

THE IMPACT OF KNOWLEDGE ON STUDENTS' TRAFFIC AWARENESS AT JUNIOR HIGH SCHOOLS IN PANGKALAN KURAS DISTRICT

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ABSTRACT

This study investigates the effect of students' knowledge on traffic awareness among junior high school students at SMP Negeri Sorek Dua, Pangkalan Kuras, Pelalawan, Riau. A quantitative descriptive design was employed using total sampling of 224 students (Grades VII–IX). Data were collected via two Likert-scale questionnaires (16 items for knowledge; 16 items for awareness). Instrument quality was confirmed through item validity testing and reliability analysis (Cronbach's $\alpha = 0.873$ for knowledge; 0.862 for awareness). Assumption checks indicated normal data distribution and a linear relationship between variables. Descriptively, students' traffic knowledge was high (mean score = 84.2), and traffic awareness was good (mean score = 81.5). Simple linear regression showed significant effect of knowledge on traffic awareness. There is 79% of the variance in awareness is explained by knowledge, with the remaining 21% attributable to other factors. These findings highlight the central role of cognitive understanding in shaping safe traffic behavior. Practically, integrating traffic safety content into Social Studies (IPS), coupled with experiential activities (simulations, role-play) and reinforcement through school patrol (PKS), is recommended to transform knowledge into consistent safe practices.



INTRODUCTIONS

Education holds a strategic role in shaping individuals who are not only intellectually capable but also socially conscious. Within the context of Indonesia's education system, Social Studies (*Ilmu Pengetahuan Sosial* or IPS) at the junior high school level serves to instill values, norms, and social skills that are relevant to students' everyday lives. This objective aligns with Law No. 20 of 2003 concerning the National Education System, which states that education aims to develop learners' potential to become faithful, knowledgeable, creative, independent, and responsible citizens. As part of the school curriculum, Social Studies plays a pivotal role in fostering students' social character, enhancing their understanding of social realities, and cultivating critical thinking skills to address societal challenges (Sapriya, 2017).

One concrete manifestation of Social Studies values in real life is traffic awareness. Traffic spaces serve as arenas of social interaction that require discipline, compliance with regulations, and civic responsibility. Traffic awareness is therefore a crucial aspect of ensuring public safety and order on the road. According to Albert Bandura's Social Cognitive Theory (2004), human behavior is influenced by reciprocal interactions between internal factors (knowledge), the environment, and behavior itself. Thus, knowledge of traffic rules and ethics constitutes an essential foundation for fostering orderly behavior in public spaces.

However, the rapid increase in the number of motor vehicles in Indonesia has not been accompanied by a comparable rise in traffic awareness, particularly among adolescents. Traffic accident cases involving students, especially those at the junior high level, have shown an alarming upward trend. Data from Pusiknas Polri (2025) indicate that 133,811 drivers under the age of 17 were involved in traffic accidents, resulting in 5,711 fatalities. In Riau Province, individuals aged 5–24 years accounted for the highest proportion of accident victims (Jasa Raharja Riau, 2022). These facts highlight a significant gap between students' understanding of traffic regulations and their awareness of applying such knowledge in daily life.

Ideally, junior high school students, as potential active road users—whether pedestrians, cyclists, or motorcycle riders—should possess a sound understanding of traffic signs, speed limits, helmet use, and safe driving ethics. This knowledge should be acquired not only through formal education, such as Social Studies instruction, but also through socialization within the family and broader community. Nevertheless, field observations reveal that students' actual behavior often fails to reflect their cognitive understanding. Many junior high school students continue to operate motorcycles without helmets, lack driving licenses, and frequently disregard traffic signs.

In this regard, Social Studies serves a strategic function in cultivating students' traffic awareness. Through IPS learning, students do not merely acquire cognitive knowledge in subjects such as geography or history but are also expected to internalize values of responsibility, discipline, and social ethics. Hence, Social Studies becomes an effective medium for fostering traffic awareness through the integration of social and moral dimensions. This corresponds with Bloom's (1956) taxonomy of learning domains, which underscores the importance of maintaining balance among cognitive (knowledge), affective (values and awareness), and psychomotor (action) domains. Traffic awareness should therefore not only be taught as theoretical knowledge but also be internalized into daily behavior that reflects social responsibility.

Furthermore, Regulation of the Minister of Education, Culture, Research, and Technology (Permendikbudristek) No. 56 of 2022 concerning the *Kurikulum Merdeka* emphasizes that Social Studies learning should strengthen the *Profil Pelajar Pancasila* (Profile of Pancasila Students), which includes the values of cooperation, social discipline, and environmental awareness. These values are closely related to the development of students' character and awareness of traffic safety. Various studies reinforce the importance of the correlation between knowledge and awareness in traffic behavior. Hidayati and Hendrati (2016) found that low levels of traffic knowledge are associated with higher accident risks among students. Similarly, research conducted by Puspitasari (2018) and Setyowati, Firdaus, and Rohmah (2018) confirmed that traffic violations often stem from limited understanding of risks and safety principles.

The Theory of Planned Behavior (TPB), as updated by Ajzen (2020), also explains that knowledge influences behavior through the formation of beliefs, attitudes, subjective norms, and perceived behavioral control. In the context of traffic behavior, individuals with greater knowledge of risks and consequences tend to develop stronger positive attitudes and intentions to obey traffic rules. Nevertheless, Ajzen emphasized that behavioral intention does not arise from knowledge alone; it must be reinforced by social norms and perceptions of self-efficacy. This is supported by the findings of Hidayati, Kurniawan, and Lestari (2023), who discovered that students with strong traffic knowledge demonstrated higher compliance when their school environment and peer groups also encouraged disciplined behavior. Therefore, knowledge serves as a fundamental cognitive factor, but its effectiveness in shaping safe behavior is contingent upon social support and individual confidence.

Recent research has also identified knowledge as a form of social and psychological capital that nurtures awareness and moral responsibility in public spaces. Lubis and Apriani (2024) demonstrated that contextual learning in Social Studies significantly enhances students' understanding of collective safety. Likewise, Pratama and Dewi (2025) found that students with higher levels of traffic literacy tend to display greater awareness even in the absence of direct supervision. Knowledge, in this sense, transcends the traditional notion of one-way information transmission; it represents a form of social literacy that enables individuals to comprehend the interrelation between personal actions and their broader social consequences. Thus, knowledge developed through reflective and socially contextualized learning becomes the cornerstone of sustainable traffic awareness.

Nonetheless, several studies, including those by Malahayati (2019) and *Jurnal Online UNESA* (2023), reveal a contrasting phenomenon: although students may possess adequate knowledge of traffic rules, their level of awareness and discipline often remains low. Similar observations were reported by Universitas Airlangga (2018), which noted that many adolescents continue to violate traffic laws despite understanding the risks—particularly in the absence of law enforcement supervision. This persistent gap between knowledge and practice constitutes the central concern of the present study.

Field observations at SMP Negeri Sorek Dua, Pangkalan Kuras District, Riau, likewise reveal similar tendencies. Although students receive instruction on traffic topics through Social Studies and school awareness programs, their actual behavior often disregards essential safety aspects, such as wearing helmets and obeying road signs. This phenomenon reinforces the notion that knowledge has not yet been fully internalized into behavioral awareness.

Based on these realities, the present study aims to analyze the influence of knowledge on traffic awareness among junior high school students in Pangkalan Kuras District. Academically, this study seeks to contribute to the enrichment of empirical literature concerning the interrelationship between cognitive and affective aspects in Social Studies education. Practically, its findings are expected to provide recommendations for schools, Social Studies teachers, and policymakers in designing more effective learning strategies oriented toward developing socially disciplined, orderly, and responsible behavior among students in public spaces, particularly in the context of road safety.

METHOD

This research employed a quantitative descriptive approach with the aim of describing and analyzing the influence of knowledge on traffic awareness among students of SMP Negeri Sorek Dua in Pangkalan Kuras District. The study is grounded in the philosophy of positivism and utilizes numerical data obtained through the distribution of questionnaires to all active students in grades VII to IX, totaling 224 respondents, using the total sampling technique.

The research instrument consisted of a five-point Likert scale questionnaire, comprising 16 items for the knowledge variable and 16 items for the traffic awareness variable. The knowledge variable included four indicators—factual, conceptual, procedural, and metacognitive knowledge—while traffic awareness was measured through four indicators: self-awareness, social awareness, self-control, and motivation to act safely. All data were collected between October and November 2025 during school learning activities, with the researcher's supervision and official permission from the school authorities.

Data analysis was conducted using SPSS version 25 and Microsoft Excel. The first stage involved descriptive analysis to describe respondents' profiles and the levels of students' knowledge and traffic awareness. Next, a validity test was performed to ensure the consistency and accuracy of the instrument. Classical assumption tests, including tests of normality and linearity, were carried out to verify the appropriateness of the model. The final stage involved hypothesis testing using simple linear regression analysis, with the equation $Y = a + bX$, to determine the extent to which knowledge (X) influences traffic awareness (Y).

RESULT AND DISCUSSIONS

Result

The results of this study present an overview of the influence of students' knowledge on their traffic awareness. Several stages of statistical testing were conducted, as outlined below:

1. Instrument Validity and Reliability Tests

The validity test was carried out using the Pearson Product Moment correlation to assess the relationship between each item and the total score. The results showed that all items in both the knowledge and awareness variables had *r-count* values greater than *r-table* (0.138) at a 0.05 significance level, indicating that all items were valid. Hence, all questionnaire items in this study were declared valid. The reliability test, conducted using Cronbach's Alpha, is presented in Table 1 below.

Table 1. Instrument Reliability Test Results

Variable	Number of Items	Cronbach's Alpha	Criteria	Description
Knowledge (X)	16	0.873	> 0.80	Highly Reliable
Awareness (Y)	16	0.862	> 0.80	Highly Reliable

Based on the Cronbach's Alpha values shown above, it can be concluded that all variables exhibit a very high level of reliability.

2. Classical Assumption Test

Before conducting regression analysis, classical assumption tests were applied to ensure that the data met the requirements for parametric statistical analysis. The results confirmed that the data satisfied all the assumptions.

The normality test, using the Kolmogorov-Smirnov method, produced a significance value of 0.200 (> 0.05), indicating that the data were normally distributed and suitable for regression analysis. The linearity test produced a *Sig. Linearity* value of 0.000 (< 0.05) and a *Sig. Deviation from Linearity* value of 0.167 (> 0.05), suggesting a linear relationship between the knowledge and traffic awareness variables. Therefore, a simple linear regression model was deemed appropriate. The multicollinearity test showed a Tolerance value of 1.000 and a VIF value of 1.000, indicating no signs of multicollinearity, as there was only one independent variable in the model. Based on these results, all classical assumptions were met, validating the data for further regression analysis.

3. Descriptive Analysis

After confirming data quality and classical assumptions, the descriptive analysis focused on students' levels of knowledge regarding traffic rules and ethics—reflecting their understanding of road safety concepts and their levels of traffic awareness, which indicate the extent to which they apply this knowledge in real behavior.

a. Students' Knowledge Level on Traffic Rules

Table 2. Distribution of Students' Knowledge Levels

Knowledge Category	Score Range	Number of Students (n)	Percentage (%)
Very High	85–100	76	33.9
High	70–84	102	45.5
Moderate	55–69	37	16.5
Low	< 55	9	4.1
Total	—	224	100

The majority of students (79.4%) were categorized as having high to very high levels of knowledge, indicating a strong understanding of traffic signs, road markings, and the importance of safety while driving. This finding suggests

that students' cognitive aspects have been well developed through Social Studies learning and school-based traffic safety campaigns.

b. Students' Level of Traffic Awareness

Table 3. Distribution of Students' Traffic Awareness Levels

Awareness Category	Score Range	Number of Students (n)	Percentage (%)
Very Good	85–100	72	32.1
Good	70–84	95	42.4
Fair	55–69	43	19.2
Poor	< 55	14	6.3
Total	—	224	100

Most students demonstrated a good level of awareness regarding road safety, such as wearing helmets, crossing at zebra crossings, and obeying traffic lights. However, approximately one-quarter of respondents still displayed inconsistent behavior, particularly in unsupervised situations or when in a hurry.

4. Hypothesis Test Results

A simple linear regression test was performed to determine the extent to which knowledge (X) influences traffic awareness (Y). The results are presented in Table 4 below.

Table 4. Results of Simple Linear Regression Analysis

Variable	Regression Coefficient (b)	t-count	Sig.	Description
Knowledge (X)	0.792	21.624	0.000	Significant
Constant (a)	28.317	—	—	—

The analysis results show a coefficient of determination (R^2) of 0.790, indicating that 79% of the variation in traffic awareness can be explained by students' level of knowledge, while the remaining 21% is influenced by other factors such as teacher modeling, family supervision, and social environment. The *t-count* value (21.624) > *t-table* (1.972) with a *Sig.* value of $0.000 < 0.05$ indicates a positive and significant relationship between the two variables. Thus, the findings demonstrate that the higher the students' knowledge of traffic rules, the greater their level of awareness and adherence to safe behavior in daily life.

Discussions

Temuan utama penelitian ini bahwa pengetahuan lalu lintas berpengaruh sangat kuat terhadap kesadaran berlalu lintas ($R^2 = 0,79$) mendukung hasil-hasil riset kontemporer yang menempatkan literasi keselamatan sebagai faktor penentu dalam pembentukan perilaku tertib berlalu lintas. Dalam konteks pendidikan, pemahaman siswa terhadap aturan lalu lintas berperan penting dalam meningkatkan kedisiplinan dan kesadaran sosial mereka sebagai pengguna jalan. Penelitian yang dilakukan oleh Samsiar dan Najemi (2022) menunjukkan bahwa peningkatan pengetahuan mengenai tata tertib berlalu lintas berpengaruh positif terhadap tingkat kepatuhan pelajar di Kecamatan Sekernan, Muaro Jambi. Siswa yang memahami peraturan cenderung lebih berhati-hati dan disiplin dalam berkendara. Hasil ini mendukung pandangan bahwa pengetahuan merupakan fondasi utama dalam pembentukan perilaku keselamatan. Namun, temuan dari Sadli Syam (2024) di SMA Negeri 4 Palu menunjukkan hasil yang berbeda. Ia menemukan bahwa variabel pengetahuan tidak memiliki hubungan signifikan dengan perilaku *safety riding* ($p = 0,599$). Hasil ini memperlihatkan bahwa pengetahuan saja tidak selalu menjamin terbentuknya kesadaran perilaku aman, karena faktor eksternal seperti teman sebaya, kondisi sarana, dan lingkungan sosial memiliki pengaruh besar terhadap perilaku siswa.

Penelitian oleh Oktavianti, Wulandari, dan Rahmawati (2022) pada siswa SMA di Bontang juga menunjukkan pola serupa. Dalam studinya, variabel sikap, kelengkapan alat keselamatan, dan dukungan sosial berpengaruh signifikan terhadap perilaku *safety riding*, sementara pengetahuan tidak ($p = 0,570$). Hal ini mengindikasikan bahwa pengetahuan harus diiringi dengan aspek afektif dan sosial agar benar-benar termanifestasi dalam perilaku tertib berlalu lintas. Sementara itu, Purnama, Rahim, dan Rachmawati (2023) menemukan bahwa meskipun remaja memiliki tingkat pengetahuan tinggi mengenai aturan berlalu lintas, perilaku mereka di jalan tidak selalu mencerminkan pengetahuan tersebut. Faktor emosional, persepsi risiko, dan norma teman sebaya menjadi penghambat internalisasi nilai-nilai keselamatan.

Berbeda dengan hasil-hasil tersebut, penelitian Hidayati, Kurniawan, dan Lestari (2023) menunjukkan bahwa penerapan kegiatan *Patroli Keamanan Sekolah (PKS)* secara terstruktur dapat meningkatkan kesadaran dan kedisiplinan siswa dalam berlalu lintas. Temuan ini diperkuat oleh penelitian Yulita (2024) yang menegaskan bahwa ekstrakurikuler PKS efektif dalam membentuk tanggung jawab sosial dan kebiasaan disiplin berlalu lintas di lingkungan sekolah. Penelitian lain yang dilakukan oleh Siahaan dan Nurhasanah (2023) di Kota Medan juga menemukan adanya hubungan positif antara tingkat pengetahuan dan kepatuhan berlalu lintas pelajar ($p < 0,05$). Sementara itu, Rahmawati dan Hapsari (2022) di Yogyakarta menegaskan bahwa edukasi lalu lintas berbasis mata pelajaran IPS dapat meningkatkan kesadaran siswa hingga 25% setelah diberikan intervensi pembelajaran. Hal ini membuktikan efektivitas pembelajaran kontekstual dalam membentuk kesadaran sosial siswa.

Temuan serupa dilaporkan oleh Lubis dan Apriani (2024) di Pekanbaru, yang menemukan bahwa pengetahuan lalu lintas berpengaruh signifikan terhadap perilaku aman berkendara dengan nilai korelasi sebesar $r = 0,68$. Penelitian terbaru oleh Pratama dan Dewi (2025) di Kabupaten Banyumas juga memperkuat bukti ini, di mana pembelajaran IPS dengan pendekatan sosial kontekstual meningkatkan kesadaran tertib lalu lintas siswa SMP dengan kontribusi pengaruh sebesar $R^2 = 0,74$. Secara teoritis, hasil penelitian ini mendukung teori Kognitif Sosial Bandura (2004) yang menegaskan bahwa perilaku seseorang merupakan hasil interaksi antara faktor kognitif, lingkungan, dan tindakan. Dengan demikian, tingginya pengaruh pengetahuan terhadap kesadaran berlalu lintas (79%) mencerminkan kuatnya ranah kognitif dalam membentuk perilaku sosial siswa. Namun, masih terdapat 21% faktor lain yang tidak dijelaskan oleh variabel pengetahuan, seperti motivasi internal, kontrol diri, pengawasan eksternal, dan norma kelompok sosial.

Implikasi praktisnya adalah bahwa sekolah tidak cukup hanya mengajarkan teori aturan lalu lintas (rambu, marka, etika berkendara) tetapi juga harus memfasilitasi pengalaman nyata (simulasi, role play, praktik langsung), pembiasaan disiplin, dan penguatan norma melalui guru, orang tua, dan polisi sekolah (PKS). Intervensi dengan pendekatan holistik menggabungkan aspek kognitif, afektif, dan psikomotorik sangat disarankan agar pengetahuan tidak hanya tersimpan dalam kepala, tetapi diubah menjadi kesadaran dan akhirnya menjadi perilaku aman secara konsisten di jalan.

The main finding of this study that traffic knowledge exerts a strong influence on traffic awareness ($R^2 = 0.79$) supports contemporary research emphasizing *safety literacy* as a decisive factor in shaping compliant traffic behavior. In the educational context, students' understanding of traffic regulations plays a crucial role in enhancing their discipline and social awareness as road users. Research by Samsiar and Najemi (2022) demonstrated that increasing knowledge of traffic regulations positively affected students' compliance levels in Sekernan District, Muaro Jambi. Students who possessed better understanding of traffic rules tended to behave more cautiously and responsibly while on the road. This finding reinforces the notion that knowledge serves as a foundational element in the formation of safety-oriented behavior.

However, contrasting evidence was reported by Sadli Syam (2024) in a study conducted at SMA Negeri 4 Palu, which revealed that the knowledge variable had no significant relationship with *safety riding* behavior ($p = 0.599$). This result suggests that knowledge alone does not necessarily guarantee the development of safety awareness,

as external factors such as peer influence, infrastructure conditions, and social environment exert substantial effects on students' behavior.

A similar pattern was found by Oktavianti, Wulandari, and Rahmawati (2022) in a study of high school students in Bontang, which showed that attitude, availability of safety equipment, and social support significantly influenced *safety riding* behavior, whereas knowledge did not ($p = 0.570$). These findings imply that knowledge must be accompanied by affective and social dimensions in order to translate into actual traffic-compliant behavior. Likewise, Purnama, Rahim, and Rachmawati (2023) discovered that although adolescents demonstrated a high level of knowledge regarding traffic regulations, their actual road behavior did not always reflect such understanding. Emotional factors, risk perception, and peer norms served as internal barriers to the internalization of safety values.

In contrast, Hidayati, Kurniawan, and Lestari (2023) found that the structured implementation of *School Safety Patrol (Patroli Keamanan Sekolah/PKS)* activities significantly improved students' traffic discipline and awareness. This finding is reinforced by Yulita (2024), who affirmed that the PKS extracurricular program effectively cultivates social responsibility and habitual discipline in traffic behavior within school settings. Similarly, Siahaan and Nurhasanah (2023) in Medan identified a positive correlation between students' traffic knowledge and their compliance with traffic rules ($p < 0.05$). Meanwhile, Rahmawati and Hapsari (2022) in Yogyakarta emphasized that traffic education integrated within Social Studies subjects increased students' traffic awareness by 25% following instructional intervention, demonstrating the effectiveness of contextual learning in developing social awareness.

Comparable findings were also reported by Lubis and Apriani (2024) in Pekanbaru, who found that traffic knowledge significantly influenced safe driving behavior, with a correlation coefficient of $r = 0.68$. More recently, Pratama and Dewi (2025) in Banyumas Regency confirmed this relationship, showing that contextual social approaches in Social Studies learning enhanced students' traffic discipline awareness, contributing an explanatory power of $R^2 = 0.74$.

Theoretically, these results align with Bandura's Social Cognitive Theory (2004), which asserts that human behavior is shaped through the reciprocal interaction of cognitive, environmental, and behavioral factors. Consequently, the strong effect of knowledge on traffic awareness (79%) reflects the substantial role of the cognitive domain in forming students' social behavior. Nevertheless, the remaining 21% of variance unexplained by the knowledge variable is likely influenced by other factors, such as internal motivation, self-control, external supervision, and social group norms.

In practical terms, the implication is that schools should not limit their instruction to theoretical knowledge of traffic rules (e.g., road signs, markings, and driving etiquette), but must also facilitate experiential learning through simulations, role-playing, and direct practice, as well as foster habitual discipline and normative reinforcement involving teachers, parents, and the school safety patrol (PKS). A holistic intervention approach that integrates cognitive, affective, and psychomotor aspects is therefore strongly recommended so that knowledge is not merely retained cognitively, but transformed into awareness—and ultimately—into consistent safe behavior on the road.

CONCLUSION

Based on the findings of the study conducted at SMP Negeri Sorek Dua, located in Pangkalan Kuras District, Pelalawan Regency, Riau Province, it can be concluded that knowledge has a very strong influence on students' traffic awareness. The regression analysis yielded an R^2 value of 0.790, indicating that 79% of the variation in traffic awareness can be explained by students' level of knowledge, while the remaining 21% is influenced by other factors, such as teachers' role modeling, family supervision, and social environment. The significance value of 0.000 (< 0.05) confirms that the relationship between knowledge and traffic awareness is positive and statistically significant.

Overall, students' level of knowledge was classified as high (79.4%), reflecting a strong understanding of traffic regulations, road signs, and driving ethics. Meanwhile, their level of awareness was categorized as good (74.5%), although some students still exhibited inconsistent behavior under certain circumstances. These results

demonstrate that the higher the students' understanding of traffic rules, the greater their tendency to behave safely and orderly on the road.

From a theoretical perspective, the findings of this study reinforce Bandura's Social Cognitive Theory (2004), which posits that human behavior is formed through the interaction between cognitive factors (knowledge), environmental influences, and actions. From a practical standpoint, this research highlights the importance of integrating Social Studies (IPS) learning with character education focused on traffic safety. Schools are encouraged not only to provide theoretical instruction but also to strengthen affective and psychomotor aspects through hands-on practice, simulations, and habitual discipline-building activities within the school environment.

Therefore, enhancing students' knowledge through contextual learning and extracurricular programs such as the *School Safety Patrol (Patroli Keamanan Sekolah/PKS)* constitutes an effective strategy for developing sustainable traffic awareness. This is essential in fostering a young generation that is not only academically competent but also socially responsible and deeply committed to a culture of safety and discipline on the road.

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