Proposal of learning strategies in university students by involved learning process, content validit

Propuesta de estrategias de aprendizaje en universitarios por proceso de aprendizaje implicado, validez de contenido

MARTÍNEZ-FLORES, Fernanda Gabriela*† & DELGADO-SÁNCHEZ, Ulises

Universidad Autónoma del Estado de Morelos- Facultad de Comunicación Humana

ID 1st Author: *Fernanda Gabriela, Martínez-Flores* / **ORC ID**: 0000-0002-2974-0876

ID 1st Co-author: *Ulises, Delgado-Sánchez* / **ORC ID**: 0000-0002-4318-0238

Abstract

Learning strategies are organized actions that the learner uses to achieve a learning objective. The present study seeks validation by judges of an instrument for self-assessment of learning strategies, at the time of acquiring new knowledge, until its applicability in evaluation or execution tasks. Once the instrument was designed, it was provided to five university professors who served as judges. Kendall's W coefficient was obtained to identify the agreement of their responses. 5 dimensions were proposed with a total of 40 items, with a value close to 1.0 in most of the items.

Learning strategies, University Students, Questionnaire, Judging, Content validity

Resumen

Las estrategias de aprendizaje son acciones organizadas que emplea el aprendiz para lograr un objetivo de aprendizaje. El presente estudio procura la validación por jueces de un instrumento para la autoevaluación de las estrategias de aprendizaje, al momento de la adquisición de un conocimiento nuevo, hasta su aplicabilidad en tareas de evaluación o ejecución. Una vez diseñado el instrumento se proporcionó a cinco docentes universitarios que fungieron como jueces. Se obtuvo el coeficiente W de Kendall para identificar la concordancia de sus respuestas. Se propusieron 5 dimensiones con un total de 40 ítems, con un valor cercano a 1.0 en la mayoría de los ítems.

Estrategias de aprendizaje, Universitarios, Cuestionario, Jueceo, Validez de contenido

* Correspondence to Author (e-mail: rocio.ramos.jaubert@uadec.edu.mx)
† Researcher contributing first author.

Introduction

Learning strategies involve a sequence of steps or stages when it comes to putting them into practice, which requires that the individuals who carry them out have a set of cognitive tools that are usually called "skills", i.e., those abilities that can be specified in a behaviour, since they have been developed through training and then in a specific applied practice (Valle, Barca, González & Núñez, 1999). This work team, by means of an analysis of the theoretical and empirical concepts that they carried out, made a proposal to classify strategies into three groups: cognitive strategies, metacognitive strategies and resource management strategies.

−   Cognitive strategies: These are strategies that integrate new material with previous knowledge, being a set of strategies used to learn, encode, understand and remember information in the service of certain learning goals. These strategies include repetition, elaboration and organisation strategies.

−   Metacognitive strategies: These strategies refer to students' planning, control and evaluation of their own cognition.

−   Resource management strategies: these are support strategies that include different types of resources that contribute to the successful completion of the task (Valle, González, Barca & Núñez, 1999).

    Another proposed definition of learning strategies is that proposed by Gargallo et al (2012), defining them as an organised, conscious and intentional set of what the learner does to effectively achieve a learning objective, in a given social context, integrating affective-motivational and supportive, metacognitive and cognitive elements.

    This model is based on the Questionnaire for the Evaluation of Learning Strategies of University Students (CEVEAPEU) likert type with 88 items, the items must be answered in relation to whether you strongly disagree with the statement, disagree, undecided, agree and strongly agree, it is divided as follows.

1.   The first scale is the affective, supportive and controlling (self-management) strategies scale: this scale has four subscales.

−   Motivational strategies: this subscale includes intrinsic motivation, extrinsic motivation, task value, internal attributions, external attributions, self-efficacy and expectations, conception of intelligence.

−   Affective components: consists of positive physical and emotional state, as well as anxiety control.

−   Metacognitive strategies: consists of knowledge of objectives and evaluation criteria, planning, self-evaluation, control and self-regulation.

−   Strategies of context control, social interaction and resource management: this part incorporates context control, as well as social interaction skills and learning with peers.

2.   The second scale is of strategies related to information processing: it is made up of two subscales.

−   Information search and selection strategy: involves knowledge of sources and search for information, as well as information selection.

    Strategies of information processing and use: consists of the aspects of information acquisition, elaboration, organisation, personalisation and creativity, critical thinking, memorised storage, simple storage, repetition, transfer and the management of resources to use the information acquired.

    Another conception more akin to the information processing model is that based on the cognitive perspective. This position focuses on the mental processes that the student puts into action when studying and takes into account the latest contributions from the psychology of intelligence, memory and the psychology of learning (Del Caño, Román & Foces, 2000).

This approach was started in Spain by José María Sánchez and Sagrario Gallego Rico from the Psychology Department of the University of Valladolid, through the creation of the instrument called ACRA, which is related to the processes of acquisition, encoding, retrieval and support for processing, on a Likert scale of never or almost never = 1, sometimes = 2, quite often = 3, always = 4 (Beltrán, 2003).

Assessment of cognitive strategies			Cognitive and non-cognitive
Scale I: Information Acquisition Strategies.	Scale II: Information coding strategies	Scale III: Information Retrieval Strategies	Scale IV: Strategies to support information processing information
1. Scanning. 2. Linear underlining. 3. Idiosyncratic underlining . 4. Epigraphic. 5. Review aloud. 6. Mental review. 7. Repeated review.	8. Nemotechnics . 9. Intra-content relations. 10. Shared relationships. 11. Images. 12. Metaphors. 13. Applications. 14. Self-questions. 15. Paraphrase. 16. Groupings. 17. Sequences. 18. Concept maps. 19. Diagrams.	20. Search for encodings. 21. Search for clues. 22. Response planning. 23. Written response. 31. Intrinsic and extrinsic motivation. 32. 32. Escape motivation.	24. Self-awareness. 25. Self-management / Planning. 26. Self-management / Regulation and evaluation. 27. Self-instructions. 28. Self-monitoring. 29. Counter-distractors. 30. Social interactions

Table 1 ACRA instrument scales

With the above it is clear that learning strategies are conscious and intentional, and that they are therefore implemented at different times in the learning process of students, from the time of acquisition of information, to the time of performance testing of what has been learned, for this reason the present study was aimed at:

General objective: content validation by expert judgement of a proposal of learning strategies in university students by learning process involved.

Materials and Methods

Research design: Instrumental; applied to test and apparatus development studies.

Participants: 5 teachers in front of group in higher education, as detailed in table 2.

Academic degree	University of graduation	Years in teaching	Age
PhD in Educational Science	Universidad Autónoma de Coahuila	29	55
Master in Attention to Diversity and Inclusive Education	Universidad Autónoma del Estado de Morelos	10	41
Master in Education	Instituto Tecnológico y Estudio Superiores de Monterrey	7	31
Master in Attention to Diversity and Inclusive Education	Universidad Autónoma del Estado de Morelos	6	32
Master in Diagnosis and Neuropsychological Rehabilitation	Benemérita Universidad Autónoma de Puebla	4	34

Table 2 Sample characteristics

Technique or instrument:

Conceptual delimitation of the construct to be assessed, semantic definition of the variable.

Individual Aggregate Method: Each expert is asked individually to give a direct estimate of the items of the instrument by means of judgement (Corral, 2019).

Procedure

Escobar and Cuervo (2008) propose eight systematic steps for conducting the expert judgement to carry out content validity. 1) Defining the objective of the expert judgement; 2) Selecting the judges; 3) Specifying both the dimensions and the indicators that each of the test items is measuring; 4) Specifying the objective of the test; 5) Establishing the differential weights of the test dimensions; 6) Designing spreadsheets; 7) Calculating the concordance between judges; 8) Drawing up the conclusions of the judgement that will be used for the psychometric description of the test.

Data analysis Kendall's coefficient was used

This analysis indicates the degree of association of ordinal evaluations made by multiple raters when evaluating the same samples. The Kendall's coefficient values range from 0 to +1, when the number is closer to +1 the association is said to be stronger.

Results

Five dimensions of learning strategies are proposed according to the process in which the strategy is implemented: 1) Before the execution of the task; 2) Development of the task; 3) After the task; 4) Study for the exams or evaluation; 5) In the exam or evaluation; there are 40 items that are valued on a Likert scale of never=0, sometimes=1, almost always=2, always=3.

1. *Prior to the execution of the task*: these are the strategies that the student puts into use before getting into the subject or learning task; they include the strategies that the student must consider in order to plan the development of the task and his/her learning (they include information encoding and retrieval strategies, as well as information processing).

2. *Development of the task*: involves the execution of some technique that allows the student to analyse the information that is being presented (it has strategies for encoding and retrieving information, as well as for acquisition).

3. *Post-task*: has strategies that students can apply when they have completed the learning task (there are strategies for encoding and retrieving information, as well as for processing).

4. *Study for exams or assessment*: considering those strategies that can be of help to study or review the topics seen in order to prepare for the application of an exam (only has coding and retrieval strategies).

5. *In the exam or assessment*: strategies that learners use at the time of the assessment or exam (it is made up of processing strategies).

Strategies prior to the execution of the task

These strategies, as mentioned above, are those which enable preparation for a study activity, among them are: I mentally plan those strategies that I believe will be most effective for "learning" each type of material I have to listen to, I take notes, I establish times to be devoted to each topic, before writing a paper I make an outline of the points to be dealt with, I make an outline of the points to be dealt with, and I use the following strategies to prepare myself for the task.

–   *Asking questions about the topic*: Asking questions is a way of inquiring about a particular topic. In university classrooms, few students are in the habit of asking questions in class, giving the impression that they have no doubts and fully understand what is being said by the teacher or their classmates. Only a few students ask questions directly to the lecturer in the classroom, sometimes students approach the lecturer in areas outside the classroom, such as the corridors or the lecturers' cubicles, while others raise their doubts with their peers in the hope that they will be able to clarify their concerns.

–   *Ask questions before reading the subject*: after students are given the topic to be covered in class, they could ask questions such as: What is it, how is such and such a thing, how does it work, who discovered it and how did they discover it, who discovered it and how did they discover it, when was it discovered or how did it begin to be studied? When was it discovered or was it first studied, where was it discovered, in what area is it applied, how did it revolutionise knowledge, what does it bring to the present time, why does such and such a thing or phenomenon happen, what is it for, how is it classified?

−   *Importance in reflecting on the use of drawings or graphics, mental images, metaphors, self-questions, paraphrases, schemes, sequences, diagrams, concept maps, matrices to execute the task*: Alvarado (2003) expresses that the knowledge that a subject has about his mental process and its products, as well as self-regulation, comprise the so-called cognitive control, which allows the student to consider the strategies that he can use in his learning process. It is important to encourage the learner to reflect on which strategies he/she uses to learn and which strategies would be optimal to use depending on the type of task. In this section it is commented that the student together with the teacher or facilitator, reflect on the learning strategies, so that the student can identify which is the one he/she predominantly uses and perceive that there are a variety of other strategies that can be useful to him/her.

−   *I mentally plan those strategies that I believe will be most effective for "learning" each type of material I have to listen to*: this consists of continuing with cognitive control, it is not enough for the student to identify the strategies that he/she most applies in learning situations, but to make a decision as to which of them would be the most suitable depending on the type of subject, the material to work on, the teaching style of the teacher, so that the same strategy is not always applicable to all subjects and all learning situations.

−   *Note-taking*: When the class is taking place, whether the teacher is explaining, a classmate is presenting or a material is being read in class, the students have to write notes in their notebooks about the topic that is being developed. Students may sometimes try to write down verbatim what the teacher is saying, or what is being presented on slides, so it is important that students reflect that copying verbatim what they hear or see does not always allow them to take an action that leads to learning, so the notes must be efficient so that they can serve as support in the understanding of the topics being studied.

−   *Establish time to dedicate to each subject*: one of the current challenges for every student is to be able to plan their study time adequately, both for homework and to prepare for the next day's class or for an exam. This planning of study time is sometimes reduced due to the fact that some students work to be able to pay for their studies or because of the dedication to other activities such as sports or recreational activities, as well as the large amount of time spent on social networks on the internet. The purpose is that students can divide their time in a more efficient way, planning specific times for the study of the different disciplinary areas of their subjects. There are students who, due to the ease with which they study a subject because of their affinity to it, find it easy to study, while for others they need more time to study it.

−   *Before writing a paper, an outline of the points to be dealt with is made*: the student must plan the strategies to be used, for example, determine whether he/she will make a concept map, a summary, main and secondary ideas, and break down his/her activity. It is important that at the beginning the student is guided to be able to make a planning of its execution, for example, read the text to have a general idea, give a second reading trying to identify main and secondary ideas, decide if at the time of making the readings use some signs or coloured pens to highlight information, decide what product will be made, if it will be a summary, a concept map or a timeline or if it will only stay with the underlining. As well as determining from the text read the general points that need to be addressed..

Strategies in the development of the task

– *Differentiate the main and the secondary*: a text always revolves around a theme, which has main ideas that can be identified in each paragraph. The main idea can be words or short phrases, Castillo, Jiménez and López (1999) express that the main idea would be the answer to the question: what is the most important idea that the author intends to explain in relation to the topic; being the secondary ideas the ones that provide the details, being a complementary information to the main idea.

– *Analogies and metaphors*: the analogy is a construction that the student makes from his experience or based on something familiar to learn the concept that is being worked on in the class of a particular subject; for example, aphasia is adult as dysphasia to child, blindness is eyes, as deafness to ears, the corpus callosum is to the brain as bridges are to cities, internal organs are to man as gears are to the clock. On the other hand, for Amparo (2006) metaphor is the mechanism through which we build new concepts from existing ones; we build on the unknown from the known; for example, brain damage is an injury to the central nervous system that has consequences in the life of the subject, it is as if a clock fell and crashed affecting its normal functioning.

– *Social or occupational application*. It consists of making a reflection at the beginning with the teacher's guidance and later individually on how the subject I am learning can I apply it in my future work, have I seen or heard about this subject, have I witnessed its applicability, how does it contribute, that I learn this subject in my training for my work, where or with whom can I apply this knowledge?

– *Schemes or synoptic tables*: These are representations that relate words or phrases within an informative process, allowing the organisation of information by identifying the main ideas and the subordinate ones in a logical manner (Pimienta, 2012). Therefore, they are graphic representations of the fundamental ideas of a text, there are different types of diagrams, the main ones being: key diagrams, arrows, diagrams, developmental diagrams and bar diagrams.

– *Underlining words and phrases*: this strategy consists of underlining the words or phrases that the student considers significant while reading, always trying to answer the questions: what is the text about, what is being talked about, what is the most important idea that the author intends to explain in relation to the subject, and what is the most important idea that the author intends to explain in relation to the subject, allowing the identification of transcendental segments of the text.

– *Concept maps:* this is a graph of concepts linked by means of truth values, consisting of three elements: 1) concepts, identified as nouns, adjectives and pronouns, 2) linking words, which can be verbs, prepositions, conjunctions and adverbs, 3) propositions, which is the phrase with a specific meaning (Martínez, Leyva & Félix, 2014).

– *Use of exclamation marks, asterisks, drawings:* this strategy allows for the highlighting of information: this is a strategy by means of which the student makes use of different signs that he/she can select to highlight the most relevant part of a text, or to focus his/her attention later in a second reading on the element that seemed most relevant to him/her.

– *Semantic networks*: to create a semantic network it is necessary to make a list of the concepts present in the text, identify which is the central concept, establish relationships between the central concept and the other concepts, make a hierarchical construction of the concepts, and then create a hierarchical construction of the concepts. (Gómez, Molina & Ontoria, 1999).

– *Summarising*: this is a synthesis of the most important parts of a text, and the main and secondary ideas must be maintained in a logical, coherent and congruent manner.

– *Use of pencils or pens of different colours*: students use pencils to underline, which can be linear, or in a circle, or with squares, in order to distinguish the main ideas from the secondary ones; they can also use different colours to differentiate one concept from another, also highlighting the main and secondary ideas, allowing them to identify the most relevant parts of the text more quickly when rereading it.

– *Logical or temporal sequence*: the temporal sequence implies the ordering of information according to the time at which the events or processes took place, respecting a hierarchical order of the succession of events. It can be applied when trying to identify the dates on which a specific topic has been studied and the contributions that have been made in relation to it, or in making a logical sequence when the stages of a specific process, such as embryonic development, must be specified.

Post-task strategies

– *Deducing conclusions from the topic*: this strategy is infrequently used by students, as it implies that after reading the text, they can say in their own words what were the most significant elements of the topic read, highlighting main and secondary ideas, as well as giving their opinion or interpretation of what they have read. This opinion can be expressed orally or in writing.

– *Exchanging opinions among peers*: this is a strategy that allows each of the students to express what they liked and what surprised them most about the topic, emphasising what they did not know before and what they have learned now. It is also important to talk about what they did not understand in the text so that, among peers, they can give feedback on the text.

– *Before starting to speak or write, I think and mentally prepare what I am going to say or write*: this strategy has to do with the planning of the activity, being important to make the students see that before writing they should make an analysis of the information about what is the most relevant thing that should go into the topic that was addressed, trying to organise the ideas in a logical and sequenced way.

– *Explain in their own words*: this means that the student should be able to express either verbally or in writing what was clear to them about the topic they have read.

Study strategies for exams or assessment

– *To study with questions*: this strategy implies that the students, starting from the topic to be studied, make a questionnaire, reflecting in the questions, the central themes and their secondary ideas. This is an organised way of studying according to the organisation of the text.

– *To study with their own grouping and criteria*: this strategy consists of the student using different strategies to be able to carry out their study, some of them can make use of images and creation of drawings to review the subject, in other cases they can read the text again, but turning it upside down, to exercise a higher level of concentration, which supports the attention of what has been read, make schemes with the support of letters that represent words or concepts, etc.

– *Applying what has been learnt*: this consists of reflecting on how what has been learnt can be applied in the area of study, trying to imagine making a simulation where one has to apply what has been read, for example, if one is dealing with the subject of the auditory pathway, the student could simulate being a doctor who is explaining to a patient with hearing loss where the problem of hearing loss is occurring and what the implications of this are.

– *Use of acronyms, acronyms, acronyms when studying*: the acronym, according to the Royal Spanish Academy (2017), is the acronym whose configuration allows its pronunciation as a word, for example, ICT, for information and communication technologies. The acronym, according to the Royal Spanish Academy, is understood as a graphic abbreviation formed by the set of initial letters of a complex expression. This implies that the student can simplify words through the use of acronyms when studying, being able to integrate them in their summaries, in their concept maps, in their summaries, as a tool to favour the study of the subject.

– *The use of rhyme or rhymes*. Rhyme is the coincidence, repetition of phonemes or sounds that occur in a sequence of words at the end of a sentence and can be written in different styles (Sanmartín, 2015). For example, if you are studying the topic of brain connecting fibres, in particular the arcuate fasciculus, you can say that it rhymes with four.

– *Loci method*: The word Loci comes from the Latin word locus, which means "place", referring to a physical and real environment, projectable in the mind (Iodice, 2009). This strategy consists of taking as a reference a known place, such as a room, a space in the house, a classroom, a square, etc., and through the association of objects in a specific place learn the theoretical content, for example if the cell and its elements are being studied, it could be said that the room is the cell, its walls are the membrane and that inside it is the nucleus, which is the bed, that the desk is the ribosome, the television is the mitochondrion, etc,

– *Repeating or writing down important information*: this study strategy for an exam allows for an auditory feedback of what has been said while repeating the information verbally, a tool that Vygotsy called external language. This type of strategy of repeating information can also be presented in writing, as when we write something down several times to consolidate it. In this strategy, the aim is for the student to repeat or write down the information that was most relevant and central to the understanding of the subject.

– *Re-reading the text*: This consists of the student choosing the strategy of re-reading the whole text that was seen in class and in this way reviewing the topic that was seen. The reading can be done once or several times.

– *Re-reading the outlines, underlining*: the first of these consists of the student reviewing the topic or content of the exam using the outlines created. The second is different from reading the text, as in the latter the whole text is re-read and in the strategy of re-reading the underlined is only to read the most important words, phrases or sentences, the reading can be horizontal or vertical.

– *Searching for relationships between the contents of the text*: This consists of the student, after seeing the parts into which the subject to be studied is divided or subdivided, finding how these parts are linked; the importance of their logic and sequence.

– *Relation of content with experiences and fantasies*: the first of these strategies is applied when the student can relate what he is studying to some event in his past, for example, if he is looking at the subject of types of fractures and in his childhood he had a fracture, he can relate that fact to the conceptual part of the subject studied. Another way is the use of fantasies: if you are studying the subject of fractures, you can imagine that during a holiday doing the sport of mountaineering, you fell and this caused a fracture of a certain type with certain characteristics.

– *Imagining the content as in a film*: this is a strategy that, like fantasy, allows the student's imagination to be used, and consists of imagining the theoretical content of a subject in a sequential manner, but as if a film were being made; For example, if you are working with the topic of chemical bonds, you can imagine yourself watching a film where you are in a laboratory and several scientists are talking about the molecular construction of polonium.

– Put yourself in the situation: This strategy is related to fantasy, it consists of asking oneself the question and imagining what would happen if I were in a laboratory. ...., for example, if the subject is being addressed in a law degree, specifically in the subject of labour law, the student can put himself in the situation in which he can represent a lawyer who is protecting and safeguarding the welfare and legal compliance of a worker who has an accident at work and who does not want to be compensated. Being able to situate himself in this way makes it easier for the student to get involved in a more direct way with the subject to be learned and to see the importance of the subject in the labour and social application.

– Replicating the outline of the book: this strategy is simple in relation to the complexity of the outlines presented in the literature presented to the students, it consists of the student making a copy in his/her notebook of an explanatory figure that is in the content, copying an outline that is in the same, a comparative table, etc. It means that he/she tries to make a faithful reproduction in terms of the content of some outstanding elements of the text.

Strategies used during examination or evaluation

– Remembering (words and pictures or graphics, mental images, metaphors, self-questioning, paraphrasing, schemes, sequences, diagrams, concept maps, matrices, recalling anecdotes before speaking or writing): remembering is a memory process where it is proven that information was previously stored, when answering an exam this strategy is of utmost importance, as it allows evoking either words or images that the student used to support him/her to study.

– Before writing (first I remember, in any order I can, then I order it and make an outline or script and finally I develop it point by point). This type of strategy is useful when the exams are open questions, it is advisable for students to write down everything they remember about the subject being evaluated, then identify the order of these ideas and finish by reading the questions and consulting what to write, in order to subsequently organise the answer more effectively, it is also valid to remember the outlines that were studied previously and reproduce them.

– Free writing (the ideas are noted down, ordered and written): this strategy consists of exams where the topic is developed completely, the ideas remembered as in the previous strategy are noted down at first, the ideas are hierarchised either in order of importance or temporality, the selection of the criterion that will allow the order is important, after which the writing begins to be done as concatenated as possible.

The analysis of validity and external consistency of the dimensions was carried out with Kendall's W concordance coefficient. This coefficient was obtained from the analysis of each item, using five criteria for each indicator (sufficiency, clarity, coherence, relevance and unidimensionality).

Dimension	Indicator	Null hypothesis	P	Decision
1.-Prior to the execution of the task	Ask questions about the topic	The distribution is the same	1.000	Retain the null hypothesis
	2. Ask questions before reading the subject matter.	The distribution is the same	1.00	Retain the null hypothesis
	3. Importance of reflecting on the use of drawings or graphs, mental images, metaphors, self-questions, paraphrases, diagrams, sequences, diagrams, concept maps, matrices to perform the task.	The distribution is the same	.406	Retain the null hypothesis
	4.I mentally plan those strategies that I think will be most effective for me to "learn" each type of material I have to listen to.	The distribution is the same	1.000	Retain the null hypothesis
	5.I take notes	The distribution is the same	.406	Retain the null hypothesis
	6.I set time to be spent on each topic.	The distribution is the same	1.000	Retain the null hypothesis
	7.Before writing a paper, I make an outline of the points to be covered.	The distribution is the same	1.000	Retain the null hypothesis
2.-Desarrollo de la tarea	8. Differentiate between the main and the secondary	The distribution is the same	1.000	Retain the null hypothesis
	Analogies and metaphors	The distribution is the same	1.000	Retain the null hypothesis
	10.Social and work application	The distribution is the same	.092	Retain the null hypothesis
	11.Outlines or synoptic tables	The distribution is the same	1.000	Retain the null hypothesis
	12.Underlining words and phrases	The distribution is the same	1.000	Retain the null hypothesis
	13.Concept maps	The distribution is the same	1.000	Retain the null hypothesis
	14.I use exclamation marks, asterisks, drawings...) to highlight information.	The distribution is the same	.406	Retain the null hypothesis
	15.Semantic networks	The distribution is the same	.092	Retain the null hypothesis
	16.Summarising the most important	The distribution is the same	1.000	Retain the null hypothesis
	17.Use of different coloured pencils or pens	The distribution is the same	1.000	Retain the null hypothesis
	18.Logical or temporal sequence	The distribution is the same	.112	Retain the null hypothesis
3.-Posterior a la tarea	19.Drawing conclusions from the topic	The distribution is the same	1.000	Retain the null hypothesis
	20.Exchanging opinions among peers	The distribution is the same	1.000	Retain the null hypothesis
	21. Before I start speaking or writing, I think about and prepare mentally what I am going to say or write.	The distribution is the same	1.000	Retain the null hypothesis
	22.To explain in their own words	The distribution is the same	.092	Retain the null hypothesis
4.-Estudio para examen o evaluación	23.To study with questions	The distribution is the same	1.00	Retain the null hypothesis
	24.To study with own grouping and judgement.	The distribution is the same	.092	Retain the null hypothesis
	25.To reorganise information from a personal point of view.	The distribution is the same	.092	Retain the null hypothesis
	26.To make an application of what you have learnt	The distribution is the same	1.000	Retain the null hypothesis
	27.Use of acronyms acrostics acronyms acronyms when studying	The distribution is the same	1.000	Retain the null hypothesis
	28.Use of rhyme or rhymes	The distribution is the same	1.000	Retain the null hypothesis
	29.Method of loci	The distribution is the same	.092	Retain the null hypothesis
	30.Repeating or writing down important facts	The distribution is the same	1.000	Retain the null hypothesis
	31.Rereading the text	The distribution is the same	1.000	Retain the null hypothesis
	32.Re-reading outlines, underlining	The distribution is the same	1.000	Retain the null hypothesis
	33.Looking for relations between the contents of the text	The distribution is the same	.406	Retain the null hypothesis
	34.Relation of content with experiences and fantasies	The distribution is the same	1.000	Retain the null hypothesis
	35.Imagining the content as in a film	The distribution is the same	1.000	Retain the null hypothesis
	36.Put yourself in the situation	The distribution is the same	.406	Retain the null hypothesis
	37.Replicating the outline of the book	The distribution is the same	1.000	Retain the null hypothesis
5.- En el examen o la evaluación	38.Remembering words and pictures or graphics, mental images, metaphors, self-questions, paraphrases, diagrams, sequences, diagrams, concept maps, matrices, recalling anecdotes before speaking or writing.	The distribution is the same	1.000	Retain the null hypothesis
	39. Before writing, I first remember, in any order, as much as I can, then I put it in order and make an outline or script and finally develop it point by point.	The distribution is the same	1.000	Retain the null hypothesis
	40.Free writing, where the learner writes down ideas, arranges them in order and writes them down.	The distribution is the same	1.000	Retain the null hypothesis

Table 3 Results of Kendall's W analysis of dimensions

Null hypothesis: the distribution is the same.

Discussion

Even though the proposed Likert scale differs from the ACRA (Beltrán, 2003), in the values given to the scale, for example in the ACRA the score is never or almost never=1, sometimes=2, often=3, always=4, in the present proposal the score is never=0, sometimes=1, almost always=2, always=3.

In relation to the CEVEAPU (Gargallo et al, 2012), if the content of the items is analysed, some of them can be considered as learning styles rather than strategies that the student implements in order to learn, in addition to its Likert scale, even though it is Likert, the items must be answered in relation to whether the student strongly disagrees with the statement, disagrees, undecided, agrees and strongly agrees;

Likert values are not so appropriate for the strategies, since these are actions that students can implement to a lesser or greater extent, so the proposal put forward in this research is more recommendable. Unlike the CEVEAPU, the current proposal focuses on the times in which knowledge is acquired until the stage of its evaluation or execution of a task where strategies must be implemented to evoke what has been learned, the CEVEAPU, on the other hand, contemplates conditions that can be considered as elements of the environment that can predispose students to some action.

The results highlight that there is a consistency in the answers of the judges, accepting the items, even though not all the items have a convergence of total agreement, they are consistent.

Conclusion

The contribution of the present research is to give a proposal of the moment where the implementation of a learning strategy in the process of acquiring new knowledge is put into action until the moment of its evaluation or of putting into action the applicability of what has been learnt. The Kendall analysis showed a good content validity of the items, being an instrument that can be self-applied by the students so that they can make a self-evaluation of which strategies they are implementing in some of the moments of the learning process and thus be able to identify and know that there are various strategies that can be of help to them to favour their learning.

Future lines of research

In future research, the instrument should be applied to the university population in public, private, rural, urban and technological schools in order to obtain its reliability, as well as to carry out an exploratory factor analysis of the dimensions in order to subsequently carry out a confirmatory factor analysis.

Acknowledgements

ISSN 2524-2059
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MARTÍNEZ-FLORES, Fernanda Gabriela & DELGADO-SÁNCHEZ, Ulises. Proposal of learning strategies in university students by involved learning process, content validit. Journal-Economic History. 2023

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