

# Career Orientation of Students in the Faculty of Mining at Hanoi University of Mining and Geology

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**Abstract.** Career orientation has become significant in Vietnamese education recently. To students of the Mining Faculty of Hanoi University of Mining and Geology, this issue is more important as society changes its acceptance of mining. The research uses investigation, interview, and observation methods for 205 students to see their career orientation. The performance is on the following criteria: 1) Career choice based on individual interests, abilities, personalities, career values; 2) Understanding of the profession in aspects of quality and capacity, workplace, future working environment, the development trend, etc.; 3) The suitability of the profession with individual interests, abilities, personality, and values of the profession during the study; 4) Study plans to meet industry requirements; 5) Self-development plans in the future career. Research results show that the majority of students have the right and appropriate career. These students have clear and positive motivations and goals in the learning process. Only a few students have not determined the proper position in the profession due to their emotions, which are not stable and oriented.

**Keywords:** Student, Profession, Career orientation, Faculty of Mining.

## 1. Introduction

Career guidance is like a journey that requires correct awareness, a severe, positive attitude, and thoughtful preparation to decide their direction. A promising career is a career that matches individual interests, abilities, career values, personality, and intellectual capacity. It helps create motivation, joy, happiness, and success in studying and working in the future. Students who choose the wrong careers could be discouraged when entering school, lose motivation and study, and waste money and time. Thus, to choose the right career, with the suitable orientation, first and foremost, the students must understand themselves clearly, i.e., to understand their interests, abilities, learning abilities, personality, career values, etc. From that understanding, students must have a clear overview of the profession and vocational schools. Recently, there are some studies on vocational education, career counseling for students, and vocational education competencies, such as Le Thi Duyen's study on the status of education capacity of high school teachers [1], Truong Thi Hoa's publications about the vocational education competencies of pedagogical students and the ability to organize vocational education knowledge into subjects, and career counseling capacity of students [2, 3, 4, 5]. Dang Van Hai (2020) gave some recommendations to improve the effectiveness of vocational education in local education programs, such as 1) Promoting awareness about vocational education in the local educational curriculum; 2) Improving the effectiveness of consultancy and career orientation; 3) Implementing flexibly in organizing vocational education activities at schools; 4) Concretizing the content of vocational education in the implementation of local socio-economic development policies; 5) Increasing investment in resources; 6) Adapting experiences to promote vocational education for students [6]. Nguyen Thi Nhu Thuy, Lu Thi Mai Oanh (2020) researched and analyzed the basis of building an enrollment counseling model and the results of career counseling and enrollment to help students in choosing their careers based on their interests and personal capacity, and social value of the profession [7].

According to Jesus Bravo et al., career orientation is best represented by a six-dimension factor structure, which contains entrepreneurial creativity, security, managerial competence, lifestyle, technical competence, and service to a cause. Five of the six factors that emerged were correlated as expected with proactive personality, ambition, career self-management behaviors, mentoring relationships, and workplace attitudes, providing support for our conceptualization and a measure of career orientation [8]. William Donald et al. researched early steps along the pathway of exploring the student perception of graduate

employability. The neo-liberalization of higher education has been studied, characterized by increased participation, diversity, employability, and work-integrated learning. Subsequently, the evolving nature of careers was detailed, providing coverage of traditional and contemporary careers, with a particular focus on boundaryless and protean career constructs [9]. E. Polyanskaya, O. Fisenko, V. Kulakova research on Strong-Willed Character Traits in Students' Career Orientation in the Labor Market and Self-Realization mentions psychological factors such as initiative, perseverance, and aspiration of students affect their career orientation. The more students have a strong desire to overcome obstacles and solve difficult tasks in their career, the higher their initiative, and perseverance. And when orienting career, the most preferred career orientations are "stability of work", "management", "service", and the least popular are "professional competence" and "stability of the residence" [10]. Angela Ulrich, Kerstin Helker and Katharina Losekamm research on "What Can I Be When I Grow Up?"—The Influence of Own and Others' Career Expectations on Adolescents' Perception of Stress in Their Career Orientation Phase. Their research is based on the possible selves approach and aims at understanding how far imbalance between adolescents' own and their social environments' expectations for their vocational future will cause stress. Results showed a variety of expectations for future careers held by participants and their social environment and emotions regarding these expectations. Positive deactivating emotions (satisfaction and relief) negatively predicted adolescents' stress and strain, and the older and closer to final job choice participants were, the more they reported stress and strain. These findings suggest including adolescents' social environment in the career choice process [11].

To summarize, most articles on career guidance focus on students but hardly mention their career orientation in technical schools. This article concentrates on the career orientation of students in the Faculty of Mining, Hanoi University of Mining and Geology, to narrow that gap. Some recommendations are proposed to help students get better orientation at the university and workplaces.

## **2. Research content**

### **2.1 Research methods**

Investigation method was used in surveys to evaluate the career orientation of students by the following criteria: 1) Occupation chosen based on individual interests, capability, personality, and career values; 2) Understanding of the profession regarding the quality and capacity of the profession, workplace, future working environment, and development trend of the profession; 3) The suitability of the profession with individual interests, abilities, personality, and career values during the study; 4) The study plan to meet industry requirements; 5) The plan of professional self-development. The survey presented the highest level (5 points) and the lowest level (1 point). We evaluate five levels: The data processing results are mainly based on the average results by the formula: "Value of distance" = (Maximum – Minimum)/n. Therefore, the designed questionnaire with five levels of responses, "Value of the distance" = (5-1)/5 = 0.8, divided into five scales: Level 1 (Very low): 1.00 to 1.80 points; Level 2 (Low): 1.8 to nearly 2.6 points; Level 3 (Average): 2.6 to almost 3.4 points, Level 4 (High): 3.4 to almost 4.2 points, Level 5 (Very high): 4.2 to 5.00 points.

The interview method was used to directly interview students through open-ended questions to find out deeply and thoroughly the relevance to the student's career orientation.

Besides, the authors collected lecturers' observation results of on-site students' attitudes in the study while doing assigned tasks.

### **2.2. Research subjects**

We studied on 205 students in Faculty of Mining: 28 (11.2%) female students, 177 (89.8%) male students, 55 (26.8%) freshmen, 52 (25.4%) sophomore students, 53 (25.9%) junior students, and 45 (21.9%) senior students. Fig. 1 shows the distribution of students in the Faculty of Mining by age.

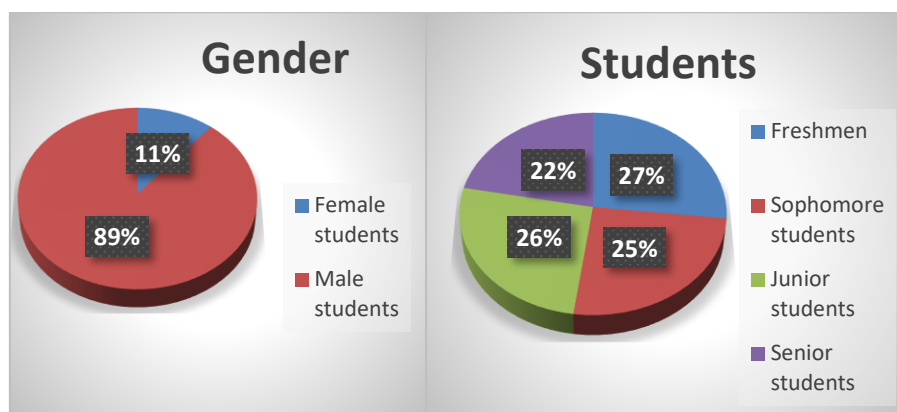


Fig. 1. The distribution of students in the Faculty of Mining by age.

## 2.3. Results and discussion

### 2.3.1. Understanding criteria of an exemplary career selection

To prepare for the right career, students have to choose an appropriate major to enroll in a university or college, considering their interests, abilities, intellectual capacity, characteristics, personality, and career value. To find out if students have a right or wrong understanding and to their extent about the criteria, we used the question: according to you, to choose the right major, which of the following criteria is the most important? Table 1 shows the results.

Tab. 1. Current status of correct understanding criteria of career selection.

No.	Criterion	Percentage (%)					Avg.	Var.	Rank
		1	2	3	4	5			
1	Personal interests	4.4	1.5	13.7	28.8	51.7	4.22	1.032	5
2	Personal capability	1.5	4.4	15.1	25.9	53.2	4.25	0.966	2
3	Academic capability	1.5	4.4	10.7	35.6	47.8	4.24	0.916	3
4	Characteristics, Personality	2.9	2.9	17.1	21.0	56.1	4.24	1.029	3
5	Career value	1.5	4.4	11.7	35.1	47.3	4.22	0.923	5
6	Labor market demand	1.5	2.9	11.7	30.2	53.7	4.32	0.898	1
7	Family background	2.9	5.9	15.1	28.8	47.3	4.12	1.055	7
8	Advice from parents/others	5.4	4.4	23.4	26.8	40.0	3.92	1.137	8

Results from the Table 1 show that most students correctly assessed the above criteria when choosing a career with a very high average score (average score from 4.22 to 4.23). Although the requirements do not differ much, if we look at the order of the criteria, we see a difference, as follows:

Labor market demand (average = 4.32) ranks first, showing that students are concerned about the industry’s needs for labor, the unemployment rate, the employment rate, and recruitment.

Personal capability (average = 4.25) ranks second, mentioning individual forte, strength, and self-confidence. Therefore, students choose this criterion at a high level.

Following these two criteria is academic ability. When choosing a career, students need to consider their advantages in studying, relevant to subjects they are good at, prerequisites for other university majors.

Ranked in the same third position are personality and characteristics. These two categories show that when choosing a career, students need to consider and evaluate their characters and aspects to find suitable professions, as each job requires specific features.

The profession’s value is reflected in the dedication to society, working for the community, not thinking about self-interest ranked fifth place.

The family background ranked seventh place. Family background also affects career choice such as family’s economy, family’s support for that career choice.

The last position is advice from parents or others. However, this is not a criterion for choosing the right profession, which shows that some students do not adequately understand the criteria for choosing a career. If students rely on the advice of their parents or others, they cannot determine their interests and abilities.

In the interview, Tran Thanh T, a sophomore student, said: “In my opinion, choosing a career must

come from my abilities and interests. Therefore, I choose the criteria of interests and personal capability”. Another student, Nguyen The N, a senior student, said: “I think that all criteria are appropriate at each stage. For me, I feel it needs to base on the labor market demand”. Comparison the understanding of the criteria of students in year 1, 2, 3, and 4, the Oneway ANOVA test with the coefficients  $sig. > 0.05$  shows no statistically significant difference in mean scores between groups of students in all eight variables of the question. Thus, the above results show that most students have the correct understanding and assessment of the criteria for choosing their fitting careers, beside a small percentage has not.

### 2.3.2. The current status of students’ career choice

With this content, we confirm the understanding of whether the criteria for choosing a career are consistent with the student’s actual career choice, using the question: What are the reasons for your choice of a job? Table 2 shows the results.

**Tab. 2.** The current status of students’ career choices.

No.	Explanation	Freshmen		Sophomores		Juniors		Seniors		Avg.	Var.	Rank
		Avg.	Var.	Avg.	Var.	Avg.	Var.	Avg.	Var.			
1	Personal interests	3.09	1.442	3.48	1.334	3.56	.814	4.25	1.135	3.67	1.324	8
2	Personal capability	3.54	1.421	3.52	1.052	3.38	1.025	4.20	1.123	3.69	1.187	7
3	Academic capability	3.37	1.190	3.73	1.169	3.38	1.025	4.20	1.123	3.80	1.182	5
4	Characteristics, Personality	2.97	1.445	3.71	1.114	3.38	1.025	4.38	0.756	3.78	1.179	6
5	Career value	3.63	1.262	4.11	0.880	3.81	0.750	4.25	1.090	4.01	1.050	2
6	Labor market demand	3.80	1.132	4.01	0.966	3.81	0.981	4.15	1.152	3.97	1.075	3
7	Family background	3.11	1.659	3.92	1.154	3.81	0.981	4.20	1.166	3.87	1.289	4
8	Friends’ suggestion	1.69	1.255	2.79	1.370	2.69	1.250	3.85	1.314	2.94	1.517	10
9	Advice from parents/others	3.63	1.457	4.19	1.226	4.00	1.095	4.30	1.101	4.12	1.233	1
10	Family’s tradition	3.14	1.309	3.58	1.438	3.63	1.025	4.05	1.244	3.67	1.357	8

Table 2 shows that the majority of students made the right choices to study mining. Comparing students of different courses, Oneway ANOVA test with coefficients  $sig. < 0.05$  indicates a statistically significant difference in student mean score across most of the years across the variables. Fourth-year students scored higher on the criteria than the first, second, and third-year students. However, the hierarchical results are prominent, as follows:

In the first place, students choose this major because of the advice of parents or others (average = 4.12). If the perception is correct, this result shows that the action will be right, but the results are very different from Table 1. As can be seen, here, there is no consistency and correlation between understanding the criteria for choosing a major and the actual reason for choosing the major you are studying. In Table 1, labor market demand ranked first place, and advice from parents/others ranks the last. Thus, there is a disparity between awareness and actual action. In this criterion, there is no difference among students.

Career value (average = 4.01) ranks second position, orienting to the social value of the profession, which can be both material and spiritual values. This criterion has a difference between first-year and fourth-year students: first-year students rated much lower than fourth-year ones (average = 3.63 vs. 4.25).

The last position is students’ abilities and interests when entering the mining industry. It can be seen that students choose a career that does not match their interests and skills. There is a difference between first, second, and fourth-year students. The reason for following peers ranked last. Surprisingly, some students enrolled at the university under the suggestion of friends, which is a student’s mistake: choosing a career without understanding himself and the industry. There is a diversity among first-year students, sophomores, and seniors: in freshman year, average = 1.69 and in sophomores year, average = 2.79, but in senior year, average = 3.85; and there is also a difference between third and fourth-year students.

In discussion with students, Phan Ngoc L, a freshman, said: “I chose to enter this industry because my parents worked in this industry, so they follow their advice.” A sophomore student, Nguyen Nhat M, said: “I chose this major because I found it suitable for my ability”.

Thus, the above results show that a good percentage of students choose a career according to their interests and abilities. The others’ choice depends on labor market needs and their career value. There is a

variation among freshman, sophomore, junior, and senior students.

### 2.3.3 Understanding of professional information

After identifying students' abilities, interests, and learning capacity and understanding who they are, the next step is to find out about the suitable profession. To assess how students understand their jobs, we asked the following question: Before enrolling in your major, how have you understood the industry? The results are in Table 3.

**Tab. 3.** Understanding a profession before enrolling.

No.	Profession information	Percentage (%)					Avg.	Var.	Rank
		1	2	3	4	5			
1	Requirements on competency for people working in the profession	1.5	5.4	10.2	36.6	46.3	4.21	0.934	8
2	Requirements on ethical qualities for people working in the profession	1.5	5.4	8.8	32.2	52.2	4.28	0.938	4
3	Recruiting demand	1.5	3.9	10.7	31.2	52.7	4.30	0.915	2
4	Working position	1.5	3.9	11.7	27.3	55.6	4.32	0.930	1
5	Industry development	1.5	4.9	14.1	31.2	48.3	4.20	0.957	9
6	Vocational training schools	1.5	5.4	11.7	35.1	46.3	4.20	0.945	9
7	Basic salary	1.5	3.9	12.2	33.2	49.3	4.25	0.919	7
8	Working environment	1.5	2.0	15.6	29.3	51.7	4.28	0.900	4
9	Recruitment conditions of companies	1.5	2.0	14.1	31.2	51.2	4.29	0.886	3
10	Job hunting opportunities	0.0	5.9	11.2	31.7	51.2	4.28	0.884	4

The above results show that the students understood their profession at a high level (average score from 4.32-4.2). Knowledge about working positions ranked first place with average = 4.32 means that students are interested in their jobs after graduation.

Recruitment demand ranked second, which is critical information because the higher demand for recruitment, the more chances for new postgraduates to find jobs.

The third position is companies' recruitment conditions, which shows students' concern about their job opportunities.

The qualifications of people working in the sector are not very important, as students put it at the eighth position.

There is no difference among freshman, sophomore, junior and senior students.

Through discussion, senior student Nguyen Trung K said: "Choosing to join the mining industry, I surfed many websites to find information about it. Only after considering it carefully can I make the right choice".

Students learned about the profession with interests from the above results to see if it is easy to apply for a job later. They were afraid of unemployment after graduation, so they continuously learned about the recruitment needs of companies. They did not pay much attention to other information such as the requirements of the capacity of the profession.

### 2.3.4. The student's suitability with the field of study

In this part, we want to see if the industry is suitable for students by the question: When entering this major, do you find your field of study right for you? In which of the following criteria?

The results obtained are in Table 4.

**Tab. 4.** Degree of the field of study suitability according to industry selection criteria.

No.	Cause	Freshmen		Sophomores		Juniors		Seniors		Avg.	Var.	Rank
		Avg.	Var.	Avg.	Var.	Avg.	Var.	Avg.	Var.			
1	Personal interests	3.57	1.243	3.61	1.215	3.63	0.500	4.26	0.947	3.97	0.975	4
2	Personal capability	3.77	0.910	3.88	0.970	3.81	0.750	4.21	1.035	4.01	1.012	3
3	Academic capability	3.86	0.974	3.91	1.056	4.00	0.632	4.21	1.035	3.94	1.069	6
4	Characteristics, Personality	3.69	1.231	3.88	1.069	3.63	0.500	4.21	1.035	4.05	1.053	1
5	Career value	3.74	1.268	3.98	1.060	3.81	0.750	4.36	0.913	4.05	0.991	1

6	Labor market demand	4.03	1.014	3.90	1.017	3.81	0.750	4.31	0.958	3.95	1.147	5
7	Family background	3.63	1.239	3.81	1.150	3.44	1.365	4.41	0.864	3.82	1.138	7

The above table shows that the suitability of the study field compared to students' characteristics is at a reasonable level. Most students find their field of study suitable.

The first place is appropriate for career value and labor market demand (average = 4.05). When students enter the profession, they only care about the opportunities to find a job quickly after graduation with a high salary. And this is also the topic that students consistently talk about during the study.

The suitability between academic ability and field of study ranked third. It means that students realize it is not difficult to learn in their major compared to their learning capability. They can absorb the knowledge of the subject relatively easily.

Their abilities ranked fourth, which shows that students' choice of majors does not depend on their knowledge and skills.

In line with interests only ranked in the seventh position, the last post in the order.

Comparison among different students through Oneway ANOVA test with coefficients sig. <0.05 shows a statistically significant difference in mean scores on the variables, specifically as follows: personal preferences: among first, second, and fourth-year students; career value: among first and fourth-year students; family background: among all students.

Comparing the correlation among students' causes for choosing a major and the degree of job suitability, we found a close correlation. That is, students choose according to any criteria; those criteria are suitable for them. For example, students who choose a career because of their interests learn they like; Students who choose a career because of their ability learn comfortably and quickly.

In the interview, Duong Duc H, a freshman student, said: "When I entered mining engineering, I found it quite difficult, but I also tried to overcome difficulties, to get a good job in a good company". Nguyen Van T, a senior student, said: "I chose this major because I heard about it from some students, so I think it's good. During my study, it is fortunate that it matches my ability. Now I like mining engineering, so I am very interested in the subjects of our major".

Thus, most students find that they are studying in a suitable course, leading to better learning.

**2.3.5. The level of interest in the industry students are studying**

Again, this content aims to know when students have entered the school and how much they care about the industry's information. To figure it out, we gave the students the following question: How well do you understand the industry you are studying?

**Tab. 5.** The degree of understanding of the profession in the studying process.

No.	Career information	Percentage (%)					Avg.	Var.	Rank
		1	2	3	4	5			
1	Companies you want to work for in the future	0.0	2.0	20.0	37.1	41.0	4.17	0.814	10
2	Requirements of profession competency	0.0	3.4	14.6	35.1	46.8	4.25	0.831	5
3	Qualities of people working in the profession	0.0	2.0	16.1	39.5	42.4	4.22	0.785	7
4	Industry development trends	0.0	2.0	18.0	37.6	42.4	4.20	0.803	8
5	Job position	0.0	2.0	17.1	35.6	45.4	4.24	0.804	6
6	Basic salary	0.0	2.0	18.5	37.1	42.4	4.20	0.807	8
7	Working environment	0.0	0.0	21.5	31.2	47.3	4.26	0.790	3
8	Recruitment conditions	0.0	0.0	17.6	34.1	48.3	4.31	0.753	1
9	Job opportunities	0.0	2.0	17.1	31.7	49.3	4.28	0.815	2
10	Courses in studying program	0.0	2.0	18.5	31.2	48.3	4.26	0.826	3

Table 5 shows that students learn information related to the profession they are studying at a higher level. Students are very interested in the major. However, there are differences in their priorities of information.

First and foremost, students wanted to know about the conditions of employment, which are requirements of qualifications, health, professional fields, and specific jobs. These pieces of information are helpful for them in preparation for the recruitment before their graduation.

Job opportunities are secondly concerned. The desire to get a job after graduation is natural to any student.

Courses in the training program and the working environment in the future are in the third positions.

The competency requirements of the profession, which ranked at fifth place, show that although students should pay attention to this factor, it is not a top priority. This thing will be enjoyable to the image to and development the power they are in to the learning.

As ranked in the last positions, the information about the company that students will work for after graduation shows that not all students have a clear goal of working in the company.

Comparison among students of different courses through Oneway ANOVA Test with sig. coefficients. > 0.05 shows no statistically significant difference in mean scores in all ten variables in the above content.

Thus, there is no difference in the student’s understanding of the profession before and after studying this major.

**2.3.6. Student learning activities**

In this part, we want to find out about the perception, attitude, and behavioral manifestations in the learning of students. We want to find out the correlation relationship between students’ career choices and student’s activities. To explore this content, we asked: How do you perceive the subjects during the learning process? Results of answers are in Table 6.

**Tab. 6.** Current status of students’ learning activities.

No.	Content	Freshmen		Sophomores		Juniors		Seniors		Avg.	Var.	Rank
		Avg.	Var.	Avg.	Var.	Avg.	Var.	Avg.	Var.			
1	Easy to learn major subjects	3.74	1.067	3.67	1.142	3.63	0.500	4.28	0.799	3.86	1.020	9
2	Interested in major subjects	3.86	1.089	3.83	1.041	4.00	0.632	4.43	0.763	4.04	0.977	5
3	Try to get good grades in learning	4.26	0.852	4.14	0.894	4.19	0.750	4.43	0.763	4.26	0.840	2
4	Going to class is a big effort for me	3.80	1.346	4.03	0.953	4.19	0.750	4.18	0.992	4.06	1.029	4
5	Listen attentively to the teachers’ lectures	4.20	0.964	4.00	0.936	4.19	0.750	4.48	0.698	4.20	0.878	3
6	Committed to completing my studies at school, no matter how difficult it is	4.26	0.780	4.10	0.949	4.38	0.806	4.52	0.698	4.29	0.852	1
7	Study just enough to pass subjects	3.34	1.371	3.79	1.055	4.00	0.894	4.28	0.915	3.88	1.098	8
8	Take time to study difficult subjects thoroughly	3.63	1.190	3.89	1.086	3.81	0.750	4.43	0.694	4.01	1.017	7
9	Always enjoy new lessons and learning challenges	3.57	1.145	3.93	1.036	3.81	0.403	4.43	0.763	4.02	0.987	6
10	Find the subjects interesting and meaningful	3.29	1.487	3.63	1.311	3.63	0.806	4.13	1.024	3.73	1.250	10

In Table 6, there are some prominent pieces of information:

- Awareness of subjects: Although students have good awareness about the training program, “Easy to learn major subjects”, and “Find the subjects interesting and meaningful” ranked the last positions. It is not easy for students to understand specialized knowledge, but they have to during the study. Once students understand the lessons, they can find the course exciting and meaningful.

- Attitude towards the subjects: The students of Mining Engineering have a good attitude in studying.

Although courses are challenging, the students have a positive attitude as they are interested in learning important topics and always attentively listening to the teacher’s lectures.

- Behavioral manifestations in learning: In this content, the students’ great determination is shown in specific actions. “Committed to completing my studies at school, no matter how difficult it is”, “Try to achieve good grades in studying”, and “always listen attentively to the teachers’ lectures” are top answers. These answers show the high determination of students, no matter what challenges they scope to complete their study at HUMG.

Besides, a negative criterion that we evaluate is “going to class is a great effort for me” ranking fourth place. There are a few students whose goal of studying is to pass the courses. They are not interested in their study. In other words, they lack motivation in learning.

Comparison among first, second, and fourth-year students through Oneway ANOVA test with coefficient sig. < 0.05 shows a statistically significant difference in mean scores.

**Tab. 6.1.** Correlation between career suitability and student learning activities.

		The major suitable for their ability	Interest in studying major subjects
The major suitable for their ability	Pearson Correlation	1	.742**
	Sig. (2-tailed)		.000
	N	205	205
Interest in studying major subjects	Pearson Correlation	.742**	1
	Sig. (2-tailed)	.000	
	N	205	205

\*\* . Correlation is significant at the 0.01 level (2-tailed).

There is a correlation between the suitability of the profession they choose (Tab. 4) and the students’ strong learning attitude (Tab. 6). The learning attitude will be positive and exciting for those who have chosen a career that follows their interests (Tab. 6.1). Students who find the major suitable for their ability find the study more straightforward and faster (Tab. 6.2).

**Tab. 6.2.** The correlation between career suitability and students’ learning activities.

		The major suitable for their ability	Easy to learn major subjects
The major suitable for their ability	Pearson Correlation	1	.724**
	Sig. (2-tailed)		.000
	N	205	205
Easy to learn major subjects	Pearson Correlation	.724**	1
	Sig. (2-tailed)	.000	
	N	205	205

\*\* . Correlation is significant at the 0.01 level (2-tailed).

In discussions, Le Truong G, a sophomore student, said: “This major is good and I like it. Thus, every class I am interested in, I will try to study well. I hope I can have a good career with high income in the future”. A junior student, Nguyen The B, said: “Sometimes I also feel pressure, studying this major is not suitable for me. Hence, it is a big effort to go to class.”

Thus, students in the Faculty of Mining of Hanoi University of Mining and Geology have been active in their learning activities. This statement is reflected in their awareness, attitude, and behavior.

**2.3.7. Preparing for the future career**

We questioned: How have you prepared for your work in the future? This question aims to know how students prepare for their future work. The results are in Table 7 below:



**Tab. 7.** Students' preparation for their future career.

No.	Content	Freshmen		Sophomores		Juniors		Seniors		Avg.	Var.	Rank
		Avg.	Var.	Avg.	Var.	Avg.	Var.	Avg.	Var.			
1	I have plenty of time so preparing is unnecessary	3.80	1.158	3.73	0.992	2.69	1.078	3.64	1.317	3.64	1.153	10
2	Have goals and development plans	4.14	0.810	4.14	0.815	3.81	0.403	4.28	0.799	4.17	0.789	1
3	Have been implementing the plan towards goals	4.14	0.810	3.98	0.848	4.00	0.632	4.30	0.782	4.12	0.814	2
4	Participate in club activities on and off campus	3.83	0.954	4.06	0.853	3.81	0.750	4.39	0.802	4.11	0.870	5
5	Attend advanced courses	3.74	1.221	3.97	0.867	3.63	0.500	4.34	0.854	4.03	0.939	8
6	Attend seminars and talks relevant to the industry	3.80	1.158	4.08	0.738	3.81	0.403	4.39	0.802	4.12	0.849	2
7	Participate in teachers' projects	3.91	1.011	4.08	0.824	3.81	0.403	4.30	0.782	4.11	0.833	5
8	Attend soft skills classes	4.14	1.004	3.99	0.786	3.63	0.500	4.28	0.915	4.09	0.864	7
9	Attend foreign language classes	4.37	0.731	4.03	0.917	3.63	0.500	4.18	0.992	4.12	0.900	2
10	Ready to make job applications	3.74	1.172	3.63	1.231	3.06	1.124	4.23	1.007	3.80	1.189	9

Students have relatively well prepared for their future careers. "Having goals and development plans" is the most important for students. "Participate in seminars and talks relevant to the industry" to learn more and improve industry knowledge, and "attend foreign language class" to improve languages skills ranked second. Students prioritize those above activities. "Participate in club activities on and off-campus" and "participate in teachers' projects" are also necessary activities for students. Also, most students are "ready to make job applications."

Tran Gia B, a senior student, shared his opinion: "I have prepared a lot for my job applications regarding necessary skills and a proactive mindset."

Comparing among first, second, third, and fourth-year students through One-way ANOVA test with coefficient sig. < 0.05 indicates a statistically significant difference in mean scores. Fourth-year students prepared at a higher level than other year students in the following criteria: participate in club activities on and off-campus, participate in advanced training courses, participate in seminars and talks relevant to the industry, participate in teachers' projects, and be ready to make job applications. The rest of the other criteria showed no difference.

Thus, students have consciously prepared for their future careers in various ways. However, some students do not know how to prepare for their future careers, and they have no motivation to set goals in the learning process. Fourth-year students prepare at a higher level than first, second, and third-year students.

### **2.3.8. Students' confidence in their professional abilities**

We asked the question: Are you now confident in your professional capability? The results are in Table 8:

**Tab. 8.** Confidence in students' professional competence.

No.	Content	Freshmen		Sophomores		Juniors		Seniors		Avg.	Var.	Rank
		Avg.	Var.	Avg.	Var.	Avg.	Var.	Avg.	Var.			
1	I feel I can get a job right after graduation	3.60	0.976	3.67	1.091	4.00	0.894	4.08	0.900	3.82	1.019	3
2	I feel I still lack a lot of industry knowledge	3.80	0.901	4.02	0.912	3.63	0.500	4.18	0.827	4.00	0.863	1
3	I feel I still lack many professional skills	3.97	0.891	3.96	0.947	3.63	0.500	4.13	0.866	4.00	0.891	1
4	I am not confident because I feel this profession is not suitable for me	3.91	1.040	3.79	1.195	2.50	1.265	3.74	1.413	3.70	1.278	4

Results show students' confidence in their abilities is relatively high. The criteria "I can get a job right after graduation" (average = 3.82) shows their belief. These students are confident in their expertise and skills. Besides, some students still think that they lack a lot of knowledge and professional skills. Therefore, they do not have enough knowledge and skills to apply for jobs immediately.

Some students are not confident because "this profession is not suitable for me". It is because students choose a major without motivation, learning goals, and confidence. Consequently, they cannot achieve high results and lack sufficient knowledge and skills for further work.

Comparison of confidence among first, second, third, and fourth-year students through One-way ANOVA test with coefficient sig. < 0.05 indicates no statistically significant difference in mean scores. It means there is no difference in students' confidence in career. This fact seems contradictory because fourth-year students should have more confidence than first, second, and third-year students.

In addition, we compared the correlation between students' preparation for their future careers (Tab. 7) with confidence in their abilities (Tab. 8) and found a close relationship (Tab. 9). With good preparation of knowledge, skills, and skills at a high level, their confidence in their abilities is also correspondingly high.

**Tab. 9.** The correlation between preparation for a future career and confidence in personal ability.

		Preparation for future career	Confidence in personal ability
Preparation for future career	Pearson Correlation	1	.713**
	Sig. (2-tailed)		.000
	N	205	205
Confidence in personal ability	Pearson Correlation	.713**	1
	Sig. (2-tailed)	.000	
	N	205	205

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Thus, students are confident in their abilities to a reasonable level, while students who are not confident in themselves are also at a reasonable level. Significantly, there is no difference between the students of the courses because, as a rule, the fourth-year students must be more confident than first, second, and third-year students.

### 2.3.9. Orientation of students' future work

We aim to determine how graduation students choose a career through the question: How do you choose your future job? The results are in Table 10:

**Tab. 10.** Orientation of students' future work.

No.	Content	Freshmen		Sophomores		Juniors		Seniors		Avg.	Var.	Rank
		Avg.	Var.	Avg.	Var.	Avg.	Var.	Avg.	Var.			
1	Good working environment	4.29	0.860	3.94	0.879	4.19	0.911	4.20	0.833	4.10	0.863	1
2	High income	4.34	0.838	4.03	0.893	3.88	1.204	4.07	0.998	4.08	0.938	2
3	Potential for promotion	4.09	1.173	3.59	1.244	4.06	1.124	3.97	1.110	3.83	1.186	6
4	Good compensation policy	3.97	1.014	3.72	1.028	3.94	0.998	3.95	1.087	3.86	1.036	5
5	Work brings joy and happiness	4.11	0.993	3.99	0.841	4.00	0.894	4.03	0.894	4.02	0.877	3
6	Work brings social values	4.09	1.011	4.00	0.848	3.94	0.998	3.97	0.948	4.00	0.907	4
7	Creative, challenging work	3.71	1.405	3.57	1.281	3.44	1.504	3.82	1.285	3.67	1.313	7

The results show that students' choices are also diverse, and each student has a different career value.

Ranked first is the students' choice of a "good working environment" reflected in the workplace atmosphere, such as suitable work, happy and harmonious colleagues in the company, etc.

The second best choice is high income. Indeed, many students choose this criterion, which means salaries and bonuses of the company help them have a more comfortable life.

The third popular choices are "work brings joy and happiness" and "work brings social value". These are the spiritual values that students aspire. One-way ANOVA test with coefficient sig. < 0.05 indicates no statistically significant difference in mean scores among first, second, third, and fourth-year students.

Thus, we see no difference in choosing future jobs. Most students chose "good working environment" and "high income" as the two criteria earned the highest score.

### 3. Conclusions

The above research shows that most students in the Faculty of Mining, Hanoi University of Mining and Geology, have good career orientation. The majority of students have identified the proper criteria when choosing a career. They have carefully researched information about the industry, such as labor market demand, working environment, job position, capability requirements, and quality of the profession they are studying. The information and decision motivate them to form the awareness, attitude, and behavior in learning. Many students prepare well for their future careers by setting goals, planning and implementing plans, and participating in other activities to enhance understanding and build skills. As a result, many students are confident in their professional ability to work in the industry after graduation successfully. However, a few students determined relatively wrong criteria for choosing a career, depending on the advice of friends or others. Hence, they do not find the field of study suitable for them, which downgrades their motivation and goals in the learning process. Consequently, they are not excited to study.

Students need to understand their strengths, interests, and career values clearly and actively learn about the profession to have a proper choice for studying. It is important to improve career orientation in high schools and universities. Consequently, students can develop their responsibility in their studying and self-improvement to meet the needs of the industry. Especially, it is necessary to proactively discuss with career counselors when they have difficulties at the university.

### 4. Acknowledgements

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