

# Impact of Teachers' Willingness to Share Knowledge on Teamwork Behavior in Shandong Province, China

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Received: September 18, 2023

Accepted: October 18, 2023

Online Published: October 19, 2023

doi:10.5430/ijhe.v12n5p251

URL: <https://doi.org/10.5430/ijhe.v12n5p251>

## Abstract

Teamwork is the key to advancing educational innovation to achieve a common goal. Adding a professional title as the background variable, We have proposed and tested the hypotheses in this study according to the fairness heuristic theory. An online survey was conducted to determine the willingness to share knowledge and teamwork behavior of teachers in Shandong universities based on convenience sampling. The collected data were analyzed using SPSS to undertake a descriptive analysis, difference analysis, correlation analysis, and hierarchical regression analysis. It was shown in the 860 completed questionnaires that different titles have a significantly different effect on teachers' willingness to share knowledge and that their willingness to share knowledge has a significant and positive impact on their teamwork behavior.

**Keywords:** fairness heuristic theory, willingness to share knowledge, teamwork behavior, professional title

## 1. Impact of Teachers' Willingness to Share Knowledge on Teamwork Behavior in Shandong Province, China

In a contemporary knowledge-based society, higher education institutions are not only the cornerstone of knowledge dissemination and talent training but also important places for sharing knowledge and innovation (Malik, 2018). The sharing of knowledge and teamwork behavior of university teachers is particularly critical for promoting continuous progress in the educational field and improving the quality of education (Mohammed et al., 2016). The vigorous development of the professional level and professional skills of university teachers is one of the major measures of China's higher education reform (Zhuang et al., 2018), and Shandong Province is a particularly good example of the situation, embracing tasks of educational development and the proposal of new measures and corresponding countermeasures. This strategy is significant for the development of university teachers in Shandong Province and for the implementation of the strategy of "revitalizing Shandong through science and education" and accelerating the pace of education to strengthen the province (Kipnis, 2019, p. 22). Teamwork behavior plays an important role in the field of university education (Riebe et al., 2016) because it no longer depends on individual teachers' education and research work alone but is increasingly focused on interdisciplinary and cross-field cooperation as well as collaborative efforts among teachers (Fu et al., 2020). However, the achievement of efficient teamwork depends on the willingness of individual teachers to share their knowledge (Bashan et al., 2017). The fairness heuristic theory provides an important theoretical framework to assess the willingness of individuals to share their knowledge and experience with others to promote the realization of a common goal (Ganguly et al., 2019).

As its name suggests, the fairness heuristic theory highlights individuals' sense of fairness toward others. Its proponents believe that people are influenced by the social and organizational environment and will be guided by the principle of fairness in treating others (Bell, 2016). In the field of university education, knowledge sharing usually requires the fair allocation of resources, fair treatment, and fair opportunities (Al-Kurdi et al., 2020). Therefore, the fairness heuristic theory helps to understand the willingness of university teachers to share their knowledge based on the belief that they are more likely to be willing to share their knowledge and participate actively in teamwork if they feel they are being treated fairly (Lin et al., 2021).

The willingness of university teachers to share knowledge is influenced by their willingness to share their knowledge, experience, and resources for the benefit of others (Bolisani et al., 2018). Thus, in university education, teachers are willing to share teaching methods, research results, and educational resources with their colleagues, thereby improving the quality of education and promoting the progress of disciplines (Saroyan et al., 2015). Sharing

knowledge not only builds an educational environment of collaboration and mutual assistance but also cultivates students' innovative and critical thinking skills (Mulà et al., 2017). Therefore, an in-depth study of the willingness of university teachers to share knowledge is crucial for the continuous improvement of university education (Bendermacher et al., 2017).

Teamwork involves multiple teachers working together to achieve a common goal (Guchait et al., 2016). This process can include the joint development of research projects, the joint planning and implementation of teaching programs. In education, teamwork behavior contributes to the integration of various resources and knowledge to improve the efficiency of the work and quality of the results (Salas et al., 2015). Therefore, the importance of teachers' willingness to impart knowledge and teamwork behavior to university education should not be ignored (Sanyal et al., 2018).

In China's university system, the titles of teachers are divided into different levels, including teaching assistant, lecturer, and associate professor. These different levels of titles tend to reflect teachers' professional achievement in the educational field (Wallace, 2015), and they may also affect their willingness to share knowledge and teamwork behavior. Teachers with different professional titles may have diverse teaching abilities and experience of scientific research and management (Geschwind et al., 2015). Hence, the willingness to share knowledge and teamwork behavior of teachers with different professional titles may vary significantly different (Tan, 2016), which deserves to be studied in depth.

On this basis, teachers from Shandong undergraduate universities participated in this study in order to explore the differences between university teachers' willingness to share knowledge and engage in teamwork behavior in a quantitative way and to explore the relationship between their willingness to share knowledge and their teamwork behavior. This is expected to provide a basis for clarifying the occurrence and development mechanism of team cooperation behavior and act as a reference for university administrators to formulate scientific and reasonable teacher research management strategies that improve teachers' individual professional skills and contribute to the steady development of the organization.

## 2. Literature Review

We selected the fairness heuristic theory as the theoretical basis for this study to examine the relationship between teachers' willingness to share knowledge and their team behavior. The premise of the fairness heuristic theory is that people make decisions about fairness based on their expectations and the way they wish to be treated by others (Lind, 1999). The fairness heuristic is activated when individuals expect to extensively interact with a person or group (exposing them to a risk of exploitation), or when they personally recognize a group or relationship (when they may lose their identity due to exclusion; Lind et al., 2001). A new university teacher faced with an unfamiliar environment and a lack of information is likely to rely on group members to make judgments and acquire an overall fair perception. Members of the teacher group contact each other based on active communication between colleagues to consult and learn in a process of donating and collecting knowledge, which is otherwise known as sharing knowledge (Geurts, 2005). When people are treated fairly, they will forget their burdens and work hard to maximize the organization's interests, even if it means sacrificing their own. This sense of fairness, which is inspirational, is associated with cooperation (Bos & Lind, 2004).

### 2.1 Willingness to Share Knowledge

According to Dyer and Nobeoka (2000), the sharing of knowledge promotes the exchange of valuable information, guides the correct learning direction, and enhances the achievement of goals from both personal and organizational perspectives. Meanwhile, Storey (2001) defined knowledge sharing as a process of exchanging ideas or sharing common goals and similar problems, whereas Van et al. (2004) further explained knowledge sharing as a process of exchanging knowledge and creating new knowledge together. Chinese scholars Sun et al. (2012) maintained that knowledge sharing includes individuals' willingness to actively communicate with colleagues (i.e., donating knowledge) and actively consult with them (i.e., to collect knowledge), which is extremely significant for maximizing the value of the organization's overall knowledge resources. Nonaka and Takeuchi (1995) described the essence of knowledge sharing as involving the connection between individuals, the team, and the organization as well as the interactive process of tacit knowledge and explicit knowledge, which relies on a high degree of individuals' initiative, team awareness, and channels of communication. Furthermore, knowledge sharing provides an organization with the potential to improve productivity and retain intellectual capital. According to McDermott and O'Dell (2001), the core competitiveness of an organization is ultimately greatly enhanced if it is based on a culture in which individuals are encouraged to share their knowledge spontaneously. In summary, in this paper, we have

defined the willingness to share knowledge by the degree to which individuals are willing to engage in teamwork behavior.

### *2.2 Teamwork Behavior*

Messick and Brewer (1983) defined teamwork as an act that maximizes the interests of another party (either an individual or a collective) and corresponds to a betrayal of one's own interests. Although a cooperative approach causes a dilemma and reveals some behavioral characteristics, it reduces the scope and complexity of real-life cooperative behavior (Argyle, 1991). Mead (1976) suggested that cooperation refers to the behavior of two or more individuals working together to achieve a common goal and produce a result that benefits them all. This emphasizes a cooperative motive for people to work together to achieve the same goal rather than to engage in a collective activity as an explicit pattern of behavior. Ring and Van (1994) further defined cooperation to include a willingness to maintain a partnership. In summary, most definitions of cooperation focus on an individual perspective, emphasize the mutual influence of individuals, and regard cooperation as a psychological process in which two or more individuals work together to promote the realization of a common goal.

### *2.3 Willingness to Share Knowledge and Teamwork Behavior of Teachers with Different Titles*

Wei et al. (2020) found that teaching assistants' willingness to share knowledge was relatively low because they are usually in the early stages of their education and research career, when they are more focused on their personal research and teaching tasks and less inclined to share their knowledge. Conversely, Pucciarelli et al. (2016) found that lecturers' willingness to share knowledge was on a more moderate level. They may be willing to share their knowledge, with some reservations, because they may still strive for a higher professional title. Seeber et al. (2016) concluded that teachers with associate professor or above titles had a relatively high score in terms of their willingness to share their knowledge with other teachers because they have acquired a reputation in academia based on more experience. In terms of teamwork, Lavy (2017) found that teaching assistants had a low score and were less involved in research projects because of their focus on teaching and their own academic development. Kalmar et al. (2022) observed that lecturers have some enthusiasm for teamwork, but they are inclined to cooperate relatively little with other teachers because they are focused more on their personal research. Sumtsova et al. (2018) argued that the teamwork of teachers who are associate professors or above was better, and they were more active in initiating or participating in research projects. They also collaborated with colleagues to promote academic cooperation and teamwork. On this basis, the following hypotheses are proposed:

H1: There are significant differences in the willingness of university teachers in Shandong Province to share knowledge.

H2: There are significant differences in the teamwork behavior of university teachers in Shandong Province.

### *2.4 Impact of Willingness to Share Knowledge on Teamwork Behavior*

According to Bock and Kin (2002), the willingness to share knowledge is the degree to which a person believes he or she will participate in teamwork behavior that involves sharing knowledge. Therefore, knowledge sharing is correlated with teamwork behavior (Liu & Fang, 2010). Johari et al. (2021) found that the willingness to share knowledge has an important impact on teamwork behavior. The way knowledge is shared in universities mainly involves communication, learning and knowledge interaction, and teamwork behavior committed to improving team interaction, interdependence, cooperation, and coordination (Morgan et al. 1993). Team members exchange knowledge and participate in complementary activities based on the characteristics of the team, and the willingness to share knowledge between teams forms a temporary knowledge learning alliance that helps to increase long-term team cooperation (Sá et al., 2020). Nooteboom et al. (1997) concluded that effective knowledge transfer leads to more effective cooperation. Individuals' willingness to share their knowledge can determine mutual cooperation or non-cooperation with others (Bandyopadhyay & Pathak, 2007). On this basis, the following hypothesis is proposed:

H3: University teachers' willingness to share their knowledge has a significant positive impact on their teamwork behavior.

## **3. Methodology**

### *3.1 Research Participants*

The research participants, which we selected using convenience sampling, consisted of teachers from public and private universities in Shandong Province. Renowned for the provision of higher education, Shandong Province ranks third in the number of university teachers (182,200; Ministry of Education, 2023) and second in the number of universities in China. Forty-five of the 70 universities in the province are public universities, and the remaining 25

are private. Based on 230 pre-test questionnaires, 900 questionnaires were distributed online and 860 were completed and collected, with an effective recovery rate of 95.6%. The participants consisted of 214 teaching assistants, 494 lecturers, and 152 associate professors or above. The study was conducted in strict accordance with the ethical requirements of the National Research Council of Thailand. The participants were informed in detail about the purpose of the study and were invited to sign an informed consent form before completing the questionnaire. They were all informed that the collected data would only be used for this study, not for other purposes, and that their privacy would be guaranteed. Furthermore, they were advised of their right to withdraw from the research at any stage without the need of an explanation.

### *3.2 Research Instrument*

The willingness to share knowledge scale of Bock and Kin (2002) was used as the research instrument. This scale had a single dimension with 5 items. The content the participants provided was in line with their actual behavior. The score relied on a 5-point Likert scale and the reliability of the pre-test questionnaire, which was 0.865. The factor load of the formal questionnaire was between .753 and .787, and the squared multiple correlation (SMC) values were between .566 and .619. The composite reliability (CR) value was .8794, and the average variance extracted (AVE) value was .593.

A teamwork behavioral scale with 7 items was used to determine the teamwork dimension of knowledge sharing behavior (Lu et al., 2006). The score relied on a 5-point Likert scale with a pre-test reliability of .913. The formal questionnaire factor load was between .754 and .810. The SMC value was between .569 and .657. The CR value was .917, and the AVE value was .613.

## **4. Results**

### *4.1 Common Method Bias Test*

A one-way analysis of variance (ANOVA) was used to test whether the results were affected by a common method bias. All items of the four subscales were subjected to an exploratory factor analysis. Using a principal component analysis, two factors with eigenvalues greater than 1 were analyzed, and the variation interpretation rate of the first common factor was 33.676%, which was less than 40% of the critical standard (Harris & Mossholder, 1996). Therefore, this study was less affected by a common method bias.

### *4.2 Analysis of Current Situation*

The results were subjected to a descriptive statistical analysis to understand the current status of the willingness to share knowledge and teamwork behavior of university teachers in Shandong Province. The statistical results included mean and standard deviation. The mean of willingness to share knowledge was  $M = 3.374$ , and the mean of teamwork behavior was  $M = 3.312$ . A 5-point Likert scale was used as the scoring method, which was higher than the average value of 3, indicating that the university teachers in Shandong province are more willing than the average members of the teaching profession to share their knowledge and engage in teamwork behavior.

### *4.3 Analysis of Variance*

An ANOVA variation analysis was used to study the willingness to share knowledge and engage in teamwork behavior of teachers with different professional titles. According to the Levene verification test, the willingness to share knowledge of teachers with different titles was  $p < .001$ , with the variant number of different qualities. Because the ANOVA verification of  $p < .001$  indicated significant differences among the samples in each group, a post hoc test was performed using the Dunnett T3 method. We found that associate professors and above were considerably more willing to share knowledge than lecturers and teaching assistants were, thereby supporting H1. What is more, the results showed that teachers with different titles in the Levene verification of teamwork behavior was  $p > .001$ , with a variant number of different qualities. In the ANOVA verification, it was  $p > .001$ , indicating no significant differences among the samples in each group. Therefore, H2 is not supported. The results are shown in Table 1.

Table 1. Teachers with different titles' willingness to share knowledge and engage in teamwork behavior

Items	Teaching assistants		Lecturers		Associate professors or above		Levene	F	Post hoc
	M	SD	M	SD	M	SD			
Willingness to share knowledge	3.419	.962	3.402	.947	3.746	1.056	.245	5.351***	3>2,3>1
Teamwork behavior	3.288	.996	3.359	.956	3.553	1.069	.067	2.392	-

Note: Table built for the research; \*\*\*p < .001.

#### 4.4 Regression Analysis

After controlling the professional title, the willingness to share knowledge was included in the regression model of teamwork behavior, and the results demonstrated that the willingness to share knowledge had a significant positive impact on teamwork behavior ( $\beta = .421, p < .001$ , as shown in Table 2); therefore, H3 is supported.

Table 2. Regression analysis

Items	Teamwork behavior	VIF
Professional title	.003	1.016
Willingness to share knowledge	.421***	1.305
R <sup>2</sup>	.178	
F	69.747***	

Note: \*\*\*p < .001; table built for the research.

### 5. Discussion

The purpose of this study was to explore the impact of teachers' willingness to share knowledge on their team behavior with a focus on university teachers in Shandong Province, China.

#### 5.1 Teacher Teamwork Behavior is an Inevitable Trend of Educational Development

The results of analyzing the current status showed that the average score of university teachers' willingness to share their knowledge ( $M = 3.374$ ) and the average score of teachers' teamwork behavior ( $M = 3.312$ ) in Shandong Province is 3, which belongs to the upper average level. This indicates that the higher level of university teachers in Shandong Province's willingness to share their knowledge is consistent with that of the previous study by Pucciarelli et al. (2016), and the higher level of their teamwork behavior is consistent with that of the previous study by Sumtsova et al. (2018). The number of cooperative and co-authors among university teachers has gradually increased in recent years, indicating that teachers are more willing to share their knowledge and research results (Seeber et al., 2016). This collaboration is not limited to the same university; it also occurs between different universities, demonstrating teachers' willingness to further extend knowledge sharing to a wider range (Papa et al., 2021). Universities frequently host a variety of academic seminars, lectures, and workshops, which not only provide a platform for teachers to share their research results and experience but also reflect their willingness to actively participate in sharing their knowledge and communicating with their peers (Wei et al., 2020). As open access to scientific research resources and paper databases attract more and more attention, university teachers are willing to share their research results with the global academic community in an open access way to promote the dissemination and sharing of knowledge (Pucciarelli et al., 2016). In the educational field, more and more university teachers are participating in the construction of teaching resources and teaching plans by sharing their teaching materials for reference and use by other teachers (Gillet et al., 2020). University teachers are also becoming increasingly active on social media and academic networks.

University teachers are sharing their research results, insights, and experiences on blogs, microblogs, and academic social networking platforms, and they are interacting with others in academia, which is further proof of their willingness to share knowledge in the digital age (Huang et al., 2020). Several universities provide training and professional development courses for teachers that rely on knowledge sharing and the exchange of experience among teachers (Admiraal et al., 2021). Teachers further enhance their professionalism through these courses and demonstrate their willingness to share their knowledge with their peers (Zhu et al., 2021). Academics emphasize academic ethics and a cooperative culture, and teachers generally recognize the importance of sharing their

knowledge (Zhao et al., 2021). This cultural climate encourages faculty members to share their research results and experience in order to promote progress throughout the academic community. The willingness of university teachers in this context is generally of great significance at the academic, educational, and social levels. Encouraging and supporting teachers in sharing their knowledge and participation in teamwork will help to promote the progress and development of the entire academic community.

### *5.2 Professional Titles are Conducive to the Generation of Teamwork Behavior*

The results of the analysis of teachers with different titles indicated that associate professors are more willing to engage in teamwork than university lecturers and university teaching assistants are, which is consistent with the previous study by Johari et al. (2021). As Schimanski et al. (2018) pointed out, teachers with the title of associate professor or above usually bear more responsibility and pressure in scientific research, and they need to publish more high-quality papers to obtain research funds to support their career development and promotion. This makes them more willing to share their knowledge in order to improve their academic reputation and reduce the pressure of scientific research. Glenn (2006) observed that teachers with the title of associate professor or above usually have more work experience and professional skills, which gives them confidence and a greater desire to share knowledge with their peers. At the same time, they are willing to play the role of mentor to train young teaching assistants and lecturers and, hence, improve the performance of the whole team. Pepin et al. (2017) also pointed out that teachers with senior titles pay more attention to building their reputation and influence in academia. They are more willing to work with peers to share their knowledge in order to enhance their academic status. Van et al. (2020) proposed that, in the context of scientific research, teachers with senior professional titles need interdisciplinary cooperation and innovation to solve complex problems, which requires their willingness to share knowledge and resources to drive teamwork.

### *5.3 Improving University Teachers' Willingness to Share Knowledge to Enhance Their Teaching Ability*

The results of the regression analysis indicated that university teachers' willingness to share knowledge can significantly and positively predict teamwork behavior, which is consistent with the previous study by Johari et al. (2021) and the fairness heuristic theory, which proposes that people expect a reward for their efforts. In the context of teamwork, teachers' knowledge sharing can be perceived as dedication and the support and assistance of other members of the team as the reward (Jiang et al., 2020). Teachers believe that their knowledge sharing will be recognized and rewarded by other members, prompting them to take a more active part in teamwork (Lin et al., 2021). Educational innovation will occur in this process of active communication, consultation, and learning based on the improvement of individual teachers' ability and the construction of a collaborative organizational culture.

## **6. Conclusion**

### *6.1 Different Titles Affect the Willingness of University Teachers in Shandong Province to Share Their Knowledge*

It is evident from the different analyses that there are significant differences in the willingness of university teachers in Shandong Province to share knowledge, with those with high professional titles being more willing to do so than others are (Ali et al., 2018). Typically, teachers with high professional titles have achieved a higher professional level and accomplished more in their field. Having gained the trust and respect of other teachers and students, they are motivated and feel confident to further share their knowledge and experience. However, although possessing a high professional title may generally improve university teachers' willingness to share knowledge, other factors still need to be considered, such as individual differences, organizational culture, and incentive mechanisms. Not all teachers with high professional titles are automatically more willing to share their knowledge—everyone has different motives and values.

### *6.2 Significant Positive Impact of University Teachers' Willingness to Share Knowledge on Teamwork Behavior in Shandong Province*

Knowledge is a valuable resource, especially in the educational field, and the willingness of teachers to share their knowledge is a key factor in the creation of an open, cooperative atmosphere, which encourages more active communication and cooperation among team members and promotes the team's cohesion and synergy. The quality of the team's teaching and the students' academic performance benefit from teachers being willing to share their expertise, teaching experience, and textbook resources. Most important, the sharing of knowledge can promote team innovation and problem-solving capabilities. When teachers share their ideas and insights with the team, members can explore and develop new educational strategies and solutions. The adoption of this spirit of innovation and collaboration enables teams to become more competitive, despite the complex challenges in education today.

## 7. Limitations

There were a limited number of participants in this study due to its focus on the university teachers in Shandong Province, which may restrict the generalizability of the results. University teachers' willingness to share knowledge and engage in teamwork in other regions may be subject to different cultures, educational backgrounds, and institutional environments. Therefore, these results need to be further verified by studying university teachers in other regions. Other factors that were not considered in this study, such as personality traits and leadership style, may also influence knowledge sharing and teamwork behavior (Mehmood et al., 2022). This study may only have captured the relationship between the variables at a given point in time and ignored the dynamic changes that may occur over time. Despite some relational conclusions being drawn in the study, it is still difficult to determine the cause; for example, whether the addition of mediation variables or moderation variables directly enhances knowledge sharing and teamwork, or whether there are other factors at play. Therefore, although these findings provide valuable insights into the relationship between teachers' willingness to share knowledge and teamwork behavior, more research is needed to address the above limitations and ensure the accuracy and generalizability of these results.

## Acknowledgments

We would like to express our heartfelt thanks to all the participants in this study.

## Conflict of Interest

The authors declare that there are no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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