

Application and Validation of the Proposed Methodology Supported by Information and Communication Technologies in the Preuniversity Level



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SUMMARY: The work is carried out due to the need for improvements in the subjects of a second language, such as English, in the study center where the research has been carried out. For such purposes, an application and validation of the methodology that has been proposed in Information and Communication Technologies (ICT) as a mediating instrument in the teaching and learning of a non-native language has been proposed, to encourage students through the technology to engage students in the interest of learning a second language and a change in teachers in innovating their teaching practices taking advantage of the resources they have in the school.

This research aims to describe the knowledge developed by the director of the study from the approach of the problem to the creation of a utility that can positively satisfy the complications through methodological executions, statistical analysis, theoretical investigations, conclusions, recommendations, among others, proposed by the research developer.

KEYWORDS: Methodology, proposal, ICT, educational software

INTRODUCTION

Technological and scientific advances, changes and innovations in the economy, give new forms to the various scientific instructions that gradually lead to a new prototype of society, working conditions, mechanisms to disseminate information, among others. On the other hand, these transformations project vital changes in people, who require an innovative educational approach.

The conditions presented by technology manifest the disclosure of data and insights in communication by applying and validating methods proposed for the training of students. For its application, validation and application are encouraged to achieve the objectives, promote the modernization of teachers to exercise their role as guides and motivators of the teachings in the students.

Application and Validation of the proposed Methodology based on Information and Communication Technologies through Colimpi English Class

The research process carried out, whose results are shown in this thesis, by putting into practice actions in the novel context of the development of soft skills in students, in the elementary basic education of the Liceo Morayma Veloz de Báez Educational Center

It underwent a validation process, through the assessment of the practical results obtained by applying the methodology, reflected in the statistics and the criteria of the main actors of the methodology applied in the center under study.

This chapter describes the plan of activities designed for teacher training, which is essential for the introduction of the proposed methodology and serves as the basis for its generalization to other centers.

To validate the results obtained and thus achieve the enrichment of the methodology, a quasi-experiment was carried out and the main sources involved were verified: teachers, managers, employers and relatives of the students, in addition to the assessment by experts on the conception, structure and results of the strategy.

Plan of activities for the Training of Teaching Staff to apply the Methodology for the development of Linguistic Competence

As was verified in the diagnosis made, teachers must acquire special training to understand the scope of the actions included in the strategy and obtain the results proposed in the research. This is also a premise for the generalization of the methodology in other educational institutions. The activity plan is organized and is oriented towards the development of linguistic competence

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using technology as a tool. The plan contemplates several phases where the teacher is trained in the management of the methodology of the COLIMPI GOOGLE CLASS course to contribute to the development of the linguistic competence of the English language as a foreign language.

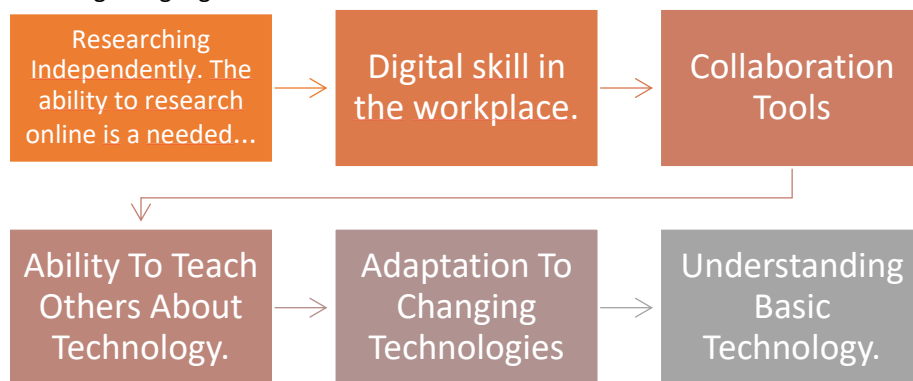


Figure 2. determining components that are involved in lesson planning activities the transfer process t
(Source: Own elaboration based on the work of Feixas et al. (2013)).

The characteristics of education in the 21st century are addressed, the characteristics of learning from an early age are explained, they are trained in the use of technology and workshops on learning theories are offered. Workshops are held on Collaborative Learning, Problem-Based Learning, Project-Oriented Learning and Case-Based Learning, among others. The processes of how to design resources to integrate formal learning and informal learning are analyzed and methods are explained to use the flipped classroom concepts in the development of soft skills in girls and boys.



Figure 3. determining components that are involved in the transfer process t
(Source: Own elaboration based on the work of Feixas et al. (2013)).

Ortega, Febles, & Estrada (2019) refer that teachers need much more support and incentive than they have been given to date for the use of technology in teaching and learning. The author of the research agrees with this criterion and considers that it is currently essential that the teacher has the necessary preparation to be able to guide the students in the learning process with the support of ICT. The good use of technology must be an aspect to evaluate its development, its way of acting, its degree of updating. Educational practice is essential to use technology in the teaching-learning process, that is, training in educational practice is required, not only in the technical aspect.

The conformation of the plan of activities for the preparation of teachers is based on the analysis of the theoretical reference framework where national and international trends are investigated on the development of linguistic skills in learning English as a foreign language. Research that pays special attention to the relationship between training actions and the desired impact is also taken as a reference, which takes into account not only the teacher but also the institution and the students (product). In this, the degree of application of what has been learned is fundamental, that is, the transfer of knowledge.

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The transit of the teacher training process and the degree of application of what has been learned, which depends on a series of elements that favor and hinder this change, is known as transfer (Ortega, 2017)

Studies on the transfer of teacher training are very new. They seek to study the changes in behavior associated with an improvement in job performance and have a sustainable effect. The following figure shows the basic components that determine the transference of teacher training and in particular with regard to the development of language skills.

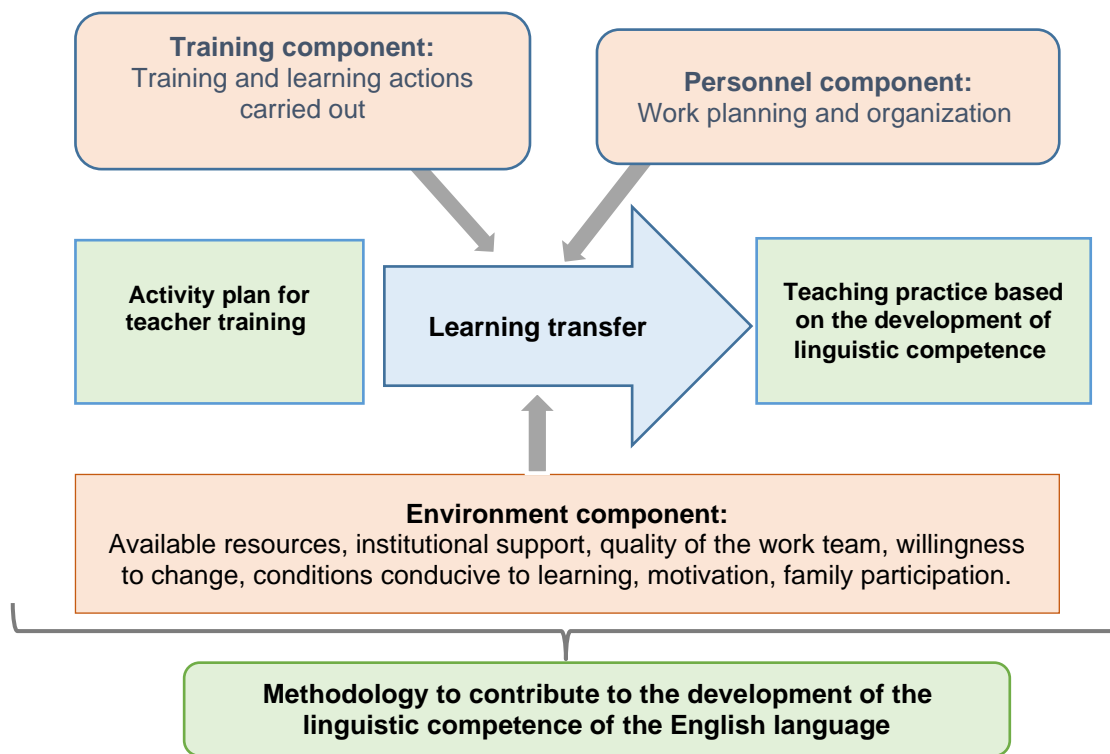


Figure 5. Basic components that determine the transference of teacher training. (Source: Own elaboration based on the work of Feixas et al. (2013)).

The effectiveness of the teacher training plan is related to the validation of the results obtained with the application of the methodology.

In the diagnosis carried out at the Liceo Morayma Veloz de Báez Educational Center, the main limitations in the preparation of teachers were determined, especially in relation to what was proposed by UNESCO (2008) on the standards of ICT skills for teachers and in UNESCO (2013) referring to strategic approaches to ICT in education in Latin America and the Caribbean, which was taken into account in the design of the plan of activities for the training of teachers.

The following cycles are defined in the plan of activities for the training of teaching staff:

Cycle 1: Diagnosis

- Determination of the training needs of those involved in the methodology for the development of language skills.
- Accuracy of the training objectives integrating the criteria of managers and what is established in the curricular documents of the Dominican Republic, which includes literacy with the use of ICT (development of didactic skills, communication, tutoring and work with the TIC).
- Conformation of the most viable alternatives, in the case of each teacher, to achieve real advances in their preparation on the development of linguistic competence with integration to technology.
- Design individual commitment for each teacher, which includes the activities for the fulfillment of the actions included in the proposed methodology.

Cycle 2: Definition of training actions

Design, implementation and development of training activities for teachers, especially for the integration of ICT in English classes through COLIMPI ENGLISH CLASS in the three stages:

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1. The PRE-ACTIVE stage focuses on preparing to carry out the actions foreseen in the strategy, which includes: planning the training activities and defining and updating the contents of the programs; prepare or select notes, teaching materials and training activities tailored to the learning needs of students at the secondary level of pre-university education; locate web pages, bibliography, videos and other materials of interest; identify software that will be used in the classroom and prepare materials that will be suggested to students to study at home.
2. The ACTIVE stage is part of the development of training activities. At this stage, the support of ICTs is increasingly essential: educational games, digitized stories, short videos to develop motivation, as well as skills to locate information. Given the age of these students, it is recommended to use anecdotes and stories that are socialized and analyzed among teachers and then used in class. Teachers should easily master working with concept maps, mental maps, as well as group work techniques: brainstorming, focus group, collective evaluation and co-evaluation. A practical workshop course with these tools is contemplated for the active stage.
3. In the final or POST-ACTIVE stage, ICT should be used to carry out complementary activities to exchange between teachers online or using other web 2.0 facilities. Create a blog, build or manage a Webquest with concepts associated with the first cycles of pre-university education, manage authoring tools, create didactic videos that will be used in the ways suggested by the flipped classroom, proposals for learning objects, among others.

Cycle 3: Development of workshops and seminars

The purpose of this Cycle is to share experiences on the development of language skills in learning English as a foreign language at the pre-university level, emphasizing the importance of collaborative and team work, communication and work with ICT. It should also be used to collectively analyze and evaluate the educational resources that have been created.

Cycle 4: Follow-up

In this cycle, the results achieved after having completed the application of the previous cycles are evaluated and decisions are made in accordance with the result of the evaluation. All cycles have as an essential condition to achieve a climate of communication and participation by teachers, so that they acquire skills in a similar way to how they are desired to be acquired by students who are enrolled in the first cycles of elementary basic education. A summary of this plan of activities for the training of teaching staff is presented in Figure 3.2.

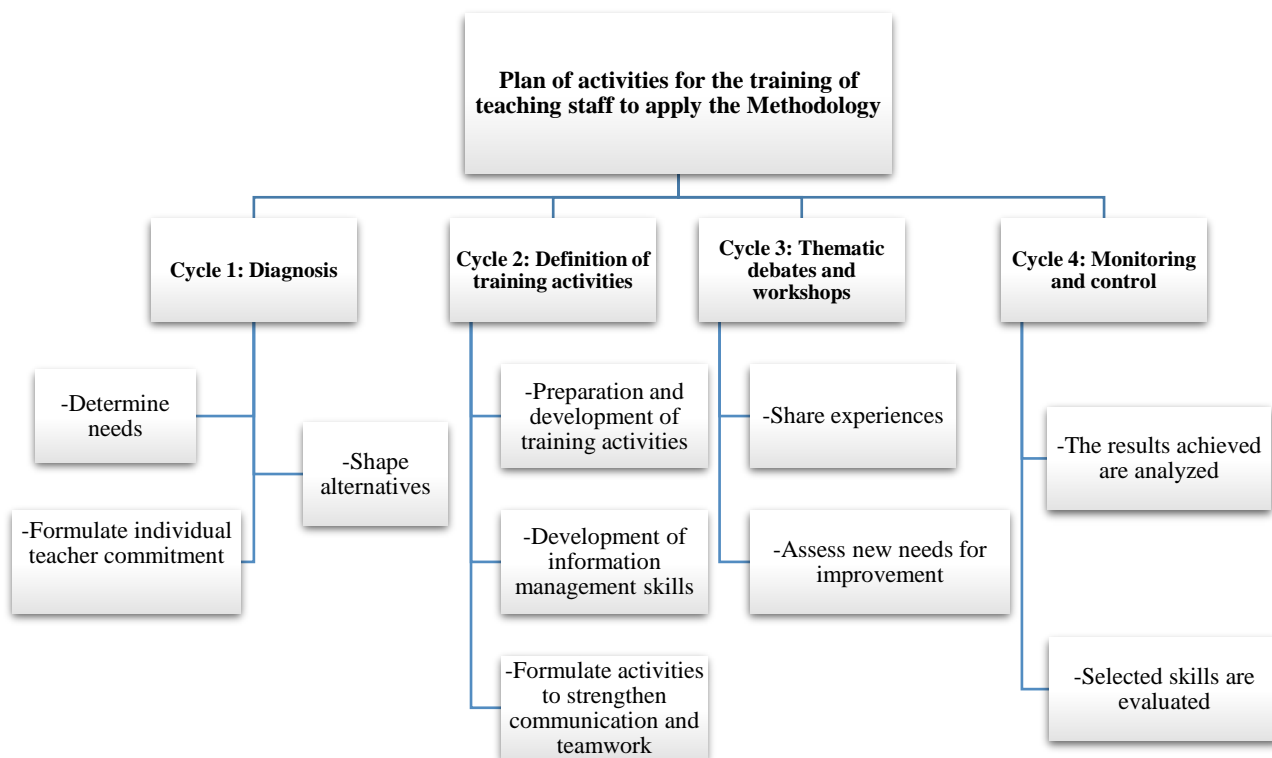


Figure 6. Summary of the plan of activities for the training of teaching staff.

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RESULTS VALIDATION

For the validation of the results, the research methods and techniques shown in the following figure were used.

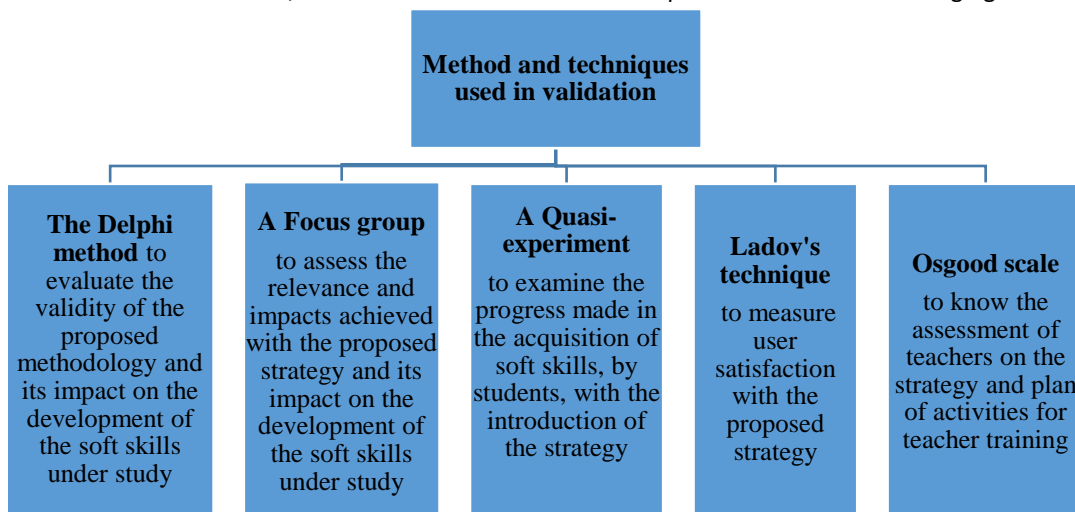


Figure 7. Methods and techniques used in the validation of the proposed methodology through colimpienglishclassroom and google classroom

DELPHI METHOD

The Delphi method is based on a technique developed at the beginning of the 50s of the 20th century, it is a consensus technique that is part of the qualitative methodology. It is a sociological research technique that belongs to the type of in-depth group interview. Interviews make it possible to collect information and subjective aspects of people: beliefs, values, opinions or knowledge that would otherwise be difficult to obtain. Similarly, they involve group communication meetings between the researcher and the informants, aimed at understanding the perspectives that the informants have about the subject under investigation.

The Delphi method has been used in several specialties to know and assess the criteria of experts, particularly in education where important contributions have been made. For the validation of the proposed strategy, this method was applied, whose use is quite common in the field of educational research, according to several authors among them.

Delphi is a structured methodology to systematically collect expert judgments on a problem, process the information and, through statistical resources, build a general group agreement. It allows the transformation during the investigation of the individual assessments of the experts into a superior collective judgment (Aponte & Cardozo, 2012).

For the elaboration of the questionnaire to be applied to the experts, the criteria that are listed below were used and that obey the need to know about the relevance of developing the linguistic competences of the English language as a foreign language at the pre-university level as a consequence of the methodology previously developed for this purpose and with the support of technology.

- 1) Importance of developing linguistic skills in English as a foreign language.
- 2) The need to have a methodology to guide the development of language skills from an early age (with the integration of formal and informal learning).
- 3) Feasibility of applying the developed methodology.
- 4) Quality of the methodology.
- 5) Perception of the progress obtained once the methodology has been applied.

The validation process has two stages: an initial stage of the selection of experts, and a second, in which the experts evaluate the elements under investigation.

a) Selection of experts

In this stage, the experts are selected from a group of potential experts, which in this case were 25.

The selection of the experts was determined by the competence coefficient (K) based on the self-assessment of the competence criterion using the formula:

$$K = \frac{1}{2}(K_c + K_a)$$

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In the formula, the variable K_c represents the coefficient of knowledge that the person has about the problem (based on her criteria). It is calculated from the assessment made by the expert himself on a scale of 0 to 10 (0 represents that the expert has no knowledge of the subject and 10 expresses that he has a complete assessment of it). According to his self-assessment, the expert places his competence at some point on this scale and the result is multiplied by 0.1 to take it to the scale from 0 to 1.

The argumentation coefficient (K_a) that estimates, based on the expert's own analysis, the degree of substantiation of his or her criteria. To determine this coefficient, the expert is asked to locate the degree of influence (high, medium, low) that each of the sources has, according to his or her criteria. It is obtained by calculating the sum of the points calculated from the answers given in the filling made by the person of a pattern table.

This evidences the result of their knowledge coefficient (K_c) on the subject submitted for their consideration and the argumentation coefficient (K_a) (Annex 5).

To calculate the Competence Coefficient (K), the sum of the Knowledge Coefficient (K_c) and the Argumentation Coefficient (K_a) values is multiplied by 0.5.

The value obtained in K is taken as a reference to determine the Levels of Competence (NK) (Annex 5), for which:

$K \geq 0.8$ is considered the High NK;

If $0.5 < K < 0.8$, it is considered the Medium NK;

$K < 0.5$ is considered the Low NK.

Of the 25 experts consulted, five were discarded for having a low level of competence ($K < 0.5$) (Annexes 5). The average competence coefficient of the experts consulted is 0.8, which corresponds to a high level of competence ($K \geq 0.8$), for which the experts consulted with a high level of competence were also taken into account for selection of medium competence ($0.5 < K < 0.8$).

In Annex 5, tables a, b, c, d and e are presented, which contain the data of the application of the method for the selection of experts.

Finally, 20 professionals were selected as experts, all with a high level of competence (Annex 6).

b) Evaluation of the elements under investigation

In this stage, necessary empirical information is managed from the subjects selected as experts (20). These were given a document that contained the fundamental elements of the investigation and a questionnaire (Annex 7), where the proposal was submitted to the assessment of each one. Two rounds were necessary because the first did not offer the necessary elements to reach a consensus. The results of the two rounds applied in the survey provided a summative evaluation between Very adequate and quite adequate, as shown in table f of Annex 7.

The application of the Delphi method and the results obtained confirmed the need to develop the linguistic skills of the English language as a foreign language at an early age, the feasibility and acceptance of the methodology proposed in this research. The fact of the improvement of the three soft skills analyzed as a consequence of the application of the methodology stands out:

- 1) Importance of developing linguistic skills in English as a foreign language.
- 2) The need to have a methodology to guide the development of language skills from an early age.
- 3) Feasibility of applying the developed methodology.
- 4) Quality of the methodology.
- 5) Perception of the progress obtained once the methodology has been applied.

Quasi experiment

A quasi-experimental design is very close to the experimental level, the missing criterion to reach this level is that there is no way to ensure the initial equivalence of the experimental and control groups. Groups that are already integrated are taken, so the units of analysis are not randomly assigned. The structure of quasi-experimental designs allows the use of a design with only post-test or one with pre-test-post-test (Ortega, 2016).

According to Bono (2012), quasi-experiments are more frequent in applied contexts, such as when:

- a) Changes are introduced in schools.
- b) An open or flexible time is tried in the world of work

In the present investigation, a quasi-experiment was applied with a control group, the first grade of the previous course (2016), to which a comprehensive evaluation O1 is carried out, at the end of their academic activities, which is considered as a pre-test. For the O2 post-test, the students who completed the third grade in the course (2017) were taken and the same instrument was applied as to the group of the previous year. The sample consisted of the entire degree enrollment in both cases.

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The Application of the IADOV Technique to verify the satisfaction of the users of the Methodology

This technique was applied to measure the level of user satisfaction (teachers and school administrators) with the methodology developed for the development of language skills in pre-university education. Knowledge of the state of user satisfaction is very useful for decision making, in the adjustments of the proposal and to measure the degree of acceptance of the proposal that is made.

The IADOV technique owes its name to its creator V. A. IADOV. Several researchers have used this technique to validate the way in which users feel satisfied with a certain proposal, as well (Hernández, 2010), (Rodríguez, 2012), (Febles, 2012) and (Sosa, et. al., 2012) use it in various contexts. It consists of three closed questions interspersed in a questionnaire and whose relationship the respondent does not know, and two open questions. Its objective is to assess the level of satisfaction based on what is known as the "IADOV logical framework." The answer to these questions allows each subject to be located, according to the logical table, on a satisfaction scale, to then calculate the Group Satisfaction Index (ISG) (Ortega, 2016).

In the present investigation, the three closed questions are reflected in the IADOV Logic Table, as shown below.

Table of the IADOV logical framework with the closed questions for this investigation

	Do you consider that a significant change can be achieved in the development of the linguistic competences of the English language as a foreign language in pre-university education, without having a specific methodology for it?								
	No			I don't know			Yes		
What is your opinion on the proposed methodology and its impact on the development of linguistic skills in English as a foreign language?	If you need to produce a significant change in the development of linguistic skills in English as a foreign language, would you use the proposed strategy?								
	Yes	I don't know	No	Yes	I don't know	No	Yes	I don't know	No
I like it a lot	1	2	6	2	2	6	6	6	6
I do not like it that much	2	2	3	2	3	3	6	3	6
Me da lo mismo	3	3	3	3	3	3	3	3	3
Me disgusta más de lo que me gusta	6	3	6	3	4	4	3	4	4
I dislike it more than I like it	6	6	6	6	4	4	6	4	5
I don't know what to say	2	3	6	3	3	3	6	3	4

Source: self-made.

For the development of this technique, a survey was applied that allowed knowing the degree of satisfaction of the users with the strategy and its characteristics in terms of:

1. The need to implement an ICT-supported strategy to achieve positive synergy between formal and informal learning in pre-university English language education.
2. The incidence of the proposed methodology for the development of language skills in the students of the Liceo Morayma Veloz de Báez Educational Center, Bayaguana, Dominican Republic. The importance of training teachers as a premise for the application of the methodology.

To measure the degree of satisfaction of the users with the methodology in the Educational Center: Liceo Morayma Veloz de Báez, an intentional sample of 22 users (teachers and directors of the educational entity and the school) was taken, taking into account the time as a teacher, work experience in education in teaching and the results obtained in previous years. The result of individual satisfaction was as follows:

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Individual satisfaction result

RESULT	AMOUNT	%
Maximum satisfaction	19	86
More satisfied than dissatisfied	2	9
Not defined	1	5
More dissatisfied than satisfied	0	-
Clear dissatisfaction	0	-
Contradictory	0	-

Source: self-made.

From the analysis of the results of the surveys, based on the IADOV logical table, the Group Satisfaction Index (ISG) was calculated according to the formula established by the method, obtaining the following result:

$$GSI = \frac{19(+1) + 2(+0.5) + 1(0) + 0(-0.5) + 0(-1)}{22} = 0.9$$

As can be seen, the group satisfaction index is 0.9, which means a clear satisfaction with the proposed strategy and its impact on the development of the linguistic skills of the English language as a selected foreign language, in students of the pre-university education of the Liceo Morayma Veloz de Báez Educational Center, which includes actions for participatory action by all in the training process, taking advantage of the influence of the family and social environment, as the main places of learning.

Regarding the two complementary questions of an open nature, the users surveyed answered:

Would you include another action in the proposed methodology, to achieve the fulfillment of the objectives proposed in this investigation? Argue.

In general, the actions were considered correct. Three of the interviewees suggested that the way to carry out co-assessment in a classroom should be further clarified in the strategy.

Do you consider the way in which the inverted classroom technique is proposed to be adequate, as a support for learning in the family environment? Argue.

The coincidence was complete with the observation that the preparation of the faculty should take longer due to the lack of preparation of teachers for training by competencies.

Open questions are very important since they allow us to delve into the causes that give rise to the different levels of satisfaction. The result obtained when processing the answers to the open questions was very positive, in particular regarding the evaluation of the proposed strategy and its perspectives.

It is noteworthy that the IADOV technique provided objective data regarding the degree of satisfaction with the methodology, particularly with regard to providing specific responses to the training needs of professionals to facilitate the development of language skills in learning the English language as a foreign language.

Osgood scaling

The Osgood scale was used to obtain an assessment of a group of teachers on the results of the research carried out.

The scales are instruments for collecting information based on a list of carefully selected items, reagents, or phrases, so that they constitute a systematic, reliable, valid and specific criterion to quantitatively measure some form of phenomenon, particularly attitudes and those related with feelings, opinions and beliefs. In this case, the teachers' opinions on the validity of the results of the proposed methodology are evaluated.

In this case, it is applied to validate the result of an investigation that has already been completed and that has been directly observed by the evaluators, with the scale explained below:

Very satisfactory 5 4 3 2 1 Unsatisfactory

Teachers were asked to rate the following:

- 5 Very satisfactory.
- 4 Satisfactory.
- 3 Neutral.
- 2 Unsatisfactory.
- 1 Unsatisfactory.

The following table shows the opinions of 25 teachers regarding 6 aspects related to the research.

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Summary of scale assessments made by teachers on the results of the research carried out.

Item to Evaluate	1	2	3	4	5
The way in which the development of the linguistic competences of the English language as a foreign language in general is treated in the proposed methodology.				5	20
The possibilities of using ICT in the development of language skills in the process of learning English as a foreign language.			2	5	18
Importance of planned actions in the methodology to develop language skills			2	4	19
On the effectiveness of the integration of formal and informal learning and its impact on the development of linguistic skills in English as a foreign language.				4	21
Opinion on the plan of activities for the improvement of teachers				5	20
Visible results with the application of the methodology in the center and specifically its incidence in the improvement of the linguistic competences of the English language as a foreign language analyzed as a consequence of the application of the developed methodology.				3	22
Total sum of the valuation			4	26	120

Source: self-made.

These data reveal a good evaluation of the research results, which is summarized in the following figure.

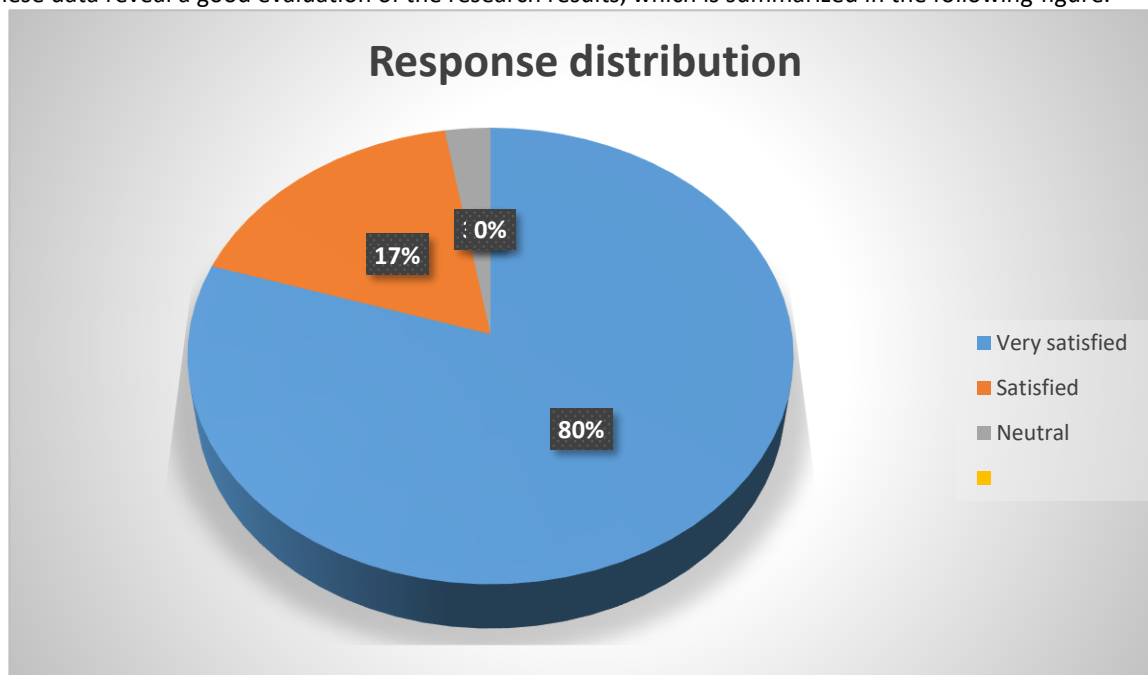


Figure 8. The responses on the Osgood scale adding the responses to the 6 items

To calculate the semantic differential, other pairs of opposite adjectives and 5 possibilities to select were chosen, to evaluate the acceptance of the designed strategy.

Item to be evaluated: The strategy for the development of language skills

Semantic space: 1, 2, 3, 4, 5

Good bad. The 25 teachers marked the first option.

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Adequate _____ Inadequate. The 25 teachers marked the first option.

Applicable _____ Not applicable. -----The 25 teachers marked the first option.

Innovative _____ Obsolete. ----- The 25 teachers marked the first option.

Complete _____ Incomplete. -----24 teachers marked the first option and one teacher the second.

These values are evidence of the favorable evaluation of the incidence of the strategy under investigation in the development of linguistic competences in English as a foreign language and of the activity plan for teacher training.

Application of the Focus Group Technique

Focus groups are group activities, where a moderator guides the collective interview process during which the selected people discuss and give their opinion about the characteristics and dimensions of the topic proposed for discussion. The characteristic that distinguishes focus groups is directed and conscious participation and conclusions resulting from the interaction and elaboration of agreements between the participants. The focus group is a qualitative research technique.

The procedure followed for the application of the focus group is explained below, as an element of collective assessment of the proposal designed and applied at the Morayma Veloz De Báez High School.

a) Study objectives approach

The objective of the analysis is to know how the group thinks about the methodology for the development of linguistic competences in English as a foreign language, as well as the relevance and impact of the proposed methodology.

b) Identification and selection of participants

10 people with teaching experience in elementary basic education were selected. The list appears in Annex 9.

c) Select a moderator

Teacher Carmen Reynoso, who has 25 years of experience teaching English as a foreign language at the pre-university level, was selected as moderator.

d) Design of the Moderation Guide

It was prepared by the author of this thesis and is aimed at responding to the objectives that were raised in the experimental design. Annex 10 presents the guide used.

e) Organize the didactic or operative materials that are going to be used

For the analysis, a video and a presentation on the general characteristics of the focus group technique and another with the presentation of the strategy and some of the results achieved with its application were used.

f) Development of the analysis: Induction, conduction and group discussion

The analysis was carried out with a very high professional level, which favored arriving at important considerations for this investigation. The meeting was recorded.

During the interventions of the participants, it was possible to verify a total coincidence in the opinions on the need and conception of the methodology, especially on the actions contained in it.

100% of the participants agreed on the importance of developing language skills at an early age and the impact that these have on the future of young people in the future.

The relevance and impact of the proposed methodology was positively valued, as well as the way of using ICT to achieve the necessary synergy between what is learned in the classroom and what the family and social environment contributes in the development of linguistic competences in the English language for the future of young people in pre-university education.

The role of the methodology in the development of linguistic skills in English as a foreign language, the positive impact of the use of ICT and the plan of activities for the preparation of teachers are highlighted.

The application of the Focus Group technique allowed us to conclude that the criteria formulated by the participants reveal a high agreement of the members, considering that both the conception of the methodology and the way for its implementation and the plan of activities to train teachers are appropriate to the characteristics of pre-university education in the Dominican Republic. The determining role of the proposed methodology in the development of linguistic skills in English as a foreign language is highlighted.

The opinions formulated in the sessions made it possible for the author of this research to reconsider some aspects of the methodology, associated with operational criteria that did not receive a unanimous evaluation.

The following recommendations were made:

1. The need to accelerate the creation of the repository of good practices for the development of linguistic skills in English as a foreign language in the teaching-learning process.

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2. The importance of developing a process for updating the proposed methodology, to the extent that the environment and technological development impose it.

METHOD INTEGRATION

In the present investigation, the mixed methodology is used, which allowed evaluating the results of the investigation.

The author of this thesis considers the study published by García (2010) Senior Researcher and of Merit of the National Institute of Endocrinology of Cuba, very helpful, on the usefulness of the integration and convergence of qualitative and quantitative methods. She states that the existence of two different research paradigms does not imply a juxtaposition or exclusion between them. There is not one better than the other. The key is that the researcher knows how to take sides according to the questions and the research objective of the researcher. The qualitative method enriches the field of social research, since it allows a closer approach to the phenomenon under study, from the perspective of the meanings that the actors themselves give to the process in which they are immersed.

Specialists of the level of Hernández (2008) have raised ideas that are aspects of interest to integrate research methods and have been considered by the author, in the validation chapter to combine the data of the quasi-experiment carried out with the answers obtained and the analyzes made in the focus group.

Ortega (2016) refers that mixed methods represent a set of systematic, empirical and critical research processes and involve the collection and analysis of quantitative and qualitative data, as well as their integration and joint discussion, to make inferences as a result of all the information collected (meta inferences) and achieve a better understanding of the phenomenon under study

A summary of the data obtained in the quasi-experiment combined with the focus group is presented, where the results are reaffirmed and complement each other.

Results of the experiment vs results of the focus group, after applying the methodology

Aspects to assess	Quasi-experiment (Good, fair or bad)	Focus group
Improvement of communication in English as a foreign language with the use of the methodology	Good	Very satisfying
In the use of ICT	Good	Very satisfying
Plan of activities for the preparation of teachers	---	Very satisfying

Source: self-made.

The results show the favorable assessment of the main aspects dealt with and ratify that the objectives of the research have been met.

METHODOLOGICAL TRIANGULATION

Methodological triangulation is a control procedure to guarantee greater reliability in the results of any investigation, because it reduces the bias that occurs when comparing results obtained in the quantification of variables through a quantitative method and the trends and dimensions that arise from it the application of qualitative methods.

For the present investigation, the author uses the triangulation of methods (simultaneous inter-method), with the aim of evaluating the data collected, both qualitative and quantitative, with the simultaneous application of the quasi-experiment, Delphi, Focus Group and scaling methods of Osgood to validate the proposed hypothesis.

The following table shows the aspects evaluated by each of the applied methods.

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Objectives to be evaluated with simultaneous inter-method triangulation

Aspects to evaluate	Quantitative methods	qualitative method
Contribution of the methodology to the development of linguistic competences in the process of learning English as a foreign language.	Quasi experiment	Delphi Focus group
Development of linguistic skills in the process of learning English as a foreign language, integrating technology as a learning support tool.		Osgood scaling Focus group

Source: self-made.

With the application of inter-method triangulation, the contribution of the methodology to the development of linguistic skills in learning English as a foreign language is ratified, as well as the positive impact of the use of technology.

CONCLUSIONS OF CHAPTER

In order to validate the hypothesis, Delphi scientific methods, Focus Group, the IADOV technique, a quasi-experiment and the triangulation of some of them were applied, it was found that there is a positive correspondence between the results obtained and the applied methodology.

The clear satisfaction of users and potential users with the developed methodology was demonstrated. With the tests in a controlled environment, the significant increase in the preparation achieved by the teachers and directors of the Morayma Veloz Báez High School in the Bayaguana Province of the Dominican Republic was verified.

With the inter-method triangulation, the contribution of the methodology to the development of linguistic skills in learning English as a foreign language is ratified, as well as the positive impact of the use of technology.

RECOMMENDATIONS

1. Implement a repository of resources on good practices in the process of teaching English as a foreign language for pre-university education.
2. Continue studies on the development of linguistic skills in English at the pre-university level in the Dominican Republic.
3. Extend the application of the methodology to all pre-university schools.
4. Prepare a basic text that contains the main elements of the research, which can serve as a reference for teachers, students and directors of pre-university education in the Dominican Republic.

REFERENCES

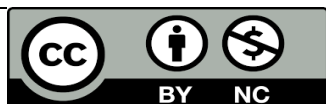
- 1) Alejandro, F.A. (April 25, 2011). Discovering Psychology. Retrieved from Discovering Psychology: <http://compartiryprogresar.blogspot.com/>.
- 2) Álvarez, M., Artime, C., Cases, E., Del Castillo, M., Fernández, P., Ferreras, M., & Friedel, B. (2007). Tandem methodology for teaching and learning languages in the school environment. Tandem Guide, 128.
- 3) Aponte, G., & Cardozo, M. (June 2012). DELPHI Method: Applications and possibilities in the prospective management of research and development. Retrieved from <https://www.researchgate.net/publication/>.
- 4) Arteaga, C. (2011). Use of ICT for learning English at the Autonomous University of Aguascalientes. Degree work. Guadalajara, Mexico: University of Guadalajara.
- 5) Ausubel, D., Novak, J., & Hanessian, H. (1983). Educational Psychology A Cognitive point of view. Mexico: Threshing.
- 6) Baquero, R. (1996). Vygotsky and School Learning. Argentina: Aique Grupo Editor S.A.
- 7) Berrocoso, J., & Del Carmen, M. (2008). The tutorial function in virtual learning environments. Latin American Journal of Educational Technology, 153-167.
- 8) Bond, R. (2012). Quasi-experimental and longitudinal designs. Retrieved from <http://diposit.ub.edu/dspace/bitstream/2445/30783/1/D.%20quasi%20y%20longitudinales.pdf>

Application and Validation of the Proposed Methodology Supported by Information and Communication Technologies in the Preuniversity Level

- 9) Caicedo, S., Alzate, S., & Avello, R. (2014). Teachers' conceptions about the relationship: ICT-learning in the framework of the program computers to educate "region 2". Magazine Universidad and society [serial online], 4, 63-68.
- 10) Canas, L., & Chacon, C. (2015). Contributions of neuroscience for the development of English teaching strategies. Educational Research and Interdisciplinarity, 10.
- 11) Cervantes Virtual Center. (1997 - 2020). Communicative competence. Retrieved from https://cvc.cervantes.es/ensenanza/biblioteca_ele/diccio_ele/dictionary/competenciacomunicativa.htm.
- 12) Cervantes Virtual Center. (1999 - 2020). Chapter 2. Approach adopted. Obtained from https://cvc.cervantes.es/ensenanza/biblioteca_ele/marco/cap_02.htm.
- 13) Cervantes, I. (2002). Common European framework of reference. Madrid: Cervantes Institute.
- 14) Coll, S. (2010). Virtual environments. Mexican Journal of Educational Research, 140-158.
- 15) Council of Europe. (2002). Common European framework of reference. Spain: Grupo ANAYA, S.A.
- 16) Cordoba, G. (September 3, 2011). Teaching and learning English and imperceptible poverty. Electronic Journal "Research News in Education", vol. 11. San Pedro de Montes de Oca, San Pedro de Montes de Oca, Costa Rica: University of Costa Rica.
- 17) Cruz, D., & Ramirez, G. (2018). School celebrations as a tool for the development of communication skills of eleventh grade students of the Fernando González Meza educational institution. Degree work. Tolima, Colombia: University of Tolima.
- 18) Curiel, L. (2017). Manual. Development of teaching materials and media. Madrid, Spain: Editorial CEP, S.L.
- 19) Sunday, J. (June 16, 2019). ICTs have become a transversal axis of all training actions: as a facilitating instrument, a communication channel and a teaching resource. Retrieved from <http://otrasvoceseneducacion.org/>.
- 20) Dorado, C., & Amador, M. (December 05, 2016). Strategies, functions and interactions in a virtual distance learning environment. Obtained from https://www.academia.edu/2180183/Estrategias_funciones_e_interacciones_en_un_entorno_virtual_de_aprendizaje_a_distancia.
- 21) Fernanda, L. (March 23, 2016). Communicative Competence. Obtained from Genially: <https://view.genial.ly/56ef6bd21561e8082c2562fc/interactive-content-competencia-comunicativa>.
- 22) Flowers, J. (2018). The teaching of the English language mediated with an educational platform: learning English with educational platforms. Sinaloa, Mexico: Autonomous University of Sinaloa.
- 23) Garcia, A. (2016). Evaluation of didactic technological resources through e-rubrics. RED-Review of Distance Education, 49.
- 24) Garcia, Z. (November 2018). Diagnosis of the receptive linguistic abilities of students of the first semester of the Degree in Communication. Learning strategies based on comprehension: a possible way to develop listening and reading skills. Graduation project. Hidalgo, Mexico: Autonomous University of the State of Hidalgo.
- 25) Gonzalez, P. (2012). Use of new technologies in the teaching of foreign languages. Retrieved from <https://ojsspcd.ulpgc.es/ojs/index.php/LFE/>.
- 26) Marin, V., Vazquez, A., Llorente, M., & Cabero, J. (2012). Digital literacy of university teachers in the European Higher Education Area. . Obtained from Edutec, Electronic Journal of Educational Technology, 39: http://edutec.rediris.es/Revelec2/Revelec39/alphabetizacion_digital_docente_universitario_EEES.html.
- 27) Ministry of Education of the Dominican Republic. (2013). Policy and Strategy of Educational Intervention with the. Santo Domingo: Ministry of Education of the Dominican Republic.
- 28) Ministry of Education of the Dominican Republic. (January 14, 2013). Review and updating of the curriculum established in Ordinance 1'95. Retrieved from <http://sitios.educando.edu.do/revisiuncurricular/data/uploads/descripcion-proyecto-revision-y-actualizacion-del-curriculo-establecido-en-la-ordenanza-195-primera-entrega.pdf>.
- 29) Ministry of National Education. (2016). Curricular Guidelines for the Area of Foreign Languages in Basic and Middle Education. Colombia: Curriculum Guidelines Series.
- 30) Miranda, D., Montejo, E., & Morales, M. (2019). English in a globalized world. Anthology. Juarez, Mexico: Autonomous University of Juarez of Tabasco (UJAT).
- 31) Montero, J., & Cebrián, M. (2014). Evolution in the design and functionality of the rubrics: from the "square" rubrics to the federated rubrics. REDu Journal of University Teaching, 81-98.
- 32) Morchio, M. (2014). The role of ICT in the English class. Thesis. San Juan, Argentina: National University of San Juan.

Application and Validation of the Proposed Methodology Supported by Information and Communication Technologies in the Preuniversity Level

- 33) Ortega, C. (2016). Strategy based on information and communication technologies to contribute to the development of soft skills in elementary basic education at the Liceo Panamericano in the city of Guayaquil. Doctorate Thesis. Havana, Cuba: University of Havana.
- 34) Ortega, C. (October 30, 2017). Development of soft skills from an early age. Degree work. Guayaquil, Ecuador: Ecotec University.
- 35) Ortega, C., Febles, J., & Estrada, V. (2019). Theoretical-methodological foundation of a strategy to develop soft skills from initial teaching. *Ecociencia Scientific Magazine*, 1-10.
- 36) Palomino, A. (November 30, 2014). Oral expression as a communication strategy. Retrieved from <https://es.slideshare.net/yareelf5/la-expresin-oral-como-estrategia-de-comunicacin>.
- 37) Parra, O., & Galvan, Y. (2014). Implementation of ICT in learning English in grades 6. Tomas Santos Educational Institution. Master's degree. Madero, Mexico: University of Santander.
- 38) Perez, H., & Trejo, M. (2013). Communicative competence and language teaching. Retrieved from <https://atenas.reduniv.edu.cu/index.php/atenas/>.
- 39) Pinto, A., Diaz, J., & Alfaro, C. (2016). Spiral Model of TICTACTEP Teaching Competencies applied to the Development of Digital Competencies. *Hekademos Educational Magazine*, 19, 39-48.
- 40) Professional Training Systems. (2016). Study on the reality of the MINERD English Language Teaching-Learning Program at the secondary level, from 2008 to 2012. Retrieved from <https://pts.edu.do/novedades/>.
- 41) Ramírez, J. (March 17, 2017). Foreign languages in Colombian education. Obtained from SlideShare: <https://es.slideshare.net/juanramirez00/>.
- 42) Report, NMC Horizon. (2017). The NMC Horizon Report: 2017 Higher Education Edition. Texas: NMC.org.
- 43) Rofle, R. (November 17, 2018). The use of new technologies and videos in English classes. Retrieved from <http://divierteteyaprendeconfalui.blogspot>.
- 44) Salazar, J. (2006). Index, introduction, development, conclusion and bibliography. Obtained from *Ilustrados.com*: <http://www.ilustrados.com/documentos/2711061.htm>.
- 45) Sanchez, A., & Coll, S. (2010). Virtual environments. *Mexican Journal of Educational Research*, 163-184.
- 46) Tedesco, J. (2011). The challenges of basic education. *Ibero-American Journal of Education*, 31-47.
- 47) Tedesco, J. (2011). The challenges of basic education in the 21st century. *Ibero-American Journal of Education*, 17.
- 48) UNESCO. (April 2008). UNESCO ICT Competency Standards for Teachers. Retrieved from *Eduteka*: <http://eduteka.icesi.edu.co/articulos/>.
- 49) Velasquez, Y. (2015). Theory of multiple intelligences and its applicability in the teaching of a foreign language: English. *Science of Education*, 28.
- 50) Vidal, M., Martínez, G., Nolla, N., & Vialart, M. (2015). Personal learning environments. *Higher Medical Education*, 29(4).
- 51) Zaldivar, B. (2016). Methodology for the development of oral expression in English supported by a 3d virtual environment at the University of Informatics Sciences. Thesis. Havana, Cuba: University of Havana.
- 52) Zaldivar, B., & Martinez, O. (2016). Methodology for the development of oral expression in English in a 3D virtual teaching and learning environment. Camaguey, Cuba: Pedagogical University of Camaguey.



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