

<https://doi.org/10.70517/ijhsa463603>

Analyzing the National Army's Spirit of Resistance in the Battle of Zhengan under the Leadership of Ding Zhipan and Its Impact on the Battle Situation Based on Data Mining

Diwen Wen^{1,*}

¹ History Department, College of Literature, Jinan University, Guangzhou, Guangdong, 510000, China

Corresponding authors: (e-mail: wandiman74@163.com).

Abstract During the Anti-Japanese War, the Battle of Zhejiang-Gan under the leadership of Ding Zhipan was an important chapter in the history of the National Army's anti-war campaign, which embodied the indomitable anti-war spirit of the Chinese nation. This study uses data mining technology, combined with multiple regression modeling, to conduct an in-depth analysis of the spirit of resistance in the Battle of Zhejiang-Gan under the leadership of Ding Zhipan and its impact on the war situation. Based on 436 valid questionnaires, the study used H. Lasswell's 5w communication model to construct a mathematical model to assess the cognitive status of three groups: teachers, students, and the general public. The results showed that 72% of the respondents did not understand the impact of the Zhengan Campaign on the war situation under the leadership of Ding Zhipan; 81% of the students believed that learning the spirit of resistance helped to cultivate patriotism; and the scores of the communication effect of the three types of groups were 92.26 points for the grassroots employees, 91.25 points for the teachers, and 86.68 points for the society at large. The correct rate of cognition on the question of communication effect was in the order of teachers (37.44%), students (36.76%), and the general public (25.8%). The Battle of Zhengan under the leadership of Ding Zhipan developed the anti-Japanese armed forces and supported the front battlefield; it made the anti-Japanese soldiers and civilians in the rear of the enemy famous, invigorated the confidence of the people to fight for the victory of the war, and consolidated the anti-Japanese united front; and it laid a solid foundation for the creation and development of anti-Japanese bases in eastern Zhejiang. The study shows that there are group differences in the current education of the spirit of resistance, and it is necessary to optimize the communication path, deepen the cognitive effect, and promote the value of the spirit of resistance in the new era.

Index Terms data mining, Ding Zhipan, Zhengan Battle, anti-war spirit, communication effect, cognitive status

I. Introduction

On April 18, 1942, the bombing of Tokyo by the U.S. "Operation Doolittle" caused shock and panic in Japan. The Japanese military began to doubt the air defense capability of the mainland, and the air bases in Zhejiang Province, represented by Quzhou, China, became the biggest obstacle to the air defense of the Japanese mainland. Therefore, the Japanese military decided to launch the "Zhejiang-Gan Battle" [1], [2] with the main strategic objectives of destroying the Quzhou military airfield and striking the Chinese army in Zhejiang. As the commander of the 26th Army, Ding Zhipan led the Chinese army to participate in the Battle of Zhejiang-Gan, which lasted for more than three months and caused serious losses to China's national defense, military and economy, as well as the killing of Chinese people [3]-[6].

According to the statistics of the Kuomintang government, 45,661 enemies were killed or wounded in the Battle of Zhengan. This shows that the Kuomintang army achieved the purpose of depleting the enemy's strength to a certain extent. However, the whole battle is the Japanese army to take the offensive, the Kuomintang army to take the defensive position, the Japanese army in the Chinese hinterland, completely achieved the purpose of destroying the international airports, resulting in more than 200,000 Chinese military and civilian deaths and injuries, and the long-term occupation of Jinhua, Lanxi and other strategic places [7]-[10]. Thus, the Battle of Zhejiang-Gan is a failed battle. The reason for this is that the KMT government led by Chiang Kai-shek to preserve its strength and passive resistance is the fundamental reason for the failure. Although the battle was a failure, the spirit of resistance in the battle had a significant impact on the war situation, and the spirit of the Chinese army's bravery, fearlessness of sacrifice, and defense of the country has influenced to this day and set an example for future generations [11]-[13].

China's War of Resistance against Japan is a great feat in the history of the Chinese nation against foreign aggression, and an important turning point for the Chinese nation from suffering to glory. In this great struggle for

the survival of the nation, Chinese soldiers and civilians built the iron and steel Great Wall to defend the sovereignty of the country and the dignity of the nation with their flesh and blood, and composed the heroic epic of the magnificent mountains and rivers. As an important battle in the War of Resistance, the Battle of Zhejiang-Gan under the leadership of General Ding Zhipan not only achieved an important military victory, but also established the indomitable and heroic national spirit of the Chinese nation to fight against the enemy on the spiritual level. This spiritual strength transcends the boundaries of time and space, deeply rooted in the collective memory of the Chinese nation, and has become a valuable asset that inspires future generations to move forward. General Ding Zhipan's military talent and patriotism in the battle of Zhegan embodied the fine tradition of Chinese soldiers' loyalty to the motherland and valor in battle. The troops under his leadership were able to overcome the strong with the weak and defied sacrifices in a difficult and desperate environment, fully demonstrating the strong spiritual power of the Chinese nation in times of crisis. This spirit was not only an important guarantee for the victory in the war of resistance at that time, but also an important spiritual pillar for the contemporary Chinese people in the face of various challenges. In the context of the new era, re-examining the spirit of resistance in the Battle of Zhejiang-Gan under the leadership of Ding Zhipan is of great significance to the promotion of patriotism education, the enhancement of national self-confidence, and the cultivation of socialist core values. However, what is the current status of social awareness and dissemination of this history? What are the differences in the understanding and acceptance of the spirit of resistance among different groups? These questions deserve in-depth discussion. Based on the above background, this study adopts data mining techniques, combined with multiple regression modeling, to conduct an in-depth analysis of the anti-war spirit in the Battle of Zhejiang-Gan under the leadership of Ding Zhipan and its impact on the war situation. The study first reviews the historical background of the Battle of Zhegan and the spiritual qualities of General Ding Zhipan, and then constructs a data mining model to analyze the current social awareness of this history. Through questionnaires and interviews, the cognitive data of university students, teachers and the general public on the spirit of the battle are collected, and a mathematical model is constructed using H. Lasswell's 5w communication model to assess the cognitive status of the three groups. Further, through data mining analysis, we reveal the influence of the Zhegan Campaign under the leadership of Ding Zhipan on the whole anti-war situation, and summarize its historical significance and contemporary value. This study will provide scientific basis for how to better inherit and carry forward the spirit of resistance in the new era, and contribute wisdom and strength to building the sense of community of the Chinese nation and realizing the Chinese dream of the great rejuvenation of the Chinese nation.

II. Historical background

During the Anti-Japanese War, "the state affairs are crowded and life is sad", which made Ding Zhipan cry secretly several times. However, with his position, what he can do, and what he expects, is to take martial arts as his soul, make self-revolution, "choose the good and be stubborn, and do what is right alone", "cultivate the atmosphere by itself", so that "those who are in the same way learn from it, and those who have different interests look forward to it", gradually change the people's psychology towards the army, invigorate the people's "martial spirit", and finally realize his ambition to save the country and the world. Ding Zhipan has always attached importance to history and sincerely admired the loyal and righteous people of ancient China. Bian Juyi, a general of the Southern Song Dynasty, was ordered to guard Hubei Xincheng, and after being broken by the Yuan soldiers, he went to the fire and set himself on fire. Ding Zhipan said when he hung the ruins: "In this world, the War of Resistance is the only one who has died." When reading the biography of Li Guangbi in the Tang Dynasty, he believed that Li Guangbi could die unyielding and calm, "he must have been prepared in ordinary times", "he has been prepared for a long time", and "he is not hastily responsible for the Heng people". Therefore, Ding Zhipan always strictly reorganized military discipline in peacetime, regarded the army as a school, paid attention to the cultivation of morale, and pinned his ardent hopes on saving the country and the world, so that his subordinates could deeply understand the great significance of the War of Resistance Against Japanese Aggression.

III. Data mining model

III. A. Data Mining Basics

Data mining, as the process of extracting useful information and knowledge from large amounts of data, is an indispensable key technology in the big data environment. It combines knowledge and methods from various fields such as machine learning, statistics, database technology, etc., and aims to discover hidden patterns, association rules, trends, etc. in data. The process of data mining usually consists of three main phases: data preprocessing, data mining, and result interpretation and evaluation. The data preprocessing stage mainly involves cleaning, integrating, transforming and generalizing the raw data to eliminate noise, improve data quality and reduce data dimensionality. The data mining phase involves the use of various algorithms and models to analyze and mine the

data in depth. And the result interpretation and evaluation stage is to interpret and evaluate the mined results to verify their effectiveness and usefulness.

III. B. Distributed Computing Framework

In the big data environment, the traditional stand-alone computing model can no longer meet the needs of data mining due to the huge size and increasing complexity of data. Therefore, distributed computing frameworks have emerged as an important tool for handling big data. Distributed computing frameworks greatly improve the efficiency of data processing by storing data in multiple nodes in a decentralized manner and using the computing power of these nodes for parallel processing. Currently, Hadoop and Spark are two of the most popular distributed computing frameworks. Hadoop is known for its high reliability and scalability, and realizes distributed storage of data through HDFS and parallel processing of data through the MapReduce programming model. Spark is known for its in-memory computing and high performance, and realizes fast reading and writing of data and efficient computation through RDD. These distributed computing frameworks provide powerful technical support for data mining in a big data environment.

III. C. Data pre-processing

In the big data environment, data preprocessing is a crucial part of data mining projects. In the face of massive, multi-source and heterogeneous data, effective data preprocessing strategies can significantly improve the efficiency and accuracy of subsequent data mining. Data preprocessing optimization mainly includes data cleaning, data integration, data transformation, and data generalization. Data cleaning aims to remove noise and outliers from data to ensure data accuracy and consistency. Data integration, on the other hand, integrates data from different sources to form a unified view of the data. Data transformation is performed by normalizing, standardizing, or discretizing data to make it more suitable for mining algorithms. Data generalization, on the other hand, reduces the complexity and computational effort of the data by selecting important features or dimensions. By optimizing these preprocessing steps, the efficiency and effectiveness of data mining can be greatly improved.

IV. Analysis of the anti-war spirit of Zhejiang-Gan Battle based on data mining

IV. A. Description of the research sample

From October to December 2024, an in-depth investigation and research was conducted on the cognition and dissemination status of the spirit of resistance in the Zhegan Campaign under the leadership of Ding Zhipan in the new era and new journey, mainly in the form of questionnaire survey and interviews. The questionnaire survey recovered 436 valid questionnaires. The main research object includes college students.

IV. B. Model construction

The research on the cognitive and communication status of the spirit of resistance in the Zhegan Campaign under the leadership of Ding Zhipan was mainly conducted in accordance with the 5w model proposed by American scholar H. Lasswell in *The Structure and Function of Communication in Society* (1948), mathematical modeling was conducted, and the collected questionnaires were categorized and analyzed. Based on the large sample characteristics of the questionnaire results, a multiple regression model was used to fit the mathematical characteristics of the three types of sample points, to analyze in depth the research data on the cognitive status of the spirit of resistance in the Zhegan Campaign under the leadership of Ding Zhipan, and to explore the problems and causes of its dissemination.

IV. C. Analysis of findings

The degree of students' understanding of and concern for the spirit of resistance is the key to the advancement of education on the spirit of resistance. In the questionnaire survey of "Do you know the influence of the battle of Zhegan under the leadership of Ding Zhipan on the war situation?" In the questionnaire survey, the results of the survey are summarized as shown in Figure 1, 122 students chose "know", accounting for 28% of the number of students surveyed. The number of students who chose "don't know" was 314, accounting for 72% of the total number of students surveyed. According to the data, the students who probably know the basic content of the spirit of resistance accounted for 23%. Those who have some knowledge of the spirit of resistance accounted for 47% of the total number of students surveyed. In addition, there are 30% of students who said they don't know much about the spirit of resistance to war. According to the data, most of the students are not clear about the content of the spirit of resistance to war, which shows that, in their daily study, they themselves do not pay much attention to understand and explore this knowledge, or in the usual process of history learning, the history teacher also neglected to explain the introduction of this knowledge, ignored the cultivation of the spirit of resistance to war, resulting in the students' insufficient understanding of the spirit of resistance to war. From this point of view, it can be seen that it is very

necessary to integrate the explanatory teaching of the knowledge of the spirit of resistance into the teaching of high history, which can not only broaden the students' knowledge and enhance their attention to the reading of history, but also help them to better learn the knowledge of history, so as to enhance the overall effect of history teaching.

In order to find out what students think they can learn through the spirit of resistance? This question is specially designed. Learning the spirit of resistance can make us feel that today's peaceful life is not easy to come by, accounting for 74% of the total number of students surveyed. There are 301 students who think that learning the spirit of resistance can help us to learn the great qualities of the heroes of the war and to exert the power of role models to push ourselves to make progress, accounting for 69% of the total number of students surveyed. There are also some students who believe that learning the spirit of resistance can establish a correct view of history and values, and these students accounted for 65% of the total number of students surveyed. In addition there are 81% of students who believe that learning the spirit of resistance can better cultivate their patriotism and help their own moral character progress. This shows that most students have correct historical values and can correctly recognize the great role of the spirit of resistance, which also provides an educational foundation for teaching the spirit of resistance.

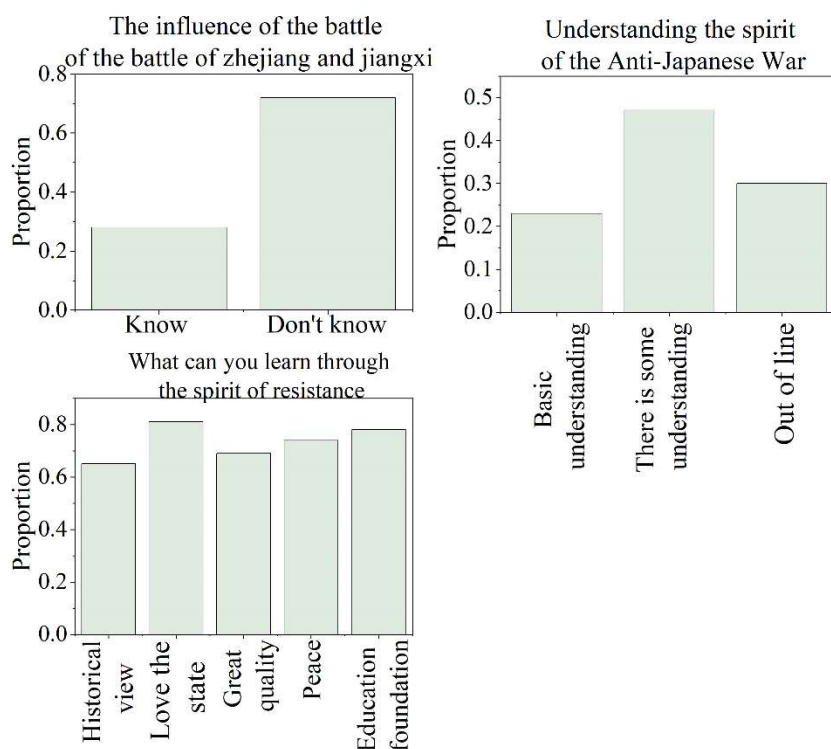


Figure 1: The understanding and attention of the anti-japanese spirit

The results of the survey are shown in Fig. 2. 327 students thought that it was unnecessary to learn the spirit of resistance when they were counted on the question "Do you think it is necessary to learn the spirit of resistance now?" This question, 327 students think that learning the spirit of resistance is not necessary, accounting for 75% of the total number of students. Seventy students, accounting for 16% of the total number of respondents, thought that it did not matter whether they learned the spirit of resistance or not. There are also 40 students who think it is necessary to learn the spirit of resistance, accounting for 9% of the total number of students surveyed, which shows that this part of the students lacks the sense of worry. In the statistics "history classroom about the spirit of war resistance are you willing to learn? 63% of the students were willing to learn the spirit of resistance. Will learn under the teacher's explanation, accounting for 29% of the total number of students surveyed. In addition there are 4% of students who said they are not very willing to learn. There are also 4% of students who said they are very willing to learn the spirit of resistance. According to the survey data, most of the students think that it is necessary to educate the spirit of resistance, and they themselves are willing to learn the spirit of resistance, therefore, there is a great prospect of development to integrate the spirit of resistance into high school history teaching. It also needs the attention and support of schools and teachers.

There were 314 students who felt that listening to some cases related to the spirit of resistance felt average, accounting for 72% of the total number of respondents. There are 96 students whose students are not interested in

studying sometimes, and this part accounts for 22% of the total number of students. In addition there are 6% of the students, on the other hand, said that they are very interested in it and are willing to study it. According to the survey data, students are interested and willing to learn about the case of the spirit of resistance.

This shows that the education of the spirit of resistance is still more attractive to students and can enhance their interest and attraction in learning history. This requires teachers to integrate the spirit of resistance into high school education in an appropriate way so as to help students develop good qualities.

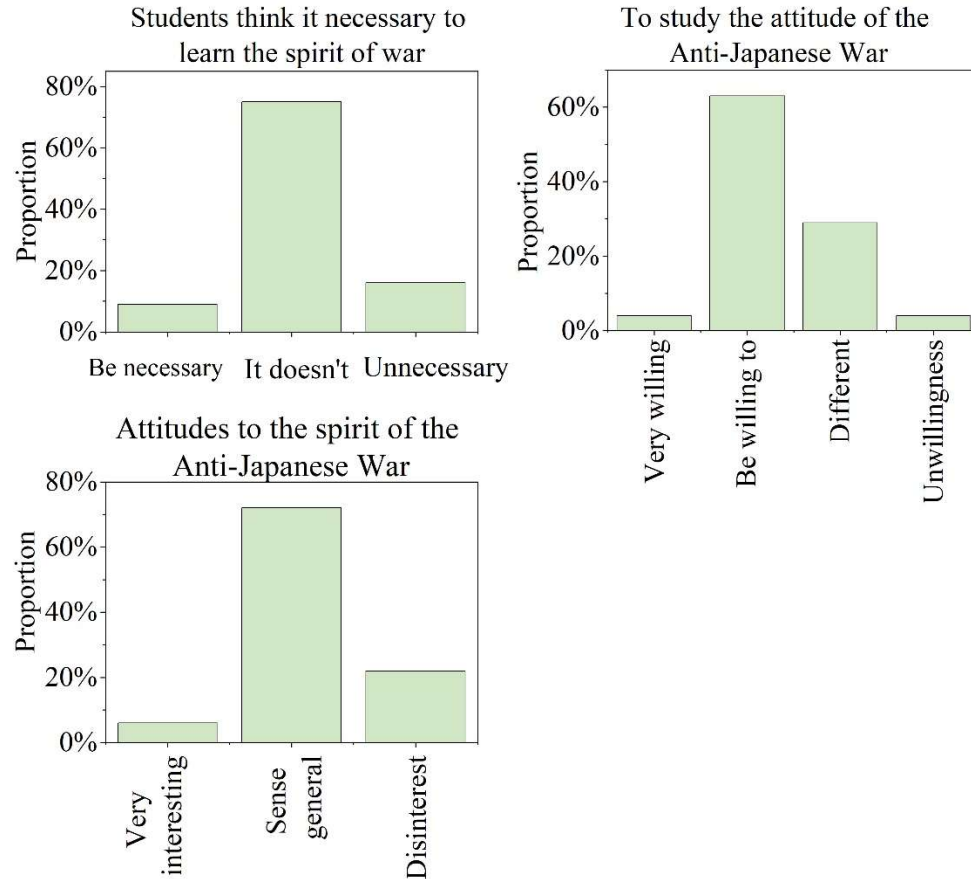


Figure 2: The attitude of the Anti-Japanese War spirit

IV. D. Data mining results and analysis

Marx said: "Problems are the slogans of the age, the most practical cries by which it expresses its state of mind." Problems are found in order to solve them better. Through investigation and research, it is believed that there are four main problems in the cognitive status of teachers, students and the public about the spirit of resistance in the battle of Zhegan under the leadership of Ding Zhipan, and the reasons leading to the problems are analyzed.

From the scatter plot of teachers' score distribution, it can be seen that teachers' scores in the three modules are high, and the scatter is stratified and concentrated in the high score area in the upper left corner, and the data portrait has the characteristic of "aggregation". The distribution of the scores of grass-roots employees is uniformly distributed on the z-axis in three segments, and the x in the XOY plane is dense in the (20, 100) segment, while the y value is more widely distributed, and the data portraits are characterized by "stratification". The scatter plot of the distribution of the score of the general public, found that the y value, z value is mainly distributed in (80, 100), (60, 80), x distribution is more uniform, the data image has a "decentralized" characteristics as shown in Figure 3. By assigning scores to the dissemination effect of teachers, grass-roots employees and the general public, we can get 91.25 for teachers, 92.26 for grass-roots employees and 86.68 for the general public, which shows that the dissemination effect embodied in the statistical analysis of the questionnaire is highest among the grass-roots employees, followed by the teachers, and lastly, the general public. Especially, there is a big difference in the overall cognitive effect of the general public. The general public's cognition of the spirit of resistance in the battle of Zhegan under the leadership of Ding Zhipan is generally lower than that of teachers and students. From the perspective of comparative analysis, the correct rate of "teachers" on the perception of communication effect (37.44%) > "students"

(36.76%)> "the public" (25.8%). There is a positive correlation between the awareness of the anti-war spirit in the battle of Zhegan under the leadership of Ding Zhipan by different political backgrounds and ranks, and the lowest awareness effect is found in the general public. The dissemination of the spirit of resistance in the Battle of Zhegan under the leadership of Ding Zhipan among teachers, students and the general public shows a very different distribution. Some units have not diversified their study and practice paths enough, and "superficial" study exists in order to accomplish the task, while in-depth practice is not in place enough.

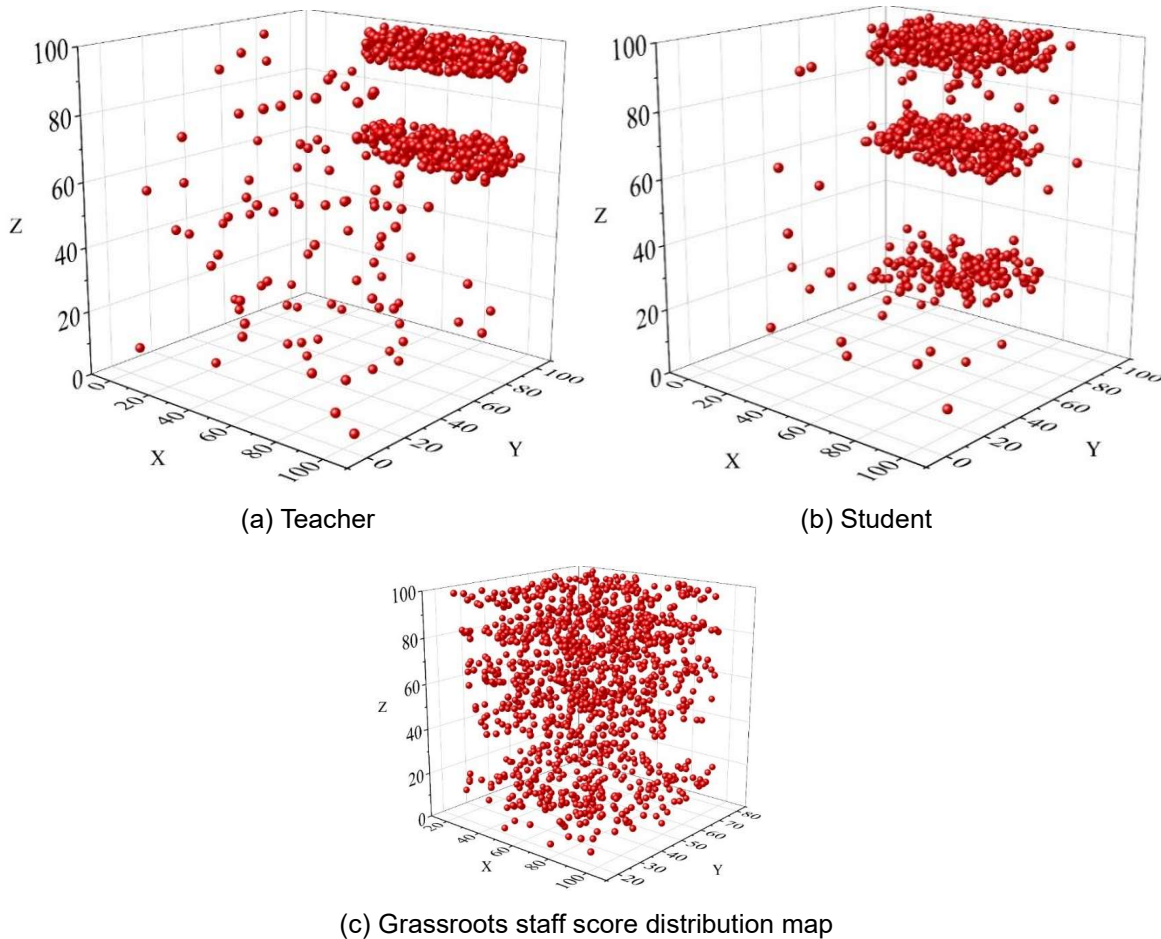


Figure 3: Data mining results and analysis

V. Influence of the Battle of Zhegan on the war situation under the leadership of Ding Zhipan

(1) The Battle of Zhegan under the leadership of Ding Zhipan developed the anti-Japanese armed forces and supported the frontal battlefield. After the Japanese army invaded Zhejiang, it ruled brutally in the places it occupied, and the people suffered so much that they needed armed forces to protect themselves. The Zhejiang Provincial Government responded to the situation and in February, 1938, promulgated the Wartime Political Program of Zhejiang Province. The "Program" clearly pointed out: "The wartime political construction of Zhejiang Province must be directed in the direction of mobilizing the people of the whole province to participate in the War of Resistance and creating new military forces. The National Defense Self-Defense Army will organize and lead the people's armed forces in the whole province.

(2) The Battle of Zhejiang-Gan under the leadership of Ding Zhipan made the anti-Japanese soldiers and civilians in the rear of the enemy famous, boosted the confidence of the people to fight for the victory of the war, and consolidated the united front of the anti-Japanese nation. After the establishment of the Anti-Japanese Armed Forces, they fought with the Japanese and pseudo-Japanese forces many times in the battlefield behind the enemy in the Battle of Zhejiang-Gan, and gained victories again and again. This raised its own prestige and gave the people's masses self-confidence. The main anti-Japanese self-defense brigade of the four townships in Zhubei moved out and fought a big victory at Longfeng Mountain. This raised "the status of the Four Townships Union in

the eyes of the masses, and also raised the determination and confidence of the masses to fight against the Japanese”.

(3) The Battle of Zhegan under the leadership of Ding Zhipan laid a solid foundation for the creation and development of an anti-Japanese base in eastern Zhejiang. Anti-Japanese armed struggle cannot be separated from anti-Japanese armed forces, and the latter is the basic content of creating anti-Japanese bases. Mao Zedong pointed out in *Strategic Problems of Anti-Japanese Guerrilla Warfare* that “the basic condition for the establishment of a base area is to have an anti-Japanese armed force and to use this force to defeat the enemy and mobilize the people”.

VI. Conclusion

Analyzed through data mining and questionnaire survey, the Battle of Zhegan under the leadership of Ding Zhipan played an important role in the War of Resistance against Japan, and the spirit of resistance it embodied still has a far-reaching impact on contemporary society. The survey shows that there are obvious differences in the current social cognition of the Battle of Zhegan under the leadership of Ding Zhipan, with the communication effect scores of teachers, grassroots employees and the general public being 91.25, 92.26 and 86.68 respectively, and the cognitive effect of the general public is generally lower than that of other groups. The correct rate of cognition on the communication effect question presents the distribution characteristics of teachers (37.44%) higher than students (36.76%) higher than the general public (25.8%).

The questionnaire data showed that 75% of the students thought that learning the spirit of resistance was not necessary, which reflected the current challenges of education on the spirit of resistance. However, 63% of the students were willing to learn the spirit of resistance in history classrooms, indicating that appropriate forms of education can effectively stimulate learning interests. In addition, 74% of the survey respondents believe that learning the spirit of resistance can make people feel the hard-won peace life, and 69% believe that they can learn the great qualities of resistance heroes.

The Battle of Zhegan under the leadership of Ding Zhipan had three important impacts on the anti-Japanese war situation: firstly, it developed the anti-Japanese armed forces and supported the frontal battlefield; secondly, it made the anti-Japanese soldiers and civilians in the rear of the enemy famous, invigorated the people's confidence in the war, and consolidated the united front of the anti-Japanese nation; and thirdly, it laid a solid foundation for the creation and development of anti-Japanese bases in eastern Zhejiang.

In the future, we should strengthen the propaganda and education of the spirit of resistance, innovate the way of dissemination, expand the coverage, and improve the cognitive effect, so that the spirit of resistance in the Zhejiang-Gangxi Battle under the leadership of Ding Zhipan can become the spiritual power to inspire the nationals to strive for strength, and provide a strong spiritual support for the realization of national rejuvenation.

References

- [1] Li, P. (2017). Japan's biochemical warfare and experimentation in China. In *Japanese War Crimes* (pp. 289-300). Routledge.
- [2] Carter, J. (2022). THE COSTS OF ALLIANCE: THE DOOLITTLE RAID AND CHINA. PUBLISHED EXCLUSIVELY FOR MEMBERS OF THE SOCIETY, 56.
- [3] Guanghui, W. U. (2015). Discussion on the Undifferentiated Bombing of Hunan From Japanese Invading Army. *Canadian Social Science*, 11(10), 152-156.
- [4] Cai, W. (2021). Research progress of SMR data in China and Japan. *Global Knowledge, Memory and Communication*, 70(6/7), 595-610.
- [5] Xia, Z. H. A. O., & Xingqi, L. I. U. (2022). The Anti-plundering Struggle of the New Fourth Army under the Leadership of the CPC against the Plunder of Mineral Resources in the Wanjiang Basin by the Japanese Army. *Journal of Anhui University of Technology (Social Sciences)*, 39(1), 34-37.
- [6] Toshiya, I. (2019). Japanese War Crimes and War Crimes Trials in China. *Genocide and Mass Violence in Asia*, 141.
- [7] Zhiliang, S., & Lifei, C. (2020). A valuable document revealing the Japanese army's “comfort stations”: Reading the Jinhua Gyerim Association articles and register. *Chinese Studies in History*, 53(1), 14-27.
- [8] Kangle, Z. H. A. N. G. (2016). Using Trial Judgment to Heal: On Crimes Committed by Japanese Forces in China (Vol. 63). Torkel Opsahl Academic EPublisher.
- [9] Chen, Q., Huang, C., Ge, C., Liu, J., & She, L. (2024). The Spirit of Northeast Anti-Japanese Resistance Movement: Its Promoting Role in the Study of Party History and Development for New-Generation University Students. *Journal of Modern Social Sciences*, 1(2), 99-107.
- [10] Guillemin, J. (2016). Crossing the Normative Barrier—Japan's Biological Warfare in China in World War II. In *Biological Threats in the 21st Century: The Politics, People, Science and Historical Roots* (pp. 17-40).
- [11] Xiaoxiao, C. H. E. N. (2021). A Review of Hasegawa Terus Resistance Spirit: Focusing on Her Literature in China. *Journal of Chongqing Jiaotong University Social Sciences Edition*, 21(6), 111.
- [12] Tong-yuan, Z. H. A. N. G. (2024). Analysis of the Influence of Woodcut Works of Anti-Japanese War on the National Spiritual Identity of Young People. *Journal of Literature and Art Studies*, 14(10), 916-920.
- [13] Reilly, J. (2011). Remember history, not hatred: Collective remembrance of China's war of resistance to Japan. *Modern Asian Studies*, 45(2), 463-490.