The Impact of Establishing Electronic Archives of Academic Integrity on Researchers' Scientific Research Behavior

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Abstract. Objective. To explore whether electronic archives of academic integrity can help researchers improve their scientific research integrity. **Methods** (1) Collected personal basic information, scientific research output, original scientific and technological archives and academic evaluation information within the scope of our school. The system automatically calculates and publicizes academic dishonesty. Dissidents can submit applications for revision and re-examination. All the academic misconduct information passed through the audit and the original information collected together to establish academic integrity files. Users with different roles have different query privileges to query. (2) Academic misconduct can be classified into three categories: tampering, embezzlement and plagiarizing other people's academic achievements. The retention time of information is 10 years; forging or adapting data is two types of academic misconduct, the retention time of information is 7 years; citing irregularities is three types of academic misconduct, and the retention time of information is 5 years. **Results** The number of registered users was 615 in 2016, the number of registered users was 102, the number of registered users was 288 and the number of queries per year was 437. In 2017, the number of registered users was 923, the number of registered users was 155, the number of registered users was 455 and the number of queries per year was 559. The indexes in 2017 were higher than those in 2016. In 2016, the proportion of first-class academic misconduct was 2.0%, that of second-class academic misconduct was 17.0%, that of third-class academic misconduct was 38.0%, and the total incidence rate was 58.0%; in 2017, the proportion of first-class academic misconduct was 1.0%, that of second-class academic misconduct was 9.0%, that of third-class academic misconduct was 26.0%, and that of total academic misconduct was 36.0%; The incidence rate decreased. **Conclusion** Academic integrity electronic archives can effectively regulate scientific research behavior of scientific researchers and reduce the probability of academic misconduct.

With the progress of the times, science and technology have become the first productive force of social development. Creating a healthy scientific research environment is a necessary condition to ensure the rapid and healthy development of science and technology. Academic integrity ensures that the researchers adhere to the values of honesty, trust, notarization, respect, and responsibility even in adversity, which is an important guarantee for the normal operation of scientific research. However, in recent years, a variety of academic misconduct reports emerge in endlessly, contrary to the traditional value of scientific research, resulting in a crisis of scientific research integrity [2]. In April 2016, the official website of the Ministry of Education published a draft for soliciting opinions on the measures for the prevention and treatment of academic misconduct in colleges and universities, which defining seven types of academic misconduct, including falsifying scientific research data, and fabricating false research results. China is determined to vigorously crack down on the academic misconduct of scientific researchers.

The establishment of electronic archives of academic integrity can widely collect the academic information of scientific researchers, and facilitate the management departments to inquire and accurately evaluate their credit ratings. It can provide an objective basis for the supervision of scientific research projects and the decision-making of scientific research projects, and help to put

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an end to the occurrence of the breach of trust from all stages and links. However, due to historical reasons, China has not yet established a unified real-time academic integrity electronic archives [4-5]. Taking the scientific research workers in colleges and universities as the object of information collection and management, this paper designs and develops the electronic files of academic integrity based on the scientific research personnel of our university, in order to objectively, accurately and efficiently follow up the academic integrity of scientific research personnel in colleges and universities. We will improve the level and quality of scientific research integrity management, greatly reduce academic misconduct, and promote the construction of scientific research integrity.

Materials and Methods.

Collection of Academic Integrity Archives.

It is mainly composed of four parts. (1) Personal basic information, including unique identification of researchers ID, name, sex, age, service organization, etc. (2) Scientific research output, including undertaking scientific research projects, award-winning results, reports, fund projects, patents, papers, theories, etc. (3) Original scientific and technological archives, including all materials from the scientific research preparation stage to the research experiment stage, the summary appraisal acceptance stage, the achievement and reward declaration stage, and the popularization and application stage. (4) The academic comment content, including the dissertation defense comments, mainstream media ratings.

Academic Misconduct Audit.

The scientific research management department uploads the previously archived researcher information to the system. The results need to be confirmed before the audit. If there have any objections to the results, contact the administrator for changes. After the information is uploaded, the academic misconduct audit shall be carried out automatically, and the academic committee shall confirm and publicize the audit results. If the researchers have no objection to the results, and save them into the personal academic integrity file. Dissidents can submit applications for revision and re-examination. Resubmit the material for academic misconduct audit with the consent of the academic committee.

Academic Misconduct Management.

Academic misconduct can be classified into three categories, tampering, embezzlement and plagiarizing other people's academic achievements. The retention time of information is 10 years; Forging or adapting data is two types of academic misconduct, the retention time of information is 7 years; Citing irregularities is three types of academic misconduct, and the retention time of information is 5 years. Administrators can not audit their own scientific research results information, for each audit to modify the system will be required to fill in the reasons, and keep its operational records.

Information Query and Retention.

Different roles in the system user have different query permissions. The ordinary user does not have the right to query, the heads of the department have the authority to query the information of the scientific research results in the department, and the leaders and super administrators at the school level have the authority to query the information of all the scientific research results of the whole school.

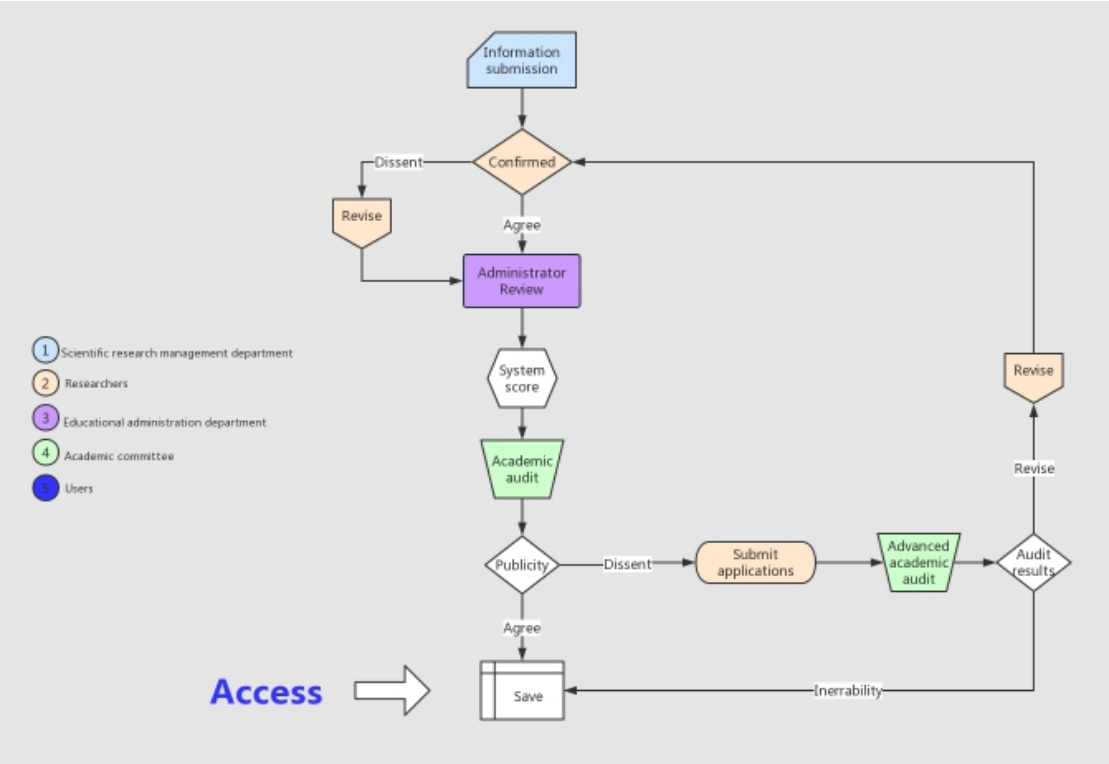

Figure 1 Database creation work-flow

Results

Database Creation and Access.

In 2016, the number of archived users was 615, with 102 registered users, and 288 login times, and 437 queries. In 2017, the number of archived users was 923, with 155 registered users, and 455 login times, and 559 queries. The indexes in 2017 were higher than those in 2016 (Figure 2).

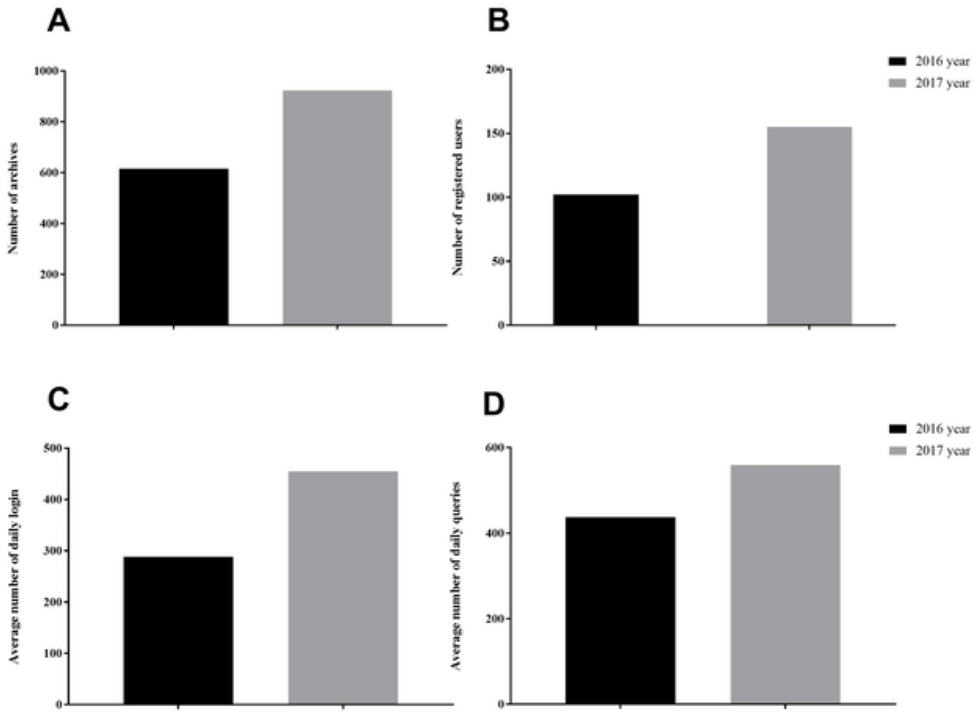

Figure 2 Database creation and access

Academic Misconduct Proportion.

In 2016, the proportion of first-classof academic misconduct was 2.0%, the second-class of

academic misconduct was 17.0%, the third-class of academic misconduct was 38.0%, and the total incidence rate was 58.0%. In 2017, the proportion of first-class academic of misconduct was 1.0%, the second-class of academic misconduct was 9.0%, the third-class of academic misconduct was 26.0%, and the total academic misconduct was 36.0%, the incidence rate decreased (Figure 3).

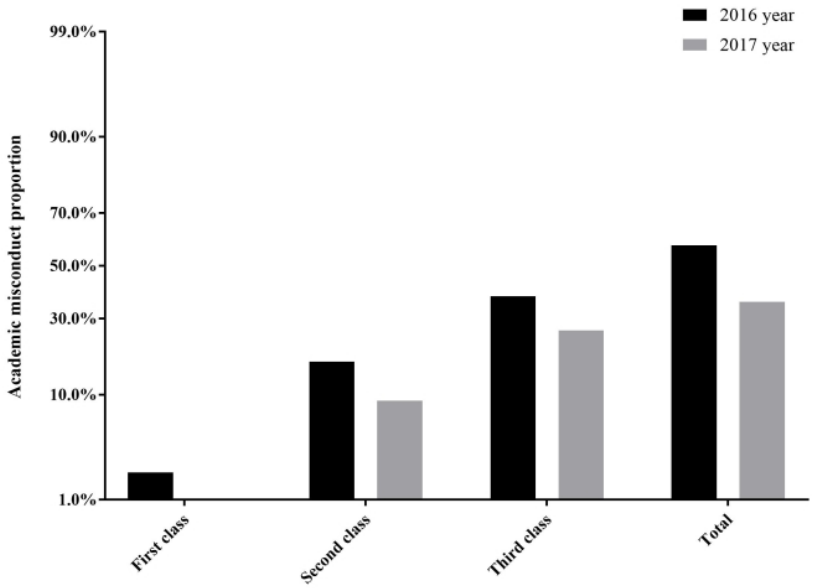

Figure 3 Academic misconduct proportion

Discussion

Academic integrity archives are the basic support for the construction of a good scientific research environment. At present, the management system of academic integrity archives in our country is not perfect, and the credit information of scientific researchers can not be recorded accurately and comprehensively. It leads to the lack of scientific and effective academic supervision of scientific researchers, and can not encourage scientific research staff to adhere to academic integrity. In recent years, electronic archives have gradually replaced the traditional paper archives, due to its small storage space, fast updating data, convenient query, etc. [8]. This research takes the scientific research personnel of our university as the research object, establishes the electronic archives of academic integrity in the campus scope. The results showed that one year after the establishment of the archive, the number of archives users, registered users, login times, query times were higher than before (Figure 2), indicating individuals or evaluation institutions pay more attention to the academic integrity, when there are the credible and easily searchable academic archives. At the same time, the proportion of the first, second and third types of academic misconduct has declined (Figure 3), indicating that researchers began to cherish their academic integrity reputation more. It shows that the establishment of academic integrity archives for scientific researchers can effectively curb the wind of academic misconduct, and is an important measure to eliminate and reduce academic misconduct in scientific research.

There are some shortcomings in this study, such as the number of participants is relatively small, the observation year is short, and in practice, multi-sectoral cooperation is needed, which puts forward higher requirements for the cooperation of information management. However, the establishment of academic integrity archives for the scientific research staff is the general trend. In the future, academic integrity should be brought into a part of the social integrity system to achieve resource sharing. Reference integrity level in the application of project to the application of loans and other scopes, restrict the academic misconduct, and improve their breach of trust cost. Through the common supervision mechanism of the whole society to urge scientific research workers to abide the academic integrity.

To sum up, the electronic archives of academic integrity can effectively standardize the scientific research behavior of researchers and reduce the probability of academic misconduct. In the future, it

should be integrated into the framework of social integrity rating through information-sharing.

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