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Effects of Different Leadership Styles on Cognitive Engagement in Online Collaborative Learning

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ABSTRACT

The collaborative learning approach as a universal teaching strategy is widely used in online learning. It is proven that the group leader has an important impact on group collaborative knowledge construction in online collaborative learning (OCL). However, limited research is available on how leadership styles influence a group universal teaching strategy is widely used in online learning this study, the authors adopted lag sequential analysis, epistemic network analysis, and social network analysis to explore the influence of divergent and convergent leadership styles on cognitive engagement in OCL groups. Compared with convergent leadership, divergent leadership strengthened online collaborative cognitive engagement through significant organizer and manager roles, triggered high-quality cognitive behavior transformation within the group, and promoted the balanced development of learners' cognitive structure.

KEYWORDS

Group Leader, Online Collaborative Learning, Learning Style, Cognitive Engagement

INTRODUCTION

Online learning is increasingly used to link learners without the constraints of time or space. Online collaborative learning (OCL) is an effective teaching strategy for progressive group discussion due to the accessibility of online learning communities, platforms, and other tools. In addition, teachers can guide synchronous or asynchronous cooperation and communication among students from different regions. While research has demonstrated that OCL can guide learners' cognitive engagement through social interactions (Heflin et al., 2017), a lack of face-to-face interaction can cause problems related to shallow learning, low team cohesion, and a weak collaborative atmosphere (Bóbó et al., 2022).

The group leader, an important role within OCL, has a positive impact on online collaborative discussions. The leader's interventions can facilitate the development of metacognitive skills of online collaborative learners (Dong et al., 2017), playing a mediating role in inducing and managing the cognitive engagement of the group and determining the level of knowledge sharing, construction,

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and creation of learners (Aalst, 2009). Regardless of the OCL design, the group leader is regarded as an important resource to improve cognitive engagement.

Researchers have conducted extensive analyses from the perspective of cognitive engagement models, quantification methods, and influencing factors to motivate the cognitive engagement of learners in OCL (Antonietti et al., 2023; Xu et al., 2020). Learning style, characteristic of the learner, reflects personal preferences when processing information (Reynolds et al., 2020). Learning style is closely related to cognitive engagement (while little is noticed in OCL).

Historically, teachers have believed that designing learning strategies and selecting teaching materials according to students' learning styles can enhance differing learning needs and learning effectiveness (Sugiharto, 2015). To further explore the role of learning styles, researchers have tried to establish an implicit link between learning style and learning process (Idkhan & Idris, 2021; Solarte et al., 2018). Some scholars have investigated the effects of learning style on learning behaviors and outcomes (Zeichner, 2019). These studies can guide teachers to propose corresponding improvement strategies based on individual style differences. However, more in-depth research is needed on the role of leader style, especially in group cognition at the level of instructional design and organization. To bridge the gap, researchers must explore the influence of leadership styles on group cognitive engagement in OCL.

Interaction content during OCL reflects the cognitive level and interaction quality of learners (Zhang et al., 2022), providing insight into cognitive engagement. To explore the potential relationship between leadership learning styles and group cognitive engagement, in this study the authors introduced a cognitive framework to investigate leadership learning styles on the cognitive process, cognitive structure, and role-play function in OCL. Then, the authors used the quasi-experimental method to explore the influence of leadership styles on group cognitive engagement. The main research questions were as follows:

1. What is the effect of different leadership styles on group cognitive processes in OCL?
2. What is the effect of different leadership styles on group cognitive structure in OCL?
3. How do different leadership styles regulate the effects of group cognition in OCL?

RELATED RESEARCH

Literature focuses on the leader's cognitive function, presents the Kolb learning style model, and reflects on the effects of cognitive and learning styles to facilitate the proposed research questions.

Cognitive Function of the Group Leader in Online Collaborative Learning

The group leader supports and manages online collaborative activities, rather than achieving the basic learning task. Regarding the influence of learning outcomes, the group leader improves the high-level knowledge construction in collaborative groups and facilitate teamwork performance (Sun et al., 2017). Dunbar et al. (2018) explored the relationship between group leaders and learning performance, finding that group leaders contribute to high learning scores and better performance.

Role assignment strategies are important factors that directly promote high levels of cognitive engagement (Gašević et al., 2015). For example, the leader can play the moderator and summarizer roles, having significant effects in promoting high levels of knowledge construction (Wever et al., 2010).

Different leadership styles, however, cannot be ignored. Kahai et al. (2013) explored the relationship between transformational and transactional leadership and collaborative learners' cognitive engagement, showing that the transformational leader is inclined to promote learners' cognitive engagement. Min et al. (2020) examined the relationship between leadership styles and motivation to engage in behaviors; their results noted a stronger association between behavioral engagement and transactional leadership styles.

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