EDUCATIONAL METHODS TO CHANGE THE ATTITUDES OF TRANSPORT PLANNERS TOWARDS ENVIRONMENTALLY SUSTAINABLE TRANSPORTATION SYSTEMS IN DEVELOPING COUNTRIES

Hong Tan VAN
Graduate Student
Department of Civil and Environmental Engineering
Tokyo Institute of Technology
Tokyo, Japan

Satoshi FUJII
Professor
Department of Civil and Environmental Engineering
Tokyo Institute of Technology
Tokyo, Japan

Fumihiko NAKAMURA
Professor
Department of Civil Engineering, Yokohama National University
Kanagawa, Japan

Hisashi EMORI
Research Associate
Department of Transportation Engineering and Socio-Technology
Nihon University
Chiba, Japan

This paper describes a pilot project aimed at increasing the exposure of transport planners in Bangkok and Colombo to Bus Rapid Transit (BRT). The objective of the project was to examine the efficiencies of three educational methods used to increase the understanding of local transport officials about BRT as well as changing their attitudes toward the implementation of BRT in their cities. Two methods were found to increase the planners' inclination to implement BRT: 1) providing the planners with information on public attitudes and perceptions of BRT, and 2) asking them to make their intentions more concrete by specifying possible BRT routes on a city map. A method that provided detailed information on using and operating a model BRT system appeared to increase the feeling of "obligation" of the planners to develop a BRT system for their countries. The combination of these methods would possibly be effective in strategies to change transport planners' attitudes toward BRT.

Key Words: Educational methods, Attitudes of transport planners, Public attitudes, Bus Rapid Transit (BRT), Developing countries

1. INTRODUCTION

Rapid motorization in urban areas of developing countries has put pressure on the limited budget of many municipal governments for providing mobility to the community. In developing countries, transport planners typically address this problem by improving the bus system rather than the railway. This is because doing so is relatively inexpensive, and the bus is often considered a "social accommodation" for low-income travelers. However, as the population reaches a certain level, bus services cannot cope with the actual mobility needs of residents, and mass rapid transport is clearly required for sustainable economic growth.

When planning for mass transit systems, various factors must be considered, including capital and operating costs, service capacity, efficiency, and environmental impact. Since the building of such a transport system requires considerable capital expenditure, it requires not only the consensus of government officials but more importantly, the support of the public as well. Regarding developing countries, difficulties in capital are known to be the main constraints on implementation of a mass transit project. For those reasons, a bus-based mass transit system named Bus Rapid Transit (BRT) is considered a ray of hope in providing high quality mobility for people in developing cities[1,2].

Initiated in Curitiba (Brazil) in 1974, BRT has been highly rated due to numerous advantages such as flexibility, cost-saving and quick construction time[3,4] compared to rail, which requires a much greater initial investment and longer construction time. Therefore after its success in Latin America, BRT is predicted to gain momentum throughout the world[5]. For example, in the Asian region, until 2005 there have been 15 systems in operation. These systems, in both developed and developing countries have shown to be an effective alternative for relieving traffic congestion[6-10]. In addition, it is also known that more than twenty other projects are in planning or under construction in some mega cities of

such Asian countries as Bangladesh, China, India, Indonesia, Malaysia and Thailand[5]. The exemplifications of the widespread adoption of BRT imply that such a BRT system is viably beneficial to many countries, varying with different social, economic and transportation conditions.

Although many successful BRT systems have been established worldwide[11], the application of BRT still faces certain obstacles[4]. One of these barriers comes from government officials who may lack knowledge of options like BRT, or to a lesser degree, have little awareness about the benefits of BRT. In addition, the public willingness to use such a system is also an important concern in planning BRT systems. Wright[4] noted that many developing cities still do not have a basic understanding about the potential of BRT. For that reason, raising the awareness of local planners about the need for such a system plays an important role in the establishment of BRT for any developing city, at least as an initial step. Following that direction, there have been some attempts to promote BRT systems in developing countries, as exemplified by Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) in its "Sustainable Urban Transport Project" (since 2003) where they cooperated with local transport agencies in developing countries including China, Thailand, Indonesia etc., to deliver lessons for local transport planners on BRT[12]. However, it should be noted that such attempts may not have been implemented in a systematic and methodical manner so far; and more importantly, there has been no study to investigate the effects of such attempts on the awareness of the benefits of BRT among transport planners in developing countries, as far as the authors know. Furthermore, psychological strategies or educational methods that have been proposed in behavioral science for the purpose of changing people's attitudes[13] have not yet been applied to persuade them into building BRT systems.

With these recognitions, we conducted a pilot project to spread the concepts and advantages of BRT to transport professionals in the developing cities of Bangkok, Thailand, and Colombo, Sri Lanka, where the introduction of BRT may have high potential for success while applying educational methods for persuasion. Bangkok is a mega-city with an estimated population of 9.3 million, whereas Colombo is much smaller with around 1.5 million inhabitants in its urban area. However, the two cities share an inherent characteristic with other developing cities, i.e., frequent traffic congestion has an increasingly negative effect on the economy and the community.

Traffic in Colombo is mixed with different road based transport modes among which motor vehicles comprise 73% of all travel[14]. For public transport, buses account for about 60% of trips by transit modes in Colombo, the remainder is mostly carried by other para-transit modes[15]. Despite making up only nine per cent of the city's traffic, buses have contributed much to the chaotic situations of traffic such as on-street competition and overloading of buses[15]. Moreover, it was reported that accident rates in Colombo were extremely high, accounting for 90% of all traffic accidents in the country[15]. On the other hand, Bangkok, a newly-emerging developing city, has a different kind of transport system where cars are a predominant mode. The city has been operating two rail lines; however their share of use are still low due to insufficient coverage of the system over the city. Meanwhile, 80% of trips by public transport users in Bangkok are still reliant on buses[16], which are suffering from certain deficiencies and unreliability[17]. In these regards, these two cities can be considered typical for many developing cities in terms of level of development and traffic characteristics.

Although the two cities have some differences in population and travel patterns etc., it is clear that for sustainable development, their transport systems must be improved by implementing transit reforms, and as mentioned above, BRT would be one feasible solution. For the case of Bangkok, an integration of BRT with the train-based system is expected to attain better performance for public transportation[5] as well as to increase travel speed of buses and other vehicles as in Taipei's experience[6]. With respect to Colombo, an ordered and segregated transport system like BRT, which mostly decreases interferences between modes, would contribute much to mitigation of traffic accidents and congestion. For those reasons, as an initial effort to help Colombo to deal with the problems, Japan International Co-operation Agency (JICA) has discussed with the government to introduce one BRT line for the Colombo metropolitan region. In Bangkok, so far up to 9 to 12 BRT routes have been proposed and planned for construction. However, determinations and consent of the governors in these two cities might not be strong enough to push those schedules for actual and rapid implementation.

Given this background, the main objective of our study was to examine the efficiencies of different educational methods used to increase understanding as well as to change the attitude of local transport officials about BRT systems in their cities. Specifically, we examined the effects of public attitudes toward BRT on the perceptions and attitudes of transport planners. We also investi-

gated the effectiveness of providing information on BRT operating practices to enhance the understanding of transport professionals. In addition, this paper also describes the application of the 'behavioral plan method'[13, 18] to influence the willingness of officials to implement BRT based on psychological theories of implementation intention[19, 20]. This method included asking the subjects to formulate their ideas and intentions on paper. The purpose of this method is to equip the subjects with implementation intentions[21], which help increase the probability of moving ideas into action.

2. METHOD

In each target city, two experiments, which were conducted as BRT workshops, took place in September and November 2006. Attendees were transport professionals and university students representing the general public. In Bangkok, the participants were 22 transport authority officials and 25 students randomly selected from King Mongkut's Institute of Technology University in the first experiment, and 20 officials and 24 students in the second experiment. In Colombo, 33 and 46 students from the University of Moratuwa and 50 and 25 transport planners participated in the first and the second experiments respectively. Descriptive statistics of these samples are provided in Table 1, and photographs and images from the workshops are provided in the Appendix.

In the first experiment, the two groups received a text explanation of the BRT concept, and were then given a graphical presentation introducing them to BRT. After each step, they answered the same questionnaire about BRT. The questionnaire included questions such as, "Do you think that it will be comfortable to use BRT?" to obtain the participants' perceptions about using BRT; "Do you expect that BRT can actually be implemented in Bangkok/Colombo?" to understand their expectation of actually building a BRT system; and "Will you make great efforts to implement BRT in Bangkok/Colombo?"

to assess the transport professionals' intentions. These beliefs were measured on a five-point scale ranging from 1 (not at all) to 5 (yes, strongly). The questions used in the first and second experiments for each group are shown in Table 2.

At the beginning of the second experimental workshop, the same graphical presentation given at the first workshop was given to all participants to (re-)elicit their perceptions on BRT. In the first phase of the second experimental workshop, transport professionals were presented with the results of the students' attitudes and perceptions on BRT, which they were told came from the first workshop. As Figures 1 and 2 show, what the transport professionals saw represented a strong inclination of the public toward BRT and an expectation to have it implemented in the city; most respondents (strongly) thought that "it will be easy to use BRT," "BRT is necessary," "BRT should be implemented," and (strongly) "wanted to use BRT daily".

After the presentation, another questionnaire was distributed to the participants. This questionnaire was similar to the one used in the first experiment, except that three extra questions were added to assess in more detail whether transport planners were willing to implement BRT. The questions are listed in Table 2.

Following the questionnaire survey, for the second phase of the second workshop all participants attended a presentation about the use and operating practices of model BRT systems in several other cities. They were then requested to answer exactly the same questionnaire as in the previous step.

In the third phase of the second workshop, the transport professionals were asked to consider where BRT route(s) should and could actually be introduced, and to draw these route(s) on a city map. This approach of asking them to draw up an actual plan was called the 'behavioral plan method'[6] for attitude and behavior modification. It is presumed that the behavioral plan method can help to form an implementation intention, which is the intention to implement a planned behavior. After they

Table 1 Descriptive statistics of the participants in the experiments

		1st Experiment			2nd Experiment		
		N	% Male	Mean age	N	% Male	Mean age
Bangkok	Professional	22	86.4	45.0	20	85.0	45.2
	Public	25	68.0	21.6	24	66.7	21.5
Colombo	Professional	50	46.0	39.2	25	60.0	42.1
	Public	33	76.0	38.9	46	71.1	20.9

Table 2 Beliefs and the questions used in the questionnaires for two experiments and two subject groups

Beliefs	Questions	Subjects	Used in
It is comfortable to use BRT	Do you think it will be comfortable to use BRT?	Plc & Pnr	*All attempts*
It is pleasant to use BRT	Do you think it will be pleasant to use BRT?	Plc & Pnr	*All attempts*
It is easy to use BRT	Do you think it will be easy to use BRT?	Plc & Pnr	*All attempts*
Want to use BRT daily	Would you want to use BRT daily when it is implemented in Bangkok/Colombo?	Plc & Pnr	*All attempts*
Expect to use BRT daily	Do you expect that you will use BRT daily when it is implemented in Bangkok/Colombo?	Plc & Pnr	*All attempts*
Easy to understand how to use BRT	Do you think that people in Bangkok/Colombo will easily understand how to use BRT?	Plc & Pnr	*All attempts*
People will use BRT if implemented	Do you think that many people in Bangkok/Colombo will use BRT if it is implemented?	Plc & Pnr	*All attempts*
BRT is necessary for the city	Do you think that BRT is necessary in Bangkok/Colombo?	Plc & Pnr	*All attempts*
BRT should be implemented in the city	Do you think that BRT should be implemented in Bangkok/Colombo?	Plc & Pnr	*All attempts*
Difficult to implement BRT in the city	Do you think that it will be difficult to implement BRT in Bangkok/ Colombo?	Pnr	*All attempts*
Wish to implement BRT in the city	Do you wish to implement BRT in Bangkok/Colombo?	Pnr	*All attempts*
Effort to implement BRT in the city	Will you make great efforts to implement BRT in Bangkok/ Colombo?	Pnr	*All attempts*
Easily imagine how to implement BRT	Can you, as a transport planner, easily imagine how to implement BRT in Bangkok/Colombo?	Pnr	*All Attempts expt Expt. 1*
Expect BRT can be implemented	Do you expect BRT can actually be implemented in Bangkok/Colombo?	Pnr	*All Attempts expt Expt. 1*
Devote work time to develop BRT	Do you want to devote your work time to develop BRT for Bangkok/Colombo?	Pnr	*All Attempts expt Expt. 1*

Note: Plc, Pnr, and Expt. 1 denote "Public", "Planner", and "Experiment 1", respectively.

Q : Do you think it will be easy to use BRT?

Q : Do you think that BRT is necessary in Bangkok?

Q : Do you think that BRT should be implemented in Bangkok?

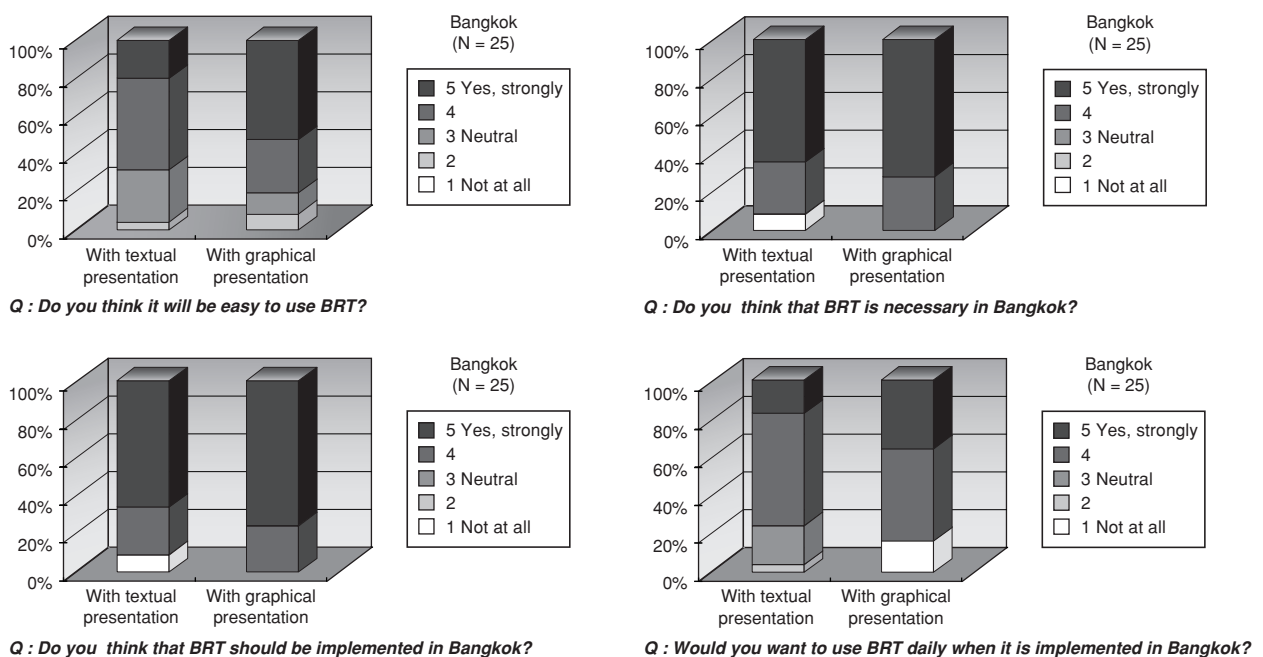Q : Would you want to use BRT daily when it is implemented in Bangkok?

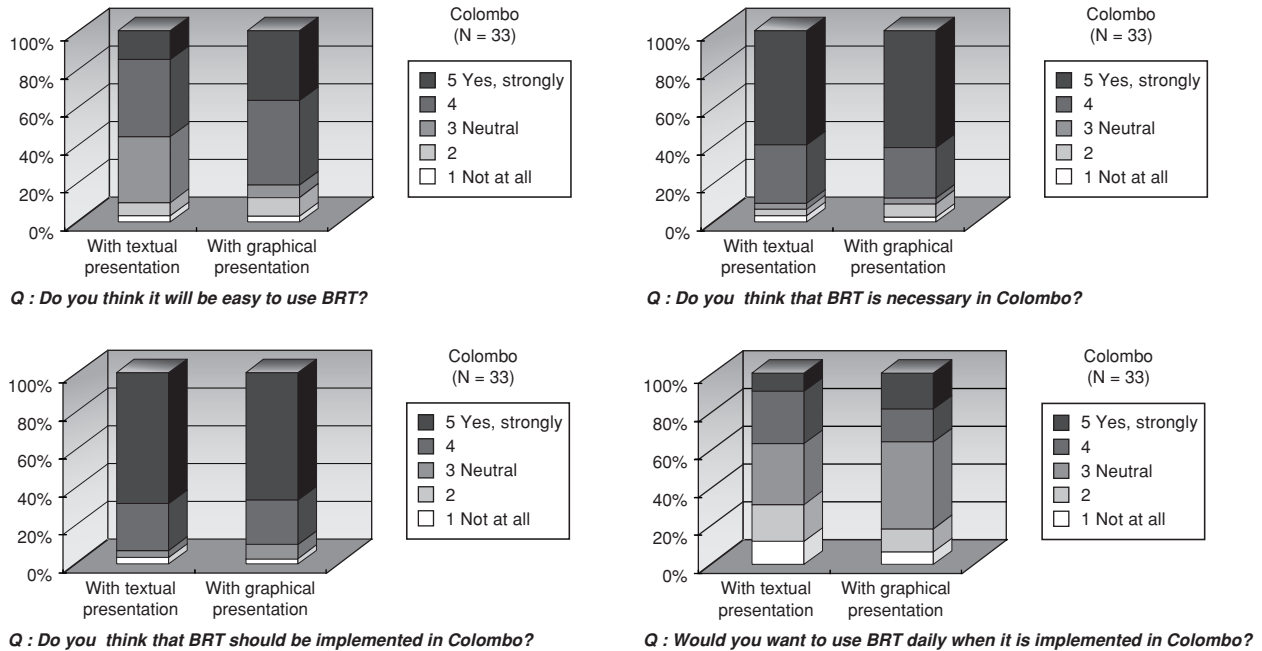**Fig.1   Results from the first workshop, presented to transport professionals in Bangkok**

Fig.2 Results from the first workshop, presented to transport professionals in Colombo

had drawn the route(s) on the map, the professionals were asked to answer the same questionnaire they had answered in the second phase (Table 2).

3. RESULTS

This paper focused on changes in the planners' attitudes under different experimental conditions, so only the results regarding transport planners are reported here. For each phase of the experiment, the mean scores of the beliefs of transport professionals about BRT are shown in Tables 3 and 4, with the caveat that the results of the first experiment were based on the survey administered after the graphical presentation. Most scores in the two samples were much higher than the neutral level of 3, indicating that the planners in Bangkok and Colombo had a positive attitude toward the use of BRT as well as a high inclination for the implementation of BRT in their cities. Note that scores of the Bangkok officials after the three phases of the second experiment were higher for nearly all beliefs than those of the Colombo officials. The transport planners in Colombo seemed to believe that it would be difficult to implement BRT, whereas planners in Bangkok showed a neutral attitude.

Our objectives were to test the efficiency of three methods of changing transport professionals' attitudes and perceptions of BRT: 1) providing the results of public attitudes and perceptions on BRT, 2) providing detailed information on use and operating practices of model BRT systems in other cities, and 3) asking the transport planners to draw potential BRT routes on a city map. In other words, we hypothesized that the application of these three methods separately or the combination of them would be effective in changing attitudes and perceptions of the subjects toward BRT. To draw conclusions about the validity of this hypothesis, we based on the last nine beliefs pertaining to the inclination for the implementation of BRT, i.e., from *"People will use BRT if implemented"* to *"Devote work time to develop BRT"* as can be referred in list of beliefs in Table 3. We would confirm this hypothesis if the application of the method(s) yields significant changes as expected to a majority of these beliefs.

Accordingly, paired-sample *t*-tests were performed for the first experiment and for the three phases of the second experiment. For Colombo, the panel dataset could not be obtained; therefore, only the mean scores of three phases of the second experiment were compared to identify any significant differences between phases of the experiment. The results are shown in Table 3 for Bangkok and Table 4 for Colombo.

Effects of Informing the Planners of Public Attitudes and Perceptions of BRT

With respect to the effect of providing public views

of BRT, a comparison between the first experiment and phase 1 of the second experiment yielded significant differences at a 0.05 probability level in the scores of three out of six beliefs taken into account, confirming our hypothesis. This result indicates that this method to some extent had significant effects on changing the planners' perceptions. Particularly, the beliefs that *"People will use BRT if it is implemented"* and *"Wish to implement BRT in the city"* clearly increased, while the feeling that *"It is difficult to implement BRT in the city"* significantly decreased after the transport planners in Bangkok learned

that the public favored BRT. These results also imply that transportation planners underestimated public attitudes toward BRT; thus, the provision of information about public attitudes could change their intention to implement BRT plans.

Effects of Providing Detailed Information About the Use and Operating Practices of Model BRT Systems

For the second method, in which information on the use and operating practices of model BRT systems was provided, the effect on the transport professionals

Table 3 Mean scores (standard deviation) and *t*-test results of the beliefs of transport professionals about the implementation and use of BRT between phases of experiments in Bangkok (N=20)

Beliefs	1st Expt.	2nd Expt.			*t*-test			
		Phase 1	Phase 2	Phase 3	1 vs. 2-1	2-1 vs. 2-2	2-2 vs. 2-3	2-1 vs. 2-3
It will be comfortable to use BRT	4.10 (0.71)	4.11 (0.81)	4.20 (0.77)	4.60 (0.68)	0.00	−0.70	−2.03#	−2.67*
It will be pleasant to use BRT	3.70 (0.66)	3.58 (0.84)	3.60 (0.88)	4.10 (0.79)	0.81	0.00	−3.25*	−3.29*
It will be easy to use BRT	3.65 (0.59)	3.53 (1.02)	3.65 (0.88)	4.00 (1.08)	0.72	−0.68	−1.44	−1.82#
Want to use BRT daily	3.60 (0.94)	3.53 (1.26)	3.50 (1.24)	4.45 (0.83)	0.42	0.20	−3.57*	−3.51*
Expect to use BRT daily	3.55 (0.89)	3.26 (1.15)	3.55 (1.23)	4.35 (0.81)	1.46	−1.32	−3.11*	−4.19*
Easy to understand how to use BRT	3.60 (1.05)	3.68 (1.29)	3.85 (1.18)	4.35 (0.81)	−0.42	−0.59	−1.60	−1.88#
People will use BRT if implemented	3.70 (0.86)	4.21 (0.79)	4.20 (0.70)	4.65 (0.49)	−2.54*	0.00	−2.93*	−3.62*
BRT is necessary for the city	4.20 (0.77)	4.11 (0.99)	4.35 (0.81)	4.70 (0.47)	0.81	−1.46	−2.33*	−3.02*
BRT should be implemented in the city	4.05 (0.89)	4.11 (1.10)	4.45 (0.68)	4.65 (0.49)	−0.70	−1.84#	−1.71	−2.73*
Difficult to implement BRT in the city	4.05 (1.05)	3.42 (1.30)	3.35 (1.18)	2.40 (1.14)	2.39*	0.00	3.57*	3.08*
Wish to implement BRT in the city	4.05 (0.83)	4.37 (0.90)	4.35 (0.81)	4.65 (0.49)	−2.36*	0.00	−2.85*	−1.76#
Effort to implement BRT in the city	4.05 (0.94)	4.21 (0.85)	4.20 (0.77)	4.45 (0.76)	−1.14	0.00	−2.03#	−1.29
Easily imagine how to implement BRT	-	2.95 (1.08)	3.35 (1.27)	3.85 (1.27)		−1.19	−1.37	−3.28*
Expect that BRT can be implemented	-	3.37 (1.21)	4.10 (0.79)	4.20 (1.11)		−3.24*	−0.38	−2.13*
Devote work time to develop BRT	-	3.79 (1.08)	3.85 (0.93)	4.40 (0.82)		−0.33	−2.77*	−3.28*

Note: Scores range from 1 (*Not at all*) to 5 (*Yes, strongly*).
   *p < 0.05, #p < 0.1
   1, 2-1, 2-2, 2-3 denote "1st experiment", "2nd experiment-phase 1", "2nd experiment-phase 2", "2nd experiment-phase 3", respectively.

Table 4 Mean scores (standard deviation) and *t*-test results of the beliefs of transport professionals on the implementation and use of BRT between three phases of the second experiment in Colombo

Beliefs	1st Expt.	2nd Expt.			*t*-test		
		Phase 1	Phase 2	Phase 3	2-1 vs. 2-2	2-2 vs. 2-3	2-1 vs. 2-3
	(N=50)	(N=25)					
It will be comfortable to use BRT	4.33 (0.95)	4.38 (0.77)	4.04 (0.93)	4.09 (0.85)	1.24	−0.53	1.10
It will be pleasant to use BRT	4.54 (0.77)	4.17 (0.87)	4.24 (0.88)	3.91 (1.12)	−0.89	2.11*	0.85
It will be easy to use BRT	3.92 (1.03)	4.04 (1.12)	3.88 (1.17)	3.74 (1.10)	0.49	0.84	1.43
Want to use BRT daily	3.92 (1.16)	3.79 (0.98)	3.75 (1.05)	4.00 (0.85)	0.19	−1.00	−1.42
Expect to use BRT daily	3.90 (1.21)	3.92 (1.12)	4.04 (0.89)	4.00 (0.85)	−0.77	0.33	−0.20
Easy to understand how to use BRT	3.79 (1.03)	3.92 (0.97)	3.76 (1.05)	3.91 (0.97)	0.46	−0.20	0.72
People will use BRT if implemented	3.85 (1.05)	3.83 (1.17)	3.72 (1.06)	4.05 (1.05)	0.36	−1.32	−1.19
BRT is necessary for the city	4.48 (0.82)	4.33 (0.92)	4.12 (1.09)	4.31 (0.89)	1.05	−1.16	0.42
BRT should be implemented in the city	4.58 (0.79)	4.21 (0.98)	4.16 (1.03)	4.28 (1.12)	0.33	−0.81	−0.27
Difficult to implement BRT in the city	-	3.38 (1.41)	2.92 (1.38)	3.23 (1.34)	1.39	−1.29	0.22
Wish to implement BRT in the city	-	4.00 (1.14)	3.96 (1.10)	4.05 (1.09)	0.18	0.00	0.00
Effort to implement BRT in the city	-	4.04 (1.08)	3.64 (1.25)	4.05 (1.09)	1.51	−1.36	−0.46
Easily imagine how to implement BRT	-	3.17 (1.01)	3.44 (0.92)	3.77 (1.15)	−1.24	−1.30	−2.23*
Expect that BRT can be implemented	-	3.54 (1.10)	3.76 (1.09)	4.00 (0.93)	−0.87	−1.14	−2.26*
Devote work time to develop BRT	-	3.38 (1.14)	3.64 (1.22)	3.86 (1.21)	−2.02#	−1.30	−2.83*

Note: Scores range from 1 (*Not at all*) to 5 (*Yes, strongly*).
　　　*p < 0.05, #p < 0.1
　　　1, 2-1, 2-2, 2-3 denote "1st experiment", "2nd experiment-phase 1", "2nd experiment-phase 2", "2nd experiment-phase 3", respectively.

can be seen by comparing phase 1 (before) and phase 2 (after being given this information). Table 3 shows a significant difference in the score for the belief *"Expect that BRT can be implemented"* in the Bangkok sample. Additionally, the *t*-values showed marginally significant differences (p < 0.1) in two other beliefs, namely *"BRT should be implemented in the city"* for Bangkok and *"Devote work time to develop BRT"* for Colombo. These scores may have increased as a result of the method applied. However, due to the few number of beliefs

being significantly effected, the hypothesis did not hold true for this method in both Bangkok and Colombo.

Effects of Planning and Drawing BRT Routes on a City Map

In the application of behavioral methods by asking transport planners to draw potential BRT routes on a city map, Table 3 shows more significant differences in belief scores between phases 2 and 3 of the second experiment for the Bangkok planner group. Specifically, the strength

of the beliefs regarding the BRT lines that each transport planner drew on the city map significantly increased, confirming the hypothesis due to the majority of beliefs yielding significant changes. They included, for example, *"It will be pleasant to use that BRT line(s),"* *"Want to use that BRT line(s) daily,"* *"People will use that BRT line(s) if it is implemented,"* *"That BRT line(s) is necessary for the city,"* *"Wish to implement that BRT line(s),"* and *"Devote work time to develop that BRT line(s)."* Table 3 also shows that the sentiment *"It is difficult to implement that BRT line(s)"* significantly decreased. These results imply that this method had a significant effect on changing the attitudes of transport planners in Bangkok. For Colombo, Table 4 shows no significant difference between the scores before and after applying this method. Furthermore, somewhat unexpectedly in Colombo, the score for the beliefs *"It will be pleasant to use that BRT line(s)"* decreased, suggesting that this method did not have a positive effect on the target planners in Colombo.

However, Table 4 does indicate that the combination of providing information on the use and operating practices of model BRT systems and asking the planners to draw specific BRT routes on a city map had some certain significant effects on the transport professionals in Colombo. A comparison between phase 1 and phase 3 of the second experiment shows that the strengths of three beliefs significantly increased, given that the planners were engaged in thinking and drawing possible BRT lines after listening to detailed information on the practical operation of BRT in other cities. The beliefs that illustrate this are, *"Easily imagine how to implement that BRT line(s),"* *"Expect that BRT line(s) can be implemented,"* and *"Devote work time to develop that BRT line(s)."* This combined effect can be seen more clearly in the Bangkok sample, in which most of the belief scores significantly differed between the two phases. Still, in Colombo it is impossible to conclude about the validity of the hypothesis, but to some extent, these results were an illustration for the combined effect of these two methods in Colombo.

4. DISCUSSION

We examined the effect of three educational methods to change the attitudes and perception of transport professionals in Bangkok and Colombo about BRT. These methods included:
- 1) providing the results of the public's attitudes and perceptions on an environmentally sustainable transportation system such as BRT;
- 2) providing information on use and operating prac-

tices of model BRT systems in other cities; and
- 3) asking the transport professionals to indicate their intentions by drawing possible BRT routes on a city map. The results obtained after each phase were compared using *t*-tests showed different effects of each method for each country.

Firstly, from the method that provided transport planners with the results of public attitudes and perceptions, we found that transport planners could change their own attitudes in accordance with public desires. After learning that the public was in favor of BRT, transport planners believed that the public would actually use such a system, which increased their intention to implement it. This result, which confirmed our hypothesis, illustrates the effectiveness of using the public's attitudes and perception in persuading planners to engage in developing a BRT system, at least in the case of Bangkok. This result also implies that transport professionals may usually underestimate public attitudes toward a new transport system such as BRT. However, it must be noted that using this method in isolation, many beliefs showed no significant change.

Secondly, we found that practical information on BRT systems in other cities could trigger feelings of "responsibility" of transport planners in the role of planning a transport system for their city. The thinking that *"BRT should be implemented in the city"* as well as the expectation that BRT could be implemented increased in the surveyed planners in Bangkok, while in Colombo, the transport professionals indicated that they would devote their future work time to develop BRT for their city. Such perceptions may be formed while the transport planners compare their city to others that already have successful BRT systems. However, for this method, the increases were mostly marginal and limited in scope.

Finally, having the transport planners express their implementation intentions on a map had an extreme effect on transport planners in Bangkok. This method succeeded in increasing the implementation intention for the planners in Bangkok for a possible BRT scheme. We speculate that providing detailed information on BRT, as we did in the second phase, may indirectly contribute to the formation of implementation intention in the planners' minds. However, the results of the third phase indicate that asking the planners to put their ideas and intentions on paper is clearly a better tool to encourage the subjects to form implementation intentions. This experimental result therefore partially provides practical support for the behavioral plan method in changing per-

ception as well as intensifying intention.

However, this method showed no significant effect on planners in Colombo. The reason for the difference in results between Bangkok and Colombo is not clear. It may have been due to a difference in attitudes and backgrounds between the two groups of planners. The differences may have been due to the fact that transport officials in Bangkok may have much more information about BRT than their counterparts in Colombo. This is because the idea of building a BRT system has been discussed for the last 20 years in Bangkok, and to date, many reports and visual presentations have been given.

Therefore, the effectiveness of having the transport planners express their implementation intentions on a map is not conclusive, even though it was very effective at least in Bangkok. Yet, it is noted that in Colombo, the combination of providing detailed information on BRT operation practices and requesting detailed map planning was found to be effective in changing the attitude of planners whilst the effectiveness of combining these two educational methods was evident in Bangkok. Even though what we have found in Colombo did not support the efficiency of these methods in changing its transport professionals' attitudes and perceptions of BRT, these results may be regarded that enhancing both the understanding of practical information and the formation of implementation intention would be useful in raising the awareness of the benefits of BRT among planners. Thus a package of several educational methods might be more effective in developing countries where planners have a better ability to understand practical information.

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APPENDIX: SOME ILLUSTRATIONS OF THE EXPERIMENTAL WORKSHOPS

BRT expert presenting a 3D computer graphic of a BRT system to students

An illustration of 3D computer graphics of a BRT system, as shown to participants

Local transport planners answering a questionnaire on BRT

An image of the practical operation of BRT in other cities, as shown to participants