Research on Learning Motivations of Freshmen and Sophomores: From Students' Perspective

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***Abstract*—It is crucial for freshmen and sophomores to form their learning motivations to meet their academic and social needs in the early stage of higher education. This paper aims to discuss their learning motivations from students' perspectives. Results of data analysis indicate that most of the freshmen and sophomores, directly driven by their academic achievement and social-emotion well-being, have positive learning motivations. They are confused to form their own effective learning methods because of their sense of "distance" with teacher and higher scores unmatched their abilities. Qualitative research revealed that it makes students unable to determine their learning purpose accurately and consequently turn to blindly following the learning motivations of their roommates or classmates. The objective feedback of these new findings in this research to teachers could help them take more effective measures to optimize teaching. The reasonable guidance of experienced teachers plays a key role in fostering positive learning motivation.**

***Keywords*—higher education, learning motivations, qualitative research**

I. Introduction

Learning motivation is the expression of motivation in learning in higher education. It's an internal process to stimulate individuals to carry out learning activities and also an internal mental state that leads the behavior toward a certain learning goal [1]. It is crucial for freshmen and sophomores to form their own learning motivations in order to meet academic and social needs in the early stage of higher education [2]. There are many researches on learning motivations [3–12]. Self-determination theory and ARCS model are widely accepted in the motivation domain [2, 13, 14]. Authors of [15–17] studied the basic psychological needs theory, which is a sub-theory of self-determination theory, from three main psychological needs likely need for competence, autonomy, and relatedness. These psychological needs are very important for studying the needs of learning motivation. ARCS Model, which abbreviated from Attention, Relevance, Confidence, and Satisfaction, is very significative for studying the incentive of learning motivation [18, 19].

Most of the previous publications agreed that the influencing factors of learning motivations involve challenge, curiosity, control, fantasy, competition, cooperation, and recognition. However, it is not easy to study learning motivations with these influence factors in practice. Accordingly, much of the literature concentrates on practical research. Zanden *et al.* [20] thought that the factors influencing learning motivations are mainly shown in two aspects: students' academic achievement and social-emotional well-being in exploring the particular domain of student success of freshmen. According to incentive theory or arousal theory [14, 17, 21–23], academic achievement and social-emotional well-being play a key role in forming students' learning motivation.

Learning is a complicated process. Teachers need to really understand the learning motivation of students with good study attitudes to guide them reasonably. This helps students to finish their learning goals so as to achieve better personal development [7, 24, 25]. Student-centered pedagogy researches point out that the central position of students should be emphasized in the teaching process. The very first step is to understand the students' ideas about learning, which is conducive to the smooth progress of a teaching process [26–28]. The most direct way for teacher is to understand their learning motivations through influencing factors because of their theoretical basis. While a large number of studies suggest that these theories play a vital role in exploring students' learning motivations [1, 13, 19, 24, 25].

Qualitative methodologies are often employed in psychological research and health [29–31]. In such studies, qualitative methodologies have been used to establish deeper understandings of participants' attitudes, perspectives, and thoughts; gain insights into behaviours and to explore participants' experiences in medical contexts. Their use in educational research is common. There has been a wealth of qualitative studies on the Higher Education decision-making of young people in England [32, 33]. Zoe Baker used qualitative methodologies in the context of exploring the higher education decision-making of further education students in England [34].

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In this paper, it seems necessary to explore in depth the learning motivation of engineering students from the perspective of students through two influencing factors: students' academic achievement, social-emotional well-being. Qualitative methodologies were employed by using semi-structured interviews and participatory observation. Our aim is to find out the problems in the learning process of students and to provide feedback to teachers from the perspective of students. This could help students to achieve better personal development, and help teachers optimize their teaching methods.

II. Methodology

This research introduced a qualitative methodology that enabled an in-depth investigation of students' learning motivations. Ethics clearance to conduct the study was received by the university's staff.

This paper investigated students' perceptions about the learning of teacher-student interactions, autonomous learning, and working together to understand learning motivations in the first and second year of university. Two research questions guided this study: a) What are undergraduate students' learning motivations in the first and second year of university? b) How do teachers perceive these learning motivations?

III. Experiment

A. Participants

Participants were 10 undergraduate students between 18 and 21 years old (Age average 19.2 / SD = 1.24) from an engineering faculty of a large research-oriented university in China. From the 10 participants, 5 were women and 5 were men. 6 were freshmen and 4 were sophomores.

B. Procedure

Freshmen were invited to participate in this research through key stakeholders of the institution, such as their teachers. Participants were asked to take part voluntarily in one semi-structured interview where they reflected retrospectively about their learning experiences, such as teacher-student interactions, autonomous learning, and working together, that were conducted in academic semester 1. Students were asked about their own learning styles and the extent to which these learning styles were helpful (or not), to their learning in the subject. They were asked to identify their learning purposes and learning methods that they thought were positive and those that were perceived to be negative and to discuss how these purposes and methods affected their learning motivations. Some examples of questions asked were "Could you share your study schedule at school?" and "What approach do you take to learn?". Students were not given any definition of learning motivations as the aim of the interview was to comprehend their understanding of learning motivations.

Eighteen face-to-face semi-structured interviews were conducted in a meeting room at the university or face-to-face online meeting between September 2020 and February 2021 over one academic semester. Despite the large number of students involved, we interviewed only one student per interview in a university meeting room and online meeting. Each participant had equal time to answer the questions. All interviews were audio-recorded taking an average of 35 minutes.

In addition, we also invited two sophomores to observe the learning motivations of the students in their respective classes to obtain direct and first-hand data (The theme of their observation is consistent with that of the interview discussed above.).

C. Data Analysis

The whole interviews were audio-recorded, transcribed and analysis using thematic analysis that described objectively the data meanings through the identification of patterns and codes [35, 36]. Our "observation analysis of sophomore" was also thematic analysis.

All participants' names were replaced by pseudonyms and codes to guarantee their anonymity. In this paper, the codes for participants consist of the first letter of their pseudonyms and their interviews' orders. For example, L1, L refers to Li and 1 corresponds to the first person interviewed and its surname is Li (Li is an example, it can also be Liu or Lin, we have no restrictions.). To get trustworthy results, member checks were conducted with three freshmen and three sophomores who reviewed the accuracy and consistency of selected topics generated by the data. The preliminary research findings were also presented to experts, tutors, and lecturers in higher education who gave feedback and posed questions for consideration in drawing conclusions.

IV. Results

3 major themes were reported: (1) learning is important; (2) incentive; (3) self-misadvise.

A. Theme 1: Learning Is Important

Participants were asked about the study states. They introspect their current learning goals. Meanwhile, they tell us their future personal development based on their own situation. Most indicated they have good goals, both in their current and future studies.

Most students' learning goals are to pursue a good mark and to ensure their personal development in the future, such as getting a high grade point average or receiving an offer letter from a large company:

For learning, I will continue to use my own learning methods. I have to make sure that I can pass the final exam, and I also need to learn more skills that can be used in future work […] Although, I feel very confused about what I have learned and don't know the usefulness of this knowledge, I think it is better to learn than not to learn. After all, I have to earn money to use what I have learned now. (Z3)

Some students have the learning purpose of satisfying their curiosity or solving practical problems. At the same time, this is not their primary learning purpose. When they have gotten a higher or received explicit

encouragement, they are willing to reconsider these problems that have yet to be comprehensively considered during the examination process and further consider the problems faced in their study and lives.

If I could get a higher score, I will definitely like this course more. I will even study the stories behind some problems in my spare time to learn this course better. (Z1)

I especially enjoy the pleasure of sharing a problem with others. I feel a sense of accomplishment [...] When I solve this problem, I always wants the answer to be perfect in my heart! I'm a perfectionist[…] When I explain a problem, I always try to "overturn" a theorem, which is also influenced by previous style studying the Olympiad in mathematics. When I try to "overturn" a theorem, I usually use some "counter-examples". When I find that I cannot "overturn", I think I have understood this theorem […]. I can give an example. Knowledge is like a large forest that I have encountered, my task is to go to the end of the forest. but I don't know which road leads to the end of the forest, I need to try every road. (Z2)

I am curious why the enabling end of 138 decoder is designed like this […] Why can't my idea work? (Z5)

B. Theme 2: Incentive

The second theme focuses on the requirement for advancing students' learning. In fact, students already have a certain degree of good learning motivation when they have a clear learning purpose. But this learning motivation needs to be further encouraged by means of specific situations and interventions [37, 38]. This enables students to put learning methods into action, such as taking measures to solve problems.

Participants were asked about the solutions. They think that their study is very unorganized, especially in theory classes. They prefer to turn to internet resources, where they seem to have more opportunities to sort out their thoughts to solve problems. This promotes their well-being, which encourages their learning motivations:

I'm very confused in theory class, so I usually previewing advance. If there is something I don't understand after class, I will take an online course at Bilibili to see whether my questions can be answered. If the question is solved, I will be more clear […] I mostly study by myself and rarely ask teachers or classmates. (Z1)

If I really don't understand, I'll take a break first and then I'll think about online classes, such as Bilibili. I think the explanation of Bilibili's online class is much better. (Z5)

Similarly, from the participants' evaluation of the teacher's curriculum, we can also perceive that the well-being influenced by teachers improves their learning motivations. On the one hand, students' well-being is promoted for their understanding what the teacher has taught when the teacher's methods are both professional and interesting. On the other hand, students think that teachers' concern can keep them eager for knowledge and make them actively solve problems in teacher-student interaction.

More than half of the participants reported that when they were attracted by teaching content and what they learn was properly guided, they felt confident in addressing these similar questions. This could enhance their learning motivations to study the course. It is a student explains:

This knowledge point is really confused for me. She (the teacher) can help me until I can solve it myself. This makes me more confident in dealing with similar problems. (C1)

Having positive interactions with teachers frequently, and being prone to seek assistance from them, contributed to learners feeling supported, which in turn stimulated students' learning motivations. The following participant explains the relationship between their learning and feeling supported:

Sometimes I feel confused in class, but the teacher further explains it clearly for me after class. This makes the course easier and make me feel that I need to learn more about this subject. (Z5)

Table I shows the characteristics of incentives with illustrative student comments.

TABLE I. CHARACTERISTICS OF INCENTIVE WITH ILLUSTRATIVE STUDENT COMMENTS

Characteristics	Description	Students' quotes
Turn to	Other people gave students helps.	Teachers and classmates can give me some help, so I'm very happy and like to study in a good way. (Z4)
The interest of the methods and clear explanation of knowledge	Teachers' teaching methods are interesting, and these methods can clearly explain the knowledge to students.	I think it's best for me to have a pleasant and intuitive understanding of what the teacher said. (Z2)
Teachers' concern and support	Students could feel teachers' concern and supported.	The teacher is very friendly. You won't be criticized for asking them some valuable questions. They always give you feedback and what you need after answering your questions. (C2)

C. Theme 3: Self-Misadvise

New and meaningful findings come to realize. According to participants' reports, most students have the sense of "distance" with teachers which comes from their being in awe of them. In addition, students simply believe that unmatched score is consistent with their ability, so they have an arrogant attitude and negative behavior of not paying attention to review. The sense of distance and unmatched score may exert negative influence on students' learning purposes. These negative influences might make them blindly imitate the learning methods of their classmates.

Table II shows the characteristics of self-misadvise with illustrative student comments.

TABLE II. CHARACTERISTICS OF SELF-MISADVISE WITH ILLUSTRATIVE STUDENT COMMENTS

Characteristics	Description	Students' quotes
Unmatched score	Scores do not actually match students' abilities.	If the course is very difficult, I don't think the teacher should not let most of the students fail. (Z6)
Distance	Teachers and students make failed and limited attempts to interact.	The teacher must be more distant, because there are a lot of people in the class who we see them once a week or twice a week and that's it. I always interact with teachers with reservation, because I am afraid that the questions I asked are tedious or leave a negative impression on the teachers. (Z2)
Blind followed	Students just blindly following the motivations of their roommates.	My classmates, especially my roommates, went out to study, so I also should study. I feel embarrassed to play alone. (S1)

V. DISCUSSION

This study reveals that students' academic achievement and social-emotional well-being exert a positive influence on engineering students' learning motivations. This has been confirmed by published researches and supported by empirical studies. This research also demonstrates that there are three problems in their learning, such as the sense of 'distance' with teacher, unmatched score, and blind following their classmates in their learning. This new finding is not discussed in previous literature.

Freshmen and sophomores attach importance to their own learning to improve their scores and ensure their personal development in the future. Learning motivations are the inherent driving force of natural formation and motivations to achieve their wishes and goals are the first pursuit [22, 39]. In the research, whether their direct learning purpose, such as "study for higher scores" or their indirect learning purposes, such as "introspections after getting higher score" are all expressive forms of students' academic achievement as one of the key influencing factors of learning motivation. Needs incent behavior objectives of learning motivation: learning purposes, which have been obviously shown in Theme 1. The needs of learning motivations determine learning motivations' intensity and strength.

As a kind of external stimulus related to need, incentives attract students to engage in learning activities and make the need possible to be satisfied [40]. Two incentives influencing learning motivations have been demonstrated in Theme 2. Students with good learning motivations are prone to turn to any available resources, such as teachers, classmates, and online courses, when they encounter problems that are difficult to solve. This further promotes good learning motivations. Besides, teaching methods and teachers' concerns also have positive impact on incentives of learning motivations. The sense of being respected, valued, and belonged to an educational context are all the embodiments of social-emotional well-being [40].

The positive impact of students' awareness of the importance of learning and the requirement for advancing their own learning on their learning motivation have been confirmed in previous researches. However, there are some problems, which were not discussed, such as sense of "distance" with teachers, higher score unmatched their ability, and blind following their classmates' learning methods. Most students have the sense of "distance" with teachers because of the inadequate teacher-students interaction or misunderstanding of teachers' behavior, leading to misjudgment of the teachers' knowledge. Besides, it is inevitable that the higher score unmatched students' abilities have negative influence on their learning motivations because students' self-knowledge cannot be as objective as the teachers' evaluations, resulting in students' incomplete self-cognition in their learning. Consequently, students' misjudgment of the teachers' knowledge and incomplete self-cognition have a negative impact on their learning, which makes students cannot accurately determine their learning purpose. This makes students blindly follow the learning purpose of their classmates. Even some students pursue high scores by doing a lot of exercises and giving up thinking about learning. As a result, incentives and needs are separated. This is not conducive to their study [40, 41].

VI. CONCLUSION

This study employed semi-structured interviews and participating observations to explore the learning motivation of engineering students from the perspective of students. The positive influences of students' academic achievement and social-emotional well-being on their learning motivation are in line with the published empirical research. The new finding of this research is that there are three problems in students' learning. Most students' learning is prone to be affected by the sense of "distance" with teachers caused by the inadequate teacher-student interaction or their misunderstanding of teachers' behavior. This problem makes students misjudge the teachers' knowledge. The second is that the higher score unmatched students' abilities. Because students' self-knowledge cannot be as objective as the teachers' evaluations, their cognition of learning is not comprehensive. All of the above discussed problems have a negative impact on students' learning and make them cannot accurately determine their learning purposes. Thus, they turn to blindly follow the learning purposes of their classmates or to pursue high scores by doing a lot of exercises. Consequently, incentives and needs are separated for giving up thinking about learning. Eliminate these factors that have a negative influence on students' learning could help them to achieve better personal development, and help teachers optimize their teaching methods.

In this paper, it seems necessary to explore in depth the learning motivation of engineering students from the perspective of students. Our aim is to find out the

problems in the learning process of students. A limitation of this research includes the small number of participants. Generalizing these viewpoints might not be an accurate representation of other perspectives.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this study.

AUTHOR CONTRIBUTIONS

Hengshuo Liu and Yanyan Hu did the research and wrote the article; both authors had approved the final version.

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