International Journal of Education and Humanities
ISSN: 2770-6702 | Vol. 21, No. 1, 2025

Teaching Effectiveness in Digital-Era Liberal Arts Master's Methodology Courses: Connotations and Influencing Factors

Shuanghe Yang[1], Manping Lu[2, *]

[1] Jiangxi Agricultural University, Nanchang 330045, China
[2] Jiangxi Agricultural University, Nanchang 330045, China

Abstract: In the digital-intelligence era, knowledge acquisition has transformed the factors that shape teaching effectiveness in higher education. This study, focusing on methodology courses at regional universities, utilizes theoretical modeling and quantitative analysis to identify three critical influencing factors: students' self-directed learning engagement, institutional resources, and teacher-student relationships. Interview findings further elucidate distinctive characteristics among liberal arts master's students, including practice-driven learning motivation, a strong need for psychological support, and ambivalence toward digital tools-valuing efficiency gains while expressing concerns about diminished innovation and critical thinking.

Keywords: Digital and Intelligent Transformation, Liberal Arts Master's Students, Teaching Effectiveness, Methodology Courses.

1. Introduction

In 2019, the Central Committee of the Communist Party of China and the State Council issued China's Education Modernization 2035, explicitly identifying "accelerating educational transformation in the information age" as one of the ten strategic tasks for modernizing education. With the emergence of large-scale generative artificial intelligence tools such as ChatGPT and Deepseek, knowledge acquisition and generation have exhibited more distributed characteristics. The New Liberal Arts, as an important direction of liberal arts education reform, aims to break down disciplinary barriers and achieve deep integration between the humanities and social sciences on one hand and natural sciences on the other. Digital intellectualization will further reshape the talent cultivation model of the New Liberal Arts by synergizing digital and intelligent technologies with humanistic thinking, pushing the boundaries of knowledge and expanding the applicability of knowledge across domains. The New Liberal Arts emphasizes interdisciplinary knowledge integration; however, the significant differences between liberal arts and science/engineering knowledge systems pose challenges in understanding and application during the integration process. Liberal arts focus on qualitative analysis and humanistic interpretation, while science and engineering emphasize quantitative analysis and logical reasoning. How to organically combine these two and construct a unified research framework and methodological system is a crucial issue in the development of the New Liberal Arts. Some scholars argue that the integration of digital intellectualization into education contributes diverse research data and sophisticated equipment to the paradigm of educational quantitative research, thereby transforming how data are stored and analyzed within the research process [1]. As an important group in the cultivation of the New Liberal Arts, liberal arts master's students need to adapt to changes in knowledge systems and methodological paradigms in the digital-intelligent era. Consequently, the connotation and influencing dimensions of course teaching effectiveness are inevitably undergoing new transformations.

2. Connotation of Teaching Effectiveness in Liberal Arts Master's Courses from the Digital-Intelligent Perspective

Digital-intellectualization refers to technical means and working systems formed by combining information technology and digitization with artificial intelligence technology[2]. Digital-intellectualization and the New Liberal Arts are aligned in terms of knowledge integration and interdisciplinary cross-over; one represents an objective technical era background, while the other is a new benchmark for talent cultivation. These dual new requirements pose fresh challenges to the traditional cultivation models and teaching method systems for liberal arts master's students. Within the new technological discourse system and digital knowledge dissemination environment, the connotation of course teaching effectiveness will further expand and deepen in both depth and dimension.

Research on course teaching effectiveness began with the wave of teaching scientification in the first half of the 20th century[3]. Promoted by American pragmatism philosophy and behaviorist psychology, especially after the teaching efficacy assessment movement[4], it quickly became a hot topic in academia. Due to the complex, multidimensional, and variable nature of course teaching activities, it has been difficult for academia to form a universal definition of "course teaching effectiveness"[5]. Literature review indicates that foreign research primarily revolves around three dimensions.

First, the dimension of achieving teaching objectives, such as scholars like Koppi and Kyriacou stating that the definition of course teaching effectiveness should be the degree to which expected goals are realized during the teaching process[6-8]. Second, the dimension of teacher teaching behavior. Scholars focusing on this orientation are relatively numerous, mainly defining course teaching effectiveness by evaluating the effects of teachers' classroom teaching behaviors on student

learning[9,10]. Third, the dimension of student achievement. Initially, some scholars proposed that student grades were the ultimate measure of teaching effectiveness[11]. However, it was quickly realized that grades could only measure part of students' abilities and could not fully prove teaching effectiveness. Thus, researchers broadened their perspective, suggesting that effective teaching should allow students to engage in autonomous learning within a positive, learner-centered course atmosphere, enabling all students to achieve greater gains[12,13].

Domestic research, building on foreign research, also focuses on teacher teaching behavior[14,15]. and individual student development[16-19]. It also combines the local cultural context to expand the dimension of teaching objective achievement into an economic analysis perspective of "effectiveness-efficiency-benefit." For example, scholars like Cheng Hong proposed that course teaching effectiveness is an evolving concept, referring to the degree to which teachers follow the objective laws of teaching activities, achieve as many teaching effects as possible with minimal input of time, effort, and resources, thereby realizing specific teaching objectives[20]. Scholars like Yao Limin further dissected teaching effectiveness, highlighting three key dimensions it encompasses: teaching effect, teaching benefit, and teaching efficiency[21]. Song Qiuqian also agreed with scholars like Cheng Hong, stating that effective course teaching requires teachers and students to follow the objective laws of teaching activities, promote students' integrated, coordinated, and sustainable progress and development in the "three-dimensional objectives" (knowledge and skills, process and methods, emotional attitude and values) at optimal speed, benefit, and efficiency, thus effectively achieving the expected course teaching objectives and meeting the educational value demands of society and individuals[22].

From the perspective of digital-intellectualization, analyzing relevant domestic and foreign literature reveals that scholars mainly discuss the main factors affecting course teaching effectiveness from aspects such as autonomous learning engagement, institutional resource support, teacher-student relationship, teachers' teaching attitude, and teaching ability. The integration of digital-intelligent technology injects new connotations into these factors.

When discussing the influencing factors of course teaching effectiveness, scholars pay particular attention to the degree of students' autonomous learning engagement. This engagement is especially important at the master's level due to the more flexible learning forms and greater autonomy in scheduling learning time. Therefore, whether students can engage in active, sustained deep learning becomes a key factor affecting teaching effectiveness. Foreign research started relatively early, with initial studies focusing on the impact of students' learning time investment[23] on teaching effectiveness, later gradually expanding to explore the influence of dimensions such as students' cognitive and emotional engagement[24] on course teaching. In recent years, several scholars have conducted in-depth research on course teaching and students' autonomous learning engagement in higher education. Kahu and Nelson proposed that student engagement in courses is an important component of success in higher education[25]. Some scholars further said that in an era of increasing diversity in higher education and growing sources of information and learning methods, it is necessary to focus on measuring the degree of students' proactive learning engagement in courses[26]. Based on data from 465 university students, Heilporn et al. proposed that learning engagement and teaching have a two-way interaction: good student learning engagement can enhance teaching effectiveness and provide feedback, while effective teaching is also a key driver for maintaining their engagement [27]. Regarding this, Chinese scholars have reached similar conclusions. Academician Lu Yongxiang believed that education should give students more opportunities for exploration and summarization through experimentation, as well as more opportunities for self-study[28]. Several scholars have indicated that the multi-dimensional synergistic effect of autonomous learning engagement is crucial for course teaching effectiveness[29,30]. This engagement, in the digital-intelligent environment, is further reflected in the exploration of personalized learning paths supported by intelligent learning platforms, data-driven learning reflection, and ubiquitous learning ability across time and space[31].

Teachers' teaching ability is the cornerstone of knowledge transmission and innovation, encompassing clear teaching concepts[32], solid subject knowledge, a continuously updated knowledge structure[33], the ability to effectively disseminate knowledge, and innovate teaching methods[34]. These ability elements have been proven to have a significant positive impact on teaching effectiveness[35]. Currently, teachers' teaching ability needs to be expanded to include proficiency in using intelligent teaching tools, integrating data resources for learning analysis, designing online-offline blended teaching models, and guiding students to master digital-intelligent professional skills[36]. Teachers' teaching attitude is the internal guarantee for stimulating teaching vitality. A proper teaching attitude[37], a high sense of responsibility[38], and sincere dedication to teaching are indispensable factors driving teachers to effectively apply their abilities and enhance teaching effectiveness. The digital-intelligent transformation requires teachers to hold a positive attitude of openly learning new technologies, actively applying new tools, and proactively exploring the deep integration of digital-intelligent technology and courses [39]. In summary, in current research literature and status, scholars' conclusions regarding the relationship between teachers' teaching ability, teaching attitude, and course teaching effectiveness are relatively consistent, believing there is a positive correlation between them.

Institutional resource support provides a solid environmental foundation for teaching and learning, including rich academic resources[40] and effective research support[41]. These resources significantly and positively affect course teaching effectiveness by optimizing the learning environment, expanding knowledge sources, and incentivizing teacher development. Currently, the core of institutional support lies in building strong digital infrastructure, including high-performance digital-intelligent training platforms, rich online teaching resource libraries, intelligent management systems supporting whole-process teaching data collection and analysis, and mechanisms promoting school-enterprise cooperation in developing digital-intelligent courses and training projects. The teacher-student relationship is the emotional lubricant of the teaching process. Positive relationships built on teacher credibility[42], good interaction, psychological safety[43], mutual respect[44], and a good, equal communication atmosphere[45,46]can effectively promote the depth of teaching interaction and stimulate students' learning enthusiasm [47], thereby significantly enhancing overall teaching effectiveness.

Digital-intelligent tools provide the possibility for building new types of teacher-student interaction that transcend time and space limitations, are more collaborative, and have data transparency. However, vigilance is needed against the emotional alienation technology might bring, emphasizing the maintenance of deep humanistic care and personalized guidance with technological assistance[48].

In summary, domestic and foreign research conclusions indicate that these five dimensions all have a significant positive correlation with course teaching effectiveness. In the wave of digital-intellectualization, the connotations and practical forms of these core elements are undergoing profound changes, and their effective synergy is the key path to enhancing course teaching effectiveness in the digital-intelligent era.

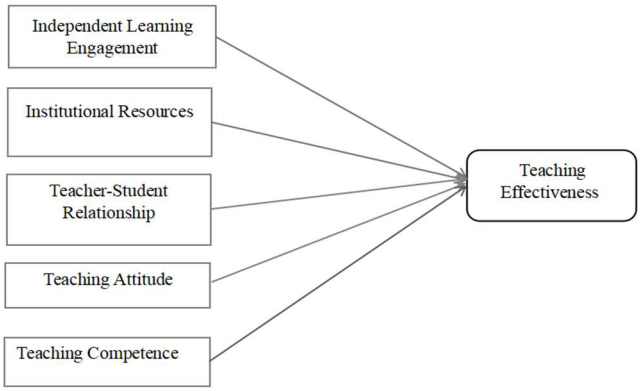


Figure 1. Factors Influencing Teaching Effectiveness

3. Analysis of Influencing Factors for Liberal Arts Master's Methodology Courses Based on Empirical Analysis

Based on the above analysis of teaching effectiveness in higher education courses, this study selects methodology courses most closely related to digital-intelligent requirements as the research object. Using questionnaire surveys and field interviews, it primarily analyzes the effectiveness of methodology course teaching from the aspects of students' method application ability, writing ability, identification ability, and critical thinking ability. It explores the influencing factors of teaching effectiveness in liberal arts master's methodology courses from dimensions such as autonomous learning engagement, institutional resource support, teacher-student relationship, teachers' teaching attitude, and teaching ability.

(1) Research Instrument and Data Collection

The pilot questionnaire consisted of 36 questions, with questions 1-8 being basic information questions, questions 9-16 measuring the dependent variable (effectiveness of methodology course teaching), and questions 17-36 measuring the independent variable dimensions (17-21: teacher-student relationship; 22-25: teacher teaching attitude; 26-30: institutional resource support; 31-33: autonomous learning engagement; 34-36: teacher teaching ability). Targeting liberal arts master's students from four universities in Jiangxi Province, 239 questionnaires were collected. After removing invalid responses, 204 valid questionnaires were obtained. SPSS software was used to test the reliability and validity of the 28 questions excluding basic information. The Cronbach's α coefficient was 0.976 (>0.8), indicating good internal consistency of the questionnaire. The KMO value was 0.976 (>0.9), and the Bartlett's test of sphericity significance was 0.000 (<0.05), indicating good validity of the questionnaire, suitable for factor analysis. Further exploratory factor analysis using the maximum variance rotation method revealed that items 15, 29, and 30 had loadings exceeding 0.5 on two dimensions, hence they were deleted. Finally, 25 items were retained. Reliability and validity tests on these 25 items yielded a Cronbach's α coefficient of 0.97 and a KMO value of 0.956. After deletion, the dimension division still met expectations, indicating good reliability and validity of the scale.

After exploratory factor analysis, item analysis was conducted on the retained 25 questions to analyze the appropriateness and reliability of each item. This study used the critical ratio method to calculate the critical ratio (CR value) for each item. The top 27% and bottom 27% of total scores were marked as high and low groups respectively, with scores ≥103 being the high group and ≤86 being the low group. Independent samples t-test on the two groups showed that the CR values of all 25 items were greater than 3, and the P-values of all items were less than 0.05, indicating significant differences between the high and low groups for all items, meaning the items have high discriminatory power.

(2) Basic Information of the Formal Survey Sample

During the formal survey stage, questionnaires were distributed via Questionnaire Star to liberal arts master's students in their second year or above or graduated within three years from 9 universities in central China (Jiangxi, Hunan, Henan, etc.). First-year students were excluded as some might not have taken methodology courses yet. 679 questionnaires were received. Based on response times less than 90 seconds and continuous/patterned responses, 431 valid questionnaires were selected.

From the collected questionnaires, students majoring in Education, especially female students, accounted for a relatively high proportion. The overall sample data primarily consisted of full-time liberal arts master's students. Since the sample data showed significant differences in the grouped data of the two demographic variables 'discipline category' and 'learning form', these two variables were not included in the influencing factor analysis.

Table 1. Basic Information of the Research Subjects

	Gender		Degree Type		Learning Form		Cross-disciplinary		Grade			Work Experience	
	Male	Female	Academic	Professional	Full-time	Part-time	Yes	No	Year 2	Year 3	Graduated 1-3 years	Yes	No
Education	31	149	41	139	169	11	70	110	111	55	14	40	140
Literature	12	82	54	40	94	0	21	73	63	23	8	20	74
Law	19	36	22	33	54	1	31	24	38	15	2	12	43
Philosophy	0	2	2	0	2	0	1	1	0	2	0	1	1
Economics	6	12	8	10	18	0	3	15	16	2	0	0	18
History	5	2	6	1	7	0	6	1	3	4	0	1	6
Management	13	21	19	15	33	1	10	24	21	11	2	7	27
Art	11	30	5	36	40	1	4	37	38	2	1	10	31

(3) Descriptive Analysis of Scale Dimensions

Table 2. Descriptive Statistics of Course Teaching Effectiveness and Its Influencing Dimensions

Dimension	Min	Max	M+SD
Course Teaching Effectiveness	1	5	3.70+0.74
Autonomous Learning Engagement	1	5	3.75+0.82
Institutional Resources	1	5	3.54+0.96
Teacher-Student Relationship	1	5	3.88+0.80
Teacher Teaching Attitude	1	5	3.94+0.86
Teacher Teaching Ability	1	5	3.75+0.88

SPSS 26.0 was used for descriptive statistics on each dimension to understand the basic characteristics of the sample data and the basic status of each dimension. As shown in Table 2, the mean value of the dependent variable (course teaching effectiveness) is 3.7, indicating that overall, the surveyed liberal arts master's students generally believe methodology course teaching is relatively effective. The mean values of the independent variable dimensions-autonomous learning engagement, institutional resources, teacher-student relationship, teacher teaching attitude, and teacher teaching ability-are all above 3.5, indicating their recognition of their own efforts, external environmental support, and teachers' attitudes and abilities.

(4) Correlation Analysis between Course Teaching Effectiveness and Influencing Factors

Before analyzing the influence relationships between variables, it is necessary to analyze the correlation between them. Using Pearson correlation coefficient to analyze the correlation between course teaching effectiveness and various influencing factors, it was found that there are significant correlations between each pair at the 0.01 level. Therefore, it can be considered that autonomous learning engagement, institutional resources, teacher-student relationship, teacher teaching attitude, and teacher teaching ability are highly related to the effectiveness of methodology course teaching.

Table 3. Correlation between Course Teaching Effectiveness and Various Influencing Dimensions

	Autonomous Learning Engagement	Institutional Resources	Teacher-Student Relationship	Teacher Teaching Attitude	Teacher Teaching Ability
Course Teaching Effectiveness	.759**	.687**	.775**	.705**	.735**

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

(5) Regression Analysis Based on Influencing Factors of Course Teaching Effectiveness

Regression analysis primarily examines the influence relationships between variables. This study hypothesized that autonomous learning engagement, institutional resources, teacher-student relationship, teacher teaching attitude, and teacher teaching ability have a significant positive impact on the effectiveness of methodology course teaching. Therefore, these five independent variables were included in the regression equation. Stepwise multiple regression analysis was used to explore the predictive role of these five variables on course teaching effectiveness. As shown in Table 4, $F=189.441$, $P=0.000<0.001$, indicating the model is statistically significant, meaning the independent variables can predict the dependent variable; $R^2=0.690$, adjusted $R^2=0.687$, indicating that autonomous learning engagement, institutional resources, teacher-student relationship, teacher teaching attitude, and teacher teaching ability can explain 69% of the variation in course teaching effectiveness. An explanation rate exceeding 30% generally indicates high predictive effect. The regression coefficient for autonomous learning engagement is 0.319 ($t=7.513$, $P=0.000<0.001$), for institutional resources is 0.101 ($t=2.986$, $P=0.003<0.01$), and for teacher-student relationship is 0.339 ($t=6.099$, $P=0.000<0.001$), indicating that autonomous learning engagement, institutional resources, and teacher-student relationship have a significant positive impact on course teaching effectiveness. However, the regression coefficient for teacher teaching attitude is -0.003 ($t=-0.062$, $p=0.951>0.05$), and for teacher teaching ability is 0.077 ($t=1.558$, $p=0.120>0.05$), indicating that teacher teaching attitude and teacher teaching ability do not have a significant impact on the perceived effectiveness of methodology course teaching.

Table 4 also shows that the VIF values for multicollinearity diagnosis in the model constructed with these five independent variables and course teaching effectiveness are all less than 5, indicating no multicollinearity problem among the independent variables; the acceptable range for the Durbin-Watson statistic is usually 1.5 to 2.5, with 2 being ideal. The Durbin-Watson value for this model is 2.195, close

to 2, indicating no autocorrelation in residuals, meaning the five independent variables are independent of each other. From the perspective of data distribution normality (see Figure 2), the points on the P-P plot all fall near the diagonal line, indicating that the standardized residuals of this model follow a normal distribution, and the regression analysis results are accurate and reliable.

Table 4. Regression Analysis Predicting Course Teaching Effectiveness

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	VIF	Durbin-Watson
	B	Std. Error	Beta				
(Constant)	0.624	0.104		5.976	0.000		2.195
Autonomous Learning Engagement	0.301	0.040	0.334	7.513	0.000	2.710	
Institutional Resources	0.101	0.034	0.131	2.986	0.003	2.648	
Teacher-Student Relationship	0.339	0.056	0.365	6.099	0.000	4.910	
Teacher Teaching Attitude	-0.003	0.051	-0.004	-0.062	0.951	4.821	
Teacher Teaching Ability	0.077	0.049	0.090	1.558	0.120	4.628	
R^2	0.690						
Adjusted R^2	0.687						
F	189.441						
P	0.000[b]						

Predictors: Autonomous Learning Engagement, Institutional Resource Support, Teacher-Student Relationship, Teacher Teaching Attitude, Teacher Teaching Ability

Dependent Variable: Course Teaching Effectiveness

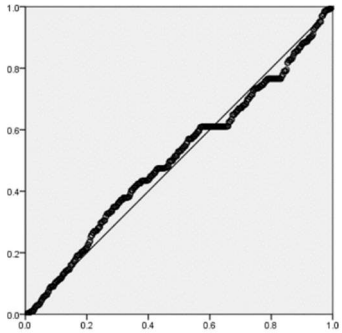


Figure 2. Normal P-P Plot of Standardized Residuals

(6) Regression Analysis Incorporating Demographic Variables

Table 5. Regression Analysis after Incorporating Demographic Variables

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.507	0.131		3.872	0.000
Autonomous Learning Engagement	0.308	0.041	0.342	7.574	0.000
Institutional Resources	0.096	0.035	0.125	2.761	0.006
Teacher-Student Relationship	0.333	0.057	0.358	5.857	0.000
Teacher Teaching Attitude	0.000	0.052	0.000	0.007	0.995
Teacher Teaching Ability	0.083	0.050	0.098	1.667	0.096
Year 3	0.037	0.046	0.022	0.786	0.432
Graduated last 3 years	0.70	0.086	0.023	0.819	0.413
Male	0.068	0.050	0.038	1.362	0.174
Professional Degree	-0.016	0.043	-0.010	-0.370	0.712
Cross-disciplinary	-0.017	0.044	-0.011	-0.390	0.697
University's Advantage Discipline (Social Sciences)	0.087	0.064	0.039	1.363	0.174
Work Experience	0.003	0.052	0.001	0.051	0.960
R^2	0.694				
Adjusted R^2	0.685				
F	78.897				
P	0.000[b]				

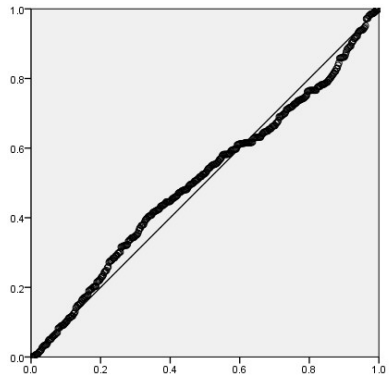


Figure 3. Normal P-P Plot of Standardized Residuals

On the basis of verifying the theoretical model in Figure 1, this study continued to incorporate demographic variables to construct a regression model. First, dummy variable processing was performed on demographic variables using Year 2, female, academic degree, non-cross-disciplinary, university' discipline natural sciences, no work experience, etc., as reference variables.

After incorporating the six demographic variables (excluding discipline category and learning form) into the model, the analysis results are shown in Table 5. From Table 5, it can be found that demographic variables do not have a significant impact on the effectiveness of methodology course teaching, nor do they affect the predictive power of the five independent variables in the theoretical model on the dependent variable. The factors influencing the effectiveness of methodology courses remain the three variables: autonomous learning engagement, institutional resources, and teacher-student relationship. Meanwhile, from the P-P plot (Figure 3), the standardized residuals of the regression model after incorporating demographic variables still conform to a normal distribution, indicating the regression analysis results of this model are still reliable.

4. Reconstruction of Multiple Influences: Dynamic Combination of Subject, Technology, and Psychological Support

The above empirical analysis conclusions indicate that the factors influencing the effectiveness of methodology course teaching are autonomous learning engagement, institutional resources, and teacher-student relationship. In contrast, teacher teaching attitude and teaching ability, which were mentioned as important in previous studies, do not have a significant impact on the effectiveness of methodology course teaching. The reasons for this change could be multidimensional. Consequently, this study selected 10 liberal arts master's students from the surveyed universities (details in Table 6) for online interviews. Main interview questions included: *What factor do you think has the greatest impact on learning methodology courses? How do you usually acquire and use research methods? What factors do you think are currently bringing challenges or difficulties to learning in the process of learning methodology courses?*

Table 6. Basic Information of Interviewees

Code	Gender	Grade	Major	Discipline
A1	Female	Year 3	Higher Education	Education
B2	Male	Year 2	Marxist Theory	Law
C3	Female	Graduated 1 year	Applied Economics	Economics
D4	Female	Year 2	Educational Economy and Management	Education
E5	Male	Year 2	Educational Management	Education
F6	Female	Year 3	Sociology	Law
G7	Female	Year 2	Journalism and Communication	Literature
H8	Female	Graduated 2 year	Psychology	Education
I9	Female	Year 3	Human Resource Management	Management
J10	Male	Year 3	Agricultural and Forestry Economic Management	Management

By generating a word cloud (Figure 4) from the sorted transcripts of the 10 interviews, it can be found that current liberal arts master's students place great emphasis on learning research methods. As student F6 mentioned in the interview: *I feel that without research methods, my entire master's learning process would be like a farmer without a hoe, because for the discipline of sociology, methods are the skeleton that supports the entire research. For method learning, we all invest a lot of time.* The word

"method" appeared 152 times, mainly related to research methods, learning strategies, and technical tools. The words "learning" and "research" appeared 84 and 54 times respectively, forming the main background of the interview narrative. "Myself" appeared 72 times, and "Mentor" appeared 55 times, reflecting the important influence of autonomous learning engagement. Simultaneously, this autonomous learning engagement requires external support. In the frequency analysis, "psychology" often appeared simultaneously with "Mentor support". The interview results once again confirmed the impact of the teacher-student relationship on the effectiveness of methodology course learning; they also indicate that besides the methodology course instructor, the supervisor plays a very important role in the method learning of liberal arts master's students. Another high-frequency word is related to technology. "AI", "tool", and "technology" appeared together more than 10 times. "Resources", "needs", and "practice" appeared together nearly 20 times, indicating that the use of technology in methodology course learning has become general. However, in technology application, there is a contradictory conflict

between "help" and "confusion". AI and other technologies provide more resource help but also bring concerns about similarity and lack of innovation.

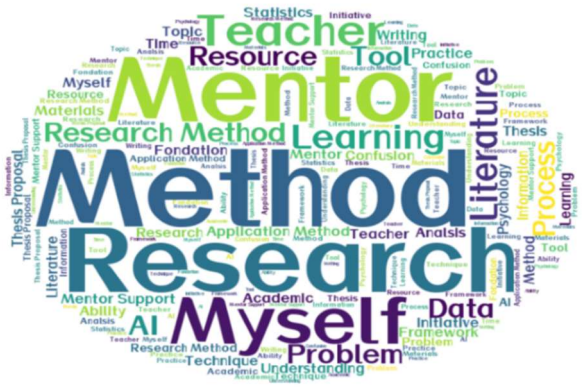


Figure 4. Interview Transcript Word Cloud

5. Conclusion

In summary, the core dimensions liberal arts master's students focus on in research method learning are: personal agency (self/initiative), technological adaptation (AI/tools), practical transformation (application/thesis), and support system (mentor/resources).These dimensions exhibit three key characteristics:

(1)Self-Driven Learning: Learners often pursue methods training in response to practical demands (e.g., thesis writing or research tasks). During interviews, many students mentioned that writing papers and their thesis compelled them to genuinely engage with research methods.

(2)High Need for Psychological Support: When encountering difficulties during self-directed learning, students most need encouragement and support from teachers or supervisors. Psychological reliance and a sense of security are critical factors in overcoming challenges.

(3)Contradictions in Technological Resource Utilization: While AI tools enhance efficiency and save time and effort, they also provoke concerns about "lack of innovation," "feelings of worthlessness," and "replacement of critical thinking" .

Survey and interview data mutually reinforce the conclusion that proactive engagement, institutional resources, and psychological support within teacher-student relationships are the most significant factors influencing the effectiveness of research methods courses. In the digital-intellectual era, the factors affecting research methods training for humanities master's students are undergoing transformation and are constantly being reconfigured under these influences.

(1) Heightened prominence of the learner's agency

The challenges posed by digital-intellectualization-information overload, technological support, and shifts in thinking-highlight that while general knowledge and routine procedures are easily accessible and demonstrated, truly mastering and deeply applying methods to showcase research originality requires cognitive processes that cannot be outsourced. Constructivists proposing distributed cognition argue that while external cognitive tools can reduce the individual's cognitive load, thereby facilitating knowledge construction and meaning making, in the digital-intellectual era, tools that simulate human thinking and replace primary cognitive processes seem to exceed the role of mere distributors-they appear to encroach upon or even seize domains of human thinking. In this process, the roles of both teachers and learners are diminished, yet the constructivist emphasis on the learner's central agency remains unchallenged.

Simultaneously, the teacher's guiding role is weakening. Digital-intellectual tools provide more informational resources than teachers-resources primarily supplied by specialized knowledge producers and disseminators (e.g., Bilibili and Deepseek, frequently mentioned by interviewees). This explains why teachers' attitudes and instructional abilities do not significantly impact the effectiveness of research methods courses.

As evidenced in the word cloud, students consistently emphasize their own proactive role. In the digital-intellectual era, the starting point is no longer uniform knowledge or methods taught by the same instructor or type of instructor; rather, students are immersed in a systemic, continuously updated knowledge system. For humanities master's students, especially those with opportunities to engage in cutting-edge research projects, the starting point) and end point of learning and applying methods increasingly depend on themselves. As Student I9 stated: "*It was difficult for me to fully learn case study methodology in class; the key was to explore on my own-reading books on case study methods and reviewing relevant research papers.*" This indicates that learning research methods has largely returned to personalized, individual learning, where subjective initiative plays a decisive role.

Furthermore, students' prior backgrounds significantly influence learning outcomes. For instance, interviewees with backgrounds in mathematics (D4) and computer science (H8) demonstrated greater confidence in learning research methods.

(2) Transformation and Challenges of Digital-Intellectual Technology in Practice

AI was frequently mentioned in interviews, indicating that humanities master's students are widely exposed to digital-intellectual tools. The use of these tools has led to the development of new skills and continuous optimization of research methods learning. Technologies such as augmented reality, the metaverse, blockchain, intelligent data processing, and targeted data push technologies are reshaping knowledge production into a new paradigm characterized by human-machine virtual-real interaction, digital twin modeling, and AI-generated content[49].

Digital-technological training is often disembodied,

abstract, and symbolic. This approach inevitably emphasizes mastery of the technical forms of digital-intellectual tools. For example, while all interviewed students considered AI tools efficient for assisting literature reviews, few explored the underlying logical mechanisms of writing a literature review. This disembodied learning increases the "superficiality" of knowledge application, posing new challenges to the critical thinking and cognitive training essential for humanities students. As Student D4 noted: "*It either interferes with the construction of my own logical framework, provides very conventional ideas, or leads to psychological discouragement. Discovering that AI can output in moments what takes me days to conceive is frustrating-especially during research, it's better not to compare oneself with AI.*"

Research methods are inherently activities of deep thinking-an "invisible dance" of the mind. However, AI makes this process explicit and convenient. Teaching and learning activities must therefore establish a balanced boundary between technology and individual cognition. The true challenge lies in deriving meaningful cognitive outcomes from external high-efficiency support. The demands for innovation and originality present new instructional objectives for research methods courses. In these courses, the teaching of technical skills "technique" is being downplayed, while the value of "principles" and the significance behind logical structures are becoming more prominent. This restructuring necessitates innovations in teaching systems, methods, and competencies. Enhancing teachers' ability to cultivate thinking is a key factor in improving the effectiveness of research methods courses for humanities master's students in the context of technological application.

(3)Digitization, Networking, and Intellectualization of Educational Resources & the Renewal of Institutional Support

Both survey and interview data indicate that institutional resource support is crucial for the acquisition and improvement of research methods. Providing advanced digital-intellectual technical systems and equipment constitutes external support; however, more importantly, it is

essential to cultivate an academic atmosphere suited to the digital-intellectual era. Developing a digital-intellectual mindset requires open and inclusive academic concepts, innovative practices, and active academic engagement—such as regularly organizing seminars on disciplinary frontiers and creating multiple channels for students to immerse themselves in technologically enhanced academic learning. This allows students to continuously gain new insights and achieve growth between technological resources and individual cognitive development.

For local ordinary universities, actively integrating the latest academic methods and tools into the teaching system is a vital task for improving the quality of graduate education. Enhancing teacher competencies must be grounded in robust institutional resource support.

This study concludes that students' independent learning engagement and capabilities, psychological support from teachers, and institutional resource support most significantly influence the effectiveness of research methods courses for humanities master's students in the digital-intellectual context. Therefore, it is necessary to continuously enhance students' self-directed learning abilities, foster supportive teacher-student psychological environments, and improve the dimension of institutional resource support. Promoting the continuous reconfiguration of these key elements to achieve an optimal balance will improve the application of research methods among humanities master's students and elevate the quality of graduate education.

Acknowledgments

Supported by the Jiangxi Province Degree and Graduate Education Reform Project "Research on Influencing Factors and Improvement Strategies for the Effectiveness of Master's Curriculum Teaching under the 'New Liberal Arts' Background" (Project No. JXYJG-2023-050).

References

[1] Wang Yarong, Wang Panfeng, Zhou Weibin. Development Path of Educational Quantitative Research Paradigm in the Digital-Intelligent Era[J]. Higher Education Development and Evaluation, 2025, 41(02): 13-21+129.

[2] Zhang Zhixue, Hua Zhongsheng, Xie Xiaoyun. Research Status and Future Directions of Human-Machine Collaboration in the Digital-Intelligent Era[J]. Journal of Management Engineering, 2024, 38 (01): 1-13.

[3] Jiang Wei, Deng Yanhong. Reflection on the Meaning and Evaluation Standards of Effective Teaching in China[J] Education Exploration, 2011, (06): 13-15.

[4] Cui Yunhuo. Effective Teaching: Concepts and Strategies (Part 1)[J]. People's Education, 2001(6).

[5] Adams J.V. (1997). Student evaluations: The ratings game[J]. Inquiry, 1(2), 10-16.

[6] McKeachie, W. J. (1979). Student Ratings of Faculty: A Reprise. Academe,[J]. 65(6), 384-397.

[7] Koppi A.J., Lublin J.R., Chaloupka M.J. (1997). Effective Teaching and Learning in a High-tech Environment[J]. Innovations in Education and Training International, 34(4): 245-251.

[8] Kyriacou, C. (1997). Effective Teaching in Schools: Theory and Practice[M]. Starley Thomas Publishers.

[9] Schonwetter D.J., Clifton R.A, Perry R.P. (2002). Content Differential Impact of Effective Teaching on Student Achievement Outcomes [J]. Research in Higher Education, 43(6):625-655.

[10] Little, O., & Goe, L. (2009). A Practical Guide to Evaluating Teacher Effectiveness. [J]. ETS.

[11] Koshy, V. (1999). Effective Teaching of Numeracy for The National Mathematics Framework. London: Hodder and Stoughton.

[12] Marchesani, L. S., & Adams, M. (1992). Dynamics of diversity in the teaching-learning process: A faculty development model for analysis and action.[J] New Directions for Teaching and Learning, 52, 9–20.

[13] Carmen Salazar, M., Norton, A. S., & Tuitt, F. A. (2010). Weaving Promising Practices for Inclusive Excellence into the Higher Education Classroom. To Improve the Academy, 28(1), 208–226. doi:10.1002/j.2334-4822.2010.tb00604.x.

[14] Liu Liqing. On the Effectiveness of University Classroom Teaching[J]. Heilongjiang Researches on Higher Education, 2007, (05): 144-146.

[15] Sun Yaling. Focusing on Classroom Teaching Effectiveness to Enhance Talent Cultivation Quality[J]. China Higher Education, 2010(20):41-43.

[16] Chen Houde. Effective Teaching[M]. Beijing: Educational Science Publishing House, 2000: 25, 29.

[17] Cui Yunhuo, Wang Shaofei. The Concept and Framework of Effective Teaching[J]. Teaching Materials and Teaching for Primary and Secondary Schools, 2005, (02): 5-7.

[18] Yan Guangcai. Are Traditional Teaching Methods Represented by Lecturing and Blackboard Writing Obsolete? – Evaluation of the Effectiveness of Different Methods and Technologies in Undergraduate Classroom Teaching[J]. Educational Development Research, 2019, 39(23): 1-9.

[19] Zhao Zhiye, Zhao Yan'an. The Logical Path and Method Innovation for Enhancing the Effectiveness of Ideological and Political Education in Universities in the New Era[J]. China University Teaching, 2022(05):61-68.

[20] Cheng Hong, Zhang Tianbao. On Teaching Effectiveness and Strategies for Its Improvement[J]. Journal of the Chinese Society of Education, 1998(05):37-40.

[21] Yao Limin. Research on the Characteristics of Effective University Teaching[J]. Modern University Education, 2001, (4).

[22] Song Qiuqian. Concepts and Implementation Strategies of Effective Teaching[M]. Hangzhou: Zhejiang University Press, 2007: 4.

[23] Brophy, J. (1983). Conceptualizing student motivation. Educational Psychologist, 18, 200-215

[24] Astin, A. W. (1984). Student involvement: A developmental theory for higher education. Journal of College Student Personnel, 25, 297-308.

[25] Kahu, E. R., & Nelson, K. (2018). Student engagement in the educational interface: Understanding the mechanisms of student success. Higher Education Research and Development, 37(1), 58–71.

[26] Reeve, J., & Jang, H. (2022). Agentic engagement. In A. L. Reschly, & S. L. Christenson (Eds.), Handbook of research on student engagement. Springer.

[27] Heilporn, G., Raynault, A., & Frenette, É. (2024). Student engagement in a higher education course: A multidimensional scale. Social Sciences & Humanities Open, 9(2024), 100794.

[28] Lu Yongxiang. Differences Between Eastern and Western Education and Their Enlightenment for Postgraduate Cultivation in China[J]. Senior Perspective, 2006, 21(1): 1.

[29] Liu Fanhua, Yi Xitian. Construction and Application Research of an Analysis Model for Online Learning Engagement [J]. e-Education Research, 2021, 42(09): 69-75.

[30] Dai Weili, Wu Libao, Wang Ji. Research on the Impact Mechanism of Professional Core Course Experience on Top-notch Students' Learning Gains – From the Perspective of Learning Engagement [J]. Jiangsu Higher Education, 2024, (09): 73-79.

[31] Mai Yanhang, Jiang Xiaoxia, Sheng Yuhang. Research and Practice on Teaching Reform of Educational Statistics Course in the Context of the Digital-Intelligent Era[J]. Higher Education Forum, 2024, (07): 57-61.

[32] Benton, S., & Li, D. (2021, May). Teacher Clarity: Cornerstone of Effective Teaching. IDEA Paper 83. Anthology.

[33] National Council for Accreditation of Teacher Education. (2010). What makes a teacher effective? https://web.archive.org/web/20101009145601/http://www.ncate.org/public/researchreports/teacherpreparationresearch/whatmakesateachereffective/tabid/361/default.aspx

[34] Yu Shansheng. Exploration of Efficient Teaching Implementation[J]. Contemporary Educational Science, 2011(10):38+32.

[35] Xiao Min, Zhang Yanning, Xie Ni. Analysis of the Impact of Effective Teaching Behaviors on Postgraduate Course Learning Gains[J]. Academic Degrees & Graduate Education, 2021(04):80-86.DOI:10.16750/j.adge.2021.04.013.

[36] Li Zhaoqing. Teaching Reform Practice of 'Commercial Bank Operation and Management' Course in Application-Oriented Universities under the Background of Digital-Intellectualization[J]. Science & Technology Guide, 2024, (14): 125-128.

[37] Yang Yanxuan. On the Change of Teachers' Teaching Attitudes in the New Curriculum Reform[J]. Theory and Practice of Education, 2006, (03): 38-40.

[38] Cheng Cheng, Song Ling. Thoughts on Improving the Teaching Quality of Postgraduate Courses in the New Period[J]. Market Modernization, 2005, (18): 244.

[39] Yang Yanping, Ma Fuping, Ma Xiaoting, Liu Yan, Chi Yulian. Research on Teaching Dilemmas and Reform Strategies of 'Cost Accounting' Course under the Background of the Digital-Intelligent Era[J]. East China Science and Technology, 2024, (04): 138-140.

[40] Jiang Libing, Chen Youqing. Research on the Construction of Open Resources for Teacher Education Courses and the Practice of Flipped Classroom – Taking the Construction of the National Excellent Resource-Sharing Course 'Effective Teaching' as an Example[J]. Heilongjiang Researches on Higher Education, 2016, (08): 46-49.

[41] Wei Hong, Cheng Xuezhu, Zhao Ke. Research on the Relationship Between Scientific Research Outcomes and University Teachers' Teaching Effectiveness[J]. Psychological Development and Education, 2006, (02): 85-88.

[42] Meyers, S. A. (2004). The relationship between perceived instructor credibility and college student in-class and out-of-class communication. Communication Reports, 17,130-137.

[43] Kaufman, T. (2021). Building positive relationships with students: What brain science says. https://www.understood.org/en/school-learning/for-educators/empathy/brain-science-says-4-reasons-to-build-positive-relationships-with-students.

[44] Zhang Yue, Ma Baojuan. Analysis of the Three Dimensions of Effective Teaching in High School Ideological and Political Courses[J]. Taste · Classic, 2023, (08): 149-151.

[45] Macsuga-Gage, A. S., Simonsen, B., & Briere, D. E. (2012). Effective teaching practices that promote a positive classroom environment. Beyond Behavior, 22(1), 1-11.

[46] Chickering, A.W.& Gamson,Z. F. (1987). Seven principles for good practice in undergraduate education. AAHE Bulletin, 39(7), 3-7.

[47] Song Lina, Jin Lifu. The Practical Significance and Implementation Path of Effective Teaching in Ideological and Political Education in Universities from the Perspective of Cognitive Evaluation Theory[J]. University Education Management, 2024, 18(03): 73-81.

[48] Shen Xianghua, Li Xingyun, Zhao Yanfeng. Research on Teaching Reform of Accounting Postgraduate Courses in the Digital-Intelligent Era – A Case Study of Financial Accounting Courses[J]. Communication of Finance and Accounting, 2023, (19): 155-159.

[49] Long Baoxin. (2024). The Mechanism and Path of Knowledge Production Empowering New Quality Productivity. Journal of Hubei Minzu University (Philosophy and Social Sciences), (4), 46–57.