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# The Impact of Knowledge Sharing on the Innovation Capacity of Students at Universities: The Mediating Role of Psychological Capital

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**Abstract:** The current technology boom is leading to the replacement of many industries by automation and artificial intelligence. This poses a significant challenge for newly graduated students in finding suitable jobs. Therefore, the need to enhance innovation capacity has become extremely urgent for students to meet the demands of businesses and the current labor market. This study seeks to investigate the influence of knowledge sharing on the creative potential of university students in Vietnam. Employing quantitative research methodologies via explore factor analysis (EFA) and structural equation modeling (SEM) analysis. The study administered a survey involving 746 university students. The research findings indicate significant contributions by illustrating the direct and positive influence of knowledge sharing on innovation capacity, alongside the mediating roles of psychological capital in the relationship between knowledge sharing and students' innovation capacity. The authors recommend several ways to enhance the creativity potential of university students in Vietnam, based on the research findings.

**Keywords**: Knowledge Sharing; Psychological Capital; Innovation Capability; Students at Universities.

## I. Introduction

The current technology boom is leading to the replacement of many industries by automation and artificial intelligence. This poses a significant challenge for newly graduated students in finding suitable jobs. Therefore, the need to enhance innovation capacity has become extremely urgent for students to meet the demands of businesses and the current labor market.

Tangible capital, such as resources and physical assets, is finite, while intangible capital, especially intellectual capital, still has great potential for exploration. This necessitates more in-depth research on intellectual capital and its impact on students' innovation and creativity capabilities. Knowledge sharing plays a key role in developing this intellectual capital, enabling students to access new ideas, methods, and knowledge.

The results of many studies indicate that psychological capital has a positive and statistically significant relationship with innovation capacity (Avey et al., 2009). Numerous international studies have shown that knowledge sharing has a significant impact on innovation capacity, particularly in higher education environments. According to Nonaka (1994), knowledge exists in two main forms: explicit knowledge and tacit knowledge. Explicit knowledge can be conveyed through books, documents, and lectures, whereas tacit knowledge often takes the form of experiences, skills, and creative thinking that individuals accumulate throughout their learning and working processes. Knowledge sharing among students not only helps them access diverse perspectives and new ideas but also fosters an interactive learning environment that encourages innovation and creativity.

Nahapiet and Ghoshal (1998) emphasize that in a knowledge-based economy, the exchange and integration of knowledge among individuals and organizations play a crucial role in developing innovation capacity. When students share knowledge, they not only learn from others but also have opportunities to engage in critical discussions, develop reflective thinking, and enhance problem-solving abilities. This is especially important in research and entrepreneurship, where creativity and innovation are key determinants of success.

This study seeks to investigate the influence of knowledge sharing on the creative potential of university students in Vietnam. Employing quantitative research methodologies via explore factor analysis (EFA) and structural equation modeling (SEM) analysis. The research findings indicate significant contributions by illustrating the direct and positive influence of knowledge sharing on innovation capacity, alongside the mediating roles of psychological capital in the relationship between knowledge sharing and students' innovation capacity. The authors recommend several ways to enhance the creativity potential of university students in Vietnam, based on the research findings.

## II. Literature review and hypotheses

### 2.1. Literature review

Kothuri (2002) emphasized that knowledge in an organization is considered as intellectual capital and exists in two main forms: existing and hidden. Knowledge is now less dependent on people. People can system, measure, disseminate and store, including information and communication skills and transfer data to others. Hidden knowledge is highly dependent on the individual and can be created by processing information combined with knowledge and experience. Tsui et al. (2006) stated that knowledge sharing is an activity that helps employees share knowledge and experience to help projects and plans be completed quickly and cost-effectively. In addition, share knowledge relevant to each individual in sharing with the organization information, ideas, suggestions and expertise to others. Research by Maponya (2004) also shows that knowledge sharing is based on experiences gained in working in and outside the organization. If knowledge is available in the members, the organization will minimize duplication of decisions and solve problems faster. Effective knowledge sharing activities will help reuse the knowledge of each individual and raise knowledge to a new high level. Knowledge sharing within an organization occurs not only at the individual level but also at the collective level (Cobo, 2013).

According to Vietnam's Law on Science and Technology (2013), innovation refers to the creation and application of achievements, technical and technological solutions, and management solutions to enhance economic and social development, improve productivity, quality, and the added value of products and goods. Innovation can be simply understood as the process of renewing, creating, or changing a certain method to achieve higher efficiency in the development of science, technology, thinking, and management methods. Weiner (2001) described competence as the skills and techniques available or developed through training to solve specific situations, as well as the readiness in social motivation and the ability to flexibly apply these skills in different contexts.

Psychological capital is a fundamental human trait and represents a positive psychological state in personal development (Avey et al., 2009). It goes beyond human capital and social capital (Luthans et al., 2005). Psychological capital relates to "who you are now" and, in terms of development, "who you can become" in the future (Luthans & Youssef, 2004).

According to Luthans et al. (2015), psychological capital is a positive psychological developmental state of an individual, characterized by: (i) having the confidence to take on challenging tasks and succeed with the necessary effort; (ii) making a positive attribution (optimism) regarding current and future success; (iii) persevering toward goals and, when necessary, redirecting paths to achieve them (hope) for success; (iv) enduring, resisting, and even overcoming problems and adversity (resilience) to achieve success.

### 2.2. Hypotheses

#### 2.2.1. Knowledge sharing and innovation capability

According to Osterloh and Frey (2000), the process of knowledge sharing helps store and develop an organization's knowledge resources while enabling individuals to apply knowledge to practice more effectively. The study by Hansen and Haas (2001) demonstrated that knowledge sharing improves both individual and organizational performance and creativity. Knowledge sharing has become an increasingly important activity for organizations, as most are now considered to operate within a knowledge economy. Weiner (2001) concluded that knowledge management impacts the success of innovation. In the knowledge economy, the exchange and integration of knowledge among individuals and organizations play a crucial role in developing innovation capabilities (Nahapiet & Ghoshal, 1998). Studying the relationship between knowledge sharing and students' innovation capabilities, within the context of universities in Vietnam, this research formulates the following hypothesis:

**H1:** Knowledge sharing is positively associated with the innovation capacity of university students in

Vietnam (See Figure 1).

**2.2.2. Knowledge sharing and psychological capital**

Bandura's (2008) study suggests that psychological capital encompasses an intrinsic sense of orientation, control, and intentionality. Social skills, including collaboration skills, networking skills, and communication skills, are considered core factors influencing innovation improvement. Collaboration skills reflect the ability to work effectively with others, engage in teamwork tasks, and fulfill the role of a team member (Cobo, 2013). To clarify the impact of knowledge sharing on students' psychological capital, this study formulates the following hypothesis:

**H2**: Knowledge sharing is positively associated with the psychological capital of students at universities in Vietnam (See Figure 1).

**2.2.3. Psychological capital and innovation capability**

Creative thinking skills involve generating or adapting alternative solutions, ideas, products, methods, or services that hold significance, regardless of their immediate practicality or potential future added value. Cerinsek and Dolinsek (2009) suggested that the measurement tool for innovation capability has an acceptable level of validity and can be used to assess employees' innovation capability through nine competency models, including creativity. Positive psychology, along with positive organizational behavior, are factors that enhance work performance (Luthans & Youssef, 2004). Therefore, within the context of universities in Vietnam, this study proposes the following hypothesis regarding the impact of psychological capital on students' innovation capability:

**H3**: Psychological capital is positively associated with the innovation capacity of students at universities in Vietnam (See Figure 1).

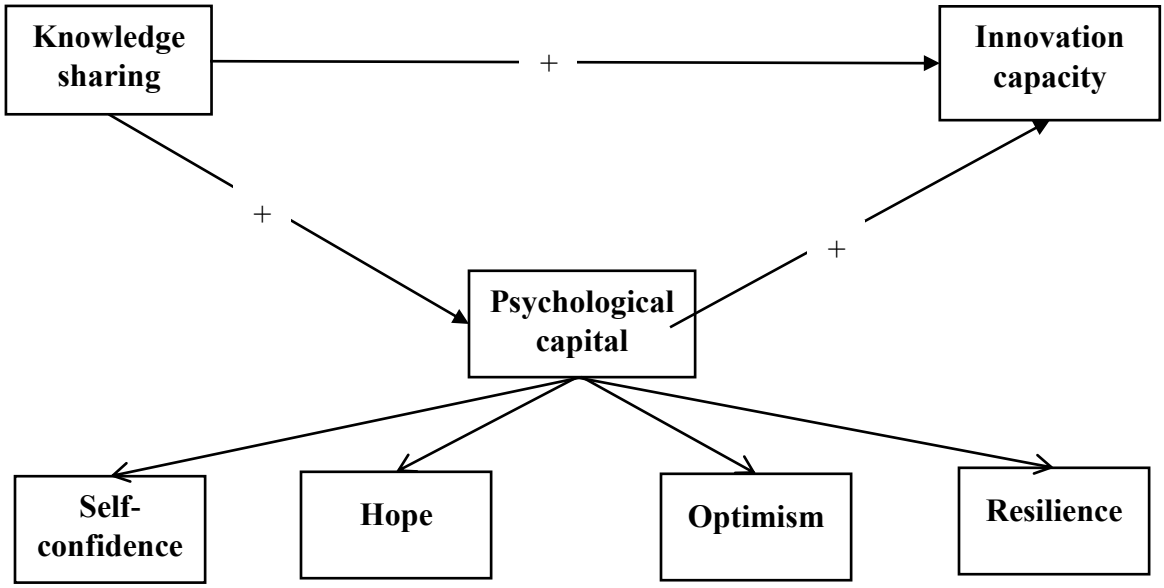


**Figure 1. Proposed research model**

## III. Research methodology

**3.1. Research scale**

The paper presents a research model of three variables, grounded in a theoretical framework and pertinent research studies. The independent variable is knowledge sharing, while the dependent variable is innovation capacity. The intermediate variable is psychological capital, which consists of four components: (1) Self-confidence, (2) Hope, (3) Optimism, and (4) Resilience. The study employs a Likert scale consisting of five levels, equating to five rating points: 1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree. Indicators assessing applied variables are modified based on the characteristics of the study sample from prior research (See Table 1).

**Table 1. Origin of the scale of variables**

| *No.* | *Variable* | *Code* | *Number of observations* | *Origin of the scale* |
|---|---|---|---|---|
| 1 | Knowledge sharing | KSH | 6 | Chennamaneni (2006) |
| 2 | Psychological capital | PSY | 21 | Luthans et al. (2015) |
| 2.1 | Self-confidence | CON | 6 | |
| 2.2 | Hope | HOP | 5 | |
| 2.3 | Optimism | OPT | 6 | |
| 2.4 | Resilience | RES | 4 | |
| 3 | Innovation capacity | INO | 6 | Donate and Guadamillas (2011) |

***3.2. Research samples***

The research sample chosen by the non-probability sampling method is convenience sampling. Data is gathered using stratified sampling at universities located in Northern, Central, and Southern Vietnam. The sample comprised 746 university students. The data collection process occurs via two methods: direct collection and online via the Google Form survey tool. Upon direct inquiry, 400 votes were issued, 298 votes were collected, and 272 votes were deemed usable. The online survey yielded 498 votes, of which 474 were deemed usable. The aggregate count of valid votes utilized for analysis is 746. The study by Hair et al. (2010) indicates that the minimum sample size should be five times the total number of observed variables. The paper contains 33 observations, whereas the research encompasses 746 samples that fulfill the analytical criteria. The duration for data gathering is from March 2024 to January 2025.

**3.3. Data processing**

The data collected via research and survey are analyzed using SPSS and AMOS software version 22.0. Consequently, one can infer findings that validate the model's suitability and the study assumptions. The study initially evaluated the scale's reliability using a Cronbach's Alpha coefficient threshold of >= 0.7 and a total variable correlation coefficient of >= 0.3. If the Cronbach's Alpha If Item Deleted value exceeds the Cronbach's Alpha coefficient of a variable, that observed variable should be considered (Nunnally & Burnstein, 1994). Subsequently, the study evaluated the scale's validity by conducting an exploratory factor analysis (EFA), which necessitated a factor loading greater than 0.5; a KMO coefficient between 0.5 and 1; a significance value less than 0.05; and an extracted variance exceeding 50% (Hair et al., 2010). The factor extraction method employed was the Varimax rotation technique. The study subsequently employs AMOS software to evaluate the appropriateness of the research model via exploratory factor analysis (CFA) and ultimately tests the research hypotheses through linear structural model analysis (SEM), adhering to the criteria of chi-square/df indicators < 5 (Hair et al., 2010); GFI, TLI, CFI > 0.8 (Segars & Grover, 1993); RMSEA < 0.08 (Taylor et al., 1993).

## IV. Research results and discussion

**4.1. Testing the reliability of the scale**

The study performed Cronbach's Alpha analysis on each variable group to assess the scale's reliability. The findings indicate that the scale's reliability in the analysis is affirmed when all Cronbach's Alpha values for the variables in the model align with the total variable correlation coefficient of the observed variables, which exceeds 0.3, and the Cronbach's Alpha coefficient surpasses 0.7. Simultaneously, the Cronbach's Alpha If Item Deleted values for all indicators are inferior to the Cronbach's Alpha coefficient of the overall variable (See Table 2).

**Table 2. Rating the reliability of the scale through Cronbach's Alpha coefficient**

| *No.* | *Variable* | *Code* | *Cronbach's Alpha* |
|---|---|---|---|
| 1 | Knowledge sharing | KSH | 0.945 |
| 2 | Self-confidence | CON | 0.886 |
| 3 | Hope | HOP | 0.945 |
| 4 | Optimism | OPT | 0.854 |
| 5 | Resilience | RES | 0.918 |
| 6 | Innovation capacity | INO | 0.939 |

**4.2. Explore factor analysis (EFA)**

After testing the appropriateness of the scale, the study analyzed the discovery factor EFA for both the Independent variables, the intermediate variable, and the dependent variable. For the independent and intermediate variables, the EFA analysis was conducted twice, in which the factor loading in each analysis was> 0.5, showing the

appropriate correlation between the variables observed (indicators) and selected factors in the model. However, in the first analysis, because "convergence value" does not guarantee the same factor, the OPT6 indicator was rejected. The second analysis shows that the remaining data are eligible for analysis due to factor load coefficients> 0.5 and satisfy two conditions, "Convergence value" (observed variables converge to the same one factor) and "Distinguishing value" (observed variables belonging to one factor distinguish from another) (See Table 3&4).

**Table 3. EFA factor analysis results**

| *EFA analysis* | | *KMO coefficient* | *P-value* | *Variance extracted* | *Factor loading* | *Conclusion* |
|---|---|---|---|---|---|---|
| Independent and mediating variables | The 1nd time | 0.930 | 0.000 | 73.607 | All coefficients > 0.5 | Remove the OPT6 indicator |
| | The 2nd time | 0.926 | 0.000 | 73.679 | All coefficients > 0.5 | Guaranteed analysis requirements |
| Dependent variable | | 0.920 | 0.000 | 77.053 | All coefficients > 0.5 | Guaranteed analysis requirements |

With the dependent variable being innovation capacity, the analytical results showed that the KMO coefficient was 0.920 (> 0.5), the Sig of Bartlett's test was 0.000 (<0.05), the total variance extracted was 77.053 % (> 50%). At the same time, the indicators of the scale are combined into a single group, ensuring the "convergence value" of the scale.

**Table 4. Rotation matrix for Independent and mediating variables**

| *Indicator* | *Component* | | | | |
|---|---|---|---|---|---|
| | *1* | *2* | *3* | *4* | *5* |
| KSH5 | 0.894 | | | | |
| KSH6 | 0.891 | | | | |
| KSH2 | 0.875 | | | | |
| KSH3 | 0.853 | | | | |
| KSH1 | 0.849 | | | | |
| KSH4 | 0.840 | | | | |
| HOP5 | | 0.896 | | | |
| HOP1 | | 0.822 | | | |
| HOP3 | | 0.820 | | | |
| HOP2 | | 0.802 | | | |
| HOP4 | | 0.787 | | | |
| CON3 | | | 0.783 | | |
| CON1 | | | 0.781 | | |
| CON5 | | | 0.769 | | |
| CON4 | | | 0.744 | | |
| CON2 | | | 0.743 | | |
| CON6 | | | 0.659 | | |
| OPT5 | | | | 0.816 | |
| OPT4 | | | | 0.769 | |
| OPT2 | | | | 0.759 | |
| OPT3 | | | | 0.749 | |
| OPT1 | | | | 0.680 | |
| RES1 | | | | | 0.795 |
| RES4 | | | | | 0.789 |
| RES3 | | | | | 0.761 |
| RES2 | | | | | 0.749 |
| *Extraction Method: Principal Component Analysis.*<br>*Rotation Method: Varimax with Kaiser Normalization.* | | | | | |
| *a. Rotation converged in 6 iterations.* | | | | | |

### 4.3. Confirmatory factor analysis (CFA)

Confirmatory factor analysis (CFA) is the next step in exploratory factor analysis (EFA), which involves designing to identify, test, and adjust measurement models independently. The purpose of the CFA is to establish appropriate measurement models that can be used to test structural models.

The results of the CFA analysis showed the conformity of the measurement model, with all indicators satisfying the criteria: Chi–square = 1662.811; df = 449; P = 0.000 (< 0.05); Chi–square/df = 3.703 (< 5); GFI = 0.880 (> 0.8); TLI = 0.934 (> 0.8); CFI = 0.940 (> 0.8); RMSEA = 0.060 (< 0.08).

### 4.4. Structural equation modeling analysis (SEM)

To test the hypotheses, the study conducted an analysis of the SEM linear structure model. The results of the analysis show that the aggregate indicators are satisfactory. Specifically, Chi–square = 1727.920; df = 457; P = 0.000 (< 0.05); Chi–square/df = 3.781 (< 5); GFI = 0.877 (> 0.8); TLI = 0.932 (> 0.8); CFI = 0.937 (> 0.8); RMSEA = 0.061 (< 0.08) (see Figure 2).

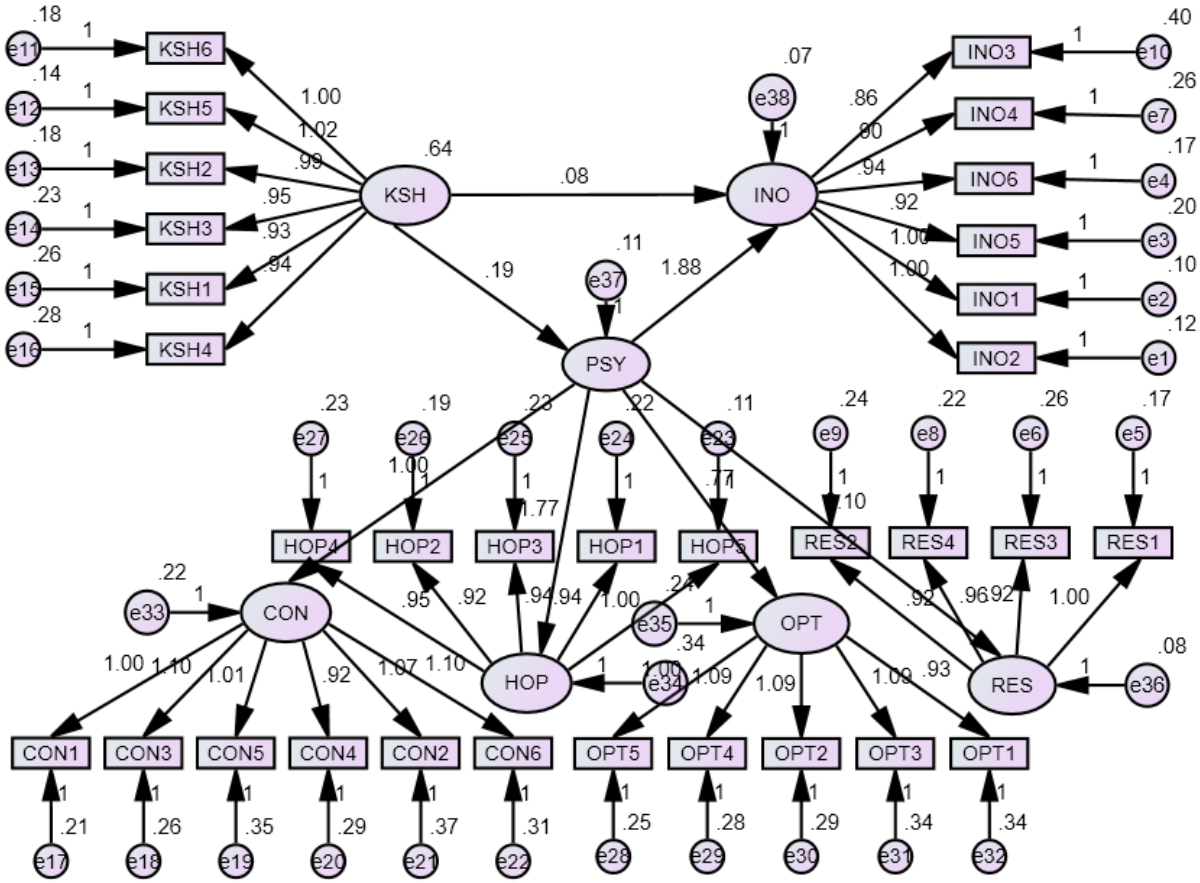


**Figure 2. SEM model analysis**

The findings of estimating the relationships within the model indicate that the research model aligns with all hypotheses incorporated in the model.

Hypothesis H1 specifically examines the direct influence of knowledge sharing on innovative ability. The results indicate that, with a significance level of P < 0.05 and a regression weight of 0.078 (> 0), hypothesis H1 is accepted (See Table 4). This indicates that knowledge sharing directly and positively influences the innovative potential of university students in Vietnam. This result is similar to the studies of Nahapiet and Ghoshal (1998); Osterloh and Frey (2000); Hansen and Haas (2001).

Hypotheses H2 and H3 are collectively accepted with a significance level in the test of less than 0.05 and exhibit positive regression coefficients of 0.193 and 1.885, respectively (See Table 4). Consequently, it can be inferred that knowledge sharing positively influences psychological capital, which in turn enhances the innovative ability of university students in Vietnam. Psychological capital serves as a mediating factor in the influence of

knowledge sharing on students' innovative potential. These results also support the studies of Luthans and Youssef (2004); Bandura (2008); Cerinsek and Dolinsek (2009); Cobo (2013).

Consequently, having all three hypotheses inside the model supported, the study has reached results that significantly enhance research in both theoretical and practical domains. The research indicates that information sharing exerts both a direct and positive influence, as well as an indirect effect on students' innovative potential via intermediary aspect of psychological capital. The study's results will provide essential resources for policymakers and university administrators to understand information sharing and its significance in enhancing students' innovative capabilities. Subsequently, it facilitates the provision of suitable and innovative orientations and solutions, targeting sustainable development and high value in Vietnamese institutions and globally.

**Table 4. Results of SEM analysis for relationships in the model**

| *Hypothesis* | *Relationship* | *Weightage* | *S.E.* | *C.R.* | *P* | *Conclusion* |
|---|---|---|---|---|---|---|
| H1 | INO <--- KSH | 0.078 | 0.023 | 3.353 | 0.000 | Accepted |
| H2 | PSY <--- KSH | 0.193 | 0.021 | 9.152 | 0.000 | Accepted |
| H3 | INO <--- PSY | 1.885 | 0.125 | 15.117 | 0.000 | Accepted |

## V. Conclusions and recommendations

This study seeks to develop a model and evaluate the effect of knowledge sharing on the innovative potential of university students. In the context of Vietnam, the research findings indicate significant contributions by illustrating the direct and positive influence of knowledge sharing on innovation capacity, alongside the mediating roles of psychological capital in the relationship between knowledge sharing and students' innovation capacity. The authors recommend several methods to enhance the creativity potential of university students in Vietnam based on the research findings:

*Firstly,* in terms of knowledge sharing, universities need to take the initiative in building and expanding international cooperation networks to establish a solid foundation for student exchange. This includes signing bilateral and multilateral cooperation agreements with prestigious universities worldwide. These agreements will create a clear legal framework, ensuring the rights and obligations of the participating parties while facilitating credit recognition and faculty exchange.

*Secondly,* regarding psychological capital, organizing psychological seminars and personal development skills workshops is essential to build students' confidence in learning and creativity. These seminars will help students identify and overcome psychological weaknesses, enabling them to approach academic challenges with greater confidence. Establishing on-campus psychological counseling centers is an effective solution to support students in addressing academic-related psychological issues. These centers can provide timely counseling and support, helping students overcome psychological difficulties. Additionally, encouraging students to participate in peer support groups is also an effective way for them to share experiences and learn from their peers.

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