pISSN: 1906 - 3296 © 2020 AU-GSB e-Journal.
eISSN: 2773 - 868x © 2021 AU-GSB e-Journal.
https://assumptionjournal.au.edu/index.php/AU-GSB

Examining Non-Cognitive Factors Affecting Academic Performance Among Students in Three Junior High Schools in Chongqing, China

Hong Chen*

Received: March 17 2024. Revised: September 15, 2024. Accepted: February 22, 2025.

Abstract

Purpose: This research investigates the non-cognitive factors influencing junior high school students' academic performance in Chongqing, China. The conceptual framework encompasses emotional intelligence, engagement, collaborative learning, social skills, student satisfaction, and academic performance. **Research design, data, and methodology:** The target population comprises 500 junior high school students between Grade 7-9 in Chongqing, China. The survey is conducted by the consent and review by their parents/guardians. The quantitative research methodology was applied in this study. The sampling techniques employed in this study encompass judgmental, quota, and convenience sampling. A pilot test was conducted involving a sample of 50 participants, and the item-objective congruence (IOC) index and Cronbach's alpha were utilized for the validity and reliability testing. The data obtained were analyzed using confirmatory factor analysis (CFA) and structural equation modeling (SEM). **Results:** Emotional intelligence positively influences social skills; engagement and collaborative learning enhance student satisfaction; collaborative learning predicts academic performance. However, the non-significant link between student satisfaction and academic performance warrants further exploration into nuanced dynamics of student outcomes. **Conclusions:** These findings offer valuable guidance for educators and policymakers, highlighting the importance of fostering socio-emotional skills, promoting active learning environments, and supporting holistic student development to enhance overall educational outcomes.

Keywords : Emotional Intelligence, Collaborative Learning, Social Skills, Student Satisfaction, Academic Performance

JEL Classification Code: E44, F31, F37, G15

1. Introduction

Primary education in China is a fundamental stage of education that provides a basic foundation of knowledge, skills, and values to children aged six to eleven years old. It serves as a critical phase in the educational journey, laying the groundwork for further learning and personal development. Primary education in China is part of the nine-year compulsory education system, which includes six years of primary education and three years of lower secondary education (junior high school) or five years of primary education and four years of lower secondary education. Attendance at primary school is mandatory for all children. In conclusion, primary education in China is a crucial stage in a child's educational journey. The Chinese government has made significant efforts to achieve universal enrollment and improve access to quality education. Curriculum reforms and initiatives are continually being implemented to enhance the educational experience and promote holistic development among primary school students. However, challenges related to educational equity and quality persist, requiring continued attention and investment in the primary education system (OECD, 2016).

Domestically, academic performance in China is typically measured through various assessments and examinations, with the National College Entrance

1*Hong Chen, Ph.D. Candidate in Educational Administration and Leadership, Graduate School of Human Sciences, Assumption University, Thailand. Email: hong_chen24@outlook.com

Examination (NCEE), commonly known as the "gaokao," being the most prominent and high-stakes examination. The gaokao serves as a standardized national examination that assesses students' knowledge and skills across multiple subjects, including Chinese, Mathematics, Foreign Language, and other specialized subjects (Szekely, 2023). Moreover, academic performance may also be assessed through class rankings, coursework grades, and teacher evaluations. These measures provide a comprehensive overview of students' academic abilities and progress throughout their educational journey (Tawafak et al., 2019).

Junior high school students go through a crucial stage of their life, during which they face a lot of changes and challenges. They undertake great pressure both in their study and life, from peers, teachers, parents and sometimes themselves. The Chinese education is endeavoring to change the assessment system and cultivate students in Healthy Growth (Literally holistic development). However, in many places academic performance is one of the most importance criteria to evaluate schools and students, so schools and parents care much more about students' grades than their non-cognitive skills (Milburn, 2011).

Previous literatures have indicated a significant relationship between emotional intelligence and academic performance among students. However, limited research has focused specifically on the Chinese education system. And only a few have been done among the targeted Chinese junior high school students. This research seeks to bridge this gap and provide insights into the association among emotional intelligence and academic performance in the context of Chinese education.

This research may serve as a foundation for future studies exploring similar factors in different educational levels, regions, or cultural contexts. It can encourage further research that delves deeper into specific components of the conceptual framework, leading to a more nuanced understanding of student success. Hence, this study aims to investigate causal relationships between emotional intelligence, engagement, collaborative learning, social skills, student satisfaction, and academic performance within the context of Chinese education. Despite the recognition of these factors as important contributors to student success, there is a need for a comprehensive examination of their relationships and impacts on junior high school students' educational outcomes in the Chinese education system.

2. Literature Review

2.1 Emotional Intelligence

Emotional intelligence pertains to the capacity to accurately perceive, comprehend, control, and utilize emotions in oneself and others. This encompasses the skills of recognizing and expressing emotions, employing emotions to facilitate thinking, comprehending emotions, and regulating emotions effectively (Adeyomo, 2007). According to Hamdzah et al. (2016), emotional intelligence is characterized as "the ability to accurately perceive emotions, employ emotions to enhance cognitive processes, comprehend emotions, and regulate emotions to foster personal development and overall well-being."

Emotional intelligence and social skills are two interconnected constructs that play significant roles in individuals' interpersonal interactions and overall well-being. This literature review aims to explore the existing research on the relationship between emotional intelligence and social skills, highlighting key findings and theoretical perspectives (Hamdzah et al., 2016). Emotional intelligence refers to "the ability to recognize, understand, and manage one's own emotions and the emotions of others effectively. It involves skills such as emotional awareness, empathy, self-regulation, and interpersonal relationships" (Bar-On, 2006). On the other hand, social skills encompass the behaviors and abilities that enable individuals to interact harmoniously and effectively with others. They include communication skills, cooperation, assertiveness, conflict resolution, and empathy (Subhi et al., 2012). Therefore, a hypothesis can be suggested:
H1: Emotional intelligence has a significant influence on social skills.

2.2 Engagement

Engagement refers to "the level of enthusiasm, interest, and involvement exhibited by individuals in a particular activity, task, or context (Fredricks et al., 2004). Engagement is defined as a positive emotional and behavioral state characterized by dedication, enthusiasm, and absorption in an activity or learning process. It reflects a sense of intrinsic motivation and investment in the task at hand (Schaufeli et al., 2002). According to Trinh (2023), engagement encompasses the extent to which individuals actively participate and invest cognitive, emotional, and behavioral resources in their learning or work activities.

Numerous studies have investigated the relationship between engagement and collaborative learning, highlighting their interconnectedness and mutual influence. Engaged learners are more likely to actively participate in collaborative learning activities, while collaborative learning experiences can enhance students' engagement (Al-rahmi et al., 2014; Wang & Holcombe, 2010). Engagement and collaborative learning also play crucial roles in promoting self-regulated learning. Engaged learners are more likely to exhibit self-regulatory behaviors, such as setting goals, monitoring progress, and adapting learning strategies (Ashwin & McVitty, 2015; Zimmerman & Schunk, 2011).

Collaborative learning experiences provide a social context for students to co-regulate their learning, exchange ideas, and reflect on their own and others' thinking, fostering metacognitive awareness and self-efficacy (Al-rahmi et al., 2014). Accordingly, a following hypothesis can be indicated:
H2: Engagement has a significant influence on collaborative learning.

2.3 Collaborative Learning

Collaborative learning refers to "an instructional approach in which students actively engage in group-based activities, discussions, and projects to enhance their learning. It involves cooperative interactions among learners, fostering the exchange of knowledge, perspectives, and ideas" (Al-Rahmi et al., 2015). Collaborative learning is a pedagogical strategy that emphasizes joint efforts and shared responsibilities among learners in achieving common learning goals (Johnson et al., 2007). It involves joint tasks, group discussions, and the sharing of resources, enabling learners to build on each other's strengths and collectively construct knowledge (Selwyn & Grant, 2009).

Research has consistently shown a positive relationship between collaborative learning and student satisfaction. Collaborative learning experiences provide opportunities for active engagement, peer interaction, and shared learning responsibility, which contribute to increased student satisfaction (Al-rahmi et al., 2014; Johnson & Johnson, 2013). Students often report higher levels of enjoyment, motivation, and sense of belonging in collaborative learning environments. This sense of belonging and social support contributes to higher levels of student satisfaction and overall well-being (Kuh et al., 2006). Collaborative learning also promotes a sense of ownership and responsibility for learning, empowering students to take control of their educational journey.

Collaborative learning promotes active engagement among students, encouraging them to take ownership of their learning and actively participate in the learning process (Prince, 2004). Through discussions, debates, and group activities, students become more engaged and invested in their studies. This heightened engagement contributes to better retention of information, deeper understanding of concepts, and improved academic performance (Aarti & Kadian, 2022). Collaborative learning environments foster positive social interaction and support among students. Working collaboratively helps students build relationships, develop communication skills, and engage in meaningful interactions with their peers (Kirschner et al., 2018). These positive social dynamics create a supportive learning environment, which enhances motivation, confidence, and academic performance (Al-Rahmi et al., 2015). Based on previous studies, this study assumes that:

H3: Collaborative learning has a significant influence on student satisfaction.
H6: Collaborative learning has a significant influence on academic performance.

2.4 Social Skills

Social skills are the proficiencies and capabilities that empower individuals to engage in effective and appropriate interactions with others across diverse social contexts. These skills encompass effective communication, empathy, cooperation, conflict resolution, and the appreciation of diversity (Gresham & Elliot, 2008). Social skills encompass a range of interpersonal abilities that enable individuals to initiate and maintain positive relationships, communicate effectively, and resolve conflicts constructively (Spence, 2003). Mehta and Singh (2013) described social skills as they involve the ability to initiate and sustain conversations, engage in active listening, show empathy, interpret nonverbal cues, and engage in appropriate social behaviors within cultural and societal norms.

Socially skilled students demonstrate appropriate behavior and positive interactions in the classroom, creating a conducive learning environment (Wentzel et al., 2012). They engage in cooperative activities, respect their peers, and exhibit self-control, which leads to fewer disruptions and distractions in the classroom. Consequently, teachers can focus more on delivering instruction, and students can concentrate better, resulting in improved academic performance (Hamdzah et al., 2016). Social skills are closely linked to self-regulation, the ability to manage one's emotions, behavior, and attention (Wentzel et al., 2012). Students with well-developed social skills are more likely to exhibit effective self-regulatory behaviors, such as setting goals, organizing their study time, and maintaining focus. Therefore, a hypothesis is speculated:
H4: Social skills have a significant influence on academic performance.

2.5 Student Satisfaction

Student satisfaction refers to the extent to which students perceive their educational experience, including the academic environment, teaching quality, support services, and overall university experience, as meeting or exceeding their expectations and needs. It encompasses students' subjective evaluations of various aspects of their educational journey (Darawong & Widayati, 2022). Student satisfaction encompasses aspects such as satisfaction with teaching quality, curriculum, support services, facilities, and social interactions (Al-rahmi et al., 2014). Student satisfaction represents the overall contentment, fulfillment, and positive evaluation of students regarding their educational experience

(Feng et al., 2022).

Student satisfaction positively influences students' motivation and engagement in their studies. Satisfied students tend to have a greater sense of belonging, higher levels of intrinsic motivation, and a stronger desire to actively participate in learning activities (Lizzio et al., 2008). Al-rahmi et al. (2014) heightened motivation and engagement contribute to increased effort, persistence, and dedication to academic tasks, leading to improved academic achievement. Effective teaching practices, such as clear communication, active learning strategies, and meaningful feedback, enhance students' understanding and facilitate their academic progress (Ramsden, 2003). Satisfied students who receive high-quality instruction are more likely to perform well academically. Thus, the researcher put forward a hypothesis:

H5: Student satisfaction has a significant influence on academic performance.

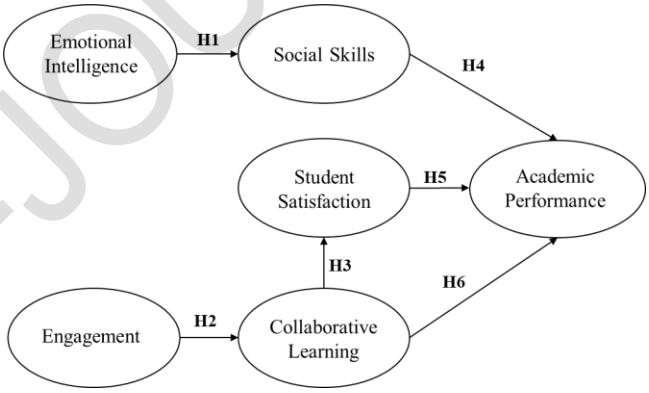
2.6 Academic Performance

Academic performance refers to "the level of achievement, competence, or success that students demonstrate in their academic pursuits. It is typically measured by factors such as grades, test scores, class rankings, and completion rates" (Sirin, 2005). Academic performance refers to the measurable outcomes and achievements of students in their educational pursuits, such as grades, test scores, and overall success in academic activities (Said et al., 2018). It encompasses the acquisition of knowledge, skills, and competencies within a formal educational setting, indicating the level of mastery and understanding of subject matter (Johnson & Johnson, 2013). Academic achievement reflects the culmination of students' efforts, abilities, and performance in various educational domains, such as subject-specific knowledge, critical thinking, problem-solving, and application of learned concepts (Wormington et al., 2012). In recent years, the integration of technology in education has received considerable attention. Research exploring the impact of technology on academic performance has yielded mixed findings. While some studies have reported positive effects on student achievement through technology integration (Valverde-Berrocoso et al., 2022; Yılmaz, 2021), others have highlighted the need for effective implementation and pedagogical strategies to maximize its benefits (Wegner et al., 2013).

3. Research Methods and Materials

3.1 Research Framework

The research model employed in this study was constructed by integrating key constructs derived from well-established theoretical frameworks. The identified constructs include emotional intelligence, engagement, collaborative learning, social skills, student satisfaction, and academic performance. To develop the conceptual framework, the study drew upon research models proposed by Hamdzah et al. (2016), Al-rahmi et al. (2014), and Al-Rahmi et al. (2015). These models were selected based on their valuable insights and contributions in understanding the factors that influence academic performance among high school students in Chongqing, China. The incorporation of relevant insights from these frameworks strengthens the foundation of this study's conceptual framework, as illustrated in Figure 1.



Fiqure 1: Conceptual Framework

H1: Emotional intelligence has a significant influence on social skills.
H2: Engagement has a significant influence on collaborative learning.
H3: Collaborative learning has a significant influence on student satisfaction.
H4: Social skills have a significant influence on academic performance.
H5: Student satisfaction has a significant influence on academic performance.
H6: Collaborative learning has a significant influence on academic performance.

3.2 Research Methodology

This research specifically focuses on 500 junior high school students between Grade 7-9 in Chongqing, China. The purpose of this research is to investigate the relationships and impacts of emotional intelligence, engagement, collaborative learning, social skills, student satisfaction, and academic performance within this specific group. The research aims to gain insights into these factors and their interplay in the Chinese education context.

A survey is conducted with the consent and review of parents/guardians of the participating students. A questionnaire is utilized as the primary data collection tool, allowing for the collection of relevant information regarding the targeted variables. Due to the research objectives, the significant participants must be junior high school students (Grade 7-9), who have been studying in select schools, using screening questions. The research instruments utilized in this study employed a five-point Likert scale for measurement. The Likert scale encompassed a range of response options, including "Strongly Disagree (1)," "Disagree (2)," "Neutral (3)," "Agree (4)," and "Strongly Agree (5)." Careful design and consideration of ethical guidelines contribute to the quality and reliability of the collected demographic data. Therefore, this study involves gender, and satisfaction with academic performance.

Prior to the primary data collection, a pilot test is conducted with a smaller sample of 50 participants selected randomly from 3 junior high schools (2 public schools and 1 private school) in Chongqing to evaluate the validity and reliability of the questionnaire. The validity and reliability of the questionnaire items are assessed using statistical measures such as item-objective congruence (IOC) index and Cronbach's alpha. All items achieved an IOC value of 0.5 or higher were considered to have met the content validity criteria, indicating their alignment with the overall objectives of the study. Furthermore, the researchers collect 50 participants in this stage to test reliability. Cronbach's alpha can be computed using statistical software or online calculators, which analyze the intercorrelations among the items. A higher Cronbach's alpha value (usually above 0.7) indicates stronger internal consistency among the items (Nunnally & Bernstein, 1994).

The collected data from the survey are analyzed using confirmatory factor analysis (CFA) and structural equation modeling (SEM). CFA is employed to examine the factor structure and measurement validity of the questionnaire items, while SEM is utilized to investigate the relationships and paths among the variables of interest.

It is important to note that the scope of the study is limited to the specified number of participants from Grades 7-9 in Chongqing, China. Therefore, the findings and conclusions derived from this research cannot be generalized to other populations or educational contexts, as the focus is specifically on this particular sample.

3.3 Population and Sample Size

In this study, the target population is based on non-probability sampling. Therefore, the researcher selects junior high school students between Grade 7-9 from 2 public schools and 1 private school in Chongqing, China. The minimum sample size required, as suggested by Soper (2023), is 403. However, to ensure efficient data analysis using Structural Equation Modeling (SEM), the researcher plans to collect a sample of 500 participants.

3.4 Sampling Technique

The sampling procedures incurs judgmental, quota, and convenience sampling methods. These techniques are used to ensure a diverse representation of participants within the specified population. The sample size of 500 participants is determined based on the research objectives and the feasibility of data collection within the given scope.

Judgmental sampling involves selecting participants based on specific criteria or characteristics relevant to the research objectives. Researchers purposefully choose participants who possess the desired qualities or experiences for the study (Patton, 2002). Therefore, the researcher selects participants who are junior high school students between Grade 7-9 from 2 public schools and 1 private school in Chongqing, China. With quota sampling, it aims to propitiate the number of students 7-9 in three schools (2 public schools and 1 private school). The schools' name cannot be disclosed due to they are not permitted. The sample unit by quota is demonstrated in Table 1.

The survey is conducted with the consent and review by students' parents/guardians. Then, the researcher distributed paper and online questionnaire via email and WeChat application to teachers and parents of junior high school students (Grade 7-9), who have been studying in select schools. Additionally. the researcher considers using paper questionnaires, because not all students have proper access to the Internet and they are not allowed to use cell-phones while at school. The students are requested to complete questionnaire within the given timeline.

Table 1: Sample Units and Sample Size

School	Total Number of Student between Grade 7 to 9	Sample Size
School A	2169	173
School B	2788	222
School C	1317	105
Total	**6274**	**500**

4. Results and Discussion

4.1 Demographic Information

Based on the data presented in Table 1, the demographic profile consists of a group of 500 junior high school students spanning Grades 7 through 9 in Chongqing, China. The survey was carried out with the consent and review of their parents or guardians. The analysis offers valuable insights into the gender composition and distribution across academic years among the participants. The data indicates that the sample is fairly balanced in terms of gender, with 47.0% of participants being male and 53.0% female. This suggests a relatively equal representation of both genders within the surveyed population. Among the participants, the majority, comprising 59.6%, reported being satisfied with their academic performance. This indicates a generally positive perception of their achievements in school.

Table 2: Demographic Profile

Demographic and General Data (N=500)		Frequency	Percentage
Gender	Male	235	47.0%
	Female	265	53.0%
Level Of Satisfaction with Academic Performance	Satisfied	298	59.6%
	Neutral	169	33.8%
	Unsatisfied	33	6.6%

4.2 Confirmatory Factor Analysis (CFA)

To validate the measurement model, guidelines by Hair et al. (2006) were followed, with factor loadings exceeding 0.50 to signify significance, and a p-value below 0.05 indicating reliability (Vongurai, 2024). Convergent validity, as per Fornell and Larcker (1981), ensured that multiple construct measures correlate, with the Average Variance Extracted (AVE) ideally surpassing 0.5. While AVE occasionally fell short, Composite Reliability (CR) exceeding 0.6 affirmed construct validity, suggesting robust internal consistency despite AVE discrepancies. The results of CFA are shown in Table 3.

Table 3: Confirmatory Factor Analysis Result, Composite Reliability (CR) and Average Variance Extracted (AVE)

Variables	Source of Questionnaire (Measurement Indicator)	No. of Item	Cronbach's Alpha	Factors Loading	CR	AVE
1. Emotional Intelligence (EQ)	Mehta and Singh (2013)	6	0.857	0.680-0.735	0.858	0.501
2. Engagement (EN)	Trinh (2023)	4	0.789	0.637--0.756	0.790	0.486
3. Collaborative Learning (CL)	Al-Rahmi et al. (2015)	4	0.820	0.655-0.808	0.823	0.541
4. Social Skills (SS)	Mehta and Singh (2013)	4	0.774	0.645-0.710	0.776	0.464
5. Student Satisfaction (SAT)	Nikou and Maslov (2023)	3	0.882	0.826-0.868	0.883	0.715
6. Academic Performance (AP)	Aarti and Kadian (2022)	4	0.824	0.693-0.769	0.824	0.541

In Table 4, the measurement model fit assessment reveals that the proposed model demonstrates excellent fit to the empirical data across various statistical indices. The calculated values for CMIN/DF, GFI, AGFI, NFI, CFI, TLI, and RMSEA all meet or exceed the acceptable thresholds established in the literature. Specifically, the values for CMIN/DF, GFI, AGFI, NFI, CFI, and TLI indicate a strong fit between the model and the observed data, while the RMSEA value indicates a close fit with minimal error.

Table 4: Goodness of Fit for Measurement Model

Fit Index	Acceptable Criteria	Statistical Values
CMIN/DF	< 3.00 (Hair et al., 2006)	298.244/260 = 1.147
GFI	≥ 0.90 (Hair et al., 2006)	0.956
AGFI	≥ 0.90 (Hair et al., 2006)	0.944
NFI	≥ 0.90 (Arbuckle, 1995)	0.944
CFI	≥ 0.90 (Hair et al., 2006)	0.992
TLI	≥ 0.90 (Hair et al., 2006)	0.991
RMSEA	< 0.05 (Browne & Cudeck, 1993)	0.017
Model Summary		**Acceptable Model Fit**

Remark: CMIN/DF = The ratio of the chi-square value to degree of freedom, GFI = goodness-of-fit index, AGFI = adjusted goodness-of-fit index, NFI = normalized fit index, CFI = comparative fit index, TLI = Tucker-Lewis index, and RMSEA = root mean square error of approximation
Source: Created by the author.

According to Fornell and Larcker (1981), discriminant validity is assessed by computing the square root of the Average Variance Extracted (AVE) for each construct, demonstrating that if the square root of the AVE exceeds the correlations between the construct and other constructs, discriminant validity is established. To address multicollinearity concerns, correlations between constructs were examined, with coefficients not surpassing 0.80 as per Studenmund (1992), indicating no significant issues and supporting the validity of the measurement model, as demonstrated in Table 5.

Table 5: Discriminant Validity

	SAT	EI	SS	EN	CL	AP
SAT	**0.846**					
EI	0.526	**0.708**				
SS	0.670	0.518	**0.681**			
EN	0.305	0.262	0.240	**0.697**		
CL	0.497	0.494	0.565	0.196	**0.735**	
AP	0.331	0.190	0.490	0.101	0.402	**0.735**

Note: The diagonally listed value is the AVE square roots of the variables
Source: Created by the author.

4.3 Structural Equation Model (SEM)

Table 6 demonstrates a significant enhancement in the structural model fit after modification. The CMIN/DF decreased from 2.338 to 1.838, both below the acceptable threshold of 3.00, indicating improved fit. Moreover, the GFI increased from 0.918 to 0.930, surpassing the 0.90 threshold, along with AGFI increasing from 0.901 to 0.914. The NFI substantially increased from 0.881 to 0.907, exceeding the 0.90 threshold, indicating significant improvement in model fit. Additionally, both CFI and TLI showed notable improvement, surpassing the 0.90 threshold. Furthermore, the RMSEA decreased from 0.052 to 0.041, falling below the 0.05 threshold, indicating better fit of the modified model to the data.

Table 6: Goodness of Fit for Structural Model

Index	Acceptable Values	Statistical Values	
		Before Model Modification	After Model Modification
CMIN/DF	< 3.00 (Hair et al., 2006)	628.807/269 = 2.338	490.676/267 = 1.838
GFI	≥ 0.90 (Hair et al., 2006)	0.918	0.930
AGFI	≥ 0.90 (Hair et al., 2006)	0.901	0.914
NFI	≥ 0.90 (Arbuckle, 1995)	0.881	0.907
CFI	≥ 0.90 (Hair et al., 2006)	0.928	0.955
TLI	≥ 0.90 (Hair et al., 2006)	0.920	0.950
RMSEA	< 0.05 (Browne & Cudeck, 1993)	0.052	0.041
Model summary		**Not in harmony with empirical data**	**In harmony with empirical data**

Remark: CMIN/DF = The ratio of the chi-square value to degree of freedom, GFI = goodness-of-fit index, AGFI = adjusted goodness-of-fit index, NFI = normalized fit index, CFI = comparative fit index, TLI = Tucker-Lewis index, and RMSEA = root mean square error of approximation
Source: Constructed by author

4.4 Research Hypothesis Testing Result

In the realm of statistical analysis, particularly in structural equation modeling (SEM), evaluating hypotheses plays a crucial role. It aims to confirm the validity of proposed relationships between independent and dependent variables. In this study, the evaluation of these relationships involved utilizing statistical tools like regression coefficients, standardized path coefficients, and t-values. The results of this assessment, as presented in Table 7, supported the hypotheses, with statistical significance observed at a level of $p<0.05$.

Table 7: Hypothesis Results of the Structural Equation Modeling

Hypothesis	(β)	t-Value	Result
H1: EQ → SS	0.194	4.128*	**Supported**
H2: EN → CL	0.160	3.246*	**Supported**
H3: CL → SAT	0.494	8.880*	**Supported**
H4: SS → AP	0.374	4.637*	**Supported**
H5: SAT → AP	-0.024	-0.344	**Not Supported**
H6: CL → AP	0.199	3.101*	**Supported**

Note: *=p-value<0.05
Source: Created by the author

Table 5.10 presents the results of hypotheses testing for the structural model, indicating the standardized path coefficients (β), corresponding t-values, and the test results for each hypothesis.

The standardized path coefficient (β) for H1 is 0.194, with a t-value of 4.128, indicating a statistically significant positive influence of emotional intelligence on social skills. Therefore, H1 is supported, suggesting that individuals with higher emotional intelligence tend to exhibit better social skills.

H2 demonstrates a β of 0.160 and a t-value of 3.246, signifying a significant positive relationship between engagement and collaborative learning. This finding supports H2, indicating that higher levels of engagement contribute to enhanced collaborative learning experiences.

With a β of 0.494 and a t-value of 8.880, H3 illustrates a strong and statistically significant positive influence of collaborative learning on student satisfaction. This result supports H3, suggesting that effective collaborative learning experiences positively impact student satisfaction.

H4 exhibits a β of 0.374 and a t-value of 4.637, indicating a significant positive relationship between social skills and academic performance. Thus, H4 is supported, suggesting that individuals with stronger social skills tend to achieve better academic performance.

The β for H5 is -0.024, with a t-value of -0.344. This indicates a non-significant relationship between student satisfaction and academic performance. Therefore, H5 is not supported, suggesting that student satisfaction does not significantly impact academic performance in this study.

H6 demonstrates a β of 0.199 and a t-value of 3.101, indicating a significant positive influence of collaborative learning on academic performance. Thus, H6 is supported, suggesting that engaging in collaborative learning activities positively affects academic performance.

Overall, the analysis of Table 5.10 reveals consistent support for the majority of hypotheses, highlighting the importance of emotional intelligence, engagement, collaborative learning, and social skills in influencing student satisfaction and academic performance. However, it is noteworthy that student satisfaction did not significantly impact academic performance in this study, contrary to initial expectations. These findings provide valuable insights into the relationships among key variables in the context of the structural model examined.

5. Conclusion, Recommendation & Limitation

5.1 Conclusion and Discussion

The hypotheses testing results provide valuable insights into the relationships between key variables within the structural model, shedding light on the factors influencing student satisfaction and academic performance. The findings confirm several hypotheses while also revealing some unexpected outcomes, prompting a deeper discussion on their implications for educational practice and theory.

Several hypotheses receive support from the statistical analysis, affirming the significance of certain variables in shaping educational outcomes. For instance, the significant positive influence of emotional intelligence on social skills suggests the importance of nurturing emotional competencies to enhance interpersonal relationships within educational settings. Similarly, the positive effects of engagement and collaborative learning on student satisfaction underscore the value of active engagement and collaborative pedagogical approaches in fostering positive learning experiences.

Moreover, the findings validate the hypothesized relationships between collaborative learning, social skills, and academic performance. The significant positive effects of collaborative learning and social skills on academic performance highlight the crucial role of these factors in facilitating students' academic success. These results align with existing literature emphasizing the importance of collaborative learning environments and the development of social-emotional skills in promoting academic achievement.

However, some hypotheses yield unexpected outcomes, challenging conventional assumptions and prompting further inquiry. For instance, the non-significant relationship between student satisfaction and academic performance contrasts with initial expectations and warrants deeper exploration. This discrepancy may indicate potential complexities in the relationship between subjective satisfaction with the learning experience and objective academic achievement, suggesting a need for nuanced measures and theoretical frameworks to capture the multifaceted nature of student success.

Overall, the hypotheses testing results offer valuable insights with practical implications for educational practice. By confirming the importance of factors such as emotional intelligence, engagement, collaborative learning, and social skills in shaping educational outcomes, educators can prioritize interventions and pedagogical strategies that foster the development of these competencies. Additionally, the unexpected outcomes prompt educators to critically evaluate existing practices and theories, encouraging a more holistic and nuanced understanding of student success.

In conclusion, the hypotheses testing results provide a nuanced understanding of the factors influencing student satisfaction and academic performance within educational contexts. By confirming certain hypotheses and uncovering unexpected outcomes, the findings offer valuable guidance for educators and policymakers seeking to optimize educational practices and improve student outcomes. However, further research is needed to explore the complexities of these relationships and refine theoretical frameworks to better capture the dynamic interplay between various factors influencing student success.

5.2 Recommendation

The hypotheses testing results offer valuable insights that can inform practical recommendations for educators, policymakers, and stakeholders involved in educational settings. By translating the findings into actionable recommendations, stakeholders can implement evidence-based strategies and interventions aimed at improving student outcomes and enhancing the overall quality of education.

Given the significant positive effects of emotional intelligence and social skills on various educational outcomes, educators should prioritize the integration of socio-emotional learning (SEL) initiatives into curriculum and instructional practices. This includes providing opportunities for students to develop self-awareness, self-regulation, social awareness, relationship skills, and responsible decision-making. Implementing SEL programs and activities can foster positive socio-emotional development among students, ultimately enhancing their interpersonal relationships, collaborative skills, and overall well-being.

Building on the positive effects of collaborative learning on student satisfaction and academic performance, educators should create and sustain collaborative learning

environments that promote peer interaction, teamwork, and knowledge sharing. This can be achieved through the design of group projects, cooperative learning activities, peer tutoring programs, and other collaborative pedagogical approaches. By fostering a culture of collaboration and collective learning, educators can enhance student engagement, motivation, and achievement across diverse academic disciplines.

The significant positive effects of engagement on collaborative learning and student satisfaction underscore the importance of fostering active engagement among students in the learning process. Educators should implement instructional strategies that promote active learning, critical thinking, and student participation, such as problem-based learning, inquiry-based learning, flipped classrooms, and experiential learning activities. By engaging students in meaningful and relevant learning experiences, educators can enhance their motivation, satisfaction, and academic performance.

Recognizing the multifaceted nature of student success, educators and policymakers should adopt a holistic approach to student support that considers factors beyond academic achievement. This includes addressing students' social, emotional, physical, and psychological well-being through comprehensive support services, counseling programs, health and wellness initiatives, and extracurricular activities. By supporting students' holistic development, educators can create inclusive and supportive learning environments that empower students to thrive academically, socially, and emotionally.

Finally, stakeholders should invest in ongoing professional development opportunities for educators to equip them with the knowledge, skills, and resources necessary to implement evidence-based practices that support student success. This includes providing training and workshops on topics such as socio-emotional learning, collaborative pedagogy, student engagement strategies, and holistic student support approaches. By investing in the professional growth of educators, educational institutions can ensure that teachers are equipped to meet the diverse needs of students and create positive learning experiences that foster academic achievement and well-being.

In conclusion, the hypotheses testing results provide actionable recommendations for promoting student success and enhancing the overall quality of education. By implementing these recommendations, educators, policymakers, and stakeholders can create supportive, engaging, and inclusive learning environments that empower all students to reach their full potential academically, socially, and emotionally.

5.3 Limitation and Further Study

While the hypotheses testing results offer valuable insights into the relationships between key variables within the structural model, several limitations underscore areas for future research. Future studies could benefit from a more rigorous examination of measurement validity and reliability, potentially refining or developing new instruments to better capture complex constructs. Additionally, considering contextual factors and generalizability is crucial, as focusing on specific settings or demographic groups may limit broader applicability. Longitudinal investigations are warranted to elucidate temporal dynamics, while exploring mediating and moderating factors can provide deeper insights into underlying mechanisms influencing educational outcomes. Addressing these limitations and pursuing further inquiry can advance our understanding of educational dynamics and inform evidence-based practices supporting student success and well-being.

References

Aarti, A., & Kadian, R. (2022). Modeling academic performance through personality traits, self-efficacy, disaffection among university students. *Journal of Applied Research in Higher Education. Advance Online Publication.* https://doi.org/10.1108/JARHE-05-2022-0133

Adeyomo, D. (2007). Moderating influence of emotional intelligence on the link between academic self-efficacy and achievement of university students. *Psychology Developing Societies, 19*(2), 199-213.

Al-rahmi, W. M., Othman, M. S., & Musa, M. A. (2014). The Improvement of Students' Academic Performance by Using social media through Collaborative Learning in Malaysian *Higher Education. Asian Social Science, 10*(8), 210-221.

Al-Rahmi, W., Othman, M., Mi Yusuf, L., & Alhaji Musa, M. (2015). Using social media as a Tool for Improving Academic Performance through Collaborative Learning in Malaysian Higher Education. *Review of European Studies, 7*(3), 265-275 https://doi.org/10.5539/res.v7n3p265

Arbuckle, J. (1995). *AMOS: Analysis of moment structures user's guide.* Small Waters.

Ashwin, P., & McVitty, D. (2015). *The Meanings of Student Engagement: Implications for Policies and Practices*. Springer. https://doi.org/10.1007/978-3-319-20877-0_23

Bar-On, R. (2006). The Bar-On model of emotional-social intelligence (ESI). *Psicothema, 18*, 13-25.

Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 136-162). Sage.

Darawong, C., & Widayati, A. (2022). Improving student satisfaction and learning outcomes with service quality of online courses: evidence from Thai and Indonesian higher education institutions. *Journal of Applied Research in Higher Education, 14*(4), 1245-1259. https://doi.org/10.1108/JARHE-02-2021-0074

Feng, D., Xiang, C., Vongurai, R., & Pibulcharoensit, S. (2022). Investigation on Satisfaction and Performance of Online Education Among Fine Arts Major Undergraduates in Chengdu Public Universities. *AU-GSB E-JOURNAL, 15*(2), 169-177. https://doi.org/10.14456/augsbejr.2022.82

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39-50.

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School Engagement: Potential of the Concept, State of the Evidence. *Review of Educational Research, 74*(1), 59-109. https://doi.org/10.3102/00346543074001059

Gresham, F. M., & Elliot, S. N. (2008). *Social Skills Improvement System: SSIS Rating Scales*. Pearson.

Hair, J., Black, W., Babin, B., Anderson, R., & Tatham, R. (2006). *Multivariate Data Analysis* (6th ed.). Pearson Education.

Hamdzah, N. L. A., & Syed Najmuddin, S. H., & Hassan, R. (2016). Examining The Level of Emotional Intelligence Among Semester One Students in Universiti Teknologi Mara Pahang. *Journal of Human Capital Development, 9*(1), 33-46.

Johnson, D. W., & Johnson, R. T. (2013). The impact of cooperative, competitive, and individualistic learning environments on achievement. In J. Hattie & E. Anderman (Eds.), *International handbook of student achievement* (372-374). Routledge

Johnson, D. W., Johnson, R. T., & Smith, K. A. (2007). The state of cooperative learning in postsecondary and professional settings. *Educational Psychology Review, 19*(1), 15-29.

Kirschner, P., Sweller, J., Kirschner, F., & Zambrano, R. J. (2018). From Cognitive Load Theory to Collaborative Cognitive Load Theory. *International Journal of Computer-Supported Collaborative Learning, 13*(2), 213-233. https://doi.org/10.1007/s11412-018-9277-y

Kuh, G., Kinzie, J., Buckley, J., Bridges, B., & Hayek, J. (2006, July). *What Matters to Student Success: A Review of the Literature.* National Postsecondary Education Cooperative. https://nces.ed.gov/npec/pdf/kuh_team_report.pdf

Lizzio, A., Wilson, K., & MacKay, L. (2008). Managers' and subordinates' evaluations of feedback strategies: The critical contribution of voice. *Journal of Applied Social Psychology, 38*(4), 919-946. https://doi.org/10.1111/j.1559-1816.2008.00332.x

Mehta, S., & Singh, N. (2013). Development of the Emotional Intelligence Scale. *International Journal of Management & Information Technology, 8*(1), 1252-1264. https://doi.org/10.24297/ijmit.v8i1.689

Milburn, K. M. (2011). *Experiences Of High-Achieving High School Students Who Have Taken Multiple Concurrent Advanced Placement Courses* [Unpublished Doctor's Thesis]. Drake University.

Nikou, S., & Maslov, I. (2023). Finnish university students' satisfaction with e-learning outcomes during the COVID-19 pandemic. *International Journal of Educational Management, 37*(1), 1-21. https://doi.org/10.1108/IJEM-04-2022-0166

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric Theory* (3rd ed.). McGraw-Hill.

OECD. (2016). *Education in China: A SNAPSHOT.* https://www.oecd.org/china/Education-in-China-a-snapshot.pdf

Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Sage Publications.

Prince, M. (2004). Does Active Learning Work? A Review of the Research. *Journal of Engineering Education, 93*, 223-231. http://dx.doi.org/10.1002/j.2168-9830.2004.tb00809.x

Ramsden, P. (2003). *Learning to teach in higher education* (2nd ed.). Routledge Falmer.

Said, M. A., Idris, M., & Hussain, S. (2018). Relationship between Social Behaviour and Academic Performance of Students at Secondary Level in Khyber Pakhtunkhwa. *Pakistan Journal of Distance & Online Learning, 4*(1), 153-170.

Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies: An Interdisciplinary Forum on Subjective Well-Being, 3*(1), 71-92. https://doi.org/10.1023/A:1015630930326

Selwyn, N., & Grant, L. (2009). Researching the realities of social software use: An introduction. *Learning, Media and Technology, 34*(2), 79-86. http://dx.doi.org/10.1080/17439880902921907

Sirin, S. R. (2005). Socioeconomic status and academic achievement: A meta-analytic review of research. *Review of Educational Research, 75*(3), 417-453. https://doi.org/10.3102/00346543075003417

Soper, D. S. (2023). *A-priori Sample Size Calculator for Structural Equation Models [Software].* www.danielsoper.com/statcalc/default.aspx

Spence, S. H. (2003). Social skills training with children and young people: Theory, evidence and practice. *Child and Adolescent Mental Health, 8*(2), 84-96. https://doi.org/10.1111/1475-3588.00051

Studenmund, A. H. (1992). *Using Econometrics: A Practical Guide.* Harper Collins.

Subhi, T., Neber, H., Linke, S., Hava, E., Zeidner, M., Matthews, G., Roberts, R., & Yamin, T. (2012). What We Know about Emotional Intelligence: How it Affects Learning, Work, Relationships, and Our Mental Health. *Gifted and Talented International, 27*(1), 161-166. https://doi.org/10.1080/15332276.2012.11673624

Szekely, E. (2023). The National College Entrance Examination in China (Gaokao): A Discreet Driver for Global Social Change. In P. Nesbitt-Larking, C. Kinnvall, T. Capelos, & H. Dekker (Eds.), *The Palgrave Handbook of Global Social Change* (pp.1-21). Palgrave Handbook. https://doi.org/10.1007/978-3-030-87624-1_244-1

Tawafak, R., Romli, A., & Juma, M. (2019). Student Assessment Feedback Effectiveness Model for Enhancing Teaching Method and Developing Academic Performance. *International Journal of Information and Communication Technology Education, 15*(3), 75-88. https://doi.org/10.4018/IJICTE.2019070106

Trinh, G. T. T. (2023). Examining the impacts of out-of-class student engagement on student competencies in the context of business students in Vietnam – evidence from universities in Hanoi. *Journal of Applied Research in Higher Education. Advance Online Publication, 6*(2), 446-468. https://doi.org/10.1108/JARHE-09-2022-0297

Valverde-Berrocoso, J., Acevedo-Borrega, J., & Cerezo-Pizarro, M. (2022). Educational Technology and Student Performance: A Systematic Review. *Frontiers in Education, 7*, 916502. https://doi.org/10.3389/feduc.2022.916502

Vongurai, R. (2024). An Empirical Investigation of Factors Influencing Innovation and Organizational Performance among Logistics and Supply Chain Organizations in Thailand. *Journal of Distribution Science, 22*(2), 1-10. https://doi.org/10.15722/jds.22.02.202402.1

Wang, M.-T., & Holcombe, R. (2010). Adolescents' perceptions of school environment, engagement, and academic achievement in middle school. *American Educational Research Journal, 47*(3), 633-662. https://doi.org/10.3102/0002831209361209

Wegner, C., Minnaert, L., & Strehlke, F. (2013). The importance of learning strategies and how the project 'Kolumbus-Kids' promotes them successfully. *European Journal of Science and Mathematics Education, 1*(3), 137-143.

Wentzel, K. R., Donlan, A., & Morrison, D. (2012). Peer relationships and social motivational processes. In A. M. Ryan & G. W. Ladd (Eds.), *Peer relationships and adjustment at school* (pp. 79-105). IAP Information Age Publishing.

Wormington, S., Corpus, J., & Anderson, K. (2012). A person-centered investigation of academic motivation and its correlates in high school. *Learning and Individual Differences, 22*(4), 429-438. https://doi.org/10.1016/j.lindif.2012.03.004

Yılmaz, A. (2021). The Effect of Technology Integration in Education on Prospective Teachers' Critical and Creative Thinking, Multidimensional 21st Century Skills and Academic Achievements. *Participatory Educational Research (PER), 8*(2), 163-199. http://dx.doi.org/10.17275/per.21.35.8.2

Zimmerman, B. J., & Schunk, D. H. (2011). Self-regulated learning and performance: An introduction and an overview. In B. J. Zimmerman & D. H. Schunk (Eds.), *Handbook of self-regulation of learning and performance* (pp. 1-12). Routledge/Taylor & Francis Group.