

The Assessment of Critical Thinking Skills in Secondary School Students in Saudi Arabia

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ABSTRACT

The assessment of critical thinking skills in secondary school students in Saudi Arabia involves evaluating their ability to analyze, synthesize, and evaluate information. Various methods are employed, including traditional exams, project-based assessments, and scenario-based tasks. Traditional exams may include questions that require students to apply logic and reasoning, while project-based assessments assess their ability to solve real-world problems. Scenario-based tasks present students with situations where they must make informed decisions, encouraging critical thinking. Additionally, group discussions and debates are utilized to gauge their capacity for reasoned argumentation. Educators often use rubrics to evaluate students' thought processes and the depth of their analyses. Challenges in this assessment process may include cultural influences on critical thinking styles, language barriers, and varying educational backgrounds. Therefore, it's crucial to design assessments that consider these factors and promote a holistic understanding of critical thinking skills. Continuous professional development for teachers and the integration of critical thinking across the curriculum are essential for fostering these skills. Overall, a multifaceted approach ensures a comprehensive evaluation of critical thinking skills in Saudi Arabian secondary school students, preparing them for the complexities of the modern world. The assessment of critical thinking skills in secondary school students in Saudi Arabia employs diverse methods, encompassing exams, projects, and discussions. These evaluations gauge students' abilities to analyze, synthesize, and evaluate information. Exam questions are crafted to test logical reasoning, while project-based assessments measure problem-solving in real-world scenarios. Group discussions and debates assess students' reasoned argumentation, promoting critical thinking. Rubrics provide a structured evaluation framework, ensuring consistency. Cultural influences, language barriers, and diverse educational backgrounds pose challenges. Adaptable assessments considering these factors are crucial. Continuous professional development for educators and integrating critical thinking across curricula enhance skill development. A holistic approach ensures comprehensive evaluations, preparing students for the complexities of the modern world.

Keywords: assessment, critical thinking, secondary school, Saudi Arabia, diverse methods, challenges, continuous professional development.

INTRODUCTION

The application of critical thinking (CT) in education facilitates the development of students' ability to comprehend and engage in analytical discourse and problem-solving activities.

During academic activities within a classroom setting, both students and professors may engage in intellectual discourse and initiate a debate. The acquisition and utilisation of CT talents can enhance an individual's performance in their routine tasks, enabling them to assume additional responsibilities. In his seminal work published in 1970, titled "Pedagogy of the Oppressed," Paulo Freire emphasised education's crucial role in resisting and challenging systems of oppression and subjugation. The individual held the belief that education has the potential to empower individuals who are marginalised or oppressed. Emancipation is attained through the facilitation of "dialogue," wherein the student assumes an active role in the educational journey, and the instructor places significance on their perspectives and contributions. The learner and the instructor are afforded exceptional opportunities for learning and development.

Henry Giroux emerged as a prominent figure within the realm of critical theory, particularly in the context of learning and education in the United States. In Giroux's seminal study conducted in 1978, it was discovered that children engage in active learning processes about culture, science, and the history of humanity. Brookfield (2005) asserts that the incorporation of critical thinking in the field of education holds significant importance. This educational approach equips students with the necessary skills to effectively navigate and adapt to unpredictable circumstances and successfully navigate the rapid shifts in social, economic, and technological landscapes. "The application of critical thinking skills aids students in acquiring and evaluating novel information" (Rodzalan and Saat, 2017). As mentioned earlier, the talents possess numerous applications and benefits beyond the confines of an educational setting. In order to cultivate critical thinking skills, it is imperative to incorporate this cognitive process into various aspects of academic endeavours, such as courses, projects, collaborative work, and individual assignments.

Governments prioritise basic and secondary school education (Topping, 2011; Dinham and Rowe, 2008). Many attempts to improve educational results have focused on critical thinking (CT) skills. Despite the significance of CT capabilities, the Kingdom of Saudi Arabia has yet to take steps to adopt these advances. The Saudi Ministry of Education and education professionals have expressed worry over secondary school pupils' academic performance (Moshashai and Bazoobandi, 2020). The Saudi Ministry of Education aims to strengthen and progress the education industry through enhancing student and instructor skills. Saudi Arabia has allotted more funding to improve social and economic areas. This additional funding has allowed educational programmes to explore and implement innovative and effective development initiatives. Information systems, professional staff, and information technology in education and training have dominated previous initiatives (Tayan, 2017).

Education Policy in Saudi Arabia

The Saudi educational system requires formal schooling from six to eighteen years old. This educational trip has four stages. Children start formal schooling at six in elementary school. From 6 to 12, students learn basic topics in this school era. After that, students attend middle school, usually 13–15. Middle school bridges elementary and secondary schooling. After middle school, students attend high school for their last years of obligatory education, usually from 16 to 18. The high school offers a more focused and comprehensive education to prepare pupils for college or the job. This educational trajectory from elementary to middle school to high school equips children with the information and skills to succeed in further education or the

workforce. Upper high school has two specialisations: sciences and humanities (Al-Shumaimeri, 1999). Gender segregation begins in fourth grade and continues through high school.

Additionally, only female teachers may teach in girls' schools and only male teachers in boys' schools. Saudi Arabian education policy aims to match education at all levels with the nation's socio-economic and cultural needs (Alshaer, 2008). Saudi Arabian education strategy aims to provide students with modern information and skills for national and global developments. The Saudi government recognises education's importance in infrastructure development. Thus, their five-year, ten-year, and Vision2030 strategic plans include social and economic growth (Vision2030, 2017). However, cultural and political issues have limited Saudi Arabia's education strategy, leading to a more conservative approach. The condition has limited pupils' cognitive processes, moral standards, and critical thinking.

Al-Zahrani (2017) examined the advantages of computer technology (CT) in English language instruction for non-native students. The study also addressed the possible problems and complications of incorporating computational thinking into language learning. Al-Zahrani's study examined instructors' roles in achieving her research goals. The researcher used qualitative research methods, including in-depth interviews, to get specific information. Students studying English as a second language will be assessed for critical thinking skills. The study found many impediments to student critical thinking. These challenges include traditional teaching methods, large class sizes, insufficient support from school administrators and teachers in promoting critical thinking skills, and a curriculum that emphasises memorisation over understanding. The research focused on King Abdul Aziz University and Arab Open University students' demographics. Only qualitative research was used in all three investigations. This study compares student and instructor critical thinking. A complete research process includes quantitative and qualitative assessment. The research is important since students provided significant insights. These insights help educational directorates and the Ministry of Education provide perspective.

METHODS

This study focuses on addressing students' abilities in critical thinking using a different approach involving 25 items developed by Stupple and colleagues (2017). Quantitative researchers follow the laws of natural sciences, relying on impartiality and reality. The interpretive model uses induction to draw general principles or hypotheses from particular observations or facts. The positivist paradigm uses empirical data to assess and validate hypotheses or ideas. Depending on the research scope and goals, this literature review examines how quantitative and qualitative research methods may be used to study critical thinking. To understand how the researcher interpreted critical thinking in the national curriculum, interviews were conducted.

It should be noted that this research used mixed methods. The quantitative study focuses on "El-Riyadh City high school Students."

Additionally, their professors participated in the qualitative section. Lockdown procedures during the Coronavirus epidemic made it impossible to obtain a representative sample from educational institutions and their students. The researcher created an online questionnaire

hyperlink for the principal to send to students' parents through email to solve the issues of spreading the survey form.

The current research used a survey design to collect quantitative data from a student sample. Within a given duration, surveys collect data from a large population, including people, educational institutions, and other organisations. The researcher in this study has used a survey to determine what characteristics affect high school students' critical thinking. The researcher also wanted to study how students' personalities affect critical thinking. This research used complex statistical methods, including multiple regression analysis, to examine the connection between students' critical thinking growth and their background factors. This investigation utilised a closed-ended questionnaire that underwent thorough verification and validation processes. In order to respond to the inquiries, participants utilised a Likert scale that consisted of various options such as strongly disagree, Disagree, Neutral, Agree, and Strongly Agree. A structured interview protocol was created to learn educators' perspectives on critical thinking, how students learn it, and how to integrate it into educational policies and the national curriculum.

The study tool's pre-test helps researchers find and fix data errors. A pre-test and pilot research aims to determine how well pupils understand academic terms. This clarifies questions. A total of 45 surveys were evaluated for accuracy, clarity, and student completion time. The researchers utilised multiple linear regression because the dependent variable represented a continuous variable. The development of critical thinking is assessed in this study. The dependent variable in the study, student critical thinking, was examined in connection to personal and familial background variables using multiple linear regression analysis.

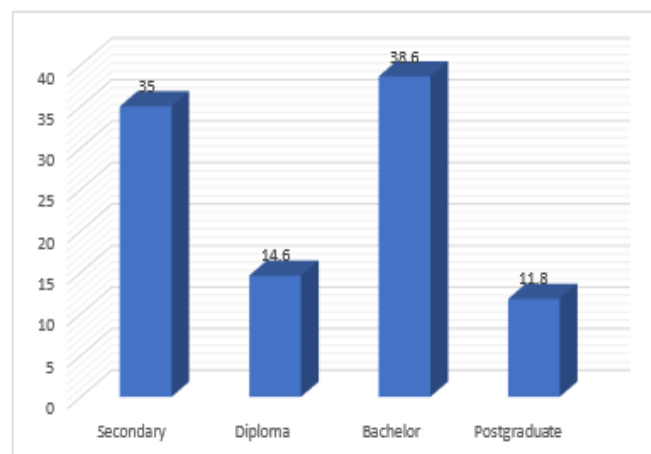
Since Arabic is the primary language of instruction in Saudi Arabia, the poll was translated from English to Arabic. After It finished, another scholar back-translated the instrument to ensure its validity and accuracy. Headteachers emailed students with their contact information and the survey form link. The Saudi Arabian three-year upper secondary school programme will distribute the questions equally among the courses. Interviews are usually done in person. This study used Microsoft Teams software for interviews due to the COVID-19 pandemic.

This study used descriptive and inferential statistics, including the Mann-Whitney test, to analyse the data. SPSS v25 was used. The Mann-Whitney test was impossible due to the three GPA groups, so the Kruskal-Wallis test was used instead. In situations where the independent variable represents more than two groups, the Kruskal-Wallis test is used so that many groups may be compared. Developing critical thinking abilities is the primary emphasis of this research (Boavista, 2017). Other studies on CT development used multiple linear regression (Stolk & Harari, 2016). All categorical factors in this study, such as "sex, GPA, year of study, speciality of studies, fathers' and mothers' educational degrees, and job status," were transformed into dummy variables. Male students are assigned a "1", and female students are assigned a "0" based on sex. The same approach was used for all other category variables in the research. The data was qualitatively analysed in three steps: interview transcription, coding, and theme analysis. The study's goals, rationale, and the students' consent to participate were included in the information packet. The paper confirmed that participation was optional and that instructors and students could stop or leave the survey and interviews anytime. The package ensured data confidentiality and compliance with data protection laws.

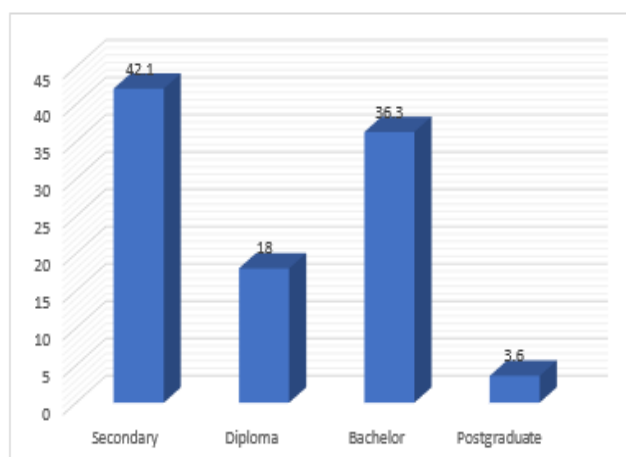
RESULTS

Quantitative Results: Survey from Students

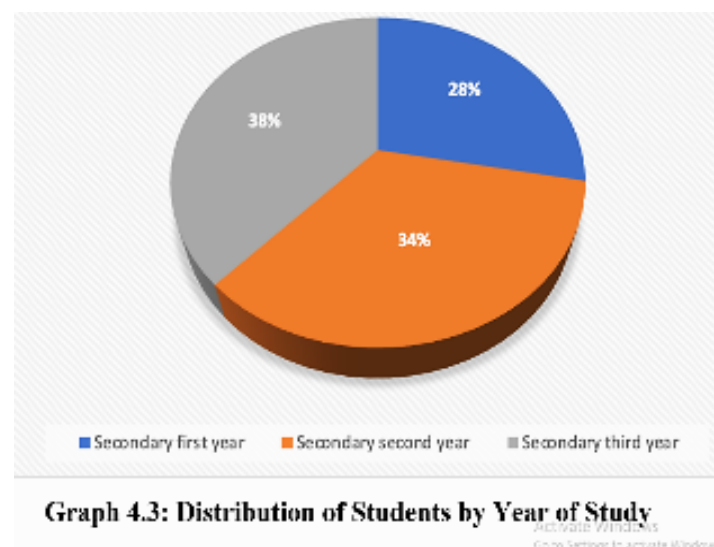
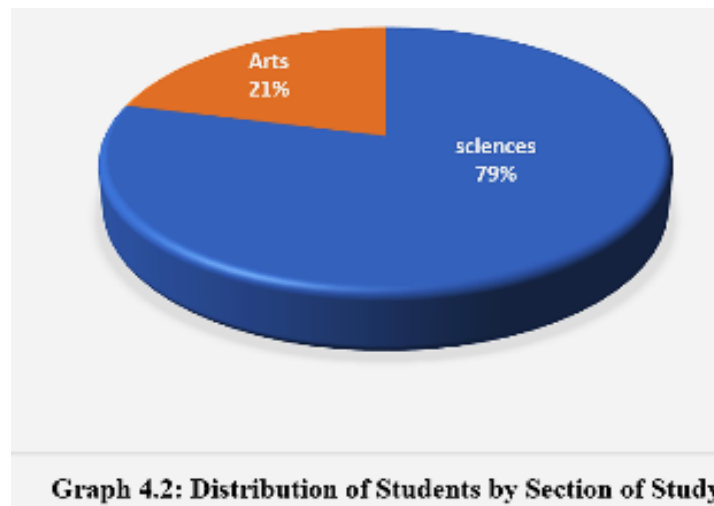
There was fifty-five per cent of male students, and forty-five per cent were female students. These results reveal no significant differences in gender participation. Chart 4.2 shows that almost seventy-nine per cent of students possess a science background, and twenty-one per cent have been from arts fields in their secondary stage. As shown by graph 4.3, Third- and First-Year students were almost high and low in numbers, respectively, while second-year students were in the middle of them. Sixty per cent of students have acquired above ninety per cent, and above 25% acquired eighty-one to ninety per cent, and the remaining have above seventy per cent. Almost both parents of students were found to equally graduate. Fathers were more employed in numbers than mothers, as shown in graph 4.5.



Graph 4.5: Distribution of Students by their Fathers' Educational Levels



Graph 4.6: Distribution of Students by their Mothers' Educational Levels



The study reveals that 52.1% of students possess critical skills to identify improper emotive language in scientific arguments. In comparison, 31.1% cannot do either. 82.3% of students have well-defined aims, suggesting that most students can think critically and independently. However, students need to be made aware of the need for critical thinking in psychological issues. They are linked to their ability to handle college without it. Over 42.2% believe critical thinking is essential for degrees, while the rest disagree. Over half of the participants can communicate critical thinking effectively through writing, while very few cannot. Approximately 42.2% believe critical thinking is a prerequisite for higher education, while 17.5% are unaware.

Students need more critical thinking abilities to finish assignments quickly, with over 80% indicating they have not developed the necessary tools. They are eager to investigate and find material beyond the classroom curriculum to help them think. Over one-third of students consider themselves competent critical thinkers. At the same time, 42.2% deliver no opinion and almost one-fourth are considered inadequate for competency. Less than half of students have critical thinking abilities to write assignments appropriately, suggesting that professors need to trust their students to think and act correctly, discouraging them from using their

knowledge in class. The findings of the study indicate that a significant number of Saudi students exhibit deficiencies in critical thinking abilities. Moreover, many of these students believe employing critical thinking skills might improve examination performance. Nevertheless, many students need help appraising novel information, evaluating arguments, and comprehending the interconnections among variables. A significant proportion of students, specifically 84.5%, possess the essential cognitive skills necessary to critically evaluate and analyse various facets of a given subject or situation, encompassing both positive and negative aspects. Conversely, a mere 5% of students need this capacity. Furthermore, it is worth noting that a significant proportion of students, specifically 36.2%, have demonstrated proficiency in critical thinking skills about reading. This finding suggests that reading capabilities are deficient among students at the secondary school level.

Most students, comprising more than two-thirds, have demonstrated proficiency in critical thinking, specifically in restating others' ideas. However, a notable minority of 19% of students acknowledge a lack of such abilities, while an additional 15.8% express uncertainty regarding their level of mastery in this regard. Notably, a significant proportion, specifically 43.3%, of students self-identify as critical thinkers within the classroom setting. Conversely, a smaller percentage, specifically 24.7%, indicate that they do not possess this attribute. However, a significant proportion of individuals, specifically 31.9%, still need to acquire the abovementioned skills. The results underscore the necessity for additional advancement in the cultivation of critical thinking abilities among students within the educational institutions of Saudi Arabia. Tables 4.2, 4.3, 4.4, and 4.5 show important correlations between critical thinking abilities, gender, GPA, and family background. Table 4.2 shows that male students in psychology have a stronger inclination towards well-defined goals and perceive critical thinking as more significant. Female students show a greater understanding of the significance of critical thinking in higher education. However, male students excel at understanding complex relationships between different variables.

Table 4.3 shows the connection between critical thinking items and GPA. Students with a GPA of 90-100 excel at recognising inappropriate emotional language. However, these students need to prioritise critical thinking in psychology. It has been observed that students with a GPA of 70-80 have better critical thinking skills. The results in Table 4.4 show that a multiple linear regression model accounted for 40.16% of the variability in critical thinking skills. Gender and maternal educational background are significant factors influencing critical thinking development. Females tend to exhibit higher proficiency, while a positive correlation exists between the mother's educational background and developing critical thinking skills. Table 4.5 shows a significant association between critical thinking skills and personal and familial background characteristics. A mother's education level positively impacts critical skill development.

Table 4.4: Model Summary⁵

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.542 ^a	.459	.416	7.77273

Table 4.5: Analysis of Variance

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1510.578	18	93.921	2.389	.000 ^b
	Residual	24286.987	402	60.415		
	Total	25797.565	420			

Table 4.6: Relationship between students' development critical thinking and their familial characteristics (Multiple Regression Coefficients)

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	75.400	3.302		22.838	.000		
Sex	1.607	.821	.102	-1.957	.047	.864	1.158
Arts and science	-.475	1.043	-.023	-.455	.649	.891	1.122
GPA 80-90	1.809	1.301	.101	1.391	.165	.445	2.249
GPA 90-100	2.231	1.188	.140	1.879	.041	.423	2.363
Secondary Qualification	5.050	4.043	.306	1.249	.212	.039	25.635
Diploma Qualification	3.083	4.194	.138	.735	.463	.067	14.978
Bachelor Qualification	4.176	4.117	.259	1.014	.311	.036	27.834
Postgraduate Qualification	3.239	4.232	.129	.765	.444	.082	12.145
Mother Diploma qualification	8.159	3.405	.511	2.396	0.01	.051	19.453
Mother Bachelor qualification	7.638	3.508	.467	2.177	.030	.051	19.666
Mother postgraduate qualification	8.253	4.311	.168	1.914	.046	.303	3.296
Father Employment	4.811	3.797	.287	1.267	.206	.046	21.971
Father unemployment	2.142	3.765	.105	.569	.570	.068	14.611
Father self-employment	3.779	3.842	.158	.984	.326	.091	10.951
Mother employment	.456	4.166	.029	.109	.913	.034	29.177
Mother unemployment	-.838	4.098	-.053	-.205	.838	.035	28.918
Mother self-employment	-3.764	4.861	-.073	-.774	.439	.262	3.819

a. Dependent Variable: Critical thinking index

Qualitative Results: Interviews with the Teachers

Teachers have proposed multiple definitions regarding the notion of critical thinking. Developing strong critical thinking skills is crucial for students to successfully tackle challenges,

engage in thorough research, and excel in their coursework. The significance of actively participating in classroom activities and engaging in collaborative education programmes resides in their capacity to facilitate student interactions, ultimately resulting in an elevated level of critical thinking. The study's results revealed that a notable challenge in promoting the development of critical thinking abilities is the teachers' restricted ability to effectively motivate and support students in actively participating in critical thinking activities. Integrating current pedagogical methods and students' need for more confidence presents difficulties in promoting the articulation and development of their viewpoints. Bullying presents a notable obstacle for students, as it frequently pressures them to conform to the viewpoints and ideologies of their peers, inhibiting their ability to engage in autonomous and critical thinking. Teachers are essential in inspiring and promoting students' growth in critical thinking skills. A safe learning environment must be created in the classroom by adapting teaching strategies and developing student confidence.

DISCUSSION

The study examined critical thinking understanding among Saudi Arabian students and teachers. The results showed that both groups had similar definitions of critical thinking, emphasising problem-solving, analysis, and decision-making skills. Students had a wider view of critical thinking, which included creativity and deep thinking. The study found that students had some critical thinking skills but needed more confidence and awareness of critical thinking's importance in psychology. The study found that female students had better critical thinking skills than male students, consistent with previous research. Higher GPAs correlate with increased development of critical thinking skills, indicating that academic performance can motivate students to engage in critical thinking. The study found that mothers' education had a greater impact on students' critical thinking skills than fathers' education. Lack of motivation among teachers and students hinders the development of critical thinking skills. The study suggested that teachers should receive specialised training. It highlighted the importance of family environments and cultural changes in fostering critical thinking. Addressing school bullying is crucial for students' self-expression and confidence. Teachers suggested different methods to promote critical thinking, such as problem-solving projects, written compositions, classroom discussions, and group discussions on social issues. The study emphasised the need for teacher training and cultural changes to promote critical thinking skills in students.

CONCLUSION AND RECOMMENDATION

Critical thinking should be included in national high school and college curricula. Education helps students develop and enhance their talents. It would enhance critical thinking skills for high school students beyond the classroom. This study proposes a teacher-training course for educators at all educational levels. These initiatives aid educators in teaching critical thinking to students and integrating it into the curriculum. This study recommends involving parents in critical thinking skill development activities. The government could promote extracurricular learning and parental involvement through a public awareness campaign. This research proposes a training plan to enhance teacher-student interaction and increase students' confidence in their education. Families and schools should avoid imposing cultural norms to promote independent and critical thinking. This study proposes improving critical thinking skills in females after high school. Gender norms limit women's potential by confining them to domestic duties, resulting in their underutilization and undervaluation. To achieve a

sustainable society, the government should encourage female employment through initiatives such as remote work and flexible hours.

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