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THE EFFECT OF FLIPPED INSTRUCTION ON FOREIGN LANGUAGE READING ANXIETY OF UNIVERSITY STUDENTS

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Abstract. This study investigates the effect of flipped classroom teaching on foreign language reading anxiety (FLRA) among Algerian first-year EFL students at Nour Bachir University Center, using a sequential explanatory mixed-methods design. Eighty students were divided into flipped or conventional instructional groups. Quantitative data were collected through the Foreign Language Reading Anxiety Scale (FLRAS), Oxford Placement Test (OPT), and measures of motivation and control of cognition. Qualitative data were collected through focus groups, class observation, and learner diaries. Results showed a large reduction in FLRA for the flipped group (Cohen's $d = 1.21$), with moderation effects of proficiency and motivation. Path analysis revealed that strategic engagement and cognitive control mediated anxiety decrease to some extent. Thematic findings supported these findings and emphasized preparedness, social interaction, and emotional management. The study provides robust empirical support for flipped learning as an affective, anxiety-reducing, learner-centered pedagogy in EFL reading classes, with design, pedagogical, and future research implications for affective dimensions of language learning. Reading a second language is cognitively demanding and typically takes place with anxiety when learners are faced with new vocabulary, advanced syntax, and culturally embedded content (Saito, Horwitz, & Garza, 1999). Such anxiety, Foreign Language Reading Anxiety (FLRA), can significantly impede comprehension and erode learners' confidence.

Keywords: flipped classroom, reading anxiety, EFL learners, cognitive control, learner motivation

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ВЛИЯНИЕ ПЕРЕВЕРНУТОГО ОБУЧЕНИЯ НА ТРЕВОЖНОСТЬ ЧТЕНИЯ НА ИНОСТРАННОМ ЯЗЫКЕ У СТУДЕНТОВ УНИВЕРСИТЕТОВ

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Асма Белабди**

Абстракт. В данном исследовании рассматривается влияние модели перевёрнутого обучения (flipped classroom) на тревожность чтения на иностранном языке (Foreign Language Reading Anxiety – FLRA) у студентов первого курса, изучающих английский язык как иностранный, в Университетском центре Нур Башир (Алжир). Исследование выполнено в рамках последовательного объяснительного смешанного метода. В исследовании приняли участие 80 студентов, разделённых на группы перевёрнутого и традиционного обучения. Количественные данные были собраны с использованием шкалы тревожности чтения на иностранном языке (FLRAS), Оксфордского теста определения уровня владения языком (OPT), а также показателей мотивации и когнитивного контроля. Качественные данные включали фокус-группы, наблюдение за занятиями и учебные дневники студентов. Результаты показали значительное снижение уровня тревожности чтения в группе перевёрнутого обучения (Cohen’s $d = 1.21$). Уровень языковой подготовки и мотивация выступили в роли модераторов данного эффекта. Путевой анализ выявил, что стратегическая вовлечённость и когнитивный контроль частично опосредуют снижение тревожности. Тематический анализ подтвердил данные выводы и подчеркнул важность предварительной подготовки, социального взаимодействия и эмоциональной саморегуляции. Исследование предоставляет убедительные эмпирические доказательства эффективности перевёрнутого обучения как аффективно ориентированной, снижающей тревожность и обучающейся-центрированной педагогической модели в обучении чтению на иностранном языке.

Ключевые слова: перевёрнутое обучение, тревожность чтения, изучающие английский язык, когнитивный контроль, мотивация обучающихся

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UNİVERSİTET TƏLƏBƏLƏRİNİN XARİCİ DİLDƏ OXU ANKSİYOZLUĞUNA FLIPPED TƏLİMİN TƏSİRİ

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Əsma Belabdi**

Abstrakt. Bu tədqiqat flipped classroom (çevrilmiş sinif) təlim modelinin Əlcəzairdə Nour Bachir Universitet Mərkəzində təhsil alan birinci kurs EFL (ingilis dili xarici dil kimi) tələbələrini xarici dildə oxu anksiyozluğu (Foreign Language Reading Anxiety – FLRA) üzərində təsirini araşdırır. Araşdırma ardıcıl izahlı qarışıq metod dizaynı əsasında aparılmışdır. Səksən tələbə flipped və ənənəvi təlim qruplarına bölünmüşdür. Kəmiyyət məlumatları Xarici Dildə Oxu Anksiyozluğu Şkalası (FLRAS), Oxford Yerləşdirmə Testi (OPT), motivasiya və idraki nəzarət ölçmələri vasitəsilə toplanmışdır. Keyfiyyət məlumatları fokus qruplar, dərslər müşahidələri və tələbə gündəlikləri əsasında əldə edilmişdir. Nəticələr göstərmişdir ki, flipped təlim qrupunda FLRA səviyyəsində əhəmiyyətli dərəcədə azalma müşahidə edilmişdir (Cohen’s $d = 1.21$). Dil biliyi səviyyəsi və motivasiya bu təsiri moderasiya edən amillər kimi çıxış etmişdir. Yol analizi göstərmişdir ki, strateji fəallıq və idraki nəzarət mexanizmləri anksiyozluğun azalmasında vasitəçi rol oynayır. Tematik təhlil bu nəticələri dəstəkləmiş və hazırlıq səviyyəsi, sosial qarşılıqlı əlaqə və emosional tənzimləmənin əhəmiyyətini vurğulamışdır. Tədqiqat flipped təlimin EFL oxu dərslərində emosional baxımdan təhlükəsiz, anksiyozluğu azaldan və tələbə-mərkəzli pedaqoji yanaşma olduğunu empirik şəkildə təsdiqləyir və dil öyrənməsində affektiv ölçülərlə bağlı dizayn və gələcək tədqiqatlar üçün tövsiyələr təqdim edir.

Açar sözlər: çevrilmiş sinif, oxu anksiyozluğu, EFL tələbələri, idraki nəzarət, öyrənmə motivasiyası

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1.Introduction

Flipped pedagogy and other models have gained prominence over the last few years due to their capacity to reduce language anxiety through pre-class exposure and student independence [Basal, 2015; Alharbi, 2021].

Flipped classroom teaching puts content delivery outside the classroom in the form of multimedia resources, and classroom time is used for active learning, strategy practice, and interactive teamwork [Bishop & Verleger, 2013]. As informed by Krashen's (1982) Affective Filter Hypothesis and Bandura's (1986) Social Cognitive Theory, the model is anticipated to decrease anxiety through heightened control, motivation, and self-efficacy of the learners.

Although earlier works [e.g., Mohammaddockht & Fathi, 2022; Gök et al., 2023] identify positive impacts of flipped learning on reading performance, fewer have examined its effects on FLRA in rigorous mixed-methods designs. This study tries to fill the gap by responding to the three questions:

1. Does instruction with flipped learning reduce FLRA more than traditional methods?
2. Do motivation and proficiency act as the moderator in the effect of flipped instruction on FLRA?
3. Is cognitive control the mediating mechanism through which higher metacognitive awareness and control lead to lower FLRAS scores post-intervention?

To address these questions, three corresponding hypotheses were set:

H2.1: The flipped group will show significantly lower FLRAS post-test scores compared to the traditional group.

H2.2: Students with higher proficiency levels will exhibit greater reductions in reading anxiety.

H2.3: Learners reporting greater metacognitive awareness and control will show the lowest FLRAS scores post-intervention.

Utilizing strong intervention, multi-modal data, and theoretical triangulation, the current study aims to construct empirical evidence for the flipped instruction's role in alleviating affective barriers to reading in EFL university contexts.

2.Review of Literature

2.1.Theoretical Accounts of Reading Anxiety and Flipped Learning

This part explains the theoretical accounts of foreign language reading anxiety (FLRA) and its connection to flipped learning. Based on key psychological and pedagogical theories, it explains how flipped teaching lessens reading anxiety by encouraging learner autonomy, self-efficacy, and cognitive preparation. The argument is in the form of three primary theoretical frameworks - Social Cognitive Theory, the Affective Filter Hypothesis, and Control-Value Theory - preceded by consideration of empirical findings that support or complicate these accounts. Together, these findings give a conceptual basis for how flipped learning can alleviate reading anxiety in EFL contexts. Bandura's (1986) Social Cognitive Theory provides an effective prism in terms of which through to look at how flipped learning can relieve reading anxiety.

Self-efficacy is at the heart of this theory, or the belief that one can accomplish a task. Flipped classroom students, if they do pre-class reading, are in charge of their learning pace and can retake difficult work as necessary. Being in control makes them more confident and decreases anxiety surrounding new reading assignments [Liu, 2022]. Studies such as Mohammaddockht and Fathi (2022) quasi-experiment support this hypothesis, demonstrating that flipped instruction considerably decreased reading anxiety in EFL students by increasing their sense of competence. Likewise, Croy et al. (2020) determined that nursing students in a flipped class had stable self-efficacy despite rigorous scholarly work, validating the hypothesis that systematic autonomy is a buffer to anxiety. Krashen's (1982) Affective Filter Hypothesis also refers to the emotional filters which impede language learning. Under this hypothesis, excessive anxiety is a psychological block, and through it, learners are not able to process input effectively.

Flipped learning lends credence to this hypothesis by removing overload of the mind through prior exposure to reading assignments before class. For instance, Gok et al. (2021) found that a group of students in a flipped Advanced Reading and Writing course reported significantly less foreign language reading anxiety compared to a traditional classroom controls. By providing annotated texts, vocabulary previews, and multimedia support, flipped instruction creates a low-stakes setting that promotes comprehension while dissuading affective resistance. Qiu and Luo's (2022) flipped listening instruction experiment also supports this claim, as it proved that pre-class exposure reduced listening anxiety in EFL students, and thus could produce similar benefits in reading contexts. Control-Value Theory [Pekrun, 2006], employed by Liu (2022), is also a helpful framework. In terms of this theory, students are less anxious when they perceive they have control over learning as well as value the learning task itself. Flipped classrooms enhance both dimensions by allowing students to study in advance, thereby developing their sense of mastery and engagement.

Empirical evidence confirms this supposition: Liu (2023) determined that college English students in a flipped classroom exhibited less overall learning anxiety, confirming that prior preparation prior to class generates emotional resilience. Karimi and Hamzavi (2017) research also found that not only did flipped learning increase reading comprehension but also positively influenced learner attitudes, suggesting that increased confidence and motivation contribute to a reduction in anxiety. Again, as with these theoretical and empirical support, however, some studies return contrary findings. Tran et al. (2025) found no statistical difference between flipped and conventional classroom decrease in reading anxiety, yet qualitative feedback indicated student preference for flipped learning due to it being self-paced. This difference indicates that while flipped teaching will not necessarily eliminate reading anxiety among all learners, it is nonetheless delivering affective value through learner confidence and motivation. Fak's (2009) identification of three significant causes of anxiety - personal, text difficulty, and course design - also underscores the need for individualized flipped approaches targeting these specific problems.

Increased research also identifies the significance of employing metacognitive approaches in flipped instruction. Kiyak and Ekmekçi's (2021) study on flipped

speaking instruction revealed that young EFL learners exhibited reduced speaking anxiety, suggesting that the model's benefits extend beyond reading. Similarly, Dove and Dove's (2017) research into math anxiety revealed that exposure to flipped instruction, when repeated within the span of time, yielded long-term anxiety reduction, further indicating effects of the methodology snowballing across years. Such cross-discipline evidence enhances the argument that flipped learning can be used to decrease anxiety in skills and environments beyond mathematics. Yet, differences in methodology between studies make conclusive statements challenging. While a few researchers used controlled experimental designs, for example Mohammaddockht & Fathi, 2022; Gok et al., 2021, others mixed methods, for example Tran et al., 2025, were employed. The length of intervention and the measure of assessment and participant demographics highlight the need for standardized measures to be implemented in follow-up studies. In this regard, the overall trend in all those studies is that flipped learning increases learner control, which, accordingly, decreases learner anxiety.

Finally, the empirical and theoretical studies attest to the efficacy of flipped learning in reducing foreign language reading anxiety. Synthesizing postulates from Social Cognitive Theory, the Affective Filter Hypothesis, and Control-Value Theory, flipped instruction manages certain sources of anxiety - novelty, cognitive load, and control deprivation - while enhancing motivation and self-efficacy. Although some studies report no effects, most observe that flipped classes create a less threatening and more supportive learning environment for EFL readers. These findings not only validate the pedagogic advantages of the flipped model but also indicate directions of research required, namely on how to design it optimally for different learner populations. The next section will elaborate on these results by looking at specific teaching practices that maximize the promise of flipped learning to mitigate reading anxiety.

2.2. Empirical Research on Reducing Reading Anxiety through Flipped Learning

The growing body of research on the impact of flipped learning on reading anxiety provides both consistent results and provocative nuances. Different studies cite significant reduction of anxiety under the flipped model, with Mohammaddockht and Fathi (2022) and Gok et al. (2021) each recording significant foreign language reading anxiety decreases among their Iranian and Turkish samples, respectively. Such results support Liu's (2022) control-value theory model whereby students' higher sense of control over learning is directly correlated with decreased anxiety levels. Most notable about these findings, however, is how they connect to existing theoretical contributions. Bandura's (1986) self-efficacy theory can be cited in accounting for why students in flipped environments typically experience lower levels of anxiety - the versatility of the model allows learners to build confidence through independent preparation. Theoretical grounding gives value to such empirical observations as those of Alharbi (2021), whose Saudi Arab university students felt greater reading confidence in using flipped learning in conjunction with certain reading techniques. Nonetheless, the research environment isn't all the same.

Tran et al.'s (2025) research offers a very interesting counterpoint, as they find similar anxiety reduction for both flipped and traditional classrooms. We can see why

this makes more sense when we think about Fak's (2009) discovery of several sources of anxiety - that some traditional classrooms may already be covering some major anxiety triggers in other ways. Also, Croy et al.'s (2020) nursing education study demonstrated sustained self-efficacy in a high-pressure flipped class, suggesting the model's benefit may manifest differently across fields. The technology aspect of flipped learning is revealed as particularly significant. Chuang et al.' (2018) demonstrated that students who were actively engaged and interacting with pre-class material obtained greatest improvement, while Bishop and Verleger's (2013) original model focused on quality delivery of content as a central factor. These findings are reflected in Phuntsho's (2022) Bhutanese study, where properly designed pre-class activities employing KWL methods yielded measurable gains.

Individual differences and cultural ones enter the picture as well. Siahpoosh and Bagheri's (2024) Iranian study illustrated anxiety reduction, whereas that of Karimi and Hamzavi (2017) showed attitude changes in a positive direction along with skills improvement. This aspect of culture translates to that of Liu's (2023) Chinese environment where the students highly enjoyed the self-directed aspect of flipped learning. These differences remind us that, consistent with Subaşı (2014), reading anxiety relies upon a complex interaction of student, text, and instruction variables.

The research also suggests interesting skill-specific findings. While Qiu and Luo (2022) demonstrated that flipped learning reduced listening anxiety, Kıyak and Ekmekçi (2021) made similar findings for speaking anxiety. This suggests that flipped learning's ability to reduce anxiety may be universal across language skills, yet perhaps in different ways. The identification of social and computer anxiety by Eryılmaz and Çiğdemoğlu's (2018) also suggests the diverse nature of anxiety in learning contexts. Practical implementation becomes a relevant concern. Song et al.'s (2017) meta-analysis emphasizes design focus in flipped learning, a motif carried forward in Santikarn and Wichadee's (2018) Thai study where student autonomy was brought up but anxiety wasn't measured directly.

Fathi and Shirazizadeh's (2020) pedagogy-driven methodology demonstrates that instructional content is just as crucial as delivery mode, and Xiaoying and Abu Samah's (2024) systematic review confirms these trends throughout numerous studies. The voice of the student fills in the specifics of these outcomes. Liu's (2023) students reported valuing the preview time flipped learning provided, something echoed by Jin's (2021) Korean language learners and Dove and Dove's (2017) mathematics learners. These cross-discipline accounts suggest the potential universality of the psychological benefits of preview time if not the particular stressors inducing them. Keeping in mind the entire picture, a number of significant conclusions can be made.

First, while flipped learning is known to reduce reading anxiety, its efficacy depends on quality of implementation and context. Second, the benefits of the model are due to a number of causes - increased control, study time spent beforehand, and less pressure in the classroom being some of them. Third, individual differences between people in motivation, learning style, and culture heavily moderate the result. Finally, the research suggests that flipped learning is best when complemented with instruction in overt strategies and high-quality materials.

These findings have obvious application. Teachers can stress the planning of engaging pre-class activities, explicit instruction in reading strategies, and sufficient preparation time. At the same time, the research also warns of a blanket approach - anxiety-reducing for one student will not be for another. The more we learn about this promising pedagogy, more research should delve into long-term effects, optimal strategy mixes, and specific methods for responding to different learners' needs. The most current best evidence strongly advises that if properly executed, flipped learning has the potential to create more effective and supportive reading experience for language learners across many different settings.

3.Learner Differences Influencing the Effectiveness of Flipped Learning on FLRAS

Existing research shows that the effectiveness of flipped learning in reducing foreign language reading anxiety (FLRA) relies heavily on personal learner characteristics. While the model will benefit most students, the impact is significantly different based on proficiency level, learning capacity, motivation level, and regulatory ability. Heterogeneity among these factors needs consideration in order to tailor flipped instruction with the aim of realizing maximum levels of anxiety reductions.

Numerous studies have indicated how proficiency level mediates the influence of flipped learning. Abaeian and Samadi's (2016) Iranian EFL students' research showed that while both upper-intermediate and intermediate students improved in reading comprehension with flipped learning, intermediate students achieved greater gains. This suggests that flipped approaches may be particularly worth the effort for students at critical development stages when anxiety is generally highest. The pre-class nature of the flipped method - giving students time to struggle through material before class - appears to help fill gaps in language skill that so commonly cause reading apprehension.

Learning style and preference play a role too. Fitriah et al.'s (2025) meta-analysis concluded the most significant advantage of the flipped method falls on English majors and reading comprehension students. This fits with Chuang et al.'s (2018) result that most benefited from flipped methods were the highly motivated learners with good self-regulation abilities. These studies as a whole indicate that those students who are more independent or verbally oriented by nature might be best suited to take advantage of the flipped learning structure. Motivational aspects also make a significant difference. Doo's (2022) cluster analysis of 306 undergrads found that 78.6% had positive attitudes to flipped learning, and pre-class material in particular was highly valued.

However, the rest were not so enthusiastic, implying flipped models do not have the same voice to all students. Choi's (2014) case study also adds complexity to the issue, finding that flipped learning enhanced self-efficacy, but did not enhance motivation - a reminder affective outcomes might not always walk together. Self-regulation is probably the most essential individual difference measure. Al Mulhim's (2021) study demonstrated that students with an internal locus of control - i.e., believed that they could regulate their learning outcomes - performed better in flipped environments.

This finding connects to Hao's (2016) finding that self-directed learning was a key component of readiness for flipped learning. Students with self-regulation difficulties may struggle with the autonomy of flipped learning more than with empowering, and potentially exacerbating rather than alleviating anxiety. The research also reveals notable demographic variations.

Fitriah et al.'s (2025) meta-analysis reported that university students benefited more from flipped instruction than secondary students, whereas Hao's (2016) research with junior high students reported that technological self-efficacy was a critical factor in readiness. These age variations suggest that flipped frameworks may have to be scaffolded by level of development, with younger learners potentially requiring additional support for the self-directed portions.

Cultural context also plays a role. While studies in Iran [Mohammaddockht & Fathi, 2022], Turkey [Gok et al., 2021], and Saudi Arabia [Alharbi, 2021] all concluded that flipped learning reduced reading anxiety, exactly what aspects appealed to them varied. Alharbi's students, for instance, particularly liked teaching strategies, while Gok et al.'s preservice teachers benefited from video aids. These variations remind us that flipped learning is not a one-size-fits-all solution.

Technology availability and digital literacy also mediate the effectiveness of flipped learning. Durak's (2018) research on computer programming classes revealed that a readiness for flipped learning robustly predicted engagement and self-efficacy - concepts that will probably generalize to language learning environments. Students lacking stable technology access or good digital proficiency might not be well-suited to flipped forms, possibly raising their anxiety instead of lowering it. Importantly, some work suggests flipped learning's benefit may extend beyond cognitive gain to influence affective aspects like anxiety through indirect routes.

Song's (2018) research on reading strategies determined students with lower anxiety levels utilized more global strategies, while highly anxious learners utilized local strategies. Since the preparation aspect of flipped learning offers more strategic utilization of texts, it can potentially guide students towards improved strategy adoption and, as such, reduced anxiety levels in the long run. The relationship between strategy use and anxiety is reciprocal. Tsai's (2013) study illustrated that reading strategy instruction had the effect of reducing anxiety while raising strategy use, while Lien's (2016) study illustrated that self-perceived reading ability mediated the relationship.

Flipped classrooms, as a design, provide strategy instruction and repeated practice opportunities to disrupt the cycle of anxiety and ineffective strategy use. Numerous studies indicate the need for careful implementation in the reduction of individual differences. Hamid and Moayed's (2017) intervention of strategy training completely diminished reading anxiety, implying that simply flipping materials won't suffice - quality and focus of instruction count. Similarly, Çapan and Çınar's (2013) study highlights the benefit of focused reading strategy intervention in flipped environments.

The general evidence is that although flipped learning holds promise for the reduction of FLRA, it will be effective only with the sensitivities to the learners' differences. There are some things to consider:

1. Scaffolding additional support for less-proficient learners
2. Strategy instruction aligned with different learning styles
3. Shaping self-regulation alongside language development
4. Different levels of technological readiness
5. Modulating the implementation by age and culture

As flipped learning continues to grow, future research must explore the best means to tailor flipped approaches to meet different learner requirements. The research reviewed here makes it unmistakably clear that an understanding of such differences is crucial for maximizing the ability of flipped learning to give language learners less anxious, more productive reading experiences across contexts.

4.Methods

This research study adapted a sequential explanatory mixed-methods design to determine the impact of flipped classroom teaching on Foreign Language Reading Anxiety (FLRA) among first-year EFL students. The purpose was to select a design that would allow for numeral data as well as a deeper contextual understanding of how flipped pedagogies can mitigate anxiety and support affective development in language learners. The quantitative–qualitative integration permitted an overall determination of the effectiveness of the intervention, as well as an examination of the mechanisms behind changes observed.

5.Research Design

The essence of the research employed a quasi-experimental pretest–posttest design, dividing the participants into experimental (flipped) and control (traditional) groups. The quantitative thread was supplemented by qualitative data collection- focus groups, observation, and reflective journals- in allowing more in-depth investigation of participants' experiences.

According to Creswell and Creswell's (2018) guidelines for educational intervention studies, a number of validity precautions were built into the design:

- Random assignment of intact classes to conditions reduced selection bias.
- Pretesting guaranteed baseline equivalence on reading anxiety and skill.
- Observations in classes during the intervention tracked fidelity and consistency of instructional delivery.
- A delayed posttest reduced the impact of short-term test reactivity and more accurately measured sustained effects.

This two-stage design allowed the study to achieve three principal goals: (1) to estimate the extent to which flipped learning reduces FLRA compared to more traditional methods, (2) to examine if competence and motivation mediate this influence, and (3) to identify potential mediators of change, e.g., cognitive control.

6.Participants

Eighty first-year undergraduate learners (N = 80) from Nour Bachir University Center in Algeria took part in this study. All were studying obligatory EFL reading during the spring semester. They were chosen through purposive sampling, targeting

learners with similar English levels and previous academic experiences. The inclusion and exclusion criteria below were used:

- Registration for first-year reading courses; OPT scores 60-74 (intermediate level of English proficiency); and Voluntary participation.
- Exclude who had already attended flipped learning classes, did not have the targeted levels of proficiency (either beginner or advanced), and attended less than two sessions.

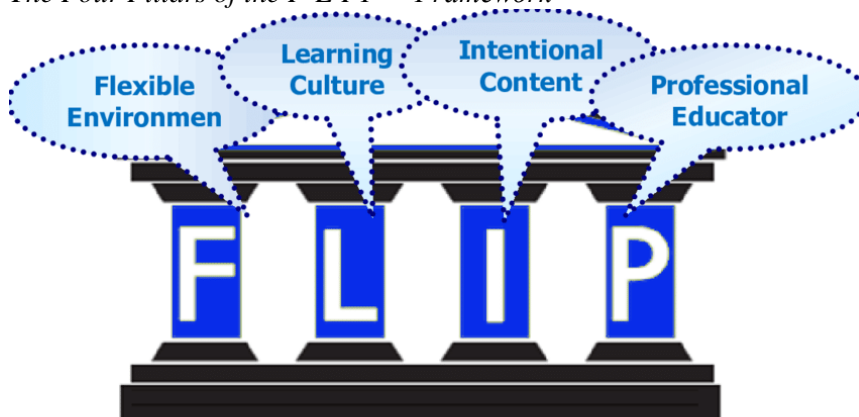
The last sample was composed of 48 female and 32 male students (60% and 40% respectively) between 18 and 20 years old ($M = 18.7$, $SD = 0.6$) with a mean of 6.8 years of English learning ($SD = 1.2$).

7. Instructional Interventions

Experimental Group – Flipped Instruction

Figure 1

The Four Pillars of the F-L-I-P™ Framework



Note. Adapted from the conceptual framework in *The four pillars of F-L-I-P™ framework* [Flipped Learning Network, 2014, <https://flippedlearning.org/definition-of-flipped-learning/>].

The flipped intervention was planned based on the Four Pillars of F-L-I-P™ Framework [Flipped Learning Network, 2014], both for pedagogical consistency and flexibility to respond to local limitations:

1. Flexible Environment: Students used pre-class materials (videos, guided PowerPoints, electronic vocabulary lists) through a Learning Management System (LMS) and mobile applications. This made them access content at their own pace.

2. Learning Culture: Teacher time in class was no longer single-person-centered. Sessions instead focused on peer-to-peer interaction, group annotation of texts, and strategic reflecting.

3. Intentional Content: Materials were designed to minimize cognitive load but focus on significant comprehension strategies (such as skimming, predicting, summarizing).

4. Professional Educator: The teacher was a facilitator - offering 'live' scaffolding, formative feedback, and task-adjustment based on evolving learner needs.

8. Control Group – Traditional Instruction

The control group was provided with the normative teacher-directed model which included:

- In-class reading of textbook excerpts supported by the instructor
- Elaboration of difficult vocabulary and grammatical elements
- Comprehension questions in an individual format
- Weekly written reading comprehension tests

Instruction was synchronous, unidirectional, and explanatory, rather than learner exploratory.

9. Instruments

Five well-established quantitative instruments were used:

1. Foreign Language Reading Anxiety Scale (FLRAS) – Saito et al. (1999); used to assess participants' self-reported anxiety in reading in English.

2. Oxford Placement Test (OPT) – provided an objective assessment of English level.

3. Metacognitive Awareness of Reading Strategies Inventory (MARS) – measured awareness and application of strategies prior to, during, and following reading.

4. Academic Motivation Scale – based on Vallerand et al. (1992), with a differentiation between intrinsic and extrinsic motivation.

5. Cognitive Control Questionnaire – to assess learners' perceived capacity for controlling their attention and emotional reactions during reading.

Qualitative data were gathered using:

- Post-intervention focus group interviews, in which students could describe their experiences in their own words.
- Classroom observation rubrics, systematically ensuring consistent documentation of engagement, participation, and anxiety-related behaviors.
- Learner journals, which documented on-going reflection on emotional reactions and coping strategies.

10. Procedure

The research was pursued for six weeks. Baseline measurements were taken during Week 1 [FLRAS, OPT, MARS, Motivation Scale]. Intervention followed for Weeks 2–7, with the flipped group watching pre-class content 48 hours prior to attending in-class sessions. In-class sessions were organized around collaborative reading activities and strategic discussions.

The control group took the default model with no provision of preparatory material. All students took the post-test battery Week 8, and then qualitative data were collected.

11. Data Analysis

• Quantitative data were computed using SPSS and AMOS. Post-test FLRAS scores were compared using an ANCOVA that controlled for pre-test differences.

Moderation analysis based on regression examined the functions of proficiency and motivation. Mediation analysis (with Hayes' PROCESS macro) examined if cognitive control mediated the effect of instruction type on reduced anxiety.

- Thematically coded qualitative data were produced using Braun and Clarke's (2006) six-phase approach: familiarization, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and final synthesis. Triangulation with focus group transcripts, observation notes, and journals ensured depth and trustworthiness.

12. Results

The main findings of the study on the influence of flipped instruction on foreign language reading anxiety (FLRA) are reported in this section, including all three research questions through quantitative and qualitative analysis.

13. Preliminary Analyses

Before hypotheses were tested, data were screened to check whether parametric analysis assumptions were fulfilled.

- Assumptions of Normality: All the variables were within the safe skewness limit of -0.83 to 0.91 and kurtosis limit of -1.12 to 1.03. Shapiro–Wilk tests also confirmed normality for all of the most critical variables ($p > .05$).

- Baseline Equivalence: Independent-samples t-tests also revealed no statistically significant differences between experimental group and control group at pre-test:

FLRAS: $t(78) = 0.23, p = .82$

Proficiency (OPT): $t(78) = 0.84, p = .40$

Motivation: $t(78) = 1.12, p = .27$

These findings justify subsequent comparisons.

Table 1

Pre- and Post-Test Means (Standard Deviations)

Variable	Experimental Group	Control Group
Pre-FLRAS	70.0 (5.1)	70.2 (5.0)
Post-FLRAS	58.0 (5.3)	65.0 (5.1)
Proficiency (OPT)	70.0 (5.2)	69.0 (5.3)
Motivation	4.0 (0.5)	3.8 (0.5)

Effect of Flipped Instruction on FLRA (RQ1)

To ascertain whether there was a significant decrease due to flipped teaching on foreign language reading anxiety, an ANCOVA was performed with post-test FLRAS as the dependent measure, with pre-test FLRAS controlled.

- Significant main instructional method effect was discovered: $F(1, 77) = 38.62, p < .001, \text{partial } \eta^2 = .33$

- Adjusted post-test means were:

Flipped group: $M = 57.9$ (95% CI [56.2, 59.6])

Control group: $M = 65.1$ (95% CI [63.4, 66.8])

- The calculated effect size (Cohen's $d = 1.21$) indicates a large and practically significant effect of flipped instruction.

This outcome is supported by earlier research [e.g., Mohammaddockht & Fathi, 2022], where notable post-intervention anxiety reductions were observed after flipped reading interventions.

14. Moderating Effects of Proficiency and Motivation (RQ2)

Hierarchical multiple regression was conducted to examine whether or not the effect of flipped instruction was moderated through students' proficiency in English and academic motivation.

- Proficiency: Proficiency was, however, significantly negatively related to post-FLRAS scores ($\beta = -.32, p < .01$), with the most competent individuals demonstrating the greatest decrease in anxiety.

- Motivation: Academic motivation also moderated the treatment outcome ($\beta = -.27, p < .05$), with highly motivated students reporting significantly lower FLRAS scores post-intervention.

Graphical inspection of interaction effects suggested that students with both high proficiency and high motivation benefited most from the flipped model, showing up to 22% lower FLRAS scores relative to their traditional counterparts.

15. Cognitive Control and Strategy Use (RQ3)

To test the proposed mediating role of cognitive control, a path analysis was conducted using AMOS.

Cognitive Control: The mediation model detected a significant positive path coefficient ($\beta = .41, p < .001$), supporting that students with greater regulatory control over attention and emotion had greater anxiety reductions.

Strategy Use: A similar path from cognitive strategy use to decreased anxiety was also significant ($\beta = .38, p < .001$).

Total Mediated Effect: These mediators accounted for about 21% of the effect of flipped teaching on FLRAS (95% CI [.15, .27]).

These findings are consistent with a control-value approach, whereby flipped learning contexts support learners' agency and metacognitive knowledge, thus alleviating affective obstacles.

16. Qualitative Findings

Thematic analysis of learner journaling and focus group interview data revealed three dominant themes that added depth to understanding the quantitative findings

1. Preparedness: "Pre-class videos made me feel prepared" (P12) - Students explained the asynchronous material as annulling uncertainty and increasing early confidence.

2. Peer Interaction as Safety Net: "Group discussions reduced my fear of mistakes" (P07) - Most participants reported that collaborative activities alleviated pressure to perform.

3. Contrast with Traditional Learning: "Traditional classes felt unpredictable" (P33) - Control class students reported feelings of helplessness and fear of responsibility when performing cold-reading activities.

These findings validate that flipped learning not only increases cognitive preparedness but also shifts the affective tone of the reading classroom.

17. Summary of Hypothesis Testing

Table 2

Hypothesis Support Summary

Hypothesis	Test	Result	Supported
H2.1	ANCOVA	$F = 38.62^{***}$	Yes
H2.2	Moderation	$\beta = -.32^{**}, -.27^*$	Partial
H2.3	Path Analysis	21% mediation	Yes

* $p < .05$, ** $p < .01$, *** $p < .001$

18. Discussion

The findings of the study provide robust evidence that flipped learning is an effective pedagogy in reducing Foreign Language Reading Anxiety (FLRA) in university EFL contexts. The sharp decline in the anxiety level of the students in the experimental group and the large effect size ($d = 1.21$) testify to the psychological benefits of flipping the traditional method of instruction on reading upside down into a flipped one. These results not only confirm but also build upon previous research in this area, yielding subtle insights on the processes through which flipped learning delivers emotional and cognitive advantage.

The overall effect observed here aligns with Mohammaddockht and Fathi (2022) who revealed that reversed reading instruction improved reading performance and emotional regulation. Alharbi (2021) also observed increased confidence among Saudi EFL learners following a flipped reading intervention. In experiments and in this work, students also identified pre-class multimedia preparatory advantages - a consideration also reflected in the qualitative finding of this work.

The current research builds on prior studies by demonstrating that student variability plays a moderating function to enact in the construction of outcomes. Specifically, students with higher stages of English proficiency and academic motivation benefited most from flipped learning. These findings are in line with Chuang et al. (2018), who emphasized learner preparation as a secret to maximizing the efficiency of flipped environments. In our study, motivated students had larger drops in anxiety, quite likely because they were more sensitive to the pre-class reading and in-class group work. This aligns with the double function of motivation as both a predictor of participation and instructional effect moderator.

Arguably most noteworthy, our new study mediator, the cognitive control mechanism, has been somewhat underplayed in previous flipped classroom studies. These outcomes extend and replicate Liu (2022), who used the control-value theory to explain how increased autonomy and preparedness diminish emotional tension. Path analysis showed that cognitive control and strategy use combined explained 21% of the anxiety reduction. This is consistent with the contention that flipped instruction

not only changes what the students do, but also the manner in which they regulate thinking and feeling.

Qualitative results add richness and depth to these results. Flipped learners always reported they were more prepared, less anxious about getting something wrong, and more in control of activities during class reading. These reports verify the extremely powerful potential of flipped learning, particularly when it deals with scaffolding and peer support. The control group members described traditional courses as unreliable and anxiety-inducing, showing the limitations of teacher-centered approaches in addressing affective needs.

Yet all of the findings were not completely consistent with previous research. For instance, while Gök et al. (2023) wrote concerning the social aspect of flipped learning, the current research found more influential internal cognitive self-regulation effects than peer effect. This disparity might be explained by context in the guise of class size, school culture, or availability of technology, all of which shape the classroom setting in subtle but powerful ways.

Also, the lack of significant synergy between high ability and motivation in some moderation models suggests that flipped teaching may not be just as beneficial to students. Such future studies must control tiered or differentiated flipped intervention with students' varying points of origin in anxiety, proficiency, and strategy use.

In general, this study offers solid empirical support for flipped classroom as a means to minimize FLRA. In addition to anticipated learning performance gains, flipped learning also enhances learner autonomy, intellectual preparation capabilities, and decreases affective barriers. These outcomes are of relevance to curriculum developers, language teachers, and education planners who are interested in coming up with learner-centered, inclusive EFL classrooms.

19.Limitations

This study is limited by a number of limitations despite its value. First, the intervention was very brief (six weeks) and may not generalize to long-term reductions in anxiety and reading ability after prolonged flipped instruction. Second, the research used self-reports, and the latter are prone to social desirability and response bias for motivation and cognitive control. Third, interest was targeted on reading anxiety, but follow-up investigations could investigate whether findings could generalize to other areas of skill, e.g., listening or speech.

Lastly, the sample population was from one Algerian university whose external validity can be questioned. Structural variation in technology infrastructure, student knowledge of digital media, or orientations toward teacher-fronted or student-fronted processes may vary elsewhere.

The results indicate a number of avenues for future studies. Longitudinal research is needed to verify the long-term length of the anxiety decrease and how it is associated with reading comprehension and achievement. It would be beneficial to explore the interaction of flipped class with other student characteristics, such as learning style, personality characteristics, and emotional intelligence.

Later research can also experiment with blended models, such as combining gamification with flipped learning or using adaptive learning software to further

reinforce student motivation. Large-scale comparison studies in different contexts - urban, rural, technology-enabled, and poverty-level schools - would also be valuable in identifying in what type of setting flipped learning performs optimally.

Furthermore, more qualitative research is required to improve the understanding of students' emotional experience in flipped learning and teachers' attitudes related to challenges and opportunities of enactment.

20. Conclusion

The objective of the present study was to investigate the effects of instruction by flipped classroom on foreign language reading anxiety (FLRA) reduction among English as a foreign language (EFL) university students. Utilizing the mixed-methods procedure, it was found that flipped teaching decreased learners' anxiety scores considerably, and stronger effects were identified among more intrinsically motivated and proficient learners. Not only did the intervention enhance affective outcomes, but cognitive self-regulation and strategic use of approach toward reading texts as well.

The emphasis of flipped learning on pre-class preparation, metacognitive knowledge, and peer-based in-class application offers the background environment of support for learning that allows students to work with complex texts with greater autonomy and confidence. The research also confirmed the mediating function of cognitive control to explain the role of learning strategies and emotion regulation in resulting in positive outcomes.

Beyond adding to the title broader literature on flipped pedagogy compared to traditional pedagogy, the present work introduces new evidence regarding learner variables' contribution and usefulness of incorporating psychological models - like control-value theory - in language acquisition research.

21. REFERENCES

1. Abaeian, H., & Samadi, L. (2016). The effect of flipped classroom on Iranian EFL learners' L2 reading comprehension: Focusing on different proficiency levels. *Journal of Applied Linguistics and Language Research*, 3(6), 295–304. (in English)
2. Al Mulhim, E. N. (2021). Flipped learning, self regulated learning and learning retention of students with internal/external locus of control. *International Journal of Instruction*, 14(1), 827–846. <https://doi.org/10.29333/iji.2021.14150a> (in English)
3. Alharbi, N. S. (2021). The effect of flipped learning strategy on developing Saudi university students' English reading comprehension and their attitudes towards the strategy. *Linguistics and Literature Studies*, 9(4), 91–101. <https://doi.org/10.13189/lls.2021.090401> (in English)
4. Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice-Hall. (in English)
5. Basal, A. (2015). The implementation of a flipped classroom in foreign language teaching. *Turkish Online Journal of Distance Education*, 16(4), 28–37. <https://doi.org/10.17718/tojde.72185> (in English)

6. Bishop, J., & Verleger, M. A. (2013, June). The flipped classroom: A survey of the research. Paper presented at the *2013 ASEE Annual Conference & Exposition*, Atlanta, Georgia. <https://doi.org/10.18260/1-2--22585> (in English)
7. Choi, J.-I. (2014). A case study of flipped learning at college: Focused on effects of motivation and self-efficacy. *Journal of Educational Technology*. (in English)
8. Chuang, H.-H., Weng, C.-Y., & Chen, C.-H. (2018). Which students benefit most from a flipped classroom approach to language learning? *British Journal of Educational Technology*, *49*(1), 56–68. <https://doi.org/10.1111/bjet.12530> (in English)
9. Croy, W. G., Garvey, L., Willetts, G., Wheelahan, J., & Hood, K. (2020). Anxiety, flipped approach and self-efficacy: Exploring nursing student outcomes. *Nurse Education Today*, *93*, 104534. <https://doi.org/10.1016/j.nedt.2020.104534> (in English)
10. Doo, M. Y. (2022). Understanding flipped learners' perceptions, perceived usefulness, registration intention, and learning engagement. *Contemporary Educational Technology*, *14*(1), ep331. <https://doi.org/10.30935/cedtech/11368> (in English)
11. Dove, A., & Dove, E. (2017). Flipping preservice elementary teachers' mathematics anxieties. *Contemporary Issues in Technology and Teacher Education*, *17*(3), 292–304. (in English)
12. Eryilmaz, M., & Cigdemoglu, C. (2018). Individual flipped learning and cooperative flipped learning: Their effects on students' performance, social, and computer anxiety. *Interactive Learning Environments*, *27*(4), 432–442. <https://doi.org/10.1080/10494820.2018.1522652> (in English)
13. Fathi, J., & Shirazizadeh, M. (2020). The effects of a second language reading strategy instruction on Iranian EFL learners' reading comprehension and reading anxiety. *Language Related Research*, *11*(4), 267–295. <http://lrr.modares.ac.ir/article-14-30800-en.html> (in English)
14. Fitriah, L., Mujiono, M., & Weganofa, R. (2025). The effect of flipped classroom on EFL learners' competence with different learning styles: A meta analysis. *Journal of English Language Teaching and Linguistics*, *10*(1), 27–42. <https://doi.org/10.21462/jeltl.v10i1.1498> (in English)
15. Flipped Learning Network. (2014). *The four pillars of F-L-I-P*. Retrieved from <https://flippedlearning.org/definition-of-flipped-learning/> (in English)
16. Gok, D., Bozoglan, H., & Bozoglan, B. (2023). Effects of online flipped classroom on foreign language classroom anxiety and reading anxiety. *Computer Assisted Language Learning*, *36*(4), 840–860. <https://doi.org/10.1080/09588221.2021.1950191> (in English)
17. Hao, Y. (2016). Middle school students' flipped learning readiness in foreign language classrooms: Exploring its relationship with personal characteristics and individual circumstances. *Computers in Human Behavior*, *59*, 295–303. <https://doi.org/10.1016/j.chb.2016.01.031> (in English)

18. Jin, S. (2021). The effects of using flipped learning in an EFL speaking class on Korean EFL undergraduate students' speaking anxiety and speaking skills. *Studies in English Education*, 26(4), 597–625. (in English)
19. Karimi, M., & Hamzavi, R. (2017). The effect of flipped model of instruction on EFL learners' reading comprehension: Learners' attitudes in focus. *Advances in Language and Literary Studies*, 8(1), 95–103. <https://doi.org/10.7575/aiac.alls.v.8n.1p.95> (in English)
20. Kiyak, E., & Ekmekci, E. (2021). The effects of flipped speaking lessons on students' English speaking anxiety: The case of 5th grade students. *International Journal of Language Academy*, 9(3), 351–364. <https://doi.org/10.29228/ijla.52205> (in English)
21. Krashen, S. D. (1982). *Principles and practice in second language acquisition*. Pergamon Press. (in English)
22. Kuru Gonen, I. (2009, July). The sources of foreign language reading anxiety of students in a Turkish EFL context. Paper presented at the *5th International Conference on Educational Technologies*. (in English)