

Presentation of a Model of Relationships between Cognitive Emotion Regulation, Metacognitive Beliefs, and Metacognitive Awareness: The Mediating Role of Goal Orientation and Self-Efficacy among Young Female Students

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ABSTRACT

Objective: The present study aimed to present a model of the relationships between cognitive emotion regulation, metacognitive beliefs, and metacognitive awareness, considering the mediating role of goal orientation and self-efficacy among young female students at Shiraz University of Medical Sciences.

Methods and Materials: This applied research utilized a descriptive correlational method of path analysis. The statistical population comprised all undergraduate female students (School of Public Health and Environment) at Shiraz University of Medical Sciences, totaling approximately 2,422 individuals. A sample size of 480 students was selected using stratified random sampling based on Morgan's table. The data collection tool was a standardized questionnaire whose validity was confirmed by experts, and its reliability was verified through a pilot study and Cronbach's alpha calculation.

Findings: The findings indicated that four factors—metacognitive beliefs, cognitive emotion regulation, goal orientation, and self-efficacy—had a significant impact on students' metacognitive awareness in the English language course. Among the endogenous variables, self-efficacy had the greatest effect (0.19), while metacognitive beliefs had the least effect (0.164) on the variable of metacognitive awareness.

Conclusion: Overall, it must be acknowledged that given the goodness-of-fit indices and the comprehensive evaluation of the model within the studied group, the proposed model demonstrated suitable fit indices and can be utilized in decision-making and policy-making processes.

Keywords: *Metacognitive Awareness, Metacognitive Beliefs, Cognitive Emotion Regulation, Goal Orientation, Self-Efficacy.*

1. Introduction

The academic performance of students is one of the most important indicators of the success of educational systems, influenced by various factors, one of which is teaching. This is especially true for teaching English courses to Persian-speaking students, who often face difficulties and weaknesses in English. In the past two years, the advent of the COVID-19 virus has led to significant changes. However, education at universities, including medical universities, did not cease; instead, they turned limitations into learning opportunities by adopting innovative teaching methods (Gholami et al., 2023; Turan, 2023). The use of modern teaching methods along with blended learning has opened a new chapter of education and teaching in the country's universities. Before the pandemic, both professors and students resisted electronic teaching, but COVID-19 not only changed lifestyles but also significantly impacted teaching and learning approaches, leading to high efficiency without reducing learning outcomes. The flipped teaching method has recently garnered attention, particularly for its effective use in English language courses (Soltan Mohammadi et al., 2023; Syarifuddin et al., 2023).

Research has highlighted many benefits of flipped classroom learning for English courses, such as peer-based learning (Sage & Sele, 2015), collaborative opportunities (Foldnes, 2016), increased creativity (Al-Zahrani, 2015), enhanced student-student interaction (Gaughan, 2014), boosted motivation (Huang & Hong, 2016), and individualized and flexible learning.

When learners experience flipped learning, they consciously engage in learning across various places, times, and technologies without borders. Flipped learning provides a continuous learning experience in different environments like home-school or workplace-university (Milrad et al., 2013). This approach transforms traditional courses, guiding students toward using knowledge and achieving higher learning goals. Mei et al. (2019) found that in flipped teaching, learners can review and evaluate their understanding of subjects with the help of teachers or classmates during learning activities, allowing them to correct misconceptions, which significantly enhances student awareness (Mei et al., 2019). This encourages students toward knowledge, student-centered learning, and emphasizes the importance of metacognitive awareness in education (Yelgeç & DağYar, 2022).

The flipped classroom has gained significant academic attention in higher education due to its educational successes

(Guo, 2019). A review of studies showed that nearly 80% of research on flipped classroom conditions has been conducted in higher education (Akçayır & Akçayır, 2018). The flipped classroom, or inverted classroom, refers to an educational approach that employs interactive and collaborative learning activities in the classroom and direct online instruction outside the classroom (Gong, 2020). Gong states that a key feature of the flipped classroom is its focus on students and learning, rather than the teacher or professor as the central figure. Additionally, in the flipped classroom, students likely engage in meaningful activities, take responsibility for their learning, process information deeply, and achieve high-level learning (Al-Zahrani, 2015; Gong et al., 2020). Much of the class time is devoted to social interaction, peer collaboration, group discussions, and problem-solving, leading to deep learning. Akçayır and Akçayır (2018) argued that participants who actively engage in the flipped classroom may find satisfaction due to their high need for autonomy, independence, and competence, thereby improving their learning motivation (Akçayır & Akçayır, 2018).

Flexibility is another benefit of the flipped classroom frequently discussed by researchers. The use of self-paced video instruction allows students to learn anytime and anywhere, pause, restart, review, or fast-forward the video (Guo, 2019). As Gong (2020) wrote, this type of self-paced learning helps students reduce cognitive load and facilitates learning (Gong et al., 2020).

It is believed that the flipped classroom approach, with self-paced and personalized learning, is more suitable for students with varying skill levels. Students with different levels of prior knowledge can receive scientifically appropriate and personalized instruction and benefit from guided sessions inside and outside the flipped classroom. This can provide better management of cognitive load, which is beneficial for learning (Kissi et al., 2018).

In this study, metacognitive awareness is considered an important distributor for learning success and a suitable tool for integrated flipped learning. The "new science of learning" includes active and metacognitive learning (Milrad et al., 2013). This type of science is essential for student performance as it broadly influences the learning process. Students engaged in active learning can control and manage their learning activities. Metacognition is crucial for the learning environment because it enables students to control their knowledge and learning process, and to develop and refine cognitive skills as needed (Yelgeç & DağYar, 2022). Metacognitive awareness requires students to reflect on what

they know, care about, and can do, which helps them expand self-awareness and provides valuable information for their education (Bagci & Unveren, 2020). Abdelrahman (2020) found that having extensive information is not as crucial as being able to apply it across various life domains (Abdelrahman, 2020). Therefore, a concept is needed that helps learners achieve higher levels of thinking and self-awareness and develop sufficient skills in cognitive processes and problem-solving, which are manifestations of metacognition (Kissi et al., 2018). Metacognition enables students to maintain their learning path and think critically (Hayati et al., 2020). Metacognitive awareness requires students to reflect on what they know, care about, and can do (Bagci & Unveren, 2020), helping them expand self-awareness and providing valuable information for their education (Siqueira, 2021).

Many motivational and cognitive variables impact the improvement and enhancement of metacognitive awareness. In this study, self-efficacy, goal orientation, metacognitive beliefs, and cognitive emotion regulation were examined. One of the influencing variables on metacognitive awareness is goal orientation, defined as the tendency to develop oneself by learning new skills, mastering new situations, and improving personal skills while avoiding judgment (Luong et al., 2017). It also represents a coherent pattern of individual beliefs that lead a person to approach situations differently, engage in them, and ultimately respond to them (Rezapour Mirsaleh & Shakeri, 2018).

Another influencing variable is self-efficacy, which has a high status in various aspects of life and health today (Abdelrahman, 2020). Self-efficacy refers to an individual's belief in their abilities and plays a crucial role in human progress (Bagci & Unveren, 2020). Self-efficacy is an individual's deep and internal judgment of their capabilities to achieve a certain level of performance or an assessment and perception of oneself regarding efficiency and capabilities (Parsakia et al., 2023).

One of the influencing variables in this study is metacognitive beliefs. These are beliefs a person holds about their cognitive resources in a domain, how well they perform in that domain, strategies and heuristic methods they can use, and the nature of that domain of knowledge (Yelgeç & Dağyar, 2022). Beliefs, through the use of metacognitive awareness strategies, have significant impacts on individual performance. Multiple studies have shown that strengthening and changing metacognitive beliefs lead to significant changes in metacognitive awareness (Hayati et al., 2020).

The next influencing variable is cognitive emotion regulation. Cognitive emotion regulation refers to the effort to influence the type, timing, and expression of emotions, altering the duration or intensity of behavioral, experiential, and physiological processes through the use of emotion regulation strategies. Individuals with high cognitive emotion regulation internally allocate their cognitive resources to thinking and actively approach cognitively challenging situations (Luong et al., 2017). Such individuals determine how to invest their cognitive resources and how to behave when facing cognitively challenging material. For example, individuals with high cognitive emotion regulation tend to engage more and enjoy metacognitive strategies (Luong et al., 2017).

Flipped learning requires students to reflect on what they know, care about, and can do, helping them expand self-awareness and providing valuable information for their education (Abdelrahman, 2020). In the study by Al-Hamouri and Abu Mokh (2017), a positive and significant relationship was found between the level of cognitive emotion regulation and the level of metacognitive awareness among students, highlighting the importance of focusing on creating cognitive emotion regulation and developing metacognitive thinking skills among female students at medical universities (Al-Hamouri & Abu Mokh, 2011). Bagci and Unveren (2020) found that metacognitive awareness significantly aids in students' self-efficacy perception in understanding. Their study also revealed that training in metacognitive awareness greatly impacts students' self-efficacy (Bagci & Unveren, 2020).

Self-efficacious individuals choose more challenging tasks, set higher goals, and show more persistence toward those goals (Akpur, 2017). In a study, Nastasia (2020) found that metacognitive training impacts learners' adaptation and self-efficacy, leading to its increase. This impact was significant in the domains of social and emotional adaptation, but not in academic adaptation (Nastasi, 1998). Gholamrezaei et al. (2016) concluded that considering the importance of self-efficacy beliefs and metacognition in predicting students' inclination toward critical thinking, university programs should be organized in a way that involves active teaching methods rather than mere storage of information and scientific facts, engaging students in problem-solving (Gholamrezaei et al., 2017). Kooshki and Shavandi (2018) found that the factors in their questionnaire had good convergent validity, meaning they measured what they were supposed to. Concurrent validity confirmed the correlation between the metacognitive awareness and

achievement goal questionnaire scales (Kooshki & Shavandi, 2019).

What distinguishes this research from other studies is the use of one of the modern blended teaching methods, the flipped classroom, which has become a core part of university teaching in the 21st century. Hwang et al. (2015) pointed out that using the flipped teaching method for teaching English courses created a new chapter of teaching methods for language learners, not only motivating them but also bringing sustainable learning (Hwang et al., 2015). The need for this research arises from two aspects: the widespread presence of information technologies in education and the emphasis on anytime, anywhere learning, making flipped learning increasingly relevant (Gong et al., 2020). Despite extensive research in the field of English language learning, no studies have yet examined blended learning and flipped learning in English courses, highlighting the necessity of this study. Therefore, the main aim of this research is to propose a conceptual model for metacognitive awareness among female students at Shiraz University of Medical Sciences.

2. Methods and Materials

2.1. Study design and Participant

This study is applied in terms of its objective and descriptive-correlational in nature, based on model presentation. The statistical population includes all undergraduate female students (School of Public Health and Environment) at Shiraz University of Medical Sciences who took the general English course in the first semester of 2023, totaling approximately 2,422 students. A sample of 480 students was selected using stratified random sampling based on Morgan's table. The theoretical foundations were collected using research cards, and data for hypothesis testing were gathered using questionnaires.

2.2. Measures

2.2.1. Metacognitive Awareness

Designed and standardized by Mokhtari & Rechar, this questionnaire contains 30 items scored on a Likert scale from "always" (5) to "never" (1). It includes components of general reading strategies, problem-solving strategies, and reading support strategies, with a reliability of 0.87 (Hayati et al., 2020; Keshavarzi et al., 2017; Keshavarzi et al., 2016).

2.2.2. Goal Orientation

Designed and standardized by Bofura et al. (1998), this questionnaire contains 20 items scored on a Likert scale from "never" (1) to "always" (5). It includes components of mastery, performance, and performance avoidance, with a reliability of 0.81 (Rezapour Mirsaleh & Shakeri, 2018).

2.2.3. Metacognitive Beliefs

Designed and standardized by Wells (1997), this questionnaire contains 30 items scored on a Likert scale from "strongly disagree" (1) to "strongly agree" (4). It includes components of positive beliefs about worry, cognitive confidence, cognitive self-consciousness, negative beliefs about uncontrollability and danger, and beliefs about the need to control thoughts, with a reliability of 0.78 (Hayati et al., 2020).

2.2.4. Self-Efficacy

Designed and standardized by Sherer & Maddux (1997), this questionnaire contains 17 items scored on a Likert scale from "never" (1) to "always" (5). It includes components of ability, effort, and context, with a reliability of 0.83 (Gholamrezai et al., 2017).

2.2.5. Cognitive Emotion Regulation

This short form contains 18 items. The questionnaires were reviewed by several university professors, and content validity was confirmed based on their feedback. Construct validity was assessed using confirmatory factor analysis with AMOS software. The results indicated that the construct validity of the questionnaires was confirmed, with factor loadings of all items above 0.5 and corresponding t-values of 1.66. Cronbach's alpha values for the research constructs were 0.87 for the Metacognitive Awareness Questionnaire, 0.81 for the Goal Orientation Questionnaire, 0.83 for the Cognitive Emotion Regulation Questionnaire, 0.78 for the Metacognitive Beliefs Questionnaire, and 0.83 for the Self-Efficacy Questionnaire (Keshavarzi et al., 2016).

2.3. Data Analysis

Data were analysed using SPSS-24 and AMOS-21 with SEM method.

3. Findings and Results

Table 1 presents the descriptive statistics for the research variables, including the mean and standard deviation (SD) for each variable. The mean score for metacognitive beliefs among the 480 participants was 3.45 (SD = 0.54), indicating a moderate level of agreement with statements about their metacognitive beliefs. Cognitive emotion regulation had a mean score of 3.68 (SD = 0.48), suggesting that participants generally had a positive approach to regulating their

emotions cognitively. The mean score for self-efficacy was 3.57 (SD = 0.52), reflecting a relatively high level of confidence in their capabilities. Goal orientation had the highest mean score at 3.72 (SD = 0.50), indicating a strong inclination towards goal-setting and achieving objectives. Lastly, metacognitive awareness had a mean score of 3.63 (SD = 0.49), showing that participants were fairly aware of their cognitive processes and strategies for learning. These descriptive statistics provide a clear overview of the levels of each variable among the study's participants.

Table 1

Descriptive Statistics for Research Variables

Variables	N	Mean	SD
Metacognitive Beliefs	480	3.45	0.54
Cognitive Emotion Regulation	480	3.68	0.48
Self-Efficacy	480	3.57	0.52
Goal Orientation	480	3.72	0.50
Metacognitive Awareness	480	3.63	0.49

The results of Table 2 show that in the correlation matrix of student variables, goal orientation has the highest correlation with metacognitive awareness ($r = .400$), and

metacognitive beliefs have the lowest correlation with metacognitive awareness ($r = .252$).

Table 2

Correlation Matrix of Research Variables

Variables	1	2	3	4	5
Metacognitive Beliefs	1				
Cognitive Emotion Regulation	.192**	1			
Self-Efficacy	.378**	.380**	1		
Goal Orientation	.218**	.416**	.341**	1	
Metacognitive Awareness	.252**	.341**	.330**	.400**	1

The present study aimed to investigate the mediating and predictive role of variables and to determine the direct and indirect effects of these variables on each other using path

analysis. The direct effects of the research variables on each other are presented in Table 3.

Table 3

Estimates of Direct and Indirect Effect Coefficients

Variable Estimates	Direct Effect Coefficients (Standardized Parameter)	T	Indirect Effect Coefficients (Standardized Parameter)	T
Direct Effect of Cognitive Emotion Regulation				
Goal Orientation	.26***	5.33		
Self-Efficacy	.283***	6.25		
Metacognitive Awareness	.173***	3.45	.103	1.49
Direct Effect of Metacognitive Beliefs				
Goal Orientation	.222***	4.41		
Self-Efficacy	.382***	8.44		
Metacognitive Awareness	.13**	2.51	.119**	2.23
Direct Effect of Self-Efficacy				
Goal Orientation	.16**	3.06		

Direct Effect of Goal Orientation				
Metacognitive Awareness	.164**		3.18	
Direct Effect of Self-Efficacy				
Metacognitive Awareness	.19***		3.57	.026
				1.12

***p<0.001

According to the direct effect coefficients in Table 3 and the conceptual model of the research among female students at Shiraz University of Medical Sciences, all direct effects of the research variables on metacognitive awareness were significant.

Regarding the hypotheses examination, considering the results obtained and the path coefficients between the variables based on the conceptual model and the level of significance of each variable according to the obtained t-

statistic, which is marked with a star at the level of .0001 in the table, they were confirmed.

According to the indirect effect coefficients on metacognitive awareness, the most important results based on the conceptual model of the research among female students at the School of Public Health and Environment, metacognitive beliefs had a significant indirect effect ($\beta = .191, t = 2.23$) at the level of .001, but other indirect effects were not significant.

Table 4

Goodness-of-Fit Indices for the Metacognitive Awareness Prediction Model

Index	Estimate
Chi-square to degrees of freedom ratio (χ^2/df)	3.53
Comparative Fit Index (CFI)	.94
Goodness-of-Fit Index (GFI)	.98
Adjusted Goodness-of-Fit Index (AGFI)	.91
Root Mean Square Error of Approximation (RMSEA)	.02

According to the goodness-of-fit indices in Table 4, the model predicting factors affecting metacognitive awareness among female students at the university was at a very acceptable level. Next, we present the final output model and the fitted conceptual model with path coefficients among female students at the School of Public Health and Environment, Shiraz University of Medical Sciences.

4. Discussion and Conclusion

The main objective of the present study was to present a model of the relationships between cognitive emotion regulation, metacognitive beliefs, and metacognitive awareness with the mediating role of goal orientation and self-efficacy among female students at the School of Public Health and Environment, Shiraz University of Medical Sciences. In examining the conceptual model of the research and considering the goodness-of-fit indices and the overall assessment of the model in the studied group, the proposed model had a suitable fit and can be used in decision-making and policy-making, aligning with existing theoretical and empirical foundations.

One of the most important findings of this study is the direct effect of cognitive emotion regulation on goal orientation, self-efficacy, and metacognitive awareness.

This is consistent with the prior studies (Al-Hamouri & Abu Mokh, 2011), which showed that cognitive emotion regulation predicts self-efficacy and metacognitive awareness of instructors, establishing a positive and significant relationship between them. This finding can be explained by stating that students with higher cognitive emotion regulation are more likely to have metacognitive awareness. Additionally, the significant effect of cognitive emotion regulation on goal orientation suggests that educational environments should be arranged to enhance students' independence and competence.

The indirect effect of cognitive emotion regulation on metacognitive awareness through goal orientation and self-efficacy was not significant, which aligns with the prior studies (Kooshki & Shavandi, 2019) but contradicts some previous findings (Keshavarzi et al., 2017). Furthermore, the results showed that the direct effect of metacognitive beliefs on goal orientation, self-efficacy, and metacognitive awareness was significant. Metacognitive beliefs also had an indirect effect on metacognitive awareness through goal orientation and self-efficacy. This finding is consistent with the prior studies (Samia Shahani et al., 2020).

The results indicate that goal orientation, as one of the motivational variables, is related to metacognition.

Therefore, the effort learners put into learning tasks and the strategies they use are influenced by the goals they set (Abdelrahman, 2020). The study found a significant relationship between performance-avoidance goals and metacognition, aligning with our research. This finding is consistent with the prior studies (Gholamrezai et al., 2017; Hayati et al., 2020).

Furthermore, the direct effect of self-efficacy on goal orientation was significant. Students with goal orientation also had higher self-efficacy (Siqueira, 2021). Students with low self-efficacy believe they lack the ability to perform a particular academic task and tend to exert effort only to pass the course. They avoid appearing incompetent in the eyes of others, focusing on avoiding failure and negative judgments, consistent with the performance-avoidance goal concept.

The direct effect of goal orientation on metacognitive awareness was also significant. This finding is consistent with the results of Rezapour Mirsaleh & Shakari (2018). Mastery-oriented individuals seek to learn and understand content genuinely, requiring more cognitive effort to achieve their goals. They consciously or unconsciously need to use metacognitive skills to optimize their cognitive processes and learning. Such individuals are sensitive to their learning and set goals to enhance their cognitive abilities, indicative of engaging in metacognitive activities. Various studies have shown that metacognition and metacognitive awareness play a crucial role in the learning process (Rezapour Mirsaleh & Shakeri, 2018).

Additionally, the direct effect of self-efficacy on metacognitive awareness was significant. This finding aligns with the prior studies (Kissi et al., 2018; Siqueira, 2021), which confirmed the impact of self-efficacy on metacognitive awareness. It is expected that when individuals have high awareness of learning strategies, they can easily identify appropriate opportunities to apply them, consequently increasing their perception of competence and confidence in overcoming challenges.

5. Limitations and Suggestions

Despite the novelty of this research in terms of methodology and path analysis of various variables related to metacognitive awareness, it had limitations. Since the research population pertains to a single university (Shiraz University of Medical Sciences), the results are not generalizable to other universities. Additionally, the limited number of variables used in causal models is a primary

limitation. It is suggested that future research considers additional variables related to metacognitive awareness.

In conclusion, individuals with high self-efficacy are more likely to use self-regulated cognitive learning strategies, including metacognitive awareness. Mastery-oriented individuals seek genuine understanding and learning of content, requiring more cognitive effort and the use of metacognitive skills to optimize their cognitive processes. Such individuals are sensitive to their learning, set goals for better learning, and seek better methods to enhance their cognitive abilities. Consequently, enhancing self-efficacy and goal orientation among students increases their metacognitive awareness, leading to the application of metacognitive awareness and better educational outcomes. Further research is essential to confirm these findings and develop knowledgeable and committed students.

Authors' Contributions

Authors contributed equally to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

References

- Abdelrahman, R. M. (2020). Metacognitive awareness and academic motivation and their impact on academic achievement of Ajman University students. *Heliyon*, 6(9). <https://doi.org/10.1016/j.heliyon.2020.e04192>
- Akçayır, G., & Akçayır, M. (2018). The flipped classroom: A review of its advantages and challenges. *Computers & Education*, 126, 334-345. <https://doi.org/10.1016/j.compedu.2018.07.021>
- Akpur, U. (2017). THE PREDICTIVE DEGREE OF UNIVERSITY STUDENTS' LEVELS OF METACOGNITION AND NEED FOR COGNITION ON THEIR ACADEMIC ACHIEVEMENT. *European Journal of Foreign Language Teaching*. <http://oapub.org/edu/index.php/ejfl/article/view/702>
- Al-Hamouri, F., & Abu Mokh, A. (2011). Level of the Need for Cognition and Metacognitive Thinking among Yarmouk University Undergraduate Students. *An-Najah University Journal for Research - B (Humanities)*, 25(6), 1463-1488. <https://doi.org/10.35552/0247-025-006-001>
- Al-Zahrani, A. M. (2015). From passive to active: The impact of the flipped classroom through social learning platforms on higher education students' creative thinking. *British Journal of Educational Technology*, 46(6), 1133-1148. <https://doi.org/10.1111/bjet.12353>
- Bagci, H., & Unveren, D. (2020). Investigation the Relationship between Metacognitive Awareness of Reading Strategies and Self-Efficacy Perception in Reading Comprehension in Mother-Tongue: Sample of 8th Graders. *International Journal of Educational Methodology*, 6(1), 83-98. <https://eric.ed.gov/?id=EJ1246886>
- Foldnes, N. (2016). The flipped classroom and cooperative learning: Evidence from a randomised experiment. *Active Learning in Higher Education*, 17(1), 39-49. <https://doi.org/10.1177/1469787415616726>
- Gaughan, J. E. (2014). The flipped classroom in world history. *The History Teacher*, 47(2), 221-244. <https://www.jstor.org/stable/43264225>
- Gholami, A., Zare, H., & fallah, v. (2023). Comparison of the effectiveness of flipped classroom biology education in gifted and normal female students. *Quarterly Journal of Education Studies*, 9(33), 51-61. https://researchbt.cfu.ac.ir/article_2772_0efac9bf3551f7b296ab815d19784969.pdf
- Gholamrezaei, S., Yousefvand, L., & Radmehr, P. (2017). The predictive role of Self-Efficacy and Meta-Cognitive on students tendency to Critical Thinking. *gums-rme*, 9(1), 45-37. <https://doi.org/10.18869/acadpub.rme.9.1.45>
- Gong, D., Yang, H. H., & Cai, J. (2020). Exploring the key influencing factors on college students' computational thinking skills through flipped-classroom instruction. *International Journal of Educational Technology in Higher Education*, 17(1), 19. <https://doi.org/10.1186/s41239-020-00196-0>
- Guo, J. (2019). The use of an extended flipped classroom model in improving students' learning in an undergraduate course. *Journal of Computing in Higher Education*, 31(2), 362-390. <https://doi.org/10.1007/s12528-019-09224-z>
- Hayati, M., Hamidipoor, R., & Razapoor Mirsaleh, Y. (2020). The Role of Metacognition and Mindfulness in Predicting the Quality of Life of Mothers with Intellectual disability Children. *Journal of Social Psychology*, 7(54), 51-62. <https://www.magiran.com/paper/2364503>
- Huang, Y.-N., & Hong, Z.-R. (2016). The effects of a flipped English classroom intervention on students' information and communication technology and English reading comprehension. *Educational Technology Research and Development*, 64(2), 175-193. <https://doi.org/10.1007/s11423-015-9412-7>
- Hwang, G.-J., Lai, C.-L., & Wang, S.-Y. (2015). Seamless flipped learning: a mobile technology-enhanced flipped classroom with effective learning strategies. *Journal of Computers in Education*, 2(4), 449-473. <https://doi.org/10.1007/s40692-015-0043-0>
- Keshavarzi, S., Fathi Azar, E., Mirnasab, M. M., & Badri Gargari, R. (2017). Effects of a Metacognitive Awareness Program on High School Students' Decision-making Styles and Emotion Regulation. *jcp*, 5(1), 51-60. <http://jcp.khu.ac.ir/article-1-2622-en.html>
- Keshavarzi, S., Mirnasab, M. M., Fathi Azar, I., & Badri Gregari, R. (2016). The effect of metacognitive awareness training on decision-making styles and emotion regulation of high school students in Tabriz. *Cognitive Psychology Quarterly*, 1(5), 67-55. <https://www.semanticscholar.org/paper/Effects-of-a-Metacognitive-Awareness-Program-on-and-Keshavarzi-Azar/955bd7434e75e26eb62be18563da216e8d9a344c>
- Kissi, P. S., Nat, M., & Armah, R. B. (2018). The effects of learning-family conflict, perceived control over time and task-fit technology factors on urban-rural high school students' acceptance of video-based instruction in flipped learning approach. *Educational Technology Research and Development*, 66(6), 1547-1569. <https://doi.org/10.1007/s11423-018-9623-9>
- Kooshki, S., & Shavandi, A. (2019). Psychometric properties of Metacognitive Awareness Inventory and its relationship with achievement goals in secondary school students in Shahriar city. *Quarterly of Educational Measurement*, 10(37), 137-167. https://jem.atu.ac.ir/article_10900_en.html
- Luong, C., Strobel, A., Wollschläger, R., Greiff, S., Vainikainen, M.-P., & Preckel, F. (2017). Need for cognition in children and adolescents: Behavioral correlates and relations to academic achievement and potential. *Learning and Individual Differences*, 53, 103-113. <https://doi.org/10.1016/j.lindif.2016.10.019>
- Mei, L., Zhou, L., & Fan, F. (2019). *Construction of Seamless Flipped Learning Mode under the Open University Vision* Proceedings of the 2019 4th International Conference on Distance Education and Learning, Shanghai, China.
- Milrad, M., Wong, L.-H., Sharples, M., Hwang, G.-J., Looi, C.-K., & Ogata, H. (2013). Seamless learning: An international perspective on next-generation technology-enhanced learning. In *Handbook of mobile learning* (pp. 95-108). Routledge. <https://www.taylorfrancis.com/chapters/edit/10.4324/9780203118764-10/seamless-learning-marcelo-milrad-lung-hsiang-wong-mike-sharples-gwo-jen-hwang-chee-kit-looi-hiroaki-ogata>
- Nastasi, B. K. (1998). A Model for Mental Health Programming in Schools and Communities: Introduction to the Mini-Series. *School Psychology Review*, 27(2), 165-174. <https://doi.org/10.1080/02796015.1998.12085906>
- Parsakia, K., Rostami, M., & Saadati, S. M. (2023). Validity and reliability of digital self-efficacy scale in Iranian sample. *Journal of Adolescent and Youth Psychological Studies*, 4(4), 152-158.
- Rezapour Mirsaleh, Y., & Shakeri, S. (2018). The Relationship of metacognitive Skills in Learning and Academic Goal Orientation with Self-Regulated Learning in female high

- school students of second grade. *frooyesh*, 7(2), 97-120.
<http://frooyesh.ir/article-1-244-en.html>
- Sage, M., & Sele, P. (2015). Reflective Journaling as a Flipped Classroom Technique to Increase Reading and Participation with Social Work Students. *Journal of Social Work Education*, 51(4), 668-681.
<https://doi.org/10.1080/10437797.2015.1076274>
- Samia Shahani, S. S., Ahmadi, O., Nemati, A., & Hajizade Sanzighi, A. (2020). The mediating role of metacognitive beliefs in the relationship between the cognitive order of emotion and mindfulness. *Applied Research in Consulting*, 3(1), 83-103.
https://www.jarci.ir/article_704282_bfae31d3c8978e5458e0d ddf6fb89dc2.pdf
- Siqueira, S. (2021). Critical Pedagogy and Language Education: Hearing the Voices of Brazilian Teachers of English. *Education Sciences*, 11(5).
- Soltan Mohammadi, Z., Sharifian, L., Moradi, S., & Araghieh, A. (2023). Identifying the Dimensions and Components of Education based on Flipped Learning in Elementary School [Research Article]. *Iranian Journal of Educational Sociology*, 6(2), 45-53. <https://doi.org/10.61186/ijes.6.2.45>
- Syarifuddin, H., Riza, Y., Harisman, Y., & Ismail, R. N. (2023). Students' Response to the Use of a Flipped Learning Model (FLM) in Abstract Algebra Course. Unima International Conference on Social Sciences and Humanities (UNICSSH 2022),
- Turan, Z. (2023). Evaluating Whether Flipped Classrooms Improve Student Learning in Science Education: A Systematic Review and Meta-Analysis. *Scandinavian Journal of Educational Research*, 67(1), 1-19.
<https://doi.org/10.1080/00313831.2021.1983868>
- YelgeÇ, N., & DaÇYar, M. (2022). A Structural Equation Modelling of Middle School Students' Metacognitive Awareness, Self-efficacy Beliefs and Foreign Language Learning Anxiety. *International Journal of Contemporary Educational Research*, 7(1), 127-148.
<https://doi.org/10.33200/ijcer.657172>