



Analyzing Road Users' Competency and Traffic Laws Awareness as an Input to Road Safety Education Program of Higher Education Institutions (HEIs) in the Philippines

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Submitted: 04 July 2025

Accepted: 10 July 2025

Published: 21 July 2025

Citation: Trivedi, J., Patel, H., Panchal, H., Doshi, A., Gupta, A., Soni, K., Singh, A. P., Deswal, S., Chaudhary, A., Balki, S., Joshim, R., Panpaliya, P., & Dubey, S. (2025). Imeglimin in Type 2 Diabetes: Expert Consensus in the Indian Context. *J of Med Clin Nur & Hel*, 3(1), 1-7.

Abstract

This study investigates the role of Higher Education Institutions (HEIs) in the Philippines in enhancing road safety through education and awareness of traffic laws and driving competencies among novice drivers who are commonly involved in vehicular accidents and support the UN's goal of providing safe and sustainable transport systems, particularly for vulnerable road users. That despite of being influential in sustainable development, research on universities contributions to transportation-related goals is limited. To assess the demographics, driving experience, traffic laws awareness and skills competencies of students using motorcycles as their mode of transportation going to school, a survey was conducted using a questionnaire patterned from the Filipino Drivers' Manual (FDM) and Training Regulation (TR) of the Technical Education and Skills Development Authority (TESDA). Results of the study showed that the predominantly young, male population with many novice drivers lacking formal driving instruction, which correlated with reported driving violations. The analysis indicates that driving experience significantly enhances awareness of traffic laws, while demographic factors have minimal impact on competency. Recommendations include developing targeted driver education and intervention programs, launching awareness campaigns, and involving parents and teachers to reinforce safe driving habits. Further research is suggested to explore various factors influencing awareness and competency.

Keywords: Competency, Driving, Land Transportation, Higher Education, Road Users, Traffic.

Themes: (Fostering Equity and Inclusion in Education, Affecting Education Policy, Strategies for Enhancing Education Access and Engagement

Introduction

Universities are central players and important economic actors in many regions, and many of them are, in general, nationally and internationally active in respect of matters related to sustainable development (Filho, 2023). But there is a dearth of research which examines their contributions towards progress on transportation-related sustainable development target.

According to World Health Organization, road traffic injuries can be prevented and that a holistic approach involving multiple sectors, including Higher Education Institutions (HEIs), is essential for effective action.

In the same vein, HEIs are uniquely positioned to contribute to the land transportation sector through research, workforce development, and community engagement by offering specialized programs and courses related to traffic safety, driving education, and transportation planning and innovation. HEIs can equip stu-

dents with the necessary skills and knowledge to address transportation challenges [1]. Furthermore, partnerships between universities and local governments or land transportation agencies can facilitate the development of innovative solutions and evidence-based policies aimed at improving road safety and sustainable transport systems [2].

The United Nations Sustainable Development Goals particularly on road safety sought to "by 2030, halve the number of global deaths and injuries from road traffic accidents", this target was not met, although some progress was made with the global mortality rate, as road traffic injuries declined from 18.1 per 100,000 population in 2010 to 16.7 in 2019. However, road traffic crashes killed about 1.3 million men and women worldwide in 2019, with 75% of these occurring among boys and men (Interagency report for second Global Sustainable Transport Conference, 2021). Moreover, enhancement of road safety is also acknowl-

edged as a key target in the pursuit of sustainable development as reflected and articulated in the 2030 Agenda for Sustainable Development (UN, 2015) which has set the following transport safety related targets: 1) Under Goal 3 (Ensure healthy lives and promote well-being for all at all ages), Target 3.6 aims to reduce global road traffic deaths and injuries by 50% by 2020; 2) Under Goal 11 (Make cities and human settlements inclusive, safe, resilient and sustainable), Target 11.2 is set for the provision of safe, affordable, accessible and sustainable transport systems for all by 2030 [3].

Congruent to this, road traffic injuries remained the leading cause of death among young men and women aged 15–29 worldwide (UN Secretary-General report, 2021). More than half the global road traffic deaths are among pedestrians, cyclists, and motorcyclists. In addition, between 20 and 50 million non-fatal injuries yearly are caused by road traffic crashes [4]. While advances have been made in terms of legislation, vehicle standards, and access to post-crash care, these are evidently not occurring fast enough, especially given the rapid motorization of transport and rising population in many parts of the world, and the persistent gaps in safe infrastructure for pedestrians and cyclists. In addition, enforcement can sometimes pose a challenge (WHO, Global Status Report on Road Safety, 2018). This was also recognized at the third Global High-Level on Road Safety, which marked the end of the UN Decade of Action for Road Safety 2011–2020 [5].

The UN General Assembly, through its resolution A/RES/74/299,80 declared the period 2021–2030 as the Second Decade of Action for Road Safety, with a goal of reducing road traffic deaths and injuries by at least 50% from 2021 to 2030.

In a simple survey conducted to determine the number of students using motorcycle and involvement in vehicular accidents, 58 percent or 42 out of 73 students were using motorcycle and tricycle as their mode of transportation going to school, 27 percent or 20 of them were involved in non-fatal accidents, 12.33 percent or 9 of them have experience cases on reckless imprudence resulting to damage to property and physical injury, while 16.44 percent were violated traffic laws such as non-wearing of helmet, unregistered MV among others. With this data, it is imperative therefore to conduct a study on land transportation.

Relative to this, the Industrial Technology program, the Criminology program, and the Bachelor of Technical-Vocational Teacher Education of Isabela State University-Angadanan Campus which offers subjects such as driving education and traffic laws, rules and regulations with driving among others, have conducted this study on Road Rudder: The Role of HEIs in the Land Transport Sector. This is to determine the road users competency as an input to HEIs road users safety education program, determine the traffic laws, rules and regulations extent of awareness and its implementation in the Rural Areas and to develop an instructional materials for traffic management and accident investigation.

Assumption of this study comprises the inclusion of road safety

education in the curriculum, designing Instructional Materials for driving education, crafting of HEIs policy particularly on students used of motorized vehicle as their mode of transportation, HEIs involvement in transport planning, setting and enforcing laws relating to key risks, and raising public awareness. These maybe are effective interventions to support UN goal (SDG 11) of providing access to safe, affordable, accessible, and sustainable transport systems for all, improving road safety, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities, and older persons.

Objectives of the Study

The main objective of this study is to determine the road users' awareness on land transport laws, rules and regulations as well as the driving competency of men and women respondents as an input to HEIs Road Users Safety Education and Intervention Program with the ultimate purpose of mitigating traffic violations and accidents. Specifically, this study aims to:

1. Determine the profile of the respondents in terms of:
 - a. age;
 - b. gender;
 - c. civil status;
 - d. type of driver's license in possession;
 - e. no. of years of driving;
 - f. way of learning how to drive;
 - g. age at which practice driving begins; and
 - h. driving apprehension experienced.
2. Determine the level of awareness of road users on traffic laws, rules and regulations specifically on:
 - a. violations on revised rules and regulations governing limited access highways.
 - b. violations on rules and regulations for the use and operation of motorcycle on highways;
 - c. violations under motorcycle helmet act of 2009;
 - d. violations under anti-drunk and drugged driving act of 2013;
 - e. violations under children's safety on motorcycle act of 2015;
 - f. violations under anti-distracted driving act;
 - g. the doctrine of last clear chance; and
 - h. maximum allowable speeds for various road types under the land transportation and traffic code.
3. Determine the road users level of competency in terms of;
 - a. common competencies; and
 - b. core competencies.
4. Determine the significant relationship of the profile of the respondents and their level of awareness on traffic laws, rules and regulations.
5. Determine the significant relationship of the profile of the respondents and their level of competency on common and core competencies of driving.

Scope and Limitations

This study was limited on determining the profile of the respondents specifically on their age, gender, civil status, type of driver's license in possession, no. of years of driving, way of learning how to drive, age at which practice driving begins, and

driving apprehension experienced.

In determining the level of awareness of road users on traffic laws, rules and regulations, it is limited only to the violations on revised rules and regulations governing limited access highways, violations on rules and regulations for the use and operation of motorcycle on highways, violations under motorcycle helmet act of 2009, violations under anti-drunk and drugged driving act of 2013, violations under children's safety on motorcycle act of 2015, violations under anti-distracted driving act, the doctrine of last clear chance; and maximum allowable speeds for various road types under the land transportation and traffic code. The instrument are patterned to the Filipino Drivers Manual and TESDA Training Regulation on Driving NC-II.

Respondents of the study was limited to enrolled students in the three (3) clusters of ISU which includes the Echague, Cauayan and Ilagan Clusters who were conveniently and purposively selected.

Methodology

This study used the quantitative methods of research wherein, a survey using questionnaire patterned from the Filipino Drivers' Manual (FDM) and TESDA Training Regulation (TR) on Driving NC-II was used particularly on the profile of the respondents, their level of awareness and level of competency. For the respondents level of awareness on traffic laws, rules and regulations, it includes aspects such as violations on revised rules and regulations governing limited access highways, violations on rules and regulations for the use and operation of motorcycle on highways, violations under motorcycle helmet act of 2009, violations under anti-drunk and drugged driving act of 2013, violations under children's safety on motorcycle act of 2015, violations under anti-distracted driving act, the doctrine of last clear chance, and maximum allowable speeds for various road types under the land transportation and traffic code. While for the level of competency it includes common and core competencies of driving. Descriptive analysis as to the significant relationship of the respondents profile and their level of awareness and competency are part of this study. Frequency, percentage and chi-square was used in this study.

Conceptual Framework

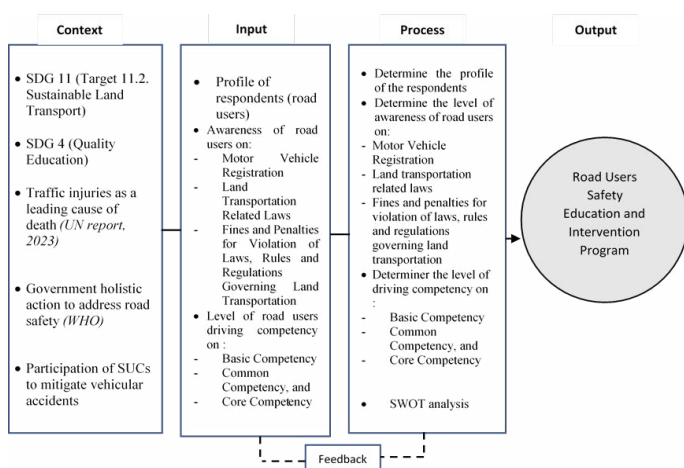


Figure 1: Paradigm of the study

Figure 1 shows the paradigm of the study. Along context, it includes the aspects that this study would like to address. These include SDG 11 particularly target 11.2 on sustainable land transport sector, SDG 4 (Quality Education), traffic injuries as a leading cause of death as reported by the United Nations, the call for the government holistic action to address road safety (WHO) and the participation of SUCs to mitigate vehicular accidents [6].

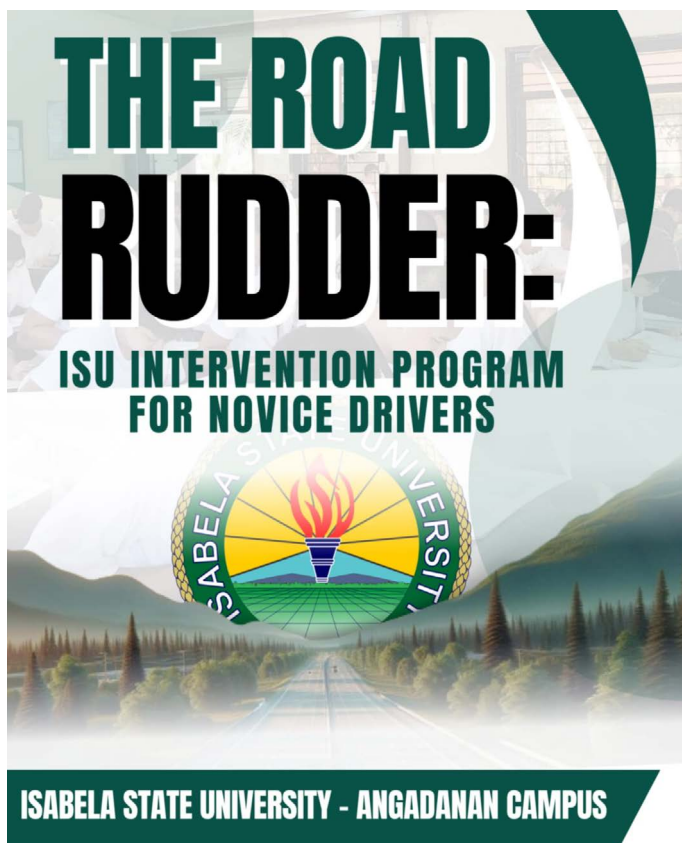


Figure 2: Front page of the ISU Intervention Program for Novice Drivers

For the input, these includes the profile of respondents (road users), awareness of road users on (1) Motor Vehicle Registration (2) Land Transportation Related Laws and level of road users driving competency.

For the process, these includes survey on the profile of the respondents, awareness on traffic laws, rules and regulations and driving competencies. Moreover, SWOT analysis, presentation, and validation of research findings will also be undertaken through focus group discussion with the experts from the land transportation sector.

The final output of the study will be the Road Users Safety Education and Intervention Program that will be used to educate the road users and thereby mitigate the occurrence of vehicular accidents as well as to mitigate traffic violations.

Results and Discussion

A. Demographic Profile of the Respondents

Table 1. Distribution of respondents according to gender, age level and civil status

Profile	Frequency	Percent
	n=354	
Gender		
Male	304	85.9
Female	50	14.1
Age Level		
17-26	341	96.3
27-36	8	2.3
37- 46	2	.6
Over 46	3	.8
Civil Status		
Single	340	96.0
Married	14	4.0
Age Begin Driving		
Less than 18	275	77.7
18 to 30	68	19.2
Greater than 30	11	3.1

Table 1 reveals the distribution of respondents by gender, age level, civil status, and age at which they began driving. A significant gender imbalance is noted, with 85.9% identifying as male (304 individuals) and only 14.1% as female (50 individuals), indicating a predominantly male demographic. The majority of respondents (96.3%) are aged 17-26 (341 individuals), suggesting that the survey captures a young driver population, with very few participants in older age groups. Civil status further reflects

this youthfulness, as 96.0% are single (340 individuals) and only 4.0% are married (14 individuals). Additionally, a substantial portion (77.7%) began driving under 18 years of age, with only 19.2% starting between 18 to 30 years and a mere 3.1% after 30. The data indicates that the sample predominantly consists of young, single males who began driving early, which may influence their driving behaviors and attitudes toward road safety.

Table 2: Distribution of Respondents According to Current Driver's License Class, no. of Years

Profile	Frequency	Percent
	n=354	
Current Driver’s license Class		
No license	129	36.4
Student Permit	86	24.3
Non professional	121	34.2
Professional	18	5.1
No.of years of driving		
Less than 1 year	145	41.0
1-4 years	121	34.2
5-10 years	87	24.6
11-20 years	1	3
Way of learning how to drive		
Self-taught	134	37.9
By Professional	24	6.8
By Relative	124	35.0
Driving School	24	6.8
Combination	43	12.1
Not Self-taught	5	1.4
Apprehension		
No violations	63	17.8
With violations	291	82.2

Table 2 presents the distribution of respondents regarding their current driver's license class, driving experience, learning methods, and driving violations encountered. A significant 36.4% of respondents do not hold a driver's license, indicating many are still learning or ineligible. Among those with licenses, 24.3% have a student permit, and 34.2% are non-professional drivers, while only 5.1% hold a professional license.

In terms of driving experience, 41.0% have been driving for

less than one year, with 34.2% having 1 to 4 years, suggesting a predominance of novice drivers. Learning methods reveal that 37.9% are self-taught and 35.0% learned from relatives, while only 6.8% received formal instruction.

Notably, 82.2% of respondents have experienced driving violations, indicating challenges for less experienced drivers. The findings highlight the need for improved driver education, especially for novice drivers relying on informal learning methods.

B. Level of Awareness of Road Users on Traffic Laws, Rules and Regulations

Table 3: Level of Awareness on Traffic Laws, Rules and Regulations

Traffic Laws, Rules and Regulations	Aware		Unaware		I heard About It	
	f	%	f	%	f	%
1.Violations on Revised Rules and Regulations Governing Limited Access Highways	315	89.0	38	10.7	1	.3
2.Violations on Rules and Regulation for the use and operation of motorcycle on highways	325	91.8	28	7.9	1	.3
3.Violations under Motorcycle Helmet Act of 2009	323	91.2	29	8.2	2	.6
4.Violations under Anti-Drunk and Drugged Driving Act of 2013	315	89.0	36	10.2	3	.8
5.Violations under Children's Safety on Motorcycle Act of 2015	317	89.5	35	9.9	2	.6
6.Violations under Anti-Distracted Driving Act	302	85.3	49	13.8	3	.8
7.The doctrine of last clear chance	299	84.5	48	13.6	7	2.0
8.Maximum allowable speeds for various Road Types under the Land Transportation and Traffic Code	310	87.6	40	11.3	4	1.1

Table 3 shows that respondents generally have a high level of awareness regarding various traffic laws and regulations. Notably, 89.0% are aware of violations related to the Revised Rules and Regulations Governing Limited Access to Highways, and 91.8% understand the rules for motorcycle operation on highways. Awareness is also strong for the Motorcycle Helmet Act of 2009 (91.2%) and public safety laws such as the Anti-Drunk and Drugged Driving Act (89.0%) and the Children's Safety on

Motorcycle Act (89.5%). However, awareness decreases for the Anti-Distracted Driving Act (85.3%) and the doctrine of last clear chance (84.5%). Additionally, 87.6% of respondents are knowledgeable about maximum allowable speeds under the Land Transportation and Traffic Code, though some may still lack full understanding. Overall, while awareness is robust, targeted educational campaigns are needed to enhance understanding of specific laws that are less known.

C. Level of Competency on Common and Core Competencies of Driving

Table 4: Level of Competencies

Competencies	Competent		Not Competent	
	f	%	f	%
Common Competencies				
Perform Mensuration and Calculation	281	79.4	73	20.6
Read, Interpret and Apply Specification and Manuals	302	85.3	52	14.7
Move and Position Vehicle	313	88.4	41	11.6
Use and Apply Lubricants/Coolant	296	83.6	58	16.4
Core Competencies				
Carry Out Minor Vehicle Maintenance and Servicing	311	87.9	43	12.1
Drive Light Vehicle	310	87.6	44	12.4
Obey and Observe Traffic Rules and Regulations	311	87.9	43	12.1
Implement and Coordinate Accident Emergency Procedures	324	91.5	30	8.5

The data in table 4 indicates a high level of proficiency among respondents in driving-related skills. Notably, 79.4% are competent in performing mensuration and calculation, while 85.3% can read, interpret, and apply vehicle specifications. The competency rate for moving and positioning a vehicle is even higher at 88.4%. Additionally, 83.6% demonstrate the ability to use lubricants and coolant effectively.

In terms of core competencies, 87.9% can carry out minor ve-

hicle maintenance, and 87.6% are capable of driving a light vehicle. Moreover, adherence to traffic rules and regulations is strong, with 87.9% showing competency in this area. The highest competency is in implementing accident emergency procedures, where 91.5% of respondents excel. The findings reflect a solid foundation of driving skills among respondents, but the presence of a minority lacking in competency highlights the need for targeted training to improve overall safety and proficiency on the road.

D. Profile of the Respondents and their Level of Awareness and Competencies

Table 5: Association Between the Profile of the Respondents and their Awareness on Laws, Rules and regulations

Profile	XT ²	p	Phi
Age	2.734 ^a	.435	.088
Civil status	.130 ^a	.719	.019
Type of license	.745 ^a	.862	.046
Years of driving	15.470 ^a	.004	.209
Learn how to drive	8.324 ^a	.139	.153
Age begin driving	.244 ^a	.970	.026
Apprehension	15.023 ^a	.131	.206

The analysis in Table 5 investigates the association between demographic and experiential factors of respondents and their awareness of laws, rules, and regulations. The findings indicate that age, civil status, type of license, method of learning to drive, and age at which respondents began driving do not show statistically significant associations with awareness, as their p-values exceed 0.05 and Phi coefficients reflect very weak correlations.

In contrast, "years of driving" is significantly associated with awareness, showing a chi-square value of 15.470 and a p-value of 0.004, with a moderate Phi coefficient of 0.209. This suggests

that greater driving experience correlates with higher awareness of laws and regulations. Although "apprehension" also shows a chi-square value of 15.023, its p-value of 0.131 indicates no significant relationship, despite a moderate Phi coefficient of 0.206.

The results emphasize that practical driving experience is a key factor in enhancing awareness of traffic laws, while demographic factors appear to have minimal impact, highlighting the importance of real-world experience in understanding and adhering to these regulations.

Table 6: Relationship Between the Profile of the Respondents and their Level of Competency

Profile	XT ²	p	Phi
Age	9.971 ^a	.019	.168
Gender	1.503 ^a	.220	-.065
Civil status	3.154 ^a	.076	.094
Type of license	4.697 ^a	.195	.115
Years of driving	1.589 ^a	.811	.067
Learn how to drive	2.172 ^a	.825	.078
Age begin driving	3.387 ^a	.336	.098
Apprehension	8.755 ^a	.555	.157

Table 6 analyzes the relationship between demographic and experiential profiles of respondents and their driving competency. The results indicate that age is significantly associated with competency, with a chi-square statistic of 9.971 and a p-value of 0.019, suggesting that older respondents tend to exhibit greater driving competency. The Phi coefficient of 0.168 reflects a small to moderate positive association, highlighting the influence of maturity and experience on driving skills.

In contrast, other variables such as gender, civil status, type of li-

cense, years of driving, method of learning to drive, age at which driving began, and apprehension show no significant associations with competency. Gender has a chi-square value of 1.503 and a p-value of 0.220, indicating a very weak negative association, while civil status approaches significance with a p-value of 0.076 but still does not meet the threshold for significance.

The remaining variables have p-values ranging from 0.195 to 0.811, indicating minimal influence on driving competency, as reflected in their very weak Phi coefficients.

The analysis emphasizes that age is the most significant factor affecting driving competency among respondents, suggesting that accumulated experience and maturity play a crucial role in enhancing driving skills, while other factors may require further investigation to clarify their impacts.

Conclusion

Based from the findings of the study, the following conclusions were drawn:

1. The surveyed population is mainly young and male, with a significant number being single and having started driving at an early age, which may affect their driving behaviors and attitudes toward road safety [7].
2. A significant portion of respondents do not hold a driver's license, indicating that they are still learning to drive or are ineligible. Among those with licenses, there is a high prevalence of novice drivers, most of whom learned through self-taught methods or from relatives instead of formal instruction. Additionally, a significant portion has reported driving violations, highlighting the challenges faced by less experienced drivers [8].
3. Driving experience is significantly linked to awareness of traffic laws and regulations, with more experienced drivers demonstrating greater awareness. In contrast, demographic factors such as age, civil status, type of license, method of learning to drive, and the age at which respondents began driving do not significantly affect awareness. Additionally, while apprehension has some correlation with awareness, it does not reach statistical significance [9].
4. Age plays a significant role in driving competency, as older respondents demonstrate better skills and understanding of driving practices. This positive relationship emphasizes the value of maturity and experience. In contrast, factors such as gender, civil status, type of license, years of driving, learning methods, age when driving began, and apprehension do not significantly affect driving competency, suggesting they have little influence [10].

Recommendations

Based from the findings and conclusions of the study, the following recommendations were drawn:

1. Create driver education programs specifically designed for young drivers, focusing on safe driving practices and responsible driving behavior. Identifying areas needing improvement and provide additional training in driving is also recommended [11].
2. Launch awareness campaigns aimed at young drivers to educate them about the risks associated with early driving and promote adherence to traffic laws. Launching awareness campaigns will educate all drivers about the consequences of violations and the importance of safe driving, particularly for those with limited experience.
3. Involve parents and teachers in the education process to reinforce safe driving habits and support their children in becoming responsible drivers.
4. To improve driving safety, it is essential to have a driver education program focusing on safe practices for novice drivers and promote formal instruction for better understanding of regulations. Additionally, providing resources for self-taught drivers and establishing monitoring systems to offer feedback on driving behaviors can help foster safer driving habits [12].

5. To improve driver awareness of traffic laws and regulations, driver education programs should prioritize practical experience and encourage extended supervised driving for new drivers. Additionally, training modules should be developed to specifically enhance awareness among less experienced drivers.
6. Driver education programs should emphasize the importance of experience and maturity in enhancing driving skills, especially for younger or less experienced drivers. Practical and theoretical training and assessment programs in driving should be developed to meet the specific needs of different age groups, while experience-based learning opportunities should be integrated into training curricula.

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