
Awareness Raising for Wise Use of Automobiles by the Travel Feedback Programme in Sapporo

Summary of the Practice

Keywords: Wise use of automobiles, environmental education, travel behaviours

Country: Japan

Province: Sapporo

Area: Sapporo

Sectoral Issues: Climate change, air pollution, urban environment

Cross-Sectoral Issues: Environmental Governance, Human Capacity Building, Environmental Information

Implementation Level: Local level

Duration: 1999-2000

Sponsors: Hokkaido Regional Development Bureau

Actors Involved: Local Government, Non-governmental organisations, Community

Description of the Practice

Background:

Sapporo is located in the south eastern part of the Ishikari Plain in Hokkaido, the northern island of Japan. It has an area of 1,121.12 km² and its population was about 1.86 million as of 1 March 2004, the fifth most populous city in Japan.

Sapporo has a public transportation network consisting of subway, light rail, urban heavy rail, and bus. The average use of public transportation was 1.28 million passengers per day in 2001. Nevertheless, with the trend towards motorization, ownership and use of automobiles has been increasing. The population of privately owned vehicles was 1.2 million in 31 January 2004, an average of 645 personal vehicles per 1000 population. With this high vehicle ownership rate, the city centre has been facing the issue of traffic congestion especially because of traffic coming in from the suburbs. The Hokkaido Regional Development Bureau, a regional development branch of the Ministry of Land, Infrastructure and Transport, has tried various travel demand management (TDM) measures but could not achieve any substantial reduction in traffic. In its attempt to introduce new measures against traffic congestions, it decided to implement several parts of the Travel Feedback Programme (TFP) from 1999 to 2000.

TFP is one programme that can impact travel behaviour through communication. These kinds of measures are categorized as *Psychological TDM* and include examples such as *Travel Wise* in the UK, *Individualized Marketing* in Germany, *Travel Smart* in Perth Metropolitan Area, Australia, and *Travel Blending Programme* in Adelaide, Australia. TFP was developed by the Hokkaido Development Engineering Center (DEC) in collaboration with academic scholars, based on the *Travel Blending Programme* in Adelaide allowing for necessary modifications which would relate to local cultures.

Participants of TFP are requested to submit their travel record to the programme coordinator, and then receive feedback in the form of a processed report data of their travel activities, including the number of trips for each mode of traffic and the resulting CO₂ emissions, along with suggested changes to their travel behaviour.

Objectives:

To facilitate changes of travel behaviour in order to reduce the use of automobiles and alleviate problems caused by traffic.

Outline of Practices/Actions:

TFP in Sapporo developed and implemented two different programmes: one for local community associations (Community Programme) and one for the elementary education level (Education Curriculum Programme). These targets were selected so that awareness would be raised not only on an individual basis but in collaboration with family and/or community. The feedback system was developed according to the pilot test in 1999. TFP programmes were implemented from August to December with the participation of 599 participants out of 219 households, from two local communities and one elementary homeroom class of fifth graders and their families.

TFP Procedures

Procedures for both the Community Programme and the Education Curriculum Programmes consist in four steps as shown in Figure 1.

In order to enhance the understanding of each programme, meetings with residents were held in local communities and a first lecture was given to the elementary school class. At the meetings and lecture, participants were provided with an explanatory pamphlet and survey materials entitled Diary 1.

Diary 1 consists of three parts: a list of family members and cars, a travel-activity diary for each member of the family, and a car-use diary for family owned automobiles. The participants were asked to fill in Diary 1 for seven consecutive days in collaboration with their family. This survey was conducted during September of 2000.

Based on results of these Diary 1 returns, the programme secretariat (DEC) provided the first diagnostic checklists consisting of graphical diagrams of the seven-day activity patterns along with comments (Figure 2). The comments were systematically drafted under the feedback

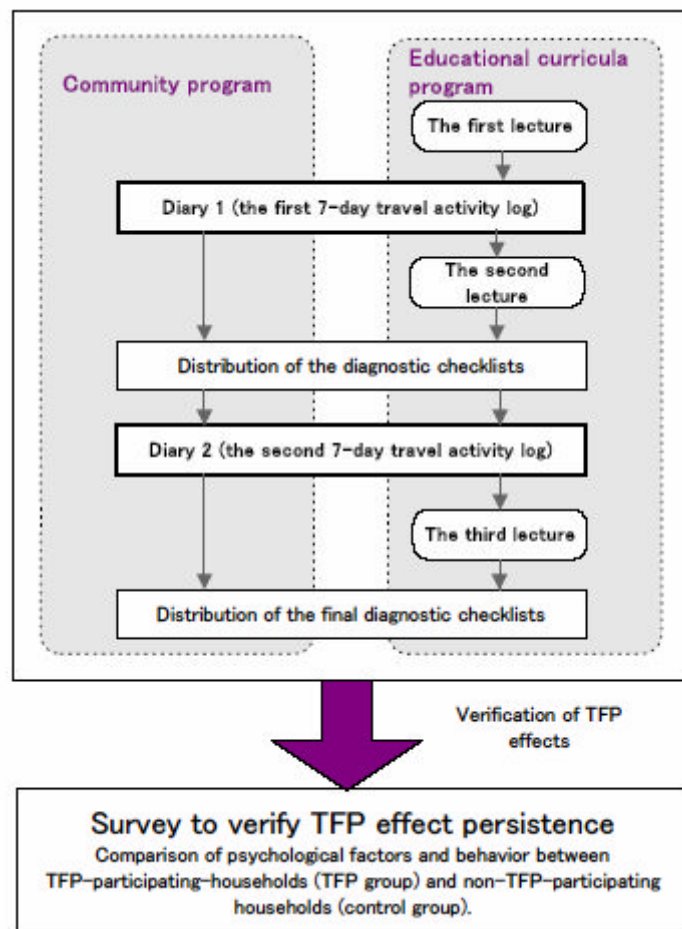


Figure 1: Steps of TFP Programmes (source: Taniguchi et al. 2003)

system and included four levels of comments: appreciation for participation in the programme (level 1); compliments for those who seldom use personal vehicles (level 2); compliments for the participants whose travel behaviours included some TDMs such as park-and-ride and car-pooling, although they still used personal vehicles (level 3); and suggestions for future travel behaviours (level 4). For the participants of the Educational Curricula Programme, the diagnostic checklists were handed out to the students during the second lecture along with information on the public transport services available in the area. Following the explanation of the checklists and information, the students were asked to calculate the CO₂ emissions produced by their own activities.

After receiving the first diagnostic checklists, the participants were requested to fill in Diary 2 for another seven consecutive days in early November. Diary 2 consisted of the same components as Diary 1. The final diagnostic checklists were developed based on both Diary 1 and 2, graphically showing the difference in CO₂ emissions between their two diaries for each mode of transport. The final diagnostic checklists of the Educational Curricula Programme were returned and explained during the third lecture at which time the students calculated the total reduction of CO₂ emissions from the whole class and discussed measures for reducing automobile use.

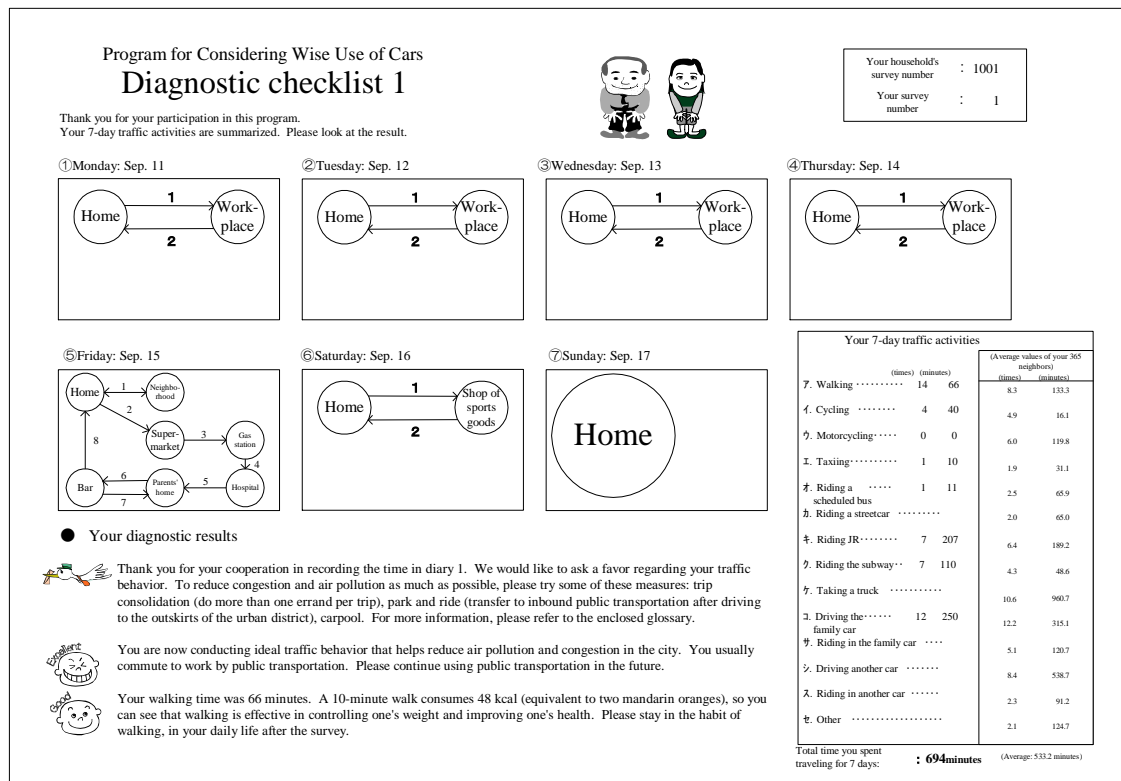


Figure 2: Example of First Diagnostic Checklist
(source: Taniguchi et al. 2003)

Results/Impacts

Short Term Impacts

Comparison between Diary 1 and 2 showed a significant change in the participants' travel patterns along with a resulting reduction in CO₂ emissions.

Modal Share: The number of trips by owner-driven private automobiles was reduced by 5 percent. At the same time, an increase in the use of public transportation was recorded. Trips by bus were increased by 15 percent while railway travel was increased by 4 percent.

Changes in CO₂: It was calculated that after the community's participation in the TFP programme, the total CO₂ emissions by participants fell from approximately 18 tons to 15 tons (16.3 percent). Figure 3 shows the changes in CO₂ emissions per person in each group. The differences in results between the local communities can be attributed to the differences in availability of public transportation.

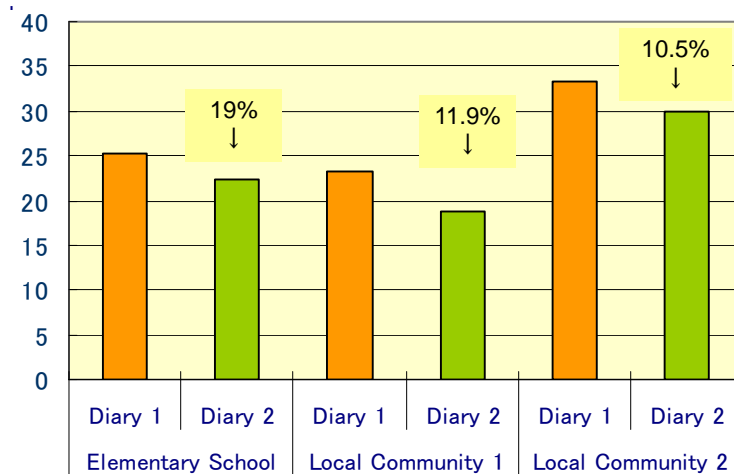


Figure 3: CO₂ emission change (kg/person)
(source: Hokkaido Regional Development Bureau, 2001)

Awareness of Travel Behaviour: A change in awareness was reflected in comments by the students and their parents received in school or recorded in the diaries.

Persisting Impacts

One year after the programme, a follow-up survey was conducted to establish how well the effects of the TFP had persisted. Using the framework of the Norm Activation Theory¹, it was shown that the TFP had had a continuing impact to promote pro-environmental travel behaviour even one year after its implementation.

Keys for success

Critical instruments used for the TFP in Sapporo included personal feedback on transportation activities and relating the feedbacks with in-class lectures. They also included a reflection on the community and family to maximize the effect as well as some collaboration with stakeholders in the community, especially with the elementary school teacher and local community leaders.

Critical Instruments

Awareness
Personal feedback and relating with in-class lectures

¹ Norm Activation Theory is a theory used to describe psychological process of supportive or altruistic behaviours.

The TFP raised awareness among the participants by (1) showing the status of their travel activities (Diagnostic Checklist 1), changes in their activities and the environmental implication of these changes in terms of CO₂ emissions (Final diagnostic checklist). It also (2) suggested specific actions through the personal Diagnostic Checklists along with information on available public transportation in the area. For the Education Curriculum Programme, three lectures were offered linking the Diaries with the Diagnostic Checklists to assist the students in understanding the issues of air pollutants, traffic congestion, and traffic accidents, as well as the mechanism of global warming and the implications of their travel activities upon it. Various visual presentations during the lectures, such as the deterioration of glaciers in Himaraya, enhanced the comprehension of students. The lectures also captivated the interest of the students by having them participate in calculating the CO₂ emissions resulting from their activities during lectures two and three and in brainstorming to find how CO₂ emissions can be reduced.



Lecture at the elementary school
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Design, Planning and Management **Focus on community and family**

TFP focused on two target groups, namely the local community and an elementary school class. This was based on the assumption that the feedback programme would be most effective if it included participants from both by community and family. The TFP diaries were designed to be filled in by family members and generated active discussions within the family. Results showed that the Elementary Curriculum Programme had also had a significant impacts on family members: the rate of automobile use was reduced and that of walking and public transportation increased for grandparents, fathers, and mothers, although little change was reported in the habits of the students who cannot drive cars by themselves.

Partnership **Collaboration with the elementary school teacher and local community leaders**

In implementing the TFP, collaboration with other stakeholders such as the school teacher and local community leaders played a crucial role. Meetings to examine the procedures, the survey questionnaires, the explanatory pamphlet, and the diagnostic checklists were held three times with participation from government, local community representatives, the elementary school teacher, and the secretariat. The school teacher helped compose the three lectures for the Elementary Curriculum Programme in collaboration with the programme implementer and then participated in the actual lectures. Local community leaders cooperated to obtain the participation of community residents in the programme. In one case, in fact, it had been impossible to get one local community involved because of opposition by some leaders who were concerned with security and privacy. One of the leaders who had agreed to cooperate personally contacted the neighbours to explain the programme and succeeded in bringing in approximately 40 households. He also followed up with those who had missed the first meeting by personally going out and explaining the purpose and procedure of the programme. Other local community leaders also supported the programme by disseminating materials and collecting the survey results from the participants.

Lessons Learned

- TFP, one of the measures for psychological TDM, can reduce automobile use as well as environmental damage when it is properly designed and applied at community levels, with effects not limited to the short term but for longer than one year.
- Awareness raising programmes targeting elementary school students and their families can have a beneficial influence upon the travel behaviours of family members.
- The effectiveness of a TFP in reducing environmental impacts such as CO₂ is related to the availability of alternate measures of transportation. A TFP would therefore best be implemented in areas with high availability of public transportation or if coupled with other measures such as car-pooling or park-and-ride programmes.

Applicability

The TFP has good potential in areas where reliable alternatives such as bus and/or rails are readily available and where automobiles are used mainly for shopping and leisure. Because a TFP can influence the motivation of people, it would be more effective wherever the people have altruistic attitudes and value the improvement of their community. Understanding and cooperation from the leaders of the community are necessary to implement the programme effectively.

In its application, it is necessary to design a programme that is adjusted to the local culture. Any sharing of information has to be sensitive to the participants, not primarily intending to prohibit the use of cars but to encourage possible changes which would benefit their society. Finally, when prepared for elementary school education, full consideration must be given for those students who cannot fill in the survey with their family.

Information date

13 March 2004

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