Journal of Economics and Sustainable Development
ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online)
Vol.15, No.5, 2024

The Relationships between Socioeconomic Factors and Reflective Thinking of College Students in Leadership Training Using Critical Thinking Development Perspectives

David Nii O. Tackie[1*] Henry J. Findlay[2] Joe B. Jimmeh[3] Nora Gogo-Kumi[1]
1. College of Agriculture, Environment and Nutrition Sciences, Tuskegee University, Tuskegee, Alabama, 36088, USA
2. School of Education (Retired), Tuskegee University, Tuskegee, Alabama, 36088, USA
3. College of Arts and Sciences, Tuskegee University, Tuskegee, Alabama 36088, USA
* E-mail of the corresponding author: dtackie@tuskegee.edu

Abstract
The study assessed the relationships between socioeconomic factors and reflective thinking of college students. The data were collected from a purposive sample of college students in a leadership training program and analyzed using descriptive statistics and correlation analysis. The results show that the proportions of strongly disagreed or disagreed responses were generally higher than the proportions of the strongly agreed or agreed responses at the low level of the Critical Thinking Development Model (CTDM). However, the proportions of strongly agreed or agreed responses were generally higher than the proportions of the strongly disagreed or disagreed responses at the middle and high levels of the CTDM. The correlations reveal that, overall, there were more positive than negative relationships between the selected socioeconomic factors and reflective thinking. The results further revealed that there were two positive and significant relationships (coefficients); specifically, the ones between "sometimes try to recognize the need to practice reflecting on issues" and the intent to hold a college leadership position, and "sometimes have good habits reflecting on issues" and gender. It may be that the intent to hold a college leadership position and gender matter in reflective thinking.
Keywords: College Students, Critical Thinking Development, Leadership, Reflective Thinking, Socioeconomic Factors
DOI: 10.7176/JESD/15-5-03
Publication date: April 30th 2024

1. Introduction

According to the Oxford Languages Dictionary (2024), pedagogy is "the method and practice of teaching, especially as an academic subject or theoretical concept." Wikipedia (2023) also indicated that pedagogy is "the study of how knowledge and skills are imparted in an educational context, and it considers the interactions that take place during learning." Shirke (2021) emphasized that the main objective of pedagogy is to build on prior learning and also assist students in improving their skills. He stressed that pedagogy has benefits for students such as developing cognitive skills, encouraging teamwork, and allowing educators to assess if they are making progress. Additionally, Shirke alluded to six reasons why pedagogical approaches are important. These are they improve the quality of teaching, encourage a team learning environment, make learning fun and engaging, provide a conducive environment of learning, allow flexible learning methods, and facilitate communication between students and teachers.

Pedagogy shapes and enables reflective thinking, and reflective thinking is embedded in critical thinking development. For instance, pedagogical methods that could be used are traditional delivery, role-playing, discussions, exercises, case studies, and individual work. These methods allow students to remember material discussed or taught in an academic or similar setting. Puig, Sanchez-Marti, Ruiz-Bueno, & Sanchez-Santamaria (2020) argued that the development of reflective thinking depends on the requisite learning context that allows for situations for reflection. They emphasized that approaches, conditions, and methods that facilitate students' training in thinking are needed. Further, they stressed that the indices should be analyzed from the perspective of their knowledge status, developing competencies, and developing professional skills.

Also, Paul & Elder (1996) posited the stages of critical thinking development as a way of developing and analyzing reflective thinking. The reasoning was to enable students to develop higher levels of critical thinking in learning and decision-making. In other words, a way to sharpen their analyses and understanding of issues. Paul & Elder defined critical thinking as the "ability and disposition to improve one's thinking by systematically subjecting it to intellectual self-assessment" (p. 4). Moreover, the Ideas to Action Team (2024, p. 1) defined critical thinking as "the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action." Further, the Ideas to Action Team (2024, p. 2) explained that the reason why it focuses on critical thinking is that "educators should aid students in advancing

from knowledge or concepts to application, analysis, synthesis, and evaluation." It emphasized that this can be attained by creating opportunities where students can apply critical thinking skills in courses. It also stressed that students should be allowed to use and refine their critical thinking skills in solving problems.

Despite the preceding arguments and explanations, there are limited studies, if any, where various pedagogical approaches have been applied to leadership training and also where the reflective thinking of students has been assessed. Therefore, the purpose of this study is to examine the relationships between socioeconomic factors and reflective thinking of college students in a leadership training program using critical thinking development perspectives. The specific objectives are to (1) describe socioeconomic factors, (2) analyze the reflective thinking of students, and (3) assess the nature of the relationships between socioeconomic factors and reflective thinking indicators.

2. Literature Review

The literature review is discussed chronologically, and it focuses on reflective thinking. For instance, Brookfield (1995) argued that critical reflection enables educators to ascertain the quality of their teaching, and continually improve their skills. He emphasized that critical reflection has several benefits, such as self-assuredness, achieving teaching goals, and developing critically reflective students. Further, Brookfield mentioned four ways through which educators can critically reflect, namely, self-reflection, student feedback, peer assessment, and publishing in the academic literature. He maintained that self-reflection is the foundation of critical reflection, and self-reflection is also the foundation for reflective teaching through student feedback. He stressed that good educators usually participate in the first two of the four ways; that is, self-reflection and student feedback. According to Brookfield, excellent educators usually seek peer feedback and advice, as well as participate in scholarly publications. Further, he mentioned that going beyond the four ways of critically reflecting leads an educator to a higher dimension. At this level, activities include changing teaching methods and goals, writing down/recording the progress of teaching methods and goals, and becoming flexible and open-minded as an educator.

Campoy (2010) explained that writing reflective statements is necessary for student-teacher educators because it results in thinking or assessing things in "more deliberate, considered, connected, and principled ways." However, the author stressed that student-teacher educators sometimes consider reflective assignments as a bother and do not take them seriously. Campoy observed three reflection situations or scenarios, involving student-teacher educators. Student Reflection 1: where student-teacher educator 1 used a teacher-directed lecture style but got students engaged; Student Reflection 2: where student-teacher educator 2 allowed students to approach her with any question or a problem. Thus, being able to transfer knowledge on a personal level; and Student Reflection 3: where student-teacher educator 3 used assessments, such as pre-and post-test assessments, to compare specific data; and, used homework as a formative tool to ascertain student progress. Despite the preceding, Campoy explained that student-teacher educators should be prepared to apply all dimensions of reflective reasoning. He further explained that one way to do that is to use a rubric. The author concluded that: "A reflective rubric describes the quality of educational thinking at the teacher, program, and policy levels. Understanding the level of reflective thinking for an individual, program, or policy can predict the likely outcome of solutions that lead to simple, short-term outcomes, or multifaceted solutions that address educational problems in complex ways" (p. 21).

Guthrie & McCracken (2010) reported four major findings on perceptions of reflective pedagogy on experiential learning. First, students were asked to define reflection; 86% defined it in terms of analyzing and learning from past experiences. Second, the students used four types of reflection methods: 97% used reflection journals; 76% used essays and papers; 54% used online discussion techniques, and 3% used web-based conference presentations. Third, all students interviewed indicated that the four methods enhanced their reflection acumen and allowed them to better internalize the content of courses. The students indicated positive attitudes toward the reflection methods; however, they explained that their positive attitudes did not happen instantly but changed over the course of the semester as they got used to the various methods. Fourth, the authors mentioned the challenge of dealing with different students with different preferences in developing reflective thinking skills. They observed that a solution to this challenge is allowing time for change/adjustment to take its course.

Ryan (2013) believed that "students can and should be taught how to reflect in deep, critical, transformative ways" to facilitate sustainable learning practices" (p. 145). In explaining his point, the author used the four "Rs", reporting/responding, relating, reasoning, and reconstructing, respectively, labeled as Levels one, two, three, and four. Level one, reporting/responding, is the most fundamental level of reflection, where students are taught to examine the dimensions of an issue related to a subject matter or discipline. They are encouraged to form an opinion on that issue. Level two, relating, focuses on the personal aspects that allow disciplinary knowledge to be taken into consideration. Further, it requires students to reflect on the issue using their experiences with the issue, a related issue, or a similar setting as a reference point. Level three, reasoning, advances the reflection from a mostly personal response to one of an intellectually detailed analysis comprising of the context, and possible impacting factors on the issue. Level four, the ultimate level, reconstructing, is the most difficult to attain and/or measure. The author argued that at this level, students must be prepared to use or implement new ideas and/or

ways of dealing with or approaching the issue.

After the preceding analyses, Ryan (2013) made four conclusions: first, if a major issue is not reported on at the outset of the reflection exercise, then students will lack focus and will be unable to reconstruct their thinking. Second, if students do not relate the issue to their beliefs, experiences, or worldview, they can show subject matter knowledge but cannot reconstruct their learning to infuse new knowledge into it. Third, if students do not consider supported evidence and reason with rigor, they are likely to rely on individual opinions and "local" philosophy. Consequently, they will not have new knowledge on which to reconstruct ideas. Fourth, if students are not given opportunities to reconstruct ideas or knowledge on an issue, then they are likely to pay lip service regarding potential action on an issue. According to the author, a conclusion on an issue that has not attained the four levels is indicative of a student's attempt to show reconstruction at the surface level. Finally, the author surmised that "reflective work does not need to sit separately from discipline knowledge, but rather it is an integral component of working within disciplines, providing a bridge between experience, generalization, and best practice" (p. 154).

Tsingos-Lucas, Bosnic-Anticevich, Schneider, & Smith (2016) assessed the before and after results of the reflective activities in a pharmacy curriculum, namely, reflective practice (online learning questions), reflective thought guides (cases), reflective statements (critical analysis), and prompt review (interview questions). They found that integrating reflective thinking activities into the curriculum enhanced the reflective thinking capacity of students.

Kheirzadeh (2018) referred to and used Larrivee's (2008) four levels of reflection: specifically, pre-reflection, surface reflection, pedagogical reflection, and critical reflection. The author reported that (1) more experienced teachers were more reflective than less experienced teachers; (2) teachers who had higher degrees were more reflective than those who had lower degrees; and (3), there was a positive association between teachers being reflective and the achievement of students. In other words, the more reflective a teacher is, the more the achievement of his or her students.

Kasalak, Dagyar, Ozcan, & Yesilyurt (2022) found that academic administrator reflective thinking focused on two major areas, faculty management and individual development. The former concentrated on education and student services, higher education legislation, faculty resources management, and personnel services. The latter focused on problem-solving and communication skills. They concluded thus: "unbiased, objective, fair, problem-solving, constructive, strong in human relations and communication, open-minded, constantly and purposefully thinking, and accessible are expected competencies that a reflective-thinking academic administrator should have" (p. 9). In other words, the preceding competencies are required of highly reflective academic administrators.

Machost & Stains (2023) reiterated that educators must engage in reflective practices to improve themselves. They posed a major question, "Why do people engage in reflective thinking?" First, they argued that "there is always a new, more efficient invention to be made, and there is always room for improvement by even the most experienced educators" (p. 2). Second, they responded that reflective practices could also help peers who have challenges in discharging their duties to overcome the challenges. What is more, the authors emphasized that educators could help students improve learning as well as advocate on students' behalf. Furthermore, the authors thought that receiving feedback was a way to enhance one's teaching and/or reflective practices. Additionally, a second major question they posed was, "What are the different types of reflection?" They answered that, generally, reflections are categorized based on timing, depth, and content. As a result, they believed that educators must use different types of reflective practices to improve their teaching. Yet, a third major question they posed was, "How can I engage in reflection?" They provided three answers, specifically, carving time out for reflection, constantly problem-solving, and questioning the status quo. Yet again, a fourth major question they posed was, "What barriers might I face?" Here, they mentioned "personal and contextual barriers;" that there are two main issues, (1) misunderstandings that educators may have about reflection, and (2) the necessity to explain the goal/purpose of reflection. Some of the things they cite include pitfalls of oversimplification, reflective practices requiring time, and the necessary written documents that facilitate annual evaluations and promotions. In addition to the barriers, they mentioned "advice and recommendations." The issue is that environmental effects have a way of stemming reflective practices. Thus, they argued that a change in existing paradigms is necessary to develop more reflective educators. Consequently, they referred to Farrell (2012), who indicated: "Reflective practices are a compass of sorts to guide teachers when they may be seeking directions to what they are doing in their classrooms (p. 10)."

In summary, the literature cited above, Campoy (2010), Guthrie & McCracken (2010), Ryan (2013), Tsingos-Lucas et al. (2016) deal with students; Brookfield (1995), Kheirzadeh (2018) and Machost & Stains (2023) deal with educators; and Kasalak et al. (2022) deal with academic administrators. The literature on "other players" in the academic setting is used because it provides insights into student reflective thinking.

3. Methodology

3.1 Data Collection

The instrument used to collect the data was developed by Tackie (2022). It comprised two sections. Section One focused on questions or statements regarding reflecting on issues. Section Two focused on socioeconomic

characteristics. The questions or statements were based on Paul & Elder's (1996) Critical Thinking Development. The questionnaire went through several iterations after which the final version was submitted to the researchers' Institutional Review Board for approval before being administered. The instrument was administered to a group of university students in two colleges at Tuskegee University, who participated in a set of leadership development workshops in the Spring of 2023. In these workshops, various pedagogical strategies were used, such as traditional delivery, role-playing, discussions, exercises, case studies, and individual work. The researchers used purposive sampling to acquire the data, based on participants who availed themselves. The participants completed the questionnaires through self-administration. The study was originally designed to be quasi-experimental; however, because of the relatively few respondents, the two groups were combined into one group. Therefore, the design was a cross-sectional design. The total number of respondents was 17 out of 39 expected participants; thus, the response rate was 44%. The Cronbach's alpha for the instrument was 64%.

3.2 Data Analyses

The data were analyzed using descriptive statistics, mainly, frequencies and percentages, and Spearman's correlation analysis, using SPSS 12.0© (MapInfo Corporation, Troy, NY). The frequencies and percentages were used for all the data; however, the correlation analysis focused on the strength and direction of the association between the socioeconomic variables and reflective thinking variables. For the former, gender, educational classification, and intent to hold a college leadership position were used. For the latter, the critical thinking categories, or stages from Paul & Elder's (1996) Critical Thinker Development were used, particularly, the unreflective thinker, challenged thinker, beginning thinker, practicing thinker, advanced thinker, and master thinker. The idea behind using the Critical Thinker Development "Model" (CTDM) is that the pedagogy used in the leadership development workshops would improve the critical thinking development acumen of the participants; hence, making them more reflective thinkers or enhancing their reflective thinking capabilities. In other words, as one moves from an unreflective thinker to a master thinker, critical thinking acumen improves.

In brief, this can be viewed from three perspectives. First, the unreflective thinker and the challenged thinker zones are considered as the low level of the CTDM. Second, the beginning thinker and the practicing thinker zones are considered as the middle level of the CTDM. Third, the advanced thinker and the master thinker zones are considered as the high level of the CTDM. Respectively, these are shown in Tables 2, 3, and 4 as Category I, II, and III. The stages of the CTDM are described as follows: Level 1: Unreflective Thinker – Unaware of significant flaws in thinking; Leve1 2: Challenged Thinker – Has significant problems in thinking; Level 3: Beginning Thinker – Tries to improve but not enough practice in thinking; Level 4: Practicing Thinker – Recognizes the need to practice thinking; Level 5: Advanced Thinker – Makes good progress in thinking; and Level 6: Master Thinker – Has good habits in thinking.

4. Results and Discussion

Table 1 shows the socioeconomic characteristics of the participants. About 29% were males and 71% were females; 88% were Blacks, and 12% belonged to other races/ethnicities, such as Hispanics and Asians. The mean age for the participants was 19 years. Additionally, 41% were freshmen; another 41% were sophomores, and 18% were in the "other" category; not particularly declared. Also, 65% intend to hold a college leadership position while in college; 29% did not, and 6% indicated "other"; they did not declare any intent. There were far more females than males, a reflection of the student gender distribution/type of the two colleges. A majority of the respondents were sophomores and juniors. It may be that these categories of respondents were more interested in the subject matter than their counterparts. That 65% plan to hold a college leadership position could be the underpinning reason why they participated in the workshops.

Table 2 presents views on leadership and reflecting on issues, or reflective thinking, on the low level of the Critical Thinking Development Model (CTDM); that is, the unreflective thinker and the challenged thinker. Approximately 35% strongly agreed or agreed that they sometimes do not critically reflect on issues as they should; 47% strongly disagreed or disagreed, and 18% had no opinion. About 12% strongly agreed or agreed that they always do not critically reflect on issues as they should; 35% strongly disagreed or disagreed, and 53% had no opinion or were not sure. For the "sometimes do not critically reflect", the "strongly disagreed or disagreed" response dominates. However, for the "always do not critically reflect", the no opinion/not sure response dominates. This implies that a sizeable proportion of respondents are unaware or do not believe that they have flaws in reflective thinking; that is, in critically reflecting on issues.

Table 1. Demographic Characteristics of Participants (n = 17)

Variable	Frequency	Percent
Gender		
Male	5	29.4
Female	12	70.6
Race/Ethnicity		
Black	15	88.2
Hispanic	1	5.9
Other	1	5.9
Age		
Mean		19
Educational Classification		
Sophomore	7	41.2
Junior	7	41.2
Other	3	17.6
Did You Intend to Hold a College Leadership Position?		
Yes	11	64.7
No	5	29.4
Other	1	5.9

Almost 24% strongly agreed or agreed that they sometimes have significant problems reflecting on issues when they should not; 53% strongly disagreed or disagreed, and 24% had no opinion or were not sure. About 6% strongly agreed or agreed that they always have significant problems reflecting on issues when they should not; 71% strongly disagreed or disagreed, and 24% had no opinion or were not sure. For the "sometimes have significant problems reflecting", the "strongly disagreed or disagreed" response dominates. Also, for the "always have significant problems reflecting", the "strongly disagreed or disagreed" response dominates. This means that most respondents do not believe that they have significant problems engaging in reflective thinking; that is, critically reflecting on issues. In summary, at the low level, a sizable proportion do not believe that they have issues critically reflecting or have significant problems reflecting.

Table 3 depicts views on leadership and reflecting on issues, or reflective thinking on the middle level of the CTDM; that is, the beginning thinker and the practicing thinker. Approximately 53% strongly agreed or agreed that they sometimes try to improve reflecting on issues or reflective thinking but do not practice it enough as they should and 47% strongly disagreed or disagreed. Nearly 82% strongly agreed or agreed that they always try to improve on reflecting on issues but do not practice it enough as they should and 18% strongly disagreed or disagreed. For the "sometimes try to improve reflecting on issues", the

Table 2. Participants' Views on Leadership and Reflection on Issues, Category I (n = 17)

Variable	Frequency	Percent
Sometimes do not Critically Reflect		
Strongly Agree	2	11.8
Agree	4	23.5
Disagree	1	5.9
Strongly Disagree	7	41.2
No opinion/Not sure	3	17.6
Always do not Critically Reflect		
Strongly Agree	1	5.9
Agree	1	5.9
Disagree	1	5.9
Strongly Disagree	5	29.4
No opinion/Not sure	9	52.9
Sometimes have Significant Problems Reflecting		
Strongly Agree	1	5.9
Agree	3	17.6
Disagree	4	23.5
Strongly Disagree	5	29.4
No opinion/Not sure	4	23.5
Always have Significant Problems Reflecting		
Strongly Agree	1	5.9
Agree	0	0.0
Disagree	3	17.6
Strongly Disagree	9	52.9
No opinion/Not sure	4	23.5

"strongly agreed or agreed" response dominates. Moreover, for the "always try to improve reflecting on issues", the "strongly agreed or agreed" response dominates. This implies that the majority do not believe that they do not practice reflective thinking enough. It is more pronounced for the "always try to improve" category.

Almost 77% strongly agreed or agreed that they sometimes recognize the need to practice reflecting on issues, or reflective thinking but do not do so enough; 18% strongly disagreed or disagreed, and 6% had no opinion or were not sure. About 88% strongly agreed or agreed that they always recognize the need to practice reflecting on issues, or reflective thinking but do not do so enough, and 12% strongly disagreed or disagreed. For the "sometimes recognize the need to practice reflecting on issues", the "strongly agreed or agreed"

Table 3. Participants' Views on Leadership and Reflection on Issues, Category II (n = 17)

Variable	Frequency	Percent
Sometimes try to Improve Reflecting but do not Practice Enough		
Strongly Agree	0	0.0
Agree	9	52.9
Disagree	1	5.9
Strongly Disagree	7	41.2
No opinion/Not sure	0	0.0
Always try to Improve Reflecting but do not Practice Enough		
Strongly Agree	5	29.4
Agree	9	52.9
Disagree	2	11.8
Strongly Disagree	1	5.9
No opinion/Not sure	0	0.0
Sometimes Recognize Need to Practice Reflecting but not enough		
Strongly Agree	5	29.4
Agree	8	47.1
Disagree	1	5.9
Strongly Disagree	2	11.8
No opinion/Not sure	1	5.9
Always Recognize Need to Practice Reflecting but not enough		
Strongly Agree	8	47.1
Agree	7	41.2
Disagree	2	11.8
Strongly Disagree	0	0.0
No opinion/Not sure	0	0.0

response has much more influence. Also, for the "always recognize the need to practice reflecting on issues" the "strongly agreed or agreed" response has much more influence. This means that the majority recognize that they do not practice reflective thinking enough. In this case, also, it is also more pronounced for the "always recognize the need" category. Consequently, at the middle level, most participants believe that they do not do enough as they would like whether practicing reflecting or recognizing the need to practice reflecting.

Table 4 reflects views on leadership and reflecting on issues, or reflective thinking at the high level of the CTDM; that is, the advanced thinker and the master thinker. About 88% strongly agreed or agreed that they sometimes make good progress reflecting on issues or reflective thinking but occasionally stumble in thought, and 12% strongly disagreed or disagreed. Approximately, 71% strongly agreed or agreed that they always make good progress reflecting on issues or reflective thinking but occasionally stumble in thought, and 29% strongly disagreed or disagreed. For the "sometimes make good progress reflecting", the "strongly agreed or agreed" response is much more prominent. Also, for the "always make good progress reflecting", the "strongly agreed or agreed" response is much more prominent. This implies that a majority of respondents believe that they are generally "sound" in reflecting on issues; however, they sometimes fall short.

About 94% strongly agreed or agreed that they sometimes have good habits reflecting on issues, or reflective thinking, and most of the time they have immense control of their reasoning or thought, and 6% strongly disagreed or disagreed. Almost 65% strongly agreed or agreed that they always have good habits reflecting on issues, or reflective thinking, and most of the time they have immense control of their reasoning or thought, and 35% strongly disagreed or disagreed. In this case also, for the "sometimes have good habits reflecting", the "strongly agreed or agreed" response dominates. Further, for the "always have good habits reflecting", the "strongly agreed or agreed" response dominates. Here again, it implies that a majority of respondents believe that they have much control in reflecting on issues, or reflective thinking; they are on an even keel so to speak. Therefore, at the high level, the majority of participants believe that they make good progress reflecting or have good habits reflecting. Generally, as one moves up the CTDM, reflective thinking improves, as it is shown in the preceding description.

The analyses indicate a relatively high proportion of strongly disagreed or disagreed at the low level and a relatively high proportion strongly agreed or agreed at the middle and high levels. It can be surmised that at the low level, the participants do not believe that they have issues critically reflecting or have significant problems

reflecting on issues. Furthermore, at the middle level, the participants believe that they do not do enough as they would like whether practicing reflecting or recognizing the need to practice reflecting. Finally, at the high level, the participants believe that they make good progress reflecting or have good habits reflecting. Overall, for the low level, the unreflective thinker, and the challenged thinker, the mean percentage for the strongly disagreed or disagreed for the "sometimes" category was 50%, and for the "always" category it was 53%. For the middle level, the beginning thinker, and the practicing thinker, the mean percentage for the strongly agreed or agreed for the "sometimes" category was 65%, and for the "always" category it was 85%. For the high level, the advanced thinker, and the master thinker, the mean percentage for the strongly agreed or agreed for the "sometimes" category was 91%, and for the "always" category it was 71%.

Table 5 shows the descriptive statistics for the socioeconomic characteristics and the items for the Critical Thinking Development Model (CTDM); the emphasis is on the requisite means. For the CTDM, the higher the means are, the greater the propensity for the opinion/answer to be closer to "strongly agree." Consequently "always do not critically reflect on issues" has the lowest mean of 0.824. This is at the low level of the CTDM. The highest mean is 3.353 for "always recognize the need to practice reflective thinking." This is on the middle level of the CTDM. However, it is on the higher end of the middle

Table 4. Participants' Views on Leadership and Reflection on Issues, Category III (n = 17)

Variable	Frequency	Percent
Sometimes make Good Progress Reflecting		
Strongly Agree	4	23.5
Agree	11	64.7
Disagree	1	5.9
Strongly Disagree	1	5.9
No opinion/Not sure	0	0.0
Always make Good Progress Reflecting		
Strongly Agree	5	29.4
Agree	7	41.2
Disagree	3	17.6
Strongly Disagree	2	11.8
No opinion/Not sure	0	0.0
Sometimes have Good Habits Reflecting		
Strongly Agree	5	29.4
Agree	11	64.7
Disagree	0	0.0
Strongly Disagree	1	5.9
No opinion/Not sure	0	0.0
Always have Good Habits Reflecting		
Strongly Agree	6	35.3
Agree	5	29.4
Disagree	5	29.4
Strongly Disagree	1	5.9
No opinion/Not sure	0	0.0

level. Another observation is that the higher one moves towards the higher levels of the CTDM; that is, towards being a master thinker, the means tend to increase, based on whether the reference points are low, middle, or high level. The means were, respectively, 1.294, 2.838, and 3.015; that is, adding the low, middle, and high numbers, in the table, and then dividing each by four.

Table 6 reveals the correlation results between selected socioeconomic characteristics and the CTDM indicators. As indicated earlier, the CTDM is categorized, respectively, as the unreflective thinker, challenged thinker, beginning thinker, practicing thinker, advanced thinker, and master thinker. The two indicator pairs in the vertical column on the left-hand side, respectively, represent the six items on the CDTM, by levels:

Table 5. Descriptive Statistics (n = 17)

Variable	n	Minimum	Maximum	Mean	Standard Deviation
GEN	17	0.00	1.00	0.294	0.470
RAE	17	1.00	4.00	1.294	0.849
EDC	17	2.00	5.00	3.294	1.213
CLP	17	1.00	3.00	1.412	0.618
Low					
SCR	17	0.00	4.00	1.706	1.359
ACR	17	0.00	4.00	0.824	1.18
SSR	17	0.00	4.00	1.529	1.231
ASR	17	0.00	4.00	1.117	0.993
Middle					
SIR	17	1.00	3.00	2.118	0.993
AIR	17	1.00	4.00	3.059	0.827
SRP	17	0.00	4.00	2.824	1.185
ARP	17	2.00	4.00	3.353	0.702
High					
SGP	17	1.00	4.00	3.059	0.748
AGP	17	1.00	4.00	2.882	0.993
SGH	17	1.00	4.00	3.177	0.728
AGH	17	1.00	4.00	2.941	0.966

Note: GEN = gender; RAE = race/ethnicity; EDC = educational classification; CLP = intent to hold a college leadership position; SCR = sometimes do not critically reflect; ACR = always do not critically reflect; SSR = sometimes have significant problems reflecting; ASR = sometimes have significant problems reflecting; SIR = sometimes try to improve reflecting; AIR = always try to improve reflecting; SRP = sometimes recognize the need to practice reflecting; ARP = always recognize the need to practice reflecting; SGP = sometimes make good progress reflecting; AGP = always make good progress reflecting; SGH = sometimes have good habits reflecting; AGH = always have good habits reflecting.

specifically, the unreflective thinker, challenged thinker (low level), beginning thinker, practicing thinker (middle level), and advanced thinker, and master thinker (high level).

Low

Unreflective Thinker

The relationships between “sometimes critically does not reflect on issues” and gender, educational classification, and the intent to hold a college leadership position were negative, respectively, the coefficients were -0.427, -0.091, and -0.369. In addition, none of the relationships was significant. The relationships between “always do not critically reflect on issues” and gender and intent to hold a college leadership position were negative, respectively, the coefficients were -0.029 and -0.013. However, the relationship with educational classification was positive; the coefficient was 0.133. Again, none of the relationships was significant.

Table 6. Correlation Results between Selected Socioeconomic Characteristics and Critical Thinking Development Model (CTDM) Indicators (n = 17)

CTDM Indicators	**Socioeconomic Indicators**		
	GEN	EDC	CLP
Low			
SCR	-0.427	-0.091	-0.369
p	(0.087)	(0.727)	(0.144)
n	(17)	(17)	(17)
ACR	-0.029	0.133	-0.013
p	(0.912)	(0.610)	(0.961)
n	(17)	(17)	(17)
SSR	-0.203	-0.060	-0.130
p	(0.434)	(0.820)	(0.618)
n	(17)	(17)	(17)
ASR	-0.202	0.041	-0.190
p	(0.437)	(0.877)	(0.465)
n	(17)	(17)	(17)
Middle			
SIR	-0.208	-0.218	0.109
p	(0.422)	(0.401)	(0.678)
n	(17)	(17)	(17)
AIR	0.101	0.288	-0.305
p	(0.699)	(0.262)	(0.234)
n	(17)	(17)	(17)
SRP	0.085	0.045	0.631**
p	(0.747)	(0.865)	(0.007)
n	(17)	(17)	(17)
ARP	0.087	0.075	0.043
p	(0.740)	(0.774)	(0.869)
n	(17)	(17)	(17)
High			
SGP	0.311	-0.077	0.238
p	(0.224)	(0.769)	(0.359)
n	(17)	(17)	(17)
AGP	0.125	0.056	-0.037
p	(0.633)	(0.832)	(0.888)
n	(17)	(17)	(17)
SGH	0.439*	-0.084	0.090
p	(0.078)	(0.749)	(0.730)
n	(17)	(17)	(17)
AGH	-0.055	0.165	0.282
p	(0.833)	(0.527)	(0.273)
n	(17)	(17)	(17)

**Sig at 1%; *Sig at 5%

Note: GEN = gender; RAE = race/ethnicity; EDC = educational classification; CLP = intent to hold a college leadership position; SCR = sometimes do not critically reflect; ACR = always do not critically reflect; SSR = sometimes have significant problems reflecting; ASR = sometimes have significant problems reflecting; SIR = sometimes try to improve reflecting; AIR = always try to improve reflecting; SRP = sometimes recognize the need to practice reflecting; ARP = always recognize the need to practice reflecting; SGP = sometimes make good progress reflecting; AGP = always make good progress reflecting; SGH = sometimes have good habits reflecting; AGH = always have good habits reflecting.

Challenged Thinker

The relationships between “sometimes have significant problems reflecting on issues” and all three socioeconomic

characteristics (gender, education, and intent to hold a college leadership position) were negative, respectively, the coefficients were -0.203, -0.060, and -0.130. In addition, none of the relationships was significant. The relationships between "always have significant problems reflecting on issues" and gender and the intent to hold a college leadership position were negative, respectively, the coefficients were -0.202 and -0.190; however, the relationship with educational classification was positive; the coefficient was 0.041. None of the relationships was significant. As indicated earlier, the above two reflection categories represent the low level of the CDTM, and probably that is why there were more negative relationships than positive ones, 10 versus two.

Middle

Beginning Thinker

The relationships between "I sometimes try to improve reflecting on issues" and gender and educational classification were negative, respectively, the coefficients were -0.208 and -0.218; it was positive regarding the intent to hold a college leadership position with a coefficient of 0.109. None of the relationships was significant. The relationships between "I always try to improve reflecting on issues" and gender and educational classification were positive, respectively, the coefficients were 0.101 and 0.288; however, the relationship was negative with the intent to hold a college leadership position with a coefficient of -0.305. None of the relationships (thus, the two coefficients) was significant.

Practicing Thinker

The relationships between "I sometimes try to recognize the need to practice reflecting on issues" and gender, educational classification, and intent to hold a college leadership position were positive, respectively, the coefficients were 0.085, 0.045, and 0.631. Only the coefficient, and thus, the relationship between "I always try to recognize the need to practice reflecting on issues" and the intent to hold a college leadership position was significant. The relationships between "I sometimes try to recognize the need to practice reflecting on issues" and gender, educational classification, and the intent to hold a college leadership position were positive, but were not significant, respectively, the coefficients were 0.087, 0.075, and 0.043. In this case, the above two reflection categories three and four, reflect the middle level of the CDTM, and probably, that was why there were more positive relationships than negative ones, nine versus three. Also, it may be the reason why one relationship was significant; "always try to recognize the need to practice reflecting on issues" and the intent to hold a college leadership position.

High

Advanced Thinker

The relationships between "I sometimes make good progress in reflecting on issues" and gender and the intent to hold a college leadership position, were positive, respectively, the coefficients were 0.311 and 0.238, and that for educational classification was negative, with a coefficient of -0.077; all the relationships were not significant. The relationships between "I always make good progress in reflecting on issues" and gender and educational classification were positive, respectively, the coefficients were 0.125 and 0.056; that for the intent to hold a college leadership position was negative, with a coefficient of -0.037. None of the relationships (coefficients) was significant.

Master Thinker

The relationships between "I sometimes have good habits in reflecting on issues" and gender and the intent to hold a college leadership position were positive, respectively, the coefficients were 0.439 and 0.090. The relationship between "I always have good habits for reflecting on issues and educational classification was negative; its coefficient was -0.084. In this case, also, the relationship, and thus, the coefficient for gender was significant.

The relationships between "I always have good habits in reflecting on issues" and educational classification and the intent to hold a college leadership position were positive, respectively, its coefficients were 0.165 and 0.282; and that for gender was negative; its coefficient was -0.055. These latter two sets of reflection, Advanced and Master, represent the high level of CTDM. Once again, just as in the previous level; that is, the middle level, there were more positive relationships (coefficients) than negative relationships (coefficients) eight versus four. This may be the reason why one relationship, that for gender, was significant. Overall, there appears to be an improvement in reflective thinking as one goes up the "ladder" of the CTDM.

5. Conclusion

The study assessed the relationships between socioeconomic factors and reflective thinking of college students in leadership training using critical thinking development perspectives. It described socioeconomic factors, analyzed the reflective thinking of students, and assessed the nature of the relationships between socioeconomic factors and reflective thinking indicators. The data were collected using a questionnaire and analyzed using descriptive statistics and correlation analysis.

The results showed that a majority of the respondents were females; sophomores and juniors, and they

intended to hold a college leadership position while in college. Regarding reflecting on issues (reflective thinking) or CTDM, the proportions of strongly disagreed or disagreed responses were generally higher than the proportions of the strongly agreed or agreed responses at the low level of the CDTM, unreflective, and challenged thinker. However, the proportions of strongly agreed or agreed responses were generally higher than the proportions of the strongly disagreed or disagreed responses at the middle and high levels, respectively, beginning thinker, practicing thinker, advanced thinker, and master thinker. The participants likely perceive themselves as "mature" thinkers than otherwise.

On the issue of the correlations, there were more positive than negative relationships or coefficients (19 vs. 17). Also, the only significant relationships (coefficients) were the ones between "I sometimes try to recognize the need to practice reflecting on issues" and the intent to hold a college leadership position (middle level), and "I sometimes have good habits reflecting on issues" and gender (high level). Both were positive relationships. The contribution of this study is that it has provided insights into practical testing of the CDTM or reflective thinking focusing on college students. It may be that the intent to hold a college leadership position and gender matter in reflective thinking vis-à-vis leadership training. It is recommended that further studies be conducted by increasing the sample size to ascertain if the results will replicate or improve.

Acknowledgments
This research is funded by the National Science Foundation (NSF), *Excellence in Research* (EiR) Program, Award Number 2154049.

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