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# Pedagogy support for Western Inner Mongolia university students: The influence of learning motivation

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## ABSTRACT

As educational research advances, the role of pedagogy support in enhancing college students' learning motivation has gained increased attention. This study takes Inner Mongolia university students as the research object to explore the influence of pedagogy support (teacher care, classroom interaction, learning resource support) on learning motivation. Using quantitative research methods, this study obtained questionnaire data from 384 college students from universities in western Inner Mongolia (Hohhot, Baotou, Ordos) through stratified random sampling, and analyzed the influence of different types of pedagogy support (teacher care, classroom interaction, learning resource support) on students' learning motivation. The data were processed by descriptive statistics, T-test, correlation analysis, and multiple regression analysis. The results show that college students' pedagogy support (teacher care, classroom interaction, learning resource support) has a significant correlation with learning motivation. In addition, from the comparison of gender, origin, major, and ethnic groups of college students, it is found that there is no significant difference between male and female, urban and rural, humanities and social sciences majors, and science and engineering majors in pedagogy support (teacher care, classroom interaction, learning resource support) on learning motivation. There are significant differences between Han students and non-Han students in the dimensions of learning resource support, and the level of learning resource support of non-Han students is lower than that of Han students. This study also enriches the theoretical framework of the relationship between pedagogy support and learning motivation and provides practical enlightenment for education reform and teaching optimization in ethnic minority areas.

**Contribution/Originality:** Recent studies on learning motivation and pedagogy support disregarding heterogeneous cultural environments. In this study, we examine the extent to which teacher care, classroom interaction, and learning resource support affect motivation in Western Inner Mongolia's multicultural environment, to provide a reference for education reform in ethnic minority regions.

## 1. INTRODUCTION

In the field of globalized education, the improvement of pedagogical support is one of the key factors in college students' learning motivation and academic ability. Pedagogical support can help enhance students' learning

engagement, boost academic self-confidence, reduce learning burnout, and improve learning motivation (Chen, Zhu, Xiao, & Que, 2023; Diggs, 2021; Oseghale, Ochie, Oyelere, & Nyantakyiwaa, 2023; Wentzel, 2021). However, there is relatively little research on how instructional support enhances students' learning motivation in different cultural contexts (Anyichie & Butler, 2023; Hofer, Busch, Bender, Ming, & Hagemeyer, 2010). This study aims to fill a current research gap in the field of instructional support for learning motivation, especially in multicultural areas. In China's Inner Mongolia Autonomous Region, which is a multicultural area, the education system has a unique cultural background (Dong, Gou, Wang, & Qiu, 2015; Yayuan & Adamson, 2017; Zhang, 2020). Therefore, it is important to study how pedagogical support for students can increase learning motivation. This study aims to explore how pedagogical support affects the learning motivation of college students in western Inner Mongolia, focusing on the specific effects of different types of pedagogical support (such as teacher care, classroom interaction, and learning resource support) on students' learning motivation. This will provide important references for the formulation of educational policies and teaching practices. This study helps to expand the existing theories of educational psychology, especially in the context of educational environment and cultural differences. The title of this study is The Influence of Three Dimensions of Pedagogical Support: Teacher Care, Classroom Interaction, and Learning Resource Support on the Learning Motivation of Inner Mongolia College Students. In addition, this study adopts quantitative research methods and questionnaire tools for data collection, and the data collection sites are Hohhot, Baotou, and Ordos, three cities in western Inner Mongolia, and the study participants are 384 undergraduates. This paper will present the results of the study, explain them in the discussion section, and finally summarize the main findings of the study and put forward recommendations for education policy and practice.

## 2. LITERATURE REVIEW

### *2.1. Learning Motivation*

The core content of learning motivation is mainly reflected in the psychological activity state that is driven by internal needs or external factors during the student learning process and shows a certain direction, intensity and persistence. It is a complex psychological phenomenon that occurs, is maintained, and is modulated as a core driver through learned behavior (Gontier,2021). In the context of learning, learning motivation not only determines whether learners are willing to engage in learning activities, but also affects the directionality of learners' choice of learning goals, their concentration on tasks, and their perseverance to overcome difficulties (Kokotsaki, 2023; Lu, Van der Linden, & Bakker, 2025). From the perspective of intrinsic needs, learning motivation may come from an individual's interest in knowledge, the pursuit of self-improvement, or the sense of achievement and satisfaction obtained from learning activities. This kind of intrinsic motivation is usually related to the sense of meaning and enjoyment of the learning activity itself, which can stimulate students' initiative and creativity. From the perspective of external factors, learning motivation may be driven by external influences such as social expectations, reward and punishment systems, parents' expectations, or exam pressure (Fischer, Malycha, & Schafmann, 2019). Although such extrinsic motivation can motivate learning behavior in the short term, its persistence and effect may vary depending on an individual's degree of adaptation to external pressure (Wen, Wang, Ma, Meng, & Liu, 2024). According to Umida, Zarina, and Shahram (2020) learning motivation is not only about interest in learning but also about the actual effort students put into achieving their goals. This desire can stem from a student's aspiration to succeed or from a strong interest in specific knowledge or skills. Additionally, learning motivation encompasses students' attitudes towards learning activities, particularly their identification with learning goals and active participation in the learning process. Students' motivation is not solely based on the expectation of rewards but also includes an intrinsic desire to learn and the anticipation of learning outcomes (Umida et al., 2020). According to learning motivation is a kind of psychological trait, which refers to students' cognitive tendency towards learning activities. Specifically, students are more likely to engage and remain engaged in learning over the long term when they perceive learning activities as having personal meaning or as meeting their interests and needs. The significance of learning

activities is not only reflected in the practicability of the content or the relevance of test scores but also in whether students can derive self-actualization or internal satisfaction from them (Gontier, 2021).

### *2.2. Pedagogy Support*

Pedagogy support is a variety of help and guidance provided by teachers in the teaching process, aimed at solving obstacles encountered by students in the learning process, enhancing their self-confidence, and deepening their understanding of the subject content (Sales, Da Silva, & Da Silva, 2016). It not only refers to the transfer of knowledge in the classroom but also covers the ways of individual support, emotional care, and academic guidance to help students overcome learning difficulties and self-doubt, to improve their learning motivation and learning outcomes (Ferri & Nano, 2022). This study divides pedagogy support into three dimensions, namely, teacher care, classroom interaction, and learning resource support. Teacher care is a deep ethical position that emphasizes teachers' attention, responsibility, and timely response to students' needs in the educational process. Teacher care is not only a process of imparting knowledge but also a moral practice that requires teachers to pay emotional attention to the well-being of students and establish a teacher-student relationship based on care and respect. This kind of care creates a safe, warm, and supportive learning environment for students, making them feel understood and valued, thereby enhancing their learning motivation and sense of participation (Adhikari, Saha, & Sen, 2023). Pianta notes that teacher care involves emotional support, warmth, and guidance, creating a classroom environment in which students feel secure, accepted, and helped. By caring for students' emotional needs and providing them with emotional support and understanding, teachers not only help students build self-confidence but also promote their overall development academically and socially. This kind of emotional support can eliminate the sense of unease and isolation that students may encounter in the learning process and make them feel a sense of belonging and security in the classroom (Graham, White, Cologon, & Pianta, 2020). In classroom interaction, the exchange of ideas between teachers and students is dynamic and constructive. Teachers are not only the transmitters of knowledge but also the guides of students' cognitive development. Students build a knowledge system together through the teacher's guidance and classmates' discussion. This kind of interaction is not only the transfer of knowledge but also the cultivation of thinking styles, problem-solving abilities, and critical thinking. As a key mechanism of cognitive development, interaction promotes students' thinking development, stimulates their interest in learning, and enhances their cognitive abilities and problem-solving skills (Dippold & Heron, 2021). In addition, classroom interaction is a process of negotiation of meaning and understanding between students and their teachers and peers. In this process, students not only learn how to express their own opinions but also learn how to listen to the opinions of others and participate in the co-construction of knowledge. Through interaction with teachers and classmates, students constantly adjust their understanding to form a deeper knowledge structure. Classroom interactions not only promote academic learning but also foster students' social and emotional growth, enabling them to form broader social networks and enhance their sense of social engagement in a supportive and interactive environment (Hanifi, 2022). Learning resources support a wide range of resources, including textbooks, digital content, virtual simulations, and collaborative technologies. Together, these resources form a learning environment that helps learners not only acquire the necessary knowledge but also apply that knowledge to real-world situations. Through these diverse media and tools, learners can process, internalize, and apply knowledge in a rich educational environment. For example, digital textbooks and simulation programs allow learners to engage in in-depth learning and practice without time or space constraints; and collaborative tools promote interaction among learners, enabling them to share resources, discuss, and solve problems (Neo & Fadilla, 2024). In addition, learning resource support includes the provision of easily accessible materials and tools to help learners acquire information, practice skills, and strengthen knowledge. These tools include, but are not limited to, traditional instructional materials, online courses, educational software, and interactive learning platforms. These resources not only support students' academic learning but also provide personalized learning paths that help students consolidate existing knowledge and acquire new skills through a

variety of instructional technologies. Through this multi-level and multi-form support, learning resources provide learners with more learning opportunities and ways, to stimulate their learning potential and independent learning ability to the greatest extent (Denny et al., 2024). Therefore, learning resource support is not limited to traditional teaching materials and teacher guidance but involves providing learners with an integrated and diversified learning environment, which includes technical tools, interactive platforms, and personalized learning materials. Through the support of these resources, learners can learn, think, and practice more effectively, thus enhancing their academic performance and comprehensive abilities.

### *2.3. University Students in Western Inner Mongolia*

The higher education system of the Inner Mongolia Autonomous Region has developed rapidly in recent years and pays attention to the combination of ethnic characteristics and modern education (Aktamov, 2023; Zhang, 2020). Higher education institutions in Inner Mongolia not only serve the ethnic culture and economic development of the region but also attract students from all over the country, becoming an important platform for training talents of all kinds. Higher education in the Inner Mongolia Autonomous Region includes comprehensive universities, ethnic colleges, agricultural and technical colleges, vocational and technical colleges, and other multi-type colleges. There are several well-known universities and colleges in the Inner Mongolia Autonomous Region, which are dedicated to training various professional talents for society. Inner Mongolia Autonomous Region is a multi-ethnic area, Mongolian is the main ethnic group in the region, therefore, ethnic education in Inner Mongolia occupies an important position in higher education. Many institutions of higher learning offer bilingual instruction in both Chinese and Mongolian to meet the needs of Mongolian students and maintain the inheritance of their ethnic language and culture (Wikipedia, 2022).

### *2.4. The Relationship of Pedagogy Support to Learning Motivation*

Pedagogy support means that teachers meet students' learning needs through emotional, cognitive, and behavioral help, and provide students with a good learning environment. Previous studies have shown that pedagogy support can significantly enhance students' learning motivation (Levy & Campbell, 2008; Mendoza, Yan, & King, 2023). Teacher support involves not only creating a caring classroom environment but also providing meaningful learning tasks and giving constructive and concrete feedback to students (Azman, Hussain, & Mustofa, 2024). In these ways, teachers can help students develop a positive attitude towards learning and enhance their self-confidence and sense of engagement in learning. He specifically mentioned that this support is especially important for students who feel insecure or unmotivated in their academic environment (Nugent, 2009). Deci emphasizes that supportive teaching practices are critical to promoting intrinsic motivation in students. They note that these practices include giving students more autonomy support, such as allowing students more choice in their learning and providing feedback that enhances students' feelings of competence. By satisfying students' basic psychological needs of autonomy, competence, and connection, these teaching strategies can effectively improve students' intrinsic learning motivation and help them find meaning and satisfaction in academic tasks (Ryan & Deci, 2020). Wentzel pointed out that students' perceived teacher support, especially the care, understanding, and respect shown by teachers, has an important positive effect on students' learning motivation. Wentzel further emphasized that this kind of support can work by building positive teacher-student relationships so that students feel accepted and valued. Teacher encouragement not only inspires students' efforts in their studies but also boosts their confidence in academic success (Wentzel, 2021). In addition, previous studies have shown that pedagogy support has different effects on the learning motivation of different groups of students. Roeser noted that students from ethnic minorities and economically disadvantaged backgrounds tend to benefit more from faculty support because it provides a sense of stability, belonging, and motivation to engage in academic tasks. These students may lack systematic guidance and emotional support due to their unstable external environment, so the support provided by teachers can not only help them overcome academic

challenges but also create a safe learning environment for them, thereby enhancing their learning engagement and motivation. This indicates that the role of pedagogy support is significantly differentiated among student groups with different backgrounds (Booth, Roberts, Gerard, & Gilfillan, 2022). Perceived teacher support has different effects on students' motivation depending on their developmental stage, gender, and socio-emotional needs. Meanwhile, the impact of teacher support on students' motivation to learn was more pronounced among Asian students, as they tended to value their teachers' authority and guidance in their studies. This reveals the role of cultural factors in pedagogical support. Due to the emphasis on the teacher-student relationship in traditional culture, Asian students tend to rely more on teachers' guidance to determine learning directions and goals (Li, 2019). For students from different cultural and linguistic backgrounds, a teacher's emotional support is a better predictor of their learning motivation than structural or instructional support, as it helps them navigate cultural transition and foster a sense of belonging. This study suggests that emotional support from teachers is particularly important for students who are in the acculturation phase. This kind of support can not only help students relieve the anxiety caused by cultural conflict but also promote students' identification and active participation in the new environment by enhancing the teacher-student relationship (Thomas, Wheeler, Delgado, Nair, & Coulter, 2022). The impact of teacher support on academic motivation differs between male and female students, with female students showing a stronger correlation between perceived teacher care and intrinsic motivation. This finding indicates the key role of gender in pedagogy support. Girls are generally more likely to benefit from the emotional support provided by teachers because it can meet their needs for the quality of the teacher-student relationship and thus stimulate their higher level of intrinsic learning motivation (Wentzel, 2022). Students with learning difficulties are particularly sensitive to structured and supportive teaching practices that provide clarity of thought, reduce anxiety, and promote their engagement in learning tasks. Structured pedagogy support is of great significance for students with learning difficulties, and by providing clear task objectives and problem-solving strategies, this support can reduce the confusion and stress students encounter during the learning process, thereby boosting their learning confidence and motivation (Martin & Marsh, 2019). Therefore, by meeting students' psychological needs, providing a positive learning experience, and varying according to students' cultural background, gender, development stage, and learning ability, pedagogy support has a significant impact on students' learning motivation by adjusting the support method according to their aptitude. Emotional support and academic support are not only the core drivers of students' learning motivation but also regulate learning behavior by satisfying students' needs for belonging, competence, and autonomy. Therefore, when providing support, teachers need to consider students' differences and specific needs, and balance emotional support and independent support, to maximize the support effect and comprehensively improve college students' learning interests and academic achievement.

Although existing research has revealed the multifaceted impact of pedagogy support on learning motivation, there are still some research gaps in cross-cultural areas. The effect of pedagogy support on learning motivation varies across different cultural backgrounds, and stages of education have not been fully studied. In the future, with increased policy support and investment in education, higher education in Inner Mongolia is expected to further develop in terms of scientific research, educational quality, and personnel training, especially in the fields of ethnic culture, agricultural technology, and environmental protection. At the same time, as the state attaches great importance to the regional economy and education in Inner Mongolia, higher education in the region will become more international and diversified, and more talents will be trained to meet societal needs. Finally, the specific research question of this study is: What is the level of influence of pedagogy support (teacher care, classroom interaction, learning resource support) on learning motivation among college students of different genders, places of origin, majors, and nationalities in Inner Mongolia? Is there a significant correlation between the influence of pedagogy support (teacher care, classroom interaction, learning resource support) on learning motivation among college students in Inner Mongolia? Based on the above content, a research framework is designed, as shown in Figure 1:

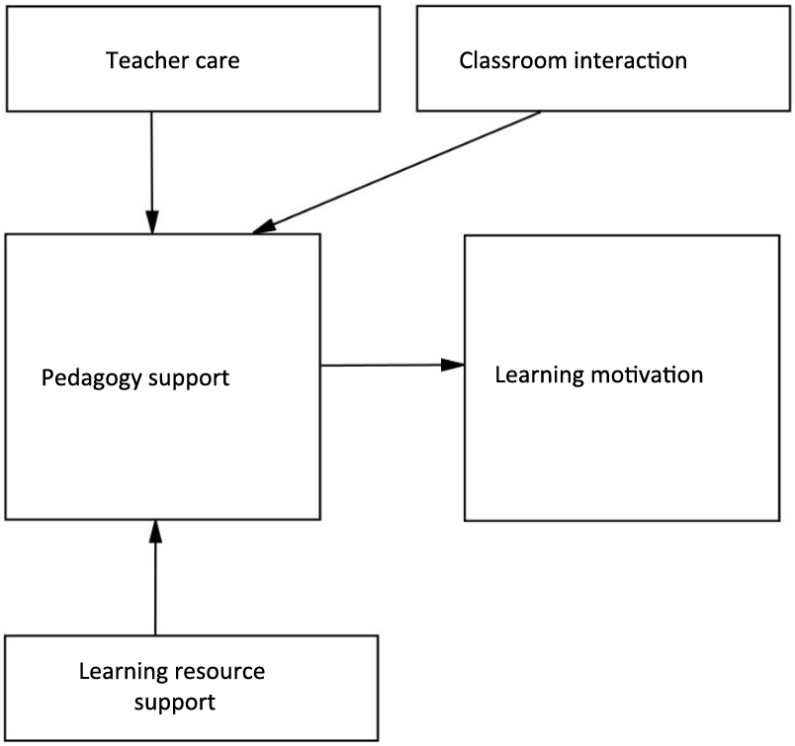


**Figure 1.** Research frameworks diagram.

## 3. METHODOLOGY

This study adopts the quantitative research method and questionnaire as research tools. The respondents are undergraduates from western Inner Mongolia, China. The specific research methods include research hypotheses, research sites and samples, research tools, reliability analysis, ethical considerations, etc.

### *3.1. Research Hypothesis*

A research hypothesis is an expected conjecture or statement about a phenomenon or relationship in scientific research, usually verified by data analysis and experiments. The hypotheses for this study are shown in Table 1:

**Table 1.** Research hypothesis.

| Serial number | Assumed contents |
|---|---|
| Ho1 | There is no significant difference in the influence of pedagogical support on learning motivation between male and female college students in Inner Mongolia. |
| Ho2 | There is no significant difference in the influence of pedagogy support on learning motivation between urban and rural college students in Inner Mongolia. |
| Ho3 | There is no significant difference in the influence of pedagogy support on learning motivation between humanities and social sciences majors and science and engineering majors in Inner Mongolia. |
| Ho4 | There is no significant difference in the influence of pedagogical support on learning motivation between Han and non-Han students in Inner Mongolia. |
| *Ho5* | *There was no significant correlation between the influence of pedagogy support (teacher care, classroom interaction, learning resource support) on the learning motivation of Inner Mongolia University students.* |

### *3.2. Study Site and Sample*

The research site is the Inner Mongolia Autonomous Region of China, which is located in the multi-ethnic region of northern China, including Han, Mongolian, Hui, and other ethnic minorities. There are about 50 institutions of higher learning in the Inner Mongolia Autonomous Region, including undergraduate and vocational colleges, which are mainly concentrated in the capital city of Hohhot. This study mainly sampled participants from four colleges and universities in western Inner Mongolia (Hohhot, Baotou, and Ordos), and conducted stratified random sampling with questionnaires. The total number of students in these four colleges and universities is about 50,000, as shown in Table 2:

**Table 2.** Schools of sample collection.

| Serial number | College | Approximate number of students enrolled in 2024 |
|---|---|---|
| 1 | Inner Mongolia University of Science and Technology | 26000 |
| 2 | Baotou Normal University | 14000 |
| 3 | Erdos City Environmental Vocational and Technical College | 6000 |
| 4 | School of Entrepreneurship, Inner Mongolia University | 7900 |

In addition, the study estimated the sample size based on Krejcie and Morgan (1970) identifying 384 students as participants and randomly drawing samples for each category. The demographic analysis covered variables such as age, gender, residence, and ethnicity. Descriptive statistics were used to show sample distribution and explore the influence of characteristics on the research results to provide support for the conclusion. Table 3 shows the demographic characteristics of this study.

**Table 3.** Demographic characteristics.

| Control variable | | Frequency | Percentage |
|---|---|---|---|
| Gender | Male | 209 | 54.4 |
| | Female | 175 | 45.6 |
| Age | Age 19 | 120 | 31.3 |
| | 20 | 95 | 24.7 |
| | 21 years old | 106 | 27.6 |
| | 22 years old | 63 | 16.4 |
| Place of residence | City | 259 | 67.4 |
| | Rural | 125 | 32.6 |
| Professional | Humanities and social sciences | 275 | 71.6 |
| | Science and engineering | 109 | 28.4 |
| Ethnic groups | Han Chinese | 346 | 90.1 |
| | Non-Han | 38 | 9.9 |
| Total | | 384 | 100 |

### *3.3. Research Tools*

In this part, questionnaire survey tools are used to quantify college students' learning motivation and pedagogy support levels. The dependent variable is the learning motivation questionnaire, and the independent variables are the three dimensions of pedagogy support (teacher care, classroom interaction, and learning resource support). The details of the questionnaire used in this study, including the original source, dimensions, number of questions, and descriptions, are shown in Table 4 as follows:

**Table 4.** Quantitative research questionnaire.

| Questionnaire | Questionnaire sources | Questionnaire dimensions | Question size | Meaning |
|---|---|---|---|---|
| "Motivation for College Students to Learn" | Deci and Ryan (1985) | Intrinsic motivation | 5 | Intrinsic motivation to learn, driven by interest and enjoyment of the subject. |
| | | Extrinsic motivation | 5 | Motivation is driven by external rewards or pressure, such as grades, recognition, or future career prospects. |
| "Pedagogy Support for College Students." | Baker (2004) | Teacher care | 5 | A teacher's emotional attention and support for students are expressed through respectful behavior, understanding students' needs, and providing help and encouragement. |
| | | Classroom interaction | 5 | The process of communication and interaction between teachers and students, as well as among students in class, encompasses various forms such as questions, discussions, and feedback. |
| | | Learning resource support | 5 | Teachers provide students with a variety of curricular-related resources, including learning materials, tools, technologies, and platforms to help students understand and master knowledge more effectively. |

### *3.4. Reliability Analysis*

Reliability analysis is a method used to assess the consistency and stability of a questionnaire. The results of reliability analysis directly influence the final research conclusions. Therefore, reliability analysis is an essential stage in any investigation or psychological measurement. The reliability analysis results of the questionnaire in this study are shown in Table 5:

**Table 5.** Reliability analysis.

| Variables | Number of questions | Alpha |
|---|---|---|
| Teacher care | 5 | 0.959 |
| Classroom interaction | 5 | 0.962 |
| Learning Resource support | 5 | 0.960 |
| Motivation to learn | 10 | 0.954 |

### *3.5. Ethical Considerations*

As an important tool in quantitative research, the ethics of a questionnaire survey directly affect the quality and credibility of research.

To ensure the scientificity of the research process and the protection of the rights and interests of participants, researchers must adhere to ethical principles. These include participants' informed consent, privacy protection, voluntariness, and risk minimization. Questionnaire design should be fair, data processing should be secure, and ethical review must be complied with.

## 4. RESULT

In the data analysis of this study, descriptive statistics were first used, followed by the T-test for inter-group comparisons (gender, place of origin, major, and ethnicity). Finally, correlation analysis and linear regression analysis were employed to examine the relationship between the three variables of pedagogical support and learning motivation and to verify the research hypothesis.

### *4.1. Descriptive Statistics*

Descriptive statistics is a statistical method used to summarize, organize, and succinctly convey data. It helps us understand and present the main features of a data set through the use of charts, tables, and numerical indicators. Descriptive statistics is the most basic and commonly used tool in data analysis and can provide a clear overview for further analysis. The descriptive statistical content of this study is shown in Table 6:

**Table 6.** Descriptive statistics.

| | | Teacher care | Classroom interaction | Learning resource support | Motivation to learn |
|---|---|---|---|---|---|
| Number of cases | Valid | 384 | 384 | 384 | 384 |
| | Missing | 0 | 0 | 0 | 0 |
| Average | | 3.014 | 3.015 | 3.009 | 3.014 |
| Median | | 3.4 | 3.2 | 3.4 | 3.3 |
| Mode | | 3.6 | 3.6 | 3.4 | 3.5 |
| Standard deviation | | 0.787 | 0.783 | 0.797 | 0.782 |
| Variance | | 0.619 | 0.614 | 0.635 | 0.612 |
| Sum | | 1157.4 | 1157.8 | 1155.6 | 1157.3 |
| Percentiles | 25 | 2.8 | 2.8 | 3 | 3 |
| | 50 | 3.4 | 3.2 | 3.4 | 3.3 |
| | 75 | 3.6 | 3.6 | 3.6 | 3.5 |

The table presents descriptive statistical results on teacher care, classroom interaction, learning resource support, and learning motivation, with data containing 384 valid samples with no missing values for all variables.

First of all, in terms of average value, the average value of teacher care is 3.0141, the average value of classroom interaction is 3.0151, the average value of learning resource support is 3.0094, and the average value of learning motivation is 3.0138. All these mean values are close to 3, indicating that the sample scores in these aspects are roughly above the average level.

Secondly, in terms of median, the median of teacher care was 3.4, the median of classroom interaction was 3.2, the median of learning resource support was 3.4, and the median of learning motivation was 3.3. The median reflects the points in the middle of the data, and these median values indicate that the majority of the sample's ratings on these dimensions are biased toward the higher part of 3. Regarding the modes, the modes for teacher care and classroom interaction are both 3.6, the modes for learning resource support are 3.4, and the modes for motivation are 3.5. The mode is the most common value in the data, indicating that 3.6 is the most frequent score for teacher care and classroom interaction, and 3.4 and 3.5 are the most common for learning resource support and learning motivation. The variance value ranges from 0.612 to 0.635. Variance is the square of the standard deviation, which quantifies the degree of data dispersion. A smaller variance further indicates that the data distribution is concentrated and there is no significant fluctuation. For the sum, the total scores of teacher care, classroom interaction, learning resource support, and learning motivation were 1157.4, 1157.8, 1155.6, and 1157.3, respectively, reflecting the combined scores of all samples on these dimensions. Finally, regarding percentiles, the 25th percentile for teacher care, classroom interaction, and motivation was 2.8, and for learning resource support was 3, meaning that about a quarter of the sample scored below 3 on these dimensions. The 50th percentile, or median, was already mentioned earlier. The 75th percentile for teacher care, classroom interaction, and learning resource support is 3.6, and for learning motivation is 3.5, indicating that about three-quarters of the sample scored below these values on these dimensions.

Finally, these descriptive statistics show that participants' ratings of teacher care, classroom interaction, learning resource support, and learning motivation are mostly concentrated at the medium level, and the distribution of ratings is relatively uniform without significant bias.

### *4.2. Gender, Origin, Major, and Ethnicity Difference in Pedagogical Support*

A T-test is a hypothesis test commonly used in statistical analysis to compare whether the difference between two samples or a sample and a known value is significant. The basic purpose of the T-test is to determine whether the differences between the sample data can be generalized to the population by comparing the sample mean to the standard error. In this study, an inter-group T-test comparison will be conducted on the gender, place of origin, major, and ethnicity of college students. The specific analysis results are shown in Table 7:

**Table 7.** Inter-group T-test statistics.

| Variables | Differentiator | N | mean | Standard deviation | T | P | Difference comparison |
|---|---|---|---|---|---|---|---|
| Gender comparison | | | | | | | |
| Teacher care | Men | 209 | 3.021 | 0.766 | 0.19 | 0.849 | Undifferentiated |
| | Female | 175 | 3.006 | 0.812 | | | |
| Classroom interaction | Men | 209 | 3.048 | 0.787 | 0.894 | 0.372 | Undifferentiated |
| | Female | 175 | 2.976 | 0.780 | | | |
| Learning resource support | Men | 209 | 3.022 | 0.779 | 0.339 | 0.735 | Undifferentiated |
| | Female | 175 | 2.994 | 0.820 | | | |
| Motivation to learn | Male | 209 | 3.012 | 0.781 | -0.05 | 0.96 | Undifferentiated |
| | Female | 175 | 3.016 | 0.787 | | | |
| Place of origin comparison | | | | | | | |
| Teacher care | City | 259 | 3.028 | 0.789 | 0.492 | 0.623 | Undifferentiated |
| | Rural | 125 | 2.986 | 0.784 | | | |
| Classroom interaction | City | 259 | 3.017 | 0.774 | 0.068 | 0.946 | Undifferentiated |
| | Rural | 125 | 3.011 | 0.806 | | | |
| Learning resource support | City | 259 | 3.031 | 0.799 | 0.764 | 0.446 | Undifferentiated |
| | Rural | 125 | 2.965 | 0.792 | | | |
| Motivation to learn | City | 259 | 3.034 | 0.768 | 0.713 | 0.476 | Undifferentiated |
| | Rural | 125 | 2.973 | 0.812 | | | |
| Professional comparison | | | | | | | |
| Teacher Care | Humanities and Social Sciences | 275 | 2.988 | 0.801 | -1.046 | 0.296 | Undifferentiated |
| | Science and engineering classes | 109 | 3.081 | 0.749 | | | |
| Classroom interaction | Humanities and Social Sciences | 275 | 2.995 | 0.700 | -0.773 | 0.44 | Undifferentiated |
| | Science and engineering classes | 109 | 3.064 | 0.743 | | | |
| Learning resource support | Humanities and Social Sciences | 275 | 2.983 | 0.796 | -1.02 | 0.309 | Undifferentiated |
| | Science and engineering classes | 109 | 3.075 | 0.799 | | | |
| Study motivation | Humanities and Social Sciences | 275 | 2.971 | 0.789 | -1.711 | 0.088 | Undifferentiated |
| | Science and engineering classes | 109 | 3.122 | 0.759 | | | |
| Ethnic comparison | | | | | | | |
| Teacher care | Han | 346 | 3.027 | 0.779 | 0.985 | 0.325 | No difference |
| | Non-Han | 38 | 2.895 | 0.860 | | | |
| Classroom interaction | Han | 346 | 3.035 | 0.773 | 1.523 | 0.128 | No difference |
| | Non-Han | 38 | 2.832 | 0.863 | | | |
| Learning resource support | Han | 346 | 3.041 | 0.782 | 2.138 | 0.038 | Have differences |
| | Non-Han | 38 | 2.721 | 0.885 | | | |
| Motivation to learn | Han | 346 | 3.031 | 0.768 | 1.178 | 0.245 | No difference |
| | Non-Han | 38 | 2.853 | 0.901 | | | |

Using the T-test, this study explored the differences in pedagogy support (teacher care, classroom interaction, learning resource support) and learning motivation among Inner Mongolia university students in terms of gender, student origin, major category, and ethnic dimension. The specific analysis is as follows:

Between male and female college students, the mean differences across all indicators namely teachers, classroom interaction, learning resource support, and learning motivation did not reach a statistically significant level ($P > 0.05$). Teacher care scores were similar for males (mean = 3.0211) and females (mean = 3.0057), with the T-test indicating no significant difference ($T = 0.19$, $P = 0.849$). For classroom interaction, males had a mean of 3.0478, while females had a mean of 2.976; the T-test results also showed no significant difference ($T = 0.894$, $P = 0.372$). Regarding learning resource support, males scored a mean of 3.022, and females scored 2.9943, with no significant difference observed ($T = 0.339$, $P = 0.735$). In terms of learning motivation, males had a mean of 3.012, and females 3.016; the T-test confirmed no significant difference ($T = -0.05$, $P = 0.96$). Consequently, the impact of instructional support on learning motivation appears consistent across genders, indicating that gender differences do not influence the effectiveness of instructional support in this context.

In the comparison between places of origin (urban and rural), the differences in each indicator (teacher attention, classroom interaction, learning resource support, and learning motivation) did not reach the level of significance ($P > 0.05$). Teacher attention: The difference between urban students (mean = 3.0278, standard deviation = 0.78917) and rural students (mean = 2.9856, standard deviation = 0.78419) was not significant ($T = 0.492$, $P = 0.623$). This suggests that there is no significant difference between urban and rural students in their feelings of teacher concern. Classroom interaction: Urban students (mean = 3.017, standard deviation = 0.77381) also did not differ significantly from rural students (mean = 3.0112, standard deviation = 0.80695) in how they felt about classroom interaction ($T = 0.068$, $P = 0.946$). There was no significant difference between urban and rural students in the level of engagement in classroom interaction. Learning resource support: The difference between urban students (mean = 3.0309) and rural students (mean = 2.9648) was also not significant ($T = 0.764$, $P = 0.446$). Motivation: There was also no significant difference between urban students (mean = 3.0336) and rural students (mean = 2.9728) ($T = 0.713$, $P = 0.476$). Therefore, the difference between urban and rural areas has no significant effect on the influence of pedagogy support on learning motivation, which may be because the gap between urban and rural educational resources in Inner Mongolia has gradually narrowed, leading to the convergence of urban and rural students' responses to pedagogy support.

Among humanities and social science students and science and engineering students, the mean differences in teacher attention, classroom interaction, learning resource support, and learning motivation did not reach a significant level ($P > 0.05$). Teacher expectation: There was no significant difference between humanities and social science students (mean = 2.9876) and science and engineering students (mean = 3.0807) ($T = -1.046$, $P = 0.296$). Classroom interaction: There was also no significant difference between humanities and social sciences students (mean = 2.9956) and science and engineering students (mean = 3.0642) ($T = -0.773$, $P = 0.44$). Learning resource support: There was also no significant difference between humanities and social sciences students (mean = 2.9833) and science and engineering students (mean = 3.0752) ($T = -1.02$, $P = 0.309$). Motivation: The difference between humanities and social sciences students (mean = 2.9709) and science and engineering students (mean = 3.122) approached the level of significance ($T = -1.711$, $P = 0.088$), but eventually reached significance ($P > 0.05$). Therefore, the influence of pedagogy support on learning motivation is basically the same regardless of whether students are majoring in humanities and social sciences or in science and engineering, indicating that the effect of pedagogy support is universal and applicable to students across different subject categories.

There is no significant difference in the influence of pedagogy support on learning motivation between Han and non-Han students in most dimensions, but there is a significant difference in the dimension of learning resource support. Teacher expectations: There was no significant difference between Han students (mean = 3.0272) and non-Han students (mean = 2.8947) ($T = 0.985$, $P = 0.325$). Classroom interaction: There was no significant difference

between Han students (mean = 3.0353) and non-Han students (mean = 2.8316) (T = 1.523, P = 0.128). Learning resources support: There was a significant difference between Han students (mean = 3.041) and non-Han students (mean = 2.7211) (T = 2.138, P = 0.038), indicating that Han students clearly supported non-Han students in learning resources. Learning motivation: There was no significant difference between Han students (mean = 3.0315) and non-Han students (mean = 2.8526) (T = 1.178, P = 0.245). Therefore, the main difference in the impact of ethnic differences on pedagogy support lies in learning resource support, and the score of Han students in this dimension is significantly higher than that of non-Han students, which may be related to the uneven distribution of educational resources. Overall, the effect of pedagogy support on learning motivation shows consistency among students with different ethnic backgrounds, but the differences in learning resource support need to be addressed.

The T-test results of this study show that most factors such as gender, urban and rural background, professional category, and ethnicity do not demonstrate significant differences in the impact of pedagogical support on learning motivation. The universality of pedagogical support across these different groups has been verified. However, there are significant differences in the learning resource support dimension concerning ethnic differences, which indicates the impact of disparities in the allocation of educational resources on ethnically diverse students. Overall, pedagogical support plays an important role in promoting college students' learning motivation, particularly through teachers' attention and classroom interaction. The positive effects of learning resource support on learning motivation should also be emphasized.

### *4.3. Correlation of Each Pedagogical Support Construct*

Correlation analysis is a statistical method used to study whether there is some relationship between two or more variables, and the strength and direction of that relationship. Its core purpose is to understand the extent to which different variables are related, helping researchers uncover underlying patterns and trends that in turn inform decisions and predictions. In this study, the correlation analysis results among the variables of the influence of independent variables pedagogy support (teacher care, classroom interaction, learning resource support) on learning motivation are shown in Table 8:

**Table 8.** Correlation analysis.

| Construct | Teacher Care | Classroom interaction | Learning Resource support | Motivation to learn |
|---|---|---|---|---|
| Teacher care | 1 | | | |
| Classroom interaction | 876 * * | 1 | | |
| Learning resource support | 883 * * | 863 * * | 1 | |
| Motivation to learn | 896 * * | 893 * * | 903 * * | 1 |

**Note:** ** At level 0.01 (two-tailed), the correlation is significant.

Table 8 shows the results of the correlation analysis among teacher care, classroom interaction, learning resource support, and learning motivation. Each value represents the Pearson correlation coefficient between the two variables, reflecting the strength and direction of the linear relationship between them. First, the correlation coefficient between teacher care and classroom interaction is 0.876, which indicates a strong positive correlation between teacher care and classroom interaction, and this correlation is significant at the 0.01 significance level, meaning that the relationship between the two is unlikely to be due to chance. Secondly, the correlation coefficient between teacher care and learning resource support is 0.883, indicating a strong positive correlation between teacher care and learning resource support, and the correlation is equally significant. This further proves that teacher care plays an important role in improving learning resource support. In addition, the correlation coefficient between teacher care and learning motivation is 0.896, indicating the strongest positive correlation between the two, which suggests that teacher care

may have a greater impact on students' learning motivation, and this relationship is statistically significant and practically meaningful. At the same time, the correlation coefficient between classroom interaction and learning resource support is 0.863, indicating a strong positive correlation between classroom interaction and learning resource support, and this correlation is equally significant, suggesting that good classroom interaction can promote the effective use of learning resource support. The correlation coefficient between classroom interaction and learning motivation is 0.893, indicating a strong positive impact of classroom interaction on learning motivation. This correlation is statistically significant, implying that good classroom interaction can stimulate students' stronger learning motivation. Finally, the correlation coefficient between learning resource support and learning motivation is 0.903, indicating the strongest positive correlation between learning resource support and learning motivation, and this relationship is significant, suggesting that sufficient learning resource support can effectively improve students' learning motivation. Therefore, all the correlation coefficients are above 0.8, indicating that the relationship between these variables is very close and all have a high positive correlation. The study shows that teacher care, classroom interaction, and learning resource support all positively affect learning motivation, and these relationships are statistically significant and have practical educational significance.

### *4.4. Influence of Pedagogy Support on Learning Motivation Between Han and Non-Han Students*

Regression analysis is a statistical method used to study the relationship between one or more independent variables (predictors) and dependent variables (outcomes). It helps researchers understand how different factors affect a certain outcome or predicted outcome by building mathematical models. The main purpose of regression analysis is to estimate the extent to which the independent variable influences the dependent variable and to build a mathematical equation for predicting the dependent variable. In this study, the regression analysis results among the variables of the influence of independent variables pedagogy support (teacher care, classroom interaction, learning resource support) on learning motivation are shown in Table 9:

**Table 9.** Multiple linear regression analysis.

| Learning motivation | Regression coefficient | T | Significance | Tolerance | VIF |
|---|---|---|---|---|---|
| (Constant) | 0.088 | 1.54 | 0.124 | | |
| Teacher care | 0.278 | 6.492 | <0.001 | 0.17 | 5.885 |
| Classroom interaction | 0.319 | 7.998 | <0.001 | 0.197 | 5.077 |
| Learning resource support | 0.374 | 9.246 | <0.001 | 0.186 | 5.37 |
| Adjusted R square | 0.879 | | | | |
| F change | 930.221 | | | | |
| Durbin Watson | 1.861 | | | | |

The table presents the results of a regression analysis between learning motivation and teacher care, classroom interaction, and learning resource support. The regression model formula is as follows:

$$Y = 0 + beta\ beta\ 1\ (X) + beta\ 2\ (X) + beta\ 3 + \epsilon\ (X) \quad (1)$$

Among them, the regression coefficient of the constant (intercept) term is 0.088, indicating that when all independent variables are zero, the predicted value of learning motivation is 0.088. The T-value is 1.54, and the significance level is 0.124, which fails to meet the standard of statistical significance. The regression coefficient of teacher care is 0.278, meaning that every unit increase in teacher care will increase learning motivation by 0.278 units. The T-value is 6.492, and the significance level is less than 0.001, indicating that its influence on learning motivation is statistically significant. The regression coefficient of classroom interaction is 0.319, indicating that every unit increase in classroom interaction will increase learning motivation by 0.319 units. The T-value is 7.998, and the significance level is less than 0.001, demonstrating a strong positive impact on learning motivation. The regression coefficient of learning resource support is 0.374, indicating that learning motivation will increase by 0.374

units for each additional unit of learning resource support. The T-value is 9.246, and the significance level is less than 0.001, which has the strongest positive effect.

The VIF values of the respective variables were 5.885, 5.077, and 5.37, respectively, indicating some multicollinearity among the independent variables, but it did not meet the criteria for severe collinearity. The adjusted $R^2$ was 0.879, indicating that the model could explain 87.9% of the variation in learning motivation, demonstrating a good fit of the model. The F statistic was 930.221, indicating that the regression model is significant overall, and the independent variables have strong explanatory power regarding learning motivation. The Durbin-Watson statistic was 1.861, which is close to 2, indicating that the residuals of the regression model do not have autocorrelation problems.

Therefore, the results of regression analysis show that teacher care, classroom interaction, and learning resource support all have significant positive effects on learning motivation, and the influence of learning resource support is the largest. The global regression model has a good fitting effect, and the multicollinearity and autocorrelation problems are minimal, which verifies the significant influence of independent variables on learning motivation.

## 5. DISCUSSIONS

Through quantitative research and analysis, it is concluded that the influence of pedagogy support (teacher attention, classroom interaction, learning resource support) on the learning motivation of Inner Mongolia university students is compared and analyzed across different groups such as gender, urban and rural background, professional category, and ethnic group. The research shows that in the gender comparison group, there is no significant difference between male and female students in the influence of pedagogy support on learning motivation, which supports the original hypothesis. The role of instructional support in stimulating learning motivation was similar regardless of gender. In the rural-urban comparison group, it is found that there is no significant difference between urban and rural college students in the impact of pedagogy support on learning motivation, which supports the original hypothesis. This is mainly because the difference between urban and rural educational resources in Inner Mongolia may be narrowed to a certain extent, and the role of pedagogy support tends to be consistent. The comparison group of humanities and social sciences majors and science and engineering majors found that there was no significant difference between these groups in the impact of pedagogy support on learning motivation, which supported the original hypothesis. This suggests the universal role of pedagogy support. In other words, teachers' attention, classroom interaction, and learning resource support have relatively consistent effects on college students' learning motivation regardless of their major. In the ethnic comparison group, it is found that there is no significant difference in the influence of pedagogy support (teacher care and classroom interaction) on learning motivation between Han and non-Han students, which supports the original hypothesis. However, there are significant differences between Han and non-Han students in the dimensions of learning resource support, which may be related to the advantages Han students gain from educational resources. The results have some consistency and differences with the conclusions of existing literature. Consistent with previous studies, the effect of pedagogy support on learning motivation is universal, and there is no significant difference in gender, urban and rural areas, and subject categories, which is consistent with the cross-group applicability of pedagogy support shown in previous studies. In self-determination theory, it is proposed that pedagogy support (such as teachers' expectations, feedback, and guidance) can satisfy students' basic psychological needs (autonomy, competence, and belonging), thus enhancing learning motivation. This universality is found among students of different genders, regions, and subject categories because basic psychological needs are universal across cultures and groups (Ryan & Deci, 2020). Vygotsky argues that learning and development are interconnected processes, and that effective pedagogical scaffolding can provide all learners with the necessary support to progress within the proximal developmental zone, regardless of individual demographics (Newman & Latifi, 2021). However, in terms of ethnic differences, the finding that learning resource support is significantly higher than that of non-Han students is consistent with the uneven distribution of educational resources

among ethnic groups mentioned in some literature. This reflects the potential influence of specific cultural and social backgrounds on the distribution of educational resources. Bourdieu pointed out that the uneven distribution of cultural capital in various social groups directly affects access to educational resources, determines academic success, and tends to reinforce the existing social stratification (Stahl & Mu, 2022). The results of this study have significant theoretical and practical implications. The research demonstrates the positive influence of pedagogical support on learning motivation and confirms the substantial positive effects of teacher care, classroom interaction, and learning resource support on motivation through regression and correlation analyses. This provides an empirical foundation for further development of motivation theory and supports a theoretical model that considers pedagogy support as an external motivator. The findings indicate that, although pedagogy support has limited impact on the learning motivation of different groups, teachers should still pay attention to students' individual needs. In a multi-ethnic context, educational policies should focus more on enhancing learning resource support for non-Han students to reduce resource disparities. Additionally, teachers are encouraged to continue improving classroom interaction and personalized support to comprehensively boost students' motivation. The limitations of this study primarily include the concentration of samples in the western region of Inner Mongolia, which may affect the generalizability of the results. Furthermore, the study only examined teacher care, classroom interaction, and learning resource support, excluding other potential factors influencing motivation, such as family background and peer support, which could limit the interpretation of findings. The use of a questionnaire survey method may also introduce subjective bias. Future research could incorporate experimental or interview methods to enhance result credibility. Based on these limitations, subsequent studies should aim to verify the effect of pedagogy support on learning motivation across larger and more diverse cultural contexts. Additionally, incorporating variables such as social support, self-efficacy, and emotional regulation could provide more comprehensive insights and practical guidance for educational strategies.

## 6. CONCLUSIONS

This study thoroughly examines the impact of pedagogy support including teacher care, classroom interaction, and learning resource support on the learning motivation of college students in Inner Mongolia. It systematically analyzes differences based on gender, urban and rural backgrounds, major categories, and ethnic groups. The results indicate that there is no significant difference in the influence of pedagogy support on learning motivation concerning gender, urban and rural backgrounds, and professional categories, suggesting that the effect of pedagogy support is universal and stable. This further validates the applicability of instructional support in stimulating learning motivation across different student groups. However, in the analysis of ethnic differences, although pedagogy support generally has no significant impact on the learning motivation of Han and non-Han students, the dimension of learning resource support for Han students is significantly higher than that for non-Han students. This highlights that, in the multi-ethnic context of Inner Mongolia, the uneven distribution of educational resources remains a critical issue requiring attention. Additionally, through regression and correlation analyses, the study confirms the significant positive impact of pedagogy support on learning motivation. This finding reinforces the importance of teacher care, classroom interaction, and learning resource support as external incentives, emphasizing their central role in enhancing students' motivation to learn. The theoretical significance of this research lies in providing a new empirical foundation for motivation theory and pedagogy, validating the broad applicability and positive effects of pedagogy support on learning motivation. Practically, the results offer valuable guidance for educational policy and teaching practices. Teachers should strengthen personalized support for all student groups, particularly by supplementing learning resources for non-Han students. Furthermore, educators should focus on creating more inclusive and positive learning environments through measures such as teacher care and classroom interaction. Despite these findings, the study has limitations related to sample size, variable selection, and research methodology. Future research should expand sample coverage to explore the effects of pedagogy support in different regions and

cultural contexts, incorporate additional variables such as social support and self-efficacy, and enhance reliability and explanatory power through diversified methodologies like experiments and interviews. Ultimately, this study confirms the positive effects of instructional support on learning motivation through a multi-dimensional analysis, expanding existing theories and offering practical implications. Future educational policies and practices should prioritize educational equity, optimize resource allocation, and address the needs of diverse student groups to continually improve the effectiveness of pedagogy support and support students' comprehensive development.

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