

ANALYSIS OF TEACHER BEHAVIOR CHARACTERISTICS FROM THE PERSPECTIVE OF CLASSROOM TEACHER STUDENT INTERACTION

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ABSTRACT

Classroom teacher-student interaction is an important component of teaching activities, and analyzing the process of teacher-student interaction can help improve the quality of classroom teaching. Classroom teacher-student interaction involves the exchange of knowledge and emotions between teachers and students, with typical social interaction characteristics. From the perspective of Sociology of education, a coding system for teacher-student interaction is designed on the basis of Leary's interaction model, and two novice teachers and two experienced teachers are selected as the research objects. The research results indicate that there are significant differences in leadership dimensions between novice teachers and experienced teachers. Experienced teachers have strong classroom control abilities, while novice teachers are more likely to be in a passive state; In the dimension of affinity, both emphasize cooperation with students, but novice teachers may face the problem of lower classroom efficiency even more; Finally, based on the analysis of the characteristics of classroom teacher-student interaction, reasonable suggestions are given.

Keywords: Interactive Ceremony, Classroom Interaction, Characteristics of Teacher Behavior, Teacher-Student Interaction

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INTRODUCTION

The interaction between teachers and students is the core of classroom teaching, which has a significant impact on the effectiveness and quality of teacher teaching. Classroom interaction refers to the mobilization of various elements involved in the classroom teaching process, focusing on the realization of educational and teaching objectives, and forming a positive interaction between each other. Teaching interaction is one of the most fundamental features in classroom teaching activities, which to some extent reflects the essence of teaching, and effective classroom interaction can more effectively promote students' deep learning.

In various educational forums and official documents, there is a clear statement about teacher-student interaction: "Teachers should actively interact and develop together with students in the teaching process, handle the relationship between imparting knowledge and cultivating abilities, pay attention to cultivating students' independence and autonomy, guide students to question, investigate, and explore, learn in practice, and promote students to actively engage in personalized learning under the guidance of teachers

In the reform of various educational systems and mechanisms in various countries, there is also a relatively unified reform approach. We need to establish a new type of teaching relationship based on student development, improve teaching and learning methods, transform teaching organizational forms, innovate teaching methods, and reform student evaluation methods. Truly effective interactive behavior can promote students to comprehensively analyze and apply the knowledge they have learned, and develop higher-order thinking abilities. However, in many classrooms, there is frequent teacher-student interaction, but there are relatively few truly meaningful interactive behaviors. In classroom teaching, teacher-student interaction is not only the transmission of knowledge and information, but also the integration of ideas and emotions. It is a special form of social interaction and therefore has the general characteristics of social interaction. Sociology of education is based on the theory of sociology, through the objective analysis of education, to design and improve education and teaching activities.

The interaction in classroom teaching is regarded as a Social phenomenon, the teachers and students in classroom interaction as a micro social group, and the definition and analysis of Role and social behaviors in classroom teaching can help teachers understand the depth of social interaction in classroom teaching behavior, thus reflecting the degree of interdependence between the two sides of the interaction, thus further reflecting the authenticity and effectiveness of the interaction. Then, from the perspective of Sociology of education, what are the characteristics of teacher interaction in digital classroom? Based on this, this research codes the teaching activities in the digital classroom from the perspective of Sociology of education, analyzes and compares the characteristics of classroom interaction between novice teachers and experienced teachers, so as to find problems in classroom interaction, propose strategies for improving classroom interaction, promote mutual understanding between teachers and students, build a harmonious teaching environment, and improve teaching quality.

LITERATURE REVIEWS

Research on Effective Interaction in Digital Classroom

The integration of various advanced information technology methods into classroom teaching provides strong assistance for teacher-student interaction. Singapore has implemented the "Intel significant Nation 2015 Plan" (iN2015 for short), which uses information technology to change teaching methods, expand innovative teaching resources, establish personalized Learning space for learners, and provide support for learners to achieve personalized learning and Lifelong learning. With the support of Intel's Future Education Project, scholars have designed a framework for student autonomous activity design in a digital learning environment based on tablet features. Through practice, they have found that the open nature of digital environments can effectively improve learners' participation and feedback speed, enhance

learning experience, effectively promote teaching tasks, and promote the transformation of classroom activities and diagnostic methods (Zheng Gang, Li Yushun, & Xin Xueyuan, 2014). From the perspective of learning analysis, an optimization framework for digital classroom interaction has been proposed, providing effective support for teachers to grasp the precise timing and objects of classroom interaction, as well as to adopt effective teaching interventions and strategic adjustments (Yu Xiaohua, & Huang Qin, 2018). By selecting primary school English digital classrooms as the research object, the factors that affect the effectiveness of digital classroom teaching interaction were predicted, and strategies and suggestions were proposed to enhance the effectiveness of digital classroom teaching interaction (Yang Biying, 2018). In traditional classroom teaching, the teaching process is often strictly controlled by teachers, who teach according to preset learning times, content, methods, etc. Learners follow the classroom order and complete their learning out of awe of the teachers, resulting in higher learning efficiency. However, learners have less classroom freedom and less time for independent learning in the classroom (Hao Zengming, 2004). In contrast, digital classrooms advocate for students to participate in activities in the classroom, providing a relaxed learning environment and rich resources for students' self-directed learning. This can stimulate students' potential for self-directed learning and exploration, thereby achieving personalized growth and assisting in personalized learning, differentiated teaching, and strategic learning (Huang Qin, 2017). It can be seen that accurately analyzing the role characteristics, behavior control patterns, and teaching atmosphere of teachers in digital classrooms from different perspectives can improve the level of teacher-student interaction and provide support for optimizing digital classroom teaching.

H1: Digital classrooms have high requirements for teachers' digital literacy

H2: Digital classrooms urge teachers to reform digital teaching facilities and promote classroom revitalization.

A Study on the Characteristics of Teacher-Student Interaction from a Sociological Perspective

In recent years, classroom research based on a sociological perspective has received widespread attention. Foreign scholars often discuss the types of teacher-student interaction or dialogue in the exploration of teacher-student relationships. For example, Pianta divides teacher-student interaction into six categories based on student engagement and attachment to teachers: dependent, actively engaged, deficient, practical/ordinary, irritable/dependent, and indifferent. It also points out that students tend to exhibit more problematic behavior in the deficient and irritable dependent groups (Pianta R.C, 1994). Lippitt et al. classified teacher-student interaction into three types of teacher leadership styles: authoritative, democratic, and laissez faire, namely teacher command style, teacher-student negotiation style, and teacher-student non-interference style. The corresponding teacher-student relationship is control and obedience, democratic negotiation, and alienation (Chen Kuixi, 1992). American scholars have proposed an interaction model that characterizes the interaction patterns between teachers and students in the classroom using two sets of parameters: leadership and obedience, cooperation, and rebellion (Wubbels, T., Levy, J., & Brekelmans, M., 1997). The model and research methods are both representative. Chinese scholars have also made some achievements in studying classroom interaction in the field of sociology. He Jin divided classroom interaction between teachers and students into three levels: basic interaction, phased interaction, and overall classroom interaction between teachers and students (He Jin, 2013). The process of teacher-student interaction is also regarded as an interactive ritual involving both teachers and students. In classroom interactive rituals, the distribution of ritual intensity is not balanced, but there is a stratification based on emotional energy. The dimensions of stratification mainly involve two aspects: power and status (Zeng Ying, 2014). Scholars have investigated the classroom conversations of teachers at different levels, dividing the questions asked by teachers

into four types: recall questions, descriptive questions, explanatory questions, and analytical questions. They have listed the coding system for the types and levels of teacher questioning questions (Li Qiong, 2004). From a sociological perspective, the classroom observation method was used to explore the characteristics of teacher-student interaction in small class teaching, and improvement strategies were proposed (Sun Yongli, 2015). A comparative study was conducted on the teacher-student interaction behavior in urban and rural middle school English classrooms through questionnaire methods and classroom observation methods. It was found that there are certain differences in the classroom interaction behavior of urban and rural middle school English teachers (Ye Ziyu, 2012). The achievements of teacher-student interaction at home and abroad have provided good ideas and methods for the study of teacher-student interaction behavior. However, there are relatively few quantitative studies on teacher-student interaction behavior from the perspective of Sociology of education. Based on the perspective of Sociology of education, this study compares and analyzes the characteristics of teachers' behavior in the digital classroom teacher-student interaction, and proposes strategies for improving classroom interaction, so as to improve teaching quality.

H3: Digital classrooms are helpful in changing the relationship between students and teachers.

H4: The level of digital literacy of teachers is indirectly related to the improvement of teaching quality.

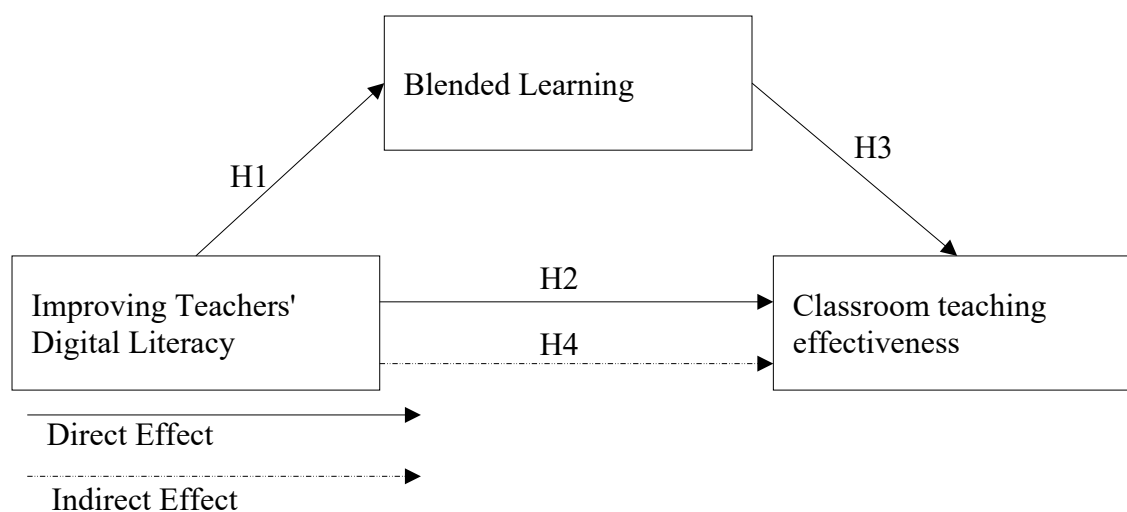


Figure 1 Research Framework

RESEARCH METHODOLOGY

In order to examine the impact of teacher behavior on classroom teaching during the teaching process, this study adopted a quantitative research method. This study selected two novice teachers and two experienced teachers as the research subjects, and used classroom observation method to compare and analyze the teacher behavior characteristics in digital classroom teacher-student interaction. By referring to the professional development standards for teachers in the United States and taking into account the actual situation in China, teachers who are in the early stages of professional development and have generally worked for 1-5 years are referred to as novice teachers, while teachers who have rich teaching knowledge and experience and have generally worked for more than 5 years are referred to as experienced teachers. The research case selects two classes of different types of teachers from the same subject in the digital classroom as a set of research samples. Considering the impact of different disciplinary types on research, two sets of different disciplines were selected as research samples. Using classroom observation method and coding system to observe and record the classroom

interaction behavior between novice and experienced teachers, and analyze the interactive characteristics of novice and experienced teachers in digital classrooms.

Before conducting the survey, the interaction was divided into two dimensions and four parameters were determined. The two dimensions are Influence and Proximity, so the corresponding four parameters are Leadership Submission and Cooperation Opposition. On the basis of two dimensions and four parameters, the Leary model further divides the classroom interaction patterns between teachers and students into eight types: DO, DC, CD, CS, SC, SO, OS, OD, DO, etc.

In order to avoid the influence of personal subjective factors on the judgment of interaction types, this study adopted a method of two people coding and recording together. After analysis, the total number of interaction types was 20, and the total number of types that the two people completely agreed on was 17. Therefore, the average mutual agreement K value was 0.85, the reliability R value of this study is approximately 0.919, greater than 0.9. It indicates that this study is effective.

To address the issue of achieving key goals, report the results in descriptive and tabular form. All details will be introduced in the next section.

RESEARCH RESULTS

By consulting relevant literature, combining the current situation and characteristics of digital classrooms in primary and secondary schools, as well as the research and application of the Leary model in China, and communicating and discussing with relevant experts, we studied the eight classification standards of the Leary model for teacher-student interaction types, and designed the coding of the Leary interaction model based on teaching activities. The coding system is based on the specific behavior of teacher teaching activities, naming and describing the eight types of teacher-student interaction in sequence, as shown in Table 1. The eight types of teacher-student interaction are: DC teacher led, CD affinity help, CS understanding resonance, SC student led, SO inefficient waiting, OS depression passive, OD persuasion preset, DO strict traditional.

Table 1 Code table for teacher-student interaction model

Interactivity Type	Code	Teaching Activities
DC-Teacher Led Type	1	Teachers impart knowledge to students through narration and explanation, able to clearly describe the task content, and appropriately develop learning steps for students.
	2	The teacher designs a complete teaching process in advance and guides students to complete learning tasks and achieve learning goals according to the preset.
	3	Students respect teachers, have high learning efficiency, but lack initiative, and their 'generative' content is limited.
CD-Affinity Help Type	4	Encourage students to actively understand and master knowledge through discussions with them. During student activities, teachers participate in inspections and provide timely assistance and advice to students.
	5	When explaining fallible knowledge points, teachers guide students to identify problems and jointly solve doubts.
	6	The teacher designs a complete teaching process in advance and adjusts the teaching content and pace based on student feedback and actual teaching needs. Teachers and students trust each other, and students fully utilize their ability to learn and think independently.

Interactivity Type	Code	Teaching Activities
CS-Understanding Resonant Types	7	Teachers consider students' interests and ideas to promote their understanding and memory of knowledge. In the student activity segment, the teacher tries to empathize and understand the students' thoughts as much as possible, and patiently guides them.
	8	Teachers should develop teaching plans in advance based on students' interests to win their love.
	9	In the actual teaching process, teachers cater to students' curiosity and interest, fully consider student feedback, and strive to resonate with them. The teacher's leadership is slightly lacking, and students have free thinking.
SC-Student Led Types	10	In the classroom learning process, students dominate. Students have free thinking, low completion of learning objectives, and low learning efficiency.
	11	Teachers lack leadership and only play the role of facilitators for students' learning. Students fully utilize their ability to learn and think independently.
SO-Low Efficiency Waiting Type	12	Teachers are powerless to address students' negative behaviors, such as not paying attention to lectures or speaking casually.
	13	Although teachers have prepared teaching process plans and materials in advance, they are prone to losing their teaching direction due to weak leadership.
	14	Students learn according to their personal preferences, resulting in greater freedom of learning and low efficiency.
OS-Depression Passive Type	15	Teachers hold a negative and laissez faire attitude towards students' negative behaviors, such as not paying attention to lectures or speaking casually.
	16	The teacher did not prepare a complete teaching plan and materials in advance. Students learn according to their personal preferences. Classroom learning is easy to lose direction and goals, and learning efficiency is low.
OD-persuasive preset Type	17	Teachers admonish and teach students about their bad behaviors, such as not paying attention to listening and speaking at will.
	18	Teachers complete classroom teaching in strict accordance with the preset. Students' learning freedom is small, and the learning atmosphere is dignified and depressing.
DO-strict traditional Type	19	When there is chaos in classroom discipline, teachers will immediately maintain class learning order through language, behavior, etc.
	20	Teachers design a complete teaching process in advance, and complete classroom teaching in strict accordance with the teaching process. Out of awe of teachers, students complete learning tasks in accordance with teachers' requirements, and their learning efficiency is high.

The analysis of teacher interaction types in different disciplines is based on the classification record results, and the ratio of time corresponding to each interaction type to the total duration is calculated to obtain the relative frequency table of teacher interaction types, as shown in Table 2.

Table 2 Statistical Table of the Relative Frequency of Teacher Interaction Types in Each Case

Teacher information		DC	CD	CS	SC	SO	OS	OD	DO
Relative frequency									
Interactivity Type									
Information technology course	experienced teacher	0.541	0.214	0.034	0.052	0.025	0.025	0.025	0.084
	novice teacher	0.101	0.023	0.023	0.256	0.349	0.202	0.023	0.023
Politics	experienced teacher	0.138	0.399	0.226	0.138	0.039	0.020	0.020	0.020
	novice teacher	0.195	0.122	0.122	0.268	0.231	0.024	0.024	0.024

The type of interaction between experienced teachers in the field of information technology is DC teacher led, which means that teachers have high leadership in the classroom and can provide assistance to students with a cooperative attitude. High leadership is mainly manifested in clear teaching processes, good classroom order, teachers teaching according to pre designed processes, and high teaching efficiency. The cooperative attitude is reflected in the teacher designing 4 to 5 activity tasks that students can independently complete, and being able to promptly answer students' doubts during their autonomous learning period. Overall, the biggest advantage of teachers lies in their strong leadership and respect from students. The disadvantage is that there is a slight lack of affinity for students, and students have less freedom. The type of interaction between novice teachers in the field of information technology is SO-low efficiency waiting type, which reflects affinity in the teaching process. However, due to insufficient leadership, they are often powerless in dealing with classroom organization issues and adopt a tolerant attitude towards students, leading to a loss of direction in the classroom. When designing the course, the teacher arranged two stages: independent review before the new lesson and independent practice after the new lesson, providing students with lesson plan documents. However, due to the unreasonable gradient arrangement of the learning plan task, students did not conduct inspections and guidance during their autonomous operation, resulting in low learning efficiency during their autonomous learning time. They were unable to achieve learning goals according to the teacher's preset schedule, and even experienced multiple instances of disordered organizational discipline in the back of the classroom. However, the teacher only gave verbal reminders, which did not achieve the effect of improving the classroom learning atmosphere. The interaction type of experienced teachers in the political discipline is CD affinity help type, which reflects a strong cooperative attitude and affinity in the teaching process, trusts each other with students, and gains their respect and love. A strong cooperative attitude is mainly reflected in the fact that teachers usually ask students a situational question when explaining knowledge concepts, and guide and help students understand the content of the knowledge points in discussions with them. In teaching, there is a section where teachers are assigned task steps, and students independently complete the "class hearing" task. The teacher only inspects and guides during this section. At the end of the activity, the students discuss the gains from the activity, and the teacher summarizes and sublimates it. Overall, the biggest advantage of teachers is their strong affinity and appropriate guidance.

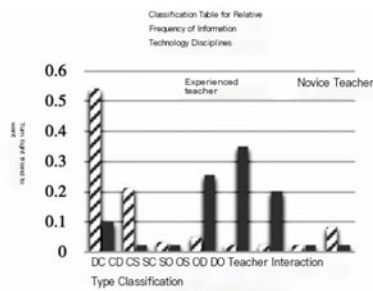


Figure 3 Statistical Chart of Relative Frequency of Information Technology Disciplines

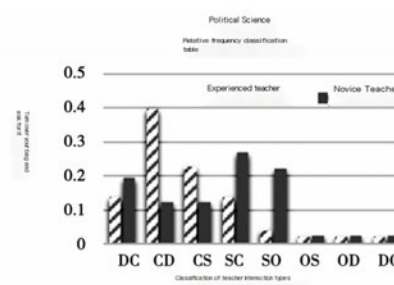


Figure 4 Statistical Chart of Relative Frequency of Political Discipline

Based on Table 2 and the analysis results of classroom interaction among teachers in different disciplines, a model diagram of teacher interaction types is drawn, as shown in Figures 5-8. Through analysis, it was found that in the dimension of influence, experienced teachers all demonstrate strong leadership, can grasp the direction of the classroom, and basically complete the teaching process according to pre class assumptions, resulting in higher teaching efficiency. Novice teachers exhibit a certain degree of obedience and are in a relatively passive position in teaching. Students have a greater degree of freedom, making it easy for them to lose direction in the classroom, and there is no guarantee of achieving teaching objectives. In the dimension of affinity, experienced teachers often exhibit a certain degree of cooperation, but due to differences in personal style, language habits, and other factors, the degree of cooperation among different teachers in actual teaching also varies. Although novice teachers demonstrate cooperation in their teaching assumptions, deviations may occur in actual teaching due to factors such as academic sentiment. Teachers may exhibit a passive and passive state due to being too humble.

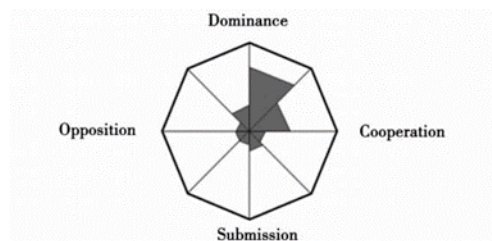


Figure 5 Interactive Model of Experienced Teachers in Information Technology Discipline

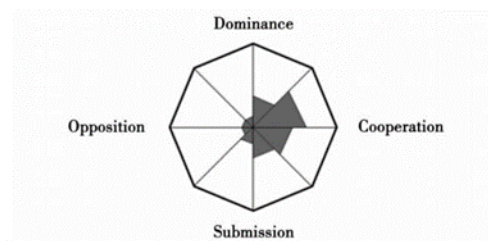


Figure 6 Interactive Model of Experienced Teachers in Political Science

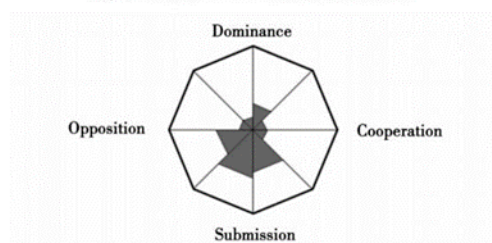


Figure 7 Interactive Model for Novice Teachers in the Information Technology Discipline

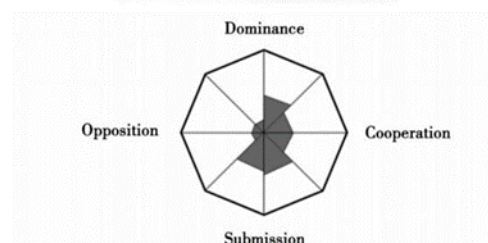


Figure 8 Interactive Model for Novice Teachers in Political Science

DISCUSSION & CONCLUSION

This study compares and analyzes the interaction characteristics of experienced and novice teachers in digital classrooms based on the Leary classroom interaction model, and draws the following conclusions.

1) Experienced teachers often demonstrate strong leadership in digital classroom interactions, while novice teachers are often more passive, which is closely related to the accumulated personal teaching experience of teachers. Experienced teachers have a reasonable grasp of the

overall rhythm of classroom teaching and are good at guiding students to ask questions, so students are more willing to ask questions and interact with teachers during the learning process. However, novice teachers often cannot effectively control the direction of the classroom, or even ensure classroom order. Students lack a good learning atmosphere and environment, so they are mostly unable to immerse themselves in the classroom and lack initiative, resulting in poor interaction effects. In addition, experienced teachers and novice teachers have varying degrees of affinity towards students. Although novice teachers place more emphasis on cooperation with students, their classroom control ability is poor, and the efficiency of student cooperation is not high.

2) The interaction model reflected by teachers in classroom teaching is the result of their teaching attitude, personality characteristics, and the dynamic process of interaction and influence with students. Therefore, the teacher's classroom interaction model is not static, but is influenced by various factors such as the nature of the course, classroom environment, teaching content, and the behavioral characteristics of the interaction objects, and reflects different characteristics in the dimensions of influence and affinity with the degree of change of the factors. Through case analysis and comparison, experienced teachers often have more advantages in leadership than novice teachers. However, in terms of affinity dimension, both experienced and novice teachers show a tendency towards cooperation in the preset, but the cooperation shown in actual teaching varies from person to person, with significant differences.

3) The factors that affect teacher classroom interaction are multifaceted. Research has shown that it is not only the performance of teachers and students in the classroom, but also factors such as the teaching environment, course nature, and personal characteristics of teachers. During the teaching process, teachers in the field of information technology tend to focus mainly on teaching and student practice, while teachers in the field of politics have more room for students to exert themselves in the teaching process, mainly focusing on student discussion. Therefore, there is a significant difference in the types of classroom interaction between humanities and science categories.

The degree of harmony between teachers and students is an important factor affecting classroom management. A good and effective interactive relationship not only helps students complete their studies, but also helps to cultivate their qualities. Currently, digital teaching, as one of the important connotations of educational modernization, has become an effective way for educational reform and development in the information age. Effectively handling teacher-student interaction in digital classroom teaching has become increasingly important.

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Conflicts of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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