

Critical Thinking As The Foundation Of Pedagogical Practice In University Teachers.

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Abstract

The aim of the study was to examine the influence of different schools of thought on the pedagogical practices of university professors. The researchers used qualitative methods to collect information, such as interviews with experts and a wide range of real-world (multi-case) examples. Professors from the various universities in Lima participated in the study, which used a questionnaire with open-ended questions and a field notebook to collect data. There is a lack of support for critical, analytical, reflective and even more creative thinking in the classroom based on the theoretical definitions of these skills, which can be seen in the various categories of data collection in this study. Despite the controversies, this methodology has allowed the generation of opinions and conclusions about the effects of these actions and will allow a perspective on the effects of the pedagogical procedures and the effects that the non-implementation of corrective measures would have.

Key words: critical thinking, reasoning, decision making, professional training, university service.

INTRODUCTION

The permanent socio-cultural changes of the 21st century require teachers to generate greater intellectual activities to favor the construction and foundation of learning, developing the necessary competencies to improve their social and individual life. The formation of competencies for life is the result of a quality education that prepares students to take on the challenges of a rapidly advancing society and it is the task of teachers to assume it by being willing to put into action their different intellectual or thinking skills towards the improvement of education.

The proposal is an education with equal opportunities, with relevant and quality learning that allows students to realize themselves as people who contribute to national development; however, these results are not being achieved, we continue to occupy the last places in basic education according to the PISA international test. Faced with this fact, society blames teachers, who are accused of not developing the skills or competencies required by this type of international evaluation, without taking into account the existence of other factors that determine student learning.

In Peru, as in other Latin American countries, students are generally characterized by being good at reproducing the information contained in the different areas of knowledge; but they are not very good at applying their knowledge by making use of their creative skills and having a conceptual and deep idea of what they learn: learning is centered on memorization. There is a lack of development in them of complex and reflective thinking strategies, requiring during the pedagogical practice that they learn to formulate questions, giving them the freedom to answer and support them according to their way of thinking, contrasting ideas, making conjectures or hypotheses, solving problems and promoting reflection on the construction of their learning and the valuation of these.

This is why critical, analytical, reflective and creative professionals are required, and teachers are the ones in charge of developing these skills. The critical thinker is ready to analyze, reflect, debate, and refute. From this perspective, the present research proposes to know the types of thinking that teachers develop in their pedagogical practice.

Previous works carried out by researchers, with reference to critical thinking in university students, show that they contribute positively to this type of thinking; likewise, they indicate that it is such a complex reality in which it is not a general domain that influences the specific domains, but on the contrary, it is the specific domains (arts, humanities and culture), the critical attitude of each one of them accumulates for a more general ability of critical thinking¹¹.

Marketing educators have always defended the importance of critical thinking as a means to develop students' problem-solving skills, supported by the review of critical thinking literature in marketing journals; these scientific statements

found in secondary sources can be successfully taught and evaluated quantitatively, thus improving methodological and statistical thinking⁹.

Other related researches sustain that, through competency-based learning, they have had a positive and innovative impact on their learning process, as well as an essential competence in their professional training; such results show, for the most part, a link with the analytical processes of reasoning, questioning, evaluation and decision making, but few understand it as action and commitment as an important factor in professional training³.

In the use of critical-analytical thinking, it is considered that there is the possibility to develop it in the classroom, making use of techniques and types of learning to strengthen and promote knowledge in the different areas, but it goes hand in hand with the development of this thinking in teachers²⁰.

In relation to reflective thinking, the relationship between the levels of reflective practices of teachers and their attitudes towards their personal and professional development was investigated, the results of which showed that the development of reflective practices was at an acceptable level¹⁴. Likewise, reflective teaching can be a better choice to create knowledge, as well as a mechanism to motivate teachers to clear their minds, renewing their teaching methods and adapting their contents²², the product of planning and evaluating a lesson³³ and whose praxis generates professional knowledge that modifies teaching practice through reflection⁷, which contributes to good teaching, autonomy and proposes to undertake a different path in in-service teacher training¹.

Analytical thinking in Tang's research in 2017 contributed that students can do their activities and build their own knowledge according to the given situations, stories or events, which is essential in higher education, in enhancing creative thinking through teaching, providing a different explanation to some arguments in teaching practice and raising possible routes or paths for future research in creative pedagogy¹⁹, where creativity is considered as a thinking skill. Promoting creativity is a task that also requires the strengthening of values such as self-confidence, divergent thinking and urges proposing new perspectives and solutions to everyday problems.

Thinking, as an integral action of the cognitive system, involves memory, attention, comprehension, analysis, learning and other skills; that is, it is an intrinsic or intrasubjective process²⁷; it also involves the sensory system and reason, which allows the individual to think deductively and inductively, make judgments, make decisions and solve problems¹⁶ during the development of activities of children and adults³⁵.

It is an internal process difficult to observe, which is capable of organizing, directing in a hidden way a future behavior, preventing some errors to give access to the best suited actions in terms of duration and effectiveness. For Vygotsky, it originates through a cognitive conflict of the person that forces to resolve it. For Piaget, it is the accommodation and assimilation that occurs between the subject and the environment¹⁸. Therefore, it has a purpose of achievement, to reach conclusions, the concept or central idea about the subject, the assumptions on which it is based, implications and consequences, points of view or perspective and the questions that are formulated about a problem posed²⁴.

There are different types of thinking that favor or improve academic and professional competencies; these types of thinking that are considered important are critical, analytical, reflective, creative, logical, analogical, systemic, practical, deliberative and collegial thinking. These skills are considered as necessary tools that lead to intellectual development³⁶. Other sources state lateral thinking and vertical thinking as types of cognitive skills¹⁰.

Critical thinking is defined as a way of thinking about any subject or problematic situation in a systematic way that seeks to analyze, conceptualize, evaluate and interpret information; it is characterized by being directed, disciplines, regulated and self-corrected, this implies bending to demanding standards of excellence and conscious mastery of its application²⁴; it is also reflective and rational, fundamental for decision making¹². On the other hand, they are defined as a mental, strategic process, as well as representations that people use to solve problems, making decisions and learning new concepts³⁰.

For critical thinking, Bloom, in his taxonomy, establishes six categories for the cognitive domain: knowledge, comprehension, application, analysis, synthesis and evaluation¹³; these are important cognitive elements that a practicing teacher should employ during his or her pedagogical work in the classroom, and that the learning process can begin at any point in the levels and not necessarily at the lowest level⁶.

On the other hand, López, in 2012, proposed to associate the skills related to critical thinking in three categories: the ability to clarify information, the ability to prepare an opinion or value judgment on the reliability of information, and the ability to evaluate information. The most common characteristics of this thinking highlighted by some authors are analyzing the validity of a statement, ordering and categorizing, defining or explaining concepts, expressing comments or explanations, giving reasons, finding fallacies and solving problems²⁶.

Thinking, in order to be analytical, must meet some characteristics or standards such as clarity, accuracy, importance or relevance, sufficiency, depth, breadth and precision. Additional standards included in this analytical thinking are the

following: reasonable, logical, rational, consistent, falsifiable, verifiable, well-organized, authentic, effective and objective; these standards are essential to be incorporated in our thinking and put into practice in daily life.

Reflective activity fulfills the function of transforming a fact that experiences conflict, uncertainty or bewilderment into a reality that is more transparent, clear, coherent, stable and harmonious. This thinking is important because it occurs in circumstances of our daily life²⁸ and is described as the ability to rethink the same thought, through the use of language, making the transformation of the very meaning of social exchange easier and the complexity of their mental abilities in relation to their manifestations and voluntary acts become responsible or aware of them.

Creative thinking is the ability to rethink the same thought through the use of language, allowing to reflect on the actions of oneself and others, making the transformation process a product of social exchange and the complexity of their mental abilities in relation to their manifestations and voluntary acts become responsible or aware of them¹⁰. Sternberg & Lubart define creativity as the ability to generate novel, suitable and high quality ideas; it is something that we all possess and that is developed to different degrees, not only in the arts, but in all human activities⁵.

The characteristics that affect the development of creativity are fluidity, flexibility, originality, elaboration. Fluency is a characteristic of generating many ideas or answers to established questions or problems; flexibility refers to the management of our alternatives in different categories to respond, with a broader or different look than we are always used to seeing; originality consists of looking for ideas that no one else thought of, when observing a problem in a different way; elaboration is considered the most important characteristic of critical thinking, its use has generated a significant advance in industry, science and the arts.

In the process of formation of creative ideas other thoughts intervene, which makes creativity more effective, such as the following: divergent thinking: proposed by Guilford (1950), is considered as the basis of creativity, because it allows to open different paths or possibilities towards the resolution of a given situation, this contrasts to only one or a few ideas are locked as alternative solutions to a situation²³; lateral thinking that allows to solve situations, trying different alternative ways to generate new and different solutions, do not respond to a linear thinking, nor sequential, nor logical, only respond to the creation of new or different ideas and at the same time new or different solutions¹⁰. Convergent thinking, despite being contradictory to divergent thinking, contributes to the development of creative thinking, and also provides necessary elements in the work.

The pedagogical teaching praxis takes into account several dimensions, which are linked during the teaching and learning process⁴: the personal dimension, which is related to the reflection on their own work, analyzing their past, valuing the present and building their future; the institutional dimension, which is related to the space where the teacher develops their daily work, according to the educational project designed by the institution; the interpersonal dimension, the teacher contributes to creating a work environment where good coexistence prevails between students and teacher, based on their individual differences in perspectives and purposes; the social dimension refers to the decisions and practices that teachers make in the face of socioeconomic and cultural conditions that place students in different positions in the school experience, in which it becomes a space where students have equal educational opportunities based on values, and the didactic dimension: refers to the teaching function as a guide and mediator of the contents and objectives of the course in order to promote the construction of learning, facilitating access to knowledge. In this process, the teacher and the student are the active actors that make possible the conditions for teaching and learning⁴.

MATERIAL AND METHOD

The methodology is described as the route to follow to obtain safe, reliable and showable information. In this study, a qualitative research strategy was used, which relies on non-quantified descriptive data and the interpretative order of a small group, community or school, among other phenomena, as well as on epistemology and hermeneutics³¹. There is a predominance of the logic of inductive reasoning in this technique, which investigates the facts and at the same time evaluates past research in order to construct a hypothesis.

Multiple case studies were supported as a research strategy because they provide a methodological alternative to traditional empirical research, which relies on a single source of data and is better suited to uncovering less obvious aspects of the phenomenon being investigated and the broader context in which it occurs. An in-depth investigation of circumstances or behaviors in small groups, organizations, programs, processes, and organizational involvements is appropriate for a case study analysis.

Observing people in a classroom setting is perfect for conducting research because the observer has direct and quick access to the people who will provide crucial information relevant to his or her research³². Lima was the study site, where the researcher tried to understand and analyze the actions of social actors in relation to what was being investigated or of interest to him¹⁷.

It is important to note that qualitative research is based on exploratory data collection; that is, data are collected to assess and understand them, to answer research questions and to generate new knowledge. It is necessary to distinguish between observation and participant observation when discussing data collection methods such as direct observation and

interviewing. The former refers to a non-verbal behavioral data collection method, while the latter involves the researcher's participation in the object of study⁸.

Observing involves using all the senses to investigate, characterize and understand human nature and the components of our social life (individual and collective behaviors, significant events, etc.). A social contact between the researcher and the informants requires direct observation in the context of the study where the original data are acquired without intervention³². One-on-one interviews are conducted in which information is shared between the interviewer and the subjects. To know what questions to ask and how to ask them in an in-depth interview, it is necessary to meet periodically with the interviewees to understand their point of view about their lives, experiences or problems, presented in their own words³². In this study, ethical behavior on the part of both the researcher and the instructor is required. In any scientific endeavor, unethical behavior has no place.

RESULTS AND DISCUSSION

In the first category "personal", teachers are described as judicious, empathetic, responsible, transparent, honest, persevering and eager to learn more; a teacher who seeks professional and emotional success, who improves day by day, getting involved in refresher courses according to new approaches, doing postgraduate studies and being at the forefront of changes and advances in science and technology. The qualities that are evidenced according to the observations made show a respectful treatment, they transmit cordiality and empathy; they are responsible in the fulfillment of their activities in some occasions they are observers in relation to the needs or difficulties of the students; the difficulties that are evidenced in general are not innovative and they do not plan their time for the development of their pedagogical practices.

Attitudes are evidenced during the pedagogical practice of teachers; most of them know how to communicate and listen to their students, adapt to their needs, and have a sense of humor. However, in general, there is little evidence of true leadership, in which they motivate dialogue, guide them and thus bring out the best in themselves or their students. Similarly, there is little evidence of strategies to positively regulate student behavior.

The results, in comparison with the observations made, show cordiality, with some empathy, but with little innovation and organization in their teaching practice; this is corroborated by the experts who state that the teacher must be transparent, focused, identified and committed to both their institution and their students; the teacher must show him/herself as he/she is. Likewise, the 21st century teacher must be responsible, flexible, concerned, compassionate, cooperative, creative, dedicated, determined, empathetic and captivating.

In this aspect, it was observed that although the majority communicate effectively, listen to their students, have a sense of humor and adapt to their needs, there is no evidence of true leadership that guides or drives students to reach their maximum potential and positively regulates their behavior in the classroom. According to experts, the teacher must demonstrate authority and the ability to master knowledge; he or she must also demonstrate security, empathy, openness or climate of trust, be tolerant and possess the ability to pose alternative solutions in complex situations. The teacher must possess intellectual and social skills developed through pedagogical practice, as well as the ability to use the resources of the environment didactically for the application of knowledge construction. In addition, the teachers observed have a bachelor's degree, some have master's degrees. In the 21st century, teachers must have a solid disciplinary training in the science or area to be taught, with permanent updating throughout their professional life³⁴.

In the "interpersonal" category, everyone has been listened to, interacting with the students and, in this way, practicing the rules of coexistence, respecting opinions, sharing thoughts, ideas, with equal treatment for all without preferences of any kind, and putting into practice ethical and moral values. Through assertive and empathetic communication, where dialogue prevails, listening to their points of view, respecting their opinions, and strengthening communication between peers and parents. Most of the teachers observed show assertive communication and relative empathy with their students and parents; they express their points of view respecting the thoughts of others; a harmonious relationship with their peers and managers in the work environment is evident. However, it was also evident that most of the teachers observed show indifference to solve problems that arise in the classroom, do not participate in the search for strategies to correct some acts of indiscipline, and leave this function to the assistants and assistant principals.

It is evident that most of them show an assertive and empathetic communication with students, respect opinions or ideas, put into practice a harmonious relationship with their peers and managers for a good coexistence in the workplace. However, it can be seen that, on some occasions, they show a certain indifference to solving problems that arise in the classroom. The interpersonal relationship is a form of coexistence between people, the links established between teachers, students and parents, and in it the teacher must be communicative, must develop social skills, learn to work as a team to maintain a harmonious coexistence. It is important that the teacher emphasizes assertive and empathetic communicative interaction, with a horizontal relationship with students that facilitates the learning process².

Regarding conflict management, it is very relative; but some teachers show this difficulty to manage or regulate behavior or conflicts in the classroom, they show some inability to resolve emotional or academic situations or different positions of certain students. In this sense, the teacher must be the person prepared for a correct resolution of conflicts, must show analytical and also reflective skills capable of creating spaces of tranquility, encouraging reflection, cooperation,

teamwork, dialogue and consensus for the peaceful resolution of conflicts, developing strategies for the improvement of coexistence in the school²⁹.

In the category "didactics" and in the subcategory "methodological action", it was evidenced that teachers plan their learning units and sessions, taking into account in a relative manner the pedagogical and didactic processes of the area; they evaluate the learning process by means of a formative evaluation instrument.

In this subcategory called methodological action, it is observed that it is fulfilled in the planning of learning units and sessions, as well as in the pedagogical and didactic processes of the area. The methodological action constitutes an important function of the teacher because it is oriented to the planning, execution, control and evaluation of the teaching-learning process.

In the subcategory "critical aspect", the majority of teachers have organized the information with their students on the subject treated in class; most of them perceive, identify, relate, compare, explain, but few argue and interpret. Some teachers formulate open questions that induce discussion, debate; but most formulate literal questions on a specific topic; they show little appreciative evaluation of the reasons for studying the facts or phenomena they are studying, they try to encourage their students to search for solutions to a problem in relation to a given situation, but they do not execute it. Not all teachers promote in their students discussion, questioning about observed facts and an attitude of commitment to change reality.

During the pedagogical practice, most teachers perceive, in a class session, that students organize information, identify, relate, compare, but few argue and interpret, some teachers formulate open questions that induce discussion or debate, but most formulate literal questions about a subject treated; this is in contrast to what experts say that a teacher should be an active, participative person, with an open mind (divergent). A critical thinker must possess attitudes and skills to reason, interpret, analyze, evaluate, infer, explain and self-regulate, so critical thinking is necessary to achieve the purposes to be achieved²⁴.

In the subcategory "analytical and reflective action", most teachers show a clear purpose about the topics they develop, but not all pose questions that induce reasoning or analysis in students. Some pose strategies taking into account the strengths and weaknesses of the students to solve a problem or situation presented in class. Not all of them promote the selection of key ideas or concepts with their students as a support to solve their questions about a topic; there is some difficulty in promoting in the students the deduction and interpretation of the observed facts; during the pedagogical process, the implications and positive or negative consequences of a topic or an experience are not taken into account. It could be observed that teachers try to encourage their students to search for solutions to situations posed, but discussion, questioning about observed facts and their transformation are not much encouraged; these observations are not in accordance with what the experts say, who state the importance of generating problematization, using as a strategy the directed study as well as the Socratic method or mayeutics, which through questions and answers the student may be able to respond to a given situation. The cognitive capacities of critical thinking, such as focusing on questions, analyzing arguments, formulating clear questions and answering them, deducing, inducing and judging, issuing value judgments, among others; the skills highlighted are knowledge, inference, evaluation and metacognition¹².

In the "reflective" area, the teacher encourages students to listen to the different ideas or opinions of their classmates; but not all teachers pose open questions that help students reflect (compare, discriminate different opinions, etc.) on a topic. Some teachers induce students to propose ideas or alternative solutions on a specific topic, but not all of them awaken enthusiasm in their students to achieve the objectives proposed in their pedagogical practice.

Here we took into account the processes of such thinking that should be evidenced in the pedagogical practice and that really constitute, according to what was observed, as skills within critical thinking, because this is reasonable, reflective, analytical and argumentative¹². However, not all teachers observed, in the analytical aspect, raise questions that induce reasoning or analysis in students. On some occasions, they take into account their own points of view to solve questions, selection of ideas or key concepts, and above all, they show some difficulty to encourage the student to deduce and interpret the observed facts; these characteristics of analytical thinking are not very clearly evidenced during the process, according to the experts, who state that the student must be able to assume a position that identifies him/herself in a situation, to know the reasons and motives for his/her actions; analytical thinking must be logical, rational, consistent, falsifiable, verifiable, deep, broad and precise²¹.

Regarding the reflective aspect, students are encouraged to listen to the different ideas or opinions of their classmates, but not all teachers pose open questions that encourage reflection in the student to discriminate and evaluate a situation of a topic discussed. Only at the end of the class is the moment of self-evaluation perceived. For the experts, reflection constitutes a look at oneself and from there is projected again to the world. This thinking can be fostered through case studies, directed readings, debates, and so on. In other words, the ability to rethink one's own thinking through the use of language, which allows one to reflect on the actions of oneself and others.

In the subcategory "investigative, creative and innovative action", it is evident that very little research is promoted in the students, there are not observed some strategies to raise problems and development of creative thinking in the students, in relation to this thinking it was evidenced that only one teacher relatively fulfilled the development of creative thinking, because it was possible to appreciate the processes that characterize this ability such as problem posing, generation of hypothesis or tentative ideas, as well as the generation of new ideas through the search of different ways or strategies for the solution of a problem to an observed need, which is evidenced through the elaboration of a product that is supported by the student and evaluated by the teacher.³⁸⁻⁵⁸

In order to identify creative thinking in the pedagogical practice, it is deduced that most of them have difficulties to promote this thinking in their students; there is no evidence of strategies to pose problems, hypotheses, or search for new ideas and promote new knowledge to solve a problem or produce something new. This finding is not in line with what is said by the theoreticians and experts. Experts consider creativity as an inductive deductive process, taking into account a series of possibilities that the subject has to choose from in order to make decisions and build something different. Creativity is a mental ability that allows the individual to generate something new and thus face and solve problems¹⁰. Teachers, during the observation, do not use, in their pedagogical practice, other sources of information to enrich knowledge; they limit themselves to the use of texts provided by the Ministry of Education, but this is not a factor that prevents the development of critical thinking in students. Information management refers to the identification, optimization, care and linking of information to innovate and achieve competitive advantages³⁷.

In the subcategory "effective information management", the teachers observed are limited only in the use of texts to extract information and do not use other sources during their pedagogical practice. In the "value" component, teachers express that values would be fostered with good examples starting from oneself, being a model for them, starting from significant situations related to the subject and daily life, raising awareness and creating awareness, empathy through different examples, anecdotes and life experiences.

In relation to cultural values, in their pedagogical practice, it is evident, on some occasions, that teachers develop activities to promote some ethical and social values such as respect, friendship, freedom, through the rules of coexistence in the classroom and some intellectual values such as expressive capacity, attention, understanding, but little value is placed on research and problem analysis. In curricular values, responsibility for the care of the environment and solidarity are always encouraged.

Teachers, on some occasions, develop activities to promote cultural values (ethical, social), such as respect, friendship, justice, freedom, etc., as well as some intellectual values (expressive capacity, attention, comprehension, evidence, research, among others). Patriotism, solidarity, responsibility and care for the environment are always encouraged. Experts consider that it should be encouraged through dialogues, plenary sessions using information technology through films and videos; likewise, values have a holistic vision, and constitute a contribution to critical and creative training¹⁵.

In the institutional component, the teachers who were interviewed state that they are well prepared psychologically, with a vocation for service; open to change, active, empathetic, reflective, creative, analytical, adapting to the new generation and fostering interpersonal relationships with the entire educational community, having leadership, showing empathy with everyone, working as a team, having assertive and reflective communication, with critical and creative teaching-learning; also complying with the schedules, units and sessions for good teaching practice.

In the institutional component, sometimes, teachers show little leadership, they do not show that level of commitment to projects or activities in their area and some have problems making decisions; but, when it comes to the institution, they treat students and the educational community well and work well together. In the classroom, they know that the teacher is a social communicator, participatory and a person who cares about the community. People who know what they are talking about say that teachers must have a strong connection to their school. In front of his or her peers, the teacher must show a democratic, tolerant, assertive and compassionate attitude, must be a principal in the school to go out and be an advocate for it outside of it, and must be a leader in the classroom. The teacher must be an authority with his or her own skills, innovative and charismatic²⁵.

CONCLUSIONS

After an exhaustive analysis, the following conclusions are drawn: teachers, for the most part, show personal qualities: responsible, persevering, respectful, cordial; in their pedagogical practice, they are communicative, empathetic; but not very innovative and with little leadership. This may hinder the development of types of thinking in students; today's teacher must possess intellectual (critical, analytical, reflective and innovative or creative) and social skills developed through their pedagogical practice; they must know how to take didactically advantage of the resources of the environment for the application of the construction of knowledge.

They show an interpersonal relationship, based relatively on an assertive and empathetic communication with students, as well as a harmonious relationship with their peers and managers at the educational community level, but show certain difficulties in resolving conflicts in the classroom. To this end, teachers need to be prepared with analytical and reflective skills that encourage dialogue, teamwork and consensus to improve coexistence in the classroom.

During the pedagogical practice, in the didactic aspect, most teachers show certain difficulties to develop critical thinking, they develop activities that only promote basic or literal thinking; but little discussion, interpretation, argumentation, inference, questioning and solving situations of the topics discussed, which are characteristics that should be evidenced during the pedagogical process with the students.

Most teachers develop their pedagogical practice in the classroom following the didactic processes, but show certain difficulties in developing analytical and reflective thinking. On some occasions, teachers do not pose open questions to encourage analysis and reflection in accordance with the characteristics of these skills.

They do not encourage research, therefore, critical thinking. To develop this skill, it is required to follow certain steps that characterize scientific inquiry such as observation and problem statement, hypothesis, testing, analysis, conclusions and the generation of new ideas or knowledge that can be transformed into innovative products.

Ethical or social values are an important element for the development of different types of thinking; teachers should encourage these values in their students (ethical, social and intellectual) and put them into practice in our daily lives for a peaceful and harmonious coexistence in our community.

The teacher must develop or strengthen types of thinking to put them into practice in our pedagogical work in the classroom and facilitate learning in our students, using strategies that help the development of this skill in them, as well as the achievement of their competencies and interpersonal relationships within and outside the educational institution.

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