

03

FLIPPED CLASSROOM

IN HISTORY TEACHING

AULA INVERTIDA EN LA ENSEÑANZA DE LA HISTORIA

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ABSTRACT

This article aims to analyze the importance of the Flipped Classroom in History teaching, with the intention of awakening the interest of teachers in the implementation of this teaching modality. In this sense, a bibliographic systematization was developed based on the hermeneutic methods, documentary analysis and content analysis. Among the main findings, its importance in the implementation in History classes is given by facilitating student autonomy, favoring responsibility in their own learning process, and greater active participation in addressing the subject content.

Keywords:

Flipped classroom, teacher's role, student's role, teaching process, History.

RESUMEN

Este artículo tiene como objetivo analizar la importancia del Aula Invertida en la enseñanza de la Historia, con la intención de despertar el interés de los docentes por la implantación de esta modalidad de enseñanza. En tal sentido, se desarrolló una sistematización bibliográfica sustentada en los métodos hermenéutico, análisis documental y análisis de contenido. Entre los principales hallazgos se tiene que, su importancia en la implantación en las clases de Historia está dada por facilitar la autonomía del estudiante, favorecer la responsabilidad en su propio proceso de aprendizaje, y una mayor participación activa en el abordaje de los contenidos de la asignatura.

Palabras clave:

Aula invertida, rol del docente, rol del estudiante, proceso de enseñanza, Historia.

INTRODUCTION

Knowledge is not generated by pouring information into the students' brains; rather, it appears when the students are able to think critically and reflectively about the data provided to them, allowing the student to develop creativity and autonomy. New knowledge is more solid and lasting when the student is the active subject in the learning process; in addition, this allows the student to acquire skills and attitudes for better development in the personal, school and social spheres.

In contemporary society, technological and scientific advances have had an impact on all contexts of human endeavor, where the education sector is no exception; a space in which they have led to major transformations in the methodological order in all areas of knowledge. Thus, new ways of teaching and learning have emerged, didactic means and methodological strategies based on active methods, focused on the role of the student as the center and protagonist of the teaching-learning process (Domínguez Rodríguez & Palomares Ruiz, 2020; Elizalde, 2020), it can be said that in the last decades the innovation processes have been substantial.

Undoubtedly, this progress of science and technology has a major degree of importance, since they are changing and continuous, requiring the education system to systematically search for methodological alternatives that promote the necessary improvement in the educational task; this requires an academic staff with appropriate professional skills, including technological skills, through which to make educational praxis feasible with assertive attitudes.

Another requirement of current education is the need to train students through active and personalized learning, where they assume the leading role in their learning process; it is they who must develop concepts and definitions in an autonomous and personalized way, through the use of various resources, tools and didactic techniques, which the teacher provides and makes available to them.

Today, the aim is to change the traditional teaching-learning model and bet on active learning, which contributes to the development of fundamental competencies in the learner, where information and communication technologies (ICT) provide multiple options for the student to be the builder of his own knowledge, taking advantage of the characteristics of flexibility, immediacy, interconnectivity and manageability of these technologies (Cabero, 1993; Suasnabas Pacheco et al., 2017). Similarly, ICTs facilitate the differentiation and segmentation of the audience, allowing attention to the individual differences of the learner, as well as self-monitoring and self-assessment of knowledge (Cabero, 2000; Díaz Vidal, 2013).

However, generally in classrooms, teachers continue to employ teaching and learning models in which they

remain the central figure and main source of knowledge, while students take notes as mere recipients of already finished knowledge. The results of the research by Miranda Hernández & Medina Chicaiza (2020); and Robert et al. (2020), attest to this problem; these authors were able to determine that, teachers continue to teach the contents of Social Sciences through traditional methodologies, characterized by the exposition of the subject matter by the teacher and, the reproduction and memorization of the content by the student.

Particularly in the teaching of History we observe the use of methodologies characterized by:

- The abuse of memorization of dates and historical figures, leaving in the background the analysis and argumentation of the cause and effects of historical facts; as well as their relationship with the present.
- Insufficient use of active methodologies.
- Scarce use of ICT in the teaching-learning process to support the construction of new knowledge through inquiry.

Reason and motive for which the present work is developed, with the objective of analyzing the importance of the Inverted Classroom (IA) in the teaching of History; in this way, it is intended to contribute to the dissemination of the advantages of this methodology and to awaken the interest of teachers for its implementation in the classes of this discipline. In order to develop this article, the following topics have been proposed:

- What is IL?
- Background of IL
- IL as a didactic technique
- Phases of IL
- Role of the teacher and role of the student in IL
- Advantages and disadvantages of IL
- Evaluation of IL
- Use of IL in History teaching

METHODOLOGY

This work is the result of a bibliographic systematization study based on hermeneutic methods, documentary analysis and content analysis. These methods facilitated the in-depth examination of the literature consulted (books, scientific articles, documents, etc.) (León González et al., 2017; Espinoza, 2020). This made it possible to carry out in an organized and systematic manner the breakdown, interpretation and summary of the theoretical contributions of various authors, who, from different methodological perspectives provide information on new alternatives to carry out the teaching-learning process supported by ICT, with emphasis on IL.

The bibliographic materials and documents consulted were retrieved from specialized databases and university repositories through the use of the Google Scholar search engine, and the key terms: inverted classroom, information and communication technologies, active methodologies, teaching-learning process, History, among others. The criteria for the selection of these materials were their scientific and/or current value.

DEVELOPMENT

Education is a fundamental basis for the integral development of the human being; it is committed to satisfy the multiple cognitive and formative needs present today; accordingly, educational systems are constantly improving, in the search for new methodological alternatives, particularly those based on ICTs, which respond to the new demands of contemporary society (Liesa Orús et al. 2020).

Among the methodologies supported by ICT is IL, which has aroused the interest of teachers, since it demands an active role of the student and because of the multiple benefits it brings to the teaching-learning process; but what is IL?

The notion of the flipped classroom

Many authors consider IA as a learning strategy based on ICT (Gaviria Rodríguez et al., 2019; Alarcón & Alarcón, 2021.), others assume it as a methodology (Millán Franco, 2017), teaching method (Ordoñez Ocampo et al., 2021), model (Rivera Calle, 2019) or a technique (Alonso Betancourt, 2021), but all these conceptions agree that IL is directed to turn around or alter the logical steps of the traditional class, where the student receives optimal information to learn; the class time is better structured, which should be maximized, so that the learner can resolve doubts related to the subject of study; and work is done collaboratively to perform the activities, without the student losing individual responsibility.

In this flexible learning space, the teacher supports with the explanation of the topics and the student builds his knowledge through didactic software, such as: videos, multimedia and Web sites, among others, which favor the development of skills for autonomous learning. The following are some of their definitions.

For Domínguez Rodríguez & Palomares Ruiz (2020), "IL is one of the didactic methodologies that has spread around the world, which allows taking advantage of new technologies and generating in the student interest in autonomous research (at home) of unknown topics" (p. 263). Similarly, Escudero & Mercado (2019), state that the IA causes that the learning process does not occur only in the classroom, but that the student is also able to investigate data related to the subject of the future class from home, which enables the development of the students' research skills.

For their part, Aguilera Ruiz et al. (2017), state that it is a learning model that allows improving the teaching praxis. At this point, it should be specified that the implementation of IL is based on four essential factors that allow improving the teaching work; these are: the flexible environment, the learning culture, the intentional content and the educator.

Cedeño Escobar & Viguera Moreno (2020) indicate that "*the flipped classroom or aula invertida is a teaching method whose main objective is that the student assumes a much more active role in the learning process than the one he/she has traditionally occupied*" (p. 879). In other words, IL is proposed as a different way of presenting the content under study to the student, where the student is the main axis of the teaching-learning process, and the teacher is a guide in its development.

Criterion shared by Ordoñez Ocampo et al. (2021), who express: "*Likewise, we have another innovative and effective method called flipped classroom, which aims to provide an active role to the student in relation to their own learning, leaving aside the passive postures of reception and memorization of information*" (p.501). (p.501)

Also, Hinojo Lucena et al. (2019), allude that, IL focuses on the exchange of roles between the teacher and the student, the latter is the protagonist of the process; while the teacher becomes a facilitator and guide of the learner's activity, inside and outside the classroom. In the classroom, he rationalizes the use of explanation time and presents activities or exercises that generate critical thinking and cognitive independence skills in the student; likewise, he offers didactic means and explains their use for the development of the activity; outside the classroom he can support the student so that he can clarify his doubts, stimulate him to continue trying to develop the tasks and activities in preparation for the next class through the use of ICT resources, such as chat, audio-videos, e-mail, etc. In this way, students are previously prepared to develop the next class; Reyes et al. (2020), mention that IL favors the use of time in the classroom, since students enter classes with clear information on the subject to be addressed, thus greatly increasing the application of information.

Background of IL

Regarding the origin of IL, Vásquez & Sarco (2020) state that "*in 1998 the term inverted classroom was initially introduced by Barbara Walvoord and Virginia Johnson. These two teachers proposed a model in which the student had his or her first approach to the class material before attending the classroom. They presented students with information in the form of essays, surveys, and other didactic resources, so that they could learn, interact, and analyze the topic before it was discussed in class. In 2000, Platt, Treglia and Lage came up with the idea of incorporating*

videoconferencing, presentations and other ICTs in economics classes to explain the content to be covered in class before entering the classroom". (p.385)

To the aforementioned, it is worth adding the presence of educators Bergman Jonathan and Sams Aaron as promoters to complete the construction of the inverted classroom and contribute to the search for alternatives to help students who miss classes for various reasons. This led to the conception of personalized classes, which allowed students to work at their own pace and learning style, meeting the objectives of the class previously set, and where there is a quick feedback of asynchronous tasks.

The literature on the application of IL reflects the importance of its planning. According to Pérez Rodríguez et al. (2018), *"the planning of a class or inverted unit must guarantee the fulfillment of certain procedures and basic elements of it, and we suggest three steps for planning: sin-tering-self-learning-self-learning"* (p. 102). Thus, planning serves to consolidate quality educational management; working with the curricular plan is fundamental, since it implies keeping in mind the educational and instructional objectives that are essential to organize and, at the same time, guide the academic process.

In addition, it makes it possible to know the learning needs of each student, to reflect on the pertinent decision making, to know which are the necessary resources that should be taken to the classroom, as well as to foresee diverse strategies and methodologies in order to achieve motivation, active participation, meaningful learning and integral formation of all students.

IA has evolved to the present day, incorporating new technological resources for educational purposes; today, among other digital tools, didactic virtual platforms such as Moodle, Manhatan or e-ducativa, among others (Díaz Vidal, 2013; Hernández Silva & Tecpan Floresb, 2017), social networks and chat are used (Díaz Vidal, 2013; Hernández Silva & Tecpan Floresb, 2017).

IA as a teaching technique

The importance of IL as a didactic technique is based on a set of strengths that allow building a learning environment where student autonomy is generated, which is reflected in the construction of solid and meaningful learning in a participatory context. This technique contributes widely in the organization of the teacher's time, since the student is not limited to work in the classroom, but acquires the responsibility of appropriating the necessary information for the construction of new knowledge before the class, thus promoting his leading role in the teaching-learning process.

Therefore, IL as a technique is the result of an alternative pedagogical model that, as mentioned by Alonso

Betancourt et al. (2021), encourages individuality, creativity and the use/management of ICT to provide answers to educational problems, either online or in person. IL is a great didactic tool for, with this technique, autonomous learning is enhanced; in addition, the learner develops research skills by appropriating the audiovisual content present on the Web.

Phases of IL

The application of IL has three phases, as described in Table 1 below:

Table 1. IA phases.

Phase	Description
Pre-class	This phase refers to all the activities that are carried out before the class. For this, the teacher has the task of planning what will be used to approach the contents, of course, taking into account the student's ease of access to work with the materials proposed by the teacher. The objective of this phase is for the student to become familiar with the contents before the class and, subsequently, to be able to put the knowledge into practice.
Class	Taking into account that the students have already reviewed the contents, the teacher promotes the active participation of the students in addressing the contents of the class in question. It is in this part where students will learn by doing and the teacher will contribute to make that learning meaningful.
Post-class	In this third and final phase, a review of the topics addressed and their respective evaluation is carried out to verify the achievement of the learning, this can take place in general or by addressing the highlights of the class. It gives way to the analysis and reflection of the students about the contents, in such a way that they will expand their learning and in that the results of the activities carried out in the previous phases can be evidenced.

Source: Araya Moya et al. (2020).

It is important that in the course of these three phases a correct planning of what will be done before, during and after the class is carried out, since in this methodology it is key to be clear about what you want to achieve with the students in order to select or create the activities and resources that will be implemented based on the competencies and skills that are intended to be developed. These activities should be characterized by stimulating the interest and motivation of the specific group of students.

Role of the teacher and role of the student in IL

In the educational field it is essential to take into account IL in view of the progress of the "use of virtual media for learning, supported by new paradigms, which require the

commitment of teachers, so that their training, qualification and self-learning will give them the guideline to venture into new learning models” (Cedeño Escobar & Viguera Moreno, 2020, p. 882). Thus, in the teaching process it is vital to have a pedagogical guide at hand, who directs the learner towards profitable and feasible paths.

With the implementation of IL, the traditional teaching model is left behind; in this case, the teacher must reformulate his practice with the objective of motivating students. In order for the teacher to be able to offer an excellent accompaniment, he/she must be trained, thus being prepared to plan and exclude improvisation. Likewise, in the development of the activities he/she must be attentive to answer the doubts and questions made by the student (Merla González & Yáñez Encizo, 2016). It should be emphasized that the student ceases to have a passive role as a receiver of information and becomes an active entity in his own learning process.

Before the class, the teacher's responsibilities include planning what is necessary to address the contents, considering how to reach the students, while during the class he/she will accompany and guide them, will be aware of the progress in the development of the activities and of what the students request, always bearing in mind the objective of promoting autonomy. After the class, the teacher will verify the effectiveness of what has been done, i.e., the learning achieved, and the evaluation can begin. Also, he/she will be in charge of the feedback, a space where students will have the opportunity to ask for clarification of the doubts that have arisen about the topic in question.

On the other hand, Palencia Sarmiento (2020), points out that the student's role is active. Outside of class they will review the material that the teacher has provided them, depending on how he indicates, it may be a research on the topic that corresponds to the class. At the moment of approaching the contents with the presence of the teacher, the student will participate according to the methodologies and strategies proposed for the development of the class, they will have the opportunity to put into practice their competencies and skills. On the other hand, out of class they will also have to solve activities to reinforce what they have learned in class.

Advantages and disadvantages of IL

IL guarantees the effectiveness of education, promotes motivation, construction, appropriation and transformation of knowledge and experiences through the incorporation of innovative strategies, which facilitate a better use of the time available through the visualization of multimedia resources that provide previous information, which will be reinforced by the teacher in a collaborative process with the student (Cedeño Escobar & Viguera Moreno, 2020).

The effectiveness and educational quality is given in the achievement of each of the planted objectives despite the limitations that exist in the educational reality; so that incorporating IL in the teaching actions is a good option that facilitates the inclusion of resources, techniques and/or methodologies according to the rhythms and learning styles of each of the students; elements through which quality learning is achieved; in other words, IL *“offers the possibility of teaching students at their individual rhythms, which means a superior personalization for each one”*. (Aguilera Ruiz et al., 2017, p. 262)

But, IL not only offers advantages, also in its implementation there are potential disadvantages; for example, the economic factor is a key element. Aguilera Ruiz et al. (2017). concluded that “the economic crisis prevents the acquisition of technological resources being restrictive factors in pedagogy; therefore, it is necessary to analyze the economy of students to corroborate whether they have technological devices that allow visualization of multimedia resources.” (p. 263)

Similarly, the IL model requires the commitment of the educational actors, thus, Araya et al. (2022) consider that “it is the teacher who must be committed to his or her actions, taking into account the educational reality and the development of skills associated with criticality and reasoning” (p. 11). Also, IL demands the commitment of students, due to the need for them to visualize in advance the digital resources to socialize in class.

Evaluation of IL

In the academic field, the role of the teacher is complex, since it implies understanding that it is not only a cognitive act, but also an act of feelings, affections and emotions. Thus, it is essential to emphasize the great value as a curricular pedagogical alternative that contemplates active methodologies, due to its educational plan and the different essential and basic competencies in the classroom, at the same time, evaluation indicators specific to the area of work. Undoubtedly, active methodologies are of ample help in the teaching process, but in the same vision, it is necessary to recognize that it also requires great participation on the part of the students to create didactic spaces (Roig & Álvarez, 2019).

For this reason, the IA evaluative process demands to be more than a simple assessment method, it needs to be effective and direct; allowing to make the learning process viable, therefore, the following are taken into account: the answers to the questions formulated by the teachers and the formulation of questions generated by the students, since they are the main points to evidence the understanding and reflection of the students regarding the topics addressed, in such a way that, through the evaluation

process, the teacher can issue optimal criteria to ratify the scope of learning in each unit of study.

It is notorious that the quality of learning will depend on the thought processes of each student, i.e., evaluation is presented as a process in which responsibility is shared between the student and the teacher. In addition, according to Domínguez Rodríguez & Palomares Ruiz (2020), the IA aims at “student protagonism, role reversal and commitment on the part of the teacher and student to carry out the learning process, favoring self-regulation of learning and generating a collaborative environment in the classroom” (p.265). In other words, it presents the student as the constructor of his own knowledge, which facilitates the evaluation process, since the student learns from his inquiry.

After the analysis carried out, we are in a position to address the implementation of IL in the teaching of History.

Use of IL in the teaching of history

Social Sciences and in particular History tend to be of a theoretical nature, an aspect that promotes the disinterest of students, complicating the work of the teacher; given this reality it is essential that the conception of teaching is based on new methods and pedagogical strategies that promote autonomous learning, where the following are evident: initiative, commitment, collaborative work, the implementation of new resources and interests, which make the academic practice more dynamic and successful, leading to meaningful learning.

Taking into account the above Campillo Ferrer et al. (2019), expose the importance of IL in the area of Social Sciences, as it provides motivation in students, generates interactivity and flexibility referring to personalized education. Indeed, in IL, the teacher plays the role of involving the student in their education through multimedia tools taking into account interests, educational reality and learning style. Despite the limitations present at the time of providing the class, the aforementioned model generates interest, creativity and curiosity in the student.

In the adequate development of History classes, it is necessary to have students motivated by inquiry, by the desire to investigate to satisfy their knowledge needs; however, it is known that at present, there is a lack of students with research skills, being regrettable and evident the growth of plagiarism in school assignments, however, the IA arises as a possible solution, because it encourages the student to the critical analysis of the topic under study. Mora Ramírez & Hernández Suárez (2017), assure that, education based on exploration and practice is feasible, because it orients students to the research field to consequently interact under the guidance of the teacher. It also encourages criticality, autonomy and collaborative work (Rivadeneira, 2019).

Regarding the importance of the implementation of IL in the teaching of Social Sciences, there are researches that through their results show the benefits of the incorporation of this teaching modality. Among these studies are those of Campillo Ferrer et al. (2019), who conclude that through this way of teaching: “*students have become more independent learners, as they have shown a greater commitment in the fulfillment of their duties, a more effective use of ICT tools and a great creativity and initiative in the resolution of tasks.*” (p. 358)

In the research carried out by Calvas et al. (2020), the importance of History learning environments built on the didactic resources facilitated by ICT has been demonstrated, since they allow:

- To enhance the interdisciplinary approach of the historical contents dealt with in class with the rest of the different subjects that make up the Social Sciences.
- To support active learning through games, scientific research and the autonomous activity of the learner.
- To promote intercultural relations through research and dissemination of the cultural richness of the various peoples and nationalities that populate the Ecuadorian geography.
- To take advantage of the students' cosmovision of the history of the diverse nationalities that make up the multicultural polychromy of the Ecuadorian territory as a source of knowledge.
- To establish the link of the contents with the economic and social policies of the country.
- To encourage students to have a decolonizing perception of the country's history and culture.
- To strengthen students' ethical and civic values.
- To use historical events as sources of knowledge.
- To link the contents of the classes with the history and sociocultural context of the locality.
- To use local history as a didactic resource that motivates student learning.
- To take into account in the design of the class the historical contents from the perspective of current times.
- To analyze current historical events in their relationship with the past and the future consequences they may have.

Likewise, Millán Franco (2017), emphasizes the importance of taking advantage of the benefits of ICT in Social Sciences classes. For example, Internet resources, such as websites, facilitate virtual visits to museums and places of historical value, which for various reasons (geographical distance, economic factor, risks, etc.) are not easily accessible to the student. Likewise, they provide the consultation of documents in digital format available in libraries and virtual repositories.

The results of the aforementioned studies show the importance of ICT devices and tools in History classes; in this sense, Alonso (2013), quoted by Miralles (2011), asserts that “the use of ICT devices and tools can enrich the teaching of History aimed at forming the historical thinking of students. And this can be so, both when it comes to uses that “assist” the teaching of History, uses that “augment” the teaching of History, and uses that “expand” the teaching of History beyond the walls of the classroom and the school.” (p. 126)

A statement that is evident in the form and results of the implementation of IL in the teaching and learning of history.

CONCLUSIONS

The findings obtained as a result of the bibliographic systematization, supported by the hermeneutic methods, documentary review and content analysis allow concluding that the importance of the implementation of IL in History classes is given in facilitating student autonomy, favoring responsibility in their own learning process and a greater active participation in the approach of the contents of the subject.

The correct implementation of IL implies the transformation of the teaching-learning process; being one of the main characteristics the previous familiarization of the students with the contents that will later be approached in class with the teacher’s guidance, making the most of the time available.

LIMITATIONS AND FUTURE STUDIES

The study is limited to the analysis of the inverted classroom. The author intends to determine the relationship between the inverted classroom and students’ academic performance in Social Sciences classes.

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BIBLIOGRAPHICAL REFERENCES

Aguilera Ruíz, C., Manzano León, A., Martínez Moreno, I., Lozano Segura, M., & Casiano Yanicelli, C. (2017). El modelo flipped classroom. *International Journal of Developmental and Educational Psychology*, 4(1), 261-266. <https://www.redalyc.org/pdf/3498/349853537027.pdf>

Alarcón Díaz, D. S., & Alarcón Díaz, O. (2021). El aula invertida como estrategia de aprendizaje. *Revista Conrado*, 17(80), 152–157. <https://conrado.ucf.edu.cu/index.php/conrado/article/view/1823>

Alonso Betancourt, L. A., Cruz Cabezas, M. A., Parente Pérez, E., & Del Cerro Campano, Y. (2021). Concepción didáctica de aula invertida para la formación profesional de los trabajadores. *Revista Científica de FAREM-Estelí*, (37), 168-192. <https://dialnet.unirioja.es/descarga/articulo/7875261.pdf>

Araya Moya, S. M., Rodríguez Gutiérrez, A. L., Badilla Cárdenas, N. F., & Marchena Parrita, K. C. (2021). El aula invertida como recurso didáctico en el contexto costarricense: estudio de caso sobre su implementación en una institución educativa de secundaria. *Revista Educación*, 46(1), 103–119. <https://doi.org/10.15517/revedu.v46i1.44333>

Cabero, J. (2000). *Nuevas tecnologías aplicadas a la educación*. Síntesis.

Cabero, J. (1993). *Investigaciones sobre la informática en el centro*. PPU.

Calvas, M., Espinoza, E., & Herrera, L. (2020). El aprendizaje de la historia en los estudiantes del Cantón Girón, Ecuador. *Revista Espacios*, 41(18). <https://www.revistaespacios.com/a20v41n18/20411825.html>

Campillo Ferrer, J., Miralles Martínez, P., & Sánchez Ibáñez, R. (2019). La enseñanza de ciencias sociales en educación primaria mediante el modelo de aula invertida. *Revista Interuniversitaria de Formación del Profesorado*, 33(3), 347-362. <https://www.redalyc.org/journal/274/27466132020/>

Cedeño-Escobar, M. R., & Viguera-Moreno, J. A. (2020). Aula invertida una estrategia motivadora de enseñanza para estudiantes de educación general básica. *Dominio De Las Ciencias*, 6(3), 878–897. <https://doi.org/10.23857/dc.v6i3.1323>

Díaz Vidal, J. (2013). *La evaluación del aprendizaje y las TIC*. Universidad Médica de Granma. *Cuba*. http://www.fcmb.grm.sld.cu/ftp/cursomoodle/ev_TIC/

Domínguez Rodríguez, F. J., & Palomares Ruiz, A. (2020). El “aula invertida” como metodología activa para fomentar la centralidad en el estudiante como protagonista de su aprendizaje. *Contextos Educativos. Revista De Educación*, (26), 261–275. <https://doi.org/10.18172/con.4727>

Elizalde, P. (2020). *Flipped Classroom o clase invertida: El alumno como protagonista*. <https://www.grupoeducar.cl/revista/edicion-223/flipped-classroom-o-clase-invertida-el-alumno-como-protagonista/>

Escudero, A., & Mercado, E. (2019). Uso del análisis de aprendizajes en el aula invertida: una revisión sistemática. *Revista Apertura*, 11(2), 72-85. <http://www.udgvirtual.udg.mx/apertura/index.php/apertura/article/view/1546>

- Espinoza Freire, E. E. (2022). El problema, el objetivo, la hipótesis y las variables de la investigación. *Portal De La Ciencia*, 1(2), 1–71. <https://doi.org/10.51247/pdlc.v1i2.320>
- Gaviria Rodríguez, D., Arango Arango, J., Valencia Arias, A., & Bran Piedrahita, L. (2019). Percepción de la estrategia aula invertida en escenarios universitarios. *Revista Mexicana De Investigación Educativa*, 24(81), 593-614. http://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S1405-66662019000200593
- Hernández Silva, C., & Tecpan Floresb, S. (2017). Aula Invertida mediada por el uso de plataformas virtuales: Un estudio de caso en la formación de profesores de Física. *Revista Estudios Pedagógicos*, 43(3), 193-204. <https://www.redalyc.org/pdf/1735/173554750011.pdf>
- Hinojo Lucena, F. J., Aznar Díaz, I., Romero Rodríguez, J. M., & Marín Marín, J. A. (2019). Influencia del aula invertida en el rendimiento académico: Una revisión sistemática. *Campus virtuales: revista científica iberoamericana de tecnología educativa*. 8(1), 9-18. <http://uajournals.com/ojs/index.php/campusvirtuales/article/view/384>
- León González, J. L., Gil Álvarez, J. L., & Morales Cruz, M. M. (2017). Los paradigmas de investigación educativa, desde una perspectiva crítica. *Revista Conrado*, 13(58), 72–74. <https://conrado.ucf.edu.cu/index.php/conrado/article/view/476>
- Liesa Orús, M., Latorre Cosculluela, C., Vázquez Toledo, S., & Sierra Sánchez, V. (2020). El desafío tecnológico que enfrentan los profesores de educación superior: Percepciones de las herramientas TIC para el desarrollo de habilidades del siglo XXI. *Sostenibilidad* 12(13). <https://www.mdpi.com/2071-1050/12/13/5339>
- Merla González, A. E., & Yáñez Encizo, C. G. (2016). El aula invertida como estrategia para la mejora del rendimiento académico. *Revista Mexicana de Bachillerato a Distancia*, 8(16), 68-78. <https://revistas.unam.mx/index.php/rmbd/article/view/57108>
- Millán Franco, M. (2017). La aplicación de la metodología del aula invertida en el estudio de textos complejos en el grado de trabajo social. Una experiencia docente innovadora en el área de Ciencias Sociales. (Ponencia). *2nd Virtual International Conference on Education, Innovation and Ict*. Málaga, España.
- Miranda Hernández, P., & Medina Chicaiza, R. (2020). Estrategia metodológica para la enseñanza de estudios sociales en el cuarto grado de básica basada en la animación interactiva. Universidad Autónoma del Caribe. *Revista Encuentros*, 18(01), 23-34. <https://dialnet.unirioja.es/descarga/articulo/7289230.pdf>
- Mora Ramírez, B. F. y Hernández Suárez, C. A. (2017). Las aulas invertidas: una estrategia para enseñar y otra forma de aprender física. *Revista Inventum*, (22), 42-51.
- Ordoñez Ocampo, B., Ochoa, M., Erráez Alvarado, J., León González, J., & Espinoza Freire, E. (2021). Consideraciones sobre aula invertida y gamificación en el área de ciencias sociales. *Revista Universidad y Sociedad*, 13(3), 497-504. <https://rus.ucf.edu.cu/index.php/rus/article/view/2126>
- Palencia Sarmiento, A. E. (2020). Aportes del aula invertida en el proceso de enseñanza y aprendizaje: Una experiencia a nivel de maestría. *Acción y reflexión educativa*, (45), 86-101. https://revistas.up.ac.pa/index.php/accion_reflexion_educativa/article/view/1143/1821
- Pérez Rodríguez, V. M., Jordán Hidalgo, E. P., & Salinas Espinosa, L. G. (2018). Didáctica del aula invertida y la enseñanza de física en la universidad técnica de Ambato. *Mikarimin. Revista Científica Multidisciplinaria*, 4(3), 111-126. <https://revista.uniandes.edu.ec/ojs/index.php/mikarimin/article/view/1340>
- Reyes, Y., Villafuerte J., & Zambrano, D. (2020). Aula invertida en la educación básica rural. *Revista Electrónica Formación y Calidad Educativa*, 8 (1), 115-133. <https://refcale.uleam.edu.ec/index.php/refcale/article/view/3148>
- Rivadeneira Rodríguez, E. M. (2019). La metodología aula invertida en la construcción del aprendizaje autónomo y colaborativo del estudiante actual. *Revista San Gregorio*, (31), 72–79. <https://doi.org/10.36097/rsan.v0i31.601>
- Rivera Calle, F. (2019). Aula Invertida. Un modelo como alternativa de docencia en ingeniería. Abya-Yala.
- Robert, H. R., Espinosa, T. Y., Prado, S. O., & Barroso, P. M. (2020). Consideraciones generales de los métodos de enseñanza menos utilizados en la educación superior en Cuba. *Revista Cubana de Educación Superior*, 39(2). http://scielo.sld.cu/scielo.php?script=sci_abstract&pid=S0257-43142020000200007
- Roig, V. R., & Álvarez, H. J. (2019). Repercusión en twitter de las metodologías activas ABP, Flipped Classroom y Gamificación. RIED. *Revista Iberoamericana de Educación a Distancia*, 22(2), 79-96. <https://www.redalyc.org/journal/3314/331460297005/html/>
- Suasnabas Pacheco, L. S., Ávila Ortega, W. F., Díaz Chong, E., & Rodríguez Quiñonez, V. M. (2017). Las Tics en los procesos de enseñanza y aprendizaje en la educación universitaria. *Dominio de las Ciencias*. 3(2), 721—749. <http://dx.doi.org/10.23857/dom.cien.pocaip.2017.3.2>

Vásquez, I., & Sarco, A. (2020). Las dificultades y retos que enfrenta Panamá al implementar el aula invertida en la educación a distancia durante la pandemia del COVID-19: Perspectiva docente. *Semilla científica: Revista de Investigación Formativa*, 1(1), 381-390. <https://revistas.umecit.edu.pa/index.php/sc/article/view/1014>