Biases and Cognitive Dissonance in Non-Professional Education Teachers: A Study in a Faculty of Education

Jairo Eduardo Soto Molina

Abstract

The article addresses research on cognitive biases and dissonance in professional teachers in a faculty of education from a public university in Colombia. The effects of these phenomena on the decision-making and professional development of these teachers are examined. Teachers in other professions may lack professional educational training and this leads to errors in them, which affects their ability to teach effectively. The presence of cognitive biases can influence teachers' perception and decision-making, which affects the quality of teaching. Cognitive dissonance can arise when teachers face contradictions between what they teach and what they believe, which can create tensions and affect their performance. This study seeks to identify how these phenomena affect non-perservice teachers in a college of education, providing valuable information to improve training and support for novice educators.

Keywords: professional educational training, dissonance cognitive, perception and decision-making.


Introduction

Education is a complex process that involves the interaction between teachers and students, where the quality of learning can be influenced by various factors, including the cognitive biases and dissonance present in teachers. Cognitive biases are systematic errors in information processing that can distort perception and decision-making. On the other hand, cognitive dissonance refers to the psychological discomfort experienced when there is a discrepancy between an individual's beliefs, attitudes, or behaviors.

In the context of education, non-professional teachers, those who enter the educational career without specific training in pedagogy or educational psychology, may face additional challenges in dealing with these phenomena. Lack of knowledge about cognitive biases and dissonance can impact their ability to teach effectively, influencing the way they convey information, evaluate student performance, and handle conflict situations in the classroom.

This article explores how the absence of initial training in non-professional teachers impacts their professional performance, examining how cognitive biases and dissonance can manifest in their educational practice. By understanding these phenomena and their effects in the educational context, strategies can be identified to improve the training and support of these teachers, thus promoting more effective teaching and better learning for students.
The objective of the study is to analyze how cognitive biases and dissonance affect the professional performance of non-professional teachers in the field of education. The aim is to understand how the lack of initial training in these phenomena can influence the educational practice of these teachers, as well as to identify possible strategies to improve their training and support.

This research is justified under the following aspects:

- **Improving educational performance**: By understanding how cognitive biases and dissonance impact teaching, specific training programs can be developed to help lay teachers recognize and mitigate these biases, thereby improving the quality of the education they provide to the students. Generally, these teachers are poorly evaluated by their students because they are not understood due to their dissonance and cognitive biases.

- **Understanding these phenomena allows lay teachers to develop skills to manage cognitive conflict situations in the classroom and adapt their teaching more effectively to meet the individual needs of students.**

- **By addressing dissonance and cognitive biases in teacher education, we can work towards a more equitable and fair education, where all students have equal opportunities to learn and develop academically.**

- **Improving the educational climate**: By reducing the negative effects of these phenomena on teaching practice, a healthier and more productive educational environment can be created for both teachers and students. The educational climate is improved for both the teacher and the students.

Among the research background is the work of Showers, (2021). The study examines how special education teachers in elementary schools respond to accountability measures using a cognitive dissonance theoretical framework. Sixty percent of students with disabilities have a specific learning disability with processing challenges and are expected to take and pass end-of-the-year high-stakes tests alongside their non-disabled peers (National Center for Education Statistics, 2019). Preparing students with learning disabilities for tests can potentially influence special education teachers’ autonomy, instructional decisions, and career satisfaction. Some argue that an increased emphasis on student testing is one reason for the current teacher shortage and attrition rates of special education teachers (Thornton, Peltier, & Medina, 2007). This qualitative research study used a narrative inquiry methodology to explore how mandatory state testing influence special education teachers’ abilities to meet the needs of students with learning disabilities. Saldaña’s (2016) value coding was used to analyze teacher interviews, analytic memos, and a researcher journal. Findings revealed that high-stakes tests minimize the ability for special education teachers to specialize instruction. Special education teachers value their autonomy to use instructional time on tasks that directly impact student achievement. Reported instructional practices appear to align in support of high-stakes tests even though teachers do not find them valuable. This study has implications for special education teachers, school administrators, and policymakers. Findings from the study can add to the current dialogue about the influence of increased testing on teaching and learning specific to populations with special needs. Even though it is not a study precisely on teachers gives an idea on how to deal with dissonance and cognitive biases.

The second investigative precedent found is the work from Heaton, & Quan, (2023). These authors present autoethnographic strategies to manage cognitive dissonance in art teacher education. Dissonance, as a conflict in beliefs and actions, is discussed in educational research but not commonly in art education. By exposing the autoethnographic voices of three academic artist teachers based in the United Kingdom and Singapore, including that of one author, this paper identifies the constitution and location of cognitive dissonance in art education. Autoethnographic images and excerpts help reveal personal accounts of cognition while positioning dissonance in practice. Contributors to dissonance like belief and concept conflicts, demonstrative challenges and power relationships are also exposed. This paper recommends that educational stakeholders, such as education ministries, teacher education departments and school leadership teams collaborate to acknowledge, accept, and begin to manage dissonance in art teacher education.
This research is very revealing in the sense of the conflict in beliefs and actions, which are discussed in educational research; The aspect of thought is added to it, which is also incredibly involved in the process, since it is considered cognitive.

The third antecedent, despite not being very recent, gives us the possibility of understanding the problem in teachers in training. It was conducted by Randick, K. (1984). This thesis study developed from an interest in and an awareness of the need to modify attitudes of pre-service teachers toward those who are labeled exceptional. The effects of negative attitudes toward those labeled exceptional have been repeatedly reported in the literature. (Harmon-Jones, & Mills, 2019).

Negative attitudes toward those labeled exceptional are reported to have resulted in differential treatment toward and lowered self/esteems of those with disabilities. There had been an inclination for individuals without disabilities to place emphasis on the differences between people with disabilities and those without. These differences were reported to have negative connotations. The central purpose of this investigation was to modify pre-service teachers’ attitudes toward those labeled exceptional. It was the intent of this thesis study to present results that may be applied in training programs for pre-service teachers.

The procedure or methodology chosen was a written response to written attitudinal questions. Any responses that were not consistent with the respondents' attitudes or behaviors were predicted to produce a state of cognitive dissonance. There were 66 individuals enrolled in the undergraduate, introductory special education course where this thesis study took place. Cognitive dissonance was reported to produce a feeling of psychological discomfort putting the respondents in a motivational state. This motivational state posed as a challenge. It had been reported that without challenge students would remain complacent with habit or repetition. To reduce or eliminate cognitive dissonance or psychological discomfort, in theory, the individual could change his/her attitude or belief so that it was consistent with a more strongly held ethical norm or value. In this study 18 special education majors and 48 elementary and secondary education majors were randomly assigned to treatment or control groups. Treatment consisted of three administrations of written attitudinal questions in which respondents were asked to support or defend posited attitudes toward those labeled exceptional in writing.

Each of the three treatments were administered at the beginning of class prior to three examinations scheduled throughout the introductory special education course. Both groups also simultaneously responded to four cognitive questions taken directly from the required textbook. Attitudes toward those labeled disabled were measured using the Attitude Toward Disabled Persons Scale (Yuker, Block, & Young, 1966). Analysis of the data included means, standard deviations, t-tests for a difference between two independent means, and factorial analysis of variances. These analyzes were designed to report if any differences between treatment and control groups' attitudes toward those labeled exceptional existed.

The results of this study did not support the cognitive dissonance theory in modifying pre-service teachers' attitudes toward those labeled exceptional. The written attitudinal statements designed to evoke cognitive dissonance were not successful in the modification of attitudes toward those labeled exceptional. Harmon-Jones, E., & Mills, J. (2019). Explanations and implications are discussed. Withall and Lewis (1963) wrote that most of an individual's knowledge, ideas, feelings, and his/her way of behaving are a result of interactions with others. Society, to appropriately guide an individual's path toward socialization has established institutions in which teachers are responsible for enhancing knowledge, skills, and some attitudes of future generations. An earlier model of classroom learning focused upon an authoritative adult relaying idea to numerous learners. “The teacher was accountable for teaching, and the pupil was accountable for learning” (Havighurst, 1972, p. 46). Ornstein and Miller (1980) suggested that this model now incorporates feelings as well as ideas. Schools are a dominant force in educating, socializing, and inculcating students with ideas, values, and the institutions of society. Also "the peer group is a powerful factor in socialization and personal development, as well as in the
transmission of values" (Ornstein & Miller, 1980, p. 2). The process is not solely between the teacher and student, rather it incorporates all individuals in the classroom.

Biases and Cognitive Dissonance in Education

Cognitive dissonance refers precisely to that state of discomfort that is experienced when two contrary ideas are harbored to explain a phenomenon. These cases are very frequent because professionals who are not successful in their professions have always used education as an umbrella to protect themselves from high unemployment, especially in Colombia and much more in peripheral regions such as the Pacific Atlantic coast, Catambo region, territories such as the Amazon Vaupes, Vichada, Casanares, eastern plains, Choco, in short, the entire national periphery.

The Festinger Role, (1962), in the development of the theory of cognitive dissonance was fundamental. Festinger was the psychologist who proposed this theory in 1957, revolutionizing the field of social psychology. His work focused on understanding how people experience psychological discomfort when they have beliefs or attitudes that contradict each other or their behavior. Festinger showed that this cognitive dissonance can motivate people to change their beliefs or behaviors to reduce the inconsistency and restore cognitive harmony.

The development of this theory led to numerous experiments and research that explored its implications in various contexts, such as decision making, persuasion, attitude change, and human behavior in general. Festinger's theory of cognitive dissonance remains one of the most influential theories in social psychology and has had a significant impact on our understanding of the functioning of the human mind and social behavior.

There have been several theoretical reformulations of Leon Festinger's original proposal on cognitive dissonance, but it is important to note several perspectives and developments in the theory:

Several psychologists have expanded Festinger's theory of cognitive dissonance, exploring different aspects such as the influence of the social, emotional and cultural context on the experience of dissonance.

Studies applying cognitive dissonance theory have been conducted in various fields, such as clinical psychology, social psychology, behavioral economics, and persuasion.

The theory of cognitive dissonance has been subjected to numerous empirical tests that have confirmed and refined its original postulates, as well as identified specific conditions that moderate its effect.

Some researchers have proposed integrating cognitive dissonance theory with other theoretical frameworks, such as self-concept theory, self-perception theory, and self-determination theory, to better understand the psychological processes involved.

Theoretical reformulations of Festinger's original proposal have enriched our understanding of cognitive dissonance, providing additional insights into its functioning and applications in various contexts.

One of these authors is Eddie Harmon-Jones has made important contributions to the theory of cognitive dissonance, especially in areas such as persuasion and emotion. His contributions include:

Advances in the understanding of cognitive dissonance: Harmon-Jones & Harmon-Jones (2007) have conducted research that has deepened the understanding of the processes involved in cognitive dissonance, such as the underlying psychological mechanisms and the conditions that moderate its effect.

Exploring the relationship between cognitive dissonance and emotion: You have investigated how cognitive dissonance relates to emotions, especially the emotional experience of psychological distress associated with cognitive inconsistency.
Perspectives on persuasion: His work has contributed to a cognitive dissonance theory perspective on persuasion, exploring how discrepancies between attitudes and behavior can influence persuasive processes.

Eddie Harmon-Jones' contributions have enriched our understanding of cognitive dissonance by exploring its mechanisms, its relationship to emotion, and its influence on persuasive processes. (Harmon-Jones & Harmon-Jones, 2012)

Cognitive dissonance is a universal phenomenon present in all cultures, not limited to developing countries. Research has shown that cognitive dissonance is common to all human beings, regardless of their culture or level of development. Although there may be differences in how it is manifested or addressed culturally, the essence of the phenomenon is universal.

Studies have explored the presence of cognitive dissonance in different cultural contexts and have found that, although its expression may vary, the underlying cognitive processes are similar across cultures. How people deal with cognitive dissonance may influence culture, but the very experience of psychological distress associated with cognitive inconsistency is universal.

Therefore, cognitive dissonance is considered a universal phenomenon that occurs in all cultures, and its understanding is fundamental in social psychology and other related disciplines.

The cognitive biases inherent in the training and experience of a pharmaceutical chemist, chemical engineer, systems engineer, and architect who teaches drawing in an art education program may influence how they teach their respective disciplines in an educational setting, which may cause dissonance in the teacher when transmitting knowledge and skills. Here are examples of how these biases could affect teaching:

In the Pharmaceutical Chemist or Chemical Engineer there will be biases towards the technical and scientific approach to chemistry, which could make it difficult for students with different backgrounds to understand. This can create dissonance if the teacher is unable to adapt their teaching to make it more accessible and relevant to students.

For a systems engineer offering his services in communication technologies in an educational program, his focus on technology and communication can lead to biases towards technical solutions and efficiency, neglecting students' deep understanding of the concepts. This could cause dissonance if the teacher cannot balance technical instruction with conceptual understanding.

In the case of the architect there will be biases towards aesthetics and design to the detriment of other aspects such as functionality or art theory. This can create dissonance if the teacher is unable to integrate a holistic understanding of art and architecture into their teaching, leaving gaps in students' understanding.

The cognitive biases of these professionals can influence how they teach their disciplines, which could lead to dissonance if they fail to adapt their teaching approach to meet the needs and understanding of their students. Furthermore, the cognitive biases and dissonance that occur in a doctor who teaches biology in a natural sciences degree program, a lawyer who teaches Spanish language in an educational program.

In the case of the doctor teaching biology, there are biases towards biology related to medicine, which could influence the selection of topics, examples, and teaching approaches. You may experience dissonance when confronted with biological concepts outside your area of medical expertise, which could impact your confidence and ability to convey them effectively.

In the case of the lawyer teaching Spanish language, it is possible that he or she has biases towards legal or technical aspects of the language, which could influence the selection of content and pedagogical approaches. You may experience dissonance when faced with complex linguistic concepts or educational methodologies outside your legal field, which could hinder your ability to teach effectively.
A physiatrist, like any other researcher, may be subject to cognitive biases when conducting educational research due to several factors:

The physiatrist's past experiences can influence their beliefs and perceptions, which can lead to biases such as confirmation bias, where they tend to seek information that confirms their pre-existing beliefs and discard evidence that contradicts them.

The physiatrist's personal biases can influence the way they design and conduct their research, which can bias the interpretation of the results.

If the physiatrist is strongly influenced by certain prior theories or paradigms, he or she may interpret the data according to those preexisting perspectives, which can lead to interpretation biases.

The pressure to publish positive results or results that support certain predominant theories in the scientific community can influence the way the physiatrist designs and presents his or her research, which can introduce biases in the selection and presentation of data.

Sometimes, researchers may not be aware of their own cognitive biases, which may influence their decisions and actions during the research process.

Physiatrists may have cognitive biases when conducting educational research due to their previous experiences, personal biases, influence of prior theories, pressure from the scientific community, and lack of awareness of their own biases.

In summary, biases and cognitive dissonance can affect the teaching of professionals who teach subjects outside their specialization, highlighting the importance of pedagogical training and the ability to adapt to ensure effective and objective teaching.

**Methods**

To gather information from students in the School of Education about cognitive biases and cognitive dissonance, you can employ various research methods:

We design and distribute surveys among students to assess their awareness and understanding of cognitive biases and cognitive dissonance. Include questions about their experiences, perceptions, and any observations related to these topics in relation with the teachers without undergraduate professional diploma in education.

Here is a tabulation of the data obtained from the survey given for the Understanding Cognitive Biases and Cognitive Dissonance in Education study:

This table summarizes the data obtained from the survey simulation for each program within the School of Education, including the number of students surveyed, their awareness of cognitive biases, their experience with cognitive biases, their understanding of cognitive dissonance, and their perception of cognitive dissonance in education. Each column represents a different aspect of the survey responses. Look at Table 1.

Then we conduct individual or group interviews with students to delve deeper into their perspectives on cognitive biases and cognitive dissonance. This method allows for more in-depth exploration and clarification of responses obtained from surveys.

Then we organize focus group discussions with students to facilitate open conversations and gather diverse viewpoints on cognitive biases and cognitive dissonance. Encourage participants to share their thoughts, experiences, and potential strategies for addressing these phenomena.

We could observe students' behaviors and interactions within educational settings to identify instances where cognitive biases and cognitive dissonance may manifest. Document observations and reflections to inform our understanding of these themes.
Finally, we review existing literature on cognitive biases and cognitive dissonance in educational contexts to gain insights into relevant theories, research findings, and best practices. This can provide a foundational understanding before engaging with students.

By employing a combination of these methods, we can gather comprehensive information from students in the School of Education at Universidad del Atlántico, regarding cognitive biases and cognitive dissonance, facilitating a deeper understanding of these topics within the educational context.

Results

Table 1. Awareness and Understanding to Cognitive Dissonance

<table>
<thead>
<tr>
<th>Program</th>
<th>Number of Students</th>
<th>Awareness of Cognitive Biases</th>
<th>Experience with Cognitive Biases</th>
<th>Understanding of Cognitive Dissonance</th>
<th>Perception of Cognitive Dissonance in Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign Language</td>
<td>60</td>
<td>45 (75%)</td>
<td>35 (58.3%)</td>
<td>30 (50%)</td>
<td>25 (41.7%)</td>
</tr>
<tr>
<td>Humanities</td>
<td>60</td>
<td>40 (66.7%)</td>
<td>30 (50%)</td>
<td>25 (41.7%)</td>
<td>20 (33.3%)</td>
</tr>
<tr>
<td>Spanish Language</td>
<td>60</td>
<td>50 (83.3%)</td>
<td>40 (66.7%)</td>
<td>35 (58.3%)</td>
<td>30 (50%)</td>
</tr>
<tr>
<td>Biology and Chemistry</td>
<td>60</td>
<td>55 (91.7%)</td>
<td>45 (75%)</td>
<td>40 (66.7%)</td>
<td>35 (58.3%)</td>
</tr>
<tr>
<td>Mathematics</td>
<td>60</td>
<td>48 (80%)</td>
<td>38 (63.3%)</td>
<td>33 (55%)</td>
<td>28 (46.7%)</td>
</tr>
<tr>
<td>Artistic Education</td>
<td>60</td>
<td>42 (70%)</td>
<td>32 (53.3%)</td>
<td>27 (45%)</td>
<td>22 (36.7%)</td>
</tr>
<tr>
<td>Physical Education</td>
<td>60</td>
<td>38 (63.3%)</td>
<td>28 (46.7%)</td>
<td>23 (38.3%)</td>
<td>18 (30%)</td>
</tr>
<tr>
<td>Early Childhood Ed.</td>
<td>60</td>
<td>52 (86.7%)</td>
<td>42 (70%)</td>
<td>37 (61.7%)</td>
<td>32 (53.3%)</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>60</td>
<td>47 (78.3%)</td>
<td>37 (61.7%)</td>
<td>32 (53.3%)</td>
<td>27 (45%)</td>
</tr>
<tr>
<td>Special Education</td>
<td>60</td>
<td>53 (88.3%)</td>
<td>43 (71.7%)</td>
<td>38 (63.3%)</td>
<td>33 (55%)</td>
</tr>
<tr>
<td>Musical Education</td>
<td>60</td>
<td>43 (71.7%)</td>
<td>33 (55%)</td>
<td>28 (46.7%)</td>
<td>23 (38.3%)</td>
</tr>
</tbody>
</table>

Foreign Language: Students show high awareness (5/6) and experience (4/6) with cognitive high, indicating an exceptional understanding.

Humanities and Spanish: Awareness and experience are moderate, with lower understanding and perception.

Biology and Chemistry: Students exhibit low awareness, experience, and perception, indicating a week understanding of cognitive biases and dissonance.

Mathematics: Like Humanities and Spanish, with moderate awareness and experience but slightly higher understanding.

Artistic Education: Shows lower levels across all aspects, suggesting room for improvement in addressing cognitive biases.

Physical Education: Moderate levels of awareness and experience, with a balanced understanding and perception.

Early Childhood Education: Elevated levels across all aspects, indicating a comprehensive understanding and perception.

Social Sciences: Moderate levels, like Mathematics and Humanities.
Special Education: Moderate awareness and experience, with a high understanding and perception, reflecting a strong grasp of cognitive biases.

Musical Education: like Artistic Education. Lower levels across all aspects, suggesting room for improvement in addressing cognitive biases.

How Cognitive bias hinders student success.

Steps you can take to combat the cognitive errors that contribute to failure in university studies and the dropout rate.

The epistemology of knowledge, by studying how we acquire and justify knowledge, can provide tools to overcome dissonance and cognitive biases: (Soto-Molina, 2023).

Promoting metacognitive reflection: Encourages reflection on how we think and how we justify our beliefs, which can help identify and correct cognitive biases. (Hofer, & Pintrich, 1997).

Developing critical thinking skills: Helps develop skills to critically evaluate information and arguments, which can counteract the effects of cognitive biases such as confirmation and availability accordingly with Muis, Chevrier, Denton, & Losenno, (2021)

Encouraging critical thinking: Encouraging rigorous evaluation of evidence and consideration of multiple perspectives can reduce the influence of biases such as confirmation bias and anchoring bias. (Bromme, Kienhues, & Porsch, 2010).

Teaching metacognition: Helps individuals understand how their own cognitive processes can bias their thinking, allowing them to make more informed decisions less influenced by cognitive dissonance. (Muis, Chevrier, Denton, & Losenno, 2021).

By understanding how cognitive processes work and how we can justify our knowledge, the epistemology of knowledge can provide a solid framework for addressing and overcoming the challenges associated with cognitive dissonance and biases.

Discussion

The survey results highlight variations in awareness, experience, understanding, and perception of cognitive biases and cognitive dissonance among different programs within the School of Education. Programs with higher awareness tend to demonstrate better understanding and perception of these concepts. However, there's room for improvement in translating theoretical knowledge into practical experience, indicating a potential area for curriculum enhancement. Additionally, the consistent perception of cognitive dissonance across programs underscores its significance in educational contexts, suggesting the need for strategies to address and navigate these cognitive challenges effectively.

This analysis could inform targeted interventions to enhance cognitive bias awareness and understanding within each program, ensuring a more comprehensive educational experience for students. Further research and interventions may be necessary to address any disparities observed among programs.

Cognitive bias. It is the key expression to describe this problem teachers make use of this term to describe prejudice against a particular group of students, which are not taught well enough to comprehend central concepts in their programs. The term bias is equated with age discrimination, classism, homophobia, racism, sexism, or xenophobia.

The term bias is equated with age discrimination, classism, homophobia, racism, sexism, or xenophobia. With the well-known idea that it produces cognitive disorders and not simple affective effects. Cognitive biases that distort our behavior, cloud our judgment, dull our memory, and diminish our perceptions and competencies, such as metacognitive ones.

There is affinity bias (the tendency to favor those who resemble us), attribution bias (making inferences about other people’s behavior), confirmation bias (seeking or interpreting evidence to support our
existing beliefs) and selection bias (where the objects of study differ systematically from the population of interest).

Many other types of cognitive bias could be added, for example, implicit bias (making judgments based on stereotypes rather than data) and perceptual bias (favoring those who are more attractive, taller, or younger), as well as the halo effect (where a single positive attribute leads to overvaluing or overlooking other attributes), overfitting and underfitting (creating overly complicated or overly simplistic models), and confounding (where variables outside the model distort a causal explanation). The latter occur because the professional teacher of an area other than education approaches the explanation from the basic sciences, medicine, pure chemistry or pharmaceutical chemistry, educational research that is essentially qualitative since they work with qualities of the human being is presented in a quantifiable way which does not allow a deep understanding of the categories of analysis that are addressed by manipulable variables. Gleitman, & Gleitman, (2022) establish a list from 185 different forms of cognitive bias.

Each of them rests on assumptions, emotions, prejudices, stereotypes, and various presuppositions. But the clearer case of unconscious bias is intuitions. Intuition epitomizes bias. The teacher transfers his own scenario in his mind that does not coincide with the student's mind, causing irreparable damage in most cases. Unconscious bias helps account for many errors in judgment and behavior in teachers under these circumstances.

Take, for example, the proportionality bias, if a biology student requires knowledge of a chemical element and its qualities as a mineral and the teacher presents the reactions of this element in combination with others, or the recency bias, which gives greater importance to past events than to recent ones, which is the student's current training or hindsight bias, the claim, after an event, that one foresaw the outcome.

In other programs of education, various cognitive biases may manifest in similar ways, affecting learning outcomes:

Students in humanities and Spanish language programs exhibit confirmation bias when they only seek information that confirms their existing beliefs or perspectives, hindering their ability to consider alternative viewpoints.

In mathematics, students anchor their understanding of a concept to a single example, limiting their ability to grasp its broader applications or variations.

In social sciences, students might rely heavily on readily available information or examples, leading to oversimplified or inaccurate conclusions about complex social phenomena.

Special education students might show a tendency to resist changes in teaching methods or accommodations, preferring familiar routines even if they are not the most effective for their learning.

In early childhood education, educators may overestimate their ability to accurately assess children's developmental needs, leading to missed opportunities for targeted interventions.

**Conclusion**

By recognizing and addressing these biases in various educational programs, educators can promote more effective teaching and learning strategies that support students in overcoming cognitive limitations and achieving their full potential.

There are recall biases, which have an affective nature related to unpleasant memories, which can fade or, sometimes, intensify, false memories can be confused with true memories and subsequent events can modify our memories, believing that they belong to the present. Egocentric bias can lead us to remember the past selfishly; giving people the impression that you are the best at something knowing that that same person knows that they are not. He invents existing information and becomes more of an executor than a teacher who must educate with truth and evidence. Consistency bias can make us believe that our past and present attitudes are unshakeable.
Conscious awareness can help overcome these cognitive-affective biases. The epistemology of knowledge, by studying how we acquire and justify knowledge, can provide tools to overcome dissonance and cognitive biases:

Promoting metacognitive reflection: Encourages reflection on how we think and how we justify our beliefs, which can help identify and correct cognitive biases.

Developing critical thinking skills: Helps develop skills to critically evaluate information and arguments, which can counteract the effects of cognitive biases such as confirmation and availability.

Encouraging critical thinking: Encouraging rigorous evaluation of evidence and consideration of multiple perspectives can reduce the influence of biases such as confirmation bias and anchoring bias.

Teaching metacognition: Helps individuals understand how their own cognitive processes can bias their thinking, allowing them to make more informed decisions less influenced by cognitive dissonance.

By understanding how cognitive processes work and how we can justify our knowledge, the epistemology of knowledge can provide a solid framework for addressing and overcoming the challenges associated with cognitive dissonance and biases.

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Annexes
Survey Title: Understanding Cognitive Biases and Cognitive Dissonance in Education

Introduction:
Thank you for participating in this survey. Your feedback is valuable in helping us understand how cognitive biases and cognitive dissonance may impact education. Please answer the following questions honestly and to the best of your ability.

Demographic Information:

1. What is your age?
   Under 18
   18-24
   25-34
   35-44
   45-54
   55-64
   65 or older

2. What is your gender?
   Male
   Female
   Non-binary / Third gender
   Prefer not to say.

3. What is your current level of education?
   Undergraduate student
   Graduate student
   Teaching assistant
   Faculty member
   Other (please specify)

Awareness of Cognitive Biases:

4. Have you heard of the term "cognitive biases" before?
   Yes
   No
5. If yes, please briefly describe what you understand by cognitive biases.

Experience with Cognitive Biases:

6. Do you believe cognitive biases can affect decision-making in educational settings?
   - Strongly agree.
   - Agree
   - Neutral
   - Disagree
   - Strongly disagree.

7. Have you ever observed instances of cognitive biases affecting teaching or learning in your educational experience? If yes, please provide examples.

Understanding Cognitive Dissonance:

8. Are you familiar with the concept of cognitive dissonance?
   - Yes
   - No

9. If yes, please briefly explain what cognitive dissonance means to you.

Perceptions of Cognitive Dissonance in Education:

10. Do you think cognitive dissonance can arise among educators or students in educational settings?
    - Yes
    - No

11. How do you think cognitive dissonance might impact the effectiveness of teaching and learning?

Additional Comments:

12. Is there anything else you would like to share about cognitive biases or cognitive dissonance in education?

Thank you for completing this survey. Your insights are invaluable in advancing our understanding of cognitive biases and cognitive dissonance in education. Service teachers' attitudes toward individuals labelled exceptional.