

# Effects of Knowledge Forum–Supported Online Collaborative Learning for Kindness Literacy on College Students’ Psychological Capital

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**Abstract:** This study examined the effects of Knowledge Forum (KF)-supported online collaborative learning for kindness literacy on college students’ psychological capital. A course-embedded, single-group pretest–posttest mixed-methods design was implemented in a Positive Psychology course over an eight-week intervention with 25 college students. The instructional design encompassed two learning themes—kindness action lists and kindness stories—integrating reflective writing, peer interaction, and process-oriented tasks within the KF environment. Data sources included pre- and post-intervention measures of psychological capital and depressive symptoms, as well as learning process evidence such as notes created, build-on replies, and reading behaviors recorded in KF. Results indicated a developmental shift from individual reflection to more interactive online collaboration, and the interaction network evolved from a sparse structure toward a more centralized knowledge co-construction pattern. Quantitative findings showed significant increases in psychological capital and significant decreases in depressive symptoms following the intervention. These findings highlight the pedagogical value of integrating kindness literacy, online collaborative learning, and learning analytics to support students’ psychological development and engagement in higher education.

**Keywords:** kindness literacy, Knowledge Forum, learning evidence, online collaborative learning, psychological capital

## 1. Introduction

In higher education contexts, students commonly face academic pressure, social adaptation challenges, and psychological adjustment difficulties, making mental health and positive development important educational concerns. Positive psychology identifies kindness as a core character strength associated with well-being, social connectedness, and psychological adjustment (Aknin & Kushlev, 2022; Peterson & Seligman, 2004). However, empirical studies that systematically integrate kindness into higher education curricula remain limited (Curry et al., 2018). This study adopts kindness literacy as a pedagogical framework and integrates Knowledge Building Theory with the Knowledge Forum (KF) learning environment. KF enables the systematic recording of students’ notes, interactions, and reflections, generating analyzable learning evidence (Scardamalia & Bereiter, 2006). The present study examines whether KF-supported kindness literacy collaborative learning can enhance students’ participation, interaction, and psychological development.

## 2. Method

A course-embedded single-group pretest – posttest mixed-methods design was implemented in a Positive Psychology course with 25 second-year college students who voluntarily participated. The 8-week intervention utilized KF to support asynchronous collaborative learning. KF scaffolds were designed around four dimensions of kindness

literacy: self-kindness, kindness to others, kindness to society, and kindness to the environment (Figure 1). The procedure was as follows:

T1 (Week 1): Pretest and research briefing  
 T2 (Weeks 2–4): Kindness Action Lists: Recording and reflecting on kindness practices  
 T3 (Weeks 5–7): Kindness Stories: Kindness drawings and collaborative discussion on KF  
 T4 (Week 8): Posttest and course reflections

Psychological measures included the Taiwan Psychological Capital Scale (TPCS) (Yu et al., 2012;  $\alpha = .95$ ) and the Taiwan Depression Scale (TDS) (Yu et al., 2011;  $\alpha = .94$ ). Learning evidence data were collected from KF, including notes created, modified, read, and replied to by students.

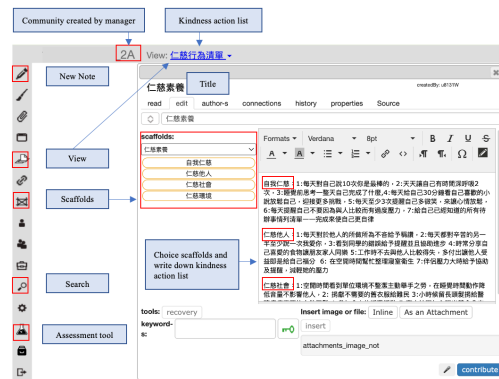


Figure 1. KF-Supported Kindness Literacy Learning Design

### 3. Results

Learning evidence recorded by the Knowledge Forum indicated that students demonstrated a moderate level of online participation and interaction during the course. On average, students created 18.40 notes, modified 35.16 notes, and read 58.12 notes. During the T2 phase (Kindness Action Lists), students proposed practical actions based on the four scaffolded dimensions, such as developing personal interests, assisting classmates with assignments, donating second-hand books, and reducing plastic bag usage. These activities mainly involved individual reflection, as shown in the relatively sparse interaction network in Figure 2 (left). During the T3 phase (Kindness Stories), students actively shared personal experiences and engaged with peers' notes. Interaction network analysis of Figure 2 (right) revealed 203 build-on replies, with an average of 8.12 replies per student. Student u7937w demonstrated the most prominent connections, contributing 34 build-on replies.



Figure 2. Interaction networks in T2 (Kindness Action Lists) and T3 (Kindness Stories)  
 Note. Node size represents degree centrality in the interaction network, and arrows indicate the direction of replies. Connections between nodes represent peer interactions and participation patterns, illustrating the evolving structure of collaborative knowledge building.

Paired-samples *t* tests (Table 1) showed that psychological capital significantly increased from pre-test ( $M = 65.24$ ,  $SD = 13.40$ ) to post-test ( $M = 69.40$ ,  $SD = 12.53$ ),  $t(24) = 3.31$ ,  $p$

= .003,  $d = 0.66$ . Depressive symptoms significantly decreased from pre-test ( $M = 18.04$ ,  $SD = 13.07$ ) to post-test ( $M = 13.40$ ,  $SD = 11.34$ ),  $t(24) = -2.99$ ,  $p = .006$ ,  $d = -0.60$ . According to Cohen's (1988) criteria, both results represent medium effect sizes. Subgroup analysis revealed a risk-buffering pattern, in which students with higher baseline depressive symptoms showed greater improvements following the intervention. Course reflections also indicated students' increased awareness of practicing kindness in daily life. For example, student u7930w reflected: "I began practicing kindness more intentionally—caring for friends' emotions, being patient in public, and expressing gratitude to my family. These small actions have made my relationships much more harmonious."

Table 1. Pre–Post Changes in Psychological Capital and Depressive Symptoms

Variable	Time	N	M	SD	t	p	Cohen's d
Psychological Capital	Pre-test	25	65.24	13.40	3.31**	.003	0.66
	Post-test	25	69.40	12.53			
Depressive Symptoms	Pre-test	25	18.04	13.07	-2.99**	.006	-0.60
	Post-test	25	13.40	11.34			

\* $P < .05$ , \*\* $P < .01$ , \*\*\* $P < .001$

#### 4. Discussion and Conclusion

The findings suggest that kindness literacy collaborative learning supported by Knowledge Forum can enhance students' participation, peer interaction, and reflective learning processes. Learning evidence indicated a shift from individual reflection to interactive knowledge exchange, while improvements in psychological capital and reductions in depressive symptoms demonstrate the positive psychological impact of the intervention. Overall, integrating kindness literacy with online collaborative learning environments may promote students' psychological resources, emotional adjustment, and meaningful peer interaction in higher education.

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