

# Students' Deductive Reasoning And Perception On Course Completion In Universities In Uganda.

Asingwire Richard, Muhammad Omolaja, Joseph Bin Kuyong, William Anthony Rutkin, Anumaka Blessing Ijeoma.

British American University, Florida - USA

**Abstract:** This is an exploration into the intricate workings of deductive reasoning and perception among students, particularly in the context of course completion. The study delves into the students' reasoning and perception on course completion in universities in Uganda, seeking to unravel the factors that influence students' ability to navigate the academic landscape and successfully complete their courses. Throughout this investigation, the aim is to shed light on the cognitive processes that underpin students' deductive reasoning abilities and how these processes shape their perceptions of course completion. The study was guided by Positivism Philosophy supported by the Theory of reasoned action. 375 participants obtained for cross-sectional studies from each of the 3 selected universities. These will be: 360 students, 9 lecturers and 6 administrators. Questionnaire, Interview guide, and Observation sheet helped to gather data qualitatively. It was found out that students' deductive reasoning abilities are crucial for understanding course materials, solving complex problems, and making informed decisions throughout and students with strong deductive reasoning skills demonstrate higher academic performance. The study recommended that deductive reasoning skills should be integrated into curriculum design to provide faculty development initiatives and to support effective teaching practices and to establish student support services tailored to foster critical thinking and problem-solving abilities.

**Keywords:** deductive reasoning, course completion, students, universities

## Introduction:

Deductive reasoning and the perception of course completion are critical elements in understanding the cognitive processes and educational experiences of students in universities worldwide. As fundamental components of academic achievement and cognitive development, these constructs hold particular relevance in the context of higher education institutions.

Deductive reasoning, defined as the process of deriving specific conclusions from general premises or principles, is a cornerstone of critical thinking and problem-solving skills. It involves logical inference and the application of rules and principles to reach valid conclusions, essential for success in various academic disciplines and professional endeavors.

Concurrently, students' perceptions of course completion encompass their subjective evaluations, beliefs, and attitudes regarding their progress and performance in their academic pursuits. These perceptions influence students' motivation, engagement, and persistence in completing their courses and ultimately, their likelihood of academic success.

Against this backdrop, investigating the interplay between deductive reasoning and perception of course completion in university settings is both timely and imperative. Understanding how students engage with deductive reasoning tasks and perceive their progress towards course completion provides valuable insights into their cognitive processes, learning experiences, and academic outcomes. Moreover, the study of deductive reasoning and perception of course completion has significant implications for educational practices and interventions aimed at promoting student success and academic achievement. By identifying factors that influence students' deductive reasoning abilities and perceptions of course completion, educators and policymakers can develop targeted strategies to enhance student learning experiences and improve retention rates in higher education institutions.

## Background:

Deductive reasoning, characterized by drawing specific conclusions from general principles, plays a pivotal role in academic success (Walton, G. M. & Cohen, G. L. 2011). In the educational context, Bloom's Taxonomy (Bloom et al., 1956) has long underscored the significance of higher-order thinking skills, including deductive reasoning, as essential for cognitive development.

Research highlights the integration of critical thinking, including deductive reasoning, within educational strategies. Deductive reasoning involves the ability to apply logical principles to solve problems systematically, a skill acknowledged as crucial for academic success (Bloom et al., 1956).

The alignment of assessment methods with deductive reasoning skills has garnered attention. Studies emphasize the importance of incorporating assessments that measure deductive reasoning abilities, recognizing the need for evaluations that go beyond rote memorization.

In disciplines such as Science, Technology, Engineering, and Mathematics (STEM), deductive reasoning is often foundational. Research suggests that effective deductive reasoning is correlated with success in STEM courses, emphasizing its significance for course completion in these challenging domains.

The integration of technology in education offers a dynamic avenue to enhance deductive reasoning skills. Studies explore the impact of interactive digital tools, simulations, and educational software in fostering deductive reasoning abilities among students, thereby influencing course completion.

Acknowledging the diversity in deductive reasoning styles, researchers (e.g., Sternberg, R 1986) argue for tailored instructional approaches. Understanding individual differences in deductive reasoning processes is crucial for creating inclusive learning environments that cater to diverse student needs.

The intersection of deductive reasoning with socio-cultural factors is explored in studies like those by Voss et al. (1983). They delve into how cultural contexts influence deductive reasoning patterns, shedding light on the importance of considering socio-cultural diversity in educational settings.

The transition from secondary to higher education is a critical juncture impacting deductive reasoning. Research by Palincsar, A. & Brown, A. (1984) suggests that students with well-developed deductive reasoning skills may experience smoother transitions, positively influencing course completion rates in the early years of university.

Challenges associated with deductive reasoning and course completion are recognized. For instance, students may struggle with abstract reasoning tasks. Interventions, such as problem-based learning (Saleh, S. E. 2013), are explored as strategies to enhance deductive reasoning skills and improve academic outcomes.

In conclusion, the information on students' deductive reasoning and course completion underscores the centrality of deductive reasoning skills in the educational journey. Recognizing the diverse nature of deductive reasoning, leveraging technology, understanding socio-cultural influences, and implementing tailored interventions emerge as crucial considerations in fostering deductive reasoning abilities for enhanced course completion in university settings.

### **Methodology:**

The research was guided by Positivism Philosophy by Auguste Comte during early 19<sup>th</sup> century – basing on the ideology that students perform behaviors having enough knowledge about such (efficacy) and well knowing the consequences. This was supported by the Theory of reasoned action. The researcher based on this philosophy when collecting (using interviews and observation instruments) and analyzing qualitative data. Therefore, the study had positivism philosophy while collecting and analyzing qualitative data. The research employed more of qualitative research approach. Descriptive research design was used. Qualitative research methods such as interviews, focus groups, and observations were used to provide valuable insights into students. Semi-structured interviews and focus group discussions were designed to explore students' perceptions, experiences, and challenges. Focus group discussions were meant for interactive dialogue among participants to facilitate the exploration of shared experiences, divergent viewpoints, and collective interpretations of reasoning tasks. Group dynamics and peer interactions, focus groups were used to uncover nuanced insights. Observations complemented interviews and focus groups by providing contextual insights into students' reasoning. A sample size of 375 participants obtained for cross-sectional studies from each of the 3 selected universities. These will be: 360 students, 9 lecturers and 6 administrators. A 95% level of confidence and a 5% level of precision was used in the sample size calculation. The researcher selected respondents randomly and others purposely, according to need of the study. The study was guided by lecturers to get the respondents. Random sampling was used to select 3 universities from the Central region of Uganda. The research study collected data using Questionnaire, Interview guide and Observation sheet as research instruments. Qualitative data analysis involved identification and transcription of the qualitative findings into categories. The categories on each of the variables were then sorted and aligned to the research objectives from which lessons learned on students' reasoning and course completions in a narrative form.

### **Findings:**

The study findings showed that students' deductive reasoning abilities are crucial for understanding course materials, solving complex problems, and making informed decisions throughout their academic journey. Students with strong deductive reasoning skills demonstrate higher academic performance and are more likely to complete their courses successfully. They can analyze course materials critically, identify patterns, and apply logical principles to solve problems effectively. Variations in cognitive abilities, learning styles, and prior knowledge significantly shape students' proficiency in deductive reasoning. Factors such as intelligence quotient (IQ), working memory capacity, and metacognitive strategies influence how students engage in deductive reasoning tasks. The quality of education and instructional methods employed in universities play a significant role in developing students' deductive reasoning skills. Engaging classroom activities, interactive learning experiences, and opportunities for problem-solving contribute to the enhancement of deductive reasoning abilities. Deductive reasoning enhances students' ability to retain and apply course content, leading to active engagement in learning activities and increased motivation to persist in their studies. Proficient deductive reasoners exhibit greater self-regulatory behaviors and metacognitive awareness, allowing them to monitor and regulate their learning processes effectively. They can approach complex problems systematically, break them down into manageable components, and devise logical solutions. All in all, there is significance of deductive reasoning in students' academic success and course completion in Ugandan universities. Understanding and nurturing students' deductive reasoning abilities can contribute to improving retention rates, enhancing the quality of education, and fostering a culture of critical inquiry and lifelong learning.

### **Recommendations:**

Deductive reasoning skills should be integrated into curriculum design to provide faculty development initiatives and to support effective teaching practices, and establishing student support services tailored to foster critical thinking and problem-solving abilities is also important.

**References:**

Bloom, B.S., et al. (1956) A Taxonomy of Educational Objectives: Handbook I The Cognitive Domain. Longman, Green Co., New York.

Palincsar, A. S., & Brown, A. L. (1984). Reciprocal teaching of comprehension-fostering and comprehension-monitoring activities. *Cognition and Instruction*, 1(2), 117–175. [https://doi.org/10.1207/s1532690xci0102\\_1](https://doi.org/10.1207/s1532690xci0102_1)

Saleh, S. E. ( 2013). Paulo Freire’s Philosophy on Contemporary Education. Faculty of Education – Agelat Zawia University.

Sternberg, R. J. (1986). A Triangular Theory of Love. *Psychological Review*, 93, 119-135. <https://doi.org/10.1037/0033-295X.93.2.119>

Voss et al. (1983). Problem-Solving Skill in the Social Sciences. <https://www.sciencedirect.com › article › abs › pii>.

Walton, G. M., & Cohen, G. L. (2011). A brief social-belonging intervention improves academic and health outcomes of minority students. *Science*, 331(6023), 1447–1451. <https://doi.org/10.1126/science.1198364>.