

## A Study on the Current Situation of Higher Education Students' Learning Power in the Information Age

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### *Abstract*

*World history tells us that science and technology are the fundamental driving force behind the progress of human civilization. According to Alvin Toffler, today human society is experiencing the third wave after agricultural and industrial civilization, which means that human civilization has entered a modern stage. This means that human civilization has entered a new stage, namely the era of knowledge economy and information age, which is characterized by the rapid development of the Internet, rapid improvement of science and technology, and continuous upgrading of economic and industrial structures. What accompany with the information age are speed, changeability and crisis, which will undoubtedly bring us more opportunities and challenges. It can be said that the 21st century information age is the age of learning, and the core of human development is also learning. This calls for us to continuously improve our learning ability, to learn faster and faster to better adapt to the needs of social change and development and our own growth. The learning power is the core and key to thinking power and creativity. For higher vocational students, in the information age of rapid development and knowledge multiplication, technology is constantly developing and progressing, and jobs are constantly changing. The only way to get core competitiveness is to keep pace with the times and update their learning methods and concepts, and improve their learning power.*

*Keywords: Higher Education, information age.*

### **Introduction**

Learning ability is formed and developed through accumulation of theoretical learning and practice on the basis of original cultural literacy and knowledge reserves, and through continuous stimulation of one's own learning potential. It is not only limited to the scope of ability, but should be a sustainable state of existence, which is reflected in all aspects of learning, life and work. In a narrow sense,

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learning power refers to the learning power of individuals (students), which is the dynamic development process of acquiring knowledge, reorganizing and updating knowledge, creating new knowledge, applying and transforming new knowledge and new skills, regenerating new knowledge, reorganizing and updating knowledge, and creating new knowledge..... so as to continuously change the dynamic development process of life, work and learning ability. This paper discusses the learning power of higher vocational college students, and focuses more on the performance of learning power such as learning ability and learning adaptability due to the special nature of their learning and employment.

In order to understand the actual status of higher education students' learning power and each dimension, this study organized and analyzed the data from the questionnaire on higher education students' learning power by using SPSS 25 statistical analysis software, so as to identify the problems of learners.

#### I. Analysis of the specific situation of senior students' learning power

##### 1、Analysis of the learning motivation of senior students

According to the mean value analysis of the internal needs of higher vocational learners, the results in Table 1 below show that the mean value of the internal needs of higher vocational learners in the learning motivation dimension is 3.80, which is at a medium to high level; the mean values of "It is necessary to learn and master more knowledge" and "Actively The mean values of "It is necessary to learn and master more knowledge" and "Participating in activities or part-time work can enhance one's ability and reflect self-worth" are 4.17 and 4.00 respectively, both of which are higher than 4 and are at a good level, indicating that learners have strong subjective motivation and are willing to set study plans and goals to learn with interest, but the mean value of "Cheating in exams is due to lack of self-confidence and effort" is 3.00. However, the mean value of "cheating in exams because of lack of confidence and effort" is 3.08, which indicates that learners believe that they do not study hard enough and do not believe that they can play well in exams and get better results.

**Table 1** Mean value analysis of internal needs aspects of motivation of higher education students

Internal needs	N	Average value	Standard Deviation	R
Internal needs overall	516	3.80	0.53	
1. In academic life, it is necessary to set study plans and milestones.	516	3.71	0.785	6
2. It is necessary to learn and acquire more knowledge.	516	4.17	0.689	1

4、 I like learning very much, learning is a very happy thing.	516	3.78	0.778	5
5、 I like my profession very much and will study hard to learn.	516	3.89	0.773	4
7. Cheating on exams is due to lack of confidence and effort.	516	3.08	1.226	7
10、 I think active participation in activities or part-time work can improve my ability and reflect my self-worth.	516	4.00	0.753	2
12、 I set goals for myself regularly and work hard for them.	516	3.99	0.732	3

According to the mean value analysis of the external needs of higher vocational learners, the mean value of the external needs of higher vocational learners in the learning motivation dimension is 3.97, which is in the middle to upper level; the mean value of the question "I will do something to meet the expectation of teachers or elders" is the lowest. The mean value of this question is 3.80, which is also in the upper-middle range. The data on external demands show that higher vocational learners attach more importance to the reasonableness of current assignments, comparison among classmates, performance and future employment pressure, and also show that learners have higher external subjective demands in their learning motivation, and will not do things they do not want to do in order to meet the expectations and ideas of parents and teachers.

**Table 2** Mean value analysis of extrinsic demand aspects of motivation of higher education students

External requirements	N	Average value	Standard Deviation	R
External demand overall	516	3.97	0.56	
3. Reasonable assignment of homework in each subject helps me study.	516	4.02	0.730	2
6. Nowadays, employment is very stressful, so we should study harder.	516	4.10	0.702	1
8、 Study hard in order to get good grades to prove yourself.	516	4.00	0.836	3

9、I want to surpass my classmates, so I will study harder and improve my academic performance.	516	3.96	0.783	4
11. I try to do things for the corresponding reward or a certain position.	516	3.96	0.770	4
13、I will accomplish certain things to meet the expectations of teachers or elders.	516	3.80	0.776	6

## 2. Analysis of the study perseverance of senior students

The mean value analysis of the learning self-confidence of senior learners, according to the data results in Table 3 below, shows that the mean value of the learning self-confidence of senior students in the learning perseverance dimension is 3.80, which is in the middle to upper level; the mean values of the questions "I will not stop trying when I have been studying seriously but with little effect" and "The mean values of "I won't put off today's study tasks until later" are 3.84 and 3.77 respectively, which are greater than 3.5 and less than 4.0, and are at the upper-middle level, indicating that higher-level learners have stronger self-confidence in learning and will continue to persist even if their study does not achieve the desired effect for a period of time. The learners have good study habits, do not procrastinate, study quickly, and advocate the attitude of 'Do what needs to be done and do it today'.

**Table 3** Analysis of the mean value of the study self-confidence aspect of perseverance in higher education students

Learning Self-Confidence	N	Average value	Standard Deviation	R
Learning Self-Confidence	516	3.80	0.73	
14、When I have been studying seriously but with little success, I will not stop trying.	516	3.84	0.813	1
15、I will not put off today's study tasks until later.	516	3.77	0.835	2

According to the results in Table 4 below, the mean value of study self-control of higher vocational learners is 3.76 in the dimension of study perseverance, which is in the middle to upper level; "If I have to be busy with other things for a period of time, I will ensure the study time of my professional knowledge" and "When people around me are watching movies or playing games, I still follow the study plan to learn my professional knowledge". The mean values of the questions "When people around me are watching movies or playing games, I still follow

the study plan to learn the knowledge of my major" are 3.89 and 3.63 respectively, both of which are greater than 3.5 and less than 4.0, which are in the middle to upper level, indicating that most of the higher vocational learners have strong study self-control and can reasonably allocate their time without being affected to complete their professional knowledge. However, there are extremely few learners who lack self-control and are easily influenced by people around them and cannot resist the temptation to complete their learning goals on time.

**Table 4** Mean value analysis of study self-control aspect of study perseverance of higher vocational students

Learning self-control	N	Average value	Standard Deviation	R
Learning self-control	516	3.76	0.71	
16、 If I have to be busy with other things for a period of time, I will also ensure the study time of this expertise.	516	3.89	0.717	1
17、 While people around me are watching movies and playing games, I still follow the study plan to learn the knowledge related to my major.	516	3.63	0.833	2

According to the mean value analysis of the study willpower of higher vocational learners, the results in Table 5 below show that the mean value of the study willpower of higher vocational students in the study perseverance dimension is 3.78, which is in the middle to upper level; "I will not give up until I understand the difficult problems I encounter in my studies." and "I won't give up studying even if I have mood swings." The mean values of the two items are 3.81 and 3.75 respectively, both of which are greater than 3.5 and less than 4.0, which are at the upper middle level, indicating that most of the higher vocational learners have strong willpower to learn, and no matter what kind of difficulties appear, they will not stop learning.

**Table 5** Analysis of the mean value of the study willpower aspect of the study perseverance of higher vocational students

Learning willpower	N	Average value	Standard Deviation	R
Learning willpower	516	3.78	0.73	

18、 I will never stop until I understand the difficult problems I encountered in my study.	516	3.81	0.768	1
19、 Even with mood swings I won't give up studying.	516	3.75	0.808	2

### 3. Analysis of the learning ability of senior students

According to the mean value analysis of information technology ability of higher vocational learners, the results in Table 6 below shows that the mean value of information technology ability of higher vocational learners in the learning ability dimension is 3.94, which is in the middle to upper level; "I can skillfully collect the required learning resources on the Internet." and "I can use the Internet to support my learning and complete learning tasks." The mean values of the two items are 4.01 and 4.00 respectively, both  $\geq 4.0$ , which are at a good level; the mean values of the remaining items are also greater than 3.5 and less than 4.0, which are at a moderate to high level, indicating that higher-level learners have strong IT skills, can skillfully use the Internet to help with learning tasks, and are good at finding learning resources to assist learning and improve themselves.

**Table 6** Analysis of the mean values of information technology competency aspects of higher education students' learning ability

Information Technology Capability	N	Average value	Standard Deviation	R
Information Technology Capability	516	3.94	0.63	
20. I will take the initiative to find the required learning resources online or in books.	516	3.89	0.791	4
22. If I notice that something in the textbook or the teacher's lecture is very different from my understanding, I will consult the information.	516	3.91	0.728	3
29、 Mobile phones and computers help me study a lot.	516	3.88	0.781	5
30. I can skillfully gather the required learning resources on the Internet.	516	4.01	0.717	1
31、 I will use the Internet to assist my study and complete my learning tasks.	516	4.00	0.728	2

The mean value analysis of the learning transformation power of the higher vocational learners, according to the data results in Table 7 below, shows that the mean value of the learning transformation

power of the higher vocational learners in the learning ability dimension is 3.91, which is in the middle to upper level; the mean value of all the questions is greater than 3.5 and less than 4.0, which is in the middle to upper level, indicating that the learning transformation power of the higher vocational learners is strong, and they can grasp the essence of the knowledge points They can clearly understand and reasonably make learning plans, flexibly use the knowledge learned to solve problems in life, and continuously reflect on them to improve their problem-solving ability.

**Table 7** Analysis of the mean value of the learning transformation power aspect of higher education students' learning ability

Learning Transformation Power	N	Average value	Standard Deviation	R
Learning Transformation Power	516	3.91	0.64	
21、I will consciously remember some basic concepts and principles when I study.	516	3.97	0.706	2
24、I will find out the problem and try to solve it if the test result is not satisfactory.	516	3.86	0.775	4
25、I can make a reasonable study plan.	516	3.80	0.830	5
32、I can apply what I have learned to life practice and can think and find new problems.	516	3.93	0.722	3
33、I can use what I have learned to solve problems in life learning.	516	3.99	0.684	1

According to the mean value analysis of higher vocational learners' learning cooperation, the results in Table 8 below show that the mean value of higher vocational learners' learning cooperation is 3.85 in the learning ability dimension, which is in the middle to upper level; the mean value of all questions is greater than 3.5 and less than 4.0, which is in the middle to upper level;However, the mean value of "I am extremely good at asking questions to teachers or experts.However, the mean value of "I am extremely good at asking questions to teachers or experts" is the lowest, with a mean value of 3.62 and the largest standard deviation, indicating that most of the higher vocational learners are strong in learning cooperation, able to actively

seek help from others, and collaborate with group members or learning partners to improve their self-learning ability. There are still a few higher-level learners who are not good at communicating their views or doubts about learning to older and experienced teachers or experts in the field.

**Table 8** Analysis of the mean value of the learning cooperation aspect of higher education students' learning ability

Learning Collaborative Power	N	Average value	Standard Deviation	R
Learning Collaborative Power	516	3.85	0.68	
23、I am very good at asking questions to teachers or experts.	516	3.62	0.870	4
26、I will consciously look for suitable study partners and monitor each other's study with classmates or roommates.	516	3.86	0.784	3
27、I will take the initiative to seek help from others for questions I cannot answer.	516	3.97	0.737	1
28、I will often share information, share ideas, and collaborate with classmates on an issue.	516	3.94	0.767	2

#### 4. Analysis of the learning adaptability of senior students

According to the mean value analysis of the learning environment adaptability of higher vocational learners, the results in Table 9 below show that the mean value of the learning environment adaptability of higher vocational students in the learning ability dimension is 3.95, which is in the middle to upper level; "I think school is the most suitable environment for learning." and "Depending on the content of my studies, I will find a suitable learning method for myself." The mean values of the two items are 3.91 and 3.98 respectively, both of which are greater than 3.5 and less than 4.0, which are in the middle to upper level, indicating that higher vocational learners have a strong ability to adapt to the learning environment, and they have experienced many years of school education and are able to adapt to the school learning environment, and at the same time, they can master certain learning strategies and methods to cope with different knowledge contents.



**Table 9** Mean value analysis of the learning environment adaptability aspect of the learning adaptability of higher education students

Learning Environmental Resilience	N	Average value	Standard Deviation	R
Learning Environmental Resilience	516	3.95	0.67	
34、 I think school is the most suitable environment for learning.	516	3.91	0.798	2
35、 According to the contents of the study, I will find a suitable study method for myself.	516	3.98	0.691	1

The mean value of the vocational adaptability of senior learners was analyzed, and according to the results of the data in Table 10 below, the mean value of the vocational adaptability of senior learners in the learning ability dimension was 3.99, which was at a medium to high level; "I will pay attention to cultivating my professional ability and psychological quality in my daily studies." The mean value of the question item is 4.02, which is greater than 4.0 and is at a better level, and the mean values of the remaining two question items are also greater than 3.5 and less than 4.0, which are at a medium to high level, indicating that the vocational adaptability of higher vocational learners is strong, and higher vocational learners have a certain ability to adapt to the environment quickly, improve their professional skills and lay a strong psychological foundation through learning in their student days, so as to prepare for their careers seriously Work.

**Table 10** Mean value analysis of vocational adaptability aspects of learning adaptability of higher education students

Career Adaptability	N	Average value	Standard Deviation	R
Career Adaptability	516	3.99	0.64	
36. I will fully understand the content of the career or job I will pursue in the future and be prepared for it.	516	3.97	0.724	3
37、 I will focus on developing my professional ability and psychological quality in my daily study.	516	4.02	0.659	1
38、 I believe I can adapt to the future work environment very smoothly.	516	3.98	0.737	2

##### 5. Analysis of each dimension of learning power of senior students

The mean ranking analysis of each dimension of learning power of senior vocational students, as shown by the results of the data in Table 11 below, the situation of each dimension of learning power of senior vocational students ranked from high to low are career adaptability, external demand, learning environment adaptability, information technology ability, learning transformation power, learning cooperation power, internal need, learning self-confidence, learning willpower, learning self-control, the results show that students' learning agree with Occupational requirements and external needs very much, 21st century learners can have certain technical ability and collaborative interaction ability, higher vocational learners have stronger learning adaptability and learning motivation, but weaker learning ability and learning perseverance, mainly reflected in their learning willpower and learning self-control is not strong, indicating that some higher vocational learners have insufficient self-willpower in learning power, can't persist in learning better, and are not interested in learning. They are not interested in learning enough.

**Table 11** Analysis of the mean value of each dimension of learning power of higher education students

Dimensions	N	Average value	Standard Deviation	R
Internal needs	516	3.80	0.53	7
External requirements	516	3.97	0.56	2
Learning Self-Confidence	516	3.80	0.73	7
Learning self-control	516	3.76	0.71	10
Learning willpower	516	3.78	0.73	9
Information Technology Capability	516	3.94	0.63	4
Learning Transformation Power	516	3.91	0.64	5
Learning Collaborative Power	516	3.85	0.68	6
Learning Environmental Resilience	516	3.95	0.67	3
Career Adaptability	516	3.99	0.64	1

II, the analysis of the difference of learning power of senior students

1、Analysis of the difference of learning power among students of different nature schools in higher education

In order to understand the differences in learning power of students in different nature schools, this study used school nature as the grouping variable and SPSS 25 statistical analysis software to conduct independent sample t-test on senior students, the data results are shown in Table 12 below. However, the mean values of motivation, perseverance, learning ability and adaptability in public schools are greater than those in private schools, indicating that learners in public schools and those in private schools do not differ significantly in these four aspects. Although there is no significant difference between the learners of public and private schools in terms of learning ability, the learners of public schools are more active and persistent in learning, and their ability is better.

**Table 12** Analysis of the differences in students' learning power in schools of different nature

Nature of school	Learning Motivation	Learning Perseverance	Learning Ability	Learning Resilience
Private	3.875±0.516	3.773±0.672	3.886±0.626	3.955±0.625
Public	3.977±0.469	3.841±0.595	3.972±0.610	4.054±0.580
T-value	0.124	0.430	0.289	0.215

## 2. Analysis of the differences in learning power of students with different major choices in higher education

In order to understand the differences in learning power of students with different major choices of higher education students, this study used SPSS 25 statistical analysis software to conduct one-way ANOVA on higher education students with major choice as the grouping variable, the data results are shown in Table 13 below, from the data results, it can be seen that the significant P-value of students with different major choices in learning motivation is less than 0.01, the significant P-value in learning perseverance and learning adaptability P-value is less than 0.05, and the significant P-value in learning ability is greater than 0.05, which indicates that there is no significant difference in learning ability, very significant difference in learning motivation, and significant difference in both learning perseverance and learning adaptability among students with different major choices; At the same time, the data show that senior vocational students who choose their majors according to their own volition have more significant differences in learning motivation, learning perseverance, learning ability and learning adaptability. The mean values of learning ability, such as motivation, perseverance, learning ability and adaptability of learning ability of senior vocational students who choose their majors according to their parents' or others' preference are more than the mean value of learning ability of senior vocational students who choose their majors according to their parents' or others' preference > the mean value of learning ability of

senior vocational students who transfer their majors, indicating that the result of willingness to choose majors affects learners' attitude, motivation, perseverance and adaptability of learning.

**Table 13** Analysis of the difference in learning power of students with different major choices

Professional Selection	Learning Motivation	Learning Perseverance	Learning Ability	Learning Resilience
Volunteer yourself	3.936±0.500	3.832±0.430	3.928±0.611	4.014±0.612
The wishes of parents or others	3.766±0.545	3.665±0.742	3.833±0.687	3.866±0.638
Transfer	3.753±0.430	3.583±0.621	3.759±0.531	3.781±0.584
F-value	5.960**	4.262*	1.818	4.001*

### 3. Analysis of the differences in learning power of students of different genders in higher education

In order to understand the differences in learning power of different gender students in higher education, this study used gender as the grouping variable and SPSS 25 statistical analysis software to conduct independent sample t-test on higher education students, the data results are shown in Table 14 below, from the data results, it can be seen that the t-values of different gender students in learning power such as learning motivation, learning perseverance, learning ability and learning adaptability are 0.544, 0.527, 0.287 and 0.897 respectively, 0.527, 0.287, and 0.897, with significance values greater than 0.05, indicating that there is no significant difference among students of different genders in these four aspects; however, the mean values of female students in three aspects of learning motivation, learning perseverance and learning adaptability are greater than those of male students, and the mean values of male students in learning ability are greater than those of female students, indicating that female students have more subjective initiative in the learning process and their learning is more persistence and endurance, but their ability is weaker than that of male students.

**Table 14** Analysis of the difference in learning power of students by gender

Gender	Learning Motivation	Learning Perseverance	Learning Ability	Learning Resilience
Male	3.887±0.521	3.780±3.780	3.912±0.653	3.948±0.653
Female	3.890±0.506	3.783±0.647	3.890±0.609	3.979±0.601
T-value	0.544	0.527	0.287	0.897

#### 4. Analysis of the differences in learning power of students in different grades of higher education

In order to understand the differences of learning power among different grades of senior students, this study used the grade as the grouping variable and SPSS 25 statistical analysis software to conduct one-way ANOVA on senior students, and the data results are shown in Table 15 below, from the data results, it can be seen that the significant p-values of learning power in learning motivation, learning perseverance, learning ability and learning adaptability of students in different grades are greater than 0.05, and the surface. There is no significant difference among students of different grades in these four aspects; however, the mean value of learning motivation of freshmen is higher than that of sophomores and smaller than that of juniors, which indicates that learners are hopeful about their future life after entering university from high school. However, they slacken off in sophomore year, and junior year is a period close to graduation, and learners are motivated about future employment; the mean values of learning perseverance and learning ability of learners in sophomore and junior year are higher than those of freshman year, which indicates that the change of teaching methods and teaching mode of university teachers can promote their learning perseverance and learning ability; the mean value of learners' learning adaptability also increases gradually with the change of grade, which indicates that university study enhances learners' adaptation to the environment and learning methods.

**Table 15** Analysis of differences in learning power of students in different grades

Grade	Learning Motivation	Learning Perseverance	Learning Ability	Learning Resilience
Freshman year	3.863±0.472	3.716±0.645	3.820±0.582	3.913±0.554
Sophomore	3.856±0.529	3.850±0.717	3.961±0.689	3.966±0.709
Junior	3.928±0.528	3.792±0.641	3.919±0.611	4.011±0.609
F-value	1.129	1.537	2.101	1.205

#### 5. Analysis of the differences in learning power of different student identities of senior students

In order to understand the differences in learning power of students with different student status in higher education, this study used student status as the grouping variable and SPSS 25 statistical analysis software to conduct independent sample t-test on higher education students, the data results are shown in Table 16 below, from the data results, it can be seen that the t-values of learning power of students with different student status in terms of learning motivation, learning perseverance, learning ability and learning adaptability are 0.006, 0.001, 0.000, and 0.010, respectively, with significant P-values less

than 0.001 for learning motivation and learning ability, less than 0.01 for learning perseverance, and less than 0.05 for learning adaptability, indicating that students with different student identities have extremely significant differences in learning motivation and learning ability, very significant differences in learning perseverance, and very significant differences in learning adaptability. The mean values of learning motivation, learning perseverance, learning ability and learning adaptability are greater when the students are cadres than when the students are not cadres, indicating that becoming a cadre is a great exercise for the learners in all aspects, and the overall quality is improved, and can promote the growth of their learning power, and learning motivation, learning perseverance, learning ability and learning adaptability are all increased, the mean value of study cadres is higher than that of the average non-status students.

**Table 16** Analysis of the difference in learning power of students with different student status

Student leaders	Learning Motivation	Learning Perseverance	Learning Ability	Learning Resilience
Yes	4.015±0.533	3.977±0.695	4.138±0.589	4.112±0.614
No	3.859±0.502	3.735±0.647	3.840±0.619	3.934±0.616
T-value	0.006**	0.001**	0.000***	0.010*

## Conclusion

To sum up, this paper analyzes the current situation of learning power of senior students and finds that: firstly, the overall learning power and all dimensions of senior students are in the middle to upper level and close to good level, and the ranking of learning power dimensions from high to low are learning adaptability, learning ability, learning motivation and learning perseverance; through the analysis of the frequency distribution of senior students' learning power groups, senior learners are better at learning motivation, learning ability and learning perseverance than in learning perseverance. The analysis of the frequency distribution of learning power of senior students shows that senior learners are better at learning motivation, learning ability and learning adaptability than learning perseverance, and the learning perseverance of learners needs to be further enhanced.

Secondly, the research analysis of each dimension of learning power of higher vocational students shows that the learning adaptability and learning motivation of higher vocational learners are strong, but their learning ability and learning perseverance are weak, mainly in their learning willpower and learning self-control, which indicates that some higher vocational learners have insufficient self-willpower in learning power, cannot persist in learning better and have insufficient interest in learning.

Finally, the analysis of the difference of learning power of senior vocational students shows that there is a highly significant difference in learning motivation, a significant difference in learning perseverance and learning adaptability of students with different major choices, and no significant difference in learning ability, and the learning power of senior vocational students who choose their majors according to their own voluntarily > the learning power of senior vocational students who choose their majors according to their parents' or The learning power of senior vocational students who chose their majors according to their own volunteering > the learning power of senior vocational students who chose their majors according to their parents' or others' volunteering > the learning power of senior vocational students who transferred their majors, indicating that the subjective strong or weak choice of majors can affect the learning power of learners to some extent. There are extremely significant differences in learning motivation and learning ability, highly significant differences in learning perseverance, and significant differences in learning adaptability among students with different student status; and when the student status is cadre, the mean values of their learning power in learning motivation, learning perseverance, learning ability and learning adaptability are greater than those of students with no status in general, indicating that becoming a learning cadre has a greater impact on This indicates that becoming a study cadre has a greater impact on all aspects of the learners' exercise, improves their overall quality, and promotes the growth of their learning power, and increases their motivation, perseverance, learning ability, and learning adaptability.

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