Research Article

Research on the Value Orientation of ELT Integration Based on Data Mining under the Background of Megadata

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The research on the value orientation of ELT integration reflects the significance in the implementation and teaching of English courses. Based on the continuous development of metadata technology, this paper studies the value orientation of ELT integration based on DM. This paper interprets the characteristics and applications of megadata and analyzes the multiple challenges faced by ELT in the era of megadata. It also explores the value orientation of teaching integration in the era of megadata-data-driven teaching, which promotes scientific teaching decision-making, refined management, personalized learning, and teaching informationization. Depending on discussing the value of the English curriculum, this paper probes into the value orientation of English curriculum objectives, the value orientation of English curriculum content, the value orientation of students to the English curriculum, and the value orientation of ELT integration. This paper investigates and analyzes the realization basis of the integrative value orientation of ELT. Making full use of teaching resources may benefit not only the deep integration of instructional materials but also the scientific application of current scientific and technology methods to support ELT’s integrated value orientation. The essential significance of the research is to improve students’ comprehensive English literacy and comprehensively promote the realization of ELT value.

1. Introduction

Due to the continuous progress of the Internet, human social life and social economy have entered a new era of informationization, digitalization, and globalization [1, 2]. With the diversification of ELT (English language teaching) modes and methods, the research on the value orientation of ELT integration has attracted increasing attention [3]. Schools are duty-bound to take on the important task of cultivating foreign language talents to meet the needs of social and economic development. Value orientation is an important issue that affects curriculum teaching [4]. The value orientation of ELT integration has an important influence on the determination of English curriculum objectives and the selection and organization of English content. Problems in current ELT are that students spend a lot of time learning English, and teachers put a lot of energy into ELT, but the teaching effect is poor, and the teaching return is low [5]. At present, there are some problems in ELT value orientation: emphasizing a single teaching value orientation and lacking integration and separation with other teaching value orientations. The study of ELT value orientation has become a prominent and difficult problem in the study of Chinese educational theory.

ELT is essentially a kind of language teaching, and the instrumental and humanistic nature of language has become one of the basic characteristics of ELT. Whether it can be displayed reasonably is related to the quality of ELT [6]. Traditional college ELT has a propensity to overlook humanism in favour of instrumentality, and its value orientation fails to combine the instrumentality and humanism of English, severely limiting college ELT progress [7]. There are a number of causes for this perplexity in college ELT, but the most essential is the presence of teaching value orientation in teaching concepts or guiding ideology, and I’m even more at a loss as to how to maintain the value orientation of college ELT [8]. The qualities of pluralism are reflected in the value orientation of English curriculum design. On the whole,
English curriculum design takes social value orientation as the ultimate pursuit and personal value orientation as the direct pursuit [9]. Social value and personal value have their own emphasis. Among them, in terms of social value orientation, English curriculum design attaches great importance to social economic value and cultural value of the curriculum. In terms of personal value orientation, English curriculum design attaches importance to personal communication value and personal development value [10]. Based on the continuous development of metadata technology, this paper studies the value orientation of ELT integration based on DM.

Data can record the minute changes in everything in the world. The larger the record range, the larger the measurement range, the larger the analysis range, and the larger the boundary extension of knowledge [11]. By using megadatas analysis, the data are extracted, compared, and transformed into models, and the existing logical relations and hidden rules are found from behind these data [12]. Under the time background of the development of education informationization, how to introduce new technology and new method of big data will be stored in the online learning space of learners learning growth trajectory of huge amounts of data into information and knowledge, and find out the correlation and causation, to deal with the education reform of information technology and intelligent technology. This undoubtedly has positive theoretical and practical significance [13]. This study introduces the theoretical basis, the functions, processes, and commonly used machine learning models of DM. It gives technical methods and theoretical support for the experimental design in this area by studying theoretical knowledge. A specific range of data inquiry and investigation are carried out based on addressing the present research situation of ELT value orientation, commencing with an examination of the nature and features of English courses. The connotation and internal mechanism of ELT integrating value orientation are thoroughly examined using literature research, content analysis, inquiry, and other methodologies. This paper tries to come up with a realistic ELT integration value orientation system design.

2. Related Work

Literature [14] selects relevant cases on the theme of the integrative value orientation of CET (College ELT), makes objective, systematic, and quantitative descriptive research and analysis on various information and contents of the cases, and carries out auxiliary argumentation, so as to enhance the practicality of the integrative value orientation of CET. Literature [15] holds that to build a CET curriculum system integrating instrumentality and humanity, it is necessary to change the training concept, expand the curriculum connotation, and pay attention to the interaction between language and cognition, so as to meet the instrumental needs of college English and practice its humanistic mission. Literature [16] makes a concrete analysis of the integrative value orientation of CET from the perspective of value theory and the standpoint of teaching theory. According to the literature [17], changing the training idea and boldly constructing a scientific image of CET demand us to modify the curriculum system with the integration of humanism and instrumentality as the value orientation of CET. Literature [18] proposes a CET analysis approach based on DM, which is supported by trials [19]. Literature DM technology is used to extract hidden, hard-to-find but essential information about influencing elements of teaching quality from massive data spanning the instructional process, circumstances, and environment of college English [20, 21]. This study expounds the fundamental meaning of CET’s integrative value orientation based on the current circumstances. According to the literature [22], value orientation is an essential concept in value philosophy that expresses specific subjects’ cognition, attitude, and ideological predisposition toward objects. There are three popular meanings at the moment: ① the value orientation is defined with “tendency,” ② the value orientation is defined with “value standard,” ③ the value orientation is defined as “behavior orientation.” According to the literature [23] from the perspective of axiology, through the collection and collation of relevant literature at home and abroad, the basic connotation of the integrative value orientation of CET is sorted out. Depending on fully demonstrating the objective facts of the integrative value orientation of CET, the research field of CET value orientation is further broadened.

Depending on the in-depth analysis of relevant literature, this study takes the integration value orientation of ELT and its realization as the topic to construct a relatively complete framework of integration value orientation of ELT. It also explores the value orientation of ELT integration, the teaching style, teaching representation, the basis, conditions, and carriers of its realization.

3. Methodology

3.1. ELT Value Orientation. Almost all basic education in China chooses English as the language of foreign language learning. Whether college students graduate or not is basically linked to their English scores. Therefore, ELT is not only an international teaching problem but also almost all schools offer this course, and the teaching of this course naturally attracts researchers’ great attention [24]. English course is a course with the English language and cultural knowledge as its main content. Language is an important communication tool for human beings. But language is not only instrumental but also humanistic. Communication is the most direct function of language, but the language used as a communication tool is the product of human social activities, involving a wide range of fields, including science and technology, ideology, and culture. As a result, stressing the instrumentality of language does not negate the humanity inherent in language. People’s emotional awareness is encoded in words, which are rich with their ideas and feelings [25]. It has a spirit and a life of its own. Humanistic elements abound in language packs. People’s cultural psychology is immediately shaped by language, which is the most direct sign of them, the most essential cultural environment in their world. Language is a built-in element of humanism. As a result, language is both useful and humane.
Pupils’ English hearing, speaking, reading, writing, and translating skills are improved in terms of instrumentality. Cross-cultural education should be performed for the sake of mankind. As a result, we should fully use the English curriculum’s rich humanistic connotation and recognize the organic connection between instrumentality and humanism.

The humanism of modern education is mainly embodied in humanistic education for students, which enables them to have humanistic thoughts and humanistic consciousness needed by modern society and realize their personal and social values. The core of humanistic education is to cultivate students’ humanistic spirit [26]. ELT and humanistic quality education are two complementary instructional resources, which should be combined and run through each other. ELT is a kind of curriculum teaching that involves the realization of the value of language learning. Therefore, when we specifically analyze the value orientation of ELT, we can mainly get information support from axiology, linguistics theory, subjectivity theory, curriculum and teaching theory, and other related theories. English courses help students acquire skills and methods of learning English. Students can master certain English language knowledge and application ability through English courses and acquire another cognitive means other than their mother tongue. Through English learning, students can broaden their knowledge, cultivate their knowledge curiosity, stimulate their critical spirit, distinguish right from wrong, and think independently. Better understand the world around you.

As a typical humanities course, English should be student-oriented, attach importance to the value of students, and respect the value of culture and spirit. The educational concept full of humanistic care is the premise and foundation of ELT, and the humanistic spirit is the foundation and core of ELT [27]. From the perspective of teaching purpose, the purpose of ELT is to enable students to learn English and master the basic knowledge and skills of English, and at the same time, through active participation and active exploration, a good impression of their cultural atmosphere is obtained, correct emotional attitudes and values are formed, and finally, cross-cultural and communicative competence is improved. From the instructional resource, on the one hand, we should learn English knowledge and skills; on the other hand, we should strengthen the cultivation of cross-cultural communication. From the perspective of teaching implementation, it includes the interactive teaching activities of teachers, students, environment, teaching materials, and other related teaching practice activities outside the classroom. The elements of practicing the integrated value orientation of ELT are shown in Figure 1.

ELT subjects mainly include students, society, schools, and culture itself [28]. Correspondingly, the value of ELT shows four aspects: the value of promoting students’ development, social progress, school promotion, and cultural exchange. The importance of an English lesson is both social and personal. The social value of English education encompasses its social political, social economic, social cultural, and social population worth. Personal survival, personal communication, and personal growth are all important aspects of the English curriculum. We focus on cultivating students’ emotional attitudes, perception ability, and cultural awareness through ELT, training students’ cross-cultural communication ability, and meeting their own development needs while emphasizing the instrumental function of English and grasping language knowledge and skills.

Teaching is the carrier of school and teaching is the basic function of school; these two are interdependent. The relationship between school and teaching is that there is a school before teaching. Teaching is the need to maintain the existence of the school and promote the development and progress of the school. Therefore, teaching is an essential component of a school and the power source for its progress and development. The value orientation of English curriculum objectives is characterized by the combination of social value orientation and personal value orientation. The ultimate pursuit of the English curriculum goal is the social value of the curriculum, while the direct pursuit is the personal value of the curriculum. Among the social values of the English curriculum, the curriculum goal pays special attention to its economic value and cultural value; among the personal values of the English curriculum, the curriculum goal pays special attention to its personal communication value and personal development value. Depending on enabling students to master language knowledge and skills, language learning should be promoted to cultural learning to improve their comprehension of the phenomenon that language reflects the culture and their tolerance and appreciation of multiculturalism so that they can get better humanistic quality education, making students become all-round talents who can meet the needs of the times and society.

3.2. Value Orientation Analysis of Teaching Integration Based on DM. Megadata are a sign that human beings seek to quantify and understand the progress of the world. At present, education has entered the era of megadata. No matter for students, teachers, schools, or the whole educational ecosystem, it will bring about revolutionary changes, leading to the deconstruction and reconstruction of educational ideas and forms [29]. The mined information or knowledge is effective, novel, and potentially useful for testing data and can be easily understood. Data need to be generated, accumulated, stored, mined, analyzed, applied, and converted. The process is the conversion of data, information, knowledge, and value. Generally speaking, DM can be implemented in a small machine or a large machine to achieve the mining goal and can also be used for parallel computing. According to the definition of DM, the premise of DM is megadata, which has three important characteristics: ① a large amount of data, ② complex structure, and ③ data update speed is fast. The DM process in the value orientation analysis of ELT integration is shown in Figure 2.

Machine learning, computer science, statistics, artificial intelligence, and other fields are all part of DM. Processing data sets, training models, altering parameters, and other activities are used to investigate the connection between
information [30]. DM is an in-depth data information analysis approach, and applying it to ELT’s integrated value orientation and assessment system is the frosting on the cake. It may examine the collected findings and their underlying relationships buried in numerous elements in a complete and in-depth manner, allowing the system to be improved and the whole application process to become more scientific and objective.

Assuming that there are $n$ training samples, the probability of occurrence of each sample is accorded with the Bernoulli distribution. $p(y_i = 1|x_i)$ indicates the probability of positive class occurrence, and then, the probability of negative class occurrence is $1 - p(y_i = 1|x_i)$. For each sample, the posterior probability is

$$p(y|x, w) = p(y_i = 1|x_i)^{y_i}(1 - p(y_i = 1|x_i))^{1-y_i}. \quad (1)$$

Then, the maximum likelihood function of samples is the posterior probability product of each sample, that is,

$$L(w) = \prod_{i=1}^{m} p(y_i = 1|x_i)^{y_i}(1 - p(y_i = 1|x_i))^{1-y_i}. \quad (2)$$

The logarithmic likelihood function is

$$l(w) = \sum_{i=1}^{m} \log p(y_i = 1|x_i)^{y_i} + \log (1 - p(y_i = 1|x_i))^{1-y_i}. \quad (3)$$

Expand it to solve it, and take the derivative of $w$:

$$\frac{\partial l(w)}{\partial w_i} = \sum_{i=1}^{m} (y_i - g(z))x_i. \quad (4)$$
Let the derivative be 0, it can be seen that \( w \) cannot be solved, so an optimization algorithm is needed to solve \( w \).

Data are exploding, and the speed of generation, processing, and movement is quite fast, increasing the demand for real-time data analysis and processing. High value is the defining attribute of megadata, because its potential high value can provide the basis for evaluation and decision-making. The main task of classification is to find out the common characteristics of each sample in the data set according to the given data samples and classify the data objects into appropriate categories by the classification model algorithm. In the classification problem, each sample data contain two parts: multidimensional features and a category label; that is, the classification problem knows what to predict with the data set. The purpose of classification is to train by classification algorithm and map data objects to category label; that is, the classification problem knows what to predict with the data set. The purpose of classification is to train by classification algorithm and map data objects to category labels. The acquired data contains two things: multidimensional features and a category label; that is, the classification problem knows what to predict with the data set. The purpose of classification is to train by classification algorithm and map data objects to category labels.

Let \( T \) be the set label, \( C_i \) be the sample class label, and initialize \( i \). Set \( i = 1 \), and the information entropy expression is shown as follows:

\[
O(T) = \sum_{i=1}^{m} \frac{\text{frequ}(C, r)}{|r|} \times \log_2 \frac{\text{frequ}(C, r)}{|r|}. \tag{5}
\]

Formula (6) indicates that if the attribute \( X \) has \( n \) different values, the estimated value of the tree information can be obtained by calculation. The conditional gain entropy expression is shown as follows:

\[
E_X = \sum_{i=1}^{n} \frac{|T_i|}{|T|} \times o(T_i). \tag{6}
\]

The expression of the gain amount is shown in formula (7):

\[
gain(X) = \text{info}(T) - E_X. \tag{7}
\]

After data extraction and selection, we can classify and summarize them and convert different data into corresponding data formats. The purpose of clustering analysis is to make the similarity between data in the same cluster as high as possible, while the similarity between data in clusters is as small as possible. The technique used to calculate similarity, such as distance calculation, determines how similarity is measured. The lower the resemblance, the larger the distance, and vice versa. Clustering differs from classification, and in that, the former’s data set comprises simply data characteristics, no category information, and no goal value. DM technology is used to piece together various forms of time-consuming data, and many hidden internal relationships are revealed. The frequency of association rules is represented in the transaction database by the ratio of the total number of transactions of \( X \) and \( Y \) to the total number of transactions, which is known as the support of association rules. It is usually denoted as \( P(Y/X) \), that is,

\[
\text{support}(X \Rightarrow Y) = \frac{\text{support}(X \cup Y)}{P(X \cup Y)}. \tag{8}
\]

We use the ratio of the number of transactions containing \( X \) and \( Y \) to the number of transactions containing \( X \) to represent the strength of the association rule, called the confidence of the association rule \( X \Rightarrow Y \). It is usually denoted as \( P(Y/X) \), that is,

\[
\text{confidence}(X \Rightarrow Y) = \frac{\text{support}(X \cup Y)}{\text{support}(X)} = P(Y/X). \tag{9}
\]

Because of the low density of megadata, it is not easy to “refine” the data value through calculation. The fundamental stage in massive data analysis is visualisation. Data can only be relevant if it is transformed into information, new knowledge is discovered from it, and intervention steps are taken. The following phase is DM and extraction, which involves a variety of activities including data selection, processing, piecing together, and assembling. The acquired source data are handled at the data preprocessing and analysis stage, and the incomplete, inconsistent, and noisy data in the source data are processed and integrated using data preprocessing technologies and methodologies to give “clean” data for mining. At this stage, it is necessary to define mining tasks, such as classification problems or regression problems, and conduct feature processing on sample data according to feature engineering methods.

4. Result Analysis and Discussion

ELT is different from other subjects, and it needs to be really integrated into the situation. The model training stage selects the appropriate machine learning model to mine and analyze the processed “clean” data. In modeling, the parameters are constantly adjusted to achieve the best effect. In model training, it is often necessary to go back to the previous stage, reprocess data, feature processing, and then train. Because the data mined in the experiment are randomly selected, and most of them are manually input, such a database will be very chaotic and complicated, there are many visible and invisible problems, such as data missing, redundancy, and abnormality. Therefore, we need to classify these data to make them have corresponding formats.

After the machine learning model is trained, it is necessary to analyze and evaluate the excavated final results; that is, the trained model is used for test data to verify the effect. For example, the classification problem can be evaluated by accuracy and recall rate, and the regression problem can be evaluated by mean square error. If the verification effect can’t meet the demand target, it is necessary to go back to the previous stage, and sometimes, it is necessary to replace the algorithm again until the target is reached. The mining efficiency of this algorithm is tested, the Apriori algorithm and K-means algorithm under different minimum support, and the mining time is shown in Figure 3.

From the description of the algorithm, it can be seen that the algorithm first divides the database into blocks, which are nonoverlapping blocks; that is to say, the total data volume of each block will not be greater than that of the database, and the overhead will not be increased in space. The algorithm in this paper only needs to scan the database twice, which reduces the number of times and saves the cost.
of accessing external memory, so it greatly improves the execution efficiency.

Static data are relatively stable information, which generally remains unchanged. Dynamic data are relatively changing behavior information, which mainly comes from the behavior data of students in the process of answering questions, and the user questionnaire data filled out by students at the end of answering questions. Screening data need to be carried out randomly. When exporting from the original database, several tables are generated. Figure 4 is a comparison of the operation efficiency of the three algorithms.

When comparing the operation efficiency of the three algorithms, it can be observed that this algorithm’s operation efficiency has certain benefits. The technique has increased the number of scans, the number of records scanned, and the amount of storage space used in this study, and it will be better for huge data processing.

The data should be split and separated into little data pieces throughout the experiment, which will make a further in-depth analysis of the received data easier. Distinct value ranges exist for different characteristics or attributes, and the value ranges among different dimensions may have a significant impact on the final prediction results. In order to make the value ranges among different dimensions as uniform as possible, it is necessary to normalize the features or attributes. Figure 5 shows the comparison results of the accuracy rates of the three algorithms. Figure 6 shows the comparison results of recall rates of the three algorithms.

Analysis of Figure 5 shows that the accuracy of this algorithm is higher than the Apriori algorithm and K-means algorithm. Analysis of Figure 6 shows that the recall rate of this algorithm is higher than the other two algorithms. It is concluded that this algorithm has the highest accuracy and the best recall rate compared with the other two algorithms. This result shows that the algorithm in this paper has certain advantages and practicability.

Teaching evaluation is a process of judging the value of teaching objects and results based on teaching objectives. Evaluation has a strong guiding function for the occurrence, development, and morphological performance of teaching activities; that is to say, under the guidance of what kind of teaching ideas and concepts, teaching activities can be identified and guided. By comparing the English process evaluation with the English process evaluation after DM, this paper analyzes and studies the key role of DM in English process evaluation and objectively shows the scientificity of DM technology in evaluating students’ learning situations. The evaluation of ELT under the integrative value orientation needs to judge whether the teaching activities are carried out under its guidance, and on this basis, the reform of ELT activities is guided according to the standards and requirements of integrative value orientation. Figure 7 shows the comparison of clustering accuracy obtained by different algorithms on data sets.

It can be seen from the figure that the accuracy of this algorithm is better than the Apriori algorithm and K-means algorithm. It is proved that the algorithm in this paper is reliable in accuracy. DM technology makes scattered data processing, then unifies scattered data, and obtains data sets.
Figure 5: Comparison of accuracy of three algorithms.

Figure 6: Comparison of recall rates of three algorithms.

Figure 7: Comparison of clustering accuracy of different algorithms.
different from those before processing. Then, by analyzing the processed data, the logical relationship behind it can be displayed. It is the most reasonable to apply this technology to English evaluation. It can make us see the hidden internal relations in the data and make the whole evaluation process more objective. The integrative value orientation can be effectively realized in ELT evaluation, and a matching ELT evaluation method can be formed. On the evaluation objective, based on the value continuum of ELT from instrumental to humanistic, the comprehensive English ability of students is comprehensively evaluated from the aspects of language knowledge mastery, language communication, and language and cultural understanding. Students should play the role of self-evaluation subject on the evaluation subject, effectively and accurately monitor and judge students' own progress and development in ELT activities. Depending on the evaluation results of other evaluation subjects, the teaching activities are adjusted more pertinently.

The selection of feature subsets is regarded as a search and optimization process; that is, different feature combinations are generated on the data set according to the objective function, and several features can be selected from all feature sets at a time, or some features can be excluded from them. The prediction impact of each combination’s characteristics is assessed, and the feature subset with the best effect is chosen. Experiments show that this algorithm can represent the subset of algorithms more appropriately, and it has good adaptability to rules of different lengths. At the same time, it has certain accuracy and practicality, and the efficiency is greatly improved compared with Apriori and K-means algorithms.

5. Conclusions

The emergence of ELT is to meet the needs of society for talents. Its educational purpose changes with the change in social needs. Under the impetus of new ideas and new directions of teaching in the information age of globalization, ELT needs to build a reasonable and perfect educational model and content system that is more advanced and scientific, can better realize students’ expectations, and can better meet social needs and change the previous training and development in ELT activities. Depending on the evaluation results of other evaluation subjects, the teaching activities are adjusted more pertinently.

Teaching activities need to focus on integrating the basic knowledge of English subjects and colorful foreign cultures, so as to cultivate students’ comprehensive quality, which requires English teachers to have higher professional quality and the awareness of pursuing the integrated value orientation of ELT. Teaching practice shows that teaching plays an irreplaceable role in inheriting human civilization, and the teaching value orientation guides the development direction of teaching. The clearer and more correct the teaching value orientation, the greater the advantages of teaching and the more obvious the teaching effect. Value orientation is a philosophical problem. Because of the limited level and research time of researchers, there are still some shortcomings in the research of this article. These problems need further in-depth study.


