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Blended learning model and academic motivation in basic education

Modelo de aprendizaje híbrido (blended learning) y motivación académica en educación básica

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ABSTRACT

Blended learning spread in basic education after the pandemic without an explicit pedagogical model, since many schools moved the same classroom tasks to the platform without attending to students' motivation. The study therefore aimed to analyze the blended learning model and academic motivation in basic education. A systematic review following the PRISMA 2020 statement was used, taking as sample 25 peer-reviewed articles (2000-2026) analyzed through extraction matrices. The results showed that combining face-to-face and online learning improves achievement and motivation when it supports autonomy, competence and relatedness. It was concluded that the model works if technological access and teacher mediation are guaranteed.

Descriptors: primary education; e-learning; pedagogical innovation. (Source: UNESCO Thesaurus).

RESUMEN

El aprendizaje híbrido se extendió en la educación básica después de la pandemia sin un modelo pedagógico explícito, por cuanto muchas escuelas trasladaron a la plataforma las mismas tareas del aula sin atender la motivación de los estudiantes. Es así que el estudio se planteó como objetivo analizar el modelo de aprendizaje híbrido (blended learning) y la motivación académica en educación básica. En este sentido se empleó una revisión sistemática según la declaración PRISMA 2020, teniéndose como muestra 25 artículos arbitrados (2000-2026) analizados mediante matrices de extracción. Entre los resultados se obtuvo que la combinación presencial y en línea mejora el rendimiento y la motivación cuando favorece la autonomía, la competencia y la relación con otros. Entre las conclusiones se estableció que el modelo funciona si el acceso tecnológico y la mediación docente están garantizados.

Descriptores: enseñanza primaria; aprendizaje en línea; innovación pedagógica. (Fuente: Tesauro UNESCO).

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Research Articles Section

INTRODUCTION

When Ecuadorian schools began returning to the classroom between 2021 and 2022, many adopted schedules that alternated days at school and days at home, although previous experience was not encouraging, since Asanov et al. (2021) had found during the quarantine that only 59% of students had both internet access and a computer or tablet, and Cárdenas-Tapia et al. (2022) had recorded, in a survey of 6206 mothers, fathers and guardians, that 54% of families with three children had only two mobile devices. In line with these figures, the hybrid modality reached basic education as a practical solution rather than as a pedagogical model, with the risk of transferring the same notebook tasks to the virtual environment.

For its part, the literature clearly distinguishes between mixing technologies and designing a combined experience, and Garrison & Kanuka (2004) defined blended learning as the thoughtful integration of face-to-face and online experiences, so that each component contributes what the other cannot offer. Later, Hrastinski (2019) reviewed the most cited definitions and warned that the term is used with such different meanings that many studies do not make it possible to know what proportion of learning takes place online, or for what purpose, which makes it difficult to compare results across studies and educational levels.

At the motivational level, Ryan & Deci's (2000) self-determination theory explains that intrinsic motivation is sustained when three basic psychological needs are satisfied, autonomy, competence and relatedness, and the same authors showed two decades later that this satisfaction predicts engagement and learning in very different school contexts (Ryan & Deci, 2020). In turn, Fredricks et al. (2004) proposed understanding school engagement in three dimensions, behavioral, emotional and cognitive, a framework that makes it possible to observe whether a blended model maintains student participation or reduces it to the submission of assignments.

But what happens to the motivation of basic education students when part of their learning moves to a platform, and what characteristics must the model have for that motivation to grow rather than decline? Based on the above, the research aims to analyze the blended learning model and academic motivation in basic education, in order to contrast the international evidence with the conditions of Ecuadorian schools and identify the components that a model of this kind requires.

METHOD

The research was conducted as a systematic literature review, since the aim was to gather, appraise and synthesize, in an explicit and reproducible way, the published evidence on blended learning and academic motivation, following the recommendations of the PRISMA 2020 statement that Page et al. (2021) updated for reporting this type of study. Accordingly, the research question was formulated as follows: what effects does blended learning have on students' achievement and academic motivation, and what conditions explain these effects in basic education? The eligibility criteria, search terms and extraction categories summarized in Table 1 were derived from this question.

Table 1. *Systematic review protocol*.

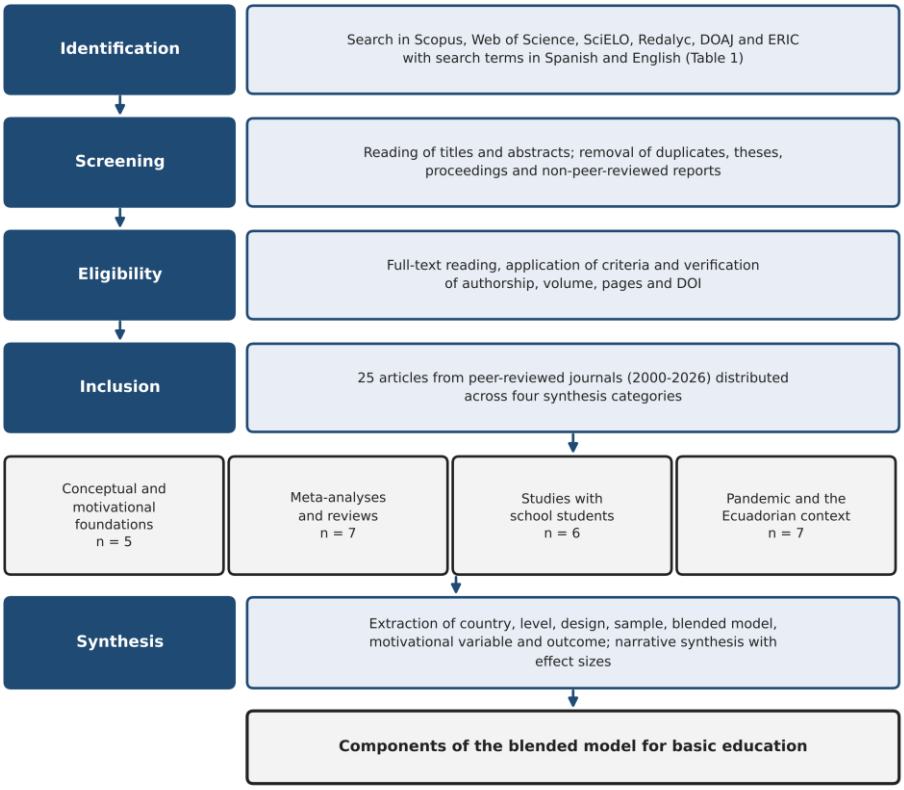
Element	Description
Design	Systematic review with narrative synthesis, reported according to PRISMA 2020
Question	What effects does blended learning have on achievement and academic motivation, and what conditions explain them in basic education?
Databases consulted	Scopus, Web of Science, SciELO, Redalyc, DOAJ and ERIC
Search terms	("blended learning" OR "aprendizaje híbrido" OR "aprendizaje mixto" OR "flipped classroom" OR "aula invertida") AND ("motivation" OR "motivación" OR "engagement" OR "compromiso") AND ("primary" OR "K-12" OR "educación básica")
Period	2000-2026
Inclusion criteria	Peer-reviewed articles with a DOI or verifiable record; empirical studies, meta-analyses or reviews on blended learning, flipped classroom, motivation or engagement; studies on learning during school closures; reference theoretical frameworks
Exclusion criteria	Theses, conference proceedings, non-peer-reviewed reports, press, blogs, non-peer-reviewed or predatory journals and duplicate records
Synthesis categories	Foundations (n = 5); meta-analyses and reviews (n = 7); studies with school students (n = 6); pandemic and the Ecuadorian and Latin American context (n = 7)
Data extracted	Country, level, design, sample, blended model, motivational variable and outcome

Note: developed in-house.

As for the search, Scopus, Web of Science, SciELO, Redalyc, DOAJ and ERIC were consulted with combinations of search terms in Spanish and English, and selection was carried out in three successive phases: first, the reading of titles and abstracts; then, the reading of the full text to apply the inclusion and exclusion criteria; and finally, the verification of each record on the journal's website to confirm authorship, volume, pages and DOI. Theses, conference proceedings, non-peer-reviewed reports, duplicate publications and journals of doubtful editorial quality were excluded, so that the final sample comprised 25 articles from peer-reviewed journals published between 2000 and 2026.

Regarding extraction and synthesis, the country, educational level, design, sample, type of blended model, motivational variable and outcome were recorded for each article, and the studies were grouped into four categories, namely conceptual and motivational foundations, meta-analyses and reviews, studies with school students, and evidence on the pandemic and the Ecuadorian and Latin American context. Given the heterogeneity of designs, measures and levels, the synthesis was narrative and relied on the effect sizes reported by the meta-analyses, without calculating a pooled effect of its own, as represented in Figure 1.

Figure 1. *Phases of the systematic review according to PRISMA 2020*.



Note: developed in-house.

RESULTS

What meta-analyses show about blended learning

First, meta-analyses agree that combining face-to-face and online experiences outperforms exclusively face-to-face teaching, and Means et al. (2013) established this by analyzing experimental and quasi-experimental studies published in *Teachers College Record*, with an effect size of g = 0.35 in favor of blended learning compared with only g = 0.05 for fully online learning. Similarly, Bernard et al. (2014) brought together 117 comparative studies and found that blended conditions outperformed face-to-face ones by about one third of a standard deviation, with g = 0.334, although both studies focused mainly on higher education.

With regard to the flipped classroom, one of the most widespread forms of the model, Låg & Sæle (2019) estimated a small effect on learning, with g = 0.35 in 272 comparisons and g = 0.24 when limited to adequately powered studies, and an even smaller effect on satisfaction, with g = 0.16. Likewise, Strelan et al. (2020) analyzed studies across disciplines and levels, including school education, and confirmed a moderate positive effect of the flipped classroom on performance, which indicates that the advantage exists but depends on how activities are organized outside and inside the classroom.

However, the online part of the model carries its own difficulties, and Rasheed et al. (2020) identified in their systematic review that students face problems of self-regulation and technology use, teachers face problems of technological competence for teaching, and institutions face problems of providing tools and teacher training. In the field of gamification, which often accompanies blended environments, Zainuddin et al. (2020) reviewed 46 studies published between 2016 and 2019 and found that motivation and engagement are the most frequently reported outcomes, while Lee & Baek (2023) estimated an effect of g = 0.801 in primary school, greater than in secondary school (g = 0.624) and at university (g = 0.270). Table 2 summarizes

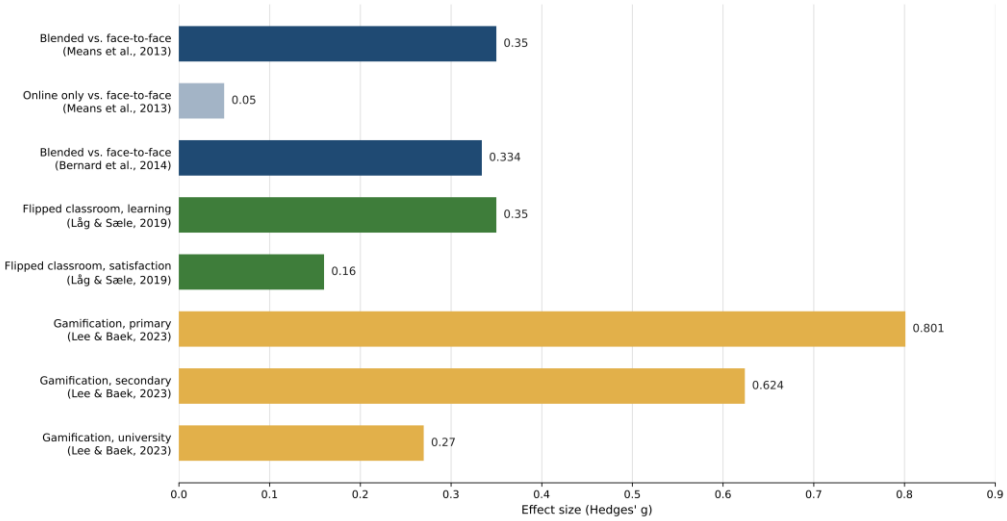
this comparison and Figure 2 brings together the reported effect sizes.

Table 2. *Comparison of meta-analyses and reviews on blended learning and motivation*.

Study	Corpus	Modality	Result
Means et al. (2013)	Experimental and quasi-experimental studies	Blended and online	Blended g = 0.35; online only g = 0.05
Bernard et al. (2014)	117 studies	Blended in higher education	g = 0.334 compared with face-to-face classes
Låg & Sæle (2019)	272 comparisons	Flipped classroom	Learning g = 0.35; satisfaction g = 0.16
Strelan et al. (2020)	Various disciplines and levels	Flipped classroom	Moderate positive effect on performance
Rasheed et al. (2020)	Systematic review	Online component	Challenges of self-regulation, technology and training
Zainuddin et al. (2020)	46 studies (2016-2019)	Gamification	Motivation and engagement as central outcomes
Lee & Baek (2023)	11 studies; 610 participants	Gamification	Primary g = 0.801; university g = 0.270

Note: developed in-house from the corpus reviewed.

Figure 2. *Effect sizes reported in meta-analyses on blended learning, flipped classroom and gamification*.



Note: developed in-house from Means et al. (2013), Bernard et al. (2014), Låg & Sæle (2019) and Lee & Baek (2023).

What studies with basic and secondary education students show

Second, studies with younger students offer evidence closer to basic education, and Bond (2020) reviewed 107 studies on the flipped classroom in school education published between 2012 and 2018 and found that 93% reported at least one dimension of behavioral, emotional or cognitive engagement, although 50% also recorded forms of disengagement, especially when the videos had not been produced by the teacher. It should be noted that only 12% of these studies defined what they meant by engagement, which limits the conclusions about motivation.

In Spain, Botella et al. (2021) worked with 100 sixth-grade students in a parkour unit in physical education and found that the flipped classroom group increased its intrinsic, identified and introjected motivation, with $p < .001$, while the traditional teaching group decreased in intrinsic and identified motivation. Likewise, Gómez-García et al. (2020) combined the flipped classroom and gamification with digital badges in Moodle in a unit on healthy habits with 202 sixth-grade students from four schools in Granada, and motivation rose from a mean of 1.94 to 2.79, with autonomy and self-regulation as significant predictors.

More recently, Ábalos-Aguilera et al. (2026) compared, in primary school, an intervention with a gamified digital object with a similar study conducted a decade earlier and concluded that technological mediation continues to influence motivation, although its impact today depends more on the methodological and emotional design of the proposal than on the mere presence of devices. Along the same lines, Chiu (2022) assessed 1201 eighth- and ninth-grade students from six schools in Hong Kong and found that organized digital support raised the satisfaction of autonomy from 3.11 to 3.98, of competence from 2.69 to 3.41 and of relatedness from 2.96 to 3.74, on a five-point scale.

This invites reflection on the weight of each need, since in Chiu's (2022) model relatedness was the strongest predictor of behavioral (β = .52), emotional (β = .55) and agentic (β = .48) engagement, while competence better explained cognitive engagement (β = .64), so that a blended environment that isolates the student in front of the screen loses precisely the component that most sustains participation. Moorhouse & Wong (2022) reached a similar conclusion with teachers in Hong Kong, 57% of whom combined synchronous and asynchronous sessions, by proposing a sequence that reserves real-time meetings for interaction and feedback. Table 3 brings together the comparison for this group.

Table 3. *Comparison of studies on blended models and motivation in school students*.

Study	Country	Sample and model	Motivational result
Bond (2020)	International	107 studies on school flipped classrooms	93% report engagement; 50% disengagement
Gómez-García et al. (2020)	Spain	202 6th-grade students; flipped classroom and gamification	Motivation from 1.94 to 2.79
Botella et al. (2021)	Spain	100 6th-grade students; flipped classroom	Increase in intrinsic motivation ($p < .001$)
Chiu (2022)	Hong Kong	1201 8th- and 9th-grade students; digital support	Autonomy from 3.11 to 3.98; relatedness predicts engagement
Moorhouse & Wong (2022)	Hong Kong	73 primary and secondary teachers	57% combine synchronous and asynchronous sessions
Ábalos-Aguilera et al. (2026)	Spain	Primary; gamified digital object	Design matters more than the device

Note: developed in-house from the corpus reviewed.

What the pandemic and the Ecuadorian context show

On the other hand, the experience of remote education warns of the limits of the online component when conditions are lacking, and Betthäuser et al. (2023) brought together 42 studies from 15 countries to estimate a learning deficit of d = -0.14, greater among students of low socioeconomic status and in middle-income countries, while Engzell et al. (2021) showed in the Netherlands that eight weeks of closure produced losses up to 60% greater in households with less schooling. In the state of São Paulo, Lichand et al. (2022) found that the risk of dropout increased by 365% during remote education and that students learned about 27.5% of what they would have learned in face-to-face classes.

In the Ecuadorian case, Alvarez et al. (2025) consulted 113 teachers in public primary schools and found that 80% indicated that students lack access to technology, a figure consistent with the scarcity of devices documented by Cárdenas-Tapia et al. (2022), who also observed that in rural areas parents focused on discipline and completing homework, while in urban areas they paid more attention to academic and emotional support. In Mexico, Flores et al. (2024) found that university students valued face-to-face classes more than virtual ones because of planning, communication with the teacher and feedback, and concluded that the challenge of distance education is pedagogical rather than technological.

DISCUSSION

Overall, the results of the review make it possible to establish that blended learning favors academic motivation when its design addresses the three needs of self-determination theory, and that it does so better at the earlier levels, as suggested by the larger effects in primary school reported by Lee & Baek (2023). On this basis, six components are proposed, as the authors'

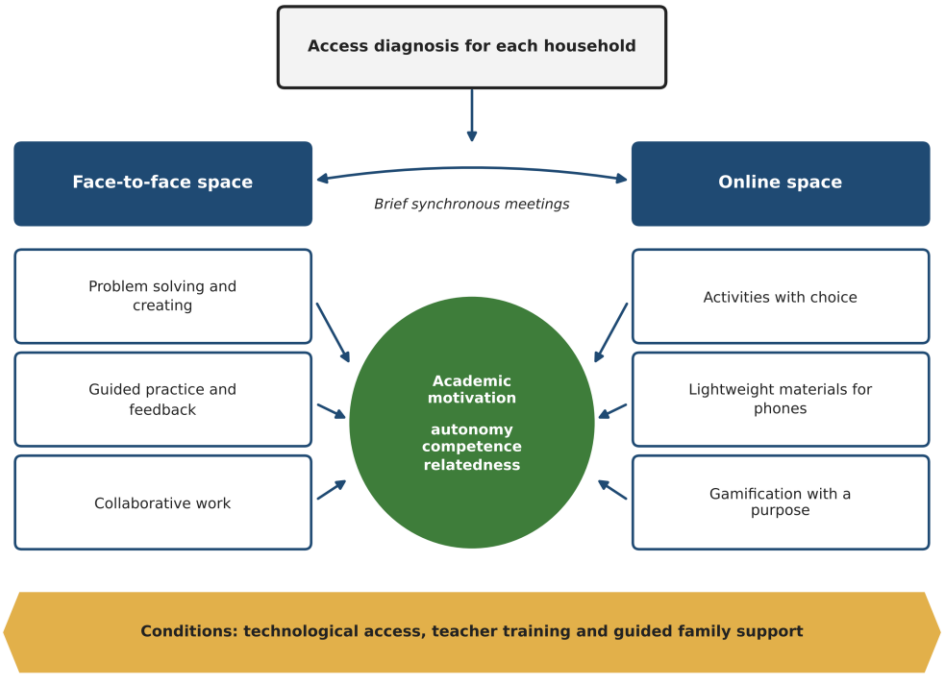
inference, for a blended model in Ecuadorian basic education, whose relationship with psychological needs, evidence and the country's conditions is presented in Table 4 and Figure 3.

Table 4. *Components of a blended model for basic education and their relationship with motivation*.

Component	Need addressed	Evidence in the corpus	Condition for Ecuadorian basic education
Access diagnosis	Competence	59% with internet and a computer (Asanov et al., 2021)	Know each household's equipment before planning
Online activities with choice	Autonomy	Autonomy from 3.11 to 3.98 with digital support (Chiu, 2022)	Lightweight materials for phones and mobile data
Face-to-face classroom for solving and creating	Competence	Flipped classroom g = 0.35 (Låg & Sæle, 2019)	Devote class time to guided practice rather than repetition
Brief synchronous meetings	Relatedness	Relatedness predicts engagement (Chiu, 2022)	Short sessions in small groups
Gamification with a purpose	Competence and autonomy	Primary g = 0.801 (Lee & Baek, 2023)	Badges and challenges linked to learning objectives
Guided family support	Autonomy and relatedness	Different support in rural and urban areas (Cárdenas-Tapia et al., 2022)	Brief guides for guardians, without excessive pressure

Note: developed in-house from the corpus reviewed.

Figure 3. *Blended learning model for basic education oriented toward academic motivation*.



Note: developed in-house from the corpus reviewed.

Another aspect that should be examined is the balance between the two spaces, since the evidence from Bond (2020) and Chiu (2022) indicates that the online part motivates when it offers choice and feedback, and the face-to-face part when it is devoted to solving, discussing and creating rather than repeating the explanation. Hence an intrinsic challenge for schools with little equipment, which is to organize the online part with lightweight materials that work on phones and with mobile data, so that the lack of a computer does not exclude the student from the model.

Consequently, the model cannot be implemented without teacher training or institutional support, as Rasheed et al. (2020) warn, and it also requires families to understand their role, since in basic education children depend on an adult to organize their time at home. In this regard, Ryan & Deci

(2020) recall that excessive control and pressure to complete tasks reduce intrinsic motivation, a warning that makes sense in light of the rural households described by Cárdenas-Tapia et al. (2022), where support focused on discipline.

Finally, the review has limitations that should be considered when interpreting its results, since most of the meta-analyses were conducted in higher education, studies with basic education students use small samples and different motivation measures, and no Ecuadorian studies published in peer-reviewed journals that evaluated a blended model at this level were found. For this reason, the synthesis was narrative and the implications for Ecuadorian schools are presented as inferences that require empirical testing.

CONCLUSIONS

The objective of analyzing the blended learning model and academic motivation in basic education was achieved through a systematic review of 25 articles covering conceptual and motivational foundations, meta-analyses, studies with basic and secondary education students, and evidence on the pandemic in Ecuador and Latin America. In light of the above, blended learning outperforms exclusively face-to-face teaching and, above all, exclusively online teaching, with greater effects at the earlier levels.

The review shows that academic motivation grows when the model offers choice, frequent feedback and meetings that strengthen the relationship with the teacher and with peers, and that it declines when the platform is used to accumulate tasks without support. This indicates that the model works if technological access and teacher mediation are guaranteed, conditions that in Ecuadorian basic education do not yet reach all students.

Therefore, educational institutions and the district offices of the Ministry of Education are advised to define an explicit blended model, with clear proportions and purposes for each space, to train teachers in designing online activities for children and to guide families on their role. Likewise, a challenge for future research is to measure, with quasi-experimental designs in schools in Manabí and other provinces, the effect of a model of this kind on the motivation and achievement of basic education students.

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Non-monetary.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest with any individuals or institutions related to this research.

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