Technological Due Process: Review, Optimization, and Prospects

Shucen Shang *

School of Ningxia University, Ningxia 750021, China

* Corresponding Author Email: 15580806388@163.com

Abstract. The Houston Independent School District case has revealed the challenges of transparency, impartiality, and human review mechanisms that automated administrative systems face in practice. The case shows that the automated administrative system needs to solve the problems of insufficient transparency and impartiality challenges while enhancing efficiency. At the theoretical level, the connotation of technical due process is further enriched in order to effectively respond to the complex and realistic needs. At the practical level, automated administrative systems with scenarios are constantly applied. In the face of the generalization of technical due process, we need to be alert to potential technical bugs and legal risks. In order to ensure the healthy development of the automated administrative system, it is necessary to pay attention to system updating and continuous optimization in the future, and introduce new technologies to improve the performance. At the same time, establish a sound error correction and human intervention mechanism to ensure that the automated system can be corrected quickly in the event of an error, and to strengthen the timeliness and effectiveness of human intervention. In addition, improving the transparency and fairness of the system, and perfecting manual intervention and decision support tools are also important directions for future development. The research will provide a reference for the optimization and improvement of automated administrative systems.

Keywords: technical due process, automated administration.

1. Introduction

In digital era, automated decision-making systems and algorithm-driven administrative processes are becoming the central part of governance and business operations at an unprecedented rate. Their significance is increasingly highlighted, and they have had a profound impact on social structures, governance models, and economic patterns. However, the use of these technologies also raises concerns about the protection of individual rights and legal processes. “Technological due process” emphasizes the importance of preserving individual rights and legal processes in automated decision-making systems and algorithm-driven administrative processes (Danielle Keats Citron, 2008). This article will take the Houston Independent School District (HISD) case as an example to discuss the relevant legal provisions and judicial practice in the context of digitization, hoping to provides reference and lessons for the resolution of similar disputes.

During the 2011-2014 school year, the HISD used the Educational Value-Added Assessment System (EVAAS) to rate teachers, resulting in the failure to renew the contracts of twelve teachers with low ratings, some of whom resigned, retired, or were reassigned. However, only four teachers received formal notices, while the others did not go through a formal dismissal process. Between 2012 and 2013, an increasing number of teachers faced dismissal or contract non-renewal for poor performance and insufficient student progress. The district approved their severance packages. The Houston Local Federation of Teachers and teacher representatives, as plaintiffs, sued the HISD, with SAS Inc. as an interested party. The plaintiffs asked the court to issue a declaratory judgment and permanent injunction prohibiting the school district from using EVAAS scores to terminate or non-renew teacher contracts. Plaintiffs assert that the district’s automated termination decisions are based on the EVAAS scores. These decisions impair the property interests of teachers under contract renewals. They potentially threaten the interests of this class of teachers. Such actions may be in violation of the Due Process and Equal Protection Clauses. These clauses are part of the Fourteenth Amendment to the U.S. Constitution. Plaintiffs ask the Court to enter a desirable judgment and

permanent injunction enjoining defendant HISD from using EVAAS scores to terminate or non-renew teacher contracts.

2. Technological Due Process Review Based on the Case

The core dispute of this case focuses on the lack of transparency in the operation of the EVAAS system and the insufficiency of the teacher's appeal mechanism. These issues directly challenge the fairness and rationality of educational assessment, leading to a profound reflection on the application of due process principles in automated decision-making systems. Teachers lacked sufficient information to meaningfully challenge dismissal decisions based on low EVAAS scores, violating procedural due process. The lack of reasonable connection between EVAAS scores and the goals of influential teachers in the HISD violates substantive due process. The EVAAS scores were used as an important basis for determining the reappointment, dismissal, or reassignment of teachers. However, teachers believe that the EVAAS system lacks transparency in evaluating teacher performance and does not provide sufficient opportunities for teachers to appeal their evaluation results. This case emphasizes the importance of due process in automated decision-making.

From this case, it can be seen that there are still the following problems in the current judicial decisions U.S. courts regarding automated due process:

The first issue is the emphasis on procedural due process while neglecting substantive due process. In this case, the court's judicial attitude is obvious, that is, it supported the plaintiff's procedural due process claim. This position aims to ensure the fairness, transparency, and participation of the legal process itself, such as ensuring the parties have the right to be heard, avoiding biased decision-making, and fully hearing all parties' opinions. However, the court also rejected the review request for substantive due process, reflecting that in specific situations, judicial practice may overemphasize procedural fairness while neglecting the rationality of substantive rights and results.

The second issue is a greater focus on the right to be heard, the exclusion of bias, and the process of listening to opinions. In this case, the U.S. District Court for the Southern District of Texas, Houston Division, supported the plaintiff's first claim and rejected the latter three claims, reducing the plaintiff's demands. In the judicial or administrative decision-making process, when the rights of the parties to be heard, the requirement to avoid bias, and the process of listening to opinions are overly simplified or neglected, their demands are often reduced, which directly affects the fairness and credibility of the decision-making.

The third issue is the procedural due process standard of cost-benefit analysis. Cost-benefit analysis is the process of comparing the expected or estimated costs and benefits (or opportunities) related to project decisions to determine if it makes sense from a business perspective (Tim Stobierski, 2019). The school district system's adoption of the bottom-line elimination method does not meet the requirements of cost-benefit analysis. This is a mismatch between means and ends. Although the method aims to improve teacher quality and student performance, it has not effectively achieved this goal in practice. On the contrary, it may backfire by undermining teacher enthusiasm and causing talent loss. At the same time, its negative impact is significant: directly eliminating teachers based on system scores without sufficient communication and notification not only infringes on the legal rights of teachers but may also lead to a series of reactions such as low teacher morale and decreased teaching quality. In addition, this approach may also trigger social dissatisfaction and a crisis of trust, damaging the reputation of the school district and the entire education system.

Undoubtedly, the ability to base public decision-making on data rather than individual judgment has great potential in terms of accuracy and objectivity. And the ability to automate this process can make decisions more consistent, predictable, and efficient (Rebecca Williams, 2022). Danielle K. Citron believes that: In situations where consistency is required over discretionary values, well-implemented automated decision-making is more desirable than human discretion; in areas where the risk of human bias outweighs the risks caused by automated bias, automated decision-making is also more attractive. However, there may also be algorithmic discrimination in automated decisions. For

example, in this case, the potential algorithmic discrimination issues of the EVAAS system may include: the decision-making process of the EVAAS system lacks transparency, and teachers cannot obtain specific standards and detailed mechanisms of algorithm operation, which hinders teachers from effectively questioning unfair scoring. Secondly, its algorithms may tend to over-generalize data, mistakenly treating specific situations or outliers as common phenomena, thereby misleading the evaluation of individual teachers or specific teacher groups.

However, the defects in artificial intelligence systems cannot be ignored. The discrimination and bias in these systems mainly come from humans. On April 14, 2017, an article by a joint research team from Princeton University and the University of Bath was published in the journal Science, proving that the discrimination and bias in artificial intelligence systems mainly come from humans, and the existing discrimination and bias in human society will be enhanced and amplified through AI systems (Aylin Caliskan et al., 2017). This phenomenon is also reflected in the HISD, revealing the dilemmas faced in the use of the EVAAS system, mainly manifested in: bias against specific teacher groups, lack of transparency in the decision-making

process, and insufficiency of appeal and correction mechanisms. When AI systems simplify the complex teaching process into quantifiable indicators, they ignore the diversity and differences in education, leading to seemingly fair decisions that may actually contain discrimination. This overly simplified assessment method not only weakens teachers' job security but also infringes on the fairness and rationality of educational decision-making. Therefore, ensuring the transparency and fairness of AI systems has become an important prerequisite for their positive role in the field of education.

To ensure the transparency and fairness of AI systems, in addition to clarifying the legal responsibilities in the development, operation, and application of systems, it is also possible to encourage diverse participation to examine the rationality of the system from various perspectives. In addition, some suggest that all countries need to review their administrative due process rules to make them applicable to countermeasure management. No matter how the law is formulated, the key issue is that those who develop algorithms and codes, as well as those who run or process software in public institutions, should understand the legal preventive measures in administrative measure management, not just the passive measures constituted by the complaint process, and understand that there are legal mechanisms that can hold them accountable and responsible for the decisions made by administrative measure management (Suksi, M., 2021).

3. The Substantive Transformation of Procedural Justice from a Process Perspective

3.1. Enhancing Transparency and Explainability in Advance

The fundamental propositions of the theory of technological due process are embedded within a plurality of legal values. Some scholars argue that automated administration may “deprive participants of the ability to understand the administrative process,” thereby weakening the accountability of administrative actions. Therefore, it is necessary to focus on restoring the accountability and transparency of automated systems. (Su Yu, 2023). Transparency helps to prevent administrative agencies from abusing their power in automated administrative processes. When the decision-making process is open and transparent, any potential misbehavior is more easily detected and corrected. At the same time, transparency ensures fairness. By publicizing the decision-making process and results, social justice can be upheld by ensuring that decisions are free from bias and discrimination.

Transparency is the foundation for ensuring fairness and trust. Taking the EVAAS system as an example, a certain degree of disclosure of the algorithmic operation rules of the EVAAS system and the corresponding data is made to the evaluated teachers within the district at the prior stage, and such disclosure not only helps to safeguard and respect the teachers' rights and interests of the subject of

the information, but also promotes their understanding of and trust in the evaluation system. Pasquale calls this requirement “quality transparency”. (Su Yu, 2023)

Understandability and explainability are two sides of the same coin. The former requires that the algorithm design should be easily understood by laypeople, while the latter emphasizes rational explanations of the results of algorithmic decisions. The two complement each other and together form an important cornerstone of automated administrative legitimacy. Improving the comprehensibility and explainability of algorithms through technical means and legal regulation is the key to preventing algorithmic black boxes and safeguarding public rights and interests. In order to further enhance the legitimacy of automated administration, an effective mechanism for listening and monitoring should be established. Measures such as allowing teachers to challenge the evaluation system, conducting post hearing, introducing professional audits, and correcting errors in a timely manner are all important means of safeguarding the rights and interests of teachers and preventing the abuse of power. The establishment of these mechanisms helps to create a favorable situation in which the government, society and the public participate and monitor each other.

3.2. Improving the Human Decision-Making Process and the Questionability of Outcomes During the Process

In the process of automated administration, the introduction of a human review mechanism is an important means of guaranteeing the fairness and accuracy of decision-making. Through the review by professionals, the decision-making results of the automated system can be reviewed twice, and possible errors or biases can be found and corrected in time. Additionally, clarifying the scope of application and process of manual decision-making procedures helps to ensure that manual intervention can be made quickly and effectively at critical moments. In this case, the EVAAS system's lack of a necessary manual decision-making intervention mechanism constrained the effectiveness of its message delivery, resulting in most teachers failing to receive timely formal notification of their performance evaluation results. At the same time, the system's norms and evaluation criteria were not sufficiently explained and popularized, making it difficult for teachers to accurately grasp the criteria for the system's operation in the absence of a clear guiding framework, and stimulating widespread controversy about its fairness.

From a comparative law perspective, the GDPR not only emphasizes the rights and freedoms of data subjects but also makes special provisions for the transparency, fairness, and questionability of automated decision-making outcomes. There are three important takeaways from this case regarding the challenge ability of results. First, automated decision-making systems must be based on a high degree of transparency to ensure that data subjects can fully understand the logic and rationale for decisions. Second, the system should have an effective human review mechanism in place to allow for timely review and explanation when data subjects challenge the decision results. Finally, the system should ensure the fairness of the decision-making process and avoid inappropriate distinctions based on sensitive features, so as to safeguard the legitimate rights and interests of data subjects.

3.3. Post-Event: System Updates and Error Correction

In the context of the HISD case, the controversy and negative impacts might have been significantly reduced if the district had put more effort into updating the EVAAS system, continuous optimization and error correction, and human intervention. Improvements in system performance and accuracy will ensure that assessment results are fairer and more scientific, while robust error correction and human review mechanisms will enhance transparency and minimize misunderstandings. These efforts not only improve the efficiency and quality of education administration, but, more importantly, they build a foundation of public trust in the system so that teachers and parents see the district's commitment to fairness and transparency. In this way, the EVAAS system can better serve education and contribute to the harmony and development of the district as a whole.

In this regard, it is necessary to design structured manual intervention mechanisms for different automated administrative scenarios, and to ensure that there are clear processes and criteria to guide human review and decision-making when the results of an assessment may have a significant impact on teachers, in order to safeguard their legitimate rights and interests and the quality of education. With regard to human review, current legislation focuses on the provision that administrative authorities should review the information and data recorded or generated by automated systems, and that erroneous data should be corrected in a timely manner when found or not used as a basis for law enforcement (Su Yu, 2023)

4. Conclusion

Based on an in-depth analysis of the case of HISD, this paper reveals the dilemmas and challenges encountered by automated administrative systems in real-world applications. Although the EVAAS system was designed to improve the efficiency and fairness of teacher evaluation through automated means, it has exposed issues such as insufficient transparency, questioning of fairness, and a lack of effective human review mechanisms, leading to widespread controversy.

This case also reflects the criticality of system updates and continuous optimization for the EVAAS system. In response, it is important not only to introduce cutting-edge technologies and fine-tune the algorithmic model to significantly improve system performance and assessment accuracy, but also to ensure that the process fully incorporates the concept of due process in automated administration. At the same time, the establishment of a sound error correction and human intervention mechanism should be the core task, clearly defining the boundaries between automated decision-making and human review, ensuring that in the event of errors or deviations in the automated system, manual intervention can be carried out swiftly and efficiently to safeguard the fairness and transparency of decision-making. In the future, how to make similar automated systems an important tool for improving the efficiency and quality of assessment and to gain the broad trust of the subjects of system evaluation and society will be key.

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