsic motivation might have a positive impact on short tasks but will most likely have a negative impact in the long run. Moreover, the study also tackles the gender's impact on learning as a moderating role.

We already know, from self-determination theory, the existence of a spectrum of types of motivations from the intrinsic to the extrinsic motivation (Vansteenkiste et al., 2008). Also, self-determination theory states that the well-being of individuals results from satisfying the need for competence. In other words, individuals fulfilling these needs will act motivated by intrinsic motivation. On the other hand, individuals who fail to satisfy these needs will react as a response to external regulations and pressures.

In fact, due to the psychological distress caused by the external regulations, the students' level of well-being decreases leading them to engage less with the learning process, which hinders their learning effectiveness. This leads to students with high intrinsic motivation and low extrinsic motivation displaying better learning outcomes than other students. Moreover, external motivation might even have an undermining effect on learning outcomes (Greene, J., 2011; Greene, R.J., 2011).

Intrinsic motivation is related to mood, pleasure, and a will to succeed and learn, which induces lasting commitment to learning. However, extrinsic motivation is generally related to expectations, which gives rise to fear of failure and pressure, which prevents learning. Therefore, external rewards related to work will most probably undermine students' learning, whereas intrinsic motivation will increase the effectiveness of learning.

Hence, as university teachers, we should be aware of the positive and negative aspects of extrinsic motivation and be aware of moments to enhance extrinsic motivation and of moments to enhance intrinsic motivation.

Design and methods

We combined the theory of motivation with information collected about the students' level of motivation. In order to collect the data, we constructed a survey using Google forms. The survey was distributed at a department level to all students in Biology. The form consisted of one question about their current level in higher education studies and 20 questions in which the students have to grade them 1 to 10, with 1 being completely disagreeing and 10 completely agreeing with the statement. The questions were aimed at discovering the levels of motivation of the students. We divided the questionnaire into two sections: first, we sought to know the background motivation of the students by asking questions like: "I consider myself a curious and exploring person, that likes to take up challenges", "What is your current level of motivation at this moment in your education?" or "I have considered quitting my education because I was not motivated"; second, we wanted to know how the students' motivation is affected by different teaching scenarios by asking questions like: "I feel motivated when only receiving traditional lectures in a course" or "I feel I learn the most when I actively participate in class (preparing small presentations, having seminars, group discussions, presenting results to colleagues, etc.)". We also gave them the possibility of answering an open question, expressing their opinion about their perspective regarding motivation. No other personal details were asked apart from their level in the studies. We have chosen Google form to conduct our survey because of the simplicity and familiarity of students with it.

Discussion

Results of the survey:

A total of 51 biology students participated in the survey. Although the questionnaire was distributed to all levels inside biology studies, 36 (72.5%) participants were in their Master's degree, while the rest were in their Bachelor's degree (Figure 2).

How far are you in your studies?

51 respuestas

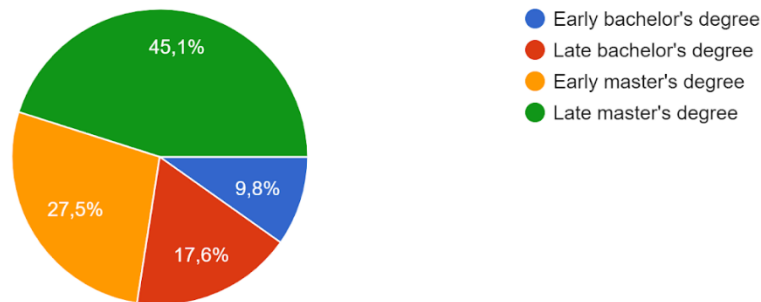
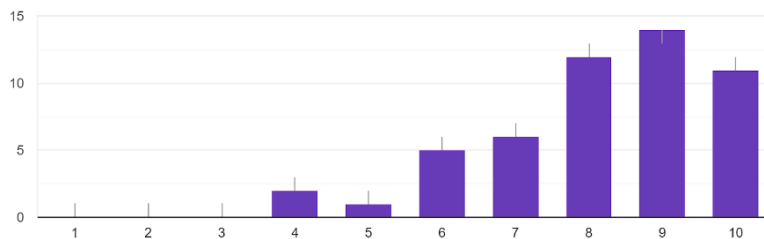


Figure 2. Pie chart showing the current education level of the students that took the survey

First, it is worth noticing the drop in the students' motivation throughout their studies (Figure 3). This motivation drop in the graphs could just be from a reality check when the students come to university; for instance, one often underestimates the level of difficulty at university and the challenges one faces.

What was your motivation at the beginning of the education?

51 respuestas



What is your current level of motivation at this moment in your education?

51 respuestas

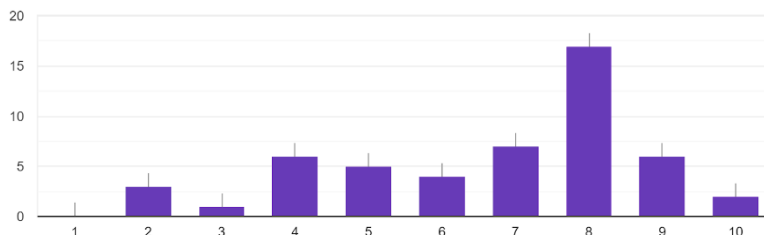


Figure 3. Levels of motivation by the university students at the beginning (top) and at the time of taking the survey (bottom).

In relation to different teaching techniques, it is also interesting to note that the students do not seem particularly motivated by the idea of a flipped classroom (Figure 4).

I feel motivated when I prepare material at home and devote all the time in classroom to having discussions
51 respuestas

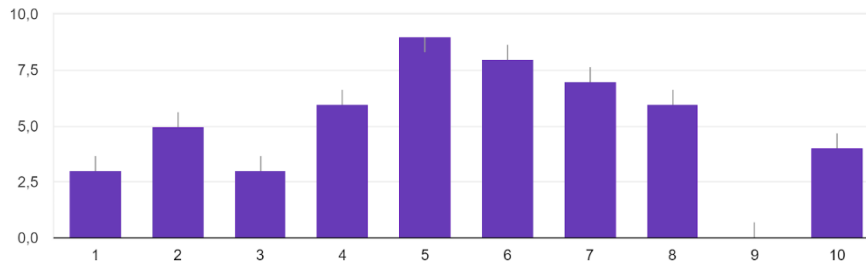


Figure 4. Answers given biology students to a question addressing the flip classroom concept.

This could be in line with studies showing that motivation increases when the students are given a choice or feel as if they have a degree of control. With the flipped classroom method, one is forced to prepare in advance, and preparing in advance is not an optional thing anymore.

It is also relevant to comment that many people in the survey mentioned the lack of motivation during online teaching and how hard it was to keep their motivations levels. (See comments by students at the very end)

The complete survey results are attached as an annex to this project.

Solutions and strategies to enhance motivation:

Despite the clear advantage to intrinsic motivation, it may not always be possible to increase intrinsic motivation in a person, which is why understanding extrinsic motivation and knowing how to increase it is equally as important.

It has been shown that optimal challenges and positive feedback promotes intrinsic motivation (Deci, 1975). Additionally, giving unexpected positive feedback on a task was found to increase a person's intrinsic motivation to perform the task, since the positive feedback fulfilled people's need for competence (Deci, 1971). On the other hand, it was found that negative feedback decreased intrinsic motivation, as it removes a person's need for competence (Vallerand & Reid, 1984). As a teacher, it is certainly sometimes necessary to give negative criticism or feedback. To reduce the decrease in intrinsic motivation, one can use the sandwich effect of starting with positive feedback, then giving the negative feedback, and ending with some other positive feedback.

It has also been found that intrinsic motivation flourishes if one feels secure and socially relevant. School children who thought their teachers to be uncaring or cold demonstrated lower intrinsic motivation (Grolnick & Ryan, 1989). Hence, at university,

a teacher can increase the students' intrinsic motivation by treating the students with respect and demonstrating an interest in wanting the students to succeed. Of course, as a teacher one has to find the right balance and maintain professionalism. One way to convey a sense of caring to the students is for the teacher to share their success and failure stories, and to share tips on how they themselves succeeded and stayed motivated as a student.

Additionally, one could share the experience of what led one to become a scientist and a teacher. In this way, students can take on what they think is relevant. As a teacher, if possible, let students have freedom in what they do and how they do it. For example, in a physics class, giving freedom to students to choose a physical phenomenon and design an experiment to describe it can spark and enhance creativity. This activity can allow students to identify the relevant regulations for their learning.

Next, in view of the fact that extrinsic motivation can sometimes have negative consequences, it is useful for university teachers to be aware of this and to know of possible suggestions for reducing extrinsic motivation where necessary. Possible suggestions to overcome externally regulated motivation include eliminating extrinsic rewards or penalties, and designing a course free of grades or "scary" final exams. This can allow students to have more time to process the acquired information during class.

Additionally, possible examples of diminishing introjected regulation include creating an atmosphere of respect in the classroom, and encouraging active and volunteer participation. Also group collaboration and peer discussion can enhance confidence among classmates.

As seen above, we have several suggestions for teachers to improve both the intrinsic and extrinsic motivation of the students. To assess and evaluate the impact of our suggestions to the teachers, one could conduct another survey of the students' motivation at a later date.

Role of gender:

It is interesting to note that a study (Zaccone & Pedrini, 2019) also found a moderating role of gender on the effect of both extrinsic and intrinsic motivation on learning efficiency. This role has been linked to the different expectations that society puts upon them such as leadership, ability to negotiate, career focus, as well as academic achievement being more linked to male than female in society. This has been widely discussed in literature, and it is described by social role theory.

According to this theory, people internalise specific gender roles and tend to have a behavior that conforms to the expectations of the society. These characteristics are enablers that can affect the link between motivation and learning effectiveness. Thus, since males are seen as more interested in success than females, the positive effect of intrinsic motivation will be stronger. Also, when we consider the effect of extrinsic motivation on the effectiveness of learning, the negative effects will occur even more in females since females may suffer from discrimination and the burden of confirming cultural stereotypes.

Conclusion

Without a doubt it is important to take both types of motivation into account, particularly since motivation is a fluid thing. Also, even though intrinsic motivation is sometimes viewed as the more preferred of the two, it is important to acknowledge that extrinsic motivation can evolve and lead to intrinsic motivation. Certainly, there is still much to be explored concerning intrinsic and extrinsic motivation.

As a teacher striving to increase their students' motivation, it is good to remember that there are several things that a teacher can do. For instance, for increasing intrinsic motivation, one should strive to give positive feedback and even unexpected positive feedback, be careful to sandwich negative feedback within positive feedback, give students a choice and an opportunity for self-direction and support them throughout their choice. For extrinsic motivation, one can offer external incentives rewards, but bear in mind that such incentives work best for short tasks, and can be detrimental in the long run and decrease the students' motivation.

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Feedback Summary

During the feedback session, we received the following feedback:

- the SDT theory should be better explained abstract and process report needs to be added, as well as page numbers remember to motivate our choice of method the graphs included in the annex should be double checked that none is missing
- rephrase certain sentences in Part 2 to avoid giving the impression that we want to eliminate extrinsic motivation, as extrinsic motivation is also good
- for the survey, it is good to include percentages, but standard deviation might not be a good representative
- one could reflect more on the interaction between intrinsic and extrinsic motivation throughout time
- to avoid using the phrase “make the lectures more entertaining”
- to give suggestions on how teachers can improve students’ motivation

We have incorporated all aspects of this feedback into our project.

Process Report

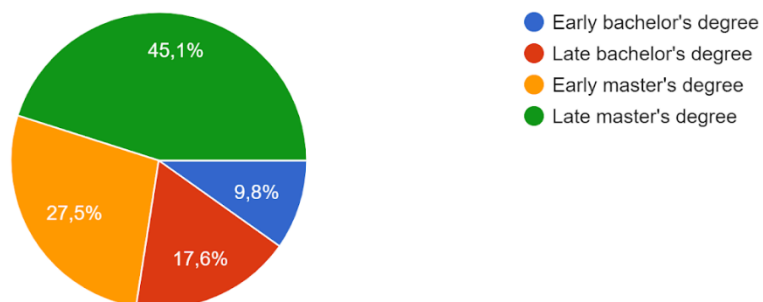
All members of the project participated actively in the design and focus of the project during its initial stages. We met on Zoom roughly twice a week to discuss the project. Anitha and Pablo worked on Part 1 of the project, whereas Omar and Ismail worked on Part 2. Omar also wrote the Introduction. Pablo took care of creating the survey and analysing the data collected. All of us worked on the conclusion and bibliography.

ANNEX

Survey results:

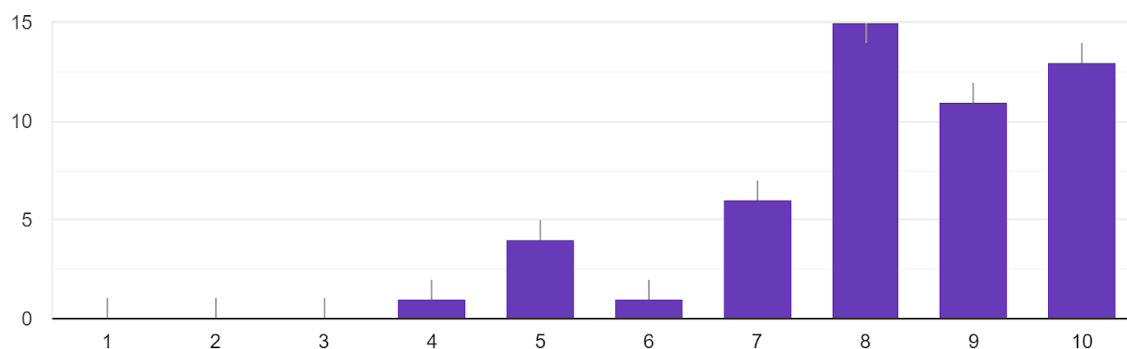
How far are you in your studies?

51 respuestas



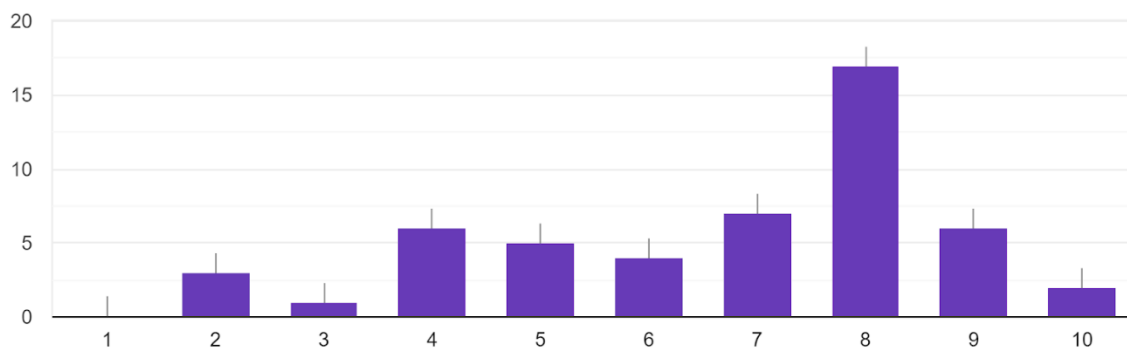
I consider myself a curious and exploring person, that likes to take up challenges

51 respuestas



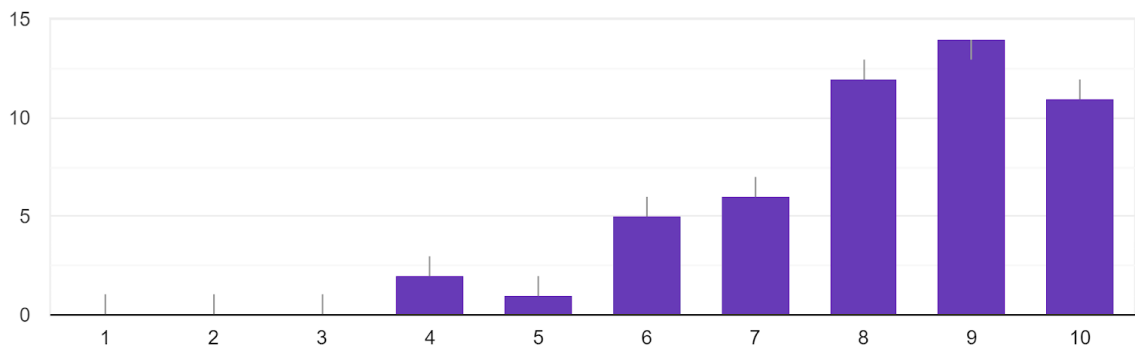
What is your current level of motivation at this moment in your education?

51 respuestas



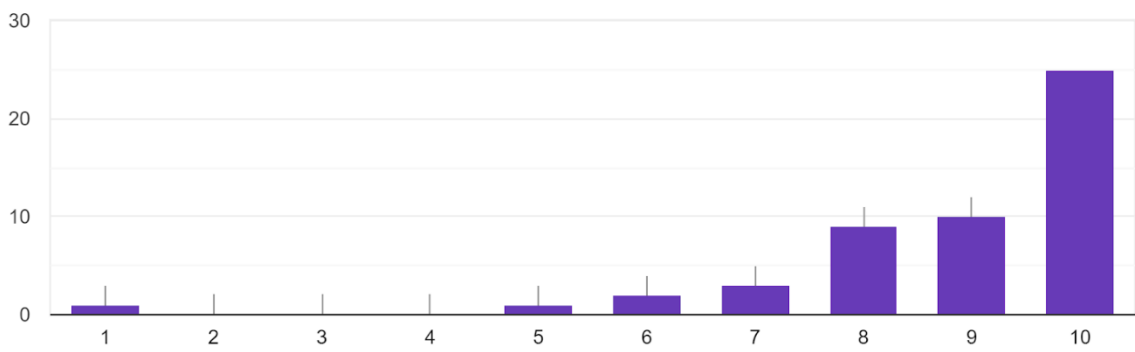
What was your motivation at the beginning of the education?

51 respuestas



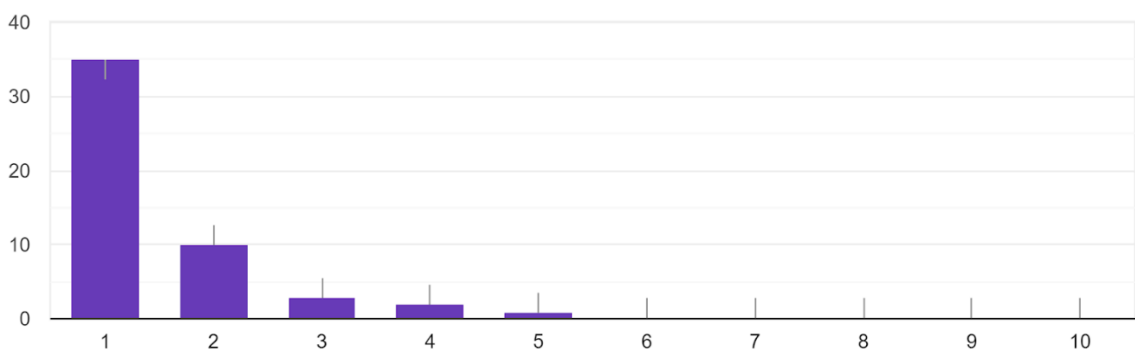
The main reason why I have enrolled in university studies is because I wanted to become more knowledgeable in that field

51 respuestas

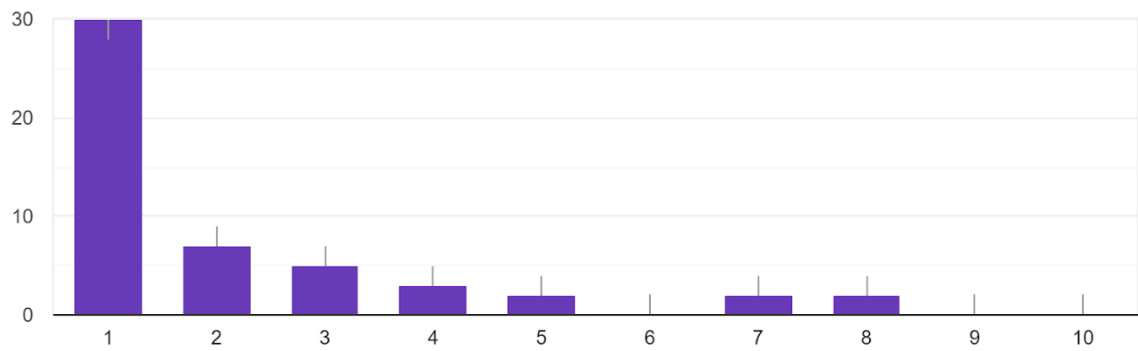


The main reason why I have enrolled in university studies is because I followed my friends

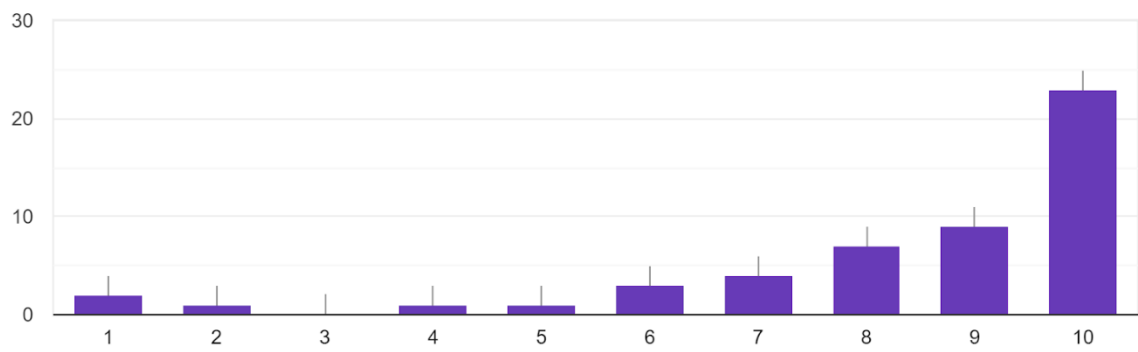
51 respuestas



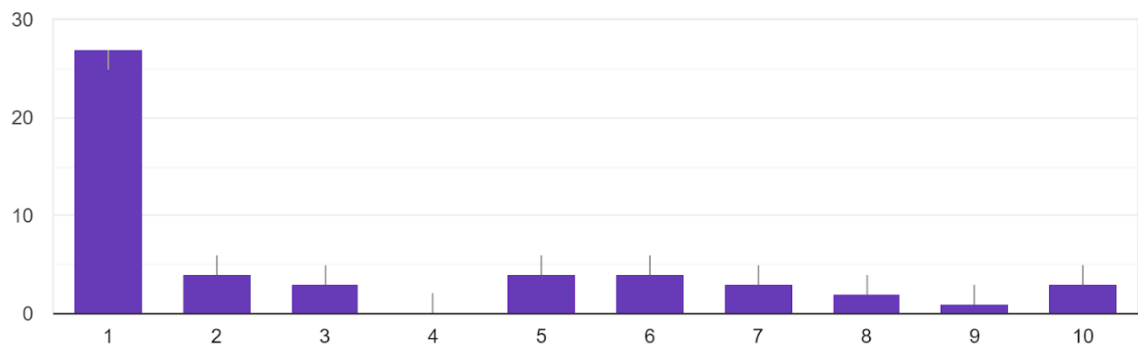
The main reason why I have enrolled in university studies is because my parents told me so
51 respuestas



The main reason why I have enrolled in university studies is because I wanted a job related to my studies
51 respuestas

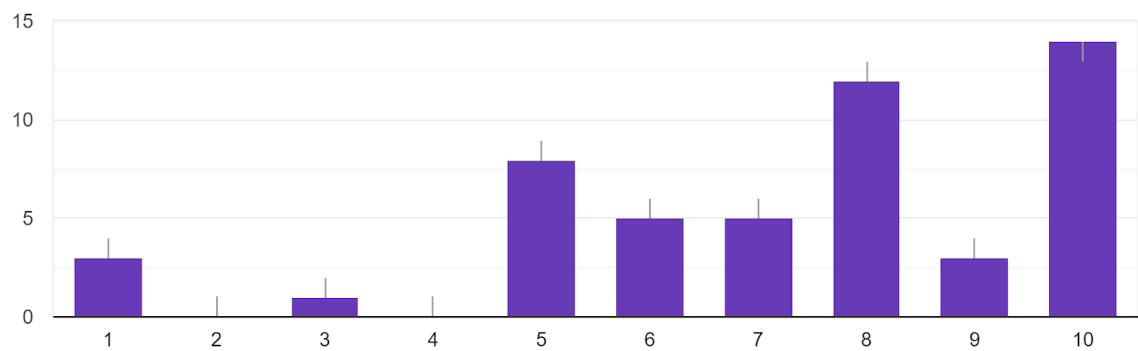


The main reason why I have enrolled in university studies is because I was not sure about what to do
51 respuestas



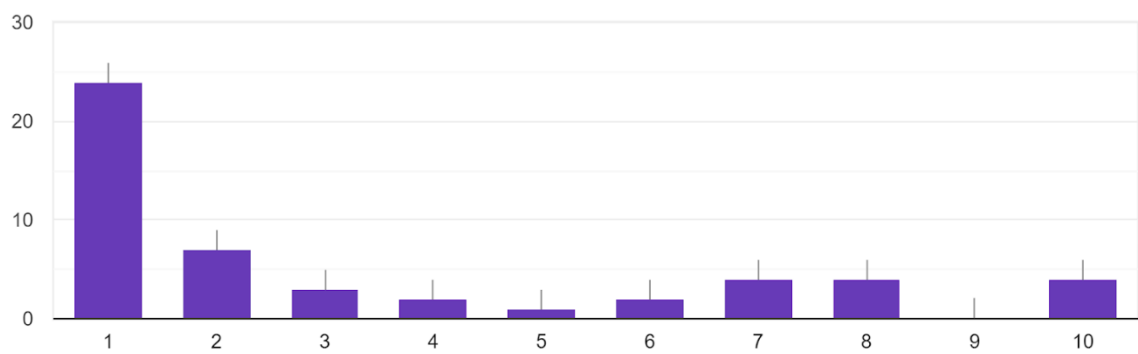
I have a vocation for my studies

51 respuestas



I have considered quitting my education because I was not motivated

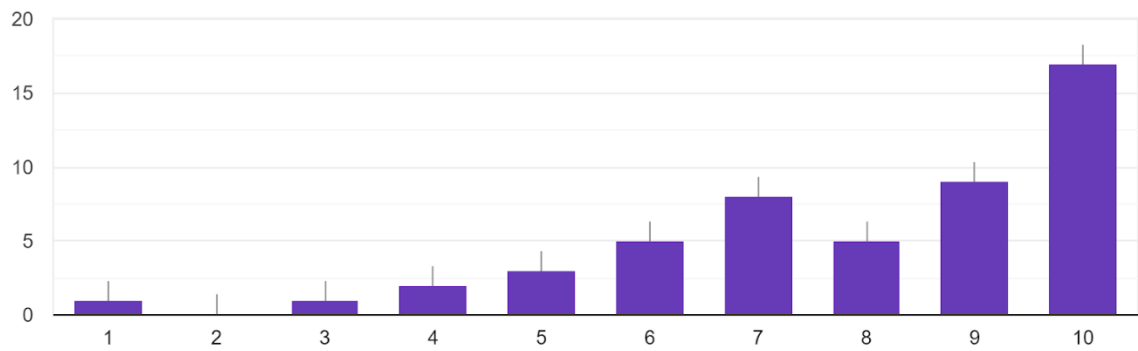
51 respuestas



Questions aiming to know what teaching techniques make a student motivated

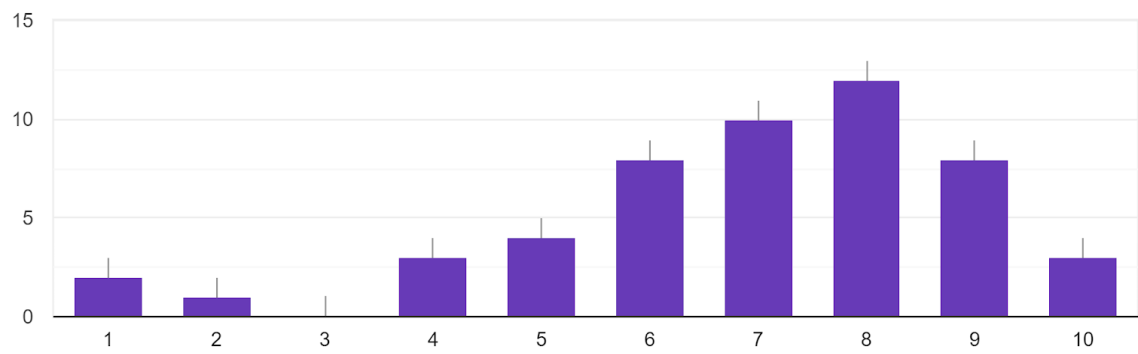
My motivation is highly affected by the teacher's level of motivation when teaching

51 respuestas



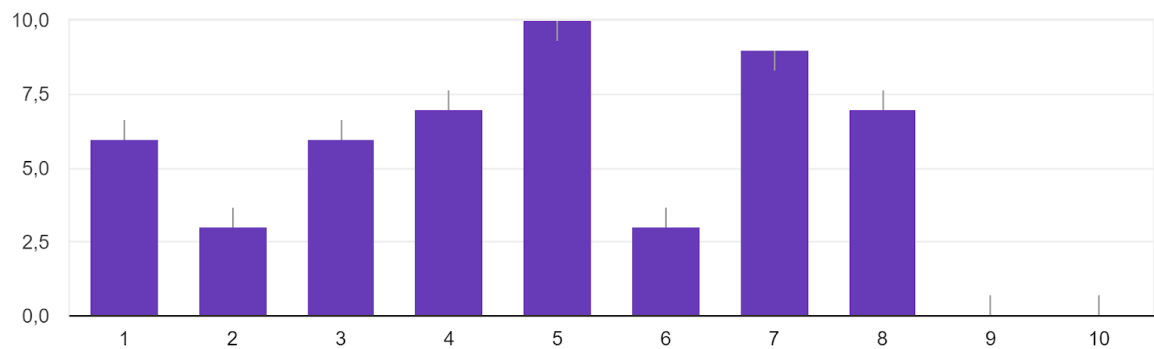
Overall, the teachers I had were highly motivated when teaching their students

51 respuestas



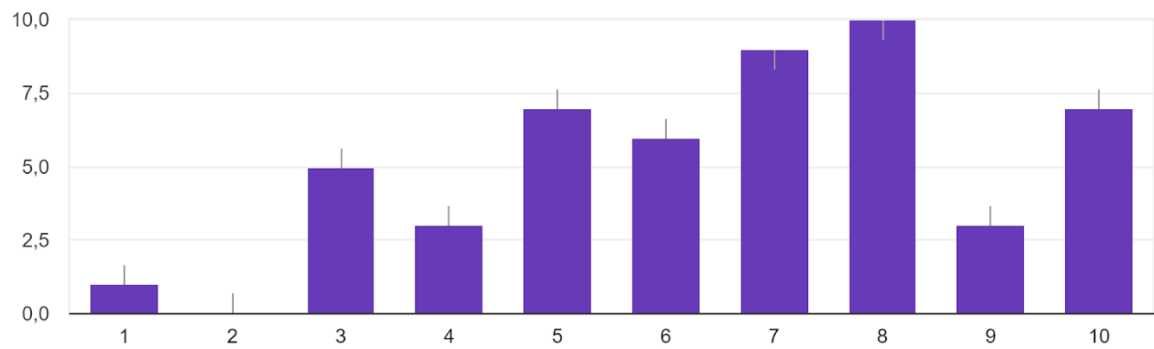
I feel motivated when only receiving traditional lectures in a course:

51 respuestas



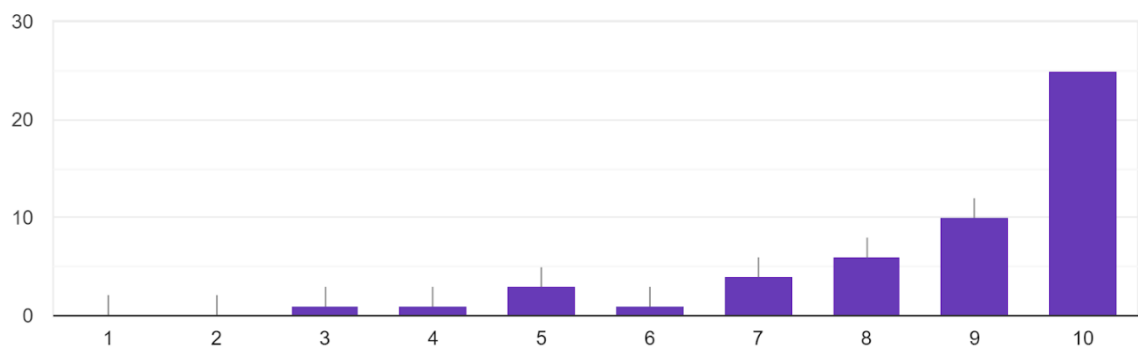
I feel motivated when only receiving practical exercises as teaching in a course (lab, seminars, field exercises, etc.)

51 respuestas



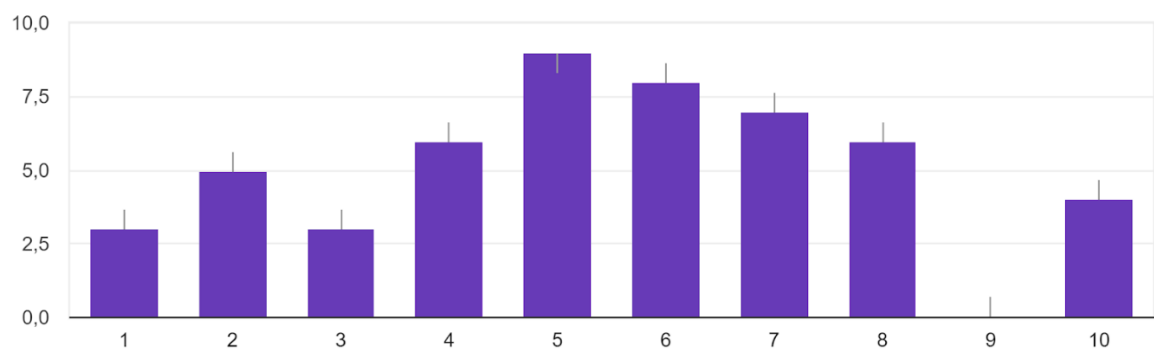
I feel motivated when learning a course through a mix of lectures and practical exercises (about 50% each)

51 respuestas



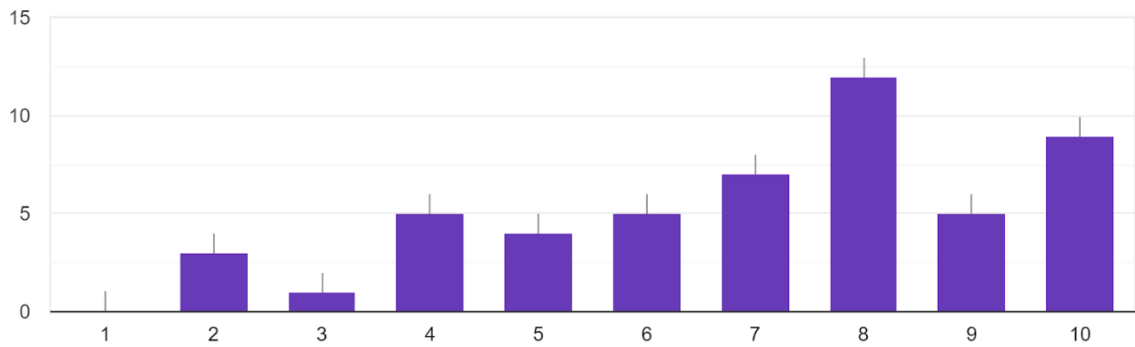
I feel motivated when I prepare material at home and devote all the time in classroom to having discussions

51 respuestas



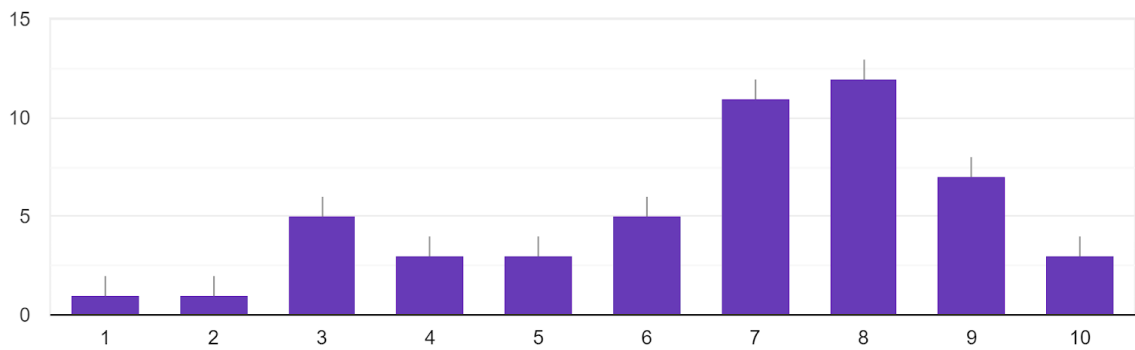
I feel I learn the most when I actively participate in class (prepare small presentations, having seminars, group discussions, presenting results to colleagues, etc.)

51 respuestas



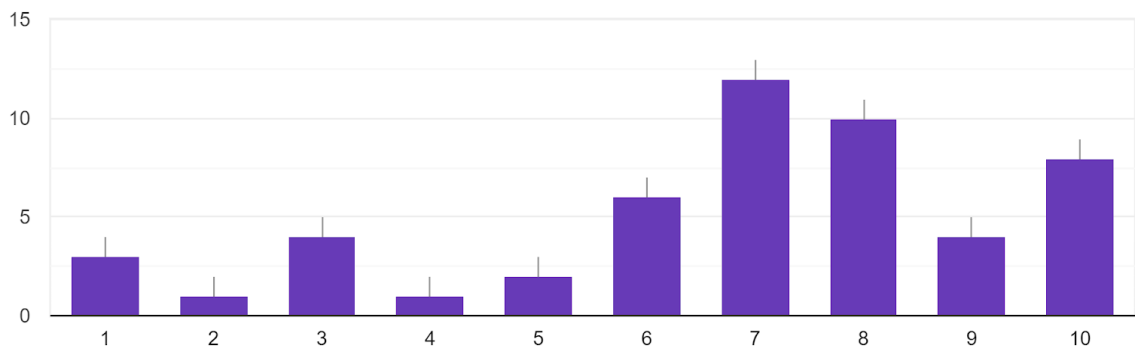
Making a course motivating for the students is all the responsibility of the teacher

51 respuestas



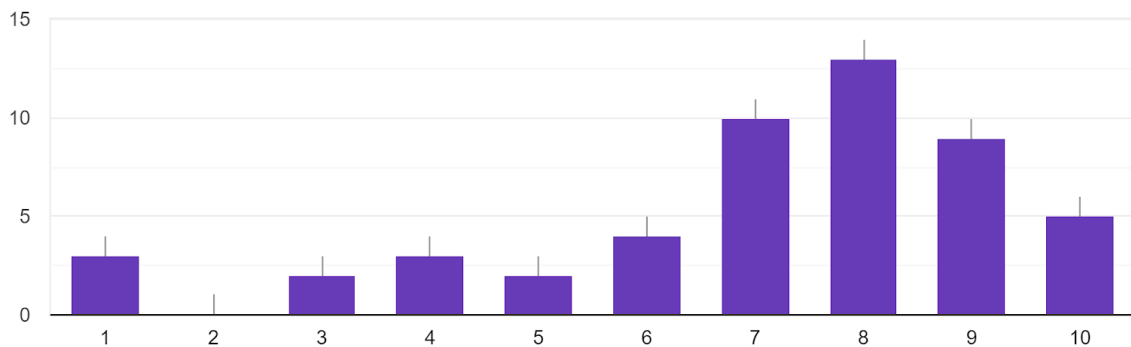
Other students play a vital role in your motivation towards a course

51 respuestas



Overall, I think the teaching methods used in higher education are up-to-date

51 respuestas



Interestingly students have lower motivation at the moment of the survey compared to when they started their university studies (mean \pm SD in the beginning: 8.05 ± 1.56 vs now: 6.22 ± 2.12)

- 15 students out of 50 (30%!) have thought (score 5 or more) about quitting their academic studies because of the lack of motivation. Overall, the majority of the students are highly affected by the motivation shown by the teacher. Also, the teachers were overall perceived with a good level of motivation, although there is room for improvement.
- Students agree that the main responsibility for making a course motivating is the teachers, but the attitude shown by other classmates also plays a vital role in their motivation.

Teaching techniques to increase the students' motivation: Having only lectures seems to be the worst teaching scenario to enhance the student's motivation (mean \pm SD: 4.08 ± 2.28). Also having only practical exercises is not a great improvement (mean \pm SD: 6.12 ± 2.28). Having a course with 50% of the time lectures and 50% of the time practical exercises shows a big increase in the motivation perceived by the students (mean \pm SD: 8.49 ± 1.79)

- Overall, students seem slightly unmotivated when they are asked to prepare material at home for devoting all the time in class to discussions (mean \pm SD: 4.78 ± 2.41) and does not seem to be a good improvement compared to a course where only lectures are given.
- Overall students think the teaching techniques used at university are up-to-date, but here again, there is room for improvement.

Is there anything else you would like to share regarding your motivation?

The amount of workload one has to do also might affect my motivation

My motivation is often also effected by the weather, and whether I feel stressed about other things in my life.

The main loss of motivation is feeling that perhaps i wont be able to find work after my education and then it loses some of its meaning

I study conservation biology. All our teachers work with either birds or pollinators. I could have felt more motivated if we had teachers in other areas as well, like mammals, or sharks or african wildlife, etc. I mean I would have felt more motivated if we had teachers with more diverse field of work in my area. Also the load of work and different things in each course to learn I believe is too much, I would have felt more motivated if it was a bit less, so that I didn't always feel behind.

The level of the course also influences motivation for me. Especially some of the courses were too easy or needed a low amount of time committed. This is also not good for motivation, if the course is too easy the few things you have to do feel harder to do. Of course a course that is too hard is also bad for motivation, as this will mean drop outs of the course.

What I'm studying now is my backup for the future.

Depends on the country and the area, if you are asking about Lund yes, the teachers are up-to-date except for punctual exceptions. If we talk about other universities (as Stockholm or SLU) or my bachelor university in Spain, teachers are definitely not up to date or even want to teach in some cases.

High motivation - studying to understand concepts, patterns, structures. Low motivation when only memorising stuff like proteins, species, names etc

Zoom is hell. You missed classroom chat, group dynamics crucial.

I will say, there was a time in the middle of my bachelors studies where i lost most of my motivation but with this current course it is back to being decent :) i had a big dip last semester

Online education kills motivation

I don't think I'm in a position to judge whether teaching methods are up to date

My motivation is also dependant on how people treat me (and those around me). If there is a bad environment in a lecture, seminar or lab I lose motivation to do it