The relationships between students´ achievements, self-efficacy and motivation in biology education

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ABSTRACT

Students’ achievements in scientific subjects, such as biology, have stringently declined during the past decade. In order to disrupt these declining results in scientific subjects it’s important to identify factors leading to decreased academic achievements within the scientific subjects. This study aims to investigate the association between students’ achievements in biology and self-efficacy beliefs, intrinsic motivation, extrinsic motivation and amotivation among 120 Swedish students with an age between thirteen and fifteen years. A self-efficacy sub-scale of the “Motivational for Learning Questionnaire” (MSLQ) was used to evaluate students’ self-efficacy beliefs and an “Academic Motivation Scale for Learning Biology” (AMSLB) was used to determine students’ motivation to learn biology. The results showed a significant positive correlation between students’ biology achievement and self-efficacy beliefs, intrinsic motivation and extrinsic motivation. Further, a significant negative correlation was found between students’ biology achievement and amotivation. These findings indicates that both self-efficacy beliefs, intrinsic motivation and extrinsic motivation could be important underlying factors that positively impact students’ achievements in biology.

Keywords: biology achievement ‘ self-efficacy ‘ intrinsic motivation ‘ extrinsic motivation ‘ amotivation
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1 INTRODUCTION

The results in science subject, such as biology, have during the last decade been stringently declining among Swedish students in comparison with other countries, such as for example Finland (Skolverket 2004; Skolverket 2010; Skolverket 2013). There is not a distinct difference between the numbers of teaching hours in these subjects between the countries, indicating that other factors might be more crucial for students’ achievements (Skolverket 2010; Skolverket 2013). Andersson & Wallin (2006) emphasise students’ motivation in scientific subjects as an important variable for understanding, which in turn is a prerequisite for learning and knowledge development. This is also in line with Deci and Ryan’s self-determination theory, in which motivation is thought to impact students’ achievement levels (Deci and Ryan 1985). Another scientist Bandura (1986) hypothesized that an individual’s self-efficacy beliefs is another variable that impacts the achievement levels in a positive manner.

In order to disrupt these declining results in scientific subjects, such as biology, it’s important to identify the underlying factors leading to decreased achievements in the scientific subjects. Therefore this study investigates the correlation between students’ self-efficacy beliefs and their study result in biology as well as the correlation between students’ motivation and their achievements in biology.
2 BACKGROUND

2.1 Students’ achievements in scientific subjects

Students’ achievements in scientific subjects have deteriorated during the past decade (Skolverket 2004; Skolverket 2008). Even if the most recent study from TIMSS (Trends in International Mathematics and Science Study) and PISA (Program for International Student Assessment) show that students’ results in scientific studies have improved compared to previous years, the difference was not significant and thus students’ achievement levels in these subjects have not increased during the past ten years (Skolverket 2016a; Skolverket 2016b).

The TIMSS study is conducted every fourth year in several countries including OECD- (organisation of Economic co-operation and development), EU- (European Union) and some additional countries, such as South Africa and Russia (Skolverket 2016a). The study is conducted in class 4 and 8 in all countries. As the study is conducted using the same setup, results can be compared between the countries and some of the questions reappears every time the study is conducted, making it possible to compare students’ results between years (Skolverket 2016a). When comparing Swedish students’ results in scientific subjects with the other 47 participating countries, their achievements is above average among fourth grade students and equal to average among eight grade students (Skolverket 2016a). In comparison with the Nordic countries, Swedish students achieve better results than students in Denmark and poorer results than Finnish students and perform at the same level as Norwegian students. However, the students’ age differs among the participating OECD- and EU countries, where Swedish students on average are 6 month older, which may have had an impact on the results (Skolverket 2016a).

The results seen in the PISA study, which is conducted every third year and includes fifteen-years-old students, partially correspond with the results seen in the TIMSS study (Skolverket 2016a; Skolverket 2016b). In conformity with the TIMSS study, Swedish students achieve lower results in scientific subjects in comparison with Finnish students and at the same level as Norwegian students (Skolverket 2016a; Skolverket 2016b). The difference between the TIMSS and PISA study concerns the difference in achievement levels between Swedish and Danish students, where Danish students achieve better results in comparison with Swedish students in the PISA study (Skolverket 2016a; Skolverket 2016b), but not in the TIMSS study, which indicates the opposite situation (Skolverket 2016a). However, the results from both the TIMSS and the PISA study show that Swedish students’ achievements in scientific subjects have decreased during the past decade (Skolverket 2016a; Skolverket 2016b).

Among the scientific subjects, Swedish students’ achievement levels in chemistry and physics are below average compared to the overall performance in scientific subjects while the achievements in biology are on average (Skolverket 2016a). Similar difference in achievement levels between the scientific subjects were found in the TIMSS study conducted 2011 (Skolverket 2012). The same pattern is found in students’ achievement levels in scientific subjects among our neighbouring
countries; however both students from Denmark and Finland obtained better results in biology than average achievement levels in scientific subjects (Skolverket 2016a).

Even though the results in scientific subjects have increased among Swedish students, they are far behind those results seen in 1995 (Skolverket 2004; 2016a). In order to reach the levels of knowledge Swedish students achieved in 1995, the underlying factors responsible for the remarkable decline in achievement levels during the past decade have to be identified.

2.2 Self-efficacy

The social cognitive theory developed by Bandura in 1986 defines self-efficacy as “people’s judgements of their capabilities to organize and execute courses of action required to attain designated types of performances” (Bandura 1986, p.128). Self-efficacy belief is thought to be an important factor impacting one’s motivation to learn, ability to establish personal goals, confidence of an individual’s own capacity and ability to solve tasks and problems (Bandura 1986). This implicates that individuals’ self-efficacy judgement concerns beliefs in their own capacities rather than the individuals’ actual capacities (Bong & Skaalvik 2003). Bandura (1986) argues that an individual’s self-efficacy can be used to predict for example academic achievements, education- and career choices.

Previous studies have shown a positive correlation between students’ self-efficacy beliefs and their academic achievements in mathematics (e.g. Pajares & Miller, 1994; Pajares & Kranzler 1995; Nielsen & Moore 2003; Stevens et al. 2004; Nasser & Birenbaum 2005; Mousoulides & Philippou 2005) as well as in chemistry (Kan & Kabas 2006; Lalich et al. 2006). Sartawi et al. (2012) investigated the relationship between students’ self-efficacy beliefs and mathematical achievement and found that students with higher self-efficacy beliefs obtained higher grades than students with low self-efficacy beliefs. Furthermore, Pajares & Schunk (2001) and Pajares (1996) showed that students’ academic achievements in mathematics were correlated with their beliefs in their capability to reach a particular goal. Students with high self-efficacy beliefs in mathematics also tend to work harder, are more interested in their tasks and can better handle difficulties, compared to students with low self-efficacy beliefs (Schunk & Pajares 2002; Brown & Lent 2006; Pajares & Urden 2006). However, previous studies indicate that students’ self-efficacy beliefs vary between different subjects (Bong 1997). A student with high self-efficacy beliefs in mathematics can have low self-efficacy beliefs in chemistry, which indicates that a student’s self-efficacy belief is closely related to a particular subject (Bandura 1986; Bong 1997). How the degree of self-efficacy beliefs in students relates to their achievements in biology is still to be resolved.
2.3 Motivation

Motivation, another factor thought to impact students’ academic achievement (Deci & Ryan 1985; Elliot & Dweck 2005), is usually explained by using the Self Determination Theory (SDT) approach (Deci & Ryan 1985). This theory divides motivation into three categories; extrinsic motivation, intrinsic motivation and amotivation (Deci & Ryan 1985). Extrinsic motivation refers to a behavior influenced by external factors, such as good grades and higher social status. Intrinsic motivation, on the other hand means a behavior impacted by a person’s interest and curiosity and thereby not impacted by external factors (Guay et al. 2010). Amotivation means absence of motivation; individuals who lack motivation conduct tasks without knowing the aim and have difficulties in understanding the interaction between their behavior and its outcome (Ryan & Deci 2000a).

Both intrinsic- and extrinsic motivation has been shown to be positively correlated with higher mathematic achievements (e.g. Gottfried 1985; Gottfried et al. 1994; Gottfried et al. 2007; Yahaya et al. 2010) and better reading and writing performance (Broussard & Garrison 2004). Among these two, intrinsic motivation has been considered as the most essential form of motivation (Ryan & Deci 2000a; Ryan & Deci 2000b). This type of motivation has been found to result in deeper learning and higher achievements compared to extrinsic motivation in mathematics (Ryan & Deci 2000a; Ryan & Deci 2000b; Areepattamannil et al. 2010). These findings are in accordance with the SDT theory, where students motivated by intrinsic motivation, i.e. students performing tasks based on their inherent satisfactions, are thought to achieve deeper understanding compared to students motivated by extrinsic motivation, i.e. performing task to avoid punishments (Ryan & Deci 2000a).

According to the SDT theory, an individual can be motivated by both intrinsic- and extrinsic motivation simultaneously in different degrees (Ryan & Deci 2000a; Covington & Mueller 2001). Furthermore, as intrinsic motivation concerns the individuals’ genuine interest for a particular task, the tasks and activities that intrinsically motivate individuals differ between individuals (Ryan & Deci 2000a). However, intrinsic or extrinsic motivation will change over time, meaning that an individual motivated by intrinsic motivation for a certain task can later on instead be motivated by external motivation (Deci 1975; Pintrich & Schunk 2002).

However, contrary to intrinsic- and extrinsic motivation, amotivation has been shown to have a negative impact on students’ achievements in mathematics (Vallerand et al. 1992; Walker et al. 2006). This is in accordance with the SDT theory where students with high level of amotivation are thought to achieve lower achievements compared to students with a low level of amotivation (Ryan & Deci 2000a). This presumption is based on the fact that amotivation refers to lack of motivation (Ryan & Deci 2000a).

It is plausible, but as far as I am aware, not empirically studied, if this pattern is true even in biology.
3 AIM AND HYPOTHESIS

Previous studies have shown a positive correlation between students’ intrinsic- and extrinsic motivation level and their achievements in mathematics, reading and writing. Several studies have also shown a positive correlation between students’ self-efficacy beliefs and their performance in mathematics and chemistry. Additionally, studies have found a negative correlation between students’ amotivation and their achievements in mathematics and chemistry. Whatever the same trends regard the biology subjects are still to be investigated. The aim with this study is to evaluate if students’ achievements in biology is correlated to their motivation and self-efficacy beliefs.

My first hypothesis is that there is a significant positive correlation between students’ biology achievement and self-efficacy beliefs. The null hypothesis is that there is no positive significant association between biology achievement and self-efficacy beliefs.

My second hypothesis is that there is a significant positive correlation between students’ biology achievement and intrinsic motivation. The null hypothesis is that there is no positive significant association between biology achievement and intrinsic motivation.

My third hypothesis is that there is a significant positive correlation between students’ biology achievement and extrinsic motivation. The null hypothesis is that there is no positive significant association between biology achievement and extrinsic motivation.

My fourth hypothesis is that there is a significant negative association between students’ biology achievement and amotivation. The null hypothesis is that there is no negative significant association between biology achievement and amotivation.
4 METHOD

4.1 Participants
Within this study 120 students participated; 48 seventh grade students, 35 eighth grade students and 37 ninth grade students. Of the participated students 47% were males and 53% were females. All participants studied at the same school, which was located in the countryside in the south-eastern part of Sweden. According to the teachers most of the students that studied at this school came from families with either low or middle socioeconomic status. In general, the educational level among the parents were low, approximately half of the parents had a secondary school education while only a few parents had graduated from the university. The majority of the students were born in Sweden and only a small percentage of the students were born in another country.

4.2 Data collecting tools
The data for this study was collected by using questionnaires. The questionnaire (appendix 1) was constructed using two scales; the “Motivational for Learning Questionnaire” (MSLQ) scale was implemented to determine students’ self-efficacy beliefs while the “Academic Motivation Scale for Learning Biology” (AMSLB) scale was used to evaluate students intrinsic-, extrinsic and amotivation. Both of these measuring instruments have been considered to reach high reliability requirements, which is a prerequisite for obtaining valid results (Duncan & McKeachie 2005). Additionally, in the beginning of the questionnaire, two general questions were stated, including the students name and class. These parameters were used to straighten out the students mark in biology.

4.2.1 Self-efficacy
To elucidate students’ degree of self-efficacy in biology, a self-efficacy sub-scale of the MSLQ scale was used (Pintrich et al. 1991). Overall, 8 statements were used to measure students’ self-efficacy beliefs (Appendix 1, statements 18-25). All questions were translated into Swedish and the language was adapted to the students’ education level to facilitate students understanding and to avoid that students skipped to answer statements (Bryman 2014).

The response scale consisted of a range between 1-7, where number 1 indicated strong disagreement while 7 indicated strong agreement. Hence, a low value indicated a low degree of self-efficacy beliefs (Pintrich et al. 1991). The self-efficacy value for each student was established by calculating the mean value from 8 statements.
4.2.2 Motivation
To determine the students’ motivation to learn biology the AMSLB scale was used (Aydin 2014). This scale consists of 3 sub-scales amotivation, external- and intrinsic motivation. Five statements were used to evaluating the impact of amotivation on biology achievement (appendix 1; statements 7-11), 6 statements for measuring external motivation (Appendix 1; statements 12-17) and 6 statements for measuring internal motivation (Appendix 1; statements 1-6). The number of statements used for measure students’ amotivation, extrinsic- and intrinsic motivation was reduced to 17 statements in comparison with the original number of 28 statements. This reduction was made to avoid tiredness and thus reduce the risk for decreased corresponding thoughtfully for answering the statements in the questionnaire (Bryman 2014). Translation of questions, adaption of language, response scale and calculation of mean value, followed the same procedure as for self-efficacy mentioned previous.

4.2.3 Achievements
The grade from previous semester was used to measure the students’ biology achievements.

4.2.4 Data processing and statistical analysis
To determine the impact of self-efficacy, intrinsic-, extrinsic- and amotivation on academic achievement in biology a Pearson correlation test was used. The mean value calculated for each variable and each student was used in the analysis which was conducted in R ver. 3.0.2 (R Development Core Team 2011).

4.3 Ethical considerations
All participants attended voluntary in the study and all students were informed about the aim of the study (Bryman 2014; Vetenskapsrådet 2011). The students were also informed that their answers only were intended for use in this study and will not be distributed for conventional practice or to other persons, such as their teachers (Bryman 2014; Vetenskapsrådet 2011). The questions within the questionnaires could not be considered as of offensive or sensitive character, which should implicate that all students corresponded thoughtfully.
5  RESULTS

5.1  Questionnaires
Of the 120 reciprocated questionnaires, a number of 112 were used for further analysis. The excluded questionnaires contained several unanswered questions for each variable.

5.2  Achievements in biology and self-efficacy
A significant positive correlation was found between students’ achievements in biology and their self-efficacy beliefs ($r=0.441$, $p<0.001$) (figure 1).

Figure 1: Relationship between students’ grade and their self-efficacy beliefs. The dots have been scattered in the x-dimension to ease the interpretation of the data.
5.3 Achievements in biology and intrinsic motivation

There was a significant positive correlation between students´ achievements in biology and their intrinsic motivation \((r=0.442, p<0.001)\) (figure 2).

![Figure 2: Relationship between students´ grade and their intrinsic motivation. The dots have been scattered in the x-dimension to ease the interpretation of the data.](image)

5.4 Achievements in biology and extrinsic motivation

A significant positive correlation was found between students´ achievements in biology and their extrinsic motivation \((r=0.211, p=0.03)\) (figure 3).

![Figure 3: Relationship between students´ grade and their extrinsic motivation. The dots have been scattered in the x-dimension to ease the interpretation of the data.](image)
5.5 Achievements in biology and amotivation

A significant negative correlation was found between students’ achievements in biology and their amotivation ($r = -0.337$, $p<0.001$) (figure 4).

![Figure 4: Relationship between students’ grade and their amotivation. The dots have been scattered in the x-dimension to ease the interpretation of the data.](image)
6 DISCUSSION

In this study a positive significant correlation was found between students’ achievements and the tested variables; intrinsic motivation, extrinsic motivation and self-efficacy. Additionally, a negative significant correlation was found between students’ achievements and amotivation. These results were in accordance with the hypotheses as well as earlier findings that have shown a positive correlation between students’ achievements in mathematics and intrinsic motivation, extrinsic motivation, self-efficacy and a negative correlation between students’ achievements and their amotivation (e.g. Pajares & Miller 1994; Sartawi et al. 2012; Gottfried et al. 2007; Yahaya et al. 2010; Vallerand et al. 1992). Furthermore, a stronger correlation was found between students’ achievements and intrinsic motivation compared to the former and extrinsic motivation.

6.1 Association between self-efficacy and biology achievements

The significant positive relationship between students’ achievements level in biology and students’ self-efficacy beliefs was in accordance with my first hypothesis. This implicates that students with high self-efficacy beliefs tend to achieve higher grades in biology. Several other studies investigating the association between self-efficacy and students’ achievements in mathematics and chemistry support these findings (e.g. Pajares & Miller 1994; Pajares & Kranzler 1995; Nielsen & Moore 2003; Stevens et al. 2004; Nasser & Birenbaum 2005; Stevens et al. 2004; Kan & Kabas 2006; Lalich et al. 2006). The positive correlation found between students’ self-efficacy beliefs and achievements corresponds to Bandura’s theory that individuals with high self-efficacy beliefs acquire better performance in comparison with students harboring a low level of self-efficacy beliefs (Bandura, 1986). According to Banduras hypothesis, students with high self-efficacy beliefs devote themselves to cognitive processes, (which for example lead to higher persistence when dealing with complex tasks), more often than students with low self-efficacy beliefs (Bandura, 1986). This has been shown in previous studies, where students with high self-efficacy beliefs in mathematics tend to work harder, are more interested in their tasks and can better handle difficulties compared to students with low self-efficacy beliefs (Brown & Lent 2006; Pajares & Urdan 2006). These findings, together with the result in this study, suggest that self-efficacy is an important factor impacting students’ achievement levels in several different scientific subjects. Previous studies have identified mastery experiences as the most important factor that positively impacts students’ self-efficacy, where success increases students’ self-efficacy while failures leads to the opposite effect (Bandura 1986; Guthrie et al. 2007). It would be interesting to further investigate the factors impacting students’ self-efficacy beliefs and further evaluate how these findings can be used in the education system to improve students’ self-efficacy beliefs.

Moreover, when strategies to increase students’ self-efficacy beliefs have been complied it could be useful for teachers to evaluate their students’ beliefs in their own capacities. If the teachers are aware of the students’ self-efficacy beliefs it would be possible to perform the teaching to increase this parameter among the students and thereby maybe also improve students’ achievements levels. As students’
self-efficacy beliefs tend to vary between different subjects (Bong, 1997), it would be desirable to investigate how this parameter differs between subjects among the students.

6.2 Association between intrinsic motivation and biology achievements

The significant positive correlation between students’ achievements level in biology and students’ intrinsic motivation was in accordance with the second hypothesis. This indicates that students with high intrinsic motivation also tend to acquire higher grades in biology. These results are in accordance with previous studies investigating the relationship between intrinsic motivation and academic performance in mathematics (e.g. Gottfried 1985; Gottfried et al. 1994; Gottfried et al. 2007; Yahaya et al. 2010) and reading and writing (Broussard & Garrison, 2004). Students driven by intrinsic motivation have in previous studies been shown to achieve higher learning quality such as deeper understanding, and can persist longer when dealing with difficult tasks, in relation to students motivated by extrinsic motivation (Ryan & Deci 2000a). However, as intrinsic motivation tends to affect students’ achievement levels it would be interesting to evaluate how the intrinsic motivation can be improved, especially among students with low performance.

6.3 Association between extrinsic motivation and biology achievements

The significant positive correlation between students’ achievement levels in biology and students’ extrinsic motivation was in accordance with the third hypothesis. This implicates that students with high extrinsic motivation also tend to acquire higher grades in biology. However, the lower r value between grade and extrinsic motivation compared to grade and intrinsic motivation indicates that there might be a weaker relationship between the grade and the former compared to the latter (figure 2 and 3). The pattern showing a stronger correlation between intrinsic motivation and students’ achievements than between extrinsic motivation and their achievements has also been found in mathematics (Ryan & Deci 2000a; Ryan & Deci 2000b; Areepattamannil et al. 2010). These results may be explained by Deci and Ryan’s self-determination theory (SDT), where they hypothesized that students motivated by intrinsic motivation tended to achieve higher performance compared to students motivated by extrinsic motivation (Deci & Ryan 1985). The difference in achievement is, according to Deci and Ryan’s theory, due to the origin of students’ motivation. Intrinsic motivated individuals perform tasks based on their inherent satisfactions which should result in higher learning quality. Extrinsic motivated students, on the other hand, are motivated by external factors, such as good grades and avoiding of punishments (Deci & Ryan 1985). In this context it would be interesting to consider how grading students in school impact students’ learning qualities in future studies, as grading is an extrinsic motivation factor. Another extrinsic motivation factor is an evaluation test, and it would be interesting to investigate to what degree students’ learning qualities are affected by the number of tests performed. It would also be interesting to evaluate if and how students’ intrinsic and extrinsic motivation vary over time during their education.
6.4 Association between amotivation and biology achievements

The significant negative correlation between students’ achievement levels in biology and students’ amotivation was in accordance with my fourth hypothesis. This indicates that students with high degree of amotivation also tend to achieve lower grades in biology. This result is in consistence with another study investigating the relationship between students’ achievements in mathematics and amotivation (Vallerand et al. 1992). In the Self Determination theory (SDT) amotivation is equal to absence of motivation and hence students with high grades in biology should, according to this theory, have a low level of amotivation (Deci & Ryan 1985). This is in line with the results found in this study.

7 CONCLUSIONS AND FUTURE DIRECTIONS

This study was aimed to investigate the correlation between students’ achievements in biology and their self-efficacy beliefs, intrinsic motivation, extrinsic motivation and amotivation. As expected, a significant positive relationship was found between students’ achievements in biology and the three tested variables self-efficacy beliefs, intrinsic motivation and extrinsic motivation. Further, a significant negative correlation was found between students’ achievements in biology and amotivation. These findings indicate that both self-efficacy, intrinsic motivation and extrinsic motivation could be important underlying factors that positively impact students’ achievements in biology. Future research should investigate the factors impacting students’ self-efficacy beliefs in biology and further evaluate how these findings can be used in the education system to improve students’ self-efficacy beliefs. Additionally, it would be interesting to consider how grading students in school and the number of tests impact students’ learning qualities in future studies. Finally, it would also be interesting to evaluate if and how students’ intrinsic and extrinsic motivation vary over time during their education.

8 ACKNOWLEDGMENT

I would like to express my gratitude to my supervisor Lena Wennersten for her scientific advices, inspiration and motivation. I would also like to thank all students that participated in this study.
9 REFERENCES


10 APPENDIX

En undersökning om hur elevers kunskapsnivå i biologi påverkas av motivation och självbedömningsförmåga

Namn: __________________________
Årskurs: 7 □
8 □
9 □


<table>
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<tr>
<th>Håller inte fullständigt</th>
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1. Jag tycker om att diskutera frågor som handlar om biologi.
   1 2 3 4 5 6 7

2. Jag tycker det är roligt att lära mig nya saker i biologi som jag är intresserad av.
   1 2 3 4 5 6 7

3. Jag tycker det är roligt att dela med mig av nya saker jag lärt mig i biologi.
   1 2 3 4 5 6 7

   1 2 3 4 5 6 7
5. Jag tycker om att lära mig biologi.
   1 2 3 4 5 6 7

6. Jag tycker det är roligt att läsa tidningar och texter som handlar om biologi.
   1 2 3 4 5 6 7

   1 2 3 4 5 6 7

8. Jag tror inte att det jag lär mig i biologi kommer att vara användbart för mig i framtiden.
   1 2 3 4 5 6 7

   1 2 3 4 5 6 7

10. Jag förstår inte på vilket sätt det jag lärt mig i biologi kommer vara användbart för mig i framtiden.
    1 2 3 4 5 6 7

11. Jag tycker inte att det är roligt att delta i aktiviteterna på biologi lektionerna.
    1 2 3 4 5 6 7

12. Jag tycker biologi är viktigt eftersom ämnet har betydelse för mitt framtida yrkesval.
    1 2 3 4 5 6 7

    1 2 3 4 5 6 7

1 2 3 4 5 6 7

15. Det är viktigt för mig att vara bra på biologi för då kan jag visa min familj hur duktig jag är på biologi.

1 2 3 4 5 6 7

16. Det är viktigt för mig att vara bra på biologi eftersom jag då kan bevisa för mig själv att jag är bra på biologi.

1 2 3 4 5 6 7

17. Det är viktigt för mig att vara bra på biologi eftersom personer i min omgivning då uppfattar mig som duktig.

1 2 3 4 5 6 7

18. Jag tror jag kommer att få ett högt betyg i biologi

1 2 3 4 5 6 7

19. Jag är säker på att jag förstår det svåraste materialet som presenteras i biologi undervisningen.

1 2 3 4 5 6 7

20. Jag är säker på att jag kan lära mig de grundläggande koncepten som lärs ut i biologi undervisningen.

1 2 3 4 5 6 7

21. Jag är säker på att jag förstår de svåraste delarna i biologin som presenteras av min lärare.

1 2 3 4 5 6 7

22. Jag är säker på att jag kommer att prestera bra på inlämningsuppgifter och prov i biologi ämnet.

1 2 3 4 5 6 7
23. Jag förväntar mig att prestera bra i biologi ämnet.

1 2 3 4 5 6 7

24. Med tanke på kursens svårigheter, läraren och mina kunskaper så tror jag att jag kommer lyckas bra i biologi ämnet.

1 2 3 4 5 6 7

25. Jag är säker på att jag kommer att klara av att lära mig det som lärs ut i biologi undervisningen.

1 2 3 4 5 6 7

Tack för din tid och ditt engagemang!

Hälsningar

Emma