BLOOM TAXONOMY VERSUS TOBON TAXONOMY

ABSTRACT

A qualitative research approach with a dialectical hermeneutic design is carried out, in which the conceptions of two authors, Benjamin Bloom and Sergio Tobón, are analyzed. They propose taxonomies that are applied in Dominican education in secondary technical-professional modality and in the academic modality respectively. The question arises: Why are different taxonomies applied in secondary education in the Dominican Republic? As a main finding, it was found that Bloom's taxonomy must be observed from its three domains: cognitive, affective, and psychomotor, and not be followed in a linear manner, hence its importance of being used in the technical-professional area of secondary school. Tobón has unified the three dimensions, which is used in secondary school, but in the academic modality. It is proposed that research continue to be carried out to allow the taxonomies to be readapted to new times.

KEY WORDS: Taxonomy, educational objective, teaching, evaluation.

RESUMEN

Se realiza una investigación con enfoque cualitativo de diseño hermeneútico dialectico en el cual se analiza las concepciones de dos autores Benjamín Bloom y Sergio Tobón quienes plantean taxonomías que se aplican en la educación dominicana en secundaria modalidad técnico profesional y en la modalidad académica respectivamente. Surge la pregunta ¿Porque se aplican taxonomías diferentes en la educación secundaria en República Dominicana? Como principal hallazgo se encontró que a taxonomía de Bloom debe ser observada desde sus tres dominios cognitivo afectivo y psicomotor, no ser seguida de manera lineal de allí su importancia

de ser usado en el área técnica profesional de secundaria y Tobón tiene unificado las tres dimensiones el cual se usa en la secundaria ero modalidad académica se propone se siga realizando investigaciones que permitan readecuar las taxonomías a los nuevos tiempos.

PALABRAS CLAVES: Taxonomía, objetivo educacional, enseñanza, evaluación.

Introduction

Achieving educational objectives through the development of potential, defining competence as the capacity to put learning outcomes into practice in a specific context, such as education, personal development or professional development (Guide to Planning and Evaluation by Competencies, MINERD, sf) or the capacity to act effectively and autonomously in diverse contexts, mobilizing concepts, procedures and attitudes in an integrated manner (Curriculum Design, MINERD, 2017).

Two educational taxonomies are compared, those of Benjamín Bloom and Sergio Tobón, in the context of Dominican Republic education, to understand their use in the different modalities and for anyone interested in analyzing, designing, implementing a curriculum, participating in curriculum modification, or applying these taxonomies in the classroom.

Methodology

The methodology used was the qualitative approach of dialectical hermeneutic design in which the conceptions of two authors Benjamin Bloom and Sergio Tobón are analyzed, an

interpretation of the authors and their textual works in the act of understanding their discourses and applications comparisons (Schleiermacher, 1834 as cited in Villalobos, 2017)

Results

IDEAS BY AUTHOR BENJAMIN BLOOM

1. Bloom (1956, as cited in Sánchez-Contreras, 2019), is the first taxonomy designed to assist and direct educational intentions towards the competencies to be achieved.
2. It attempts to break down the stages of human skill learning within an informal framework.
3. It allows for communication between teachers or examiners, facilitating the exchange of assessment instruments, as well as ideas on how to do so.
4. The goals of the learning process are explained from the affective, psychomotor and cognitive dimensions, what the learner must learn (knowledge skills), through six levels of knowledge.
5. At the cognitive level, he mentions six levels: knowledge, comprehension, application, analysis, synthesis, and evaluation. Each level is established with the support of verbs.
6. The upper levels include the lower ones.
7. Bloom (1956), At the lower order levels are the **knowledge** that allows us to gather information. The skill to be demonstrated is to observe and remember information, know dates, events, places, main ideas, mastery of the subject, indicator words such as define, list, label, name, identify, repeat, tell, describe, collect, examine, tabulate, quote, who when how can be used. At the **comprehension level** it is to confirm the transfer, interpretation and extrapolation of knowledge. The skill to be demonstrated is to understand the information, grasp the meaning, transfer knowledge to new contexts, interpret compare, order and infer the causes and predict consequences. The indicator words would be difference extends, summarizes, interprets, discusses, contrasts, explains, paraphrases illustrates compare predicts associates.

8. Application is the ability to apply knowledge, that is, to use information, methods, concepts, **and** theories in new situations, solving problems using skills and knowledge. Indicator

words include modify, relate, change, classify, test, discover, use, expand, compute, solve, construct, calculate, demonstrate, complete, illustrate, or show.

9. At higher order levels **, analysis** is the ability to divide, break down, the skill that must be demonstrated in finding patterns, organizing parts, recognizing hidden meanings, identifying components, differentiating, classifying and relating conjectures, and making hypotheses. The indicator words are separates, sorts, explains, connects, divides, compares, selects, explains, infers, arranges, classifies, analyzes, categorizes, compares, and contrasts. The **synthesize level** allows for gathering and incorporating, using old ideas to create new ones, generalizing from given data by relating knowledge from diverse areas, predicting derived ideas, generating, integrating, and combining ideas into a product, plan, or proposal. The indicator words would be combines, integrates, rearranges, substitutes, plans, creates, designs, and invents. What if? prepares, generalizes, composes, develops, formulates, rewrites, and so on.
10. Evaluation is the ability to judge an outcome, compare and discriminate between ideas **,** assess the presentation of theories, choose based on reasoned arguments, verify the value of evidence, and recognize subjectivity. The student evaluates based on specific standards and criteria. Indicator words would be to decide, establish, grade, test, measure, assess, criticize, justify, discriminate, support, convince, conclude, select, establish ranges.
11. At the affective level it refers to the emotional response concerning attitudes, values, personal appreciation and motivation for learning. They are categories, reception of the phenomenon, response to the phenomenon, valuation, organization, characterization. Reception is willing to listen and receive knowledge, in response to the phenomenon, actively participates and connects with the transfer of knowledge, and at the valuation level finds value in their learning and is motivated to continue, in organization integrates and compares, values, orders according to priorities, and in characterization (internalization of values) It has a system that controls their behavior. Their behavior is predictable consistent, adjusts personally, socially and emotionally (Center for Teaching Excellence. University of Waterloo, sf)
12. Psychomotor domain has the level, imitation, the student learns by watching and copying manipulation, results are guided through memorization or following instructions, precision, results are more expert and more precise articulation, many skills can be linked,

naturalization, high level of results achieved with actions becoming second nature (Bloom as cited in Ruhl, 2024)

IDEAS BY THE AUTHOR SERGIO TOBÓN

Tobón (2017, as cited in Sánchez-Contreras, 2019), tells us about the socioformative taxonomy, focused on collaboration, teams and communities.

1. Socioformative assessment is feedback and supports the development of talent through problem-solving using collaborative tools, seeking continuous improvement. A characteristic of the term are the levels of mastery, which seek to achieve increasingly higher levels. (Tobón, 2017)
2. The socioformative taxonomy tells us about five levels: mastery, preformal, receptive, resolutive, autonomous and strategic.
3. In diagnostic processes it is recommended to consider all five levels, while in everyday assessment practice it is sufficient to consider the last four.
4. **preformal** domain level has some idea or approach to the problem without conceptual or methodological clarity. Verbs that can be used are, addresses, abides, pays attention, codes, lists, states, explores, reads (without understanding), memorizes, names, observes, reacts, repeats, labels, points out, follows.
5. **Receptive** domain level receives basic information to identify problems basically through notions.
6. The verbs that can be used are search, cite, define, name, describe, determine, identify, investigate, manipulate, operate, organize, receive, recognize, recover, record, relate, reproduce, summarize, concentrate, select, underline, tolerate
7. **Resolutive** proficiency level solves simple problems in their key aspects with an understanding of the information and mastery of essential concepts. The verbs that can be used are: applies, characterizes, categorizes, compares, understands, verifies, conceptualizes, controls, fulfills, diagnoses, differentiates, executes, elaborates, employs, implements, interprets, works, motivates, plans, processes, resolves, systematizes, subdivides, verifies.

8. **autonomous** level argues: solves problems with several variables, has its own criteria and uses reliable sources, seeks effectiveness and efficiency. The verbs that can be used are analyzes, contributes, argues, self-evaluates, self-manages, self-regulates, evaluates, comments, contextualizes, criticizes, exemplifies, assesses, explains, formulates, hypothesizes, infers, integrates, improves, meta-evaluates, monitors, plans goals, reflects, regulates, relates, provides feedback, theorizes, values.
9. **Strategic** mastery level applies creative and cross-cutting strategies in problem solving, confronts uncertainty and change with strategies.
10. The verbs that can be used are: adapts, advises, helps, co-creates, composes, creates, empowers, generates, innovates, intervals, judges, leads, personalizes, predicts, proposes, projects, reconstructs, recreates, synergizes, transfers, transforms, transversalizes, tutors, links.

3. Identification of similarities and differences in concepts and principles and in applications.

Tobón (2017) mentions that every assessment process for developing talent must consider certain performance levels to guide improvement and learning processes. This is why Bloom's taxonomy is no longer as relevant; what's needed is one that takes into account social challenges and transcends content.

One criticism of Bloom is that its conception is too rigid and is based on the industrial age rather than the knowledge age. In the Technical Professional Area, we are currently working with Bloom's mastery levels, however, in the academic area, we work with Tobón.

Bloom's taxonomy mentions six levels of knowledge, from lower-order thinking to higher-order thinking. Tobón mentions five levels of mastery.

Bloom explains the goals of the learning process in the affective, psychomotor, and cognitive dimensions; however, Tobón explains in 5 levels of mastery how to achieve overcoming each level of mastery by solving contextual problems through the articulation of knowledge.

In order to better apply Bloom's taxonomy, it is necessary to take into account the three domains: cognitive level, affective level, and psychomotor level. At the technical-professional level of

secondary school in the Dominican Republic, Bloom's taxonomy is applied, although it should be noted that Shabatura (2022) mentions that we do not necessarily start with the lower order, many times at the technical-professional level we learn from doing, meaning that it is not necessarily applied in the hierarchical order, it also depends on the level of the student. At the academic secondary level, Tobón's taxonomy is currently applied because it is considered to contribute to competency-based evaluation.

According to the table below, it can be seen that Bloom and Tobón share verbs at different levels, which allows us to reflect that they are very related, just as there are others that are not shared, but could be said to be related.

Tabla1 Similarities of differences in concepts.

	Cognitive Domain Bloom (1956) Nouns	Cognitive Domain Modification Bloom, Anderson Krathwohl (2001) Verbs	Affective Domain Kratwohl, Bloom Masia 1973	Domain psychomotor	Tobón Mastery level
Lower-order levels of thinking	**1.Knowledge:** Define, list, **label** , name, identify, **repeat** , **count,** describe, collect, examine, tabulate, cite, who, when, how.	**1.Remember:** recognize or recall knowledge from memory	**1. Reception** recognize ask assist choose describe follow give identify listen name answer choose	**1 Imitation Define, Identify, Label, list, name**	**1. Preformal** addresses, complies with, Comply, attend, codify, **enumerate,** enunciate, explore, read (without understanding), memorize, name, observe, react, **repeat, label,** point, follow
Lower-order	**2. Understanding:**	**2.Understand**		**2. Manipulation**	**2. Receptive:**

levels of thinking	differentiate, extend, **summarize,** interpret, discuss, contrast, distinguish, explain, paraphrase, illustrate, compare, predict, associate.				look for an appointment defines names describe determines identify investigate manipulates opera organizes reception recognizes recovers records **relates** reproduce **resume** concentrates select emphasizes tolerates
Lower-order levels of thinking	**3. Application** modifies, **relates ,** changes, classifies, tests, discovers, uses, expands, computes, solves, constructs, calculates, demonstrates, completes, illustrates, shows.	**3.Apply**	**2. Answer:** accept , answer , ask , assist , clarify , communicate , contribute , cooperate , discuss , help , indicate , ask , participate , question	**3 Precision**	**3. Resolution:** applies, characterizes, categorizes, **compares,** understands, verifies, conceptualizes, controls, fulfills, diagnoses, differentiates, executes, elaborates, employs, implements, interprets, works, motivates, plans, processes, resolves, systematizes, subdivides,

					verifies.
Higher-order levels of thinking	**4. Analysis** separates, orders, explains, connects, divides, compares, selects, explains, infers, arranges, classifies, analyzes, categorizes, **compares,** contrasts.	**4.Analyze**	**4. organize** adapt, arrange, catalog, classify, compare , complete, defend, explain, reestablish, formulate, generate, identify, integrate, modify, order, prepare, range, relate	4. Control	**4. autonomous:** analyzes, contributes, argues, self-evaluates, self-manages, self-regulates, evaluates, comments, contextualizes , criticizes, exemplifies, evaluates, explains, formulates, hypothesizes, infers, integrates, improves, meta-evaluates, monitors, plans goals, reflects, regulates, relates, provides feedback, theorizes, assesses.
Higher-order levels of thinking	**5. Synthesis** combines, integrates, rearranges, substitutes, plans, creates, designs, **invents.** What happens if? . prepares, generalizes, composes, develops, formulates, rewrites	**5. Evaluate:** Make judgments on function of criteria and control standards	**3. Value** : accept approve completely choose commit describe debate demonstrate difference explain reestablish identify initiate justify prepare refute	**5.Automation**	
Higher-order levels of thinking	**6. Evaluation** : decides, establishes, grades, tests, measures, evaluates, criticizes, justifies,	**6.Create:** Bring together elements to form a coherent and functional whole	**5. characterize** act organize behave characterize	**6 Creativity**	**5. Strategic;** adapts, advises, assists, co-creates,

	discriminates, **supports**, **convinces** concludes selects establishes ranges.	by reorganizing.	defend show exemplify work incorporate influence justify hear keep modify practice preserve carry out propose question review		composes, creates, **empowers**, generates, **innovates,** intersects, judges, leads, personalizes, predicts, proposes, projects, reconstructs, recreates, synergizes, transfers, transforms, cross-cuts, mentors, connects.

Nota: Fuente propia

Conclusions and discussions

Comparative analysis of the importance of both authors.

From the author's perspective, these taxonomies can be used as a guide for what should be done to achieve learning, and how to learn it. To consider that both Bloom and Tobón help with learning and its verification through assessment, because it allows for the development of concrete instruments to verify learning and, failing that, provide feedback until the problem of the real context at hand is resolved. During 2024, the Ministry of Education of the Dominican Republic (MINERD) focused on working on projects by applying transversal axes, which allows for the observation of concrete results.

Although Bloom is considered to be focused on the result, it can be noted that if we apply Tobón's taxonomy, both are complementary to each other.

When developing activities and tools, thinking about Tobón and Bloom can help us.

Senge (1990) suggests that schools that teach that the fifth discipline is to think of an organization as a system. It is considered that companies are understood as a whole and are capable of learning and renewing themselves, as people do.

The human predisposition to learn is innate; a culture that focuses on learning dedicates its best resources to institutions that contribute to the development of learners. And places must become places where everyone grows and develops intellectually.

The central idea of a learning school is that institutions can be considered organizations that learn sustainably and creatively. Senge goes on to mention that it is possible to change the way people think and act together by creating learning organizations through the five learning disciplines: personal mastery, shared vision, mindsets, team learning, and systematic thinking.

One can reflect on what was done during the summer training day for trainers, during the year 2024-2025 it was decided to do it by area, the MINERD as a learning entity recognized that it is sometimes necessary to speak the same language, because in previous years the days, although they were grouped by school internally, were not grouped by area, however this time they were organized by area and the leaders of each area modeled their classes to their trainers who are the learning community.

The relationship between Boom and Tobón can be seen in the application of curricular adaptation in these, based on Tobón's taxonomy and his knowledge assessment strategies, and it is considered that Bloom should continue to be taken into account.

It was observed that in the summer session in the Educational Districts it is the learning communities, enthusiasm and exchange, reflection and a shared vision word something taken from Senge as one of the five learning disciplines

It can be concluded that both taxonomies complement each other, the updates that have been made are valued, now the last level of Bloom is no longer evaluation but creation, they changed position, it is considered favorable, The author Tobón is being used in the summer sessions and for application in the classrooms, it is worth asking if in these times of technology, will it be necessary to adapt these two taxonomies to be able to evaluate the competence of the students? since they are still used in Professional Technical and now when everyone must use computational thinking in the classrooms it will be necessary to reformulate these taxonomies, because they must adapt to these new times. The imposition of evaluation methodology is criticized, consideration should be given to opening fans and options, although at the 2024 consultation table it was proposed to improve the curriculum by working with projects, but it is not the only way to learn and teach, perhaps it is the most convenient because it considers the highest level of Bloom is creation, that is, doing, and it also achieves the highest level of Tobón, the strategic one. It is proposed that research continue to be conducted to realign taxonomies and open up ways of learning, ways of teaching, and ways of assessing. Schools must continue to be learning entities, and applying Senge's disciplines strengthens us.

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