

# Empowering Technological Competence of Web-Based Course Instructors: Using the Community of Inquiry Framework and Its Impact on Motivation, Engagement, and Academic Satisfaction of Farhangian University Student-Teachers

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## Article Info

### Article type:

Original Research

### How to cite this article:

Taghizade, A., & Musavian, S. S. (2025). Empowering Technological Competence of Web-Based Course Instructors: Using the Community of Inquiry Framework and Its Impact on Motivation, Engagement, and Academic Satisfaction of Farhangian University Student-Teachers. *Quarterly Journal of Research and Planning in Higher Education*, 31(4), 61-79.



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## ABSTRACT

This study aimed to introduce and implement the Community of Inquiry (CoI) Framework as a model for enhancing the technological competence of instructors in web-based courses, with an emphasis on its impact on the satisfaction, motivation, and academic engagement of student-teachers at Farhangian University. Methodologically, this research employed a quasi-experimental design featuring pre-test and post-test assessments with a control group. The study's population consisted of all student-teachers at Farhangian University during the 2022-2023 academic year. Utilizing convenience sampling, 62 students enrolled in online courses were selected from two classes and randomly assigned to either the experimental group (32 students) or the control group (30 students). The research instruments included the Motivated Strategies for Learning Questionnaire (MSLQ) developed by Pintrich and De Groot (1990), the Learner Satisfaction Survey in Online Courses by Chang (2013), and the Online Student Engagement Questionnaire by Hoi and Le Hang (2021). Multivariate analysis of covariance (MANCOVA) was employed for data analysis. The MANCOVA results indicated that the experimental group demonstrated significant improvement in post-test scores for motivation, engagement, and academic satisfaction compared to the control group ( $P < 0.001$ ). These findings underscore the potential of applying the CoI Framework to enhance instructors' technological competence, thereby increasing student-teachers' motivation, engagement, and academic satisfaction in web-based learning environments.

**Keywords:** Community of Inquiry Framework, Teacher Technological Competence, E-learning, Academic Satisfaction, Academic Motivation, Academic Engagement.



## Introduction

The rapid evolution of educational technologies and the increasing reliance on online learning platforms underscore the critical need for effective pedagogical approaches in virtual environments. In higher education, particularly for institutions like Farhangian University tasked with training future educators, ensuring high-quality web-based instruction is paramount (Jones et al., 2021; Lange et al., 2019). The Community of Inquiry (CoI) framework, developed by Garrison, Anderson, and Archer (2000), offers a well-established model for conceptualizing and designing engaging online learning experiences. It posits that a meaningful educational experience in an online environment arises from the interaction of three essential elements: Social Presence (the ability of learners to project themselves socially and emotionally), Cognitive Presence (the extent to which learners can construct meaning through sustained communication), and Teaching Presence (the design, facilitation, and direction of cognitive and social processes for learning). This study specifically investigates the application of the CoI framework as a strategy to empower the technological competence of instructors, subsequently influencing teacher-students' academic motivation, engagement, and satisfaction within their web-based courses.

## Methodology

This research employed a quantitative, quasi-experimental design featuring a pre-test/post-test approach with a control group. The study population comprised all Farhangian University students enrolled in online courses during the 1401-1402 (2022-2023) academic year. A convenience sampling method was used to select 62 students from two pre-existing online classes. These 62 students were then randomly assigned to either the experimental group ( $n=32$ ), which received instruction integrating the Community of Inquiry framework, or the control group ( $n=30$ ), which continued with conventional online instruction.

Data were collected using three standardized questionnaires:

- Motivated Strategies for Learning Questionnaire (MSLQ) developed by Pintrich and De Groot (1990), which assesses various motivational beliefs and self-regulated learning strategies.
- Online Learner Satisfaction Survey by Chang (2013), designed to measure students' overall satisfaction with their online learning experiences.
- Online Learner Engagement Questionnaire developed by Hoy and Lee-Huang (2021), which evaluates students' behavioral, emotional, and cognitive engagement in online learning environments.

Pre-tests were administered to both groups before the intervention, and post-tests were conducted after the intervention period. Data analysis was performed using Multivariate Analysis of Covariance (MANCOVA) to determine the significant differences between the experimental and control groups on the post-test scores, while statistically controlling for any initial differences observed in the pre-test scores.

## Findings

The results of the multivariate analysis of covariance (MANCOVA) indicated a statistically significant positive effect of the Community of Inquiry framework on the dependent variables. The experimental group, which experienced the CoI-integrated instruction, consistently demonstrated significantly higher scores in academic motivation, academic engagement, and academic satisfaction compared to the control group. These findings provide strong empirical evidence that the application of the CoI framework in web-based courses effectively enhances these critical student outcomes among Farhangian University teacher-students. The observed differences were statistically significant ( $P<0.001$ ), suggesting that the CoI intervention played a crucial role in improving the learning experience.

## Conclusion

The findings of this study robustly support the effectiveness of the Community of Inquiry framework as a pedagogical model for enriching online learning environments. The significant increases in student motivation, engagement, and satisfaction within the CoI-integrated courses highlight the framework's ability to foster dynamic and supportive virtual communities. This success can be attributed to the emphasis on establishing strong Social Presence (through meaningful interaction and community

building), enhancing Cognitive Presence (by promoting critical thinking and collaborative meaning-making), and optimizing Teaching Presence (via effective instructional design, facilitation, and direct instruction). For Farhangian University, these results are particularly relevant as they provide a clear pathway to improving the quality of online teacher education, thereby preparing future educators with enhanced technological competence and a deeper understanding of effective online pedagogy. The study reinforces the notion that a well-designed and facilitated online learning environment, rooted in interactive and constructivist principles, can yield outcomes comparable to, or even exceeding, traditional face-to-face instruction.

Based on the compelling results, several practical implications emerge for educational institutions, especially those engaged in online teacher training:

- Instructor Professional Development: Implement compulsory and continuous professional development programs for online instructors, focusing on the theoretical underpinnings and practical application of the CoI framework.
- Curriculum Redesign: Encourage curriculum developers and instructors to intentionally integrate elements of Social, Cognitive, and Teaching Presence into the design of all online courses, moving beyond simple content delivery.
- Technology Integration: Ensure that learning management systems and other digital tools support the collaborative and interactive activities central to the CoI framework (e.g., robust discussion forums, collaborative document editing, virtual group spaces).
- Student Orientation: Provide teacher-students with clear guidance on how to actively participate and leverage the features of CoI-integrated courses to maximize their learning outcomes.

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