

Comparison of Old and New Driver Education Curriculum (DEC) from Cognitive and Affective Domain

Roziana Shahril
Kaviyarasu Yellappan
Maslina Musa
Low Suet Fin, PhD
Eddy Azuan Senin

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Abstract

The old curriculum of the drivers' education equips drivers with only cognitive and psychomotor skills with less emphasis on affective skills thus, a new curriculum was developed to produce more courteous and disciplined drivers. Therefore, it is the objective of the present study to compare the effectiveness of the old and new Driver Education Curriculum for car drivers and motorcycle riders (class B & D) based on the affective and cognitive domain. For the affective scores for the affective domain, the results showed that there was no significant difference among the drivers as $p= 0.067$ while among the motorcyclists, $p=0.000$ showed that differences existed between the two samples. Meanwhile, for the cognitive domain, differences exist in the cognitive scores of the drivers ($p=0.014$) but, it differs for the motorcyclists as $p=0.75$. This research opens up many new research opportunities as researchers could make use of crash rates to correlate with the performance of the respondents in the self-reported questionnaire. In addition, it is also important to study the perception of the driver trainers and the driving institutes regarding the content of the curriculum.

Keyword: drivers' education curriculum, cognitive domain, affective domain

1. Introduction

Based on *Seksyen 26(1) Akta Pengangkutan Jalan 1987*, an individual who wants to drive a car or ride a motorcycle must have a license. If an individual drives or rides the motorcycle without a license, that individual has disobeyed the law and can be charged with an offence. In 2014, the Government launched the New Drivers Education Curriculum, but it has only been implemented in 2015. Therefore, a comparison between the old curriculum and the new curriculum is needed to ensure the government is on the right track to produce safer drivers.

1.1 Background of Research

Malaysia is thriving to be a developed nation by 2020, but many Malaysians are killed on the road each year especially those at the age group of 16 – 25 years old. Most new drivers and motorcyclists fall in the age group. According to the Road Safety Plan of Malaysia from 2014-2020, the number of deaths involving the mentioned age group made-up one-third of the total deaths for the year of 2013. The Goal of Decade 2011-2020 targeted to stabilize and reduce the increasing trend in road fatalities (WHO, 2010). Thus, for Malaysia to be in the same goal with WHO, it is very crucial for us to have first class drivers and road users so that Malaysia could decrease the number of deaths caused by road accidents each year. The Road Safety Plan of Malaysia 2014-2020 has outlined safer road users as a Strategic Milestone 4, and to achieve the milestone, an improvement of the current curriculum must be made. This is because the driver education curriculum is one of the legislation that could nurture the public's awareness and understanding rather than only to equip the targeted group with new information.

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The old curriculum of the drivers' education only equipped the driver with cognitive and psychomotor skills but provided less emphasis on affective skills as it only focused on dexterity and traffic rules comprehension. Many type of research discussed on the driver's training, and much emphasis was put on the cognitive, affective and psychomotor domain and how it affected the learning process of the driver as the taxonomy provide a more holistic learning experiences (Wilson, 2015). To fill in the gap, a new curriculum was developed to enhance drivers with more affective skills and to produce courteous as well as disciplined drivers. Thus, the newly implemented curriculum must be assessed to make sure drivers and motorcyclists are equipped with adequate cognitive, psychomotor and affective knowledge and skills after ten months of implementation. The effectiveness of the new Driver Education Curriculum (Kurikulum Pendidikan Pemandu, KPP) can be measured by gauging one's driving performance using the right instruments for every learning domain. Hence, the questionnaire that will be used to gauge the drivers' and motorcyclists' driving skills and knowledge will measure their knowledge from the cognitive and affective domain.

1.2 Research Objective

1.2.1 General Objective

To compare the effectiveness of old and new Driver Education Curriculum for car drivers and motorcycle riders (class B & D) based on the affective and cognitive domain.

1.2.2 Specific Objectives

- i. To evaluate the effectiveness of new Driver Education Curriculum based on cognitive domain among old and new curriculum drivers
- ii. To evaluate the effectiveness of new Driver Education Curriculum based on affective domain among old and new curriculum drivers
- iii. To evaluate the effectiveness of new Driver Education Curriculum based on cognitive domain among old and new curriculum riders
- iv. To evaluate the effectiveness of new Driver Education Curriculum based on affective domain among old and new curriculum riders
- v. To identify the significant differences between overall taxonomy scores among old and new curriculum drivers
- vi. To identify the significant differences between overall taxonomy scores among old and new curriculum riders

2. Literature Review

Many previous research data showed that education and training in schools, aimed at prospective drivers, has been far from successful as some research has shown that it simply encourages an earlier exposure to risk, which may be counterproductive for road safety (Raymond, Jolly, Risk, & Shaoul, 1973). In addition, findings from past research also suggested that new drivers are at the greatest crash risk in the first six months of solo driving (VicRoads, 2000). Meanwhile, Holubowycz & McLean (1980) stated that there was also very little evidence that training programs undertaken by young or recently licensed drivers are effective in reducing crash risk or traffic violations. This is because, such training often resulted in an increased level of confidence and optimism bias, where the novice road users believe that they were more skillful than they actually are and lead to an increase in crash risk particularly among young males (Lynam & Twisk, 1995; Mayhew & Simpson, 1996; Saffron, 1981).

However, promoting driver training as a means of improving driving skills and knowledge assumes that there are deficiencies in the skills or knowledge of drivers and that these can be improved via training. According to Woolley (2000), these assumptions are largely false and based on beliefs that are not supported by research evidence. This is because improving knowledge and skill does not always lead to a change in behaviour among drivers. The crash usually resulted by many risk factors and it is up to the motivation of the trainees to apply the available knowledge that they learnt thus a driver trainer has little control over the post-course behaviour of trainees (Christie, 2001). Christie (2001) also added that specifically, risk-taking behaviour among young drivers occurs not based on how much skill and or knowledge that they have, but much to do with motivation and psychological factors.

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On the other hand, Gregersen (1997) found that learners who received about 118 hours of supervised experience had up to 35% fewer crashes than those who received only 41-47 hours. Meanwhile, Dreyer & Janke (1979) mentioned improvements in driver training may be achieved in the longer term by concentrating on cognitive and perceptual skills, together with a greater emphasis on how factors such as belief and motivation shape driver behaviour. Exclusively, cognitive or instrumental approaches to measuring attitudes fail to account for all important variation in attitudes, and that affectively based measures have the capacity to make useful and in some cases substantial contributions to the prediction and understanding attitudes (Lawton, Parker, Manstead, & Stradling, 1997). Thus, by focusing on cognitive and psychomotor skills which included perceptual skill, with emphasis on how attitude and motivation shape the behaviour, an improvement in driving skills can be achieved since driving involves multi-task activities (Verma, Velumurugan, Chakrabarty, & Srinivas, 2011).

Furthermore, safe driving can be seen as composed of two equally important separate components which are cognitive skills and motives as the Richard P. Mills, David J. Swarts, Denise Cashmere, Marta Genovese, Penney Silvis Gentile, Clark Godshall (2008) study suggests that motivational skills are equally important as cognitive and perceptual skills in driver's education curriculum. The former includes information processing and motor skills whereas the later includes both transient motivational and more permanent personality factors and attitudes towards traffic and safety. Cognitive and motor skills, such as drivers' maximum performance capabilities, do not necessarily predict their accident involvement, but it is essential that motivational factors determine what they are doing or what they must do with their skills (Summala & Naatanen, 1988). Evans (1991) believes that this distinction matches to that between driver performance and driver behaviour and driving skills and driver style. To conclude, the cognitive and affective domain are important in promoting and enhancing safe driving. As mentioned by Rosenbloom & Eldror (2014), the theory, basis of the multifactorial model has recognized cognition, vision, and psychomotor functions did influence driving behaviour. Similarly, Isler, Starkey, & Sheppard (2011) mentioned that training in higher-order driving skills that includes perceptual, motivational and insight has resulted in the participants demonstrating improvement

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in visual search, composite driving measures and also overall attitudes to risky driving behaviour. In addition, Machin & Sankey (2008) also stated that to help young and new drivers to receive awareness on how risky driving will affect the safety of others, the self-awareness exercise must be included in the driver education programs. Thus, all of the earlier statement supports the significance of affective and cognitive domain in teaching the young and new drivers of safe driving.

3. Methodology

This section explains the methodology used and the structure of research conducted.

3.1 Research Design

This study aims to compare the scores of an affective and cognitive domain of the car drivers and motorcycle riders between the group that followed the old curriculum and the group that followed the new driving curriculum group. Therefore, this study uses cross-sectional research design as the data collected was from two different groups of drivers and motorcyclists at two different points of time. According to Mann (2003), one of the important benefit of cross-sectional study is that there are fewer resources that need to be used as the cost would be less as well as a cross sectional studies can be completed in a short periods of time without the need of contacting back the participants to get further information and details at different period of time. The researcher used the baseline data collected by (Kaviyarasu, Roziana, Eddy, Maslina & Low, 2015). For this particular study, the data collection period took only two weeks of time which involved all seven driving institutes (Institut Memandu, IM).

3.2 Location of Study

The research was carried out in Negeri Sembilan and Melaka. Only three IMs from Melaka and four IMs from Negeri Sembilan were chosen. All seven driving institutes were approached two weeks before the data collection period to have a briefing regarding the research project and also to get their agreement to cooperate with the research team. Their agreement to join meant that they were willing to provide the researcher with the available candidates who registered to take the driving or motorcycle practical test. One week before data collection, the management of the

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respective IMs were given a short briefing regarding the aim of the study and the procedure of the data collection.

3.3 Population and Sampling

The population of study consists of candidates that have attended theoretical classes of Driver Education Curriculum (Kurikulum Pendidikan Pemandu, KPP) KPP 01 to KPP 03 and passed the theoretical examination at various driving institutes (IM) in Negeri Sembilan and Melaka. The candidates had also registered for their practical exams to obtain the respective driving licenses. Meanwhile, there are two stages of data sampling. The first stage is to choose the IMs that will take part in the study. The IMs were chosen from a list that was obtained from the website of Sistem E-Mohon of Road Transport Department Malaysia (Jabatan Pengangkutan Jalan Malaysia, JPJ). IMs are identified through purposive sampling. Even though purposive sampling is a type of non-probability sampling, however in this study, a purposive sampling is the method that is most suitable to be used. This is because, for this study, not all IMs in Negeri Sembilan and Melaka have the facilities to conduct the drivers' practical evaluation and assessment. In addition, most of the IMs will send their candidates to selected IMs in Negeri Sembilan and Melaka which are the centres for practical evaluation and assessment. For the time being, there are four IMs in Negeri Sembilan and three IMs in Melaka as listed in Table 1 below.

Table 1 List of selected driving institutes

Negeri Sembilan	Melaka
Akademi Memandu Nilai	SSDC Driving Academy
Empat Sempurna	MSDC Driving Centre
InMaju Holdings	Detik Erat
Safe Motoring	

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The second stage of sampling involves a random sampling. A total of 420 respondents took part in the post-implementation study. Only candidates who were taking a practical examination at the selected IMs were randomly approached. From the 420 respondents, 212 respondents were taking driving license while another 208 candidates are the one who were taking motorcycling license. The data collected from the post-implementation sample was compared to the data collected prior to implementation of the new KPP in which the sample consist of 197 drivers and 210 motorcyclists.

3.4 Instrument

The self-reported questionnaire to measure the cognitive and the affective level of participants was developed by a group of researchers at MIROS. The self-report questionnaire has four components which are the socio-demographic background section, affective domain section, cognitive domain section and psychomotor domain section. These four components are common for both the questionnaire for the drivers and the motorcyclists. However, the number of questions for the drivers and motorcyclists varies for the affective, cognitive and psychomotor domain. For the drivers, there are 44 questions in the affective domain, 41 questions for the cognitive domain, and eight questions for the psychomotor domain. On the other hand, in the questionnaire for the motorcyclists, there are 40 questions in the affective domain, 42 questions for the cognitive domain, and six questions for the psychomotor domain. Questions for the psychomotor domain was included just to test the comprehension component of the psychomotor domain of the drivers and motorcyclists as it is impossible to test the motor component in a paper-and-pencil instrument.

The questionnaire was developed based on the learning outcome (LO) of the drivers' curriculum and assessed variables. The instrument was also pre-tested and calibrated. As mentioned above, the first part of the assessment consisted of items to collect the sociodemographic background information of the respondents. The second part of the questionnaire was the affective assessment, which functions to collect the respondent's emotions, feelings and views. The items in the second part were more

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concerned on evaluating the respondent's feelings, and views on Safety First Culture, Social Responsibility and also Self-Discipline. As mentioned by Atherton (2013), the affective objectives of learning are also divided into a hierarchy just like the cognitive domain. In the instrument developed, the researcher included the questions to gauge the first, second and third level of learning of the affective domain. The three levels of learning of the affective domain are, receiving, responding and valuing. According to Kratwohl, Bloom and Masia (the developer of the affective domain) as mentioned in Atherton (2013), the level of receiving refers to the learners' sensitivity to the existence of stimuli such as awareness and willingness to receive. For example, "*Had laju 30 km/j adalah bersesuaian di kawasan sekolah*". While responding refers to the learners' active attention to stimuli and their motivation to learn and willing to respond, and the example of the item is, "*Saya tidak akan mematuhi papan tanda ini (rujuk gambar) sekiranya saya yakin kemalangan tidak akan berlaku*". Lastly, valuing refers to the learners' beliefs and attitudes of worth such as acceptance preference and commitment to value. The example of the item is, "*Sebagai penumpang, saya akan tetap menggunakan tali pinggang keledar walaupun saya tidak selesa dengan penggunaannya*". Therefore, items in the Affective Assessment is a mixture of items that covers the three basic levels of the affective domain of Bloom's Taxonomy.

The third part in the instrument is the cognitive assessment and the items in the instrument were constructed to gauge on the respondents' cognitive domain which covers the applied knowledge of driving and the knowledge of the psychomotor aspects of driving. According to Omar, Haris, Hassan, Arshad, Rahmat, Zainal, & Zulkifli (2012), the cognitive domain of Bloom's taxonomy is the one mostly used in the field of education to validate the student's cognitive level during a written examination. Similar to the Affective Assessment, in the instrument developed, the researcher included the questions to gauge the first, second and third level of learning of the cognitive domain out of six level of learning. The basic three levels of learning of the cognitive domain are, knowledge, comprehension and application and the items are a mixture of the three basic levels in the cognitive domain of Bloom's Taxonomy. Knowledge level of cognitive domain is at the lowest level of the hierarchy and it is a level where learners memorize the facts and also recall the facts that they have learnt.

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The example of an item that taps the knowledge level is, *“Penyelenggaraan minyak enjin kereta yang tidak mengikut jadual boleh memudaratkan enjin kereta”*. While at the second level of cognitive domain, the comprehension level is the level when the learnt can interpret, translate and explain the concepts that they had to learn or grasp the meaning of information (Wilson, 2015). For example, the item *“Penggunaan lampu tinggi pada waktu malam semasa memandu adalah digalakkan untuk meningkatkan penglihatan pemandu walaupun ia boleh mengganggu pengguna jalan raya yang lain”* is an example of an item that can tap the comprehension level. Lastly, the application level is the level when the learners can apply the concept for certain scenarios and condition for example on item *“Sekiranya kenderaan yang sedang dipandu mengeluarkan asap yang tebal dari bahagian enjin, tindakan berikut perlu diambil”*.

3.5 Procedure

For data collection process, for the post-implementation study, the research team went to Negeri Sembilan and Melaka at a separate time. As mentioned above, there are three driving academies which was approached located at Melaka while another four IMs are located in Negeri Sembilan. For all IMs, the research team spends a minimum of one day to collect data. As they are collecting the responses from candidates who are taking driving and motorcycling practical exam, the research team have to make sure that the practical exams were conducted on each day that they went to the IM.

Some of the respondents were approached before they had finished their practical exams and some were after. This was because, the time was limited and the research team had to utilize the time properly or else we will lost potential candidates and which will caused the research team to extend the collection data period. Each member of the research team is located at a few strategic posts to approach the potential respondents. Some of the candidates were recruited at the waiting room while some were recruited at the JPJ waiting post. The respondents were ushered to the designated waiting area while the research team conducted the survey. Before ushering, the research assistant asked the potential respondents if they wanted to take

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part in the study, and if the candidates refused, the research assistants approached another potential respondent. There was no coercion being given to the potential candidates and they were allowed to choose whether to participate or not.

In the waiting room, there were a group of research assistants who were ready to conduct the survey. The research assistants were giving specific instructions to all the respondents. In brief, the respondents were needed to answer every question in the survey and they were allowed to raise any questions to the research assistants if they had difficulties or if they did not understand the questions. After the respondents had finished answering, they were given a token of appreciation in the form of a voucher, and they were needed to fill in their particulars for record purposes.

4. Results and Discussion

This section explains the results collected from the current research. This section is divided into four subsections which are Drivers, Motorcyclists, Descriptive Data and Analysis and Discussion.

4.1 Drivers

The demographic details of the car driver respondents were presented in Table 2 below. The distribution of the respondent's gender was dominated with higher female participation in the baseline and the post-implementation study. Overall, most of the respondents passed their driving test, and only 27.8% failed for the post-implementation sample. The majority of the respondents had at least SPM and lower education background. This could be attributed to the minimum eligible age of taking a driver's license which is at 17 years old, and most SPM leavers were taking the licenses after they had finished their secondary school. Meanwhile, Negeri Sembilan recorded a higher participation, and many were from rural residential areas.

Table 2 Demographic details for car drivers

Item		Baseline	New DEC
		%	%
Total respondent (N)		198	211
Sex	Male	41.6	40.1
	Female	58.4	59.9
Driving test outcome	Passed	69.4	72.2
	Failed	30.6	27.8
Education	STPM and higher	29.0	27.0
	SPM and lower	71.0	73.0

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States	Negeri Sembilan	66.0	50.5
	Malacca	34.0	49.5
Residence	Urban	44.3	50.2
	Rural	55.7	49.8

Both findings on an affective domain and cognitive domain for the drivers were compared with a baseline data. As can be seen in Table 3, the latest research findings for the affective domain is compared and is put side by side with the baseline data that was collected by Kaviyarasu, Roziana, Maslina and Eddy (2015) that studied on the old version of Drivers Education Curriculum (Kurikulum Pendidikan Pemandu, KPP) before the implementation of the new Drivers Education Curriculum (KPP). From the table, it can be seen that there is an increase in the percentage of drivers who agree for some items and also a decrease in the percentage of drivers who agree with the statements in the questionnaire for the other items. For item A27, it can be seen that there is a decrease in the percentage of drivers who agree in which from 21.3%, it decreases to 13.2% of drivers who agree. Meanwhile, for item A33, the percentage increases from 91.4% to 92.0% and it is still the item that has the highest percentage of drivers who agree.

Table 3 Percentage of drivers who agree for each item in the affective domain

Question no.	Questions	Percentage of drivers who agree (B)(%)	Percentage of drivers who agree (P)(%)
A19	Saya tidak akan berasa tertekan sekiranya terperangkap dalam kesesakan lalu lintas.	20.8	24.0
A27	Saya lebih selesa memandu di lorong tengah untuk mengelakkan risiko diekori oleh kenderaan berat di lorong paling kiri.	21.3	13.2
A35	Untuk lebih selamat, saya akan menempatkan anak saya di kerusi	21.8	16.9

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	belakang yang tidak mempunyai beg udara keselamatan.		
A12	Sebagai pemandu, saya tidak akan berhenti di lintasan pejalan kaki sekiranya tiada orang yang hendak melintas walaupun ketika lampu isyarat undan berwarna hijau.	33.5	28.7
A2	Sekiranya saya sedang memandu ke bank dan mendapati 'speedometer' (meter had laju) kereta tidak berfungsi, saya akan membawa kereta ke bengkel kereta berhampiran dahulu kemudian menyelesaikan urusan bank.	46.2	48.1
A26	Saya tidak akan meneruskan pemanduan saya apabila lampu isyarat bertukar kuning walaupun kenderaan saya diekori dengan rapat dari belakang.	48.3	45.3
A31	Penggunaan 'child restraint system' (kerusi keselamatan kanak-kanak) pada kanak-kanak akan memberikan perlindungan yang berkesan semasa kemalangan.	52.8	58.0
A4	Saya akan berasa kurang selesa menggunakan tali pinggang keledar semasa berada di tempat duduk belakang kenderaan.	53.8	58.0
A43	Saya akan memberikan keutamaan kepada pemandu dari kanan di persimpangan yang tidak mempunyai lampu isyarat.	53.8	58
A11	Saya tidak akan berhenti di persimpangan yang hanya mempunyai garisan berhenti (putih) tanpa tanda berhenti.	54.3	68.4

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A6	Saya tidak akan meneruskan perjalanan walaupun penghawa dingin kereta tidak berfungsi dengan baik semasa hujan lebat.	56.3	48.6
A13	Saya tidak akan membuat pusingan-U di kawasan larangan sekiranya saya perlu segera ke hospital untuk mendapatkan rawatan.	56.3	59.4
A38	Saya tidak akan memandu melebihi had laju yang ditetapkan sekiranya saya berpendapat had laju yang ditetapkan tidak bersesuaian dengan laluan di kawasan tersebut.	57.3	63.7
A18	Anda hendak ke perhentian bas yang berhampiran dengan rumah untuk mengambil ibu anda, dan semasa dalam perjalanan didapati lesen memandu anda tertinggal. Anda akan pulang ke rumah dan mengambil lesen tersebut walaupun ibu anda sedang menunggu.	57.3	66.8
A29	Saya akan memeriksa paras minyak enjin walaupun kenderaan saya diselenggara mengikut jadual.	57.9	62.8
A30	Saya akan menegur setiap penumpang hadapan dan belakang kereta saya agar memakai tali pinggang keledar.	58.4	60.8
A7	Saya tidak akan meneruskan perjalanan walaupun dalam keadaan penat jika terdapat hal kecemasan.	58.9	60.4
A17	Alat pemadam api adalah satu peralatan keselamatan yang penting dalam setiap kenderaan.	59.4	70.7
A8	Had laju di kawasan sekolah tidak wajar	59.4	63.2

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	ditingkatkan berdasarkan kesesuaian jalan di kawasan tersebut.		
A15	Sekiranya berlaku kesesakan di lebuh raya semasa musim perayaan, penggunaan lorong kecemasan tidak dibenarkan bagi mengurangkan kesesakan tersebut.	60.9	68.2
A25	Adalah menjadi satu kesalahan mengekori kenderaan di hadapan dengan rapat sebagai isyarat kenderaan tersebut perlu bergerak ke lorong yang lebih kiri.	62.4	63.2
A41	Saya patut disaman sekiranya saya memandu pada kelajuan 40 km/j di jalan yang mempunyai tanda had laju 30 km/j.	62.9	72.2
A36	Saya patut disaman sekiranya saya memandu pada kelajuan 90 km/j di jalan yang mempunyai tanda had laju 80 km/j.	66.0	77.4
A23	Sekiranya lebuh raya lengang, saya tetap tidak berasa selamat untuk memandu pada kelajuan 120 km/j walaupun had laju lebuh raya adalah 110 km/j.	66.5	73.6
A3	Larangan penggunaan telefon bimbit ketika memandu adalah tidak wajar kerana telefon bimbit merupakan satu keperluan yang amat penting pada masa kini.	67.0	60.9
A28	Saya tidak akan memeriksa keadaan tayar sekiranya saya lewat ke destinasi yang dituju.	68.0	71.2
A24	Apabila lampu isyarat bertukar hijau di laluan saya, saya akan pastikan semua kenderaan di laluan lain berhenti sepenuhnya sebelum saya memulakan	68.5	73.5

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	perjalanan walaupun saya dihon oleh kenderaan di belakang saya.		
A9	Saya akan berhenti di lintasan belang untuk pejalan kaki sekiranya ada pejalan kaki sedang menunggu untuk melintas.	73.6	79.3
A22	Saya perlu berhenti di kawasan berpapan tanda ini (rujuk rajah) walaupun tiada kenderaan.	74.6	78.8
A44	Saya tidak akan membuat pusingan-U di kawasan yang tidak dibenarkan walaupun tiada pegawai penguatkuasa bertugas di kawasan tersebut.	77.2	76.9
A20	Saya akan sentiasa memeriksa bahagian luaran kenderaan setiap kali sebelum memulakan pemanduan.	77.7	80.6
A39	Setiap individu wajar diberikan kebebasan memandu di jalan raya walaupun hanya jika memiliki lesen memandu yang sah.	80.2	87.2
A5	Saya akan membetulkan kedudukan aras kepala kerusi (head restrain) setiap kali sebelum memulakan pemanduan.	80.7	82.1
A21	Saya tetap akan mematuhi papan tanda ini (rujuk rajah) walaupun saya yakin kemalangan tidak akan berlaku.	81.7	87.8
A40	Sebagai penumpang, saya akan tetap menggunakan tali pinggang keledar walaupun saya tidak selesa dengan penggunaannya.	83.3	85.8
A42	Saya akan memastikan setiap penumpang di dalam kereta saya memakai tali pinggang keledar.	83.7	82.1
A14	Saya akan memperlahankan kelajuan	83.8	85.4

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	kenderaan di kawasan berhampiran jualan pasar malam walaupun had laju di kawasan tersebut adalah 80 km/j.		
A32	Saya sentiasa mengaktifkan fungsi 'child lock' sekiranya saya mempunyai penumpang kanak-kanak di bahagian belakang kereta.	84.2	88.7
A16	Had laju 30 km/j adalah bersesuaian di kawasan sekolah.	84.3	91
A10	Pihak berwajib harus menyediakan laluan khas untuk pejalan kaki di kawasan perumahan bagi mengurangkan risiko kemalangan.	84.8	90.1
A37	Saya akan sentiasa memeriksa keadaan tayar kenderaan sebelum memulakan perjalanan.	85.3	88.2
A34	Saya akan cuba berhenti sebelum garisan berhenti sekiranya saya melihat lampu isyarat bertukar ke warna kuning.	87.3	91.1
A1	Saya akan memeriksa bahagian enjin kenderaan sebelum memulakan pemanduan.	88.3	91.0
A33	Sebagai pemandu, saya akan tetap menggunakan tali pinggang keledar walaupun saya tidak selesa dengan penggunaannya.	91.4	92.0

**B=Baseline data, P=Post implementation data*

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For cognitive section for the novice drivers, the range of scores also varies as presented in Table 4. Similar to the affective section, there are items that show an increase in the percentage of respondents who get correct while there are other items which show a decrease pattern in the percentage of respondents who get correct. For example, for item C26, it can be seen that there are improvements in the percentage of respondents who get correct in which, from only 6.6% of the respondents get correct, the percentage has increased to 93.9%. It is similar to question C21, in which the percentage of respondents who get correct increased from 93.9% to 98.1%. On the other hand, for question C15, the percentage of drivers who get correct for the item decrease from 11.7% to 7.5%. While question C18 and question C27 both show a decreased from 57.9% to 49.1% for the former and 69.00% to 19.8% for the latter.

Table 4 Percentage of drivers who get correct for each item in the cognitive domain

Question no.	Questions	Percentage of drivers who get correct (B)* (%)	Percentage of drivers who get correct (P)* (%)
C26	Pemandu yang memandu melebihi had laju ini (rujuk gambar) boleh dikenakan tindakan saman.	6.6	93.9
C15	Tanda lampu isyarat kuning memberi petunjuk kepada pemandu untuk meningkatkan kelajuan untuk mengelak perbuatan berhenti secara mengejut.	11.7	7.5
C28	Adalah menjadi satu kesalahan lalu lintas sekiranya tidak patuh kepada lampu isyarat di persimpangan yang dikawal oleh polis trafik.	25.9	22.6
C14	Pemandu kenderaan hendaklah memberikan isyarat membelok sekurang-kurangnya selama 2 saat sebelum membuat pusingan-U di persimpangan jalan.	27.4	20.8
C2	Menekan 'clutch' ketika membelok di	29.9	26.9

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	persimpangan sangat disarankan kerana ia akan menghentikan kuasa enjin terhadap putaran roda yang mampu mengurangkan kelajuan.		
C4	Kaedah menganggar jarak bagi peraturan 2 saat adalah dengan berpandukan objek kekal di tepi jalan, tetapi bagi peraturan 4 saat, sebarang objek bergerak di jalan boleh dijadikan panduan.	34.0	32.5
C17	Anda sedang melalui jalan yang mempunyai papan tanda "dilarang memotong kenderaan". Had laju jalan ialah 70 km/j. Di hadapan anda adalah sebuah lori yang bergerak dengan kelajuan 40 km/j. Anda dapati kenderaan lain mula memotong lori tersebut. Apa tindakan yang anda rasa paling selamat?	35.0	37.7
C31	Apakah makna papan tanda ini?	36.0	38.7
C5	Masalah 'blind spot' (titik buta) boleh diatasi dengan sentiasa melihat cermin pandang belakang setiap 15 saat.	36.5	28.3
C1	Pemandu perlu menghidupkan 'hazard light' (lampu kecemasan) semasa memandu ketika hujan lebat kerana ia dapat memudahkan kenderaan saya dilihat.	42.1	37.7
C39	Memberikan lampu tinggi kepada kenderaan di hadapan adalah amalan selamat untuk berkomunikasi dengan pemandu di hadapan agar memberi laluan untuk memotong kenderaan tersebut.	43.1	42.9
C40	Segi tiga amaran hanya berguna sekiranya kenderaan rosak pada waktu	43.1	54.7

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	malam sahaja sebagai pemantul cahaya bagi mengelakkan kemalangan.		
C25	Bagi kes pelanggaran belakang melibatkan lebih daripada 2 kenderaan, hanya kenderaan paling hadapan akan dikecualikan daripada tindakan undang-undang.	46.2	41
C11	Sekiranya berlaku kerosakan brek semasa memandu, matikan enjin dengan segera untuk memperlahankan kelajuan kenderaan.	49.7	50
C37	Lorong kecemasan boleh digunakan untuk berhenti bagi menjawab panggilan telefon.	50.3	43.4
C41	Peraturan berikut perlu diamalkan semasa memotong kenderaan KECUALI...	52.8	56.6
C30	Memberhentikan kenderaan secara mengejut pada lampu isyarat hijau untuk memberikan laluan kepada pejalan kaki adalah satu kesalahan trafik.	53.3	56.1
C20	Semasa melepasi 'hazard'/bahaya, adalah penting untuk mengamalkan langkah-langkah berikut.	54.8	64.6
C33	Pemandu kenderaan digalakkan membunyikan hon sebelum memotong penunggang motosikal agar penunggang motosikal tersebut lebih peka.	55.3	55.7
C35	Menjawab panggilan telefon tanpa 'handsfree' ketika kenderaan berhenti menunggu di lampu isyarat merah adalah dibenarkan.	56.3	64.2
C3	'Brake fluid' (cecair brek) boleh diisi melebihi takat maksimum supaya brek boleh tahan lebih lama sekiranya berlaku masalah kebocoran.	56.9	55.2
C10	Sekiranya kenderaan yang sedang	57.9	70.8

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	dipandu mengeluarkan asap yang tebal dari bahagian enjin, tindakan berikut perlu diambil.		
C18	Kenderaan seperti ambulans, bomba dan polis perlu diberikan keutamaan walaupun tidak membunyikan siren.	57.9	49.1
C38	Mengubah saiz tayar asal sesebuah kereta adalah satu kesalahan trafik.	62.4	68.4
C29	Anda boleh disaman jika tidak bergerak ketika lampu isyarat bertukar hijau untuk memberikan peluang kepada pejalan kaki selesai melintas.	67.0	66.5
C27	Pemandu boleh mengabaikan had laju ini sewaktu musim cuti persekolahan.	69.0	19.8
C24	Pemandu kereta tidak boleh disaman jika penumpang tidak memakai tali pinggang keledar.	70.6	75.5
C16	Tanda lampu isyarat kuning memberi petunjuk kepada pemandu untuk meningkatkan kelajuan bagi mengelak perbuatan berhenti secara mengejut.	72.6	78.8
C12	Penggunaan telefon bimbit untuk menghantar SMS ketika berhenti di lampu isyarat merah adalah dibenarkan.	73.1	78.8
C32	Papan tanda ini WAJIB dipatuhi.	74.6	73.1
C34	Posisi segi tiga amaran yang diletakkan dalam jarak 30 meter dari belakang kenderaan adalah mencukupi.	77.7	82.5
C6	Penggunaan lampu tinggi pada waktu malam semasa memandu adalah digalakkan untuk meningkatkan penglihatan pemandu walaupun ia boleh mengganggu pengguna jalan raya yang lain.	79.7	74.5
C8	Membunyikan hon adalah cara yang selamat untuk mengelakkan	80.2	81.1

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	perlanggaran dari arah hadapan di kawasan selekoh.		
C7	Tekanan angin tayar yang tidak sempurna akan menyebabkan 'hydroplaning' iaitu keadaan apabila kenderaan menggelongsor di atas lapisan air yang berada di antara tayar dengan permukaan jalan.	82.7	79.7
C9	Penyelenggaraan minyak enjin kereta yang tidak mengikut jadual boleh memudaratkan enjin kereta.	84.2	90.6
C19	Penggunaan segi tiga amaran adalah penting semasa berhenti di lorong kecemasan.	85.8	90.6
C36	Mengingkari arahan berhenti warden trafik di kawasan sekolah adalah satu kesalahan lalu lintas.	85.8	87.3
C23	Kegagalan penumpang memakai tali pinggang keledar di bahagian belakang boleh mendatangkan risiko kecederaan/kematian kepada individu lain dalam kenderaan semasa kemalangan.	86.3	87.7
C13	Alat segi tiga amaran tidak perlu digunakan semasa kenderaan rosak pada siang hari.	86.8	89.5
C22	Anda boleh disaman jika tidak mematuhi had laju di kawasan ini seperti yang disarankan oleh papan tanda tersebut.	88.8	91
C21	Had laju ini wajib dipatuhi.	93.9	98.1

**B=Baseline data, P=Post implementation data*

4.2 Motorcyclists

The demographic details of the respondents among the motorcyclists were presented in Table 5 below. Unlike the drivers, the distribution of the respondent's gender was dominated by male participation as 68.8% are male. This could be due to the norms in which females prefer driving a car rather than riding a motorbike. Most of the respondents also passed their test to obtain the motorcycle license as only 21.2% failed their practical test. Negeri Sembilan recorded a higher participation, but overall, 54.8% of the respondents are from the urban residential area. Regarding education, it is similar to the drivers as 84.6% of the respondents are SPM leavers or lower.

Table 5 Demographic details for motorcyclists

Item	Baseline	New DEC
	%	%
Total respondents (N)	210	208
Sex	Male	68.8
	Female	31.2
Driving test outcome	Passed	78.8
	Failed	21.2
Education	STPM and higher	15.4
	SPM and lower	84.6
State	Negeri Sembilan	54.3
	Melaka	45.7
Residence	Urban	54.8
	Rural	45.2

Similarly, for the findings of the affective domain and cognitive domain of respondents who were taking the motorcycling practical exam, they were being compared to the baseline data that was collected by Kaviyarasu, Roziana, Maslina and Eddy (2015) that studied on the old Drivers' Education Curriculum (Kurikulum Pendidikan Pemandu, KPP) before the implementation of the new Drivers' Education Curriculum (KPP). From

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Table 6, it can be seen that there is an increase in agreeableness for some of the items in the questionnaire while there is also a decrease in the percentage of motorcyclists who agree with the statements in the questionnaire for some other items. As can be seen, for items A20 and A30 which have the lowest percentage of motorcyclists who agree with the statement in the baseline data, the percentage has increased to 38.7% and 66.5% respectively. On the other hand, there is a major decrease for item A40 in which it decreases from 76.7% to 8.8%. Similarly, for question A36, the percentage of respondents who agree decreases from 81.9% to 17.7%.

Table 6 Percentage of motorcyclists who agree for each item in the affective domain

Question no.	Questions	Percentage of motorcyclists who agree (B) (%)	Percentage of motorcyclists who agree (P) (%)
A20	Saya tidak akan rasa tertekan sekiranya terperangkap dalam kesesakan lalu lintas.	18.5	38.5
A30	Saya sering menggunakan brek kaki dan tangan untuk memperlahankan motosikal.	27.1	65.0
A2	Semasa saya sedang menunggang motosikal ke bank, saya mendapati 'speedometer' pada motosikal tidak berfungsi. Saya akan membawa motosikal ke bengkel berhampiran dahulu dan menyelesaikan urusan penting kemudian.	31.0	32.7
A5	Saya akan sentiasa menggunakan isyarat tangan semasa menunggang walaupun lampu isyarat motosikal saya berfungsi dengan baik.	34.8	46.7
A38	Saya akan berhenti apabila lampu isyarat bertukar kuning walaupun motosikal saya diekori dengan rapat dari belakang.	39.5	36.5

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A15	Saya akan sentiasa memotong di lorong kanan jalan kerana menjadi kesalahan kepada motosikal untuk memotong di lorong kiri.	40.5	39.5
A26	Saya lebih selesa menunggang di lorong kiri walaupun mempunyai risiko diekori oleh kenderaan berat di lorong kiri.	50.0	51.0
A34	Saya akan sering memperlahankan kelajuan ketika membelok di selekoh.	51.4	33.7
A37	Kebenaran menunggang motosikal di jalan raya dalam kalangan pemegang lesen L adalah sesuatu yang selamat.	51.9	54.3
A3	Larangan penggunaan telefon bimbit ketika menunggang adalah sesuai kerana telefon bimbit merupakan bukan satu keperluan yang amat penting pada masa kini.	51.9	55.3
A35	Saya lebih selesa memakai kasut walaupun menunggang ke destinasi yang berhampiran.	52.8	56.2
A12	Saya akan berhenti di lintasan pejalan kaki untuk memberi laluan kepada pejalan kaki walaupun lampu isyarat undan masih merah.	53.4	54.8
A11	Saya akan berhenti di persimpangan tanpa papan tanda berhenti hanya jika ada kenderaan yang ingin lalu.	54.8	22.6
A17	Saya tidak akan mencelah semasa kesesakan lalu lintas walaupun saya ingin cepat sampai ke destinasi.	55.8	20.7
A32	Ketika saya mendaki bukit dengan motosikal, saya jarang memotong kenderaan hadapan yang perlahan.	58.1	33.7
A4	Saya selesa menggunakan topi keledar semasa menunggang di kawasan berdekatan dengan tempat kediaman.	59.0	54.3

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A25	Adalah menjadi satu kesalahan mengekori kenderaan di hadapan dengan terlalu rapat sebagai isyarat kenderaan tersebut perlu bergerak ke lorong yang lebih kiri.	59.0	64.5
A28	Saya perlu memeriksa paras minyak enjin walaupun kenderaan saya diselenggara mengikut jadual.	59.0	57.2
A18	Anda hendak ke perhentian bas yang berhampiran dengan rumah untuk mengambil ibu anda, dan semasa dalam perjalanan didapati lesen memandu anda tertinggal. Anda akan pulang dahulu untuk mengambil lesen sebelum meneruskan perjalanan untuk menjemput ibu anda.	59.5	50.9
A23	Walaupun jalan raya lengang, saya akan berasa tidak selamat untuk menunggang pada kelajuan 90 km/j walaupun had laju jalan raya adalah 80 km/j.	61.0	54.9
A27	Saya akan memeriksa tekanan tayar sekiranya saya lewat ke destinasi yang dituju.	61.4	68.8
A6	Penggunaan pemantul cahaya di belakang motosikal dapat membantu mengurangkan kemalangan di waktu malam.	62.4	58.2
A7	Saya tidak akan meneruskan perjalanan jika saya keadaan penat walaupun terdapat hal kecemasan.	64.7	59.6
A39	Saya akan berhenti di lintasan belang untuk pejalan kaki sekiranya ada pejalan kaki sedang menunggu untuk melintas.	64.7	38.5
A22	Saya perlu berhenti di kawasan berpapan tanda ini (rujuk rajah) walaupun tiada kenderaan.	65.7	70.7
A13	Pakaian pemantul cahaya perlu	67.1	18.3

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	diwajibkan kepada semua penunggang motosikal.		
A8	Had laju di kawasan sekolah tidak wajar ditingkatkan berdasarkan kesesuaian jalan di kawasan tersebut.	68.1	70.2
A19	Saya akan sentiasa menunggang mengikut had laju yang ditetapkan pada waktu malam walaupun jalan lengang.	69.5	12.0
A29	Saya akan menggunakan peraturan 4 saat semasa mengekori lori di lebuhraya walaupun lorongnya luas.	69.5	55.3
A40	Saya akan membuat pusingan-U di kawasan yang dibenarkan walaupun tiada kehadiran pegawai penguatkuasa di kawasan tersebut.	76.7	8.7
A24	Apabila lampu isyarat bertukar hijau di laluan saya, saya akan pastikan semua kenderaan di laluan lain berhenti sepenuhnya sebelum saya memulakan perjalanan walaupun saya dihon oleh kenderaan di belakang saya.	77.2	60.6
A16	Had laju 30 km/j adalah bersesuaian di kawasan sekolah.	77.6	66.4
A1	Saya akan memeriksa bahagian enjin motosikal sebelum memulakan penunggangan.	81.9	79.3
A36	Setiap individu wajar diberikan kebebasan menunggang motosikal di jalan raya dengan memiliki lesen yang sah.	81.9	73.1
A10	Pihak berwajib harus menyediakan laluan khas untuk pejalan kaki di kawasan perumahan bagi mengurangkan risiko kemalangan.	86.7	82.6
A14	Saya akan memperlahankan kelajuan motosikal di kawasan berhampiran	87.2	76.5

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	jualan pasar malam walaupun had laju di kawasan tersebut adalah 80 km/j.		
A9	Saya tidak akan membuat pusingan-U di kawasan yang tidak dibenarkan walaupun tiada kehadiran pegawai penguatkuasa di kawasan tersebut.	87.6	25.0
A33	Saya akan sentiasa memastikan pembonceng kanak-kanak motosikal saya memakai topi keledar yang mengikut piawaian.	87.6	77.9
A31	Saya sentiasa memastikan pembonceng motosikal saya mengikat kemas topi keledar sebelum saya memulakan perjalanan.	91.5	16.3

**B=Baseline data, P=Post implementation data*

For the findings of the cognitive domain of the motorcyclists in Table 7, it was found that two items that previously had the lowest percentage of respondents who got correct, the percentage had increased. For C1, from only 11.4% of respondents who got correct in the baseline study, now the readings had increased to 17.8% in the post-implementation study. Similarly, for items C4, the percentage also increased from only 19.0% to 31.4% of respondents who got correct. However, there were four items that showed a decrease in the percentage of respondents who got correct. The items are C11 and C28. The percentage of respondents who got correct for C11 dropped from 45.2% to 38.9%. While for C28, the percentage dropped from 69.00% to 28.8%.

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Table 7 Percentage of motorcyclists who get correct for each item in the cognitive domain

Question no.	Questions	Percentage of motorcyclists who get correct (B) (%)	Percentage of motorcyclists who get correct (P) (%)
C1	Penunggang perlu memastikan cekam tuil 'throttle' mesti berada dalam keadaan ketat bagi memastikan ia sentiasa berfungsi dengan baik.	11.4	17.8
C4	Kaedah menganggar jarak bagi peraturan 2 saat adalah dengan berpandukan objek kekal di tepi jalan, tetapi bagi peraturan 4 saat, sebarang objek bergerak di jalan boleh dijadikan panduan.	19	31.4
C40	Kompaun sebanyak RM300 akan dikenakan sekiranya menunggang tanpa memasang cermin sisi.	26.2	21.4
C39	Pemakaian pakaian gelap oleh penunggang motosikal pada siang hari dapat membantu mengurangkan risiko dilanggar oleh kenderaan lain.	32.4	32.3
C25	Bagi kes pelanggaran belakang melibatkan lebih daripada 2 kenderaan, hanya kenderaan paling hadapan akan dikecualikan daripada tindakan undang-undang.	32.4	41.5
C17	Anda sedang melalui jalan yang mempunyai papan tanda "dilarang memotong kenderaan'. Had laju jalan ialah 70 km/j. Di hadapan anda adalah sebuah lori yang bergerak dengan kelajuan 40 km/j. Anda dapati kenderaan lain mula memotong lori tersebut. Apa tindakan yang anda rasa paling selamat?	35.7	42.8

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C31	Apakah makna papan tanda ini?	39	37.5
C30	Memberhentikan motosikal secara mengejut pada lampu isyarat hijau untuk memberikan laluan kepada pejalan kaki adalah satu kesalahan trafik.	44.8	48.7
C37	Lorong kecemasan boleh digunakan untuk berhenti bagi menjawab panggilan telefon.	44.8	62.2
C11	Pembonceng dibenarkan menaiki motosikal sebelum enjin motosikal dihidupkan.	45.2	38.9
C18	Kenderaan seperti ambulans, bomba dan polis perlu diberikan keutamaan walaupun tidak membunyikan siren.	53.8	66.2
C20	Semasa melepasi 'hazard'/bahaya, adalah penting untuk mengamalkan langkah-langkah berikut.	54.3	51.9
C3	Minyak enjin boleh diisi melebihi takat maksimum supaya enjin kenderaan boleh bertahan lebih lama sekiranya berlaku masalah kebocoran.	56.2	60.3
C5	Penggunaan gear neutral atau 'free gear' sewaktu menuruni bukit adalah sangat penting untuk kawalan kelajuan kerana enjin tidak bertindak menggerakkan roda motosikal.	56.2	54.8
C9	Penunggang perlu melihat cermin sisi sahaja semasa menukar lorong tanpa menoleh ke belakang kerana perbuatan menoleh adalah berbahaya.	56.7	68.8
C29	Anda boleh disaman jika tidak bergerak ketika lampu isyarat bertukar hijau untuk memberikan peluang kepada pejalan kaki selesai melintas.	57.6	64.9
C33	Penunggang motosikal digalakkan membunyikan hon apabila memotong	57.6	52.4

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	kenderaan untuk agar mereka tidak terkeluar dan memasuki laluan kenderaan.		
C35	Menjawab panggilan telefon tanpa 'handsfree' ketika kenderaan berhenti menunggu di lampu isyarat merah adalah dibenarkan.	57.6	55.8
C14	Bebaskan brek, lepaskan pemulas minyak dan biarkan motosikal bergerak perlahan adalah cara yang terbaik perlu dilakukan semasa menghadapi masalah tayar Kempis/pancit.	61	63.5
C2	Tekanan udara tayar yang secukupnya dapat membantu dalam menjimatkan penggunaan bahan api.	64.3	58.7
C15	Sekiranya pemulas minyak tersekat semasa menunggang, penunggang perlu matikan enjin bagi mengurangkan kelajuan.	65.2	24
C42	Gunakan kaki kanan dahulu untuk memijak permukaan lantai bagi mendapat keseimbangan ketika motosikal berhenti.	65.7	67.3
C10	Penggunaan lampu tinggi pada waktu malam semasa menunggang adalah digalakkan untuk meningkatkan penglihatan penunggang walaupun ia boleh mengganggu pengguna jalan raya yang lain.	67.6	57.7
C41	Kanak-kanak di bawah usia 12 tahun dibenarkan menjadi pembonceng ke-3 di atas motosikal.	68.1	74
C6	Kedudukan badan semasa menunggang tidak mempengaruhi cara menunggang motosikal dengan selamat.	68.6	66.3
C28	Adalah menjadi kesalahan lalu lintas	69	28.8

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	sekiranya tidak patuh kepada lampu isyarat di persimpangan yang dikawal oleh polis trafik?		
C32	Papan tanda ini _____ dipatuhi.	70.5	64.9
C7	Cengkaman tayar yang baik tidak penting sekiranya motosikal mempunyai sistem brek yang baru diselenggara.	71.4	60.6
C27	Penunggang boleh mengabaikan had laju ini sewaktu musim cuti persekolahan.	71.9	78.8
C38	Topi keledar motosikal yang dipakai tetapi tidak diikat kemas masih boleh memberikan perlindungan yang optimum semasa pelanggaran.	75.2	79.8
C24	Penunggang motosikal tidak boleh disaman jika pembonceng tidak memakai topi keledar keselamatan.	78.6	80.3
C8	Membunyikan hon merupakan cara yang selamat untuk mengelakkan pelanggaran dari arah hadapan di kawasan selekoh.	80	79.8
C12	Penggunaan isyarat yang betul membolehkan anda mendapat keutamaan laluan.	80.5	85.1
C36	Meningkari arahan berhenti warden trafik di kawasan sekolah adalah satu kesalahan lalu lintas.	83.3	82.7
C19	Pembonceng di bawah usia 12 tahun adalah dikecualikan daripada memakai topi keledar motosikal.	87.1	91.3
C34	Topi keledar motosikal yang diluluskan mengikut piawaian SIRIM adalah lebih selamat berbanding topi keledar tanpa piawaian SIRIM.	88.6	88
C13	Minyak enjin yang jarang ditukar akan mengakibatkan enjin kenderaan mengalami kerosakan.	88.6	86.5
C22	Anda akan disaman jika tidak mematuhi	90.5	87

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	had laju di kawasan ini (pembinaan) seperti yang tertera pada papan tanda tersebut.		
C16	Tanda lampu isyarat kuning memberi petunjuk kepada penunggang untuk memperlahankan kenderaan dan bersedia untuk berhenti.	91	93.8
C23	Pemakaian topi keledar motosikal adalah untuk mengurangkan risiko kecederaan dan kematian pada penunggang dan pembonceng semasa kemalangan.	91.9	95.7
C21	Had laju ini (30 km/j) wajib dipatuhi.	94.3	97.1
C26	Papan had laju ini (30 km/j) sering dijumpai di kawasan sekolah	96.7	98.1

B=Baseline data, P=Post implementation data

4.3 Descriptive Data and Analysis

Table 8 below shows the descriptive data for the overall scores for the affective and cognitive domain of the drivers in the post-implementation study. It can be seen for affective domain, the mean is 162.18, (SD=17.88, min=71, max=205). While for the cognitive domain, the mean of scores for the drivers is 68.75, (SD=3.62, min=57.00, max=80.00).

Table 8 Descriptive data of the overall scores of the drivers in the post-implementation study

Score	μ	SD	Min	Max	Median
Affective	162.18	17.88	71.00	205.00	160.00
Cognitive	68.75	3.62	57.00	80.00	66.00

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On the other hand, Table 9 below shows the descriptive data of the overall scores for the affective and cognitive domain of the respondents who were among candidates who were taking their motorcycle practical exam. From the table, it can be seen that the mean scores for the motorcyclists for the affective domain is 127.49, (SD=10.64, min=94.00, max=165) and the mean scores for the cognitive domain are 68.39, (SD=4.22, min=55.00, max=79.00).

Table 9 Descriptive data of the overall scores of the motorcyclists in the post-implementation study

Score	μ	SD	Min	Max	Median
Affective	127.49	10.64	94.00	165.00	126.00
Cognitive	68.39	4.22	55.00	79.00	69.00

An independent-sample t-test was conducted to compare whether there are differences regarding the affective domain scores for the drivers samples which are following the old curriculum (Old KPP) and with the samples who are following the new curriculum (New KPP). Table 10 shows, there is no significant difference in the scores for samples of those who followed the old curriculum ($\mu=158.95$, $SD=17.63$) and new curriculum ($\mu=162.18$, $SD=17.88$) conditions; $t(407) = -1.84$, $p = 0.067$. These results suggest that the new curriculum implemented does not resulted a better affective domain scores compared to scores of participants who follows the old curriculum.

Table 10 Results of t-test and descriptive statistics for affective domain scores by types of curriculum (Drivers)

	Types of curriculum (KPP)						<i>t</i>	df
	Old (KPP)			New (KPP)				
	μ	SD	N	μ	SD	N		
Affective domain scores	158.95	17.63	198	162.18	17.88	211	-1.84	407

$p = 0.067$

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Similarly, to test whether there was a significant difference regarding the cognitive scores between drivers who followed the old curriculum with the drivers who followed the new curriculum, an independent t-test was also conducted. Table 11 shows a significant difference between the respondents who followed the old curriculum ($\mu=64.82$, $SD=4.00$) and the new curriculum ($\mu=65.75$, $SD=3.62$) as the results of the t-test show; $t(407)=-2.456$, $p = 0.014$.

Table 11 Results of t-test and descriptive statistics for cognitive domain scores by types of curriculum (Drivers)

	Types of curriculum (KPP)						t	df
	Old (KPP)			New (KPP)				
	μ	SD	n	μ	SD	n		
Cognitive domain scores	64.82	4.00	198	65.75	3.62	211	-2.456	407

$p = 0.014$

Similarly, for the motorcyclists, an independent-sample t-test was conducted to compare whether there are differences regarding the affective domain scores for the samples who are following the old curriculum (Old KPP) and with the samples which are following the new curriculum (New KPP). Similarly, from Table 12 below, a significant difference is shown in the scores for samples who follows the old curriculum ($\mu=137.79$, $SD=16.86$) and new curriculum ($\mu=127.70$, $SD=10.64$) conditions; $t(416)=7.59$, $p = 0.00$. These results suggest that differences exist regarding scores between the two sample and it could be due to a better curriculum that covers more affective domain.

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Table 12 Results of t-test and descriptive statistics for affective domain scores by types of curriculum (Motorcyclists)

	Types of curriculum (KPP)						<i>t</i>	df
	Old (KPP)			New (KPP)				
	μ	SD	N	μ	SD	N		
Affective domain scores	137.79	16.86	249	127.70	10.64	169	7.59	416

$p=0.00$

For cognitive scores, an independent t-test was also executed to test whether there are significantly different between these two samples. As shown in Table 13, there was no significant difference between the respondents who followed the old curriculum ($\mu=68.53$, $SD=5.12$) and new curriculum ($\mu=68.39$, $SD=4.22$) as the results of the t-test shown; $t(416)=0.310$, $p = 0.75$.

Table 13 Results of t-test and descriptive statistics for cognitive domain scores by types of curriculum (Motorcyclists)

	Types of curriculum (KPP)						<i>t</i>	df
	Old (KPP)			New (KPP)				
	μ	SD	N	μ	SD	N		
Cognitive domain scores	68.53	5.12	249	68.39	4.22	169	0.310	416

$p=0.75$

4.4 Discussion

From this post-implementation study, it can be seen that the researcher had collected mixed results for both the drivers' samples and the motorcyclists' sample. As mentioned earlier, the findings of the current study have been compared to the baseline study findings done by Kaviyarasu *et al.* (2015). The difference between the drivers' and motorcyclists' sample in the baseline study and the post-implementation study are that the respondents who took part in the baseline study follow the old curriculum (Old KPP) while the respondents who took part in the post-implementation study follows the new curriculum (New KPP). Therefore, for further analysis, the researcher used a t-test to study if there are differences between the two samples in the cognitive and affective domain represented by cognitive and affective scores. The percentage of respondents who get correct for the cognitive domain, the percentage of respondents who agree with the statements in the affective domain section and also the descriptive data such as the mean, mode, median, the minimum score and also the maximum score for both domains in the questionnaire were also presented earlier as a basic information for the readers to understand the data collected in the post-implementation study.

For affective domain, as could be seen in the findings, both results for the drivers and the motorcyclists portrayed a mixed result. For the percentage of respondents who agree with the statements in the questionnaire, it could be seen that there is an increase for some items while there is a decrease for the others. As explained in the results section, there are items that showed a massive drop in the percentage of agreeableness while the increased margin was not very high. Nevertheless, the t-test done for the sample showed that there was no significant different regarding scores of the affective domain for the drivers. On the other hand, using the same test, a significant difference in terms of scores of the affective domain was found among the motorcyclists. However, the difference is contradicted to what the researcher expected earlier as the new KPP is expected to increase the affective knowledge of its learner. However the post-implementation findings showed a lower means compared to the baseline findings. Even though the New Driver Curriculum (KPP) was constructed

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and implemented with the aim to instill positive awareness towards safety culture and to produce safer road users, somehow it is not portrayed in the findings found by the researcher. This occurrence could be caused by the motivation of the learners itself and not due to the ineffectiveness of the new curriculum. As mentioned by Mayhew and Simpson (2002), a structured driver education and training could provide the students and future road users with all the necessary knowledge and skills but it is up to the students to put it into practice, and one is just unable to influence how the students choose to drive and what motivated them to drive. Mayhew and Simpson (2002) also added that novice drivers' primary motivation is only to get a license and unmotivated to drive safely. Thus, a likelihood to involve in the crash is higher.

For cognitive domain section, there are also mixed results for both the drivers' sample and the motorcyclists' sample. Among the drivers, they showed an increase in questions that related to the traffic laws and rules such as question C26. On the other hand, among the motorcyclist, an increase in the percentage of respondents who got correct can be seen for questions that are related to safety while riding a motorcycle such as for questions C1 and C4. These differences between the drivers and the motorcyclists could be due to the motivation of the drivers and motorcyclist and what matters the most while they are on the road. It's either traffic rules are much more important or their safety is more important. Motivation plays a major role while driving or riding a motorcycle and since each individual is different, their motivation is also different as one driver might accept behaviour that others regard as immoral while the other might reject it and accept other immoral behaviour (Shope, 2006). Similarly, in the t-test analysis, it can be seen that the results are contradicted between the drivers and motorcyclist. Among the drivers, there is a significant difference between these two groups of samples while for motorcyclists the distribution of the scores are the same among the two samples and no significant difference exists. Developmental factors can be implied as one of the factors that resulted in the differences in scores in the cognitive domain as Shope (2006) also mentioned that for novice road users, their prefrontal cortex that helps in decision making and judgement might not be fully developed yet, thus causing each individual to select differently on which aspect that they want to learn and apply.

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There are a few limitations of this study. First of all, the implementation of the driver's curriculum is not standard and the same across the two states selected. Some of the driving institutes started to implement it earlier than the other driving institutes. It can be hypothesized that other factors such as the standardization of the new curriculum might affect one student performance to another student's performance in two different areas. This is because, since it has only been a few months since the new drivers' curriculum being implemented, it can't be assured that the new curriculum followed rigidly, or the driving institute still followed some principles or method of the old curriculum. One can also argue if all the trainers are competent enough to instruct the students based on the new curriculum or even the instructors need more time to pick up the new curriculum. In addition, there is no Train of the Trainer (TOT) program has been conducted prior to the implementation of the program. Secondly, the research is done based on a self-reported questionnaire that was developed to measure the performance in affective knowledge and also cognitive knowledge. This is differing with many studies that have been done in the West and other developed countries that study the effectiveness of driver training and driver education based on crash rates rather than solely relying on affective or cognitive scores.

5. Recommendations

This research opens up many new research opportunities in the future. Since the new KPP has just newly been implemented, current researchers believe that another post-implementation study can be done in a year or two as different road safety measures is developed rapidly everyday and new findings related to drivers' education in one country must be obtained to guide the authority implement better policy (Engström, Gregersen, Hernetkoski, Keskinen & Nyberg, 2003). However, this time, the future researcher could use data of crash rates to correlate with the performance of the respondents in the self-reported questionnaire. Besides that, a replication of the same study might also be possible in the future as the researcher believes that the new curriculum will need more time to be more structured regarding the implementation and also on how it will be implemented. Besides than just assessing whether the drivers' education curriculum is effective, it is also important to study the perception of the driver trainers and the driving institutes regarding the content of the curriculum and whether they can implement it as what the government wants. As mentioned by Williams and Ferguson (2004), driver education and curriculum have enduring appeal to promote and enhances safety while on the road and it should be continued despite the mixed results of the effectiveness of the programs around the world. As drivers' education is the first step for Malaysians to acquire knowledge and skills that are related to vehicle handling, maneuvering, road safety culture and laws, a thorough evaluation of the KPP must be made continuously to guide the policy makers. Drivers' education is also important to produce first class drivers, motorcyclists and road users, eventhough Christie mentioned in Mayhew and Simpson (2002), that the use of road safety education (RSE) programs that are delivered over several years to foster the development of attitudinal and motivational factors are much more important and could act as the very first step to instilling safety values. But drivers' education can be seen as a program that continues the objective of the RSE program that conclude when the students complete their Form 3 that is to produce safer drivers.

6. Conclusion

In conclusion, all specific objectives of this research is achieved. The present study succeed to evaluate the effectiveness of the New Driver Education Curriculum based on cognitive and affective domain among the drivers and motorcyclists. The differences of the overall taxonomy scores among the two different groups of the drivers and motorcyclists was also able to identified. The results showed that there is no difference in terms of the affective scores among the drivers while difference exist among the motorcyclists. On the other hand, for cognitive domain scores, difference exists among the drivers while no difference was showed among the motorcyclists. It is anticipated that more significant findings can be obtained after a longer period of implementation of the new KPP.

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