



Application of a didactic unity for the development of critical thinking in high school students



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Aplicación de una unidad didáctica para el desarrollo del pensamiento crítico en estudiante de secundaria

Abstract

This paper is the product of a didactic intervention, carried out with the purpose of applying innovative strategies focused on the development of critical thinking in students, in the discipline of Economics in High School, through educational and practical didactic sessions. The methodology used was action-research, since the work was carried out immersed in the process, not as an observer agent but as a transforming agent, intertwining research practice with educational action. The mixed approach was applied because during the research, quantitative data were generated but with qualitative predominance, because the entire process carried out had to be supported with relevant information found during the research. The techniques implemented were observation and focus group. The sample for this research was 15 students of 10th grade A of the Tania la Guerrillera School, selected by an intentional non-probabilistic sampling. This research was carried out through a didactic intervention with innovative learning strategies to generate critical thinking in students, there were 8 didactic sessions in total. As a result, it was possible to know the incidence of the strategies applied and the significant learning that students built, and the new positions students have with respect to the subject Economics.

The degree of importance that the use and implementation of didactic strategies had at the time of teaching a class was determined, the variation of them during the class sessions favors the achievement of the objectives and quality learning by the students. Likewise, the appropriate selection of strategies according to the area to be strengthened in students will allow optimizing time and obtaining better results in terms of the learning achieved by them.

Keywords: didactic strategies, critical thinking, action-research.

Resumen

El artículo es producto de una intervención didáctica realizada con el propósito de aplicar estrategias innovadoras enfocadas en el desarrollo del pensamiento crítico en los estudiantes, en la asignatura Economía en educación secundaria, mediante sesiones didácticas educativas y prácticas. La metodología empleada fue la investigación-acción, puesto que el trabajo se realizó de forma inmersa en el proceso, no como agente observador, sino como agente transformador entrelazando la práctica investigativa a la acción educativa. Se aplicó el enfoque mixto, mediante la generación de datos cuantitativos con predominancia cualitativa, debido a que todo el proceso realizado se debió sustentar con información relevante encontrada durante la investigación. Las técnicas implementadas fueron la observación y el grupo focal. La muestra para esta investigación fue de 15 estudiantes de décimo grado "A" del Colegio Tania, la Guerrillera. Estos fueron seleccionados mediante un muestreo no probabilístico intencional. La investigación se desarrolló a través de una intervención didáctica con estrategias de aprendizaje innovadoras para generar pensamiento crítico en los estudiantes, en total se realizaron ocho sesiones didácticas. Como resultado, se logró conocer la incidencia de las estrategias aplicadas y el aprendizaje significativo que construyeron los estudiantes, así como los nuevos posicionamientos que el estudiantado tiene respecto a la asignatura de Economía. Se determinó el grado de importancia que tiene el uso e implementación de estrategias didácticas al momento de impartir una clase, puesto que la variación de estas durante las sesiones favorece el alcance de los objetivos y un aprendizaje de calidad por parte de los estudiantes. Asimismo, la selección adecuada de las estrategias correspondientes con el área que se desea fortalecer en los estudiantes permitió optimizar el tiempo y mejores resultados en cuanto al aprendizaje alcanzado.

Palabras clave: estrategias didácticas, pensamiento crítico, investigación-acción.

Introduction

Even when a variety of educative approaches currently exists, from teaching Social Sciences, bets are on the constructivist model, centered in the students' learning through practical classes, where the teacher is a mediator of the process, and the protagonist is the student. Ortiz Granja (2015) expresses this process as a dialectic exchange between the knowledge of the teacher and students, coming into discussion, opposition, and dialogue leading to a fruitful and meaningful synthesis (p. 97). This model is refined when both, teacher and student, engage between themselves to create new knowledge through a harmonious process, without automating the educational processes, rather facilitating a dynamic space where students are not seen as objects, but as capable subjects, able to argue perspectives.

Similarly, Schunk (2012) states cognoscitive theories stress the acquisition of knowledge and abilities, the creation of mental structures and information processing (p. 22). Namely, to develop these mental abilities we must allow the student to construct and deconstruct, practice and experience what they learned, teach the mistake is part of learning; an active student will be an active professional capable of excelling in different situations. Teachers are responsible, through constructivist learning, of aiding the creation of new mental structures, leading students to broaden up their cognitive abilities.

Hence, with the goal of applying didactic strategies to promote the development of the critical thinking in students through

innovative educational practices, a didactic intervention was performed, allowing the creation of educative spaces, set up in the application of strategies, whereby students can display their abilities to argue, analyze, and evaluate the consistency of information on the process of teaching-learning. Aiming this, an inquiry process of students' previous knowledge was led; then, eight class sessions with prior created strategies were applied to enhance the ability of analysis and interpretation of information in students, plus the judgement to apply it. Lastly, the impact of the didactic intervention and if it allowed the development of critical thinking by students was determined.

All this process arises in reply to the need to promote the application of didactic strategies in the subject of Economy and guides the development of students' critical thinking. Didactic strategies are all those the teacher applies during class, earlier designed for students to be able to comprehend with greater ease the study topics.

Regarding this, Velazco and Mosquera (2010) suggest the concept of didactic strategy is entangled with the selection of activities and pedagogical practice in different educative moments, methods and resources in the processes of teaching-learning (p. 1). Thereby, before applying a didactic strategy, the goal to be achieved must be clear and, likewise, do an analysis based on the educational need to be solved.

However, it is usual when, in teacher practices, prevails the technician model, defined by flat classes, little use of the textbook and other didactic resources,

extensive question guides; memory processes do not generate new knowledge and much less development of students' reading comprehension three dimensions, as memorization seizes a central place. Rather, the constructivist view leads to apply strategies to enable the student to judge and analyze what was read, formulate hypotheses, argue, emit a judgement, and not be a passive reader.

The implementation of innovative didactic strategies centered on the development of critical thinking allows students to grow a better comprehension and greater mastery of subjects. It is essential for students to egress from the educative system with skills needed to assertively make decisions, consequently, to shift from the technician model to the constructivist is very appropriate in the processes of continuous teacher training.

Therefore, this didactic intervention was based on the application of strategies to allow students to execute critical thinking and grasp the contents of Economy's subject through practical activities, promoting students' interest in class. Once the intervention period was done, a results analysis was led, demonstrating the intervention of didactical strategies in educational sessions creates better learning results in students.

The investigation is supported by different studies nationally and internationally. Among them the thesis titled *Didactical strategies to develop critical thinking in students of initial level of an educational institution of the Puente Piedra district, Lima* (Asencios, 2022, p. 13), *Didactic intervention with Innovative Learning Strategies in the discipline of History to*

Develop Critical Thinking through the Content of the First and Second World War in students of 8th grade "A" of the Sendero de luz School Center of the municipality of Ciudad Sandino, department of Managua during the II semester 2016 (Marengo, et al. 2017, p. 12) and *Didactic intervention to develop critical thinking in the subject of Philosophy in students of 11th grade of the Institute Monseñor Rafael Ángel Reyes of the municipality of Diriomo, Granada* (Hernández & Delgado, 2017. p. 5).

These investigations focus on generating students' critical thinking in the learning of Social Sciences on the Economy's subject through the execution of innovative didactical strategies, new learning activities, use of didactic resources and implementation of a competency-based approach, under a socio-critical paradigm so the student body takes the learning with sense, significance, and utility in their daily life. Precisely through this didactical experience, the research arises; as a didactical experience systematization in Secondary Education, it pretends to spread innovative experiences in Social Sciences and, concurrently, pose challenges and obstacles to the professorship in the permanent task of carrying out innovative experiences in the classroom.

Materials and methods

The investigation was led through a didactical intervention applied at Tania la Guerrillera Public School located in the municipality of Villa El Carmen, territory of Managua, on the II semester of 2022. This mediation was executed in eight didactic sessions in the discipline of Economy with tenth grade "A" students on secondary education.

The research applies the socio-critical paradigm. Alvarado and García (2008) state “the socio-critical paradigm is founded on social critique with a marked self-reflexive character, considering knowledge is always built by interests based on the groups’ needs” (p. 190). The gathered data is supported in the compilation of quantitative and qualitative data, in a concatenated through the analysis and inference of statistic data, graphics, application of pre-test and post-test; therefore, the applied approach was mixed approach, a blend of the qualitative and quantitative approach. It consists of the union of qualitative and quantitative in research compiling specific traits of each one. This clarifies the denominated mixed approach. Hernández, et al. (cited by Pereira Pérez, 2011) convey mixed approach represents the highest grade of integration between qualitative and quantitative. Both are intermingled or combined during all the process of research, at least, in most of their stages (...) it adds complexity to the study’s design; but ponders all advantages of each approach (p. 17).

The methodology applied is the action-research, Latorre (2003) (cited by Estrella and Centeno, 2019) raises it is used to depict a family of activities carried out by teachers in their classrooms with goals such as curricular development, self-development, improvement of educational programs (p. 29). Similarly, instruments were used as question guides and field journals from different points of view; students, teachers, investigators and external observers. It allowed us to compile accurate insight of the evolution of didactical education, as well as checklists of self and hetero evaluation.

Between the applied techniques are found observation and focus groups.

The total population was 153 students in high school at Tania la Guerrillera Public School, located in the municipality of Villa el Carmen, territory of Managua, during the II semester of 2022. According to Alvarado (2003), population means the collective universe or totality elements of what is being investigated or studied (p. 23). Though, main agents in the research had to comply with a non-probability criteria or intentional sampling was applied. Hernández, et al. (2014) stated non-probability samples, also titled directed samples, are not dependent on probability but related causes with research’s characteristics or investigator’s purposes (p. 176). Therefore, the selected sample was 15 students of tenth grade.

Result and discussion

A didactic intervention was applied. It was divided into eight sessions where innovative didactic strategies were executed to initiate students’ critical thinking on Economy. It is noteworthy all the didactic sessions study guides and reading materials were created, given to each student before classes.

On the *first didactic session*, students’ prior knowledge was identified through a diagnostic test S.Q.A “What I Know, what I Want to know, what I Learned” (Lo que Sé, lo que Quiero saber, lo que Aprendí) consisting in each student answering in their own words, aspects or topics to study in class, this had rows alluding to “what I Know” and “what I Want to know” to be completed. At this point, students showed

Figure 1
Students solving diagnostic test S.Q.A



difficulty as topics to study were unknown to them, most didn't complete the information and delivered evaluations blankly. With the instrument's application, only 13% of students had mastery of the topics.

In the *second didactic session*, they worked on *Free trade agreements* through a guided reading. A fish graphic organizer was created, and students exchanged ideas in class. At the end, they exposed their graphic organizers, evaluated through a checklist.

The *third session* was based on the bingo game. Groups were organized and each given a passbook with questions and cards to complete the bingo. This game was based on the previous session's topic and students had to answer the questions coming out of the bingo box until completing all questions of their passbook cards. The above granted the integration and attention of all students in class. To conclude, questions and answers manifested by students during the game were mingled.

In the *fourth didactic session*, the Kahoot Test was carried out. In it, the topic of

Advantages and disadvantages of the T.L.C. was studied. This class took place in the T.I.C. classroom. Students answered some questions through selecting options and, in turn, had to comply with the time established to reply. It was a striking and motivational strategy for students. It is vital to mention the strategy produced a positive effect and allowed everyone's integration.

In the *fifth didactic session*, the topic was *System of Central American Integration*, done through a lecture and document analysis, and choice of main ideas for the creation of infographics, using illustrative drawings and key information related to the topic. To finish, students made a presentation and chatted about their products. All students were part of the activities; a self-evaluation checklist was applied, solved individually by students.

During the *sixth session*, a tombola of questions was executed. Each student would turn the tombola and take a question related to topics studied in class. Likewise, questions were written

Figure 2
Students creating a fish-type graphic organizer



with the intention of promoting students' critical thinking and inference. In some cases, there were prizes, motivating students to engage, each question was answered by protagonist and socialized within the group.

Figure 3
Students playing Bingo



In session seven a mock SICA summit was performed. Through this strategy, students would take government head roles and solve a problem of broad nature. A problem was raised, and seven heads of government were chosen to be each country's representatives at the SICA summit: two secretaries, a moderator, and two assistants. Motivation in students was evident as they owned the character and offered key solutions to problems. It was in this strategy that critical thinking in students grew, as they no longer acted as passive students, rather as agents capable of creating essential changes to society. This process was evaluated through a hetero evaluation checklist.

The final evaluation took place in the eight didactic sessions. Students completed the column corresponding to

“what I Learned” of the S.Q.A., showing 87 % acquired knowledge related to study topics, they also explained and related it with their context. We can affirm the didactic intervention influenced the student's critical thinking development. The strategies enforcement allowed them to raise their arguments and outlooks. Similarly, it was clear at the intervention process the students' motivation and interest in the educational process.

A focus group was applied to assess the influence of the didactic intervention from the students' perspective. As an instrument, a question guide was employed to collect data from the validated intervention.

It is salient, according to the data documented through the focus group, how students expressed the strategies generated competitiveness and progress of critical analytical and self-critical skills. They also manifested how the use of strategies and dynamics by teachers allows them to easily understand topics; thus, classes are more fun and motivational, and do not

Figure 4
Use of Tombola as a didactic resource



Figure 5
International Summit Simulation



generate a technical educational process environment.

An analysis and contrast on both tests applied to student (pre and post-test) through which it was evidenced the positive impact of the didactic intervention, considering relevant data in terms of students' prior knowledge regarding the subject of free trade agreements. Only 13% of students knew what it was and 82% were completely unaware. Nevertheless, through the didactic intervention, 87% of students appropriated the new knowledge. Hence, we can state the didactic intervention had a meaningful impact on students, as it allowed them to not perceive themselves as passive subjects, rather than actives during didactical sequences.

Evaluation of the didactical intervention

The data presented in the previous section presents clear evidence (quantitative and qualitative) of the didactical intervention's influence in terms of results obtained exhibiting a wide margin for growth regarding the students' acquired knowledge, as well as the development of critical thinking, analysis and inference on the topics. The applied strategies allowed

to establish a starting point in terms of previous students' constructs, rather follow a sequential order with topics, and a final assessment of the didactical intervention's process effect.

According with the triangulation of field diaries generally aims at the following aspects as most relevant:

- Implemented strategies were eye-catching for students.
- Students showed themselves active, participative, interested, and motivated.
- Classes were hands-on, allowing students to grow their critical and self-critical abilities.
- Students were able to extrapolate their ideas and relate study topics to their reality.
- Clarification of student's doubt was achieved.

Conclusions

The intervention process carried out at Tania la Guerrillera Public School enabled assess to the influence of innovative strategies for students' critical thinking development through the topic of Free Trade Agreement and Central American Integration System (Sistema de Integración Centroamericano, SICA). Results of the intervention, it was concluded:

Students' prior knowledge regarding T.L.C. and SICSA was identified. Using an innovative diagnostic test (S.Q.A.), 80% of students were completely unaware of topics related to T.L.C. and 87% could

not answer the question about SICA. This allowed us to mark a starting point of the new knowledge building and choose adequate methods and teaching techniques for the introduction of it.

A Didactic Intervention was successfully carried out at Tania la Guerrillera Public School with Innovative Didactical Strategies, aiming for the development of students' critical thinking, as the creation of a fish graphic organizer, bingo, Kahoot, infographics, tombola and the summit; allowing students' analysis and reflection of the content, evidenced on the participation and motivation of students.

The implementation of Innovative didactical strategies in the teaching of Economy generated students' critical thinking, boosted by the participation and construction of new mental structures, enabled the development of students' competitive abilities.

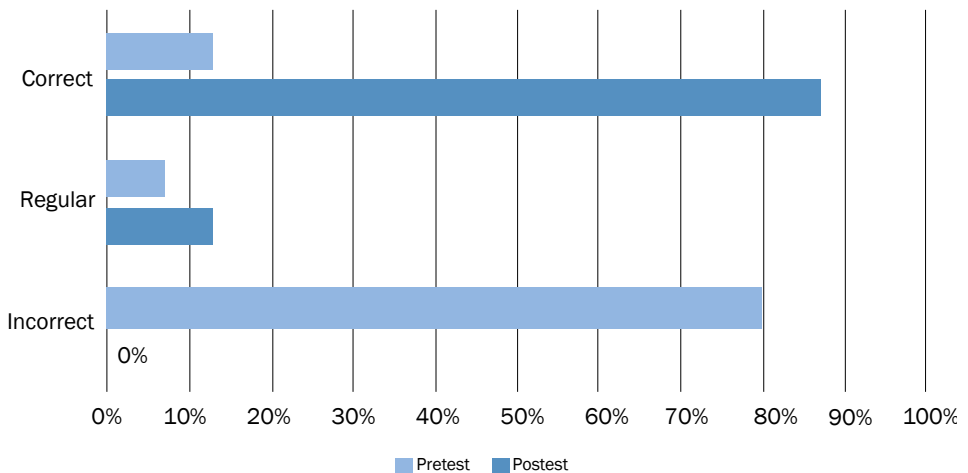
The application of the constructivist theory in the didactical intervention' sessions was a key element, facilitating students' innovation and critical thinking. They created their own ideas and arguments on the topic, as they are the protagonists of their learning, and the teacher is only a process mediator.

If didactical strategies are gradually applied when carrying out class sessions, results in the students' learning will be satisfactory.

The students' perspective was known due to the triangulation of field diaries which allowed to comprehend the influence of the applied strategies to the extent it was possible to get more than 80% of students' knowledge of contents.

Research shows teachers, students and future students the value of the strategies used to focus on students'

Figure 6
Comparison of the pretest and post-test



Own Work

critical thinking development during the educational processes. To teachers, new applicable and adaptable strategies to their disciplines were facilitated, while it aroused students' interest, classes were more practical, and the class frequency was taken advantage of.

intervention with approach by competencies to generate significant learning on the subject of Sociology with students of 11th grade]

References

Alvarado, A. (2003). *Diseño de investigación [Design of investigation]. Prades.*

Hernández, R. Fernández, C. Baptista, P. (2014). *Metodología de la investigación [Methodology of the investigation].*

Alvarado, L. García, M. (2008). *Características relevantes del Paradigma sociocrítico. Su aplicación en investigaciones de educación ambiental y de enseñanza de las ciencias realizadas en el doctorado de educación del instituto pedagógico de Caracas [Relevant characteristics of the Socio-critical paradigm. Its application on investigations of environmental education and the teaching of sciences made on the Doctorate in education of the pedagogical of the pedagogical institute of Caracas]. Rev. Universitaria, (9)2.*

Hernández, A. y Delgado, M. (2017). *Intervención didáctica para desarrollar pensamiento crítico en la asignatura de Filosofía en los estudiantes de 11mo grado del Instituto Monseñor Rafael Ángel Reyes del municipio de Diriomo, Granada. Tesis de licenciatura, UNAN-Managua [Didactical intervention to develop critical thinking in the subject of Philosophy on students of 11th grade from the Monseñor Rafael Ángel Reyes Institute of the municipality of Diriomo, Granada. Bachelor's thesis, UNAN-Managua].*

Asensios, S. (2022). *Estrategias didácticas para el desarrollo del pensamiento crítico en estudiantes del nivel inicial [Didactical strategies for the development of critical thinking in students on initial level].*

Marengo, H. Blanden, J. Centeno, K. (2017) *Intervención Didáctica con Estrategias de Aprendizajes Innovadoras en la disciplina de Historia para Desarrollar Pensamiento Crítico a través del Contenido Primera y Segunda Guerra Mundial en los y las estudiantes del 8vo grado "A" del Centro Escolar Sendero de Luz del municipio de Ciudad Sandino, departamento de Managua durante el II semestre 2016. Tesis de Licenciatura, UNAN-Managua. [Didactical intervention with Innovative Learning Strategies in the subject of History to develop Critical Thinking through the context of the First and Second World War on students of 8th grade "A" from*

Estrella, A. y Centeno, A. (2019). *Intervención didáctica con enfoque por competencias para generar aprendizajes significativos en la asignatura Sociología con los estudiantes de 11mo grado [Didactic*

the Sendero de Luz Scholar Center of the municipality of Ciudad Sandino, department of Managua during the II semester 2016.]

Ortiz, D. (2015). *El constructivismo como teoría y método de enseñanza. Universidad Politécnica Salesiana [Constructivism as theory and teaching method. Salesian Polytechnic University].*

Pereira, Z. (2011). *Los Diseños del Método mixto en la Investigación en Educación: una experiencia concreta [The Designs of the Mixed method on the Investigation in Education: a concrete experience].*

Schunk, D. (2012). *Teorías del aprendizaje. Una perspectiva educativa [Theories of learning. An educational perspective.]. Sexta edición. México. Editorial, Pearson Educación.*

Velazco. M y Mosquera. F. (2010). *Estrategias para el aprendizaje colaborativo [Strategies for collaborative learning].*