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EMOTIONAL INTELLIGENCE AND SPIRITUAL INTELLIGENCE AS PREDICTORS OF ACADEMIC PERFORMANCE OF GRADE 10

STUDENTS IN MATHEMATICS

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ABSTRACT

Poor academic performance in mathematics has become one of the big problems worldwide. This study determined the combined significant influence of emotional intelligence and spiritual intelligence on the academic performance of Grade 10 Students in Mathematics. A non- experimental quantitative research design utilizing a descriptive-correlational approach was used in this study. A cluster sampling technique was used in the study with a target number of respondents of 200 grade 10 students. The study's findings indicate that while spiritual intelligence by itself may not be a reliable indicator of academic success, emotional intelligence—more especially, emotional management—showed a significant influence. Taken together, spiritual and emotional intelligence proved to be a powerful predictor of academic success. This implies that students who are able to effectively manage their emotions as well as those who have some degree of spiritual intelligence may typically outperform their peers in the classroom. As a result, it is already time to integrate these intelligences into the educational environment in order to create people who are fully formed on all levels—mentally, emotionally, and spiritually.

Keywords: Emotional Intelligence, Spiritual Intelligence, Academic Performance, Emotional Management.

INTRODUCTION I.

Good education is crucial to success in all other areas of life. In reality, this is where all future development and progress begins. Unfortunately, poor academic performance in mathematics has become one of the big problems all over the world since it is one of the main ways to measure how well students do in different fields. However, mathematics is used extensively in most areas, it has always been acknowledged that having mathematical knowledge and skills is an essential requirement for admission to universities and other higher education institutions. In essence, for students to advance their computational and analytical abilities, they must be proficient in mathematics (Syazana Awaludin et al., 2015).

Globally, in Gambia, West Africa, poor performance in mathematics significantly impacted students' ability to enroll in postsecondary institutions for higher education and actively participate in future national advances (Bah, 2021). Furthermore, in Nigeria, the country also experienced poor performance in their secondary school exam in mathematics which was verified that the following factors student engagement and attitudes, as well as teaching strategies math, the use of instructional resources, and educational environment are important contributing factors of low math performance among students (Abdullahi et al., 2022).

In the Philippines, education faces significant difficulties due to Filipino students' decreasing performance on national and international mathematics exams (Dacillo, 2018). In the 2019 Trends in International Mathematics and Science Study (TIMSS), the Philippines had the lowest scores out of the 58 participating countries, 297 in Mathematics and 249 in Science (Magas, 2019). Moreover, in the recent results from the 2022 Program for International Student Assessment (PISA), Filipino students are still among the least proficient in the world in math, reading, and science. The nation's performance in 2018 did not significantly improve as measured by the most current test results (Chi, 2023).

Living in the modern world requires having a strong mathematical foundation, which is especially crucial for many jobs and careers (Weißeno et al., 2016). Thus, research on mathematical achievement is crucial. Despite the severity of this issue, not much study has been done and published, particularly in the Philippines. Therefore, the conduct of this investigation was carried out.



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II. METHODOLOGY

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Respondents

The respondents of this study were the Grade 10 public junior high school students in one of the clusters in Davao City. A target of 200 sample respondents was determined by using cluster sampling. According to Sedgwick (2014), cluster sampling entails selecting a random sample from the population and inviting all participants from each chosen cluster. Creating a sample frame that includes a list of every cluster in the population is important. Randomly from this list, a sample of a predetermined number of clusters is chosen. It is a more convenient way of choosing samples from large populations to gain more effective outcomes.

Research Instrument

The respondents answered two sets of adapted and modified survey questionnaires. The first set inquired on the students' emotional intelligence that is an adapted-modified questionnaire from the San Diego City College MESA Program that is modeled on Mohapel (2015). The second set of questions inquired about the students' spiritual intelligence that is also an adapted-modified questionnaire from King (2013), the SISRI-24: The Spiritual Intelligence Self-Report Inventory. Lastly, to determine the student's academic performance level, the researcher used the student's grades in Mathematics for the second quarter. The two questionnaires used underwent validation by the experts and then pilot testing to establish reliability. The instrument's validity had an average of 4.44. The reliability, results showed that in the emotional intelligence questionnaire, the overall Cronbach alpha value is .802, which means that the equivalent internal consistency was good. On the other hand, for spiritual intelligence, results showed that the overall Cronbach alpha value is .787, which means that the equivalent internal consistency was acceptable.

Procedure

A REC certificate was obtained by the researcher before any data was collected. The principle and district supervisor were consulted after the researchers first asked the superintendent of the school division for permission. After the study's conduct was approved, the researchers worked with the grade 10 math teachers to arrange when the students would receive survey questionnaires. Additionally, because the respondents for the research were minors, the informed consent was given to the parents or guardians in person during the public school's third-quarter parents-teacher conference. The parents were told about every facet of the respondents' participation in the study during the informed consent process. Only respondents who had their parents' or guardians' signatures on their permission form were granted informed consent. All of the details of research involvement were reviewed with the respondents throughout the in-person informed consent procedure. Additionally, the minor respondents' signature serves as an index of agreement, confirming their willingness to participate in the study. The researcher distributed and collected the survey questionnaires, tabulated the results, and used the relevant statistical software to get the information required for interpretation and additional analysis.



III. MODELING AND ANALYSIS

Figure 1: Conceptual Framework of the Study



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The obtained data were analyzed, summarized, and assessed. The Pearson Product- Moment Correlation Coefficient was utilized to analyze the significant relationship among, emotional intelligence, spiritual intelligence and academic performance in mathematics of Grade 10 learners.

IV. RESULTS AND DISCUSSION

This section focuses on the findings, analyses, and interpretations of the results obtained.

Table 1. Level of Emotional Intelligence of Grade 10 Students

Indicators	Mean	Descriptive Level
Emotional Awareness	3.55	High
Emotional Management	3.60	High
Social Emotional Awareness	3.93	High
Relationship Management	3.58	High
Emotional Awareness	3.55	High
Overall	3.67	High

Table 1 shows the emotional intelligence of Grade 10 students in terms of emotional awareness, emotional management, social-emotional awareness, and relationship management.

The overall mean score of the emotional intelligence of Grade 10 students was 3.64. This means that the descriptive level is high and often manifested. In the study conducted by Saud (2018), where the emotional intelligence level of Saudi EFL students is high, during the learning process, students gain the ability to handle and control their own emotions and those of others. Moreover, they are experts in harnessing and managing their feelings and can discern other people's emotional requirements. Furthermore, they could control their emotions to foster constructive social connections and refrain from letting their feelings influence their actions.

In particular, among the four indicators in the emotional intelligence of the Grade 10 students, respondents perceived that social-emotional awareness has the highest mean score of 3.93 with a descriptive level of high, which means that it is oftentimes manifested. This further implies that students can freely express certain feelings toward others. Moreover, they were able to recognize and interpret mostly nonverbal signs used to communicate with each other and let the person know how others are feeling and how one's emotional state can change from time to time.

The finding is congruent with Grigoropoulos (2019), who asserted that a person with good social and emotional abilities can identify and handle their behaviors in the most constructive ways. Moreover, being socially and emotionally aware benefits students' academic success and future positive learning. Empathic interventions affect students' achievement and give educators the knowledge they need to recognize how kindness, compassion, and empathy create a successful learning environment and help students achieve success on all fronts, academically, socially, or emotionally. Thus, the integration of empathy in designing instruction can be influential in meaningful teaching-learning experiences.

The second highest indicator is emotional management, with a mean score of 3.60 and a high descriptive level, which means that it is oftentimes manifested. This implies that students have the ability to control one's own emotions and feelings in relation to others. It involves managing emotions, making decisions, achieving goals, maintaining healthy relationships, and feeling and showing empathy for others. They also have healthy coping mechanisms to regulate, manage, and assess their feelings and emotions, especially in managing stress and difficult situations.

In fact, Robertson (2021) supported that emotional regulation is vital since it promotes long-term well-being and professional performance, improves interpersonal connections, and promotes general health. In addition, Kärner and Kögler (2016) found out that students with strong emotional self-regulation skills appear to have more steady perceptions of situational understanding and interest, as well as perceptions of reflective time and the value of the learning activities which are regarded as significant and essential elements of learning and accomplishment processes. Furthermore, according to Naz (2019), students with strong emotional selfregulation skills are likely to have better social-emotional development, academic success, and behavior.



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Overall, emotional self-regulation is a component of emotional intelligence positively related to cognitive styles and interpersonal skills.

The third indicator, relationship management, garnered a second to the least among the four variables with a mean score of 3.58 or high, which means that it is oftentimes manifested. This implies that the students know how to maintain and develop harmonious relationships, inspire, communicate clearly, work well in a team, influence others, and handle conflict. They already possess soft skills critical for effective project and human resource management. They are increasingly important in the digital age and are crucial for success in any field in general.

In connection, Yahaya et al. (2012) stated that to achieve excellence in learning, it is crucial to develop good relationships or interpersonal skills since the social context in which learning happens has the capacity to either reinforce or eliminate behaviors that lead to achievement. Since social skills are vital for academic achievement, studying some social skills, such as paying attention, perseverance in one's work, and cooperation with teacher requests and directions, is advisable. Moreover, Gayathri and Meenakshi (2013) believed that good interpersonal, social, and teamwork abilities benefit a person's success in establishing positive relationships with others.

The lowest indicator is still under the description level high, which is emotional awareness, with a mean score of 3.55, which means it is oftentimes manifested. This implies that students have the capacity to detect and comprehend their moods, feelings, and impulses. Additionally, they can recognize their own emotions and how they affect their thoughts and behavior toward others, which significantly affects the development of their social adaptation.

According to Todorova (2018), emotional awareness has been found to significantly impact important life outcomes for children and adolescents, including mental and physical health, successful academic behavior and achievement, and social relationships. As revealed in the study of Iqbal et al. (2021), results showed that self-awareness of emotions helps in identifying and comprehending one's own feelings as well as others. That also includes paying attention and recognizing one's own feelings, needs, and weaknesses. Possessing these things improves students' understanding of their emotional states, improving their interpersonal interactions and continuous academic performance development. Furthermore, Smith et al. (2022) presented that people with high emotional awareness can describe detailed emotional experiences, which frequently encourages flexibility.

Indicators	Mean	Descriptive Level
Critical Existential Thinking	3.63	High
Personal Meaning Production	3.85	High
Transcendental Awareness	3.65	High
Conscious State Expansion	3.58	High
Critical Existential Thinking	3.63	High
Overall	3.68	High

Table 2. Level of Summary of the Level of Spiritual Intelligence of Grade 10 Students

Table 2 shows the spiritual intelligence of Grade 10 students in terms of critical existential thinking, personal meaning production, transcendental awareness, and conscious state expansion.

The overall mean score of the spiritual intelligence of grade 10 students is 3.68. This means that the descriptive level is high and often manifested. This means that the person could inquire to simultaneously experience the seamless connection between each of us and the environment in which we live, as well as the most fundamental issues regarding the meaning of existence (Smith, 2014). Also, the science of controlling human energy describes and directs the structure of awareness. Applying this knowledge is the secret to finding personal fulfillment and producing quality work (Anbugeetha, 2015).

In particular, among the four indicators in the emotional intelligence of the Grade 10 students, respondents perceived that personal meaning production has the highest mean score of 3.85. Based on the data result, the personal meaning production gets a mean of 3.85 with a high descriptive level, which means that it is



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oftentimes manifested. This further implies that students could define their own unique meaning and purpose in relation to all physical and mental events, including the ability to develop and achieve a life purpose.

King (2013) placed emphasis on having a high personal meaning production, which refers to the capacity to derive meaning and purpose from a wide variety of sources. A feeling of purpose is part of it, and having a personal purpose can be defined as having a reason for living, a sense of direction in life, and a sense of order in one's life. This statement substantiates the study conducted by Slezackova and Janštová (2017), which explored the connection between spiritual intelligence and positive mental health; the findings showed that the ability to create one's own unique meaning is the factor that most strongly predicts positive mental health. Moreover, the study conducted by Kasler et al. (2022) showed that among emerging adults in high-income countries, personal meaning production had become the primary determinant of life satisfaction.

The second highest indicator is transcendental awareness, with a mean score of 3.65 or high which means that it is oftentimes manifested. This implies that students recognize that there is a reality greater than themselves. They believed that interactions with others that foster a stronger bond beyond the self-lead to transcendent consciousness. Through interaction, they acquire clarity and dedication to their values, beliefs, deeds, and way of life.

King (2013) labeled that a high in transcendental awareness denotes frequent awareness of the spiritual and transcendent parts of reality and their ability to see the transcendent everywhere. As a matter of fact, Smartt (2012) described this as the ability to recognize transcendent aspects of oneself, other people, and the physical universe while one is in a regular, awake state of awareness, together with the capacity to identify their relationship to one's self and the physical. This idea concerns mental abilities that go beyond what is typical for humans. They see the broad picture or the non-material aspect of life. This perception of the spiritual aspects of existence facilitates connections that can be seen in oneself and others. Furthermore, Arnold (2018) believed that when young people reach a state of transcendent awareness, they make a commitment to developing their own personal ideals, morals, and values to serve as a compass for their everyday actions and thoughts.

The third highest indicator is critical existential thinking, with a mean score of 3.63 or high which means that it is oftentimes manifested. This implies that students had the ability to critically reflect on life's meaning and importance as well as other existential issues like reality, universe, space, and time.

According to King (2013), a high in this aspect denoted that an individual has regular consideration of existence and reality as well as the creation of novel theories and philosophies on topics such as life, death, and other issues. Zainuddin (2013) mentioned that in adolescence, young people face important concerns about the purpose and worth of life and the pursuit of personal identity. The process of coming to terms with oneself and defining oneself as an individual now takes place. Because of this, schools are there to assist students in understanding both who they are as individuals and their place in the larger society. When people have a comprehensive understanding of who they are, they are more equipped to provide meaningful and effective responses on a global scale.

The lowest indicator is conscious state expansion, with a mean score of 3.58 or high which means that it is oftentimes manifested. This implies that students had the capacity to shift between higher or spiritual states of consciousness freely. This indicates a more intense level of perception and comprehension.

One who possesses this ability may be able to control the manner in which they join a cosmic union, which results in a tranquil or spiritual frame of mind (Smartt, 2012). As stated by King (2013), a high conscious state expansion refers to the ability to have complete control over entering and leaving a higher spiritual state of consciousness. Higher consciousness is the word used to describe a state of enhanced awareness and observation that enables people to comprehend reality more fully. These mental states elevate consciousness above self-interest. This indicates that a person who has accomplished a high level of conscious state expansion has the power to freely enter a state of heightened awareness or spiritual consciousness.

Moreover, Roberts (2018) specified that it had been established those human capacities, as well as human deficiencies, are connected to one or more states of consciousness. This means that each capability is more robust in certain states of consciousness than in others. Achieving a high level of conscious state expansion can have a number of benefits, some of which include better feelings of tranquility and clarity, as well as a higher sense of connectedness to the world around us.



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Table 3. Academic Perform	mance of Grade 10 Students in t	he Second Quarter
Mathematics Achievement	Mean	Descriptive Level
second quarter grade	3.09	Moderate

Table 3 shows the academic performance of the grade 10 students in the first quarter.

In terms of quarterly grade, it garnered a mean score of 3.38, described as moderate, with a K to 12 grade standard descriptor being satisfactory. In addition, this means that students' performance in mathematics which is also described in K to 12 grading system indicators, grading scale, and remarks on their quarterly grade as per this, was indicative of acceptable achievement.

Society views Mathematics as a widely regarded foundation of scientific and technological knowledge, making it an indispensable subject for the development of a nation's economy and social structure. In point of fact, a variety of findings from studies demonstrate that mathematics as a subject has an impact on every area of human existence (Ayebale et al., 2020). The result is in consonance with the study conducted by Ectuban et al. (2019) in Cebu City; results showed that the academic grades of the Grade 10 students fall under satisfactory level. According to the data, there is significant room for advancement in the manner in which respondents performed on the mathematics topic. In order to improve the overall performance of the students, it is necessary to address problems with the way the subject is taught. In addition, they suggested that students' success in mathematics, as evidenced by the grades they received, is affected by a variety of circumstances. This was indicated by the grades that the students achieved. One of the various aspects is the affective qualities of the students, which center on the students' study habits and attitudes.

Table 4. Combined Significant Influence of Emotional Intelligence and Spiritual Intelligence on Academic

 Performance of Grade 10 Students in Mathematics

	Academic Performance of Grade 10 Students in Mathematics					
Rp		p-value	Decision on Ho @ 0.05 level of significance	Interpretation		
Emotional Intelligence	0.204	0.004	Reject Ho	Significant		

Table 4 is the overall relationship between emotional intelligence and the academic performance of the grade 10 students in mathematics. The result generated an r-value of 0.024 with a p-value of 0.004 which is lesser than 0.05 in the level of significance, indicating a significant relationship and low positive correlation. This indicates rejection of the null hypothesis. Further, this means a significant relationship exists between emotional intelligence and the academic performance of grade 10 students in mathematics.

The result above agrees with the study conducted by Ugwuanyi et al. (2020) at Nigeria University, wherein the findings demonstrated that students' academic success in mathematics was significantly predicted by emotional intelligence, self-esteem, and self-efficacy. As a result, students' emotional intelligence, self-esteem, and sense of self-efficacy are key factors in determining how well they do in arithmetic. The use of teaching strategies that will improve students' emotional intelligence, self-esteem, and self-efficacy is recommended.

In addition, in the study conducted by Obilor and Gift (2020), the findings demonstrated that students' performance in mathematics in Rivers State public secondary schools was significantly influenced by emotional intelligence and its indicators, such as self-awareness, self-regulation, motivation, empathy, and social skills. Thus, to enrich the current Mathematics curriculum and improve students' performance in the subject, emotional intelligence characteristics should be considered while developing educational curricula.

Additionally, in the study conducted by Madu et al. (2020), results showed that there was a substantial positive association between the emotional intelligence components and students' arithmetic success and that both the



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individual and combined effects of the components contributed considerably to the variation in students' math achievement. Therefore, it is evident that students who succeed in their academic endeavors adopt a more proactive stance when acquiring emotional intelligence skills. This suggests that schools should promote good teaching about emotional self-awareness as well as the emotional needs of their students. As Chamundeswari (2013) mentioned, it is evident that students with higher emotional intelligence score better than those with lower emotional intelligence. This implies that emotional intelligence is important in academic success, mental and physical health, and achieving the fullest development of humanity.

Table 5. Significance on the Relationship between Spiritual Intelligence and Academic Performance of Grade 10Students in Mathematics

	Academic Performance of Grade 10 Students in Mathematics				
R		p-value	Decision on Ho @ 0.05 level of significance	Interpretation	
Spiritual Intelligence	0.066	0.357	Failed to reject Ho	Not Significant	

Table 5 is the overall relationship between spiritual intelligence and the academic performance of the grade 10 students in mathematics. The result generated an r-value of 0.066 with a p-value of 0.357 greater than 0.05 in the significance level, indicating no significant relationship and low positive correlation. This signifies acceptance of the null hypothesis. Further, this means that there is no significant relationship between spiritual intelligence and the academic performance of grade 10 students in mathematics.

The result is similar to the study conducted by Sharma (2019) among Somali students in India, wherein the findings indicated no relationship between academic performance and spiritual intelligence. Moreover, this claim supports the study of Smartt (2012), who concluded that, based on the study's findings, there was no significant correlation between students' scholastic achievement as measured by the composite score on the American College Test (ACT) and spiritual quotient as measured by the total score on the Spiritual Intelligence Self-Report Inventory-24 (SISRI-24).

However, the findings of the present study are in contrast to Azizi and Zamaniyan's (2013) research, which indicated a substantial relationship between students' spiritual intelligence and their metacognitive and social strategies as they are linked to their academic achievement. Thus, findings support that students' academic success is significantly influenced by their spiritual intelligence. The results gave a chance to consider how, in addition to intelligence, spiritual intelligence is crucial for young people's academic performance and psychological well. Developing spiritual intelligence in young people may help them face the problems of the modern world with courage and faith that leads to fostering self-awareness, empathy for others, and comprehension of the larger effects of their behavior and actions on themselves, other people, and the entire world.

Table 6. Combined Significant Influence of Emotional Intelligence and Spiritual Intelligence on AcademicPerformance of Grade 10 Students in Mathematics

Academic Performance in Mathematics							
	Unstand Coeffi	ardized cients	Standardized Coefficients				
Independent Variables	В	Std. Error	Beta	Т	Sig.	Decision on H ₀	Interpretation
Constant	1.613	.672		2.400	.017		
Emotional Intelligence	.444	.160	.199	2.781	.006	Reject	Significant

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Spiritual Intelligence	.038	.131	.021	.293	.770	Fail to Reject	Not Significant	

R = .205; R² = .042; F-value = 4.308; p-value = .015

Table 4 shows the overall relationship between emotional intelligence, spiritual intelligence, and academic performance of grade 10 students in mathematics.

The result above generated an F-value of 4.308 with a p-value of 0.015 which is lesser than 0.05 in the level of significance, indicating a combined significant influence of emotional intelligence and spiritual intelligence on the academic performance of grade 10 students in mathematics. This indicates rejection of the null hypothesis. Further, this means that there is a combined significant influence between emotional intelligence, spiritual intelligence, and academic performance of grade 10 students in mathematics. As a result, there is a combined significant influence with the student's academic performance in Mathematics. Therefore, the study rejects the null hypothesis. However, only 4.2 percent of the given variables influence the academic performance of the students, while there are various factors that have contributed to 95.8 percent of the variation that affects the emotional and spiritual intelligence of students on their academic performance in mathematics that could not have in the variable given as predictor.

The outcome mentioned above aligns with the findings of the research done by Turi et al. (2020), wherein the results demonstrated a substantial and significant association between emotional intelligence, spiritual intelligence, and academic achievement; emotional and spiritual intelligence is predictive of academic success among students. The findings make it abundantly clear that the constructs of emotional intelligence and spiritual intelligence that were selected provide an effective measurement of the academic performance construct. Because of this, there needs to be a greater integration into the routines, practices, and culture of the academic setting.

The same findings were found by Azizollah (2013) at the University of Isfahan that there is a substantial link between the academic success of students and the degree to which they have developed their emotional and spiritual intelligence. As a result of this, the findings suggest that one strategy for increasing students' academic achievement is to work on building their emotional and spiritual intelligence. An atmosphere that is rich in educational opportunities and leads to better academic success can encourage revolt.

In general, this study's results emphasize considering emotional and spiritual intelligence in the teachinglearning process since these variables can affect students' academic performance. It is already time to embrace this intelligence in the school setting to build holistically well-developed individuals- mentally, emotionally, and spiritually. To create a more holistic and inclusive educational environment by incorporating emotional and spiritual intelligence into the teaching-learning process. Teachers can use strategies such as mindfulness, meditation, and reflective practices to help students develop this intelligence.

V. CONCLUSION

Based on findings, it is concluded that emotional intelligence and spiritual intelligence can be predictors of students' academic success. The outcomes demonstrated that emotional and spiritual intelligence are good indicators of academic performance. Schools should provide a favorable learning environment to facilitate the assimilation of implicit and explicit knowledge. Thus, this study showed the importance of taking emotional and spiritual intelligence into account in the teaching-learning process because these factors can impact academic success. It is already time to integrate this intelligence into the educational environment to create people who are fully formed on all levels—mentally, emotionally, and spiritually.

The following recommendations are made based on the conclusions drawn from the study: (1) provide courses or workshops that concentrate on enhancing emotional intelligence abilities like empathy, self-control, selfawareness, and social skills, in a similar vein, support endeavors that augment spiritual intelligence, such as cultivating a feeling of meaning, purpose, and interdependence; (2) integrate notions of Spiritual Intelligence and Emotional Intelligence into the academic curriculum in a variety of topic areas; (3) give educators the chance to grow professionally so they can improve their own emotional and spiritual intelligence; (4) promote a culture at the school where academic success is valued alongside personal and spiritual development, establish open dialogue, mindfulness exercises, and chances for students to consider their values and feelings; (5) inform parents on the value of emotional intelligence and spiritual intuition in achieving academic



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achievement and offer workshops or tools to help families foster their kids' spiritual and emotional growth at home; and (6) keep an eye on how EI and SI programs are affecting students' wellbeing and academic achievement in order to maximize efficacy, programs should be modified in response to feedback and study findings.

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