Index System Construction and Model Analysis of University Teachers' Data Literacy Ability

Cunbo Yang
Lyceum of the Philippines University

The research on the index system construction and model analysis of data literacy ability of university teachers has influenced the development of academic field, and the rapid development of information digitization technology has brought about a torrent of data. University teachers' life, work and learning are profoundly affected by the big data environment, and the level of data literacy of university teachers will play a vital role in the development of information society. On this basis, the index system of teachers' data literacy is introduced. The effectiveness of the data literacy model of university teachers will become an important index. According to the analysis results, the fuzzy comprehensive evaluation method is used to determine the index weight of teachers' data literacy ability and the hierarchical model is established to analyze it. The scale of the ability index is calculated, and the weight of the teacher's data literacy index is determined. The experimental results show that the proposed method is accurate and effective.

Keywords: university teachers, data literacy ability, index system, model analysis

INTRODUCTION

The data literacy of university teachers has gradually become an essential factor and core competitiveness to enhance scientific research innovation ability. With the quiet rise of data-intensive scientific research, researchers encounter more and more problems in data management, data publishing, data citation and so on. Data acquisition, use and evaluation skills become the basic qualities of university teachers in the era of big data. Comprehensive literature research and development in China and abroad showed that the connotation of university teachers' data literacy is to have data awareness and critical thinking on data, which can effectively and properly obtain, analyze, process, use and display data. The construction of the evaluation index system of university teachers' data literacy ability is the core of the current university teachers' personnel system (Wu, 2016; Qin, et al. 2016). The ultimate goal of teaching ability evaluation of university teachers is to strictly abide by the relevant principles, according to the corresponding evaluation model, make full use of the guiding role of data literacy evaluation of university teachers and its management function, and scientifically allocates teachers' human resources. In the process of maximizing the achievement of the strategic objectives of university organizations, the evaluation of teachers' data literacy can guide the development of university teachers' career and the overall development of university teaching activities (Yue, et al. 2016). It is a very systematic and complicated work to construct the corresponding index system of data literacy ability for the intangible work characteristics of university teachers and their high-end and refined labor attributes.

In recent years, due to the need for talents and scientific and technological innovation in China, it is urgent to construct a teacher data literacy index system to promote the cultivation of talents, highlight the characteristics of university running, and conform to the law of teacher development. For a long time, the academic field has paid special attention to the research on the index system of university teachers' data literacy (Wei & Zhang, 2016; Li & Zhang, 2017). However, from the overall level, the vast majority of the research is mainly aimed at the problems of universality and conventionality, and the research lacks a certain degree of systematicness and comprehensiveness, especially for the data literacy of university teachers. The research on single performance index system is very scarce, the number of special research results on data literacy is not large, the existing evaluation index research on data literacy of university teachers is not comprehensive and systematic, and its general adaptability is relatively lack. Therefore, it is necessary to conduct in-depth research on the index system construction and model analysis of university teachers' data literacy ability.

This paper presents a fuzzy comprehensive evaluation method for the construction of a data literacy index system and a model analysis method for university teachers.

(1) It is necessary to determine the index system of data literacy ability of university teachers and establish the flow chart of the index system of data literacy ability of university teachers.
(2) To establish a hierarchical model of university teachers' data literacy ability.
(3) According to the calculation of the index system and model of data literacy ability of university teachers, the effectiveness of the model is verified.

METHODS

Construction of Index System for University Teachers' Data Literacy Ability

There are different definitions of data literacy. Some researchers think that data literacy is a continuation and extension of media literacy and information literacy, some researchers equate data literacy with statistical literacy and digital literacy, some researchers think that data literacy is synonymous with information literacy, and others think that data literacy is a synonym of information literacy. It is the improvement and deepening of information literacy (Yao, et al. 2017; Liu & Zheng, 2017). The digital environment is described, including 3 primary indexes and 14 secondary indexes as shown in Table 1. The data literacy of the researchers is discussed from the perspective of scientific management, and the indexes system of three dimensions and nine levels is formed as shown in Table 2.

TABLE 1
DIGITAL ENVIRONMENT ANALYSIS OF UNIVERSITY TEACHERS' DATA LITERACY

Primary index	Secondary index	Digital environment specification
Data value	Quantitative concept Estimating the value of data and eliminating erroneous data Sense of symbolism Vision concept Value orientation of data based on STS concept	Excel, calculator, sensor, etc.
Data mining	Scientific problems arising from data generation Discovering data relationships and structures Fuzzy and statistical methods	SPSS software, Excel, Web-quest, WIFI based wireless network, Wince platform portable notebook computer, etc.

Data observation	Experiment is the criterion for quantifying correctness. Sense of error Good at selecting or producing observation tools. Individual observation Group observation Using data to control experiments or production	Sensor Probe, VB Strip Robot Input, Simulation Physics Laboratory, Stroboscope Screen Technology, Wifi-based Wireless Network, Wince Platform Portable Laptop Computer, Network Technology Database Query, etc.

TABLE 2
INDEXES OF TEACHERS' DATA LITERACY COMPETENCY FROM THE PERSPECTIVE OF SCIENTIFIC MANAGEMENT

Dimension	Ability	Requirement
Data culture	The value of scientific data	It can recognize the position of scientific data in the process of scientific research and the value of scientific data utilization.
	Attitudes of scientific data	It is the concept of academic resources that we can rigorously treat every data in the process of scientific research and form scientific research data.
	The code of conduct for scientific data	It can respect scientific data, be responsible for data generated and used, and maintain the fairness and openness of data.
Data awareness	Usage consciousness of scientific data	It can accurately collect data needed for scientific research, and realize the value of data reuse, and is good at using data.
	Demand consciousness of scientific data	It can determine the scope of the required scientific data and express data needs in clear language.
	Legal consciousness of scientific data	It can respect others' data and make rational use of data protected by intellectual property rights.
Data skills	Processing skills of scientific data	It can distinguish all kinds of data sources, acquire data by various methods, describe metadata accurately and save data uniformly.
	Scientific data exchange technology	It can grasp the knowledge of various disciplines and use the necessary tools to analyze and express the data correctly.
	Evaluation of scientific data	It can critically evaluate scientific data, understand the meaning of the data and use it correctly, and can examine the correctness of the data.

Combining the analysis of the digital environment of teachers' data literacy and the index of teachers' data literacy from the angle of scientific management (Tang & Dou, 2017), a preliminary data information literacy framework is constructed, as shown in Table 3.

TABLE 3
PRELIMINARY DATA INFORMATION LITERACY FRAMEWORK

Dimension	Index
Data warehouse and data form cognition	Knowledge of relational databases, knowledge of how to query databases, familiarity with the standard formats and types of different categories of data.
	Identify data types and formats that match the research questions.
Data discovery and collection	To locate and utilize subject databases.
	It can distinguish the appropriate data source and transform the data format to facilitate subsequent processing tools.
Data management and organization	To understand the life cycle of the data, develop a data management plan, and track the relationship between the data subset or processed data and the original data group.
	To create standard operating procedures for data management and data files.
Data transformation and interoperability	To understand the loss of information in the process of changing data format.
	Understanding standard format data is conducive to subsequent processing.
Quality assurance	To identify and solve obvious forgery, incomplete or erroneous data sets.
	Metadata is used to facilitate understanding of potential problems in data sets.
Metadata	To understand the basic principles of metadata, can skillfully interpret and describe data, so that they and others understand and use.
	To understand the structure and purpose of ontology in the process of data utilization and sharing.
	Recognizing that the data may be beyond the original purpose, to verify the research or for others to use.
Data management and reuse	Understanding that data management is complex still costs a lot in group-driven electronic research.
	To realize that data need to be prepared for final preservation in creation and throughout the life cycle.
	To clarify the plan and operation required for data management.
Cultivation of practice	In the process of managing, sharing, organizing and preserving data, the practice, values, discipline and norms of the sub-disciplines.
	To understand the relevant data standards in the corresponding field (metadata, some standard applications.
	To combine the corresponding research fields, disciplines or quality, format, etc., and understand the application of these standards.
Data preservation	To identify benefits and costs of data preservation.
	Knowledge of technology, resources and components in data preservation.
	The best way to save data is to protect the value of data and facilitate reuse.
Data analysis	Familiar with the basic analytical tools of this discipline.
	An appropriate workflow management tool is used to achieve automatic repeat analysis data.
	Skilled in using basic visualization tools of this discipline.

Data visualization	To avoid misleading or ambiguous expressions of presentation data. When displaying data, learn about the benefits of different types of visualization, such as sketches, charts, animations, or videos.
Data reference	When sharing data, it is important to build awareness of intellectual property rights, privacy and confidentiality issues, and the basic social climate. Properly identify data from external sources.

Overall, most studies support data literacy as an awareness and ability to effectively and legitimately discover, evaluate, and use information and data (Fernandez-Pascual & Puertas, 2016; O'Callaghan & Mcveigh, 2018). From the data awareness, data acquisition ability, data processing and analysis ability, data exchange ability, data evaluation ability and data ethics, this study constructs a data literacy index system for university teachers, as shown in Table 4.

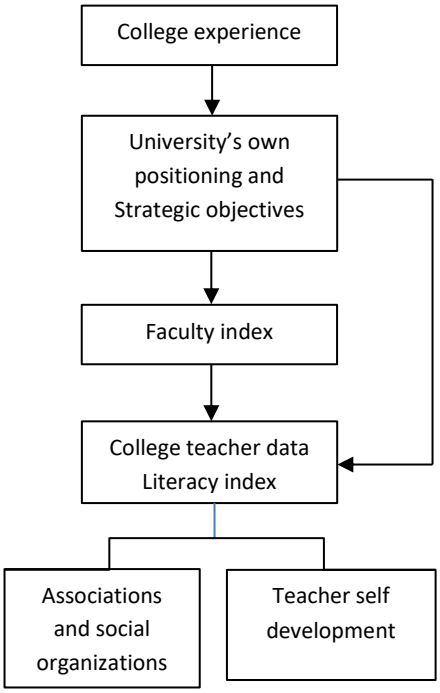
TABLE 4
INDEX SYSTEM OF UNIVERSITY TEACHERS' DATA LITERACY ABILITY

	Dimension	Index
Teachers' data literacy ability	Data awareness	Knowledge of data is a very important factor in the process of scientific research. It can realize that scientific data have lifecycle. It can treat the data generated in the process of scientific research with a serious and serious attitude. It can responsible for the data used in the paper. It can ensure the fairness and openness of data.
	Data acquisition ability	It can acquire all kinds of data and understand data sources, such as access or database. It can retrieve and collect various data. It can accurately interpret various forms of data (format, punishment, characteristics).
	Data processing and analysis ability	It can use software to process and analyze raw data. Statistical analysis software such as SPSS can be used to make proper statistical analysis of the data obtained. Combined with literature and practice, it can interpret the results of statistical analysis accurately. It can correctly use statistics to describe data, such as average, standard deviation, etc. can accurately express results based on data statistics
	Data communication ability	Statistical charts such as histograms and scatter plots can be properly used to represent and uncover hidden trends and changes in data. It can use statistical analysis results of data statistics and data to support arguments. It can make correct decisions based on data. It can write papers and reports using data and data analysis results.
	Data evaluation ability	It can check the accuracy of data and eliminate erroneous or invalid data.

	It can critically evaluate the data, and query the data with practice. It can understand the limitations of data reflecting reality, and be good at analyzing data in combination with specific situations.
Data morality	It can understand the moral and ethical issues involved in data collection, use, and sharing, respecting other people's data, and using it to identify sources

The index system of data literacy competency mainly concentrates on the refinement of its core skills. The index system for data literacy merging and integration is rather limited (Wilkins, 2016; Whitlock & Ebrahimi, 2016). The improvement and perfection of the index system of teacher's data literacy need to go from top to bottom. The school chooses and combines the index system of teacher's data literacy according to its own orientation and evaluation target. Under the guidance of the school, the Department guides the teaching and scientific research work of the university, and makes the detailed evaluation. Price target university teachers, the data literacy index system of university teachers to establish a flow chart, as shown in Figure 1.

FIGURE 1
FLOW CHART OF DATA LITERACY COMPETENCY INDEX SYSTEM FOR UNIVERSITY TEACHERS

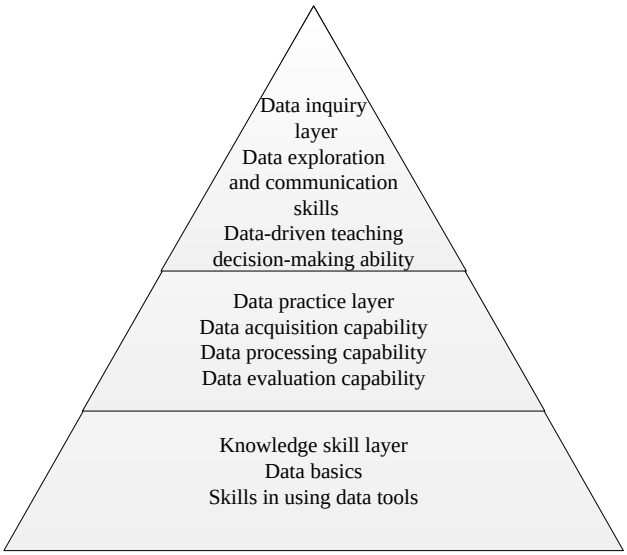


Analysis of Data Literacy Competency Model of University Teachers Based on Fuzzy Comprehensive Evaluation Method

The development level of teachers' data literacy is from low to high, which can be divided into three levels: knowledge and skill level, teaching practice level and teaching inquiry level (Mandinach & Gummer, 2016; Kavanagh & Schneider | Rainey, 2017), and the consciousness and attitude level throughout

the practice. Finally, a hierarchical model of teachers' data literacy is constructed as shown in Figure 2. The contents of data literacy and key business capabilities of teachers at all levels are also discussed.

FIGURE 1
LAYERED MODEL OF TEACHERS' DATA LITERACY ABILITY



Knowledge and Skill Level

The data literacy involved in this layer includes two things: the ability to use data tools and the basics of data applications. In the intelligent education environment, the data tools used by teachers include not only traditional teaching platforms such as student information system and teaching management system, but also popular tools such as classroom response system, homework practice software and learning analysis tools. Teachers' ability to use these technical tools should be accompanied by their professional development, gradually improving in the practice process, constantly using data tools, conversion of data and other activities to master skills (Domnguez-Serrano & Espn, 2016). For example, teachers use progress monitoring tools to record specific trigger points and the entire time line information, real-time monitoring of daily learning behavior. Data basic knowledge is the premise for university teachers to use data aided instruction. This ability mainly includes: teachers should be able to understand the quality, type and characteristics of teaching data, establish the relationship between diversified data and teaching problems, master basic visual charts, have basic statistical knowledge, and understand the meaning of data.

Educational Practice Level

Teaching work is very practical, and the ability to use data to implement teaching is ultimately to enhance the teaching skills of university teachers (Hartanto & Yang, 2016; Chen, et al. 2016). Data literacy ability in this level is reflected in the application of data knowledge and skills in teaching, including the ability to obtain teaching data, teaching data processing and teaching data evaluation. The acquisition ability of teaching data includes the division of data priority, data filtering, data type identification, the ability to distinguish data quality and data performance. The processing ability of teaching data involves the organization, collation and synthesis of data. This level of competence is to strengthen the original basic teaching ability of teachers, with the use of data support tools to obtain and analyze data skills. By analyzing these data, teachers can improve teaching behavior and optimize the teaching process. For example, to adjust the difficulty of course content, provide cognitive scaffolding and so on.

Educational Inquiry Layer

Teaching research ability is a high-level skill of teachers' professional skills. It is the core competence of university teachers' professional development, and it is the key to whether teachers can creatively apply teaching theory to complex and diverse teaching scenarios to improve the quality of teaching (Hagger, et al. 2017). Therefore, the teacher's data literacy model also includes the ability of teaching inquiry: teachers are required to put forward teaching hypothesis, formulate teaching objectives and make teaching decisions based on the results of the data. At the same time, teachers are equipped with teaching criticism and innovative thinking, which can use the data to continuously improve teaching strategies and evaluate the feasibility of teaching strategies. Based on the data, short period teaching plan is established, and inference statistics ability is available. In the intelligent learning environment, teachers' contacts and cooperation will also be more closely related. Teachers should have the ability of cooperative inquiry when using data to conduct research. Teachers should be able to establish cooperative relationship with each other, exchange and discuss with each other, and work out a reasonable teaching plan according to the actual problems reflected in the data.

A positive reciprocal judgment matrix is established for University Teachers' data literacy competency indexes. The expression is as follows:

$$A = (a_{ij})_{n\times n} \tag{1}$$

In the equation, a_{ij} is the element of column j of the first row of matrix A, representing the scale of index A_i relative to A_j, n indicates the order. According to the following formula, the index of teacher's data literacy ability is transformed into the scale of fuzzy analytic hierarchy process. The expression is as follows:

$$\gamma_{ij}(\alpha) = \frac{a_{ij}}{\alpha} - \frac{1}{a_{ij}\times\alpha} + 0.5 \tag{2}$$

Among them, α represents the parameter, and $\alpha \geq 18$, $\gamma_{ij}(\alpha)$ represents the transformed a A_i relative to the A_j fuzzy scale, after the transformation can be obtained under the unified criterion under the comparison factor two more important degree of judgment matrix M:

$$M = (\gamma_{ij}(\alpha))_{n\times n} \tag{3}$$

In Equation (3), M denotes the transformed fuzzy matrix. When $1 \leq a_{ij} \leq 9$, $0 < \gamma_{ij}(\alpha) < 1$, the fuzzy scale of the transformed data literacy index of university teachers is shown in Table 5.

TABLE 5
FUZZY SCALE OF DATA LITERACY COMPETENCY INDEX FOR UNIVERSITY TEACHERS

Scale	Definition	Definition
1	Equally important	The two indexes are unified. Standards are equally important.
3	Little important	Two indexes for unified criteria One index is slightly more important than other indexes.
5	Obviously important	Two indexes for unified criteria One index is obviously more important than the other index.
7	Strongly important	Two indexes for unified criteria One index is more important than the other index.
9	Extremely important	Two indexes for unified criteria An index is more important than another index.
2,4,6,8	Compromise value of adjacent scale	Between adjacent two scales Compromise scale
Upper scale reciprocity	Reciprocal	Index A_i scale of index A_j For a_{ij} and vice versa $1/a_{ij}$

The solution of the fuzzy complementary matrix of the data literacy competency index of university teachers is solved.

$$r_i = \sum_{j=1}^{n} \gamma_{ij}(\alpha) \tag{4}$$

The conversion formula is used to calculate the equation.

$$r_{ij} = \frac{r_i - r_j}{2n} + 0.5 \tag{5}$$

The fuzzy complementary matrix of the teacher's data literacy ability index is transformed into a fuzzy consistent matrix. The r_{ij} in Equation (5) represents the elements of the fuzzy consistent matrix. The weight vector $W = (w_1, w_2, ..., w_n)^T$ of the fuzzy consistent judgment matrix can be determined by the solution of the following constrained programming problems:

$$\begin{cases} \min z = \sum_{i=1}^{n} \sum_{j=1}^{n} [a(w_i - w_j) + 0.5 - r_{ij}] \\ st. \sum_{i=1}^{n} w_i = 1, w_i \geq 0, \leq i \leq n \end{cases} \tag{6}$$

So:

$$w_i = \frac{1}{n}\left(\frac{1}{a}\sum_{i=1}^{n} r_{ij} + 1 - \frac{n}{2a}\right) \tag{7}$$

In Equation (6) and Equation (7), w_i denotes the weight of index i of teacher's data literacy ability, a denotes the data adjustment parameter, and the value is controlled at $[1.5,1.6]$, which can satisfy the service demand of data. Through the above calculation, we completed the analysis of the data literacy competency model of university teachers. The expression is:

$$Q = w_i \cdot r_i + \gamma_{ij}(\alpha) \tag{8}$$

RESULTS

In order to verify the validity of the index system and model analysis of data literacy ability of university teachers, a questionnaire survey is needed to investigate the importance of data literacy ability of university teachers. The importance of data literacy ability can be divided into importance, unimportance, willingness to spend time and energy managing data and necessity of data literacy cultivation. Teachers are divided into arts teachers and science and engineering teachers. Questionnaires are given in Table 6.

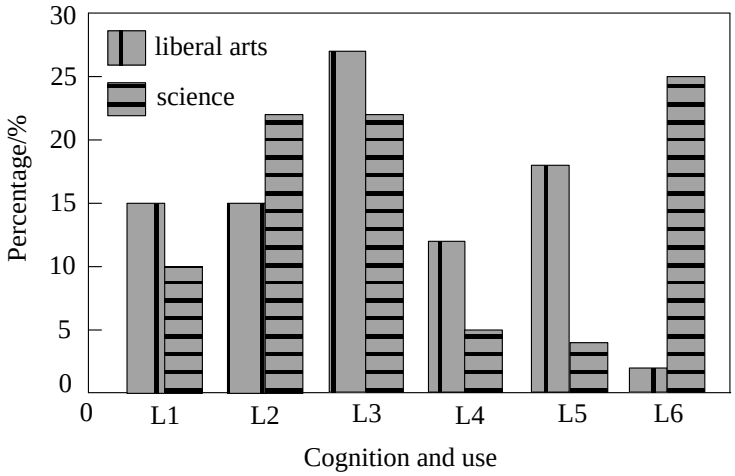
TABLE 6
SURVEY OF DATA LITERACY COMPETENCY

Importance	Liberal arts	Science and engineering
A	45%	41%
B	5%	9%
C	15%	20%
D	35%	30%

The results show that more than 40% of liberal arts and science and engineering teachers think scientific data is important to scientific research, and 9% of science and engineering teachers think it is not important. At the same time, 15% of liberal arts teachers expressed willingness to spend time and energy to manage data, 20% of science and engineering teachers willing to spend time and energy to manage data, and the proportion of unwilling attitude is higher than liberal arts. This reflects the overall positive attitude of teachers towards data management, and liberal arts teachers are more willing to data management than science and engineering teachers. The attitude toward data literacy development reflects the data awareness of people in different disciplines and the need for scientific data management. The survey found that 35% of liberal arts teachers said it was necessary to develop data literacy, 30% of science and engineering teachers said it was necessary to develop data literacy, indicating that the vast majority of teachers are aware of the importance of data literacy, and have a strong desire and demand for data knowledge and data processing skills. Differences in data awareness affect the entire process of data management, which determines whether researchers are timely and effective in data acquisition, and whether they are rigorous, efficient and secure in data processing, utilization and sharing.

On this basis, the data awareness level of university teachers of liberal arts and science and engineering is tested by using cognition and usage. Cognition and usage include self-use, supporting one-to-one requests, within the team, within the school or institution, domestic and international openness. The data awareness level of university teachers is tested as shown in Figure 3.

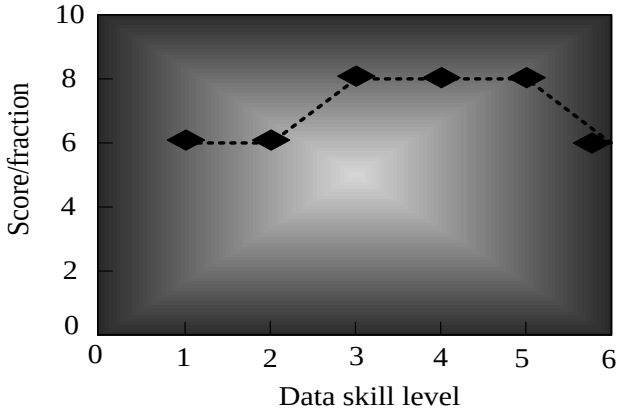
FIGURE 2
DATA CONSCIOUSNESS LEVEL TEST OF UNIVERSITY TEACHERS



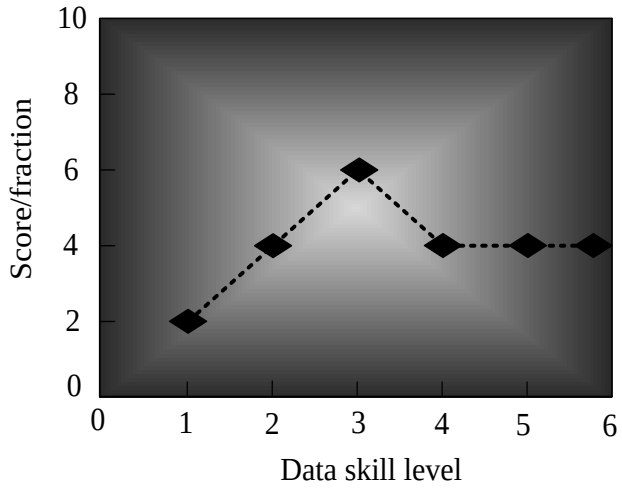
In Figure 3, L1-L6 represents their own use, supports one-to-one requests, within teams, schools or institutions, domestic openness, and international openness, respectively. The willingness of liberal arts teachers and science and engineering teachers to support their own use is 15% and 10%, respectively. The willingness of liberal arts teachers and science and engineering teachers to support one-to-one requests is 15% and 22%, respectively. Science and engineering teachers are 7% higher than liberal arts teachers. Overall, science and engineering teachers are 25% more willing to support international openness, and science and engineering teachers are 27% more willing to support the team.

After testing the data awareness level of university teachers, the experiment design has six skill levels, the comprehensive score above 6 points is excellent, and the total score is 10 points. The data literacy model of university teachers using fuzzy comprehensive evaluation method, the data literacy model of university teachers using neural network analysis method and the teaching of university teachers using AHP method were respectively adopted and the evaluation results were compared. The experiment is shown in Figure 4.

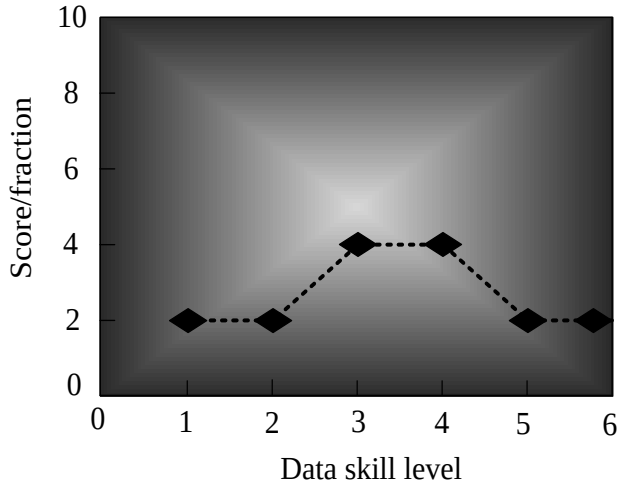
FIGURE 3
SKILL LEVEL SCORE OF UNIVERSITY TEACHERS' DATA LITERACY COMPETENCY MODEL



(a) Fuzzy comprehensive evaluation method of data literacy competency model of university teachers' data literacy competency model



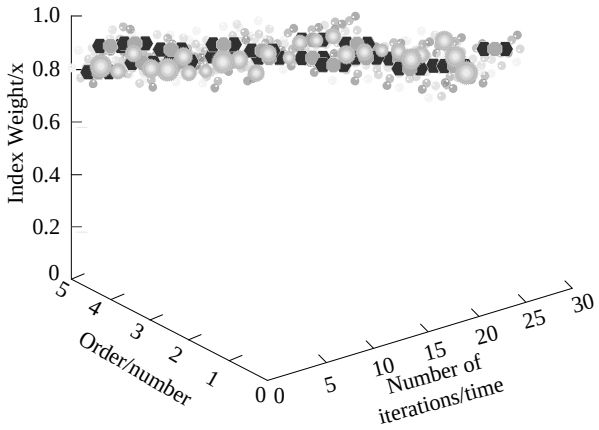
(b) Neural network analysis of data literacy competency model of University Teachers' data literacy competency model



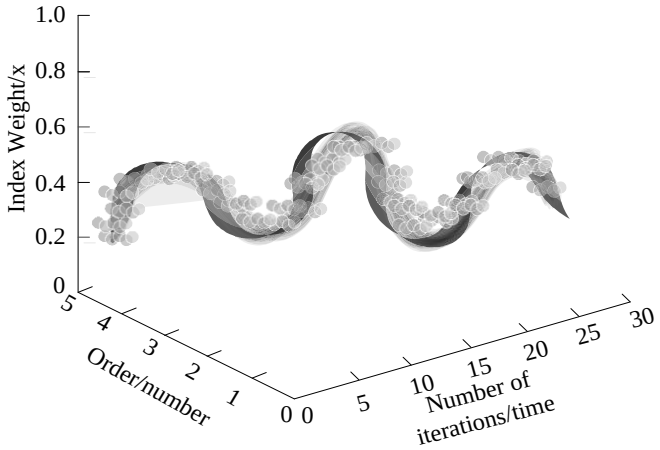
(c) Analytic hierarchy process (AHP) data literacy score of University Teachers' data literacy competency model

Figure 4 shows that in Figure (a), the first teacher's data literacy data skills score is 8, the second teacher's data literacy data skills score is 6, the third teacher's data literacy data skills score is 8, and the fourth, fifth and sixth teacher's data literacy data skills score is 8, 8 and 6, respectively. From the Figure (b), we can see that the data skill scores of six data literacy items are between 2 and 6 points, and only the third data skill scores are 6 points. From the Figure (c), we can see that the data skill scores of six data literacy items are between 2 and 4 points, and the second and third data skill scores are 4 points. Fuzzy comprehensive evaluation method of university teachers' data literacy ability model scores are above 6 points, indicating that the proposed method is more accurate than the other two methods. On this basis, the use of university teachers' data literacy index weight of data preservation experiments, set the index weight unit as x, the closer the weight value is to 1, the more complete the data is saved. The experiment is shown in Figure 5.

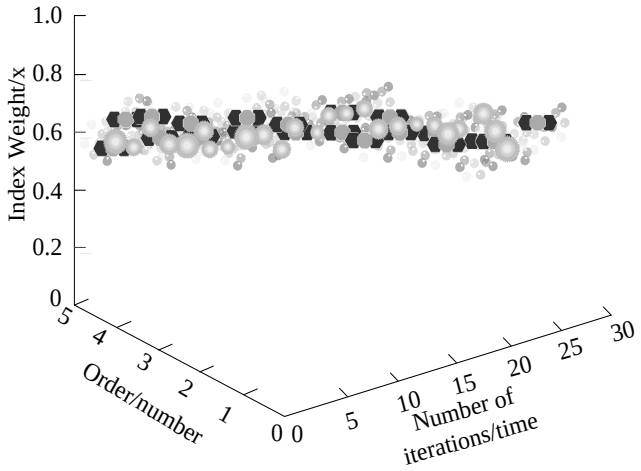
FIGURE 4
DATA RETENTION EFFECT OF UNIVERSITY TEACHERS' DATA LITERACY ABILITY



(a) Fuzzy comprehensive evaluation method for data retention effect of University Teachers' data literacy competency model



(b) Data analysis ability accomplishment of university teachers model neural network data preservation



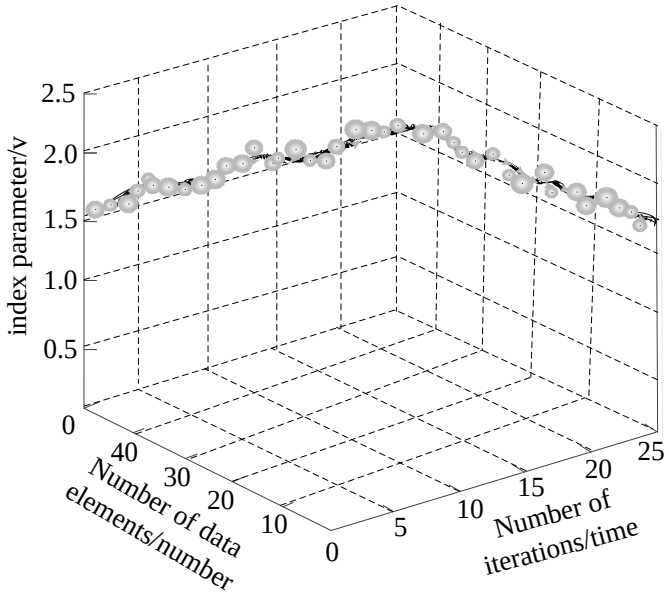
(c) Data preservation effect of data literacy competency model of University Teachers Based on analytic hierarchy process

The analysis of Figure 5 shows that the index weight of the data literacy model of university teachers is between 0.6 and 0.8, the index weight of the data literacy model of university teachers is between 0.2 and 0.6, and the index weight of the data literacy model of university teachers is between 0.2 and 0.6, respectively. The weights are between 0.4 and 0.8. The comparison shows that the index weights of the data literacy model of university teachers based on the fuzzy comprehensive evaluation method are closer to 1, which indicates that the data literacy model of university teachers based on the fuzzy comprehensive evaluation method has a better effect on data preservation.

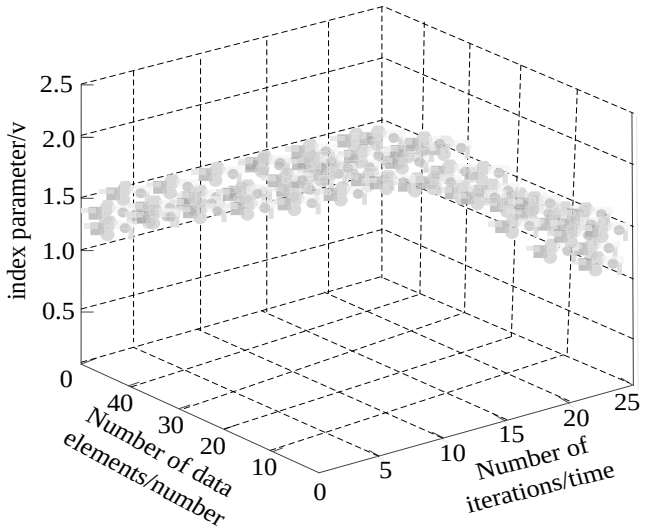
DISCUSSIONS

Through testing the data literacy index model of university teachers, this study discusses the service requirements of data by using the data literacy index parameters of university teachers. The unit of the data literacy index parameter is v. The discussion results are shown in Figure 6.

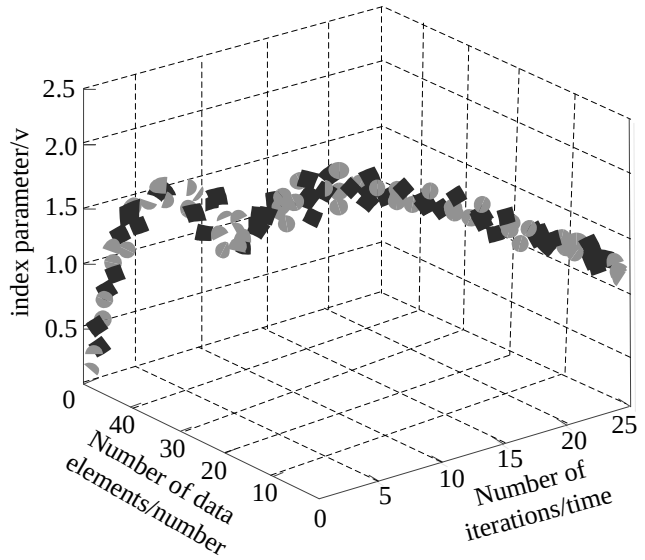
FIGURE 5
DATA SERVICE REQUIREMENT OF UNIVERSITY TEACHERS' DATA LITERACY COMPETENCY MODEL



(a) Fuzzy comprehensive evaluation method for data service requirement of university teachers' data literacy competency model



(b) Data service demand analysis and accomplishment of university teachers' ability of data model of neural network



(c) Data service requirement of analytic hierarchy process for university teachers' data literacy competency model

Figure 6 shows that the index parameters of the data literacy model of university teachers based on fuzzy comprehensive evaluation method are between $[1.5,1.6]$, the index parameters of the data literacy model of university teachers based on neural network analysis method are between $[1.0,1.5]$ and the index parameters of the data literacy model of university teachers based on AHP are between $[0,1.5]$, according to the above by controlling the value of the index parameter to $[1.5,1.6]$, it can satisfy the service demand of the data. Compared with the fuzzy comprehensive evaluation method, the data literacy model of university teachers can satisfy the service demand of the data. It verifies the effectiveness of fuzzy comprehensive evaluation method for university teachers' data literacy competency model.

CONCLUSIONS

Positive data attitude is the premise of good teachers' data literacy. Attitudes towards data are related to subjective initiative, which directly affects the process and final results of data acquisition, analysis, processing, sharing and presentation. Correct, positive and rigorous attitude towards data is necessary for scientific research. Based on the construction of data literacy ability index system for university teachers, the data skill score results, data preservation effect and data service requirements of the data literacy ability model for teachers are tested respectively. Through the comparison of three groups of data, the method can accurately score the data skills and compare the data preservation. It can meet the needs of data services, verify the effectiveness of data literacy index system construction and model analysis of university teachers.

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