

Waste Education Facilities Evaluation: Reduce Reuse Recycle Wagon Toowoomba City Council/EDROC Project.

The Waste Wagon



It Looks Like a House Inside: Report

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Waste Education Facilities Evaluation: Reduce Reuse Recycle Wagon Toowoomba/EDROC Project. [Waste Wagon]

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About the Title: *"It looks Like a House Inside"* is a quote from a student at a Toowoomba Primary School.

Acknowledgement of input into this evaluation

The contributions of the following people are acknowledged. Without their willingness to provide data and/or be interviewed in depth, the evaluation would not have been possible

Tony Shadwell: Toowoomba City Council
Paula Harrison: Envirocom
Tiggy Robinson: DDROC
Staff from DDROC Councils

Waste Education Facilities Evaluation: Reduce Reuse Recycle Wagon Toowoomba/EDROC Project. [Waste Wagon]

Highlights

The following Highlights are drawn from the program evaluation that follows

The Waste Wagon works well as an educational method and it could work much better. There is ample evidence in the evaluation that the Wagon has impacted on the students and adults that it accessed. It is a cost effective education mechanism, especially when supported by an educator.

Substantial data from the snapshot survey supports the outcome that knowledge was enhanced. For school students [90%] learned a lot from their lesson at the wagon. 67% learnt more or much more about recycling, although 27% said that they already knew about it. Over 60% said they knew more about what to recycle. Increased knowledge about littering was also reported, with 70% indicating that they knew more or much more as a result of the lessons. Students also reported that the wagon that the Wagon lessons also helped them to know why it is important to reduce waste [76%] and how to reduce waste [29% a bit more and 54% much more].

The program caused some attitude change especially with regard to recycling. Although 27% of students indicated positive attitudes to recycling at entry to the program, attitude shift was reported by 70% of students as a result of the Wagon lessons. A similar story is told for adults where there was a 53% increase in positive attitudes, but a higher level of entry support for recycling [43%].

Behaviour change is also apparent. Students report that they are less likely to litter [60%] and more likely to talk with their parents about waste reduction [over 60%]. Note that 35% say that they never litter anyway

For adults, with regard to recycling adults indicated that they learnt much more about why recycling is important [58%] and how it is done [59%]. There was also an 80% increase in knowledge about what was recycled.

Adults also indicate that they will undertake substantial behaviour change. The graphs below indicate the 83% of adults who have attended the Waste Wagon are motivated to change their behaviour. 100% have indicated that they will recycle more and buy goods with less packaging. They will also reuse more and litter less [over 90%]

Essentially the Waste Wagon program works because it is

- Pitched at an appropriate level
- Appropriate to the needs of Toowoomba residents
- Lessons for students are well presented by a qualified educator
- Adult use is appropriate and extensive and the style of the Wagon suits adult use [as well as those of young people]
- Modest in its style and objectives

The Waste Wagon will work better its use was extended both in Toowoomba and beyond. See recommendations in report below.

**Waste Education Facilities Evaluation: Reduce Reuse Recycle Wagon
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*It Looks Like a House Inside: Report***

Introduction

The delivery of education to reduce waste and to promote resource recovery is a priority activity for the Toowoomba City Council. The Enviro Ed Reduce Reuse Recycle Program is the priority means of carrying education messages about waste reduction, recycling and reuse into the Toowoomba community. The Waste Wagon is the principle means of program delivery and targets students in schools and adult community members and is based on the use of a mobile education program.

At its inception the Waste Wagon was intended for use throughout the EDROC region. As can be seen below however, for a number of logistical reasons it has been used primarily within Toowoomba City.

This report evaluates the efficiency and effectiveness of the Toowoomba/EDROC* Reduce, Reuse, Recycle Wagon Project [hereinafter referred to as the Waste Wagon]. This evaluation has been undertaken as part of a broader cross-Queensland study, which is described briefly in the box below.

The Waste Education Facilities Evaluation Project contains a blending of two elements; a broad cross Queensland study and a more focused and detailed evaluation of four local waste education facilities based projects, LAWMAC, Gold Coast, Maroochy and Toowoomba/EDROC [this project]. The Queensland wide evaluation collects data from councils and waste contractors and includes the development of ten case studies of good practice in education. The report contains findings, conclusions and recommendations drawn from a range of data sources. Some of the learning from the four local projects will be incorporated into the broader Queensland evaluation report

Note 1. This report provides evidence in the form of quantitative and qualitative data. Quotes, in italics are used to illustrate findings. These are drawn from program records, annual and evaluation reports, and focus discussion held by the evaluator.

*Note 2. At the time of drafting this report the Darling Downs ROC [DDROC] was in the process of being established. This ROC will comprise 13 councils and be managed through a company structure. A Waste Management Sub-Committee of the DDROC is proposed. Relevant recommendations about future activities of the Waste Wagon are made to the DDROC. However the summative parts of this report are addressing EDROC because it was the relevant entity up to now.

Program Objectives and Target Audiences

The objectives of the Waste Wagon Project are to:

1. To increase knowledge in the community of how recycling, reusing and reducing waste can reduce the amount of landfill needed by the community.
2. To increase knowledge of what can be recycled.

Note that objective 3 below applies only to Toowoomba City Council. For other councils in DDROC, the objective should be written more widely [for example; encourage consideration of a variety of waste management options including kerb-side or drop-off recycling etc]

3. To create awareness of the new waste contract.

In order to achieve these objectives the intention of the project's key stakeholders is to have the Enviro Ed's R-R-Recycling Wagon booked out to community groups and schools for 48 weeks a year.

The important target audiences for the Wagon are:

- School children
- Schools and teachers
- Community groups
- Councillors of TCC and EDROC councils.

The stated key messages of the program are:

- Recycling is easy.
- Recycling is good for our environment
- Enviro Ed's RRRecycling Wagon and teaching/presentation materials is available for helping teach about reducing reusing & recycling waste
- It is free.

Stakeholders of this project are DDROC, councillors and senior staff of all DDROC councils, the EPA, the executive and members of community groups and service clubs and the executive and teachers in schools and parent groups in all DDROC council areas. For the summative aspects of the report senior staff and councillors in the Toowoomba City Council are important stakeholders

Brief Description of the Waste Wagon Program [see also Waste Wagon Case Study]

The Waste Wagon is the method used for carrying the key program messages into the community. It is used as the focus of an in-school education program, at major community events, and in a targeted way with some community groups.

The school program is supported by a small resource kit for teachers; *Health Matters*. This encourages activity prior to the visit of the Wagon and afterwards, but it does so in a kit that covers a range of environmental issues, not just waste reduction.

The events program uses the Wagon as a focus of Council's efforts, and education about waste is delivered by the staff at major shows and other events, see below.

The Waste Wagon has also been used as the vehicle for targeted local education program. It has particularly been used with people with disabilities. Two people died in Toowoomba last year after eating waste food from a public waste bin. Since then Toowoomba City Council has conducted a major program targeting people with disabilities and the Wagon has been a feature of the education program.

The following dot points summarise key aspects of the ways in which Waste Wagon operates.

- The Wagon infrastructure is funded by Environmental Protection Agency and through the Industry Transitional Fund. Significant in-kind and sponsorship support has been provided by local Toowoomba business. Technical input into the design of the Wagon and the educational materials therein has been provided by the contractor, Envirocom.
- The Waste Wagon can be set up by one person within 40 minutes and it is a self-contained educational centre for use with community gatherings and schools. All parts of the Wagon are utilised for educational purposes.
- The Wagon is easy to tow and anyone with Class C vehicle driver's licence can tow it. All that is required is an ordinary passenger vehicle. The Wagon

has a good turning ability so it can be manoeuvred into tight places at schools or community events.

- The Wagon is equipped with an audiovisual unit that operates off mains power. It provides easy access to educational materials and is totally self-contained.
- The Wagon also contains an attachable canvas tent for use during inclement weather.
- The Wagon is easily accessible by people with disabilities and has been used on a number of occasions with disabled groups.

It should be noted that although the contractor provided technical input into the design and content of the Waste Wagon, they do not conduct the program. At the time of writing the report the Wagon program is coordinated out of Townsville City Council.

Components of the Study

Data for this evaluation was drawn from a number of sources. The hierarchy in Appendix 1 describes each source as it provided data for each outcome. In summary sources included the following.

- Visit to Toowoomba to gain appreciation of the facility and its use. Then a write up of each facility as a case study.
- In-depth interview with the project manager and relevant staff to determine use and impact information for each facility.
- Focus group held with some EDROC councils.
- In-depth interview with the relevant waste contractor.
- Collection of data held by council and contractor about use, knowledge, behaviour and recycling rates within the target communities [jurisdictions].
- Review of relevant waste disposal, recycling and contamination [including waste audits] data, where available and applicable. Review of other existing data [community surveys etc].
- Three snapshot surveys; students, community and teacher surveys. These were administered in the February, March 2005 period. 155 students, 9 teachers and 32 adults completed questionnaires [see appendix]. Note that in a very limited number of cases not all respondents completed each question. The percentages in the data below are related to the total number completing each question.
- Other stakeholder data collected by focus group discussions and questionnaire regarding their thoughts and feelings about what works and what does not and why?

Note re the snapshot surveys. February/March is probably not the ideal time for this to occur. Bookings tend to be at a lower level than for the remainder of the year because of the time lag after the Christmas period. However as can be seen below, substantial data was obtained.

Findings

Has the EDROC Waste Wagon Project been implemented in the manner in which it was planned?

Essentially the answer to this question is “No”. There has been very little uptake of the Wagon outside of the Toowoomba City Council area and for a project that targeted the whole of EDROC, all nine councils, this is a disappointing result. Only a small number of the EDROC councils, see below [Toowoomba, Jondaryan, Cambooya, Rosalie, Crows nest, Clifton, Millmerran, Pittsworth and Warwick], have accessed the Wagon for local use.

Apart from the project falling at the first evaluation hurdle, it is disturbing that such a valuable resource is so little used regionally. Much of the formative part of this evaluation [see recommendations below] focuses therefore on how the Waste Wagon might be more efficiently and effectively used across the new DDROC entity. It is interesting to note that a similar regional approach to the use of the Pest Trailer appears to be working, and the learning from this process will be useful to DDROC in establishing new protocols for the regional management of the Waste Wagon.

Two important issues need to be noted however that leaven the statement above somewhat. First, the Wagon has been used as planned by Toowoomba City Council and so the remainder of the summative aspect of this evaluation will focus on the outcomes in Toowoomba. Second, the low level of use beyond Toowoomba cannot be attributed to the efforts of staff of Toowoomba City Council. The project manager there has worked tirelessly to get broader spread of the use of the Wagon. It is noted that he has no EDROC/DDROC responsibilities and yet has seen the need for a regional focus for this project. He has been supported by this endeavour by his management staff in council. Some major impediments are outlined below about why regional uptake has not occurred as planned and how this might be redressed.

What is the current level of access to the Waste Wagon?

From the period July 2003 to December 2004, outside of Toowoomba the Wagon has been used

- Once by Warwick Shire, Crows Nest Shire, Clifton Shire and Pittsworth Shire
- Twice by Cambooya Shire

No specific evaluation of the effectiveness of these visits is available. Feedback from relevant council staff during the stakeholder interview indicates that the Wagon poses some challenges as an efficient educational method. The primary difficulty expressed involves the limited availability of resources to staff the Wagon for the duration of the visit.

“It is not worth driving for two hours to Toowoomba and two hours back, to get the Wagon for a day in a school. There is only one of me.”

“Lack of staff time is a real hassle to me. If I can’t staff it I can’t use it.”

In addition, the recycling focus of the display material in the Wagon is inappropriate for use in those councils who only operate small drop-off systems, rather than kerbside recycling. Purpose built education materials are required for use in each council.

In Toowoomba the situation is entirely different. The Wagon has been used extensively as can be seen in the following table [1].

Table 1. Usage data

Time Period	Number of Schools accessed	Number of students attending education sessions
July to December 2003	15	2241
Jan to May 2004	7	250
June to Dec 2004	14	1301

It is notable that although more schools were visited in the 2004 period, fewer students were accessed than in the first 6 months of operation. This is a somewhat worrying trend.

There has also been significant exposure of the messages on the Wagon through its use at a number of high profile community events including:

- The Toowoomba Home Show [2 occasions]
- The Garden Fest
- The Life Line Book Fair
- A number of school fetes and other events.

Is there evidence that the target groups see the Waste Wagon as a useful and appropriate education project?

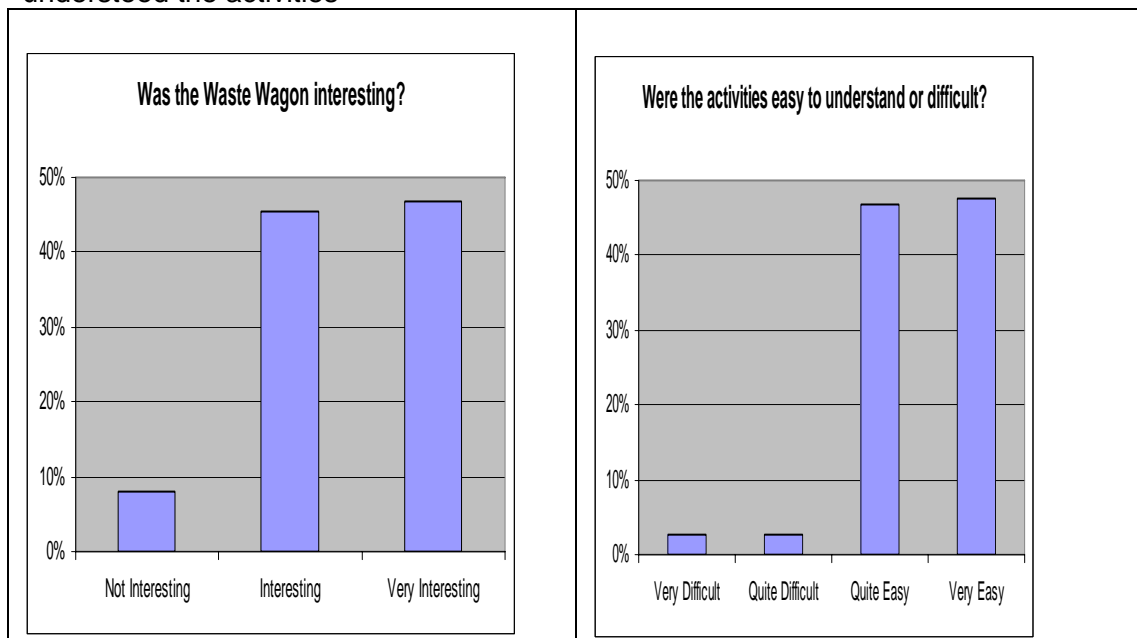
The Toowoomba City Council has collected no evaluation data prior to the snapshot surveys conducted as a part of this project. Therefore it is difficult to make judgments about how useful and appropriate the Waste Wagon is. Some inferences can be drawn from the rebooking information, where schools have reused the Wagon and so have community events.

There is evidence that schools love the Wagon. The fact that it “comes to us and it does not cost is a bonus.” A teacher said “Working with the Townsville City Council is always a pleasure when organising the use of the Wagon.”

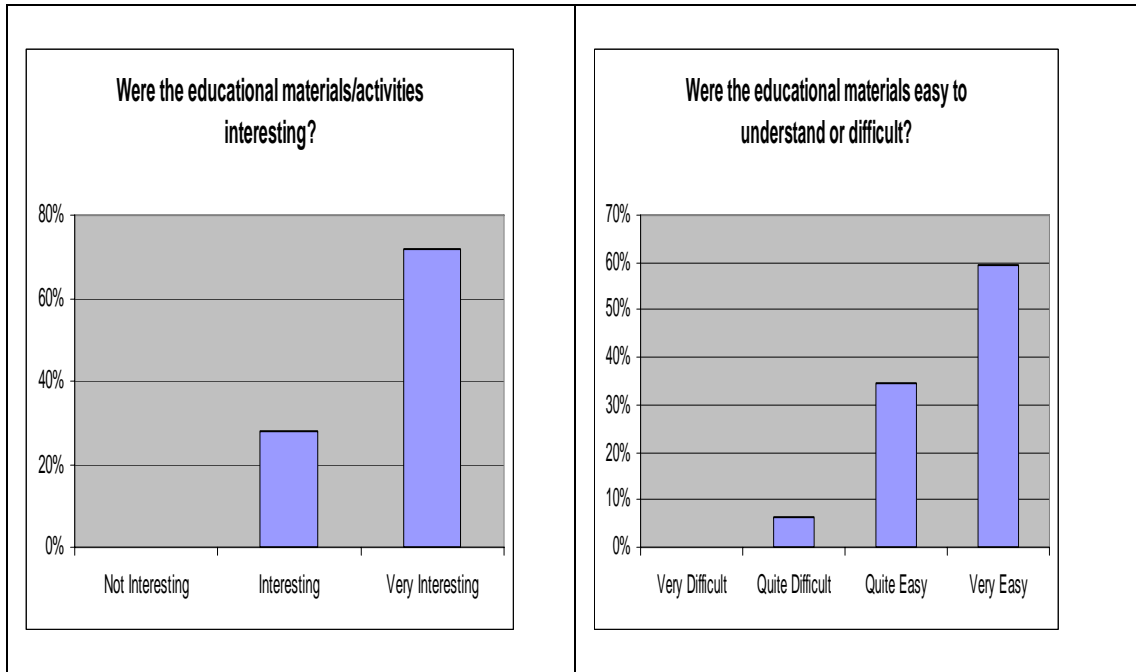
In general teachers indicated that they thought that the students had some knowledge about aspects of waste and that the Wagon’s visit reinforced and extended this.

Both school students and adults see the Wagon as interesting and the information as relevant. The following data from the snapshot survey indicates that the wagon is useful and appropriate.

Students saw the wagon as interesting [45%] or very interesting [47%]. They also understood the activities



100% of adults found the wagon interesting or very interesting and the level of the materials and activities presented were appropriate.

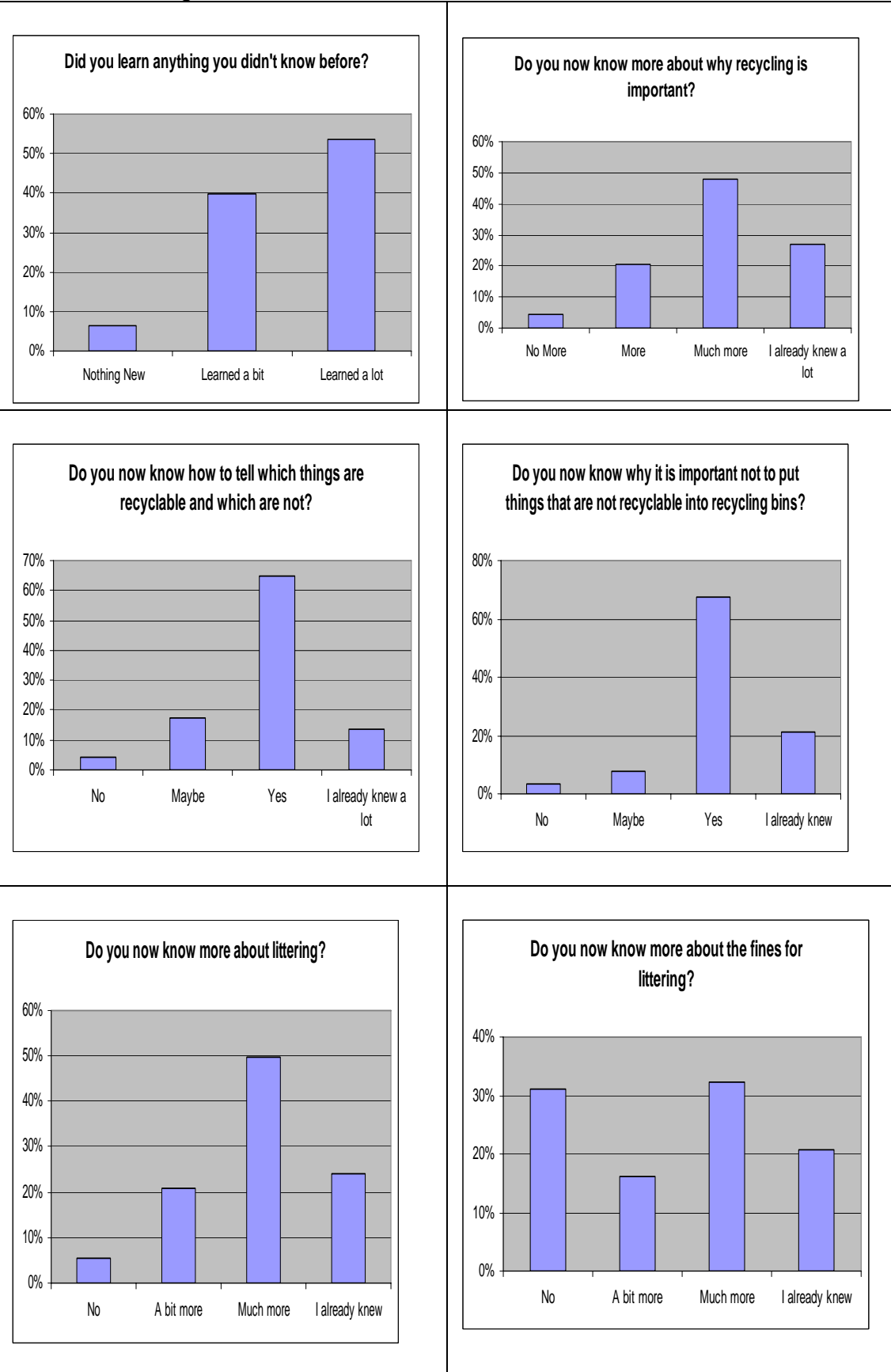


Is there evidence of improved knowledge about recycling/waste reduction in students and community members who accessed the Waste Wagon?

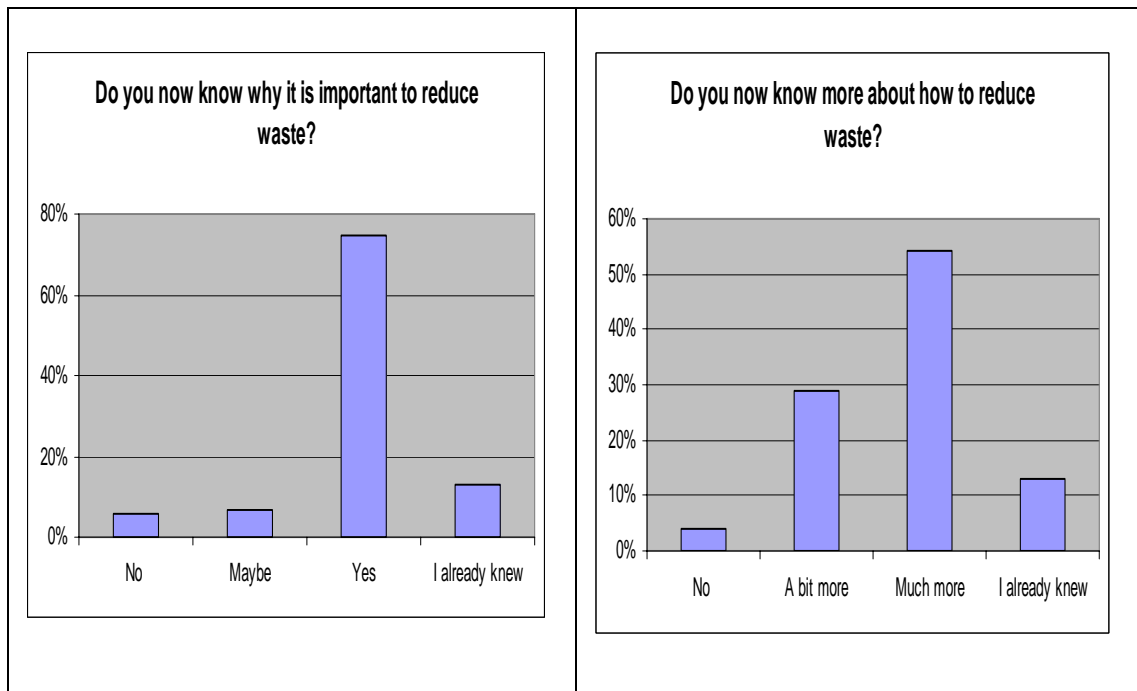
As part of the activities supporting the Launch of the Waste Wagon in June 2003, the Toowoomba City Council conducted a *Don't Waste Toowoomba* competition for adult and school aged residents. Hundreds of entries were received. Although the knowledge component of the competition entry form was relatively simple in that entrants had only to name [by fill-in completion] six recyclables and indicate which number plastic products could be recycled locally. Almost 100% of respondents answered correctly. Certainly those who entered were highly motivated, however this response is indicative of an informed and interested community.

Substantial data from the snapshot survey supports the outcome that knowledge was enhanced. The following table collates this feedback for school students. These show that students [90% learned a lot from their lesson at the wagon. 67% learnt more or much more about recycling, although 27% said that they already knew about it. Over 60% said they knew more about what to recycle. Increased knowledge about littering was also reported, with 70% indicating that they knew more or much more as a result of the lessons.

Student knowledge



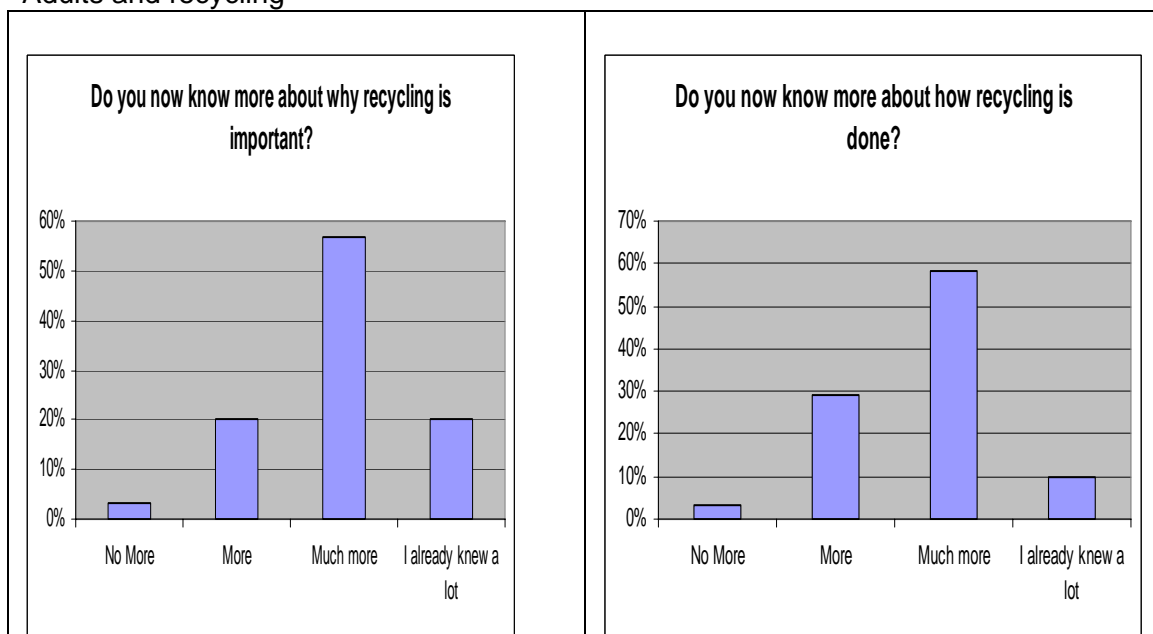
Students also reported that the wagon that the Wagon lessons also helped them to know why it is important to reduce waste [76%] and how to reduce waste [29% a bit more and 54% much more].

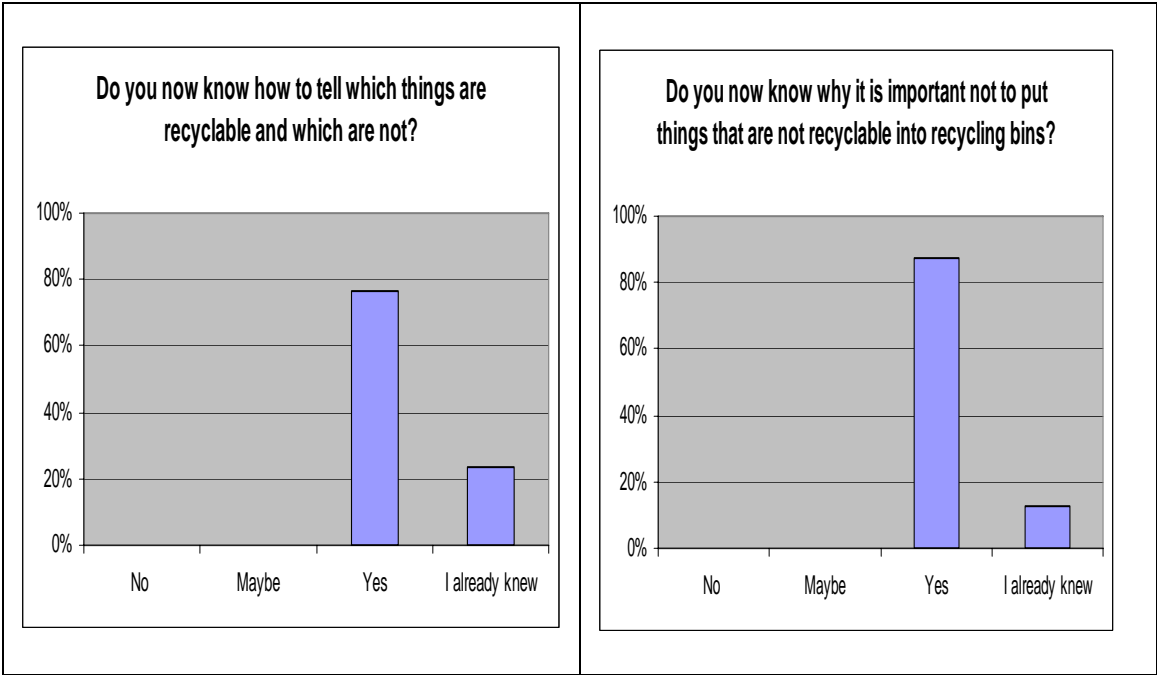


For adults there were also knowledge changes. 88% of those who responded to the survey said that they had learnt “a bit” or “a lot”. In the main this was about recycling and littering as indicated in the following graphs.

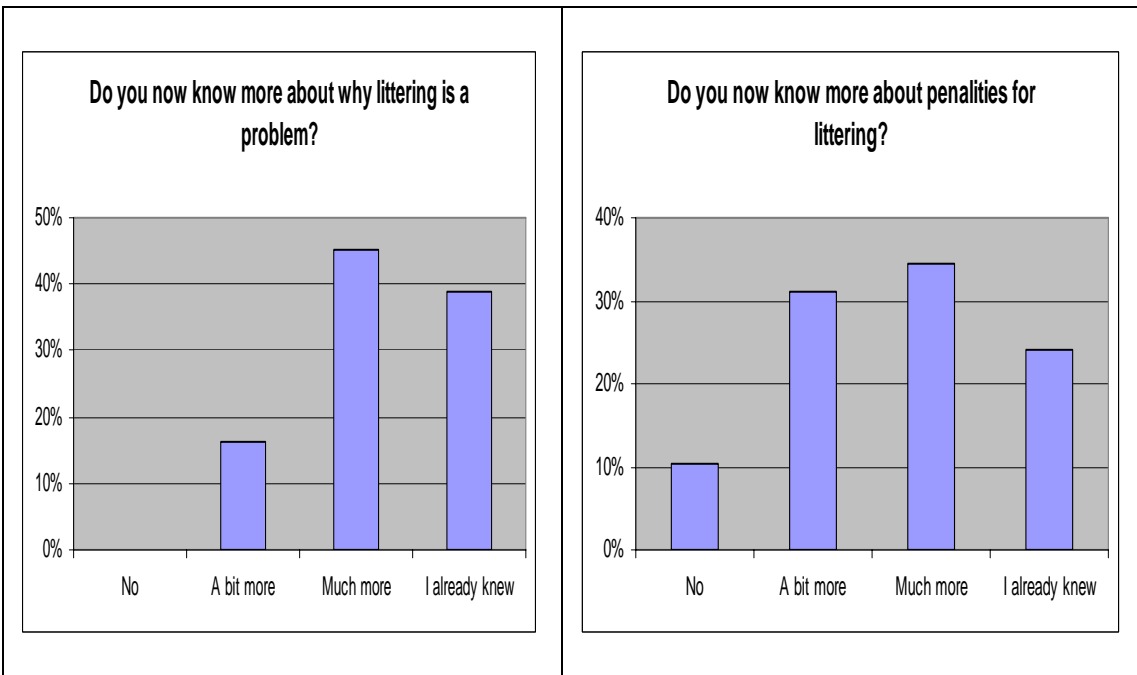
With regard to recycling, adults indicated that they learnt much more about why recycling is important [58%] and how it is done [59%]. There was also an 80 increase in knowledge about what was recycled.

Adults and recycling

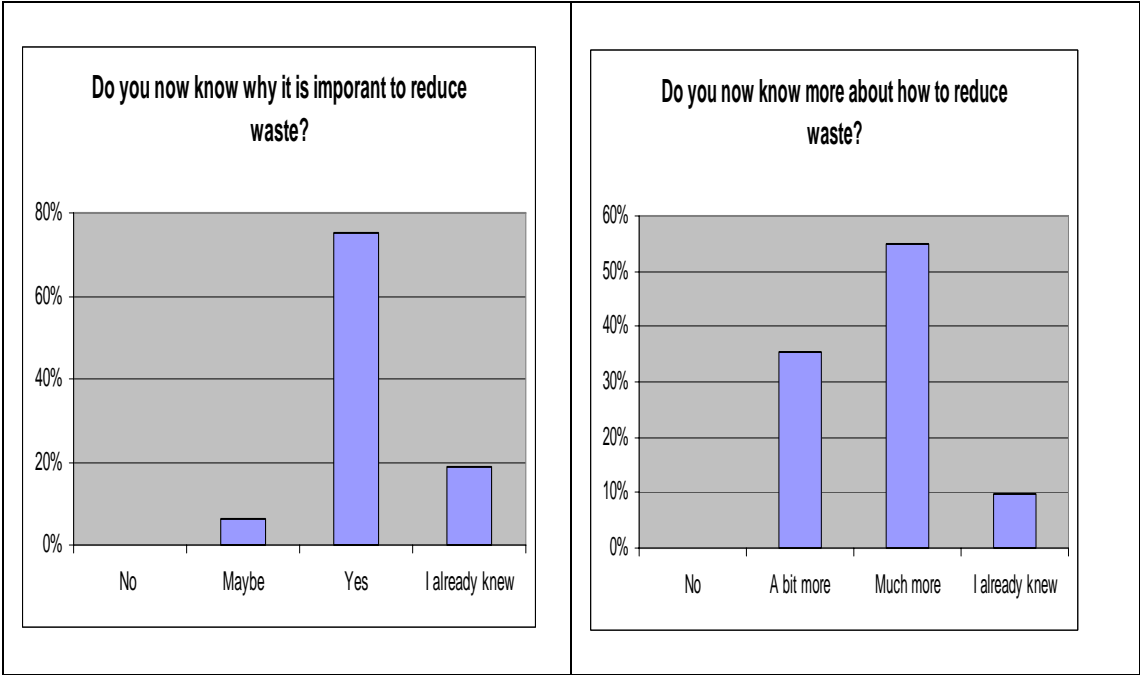




Littering knowledge also improved for many adults



Most importantly adults reported that they now knew more about why reducing waste is important [77%] and how to reduce waste [35% a bit more and 55%, a lot more]. For impact on current waste behaviour this is a telling finding.



Has the Waste Wagon affected the attitudes towards waste and recycling of those students and community members who accessed it?

Some telling quotes support the finding that the attitudes of school students have been influenced by the Wagon.

“At Mr. Shadwell’s traila [sic] we saw all different plasticks [sic]....I like recycling.”

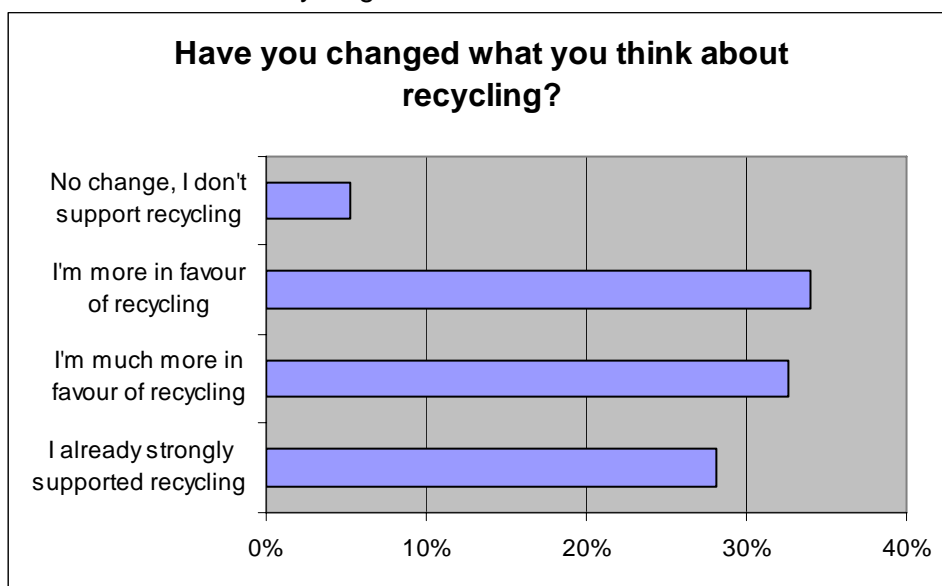
“I liked Mr. Shadwell’s caravan thing.”

“If you keep putting rubbish in the dump and there is no recycling, there is going to be a problem.”

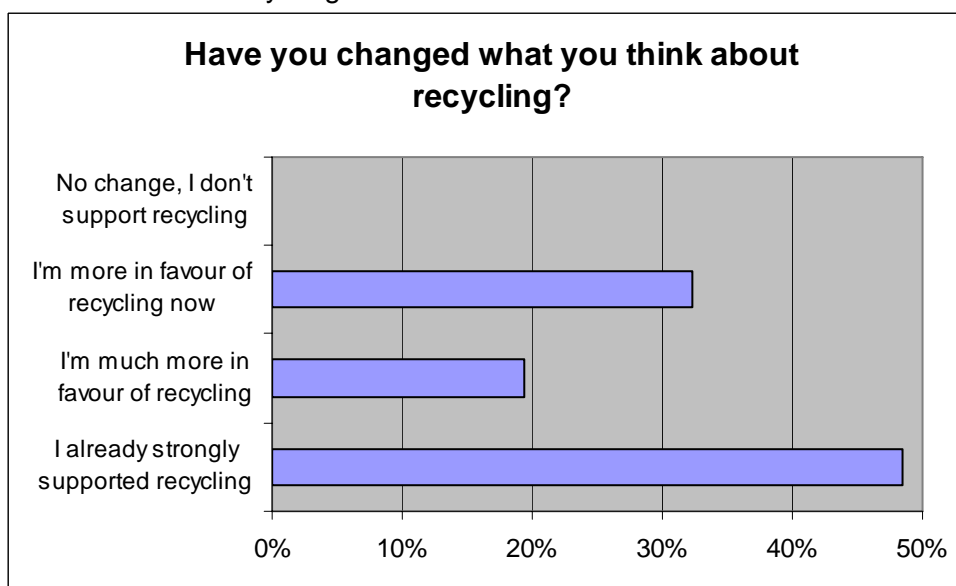
“We had to put the reduce stuff in the reduce hoop, I had a good time.”

In addition the students indicated some attitude shift to recycling as demonstrated in the following table. Although 27% of students indicated positive attitudes to recycling at entry to the program, attitude shift was reported by 70% of students. A similar story is told for adults where there was a 53% increase in positive attitudes, but a higher level of entry support [43%].

Student attitudes to recycling



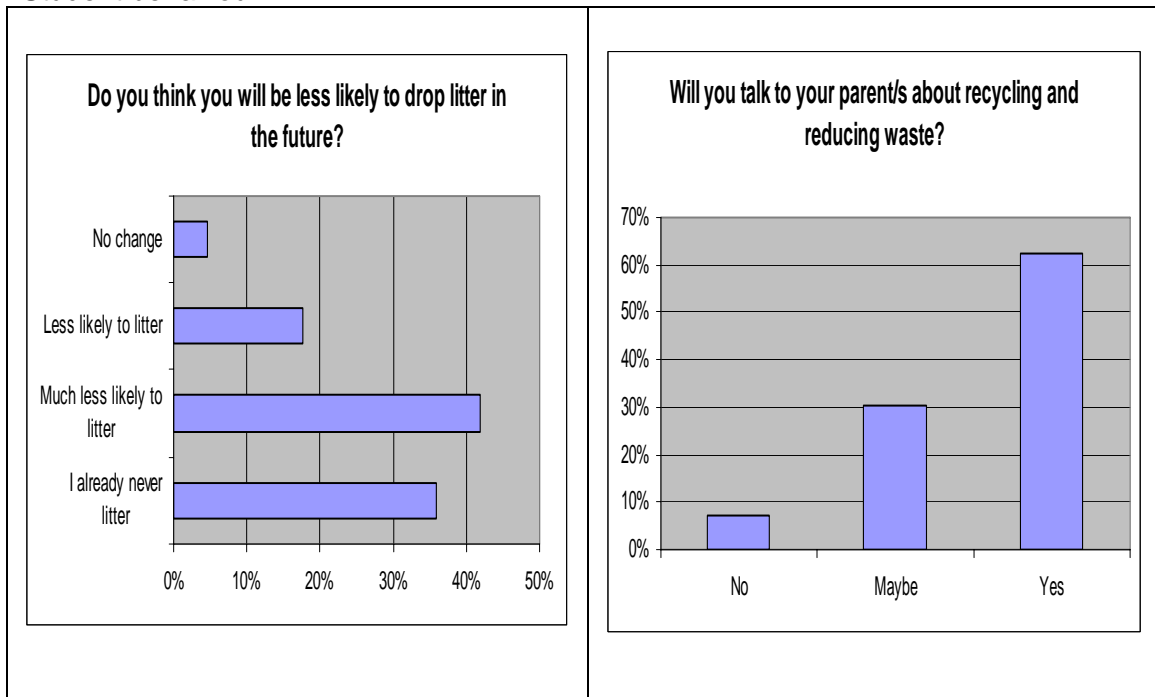
Adult attitudes to recycling



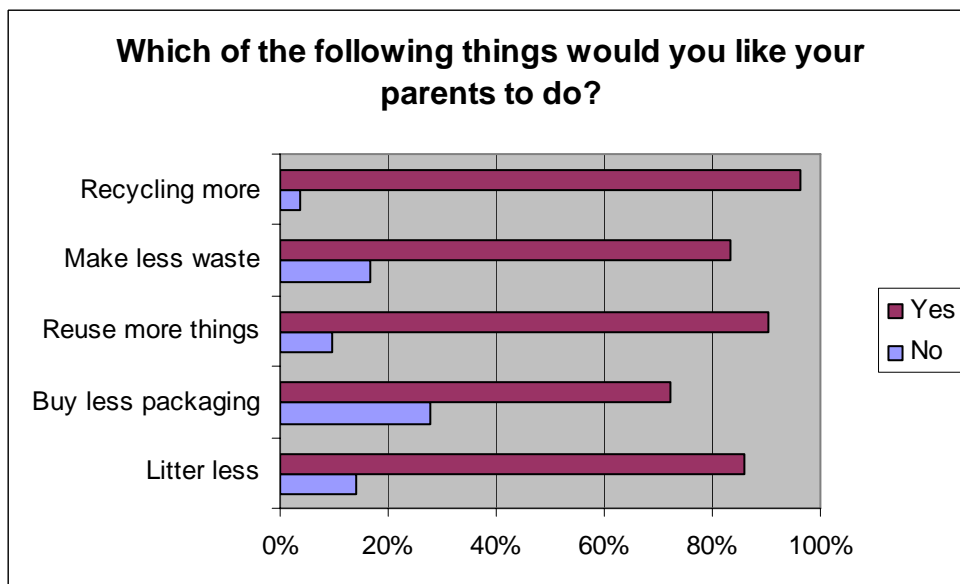
Has the Waste Wagon affected the recycling/waste reduction behaviour of those students and community members who accessed it?

Information about behaviour intent has been identified by the snapshot evaluation data. Students report [see table below] that they are less likely to litter [60%] and more likely to talk with their parents about waste reduction [over 60%]. Note that 35% say that they never litter anyway.

Student behaviour

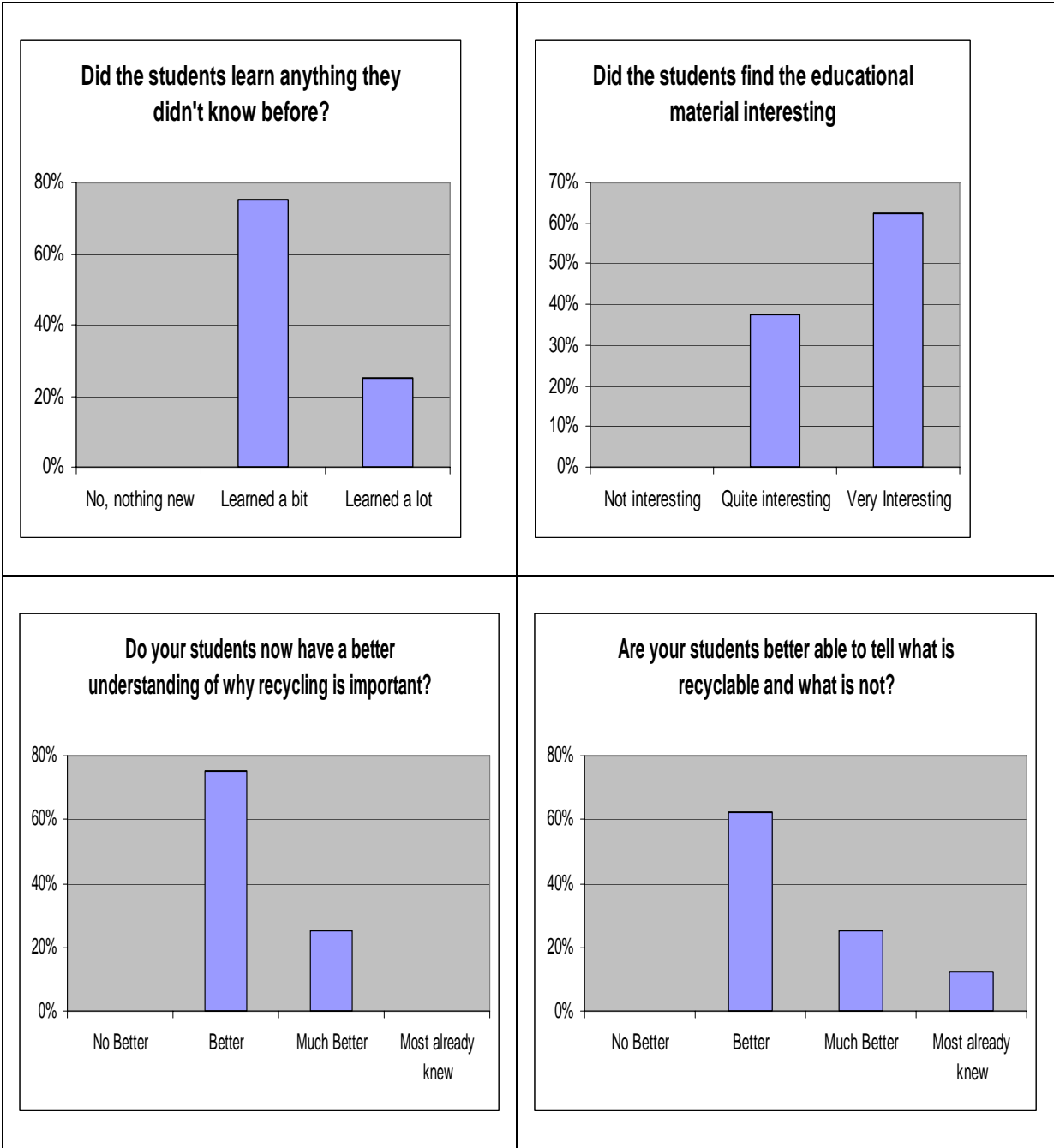


Students also indicate what they would like their parents to do about waste in the following graph. They are very positive about improving the waste related behaviour of their parents.

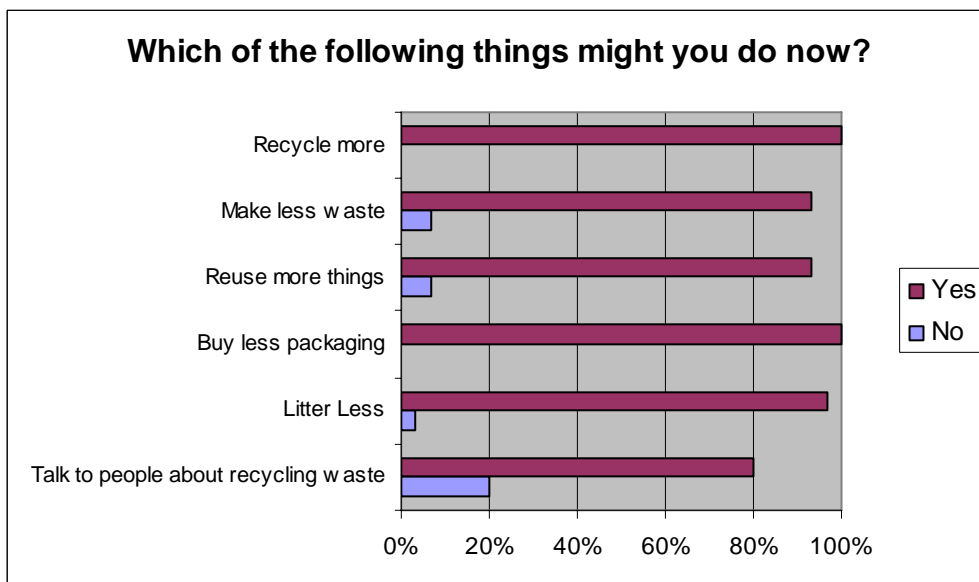
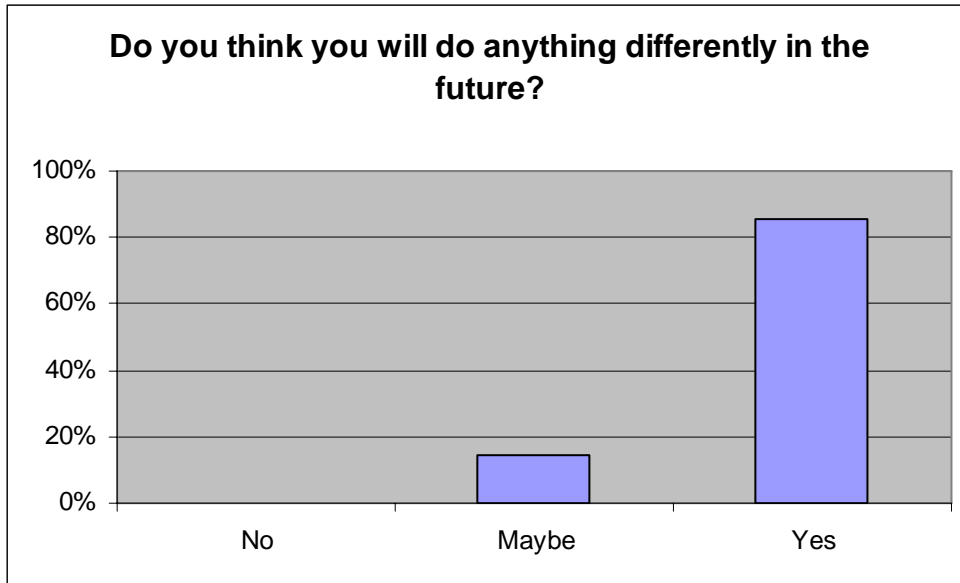


Teachers validated the information provided by students. In the snapshot data collected from 8 teachers it was indicated that 38% of students found the material interesting and 62%, very interesting and that learning occurred for all students, especially about recycling. Note because of the low number of respondents percentages should be treated with caution.

Teachers and their perceptions of student's acceptance of and learning from the program.



Adults also indicate that they will undertake substantial behaviour change. The graphs below indicate the 83% of adults who have attended the Waste Wagon are motivated to change their behaviour. 100% have indicated that they will recycle more and buy goods with less packaging. They will also reuse more and litter less [over 90%].



Is there evidence of increased recycling rates, reduced contamination, reduced waste generated in Toowoomba and/or across EDROC?

The table below summarises data from household audits held well prior to the launch of the Waste Wagon and six months after its establishment. Rigorous audit methodology was used and results can be compared because of this and the fact that sample selection methods were identical.

While no cause and effect can be claimed about the impact of the Waste Wagon, these are interesting results in that they measure the in the period immediately following the launch of the Wagon. When taken with competition findings about knowledge etc below and it can be stated that the mix of approaches is having some effect

Table 2. Toowoomba City Council Household Audit Data

Results	Audit Nov 1999	Audit Dec 2003

Total households audited	370	125
Mass Garbage stream (kg/household/week)	14.5	15.6
Mass Recycling Stream (kg/household/week)	2.7	2.9 (National average 3.1)
Mass Total Waste Stream (kg/household/week)	17.2	18.6
Contamination Rate	14.2%	10.6%
Resource recovery Rate	46.3%	47.1%

Table 3 below tracks waste data within Toowoomba City Council; all data is in tonnes. It shows that waste to landfill is rising substantially, with a substantial trend upwards over the past 4 years. It does not demonstrate a known effect from the education and other initiatives that have been put in place to reduce waste. Perhaps even of more concern the recycling data shows no statistically significant increase in gross recycling and some worrying downward trends for some specific recyclables [e.g. steel]. Contamination data has not been collected prior to 2003/04 so this provides benchmark data only.

Table 3. Toowoomba Waste Data

Data	2000/01	2001/02	2002/03	2003/04
Total waste to landfill	99,630	103,980	111,680 T	123,690
Total Recycling	2675.22	2787.34	2869.3 T	2568.43
• Paper/Cardb.	1634.5	1686.76	1690.19	1645
• Lqdpapaperboard	8.74	6.42	6.13	9
• Glass	641.43	719.28	795.95	769
• PET	101.65	112.87	123.75	116
• HDPE	111.9	112.46	125.33	116
• Polyprop	7.87	8.62	8.7	9
• Aluminum	28.68	29.67	27.35	24
• Steel	110.45	108.38	101.85	93
Contamination rate	N/A	N/A	N/A	871 T

Major Conclusions

The following are the key conclusions of the evaluation. These conclusions draw key findings together and group them under a number of headings

1. **Is the Waste Wagon effective and efficient?** The schools component of the program is both effective and efficient for those teachers and students who access lessons at the Wagon. The Wagon is set up for school use, provides a high quality teaching/ learning space and communicates the key themes of the program despite the confined area. The space is used innovatively and interactive learning is possible with the Wagon as a focus. Displays and activities are of high quality although as indicated above, the

focus on kerbside recycling makes the Wagon's messages too specific for some potential users outside of Toowoomba.

The Waste Wagon effectively accesses adults in the Toowoomba community. Although evaluative data is not available a significant number of adults have been educated through the Wagon's placement at a large range of events. The use of the Wagon in a targeted community education program with people with disabilities is effective and efficient.

It is worthy of some note that the Waste Wagon really only targets Toowoomba residents. Given the increasing tourist numbers into the region, consideration should be given to use of the Wagon to promote recycling by visitors [many of whom recycle at home and miss doing it on holidays].

- 2. Extending the Program in Toowoomba Schools.** While the program is accessing a high proportion of the schools in Toowoomba, the number of students being accessed is relatively low. On average it would appear that only two/three classes per school are being provided with education via the Wagon and this is a relatively low number of classes, especially in some of the larger schools.

The program also lacks significant quality teaching/learning support material to assist teachers to link the Wagon program to their in-school curriculum. This is a significant failing for the program.

Also, there is little obvious link between any in-school activity and the visit of the Wagon. All teachers who provided data in the snapshot survey indicate that they do cover waste issues during their curriculum based in-school teaching. The program would be improved if linkages to the curriculum were tightened and made mandatory where possible.

- 3. Extending the Program to the Toowoomba Community,** Although Toowoomba has used the Wagon in the community extensively, a more strategic approach is required. Essentially in its activities within the community the Wagon has performed at two different levels to date. First it has been used to apparently good effect at a significant number of local high profile shows and events. It seems not to have been used at more local events for example school fetes, street parties etc. It has also been used as a key feature of community education programs with some target populations [e.g. disability]. This appears to have been on an ad hoc basis and more targeted program could be conducted with local high priority groups and locations; for example in nursing homes, hospitals, etc
- 4. Program Evaluation.** In a similar way to other educational programs, evaluation of the Waste Wagon occurs only at the lower end of the outcomes scale. Some schools' data is collected about who the program has reached and whether the teachers found it valuable. No student or adult community feedback is collected. This level of program evaluation is no longer sufficient. The Waste Wagon Program would be improved if it developed a new evaluation strategy and more effective data collection forms, The tools used in the snapshot evaluation [appendix 3] within this project are available for adaptation and do contain knowledge, attitudes and behavioural intent questions. They could be adapted for use in Toowoomba in a way that would not require significant amounts of extra data collection

or analysis, although pre and post data, especially about knowledge and behaviour change, would be advantageous.

It is also important to note that there is no evaluation of education links to waste data. No monitoring of waste to landfill or recycling rates occurs in order to measure the impact of any program. It is as though the intervention occurs at a level removed from the issue

- 5. *Could the Use of the Waste Wagon be Extended?*** It is clear that the Wagon is underutilized. The desire for full use for 48 weeks of the year has not been achieved. Such a quality teaching/learning facility could be put to more extensive use. The infrastructure is such that it could be used every working day at least between mid February and late December. This use could be extended into shopping centres in the Christmas/New Year period.

As indicated in the *Findings* above, the Wagon has had little impact outside of the Toowoomba area. Extending the use of the Wagon across the DDROC is essential and the recommendations below indicate a way forward.

Recommendations

The following recommendations are made as a result of this evaluation.

Recommendations about program access

T1. It is recommended that Toowoomba City Council identifies ways to link the in-school and in-community aspects of the schools program together and increases the number of classes [and students] accessing the Wagon. Greater numbers of Toowoomba students should be educated via the Wagon.

T2. More extensive and innovative use of the Wagon needs to occur across the Toowoomba community. Proactive engagement with community groups and through precincts is needed to grow the program's impact in the community. Use at small community event, fetes, street parties etc is recommended. In addition it is recommended that Council targets community organizations in a similar way to the current use of the Wagon with disability groups.

T3. It should be possible to increase the number of school students in Toowoomba who are educated via the wagon. It is recommended that Toowoomba City Council holds a focus group of interested teachers to determine ways in which the Wagon can have more impact. Reaching Secondary Schools and providing a teaching/learning resource for teacher use in the classroom prior to the visit are important parts of this expanded approach.

T4. It is clear that the use of the Wagon as an educational method needs to be extended across the DDROC. It is recommended that as a matter of urgency the Waste Management Sub-Committee of DDROC considers how to extend the use of the Wagon across the region. The following Scenario is presented for consideration. This was developed following the meeting of stakeholders and addresses all major barriers identified above.

A Waste Wagon Scenario for the Future

In line with recommendation T4, the following scenario is proposed for the use of the Wagon in the future, in order for it to be used across all DDROC councils. Major

components of this scenario were drawn from the stakeholder focus group held on February 10, 2005.

In this scenario:

- The Waste Wagon becomes an integral regional educational resource strongly supported by the DDROC Waste Management Sub-Committee.
- Systems and information are established so that the Waste Wagon draws as little as possible on council resources and yet has maximum use across DDROC.
- There is an expectation that all DDROC councils will access the Waste Wagon for period totaling at least a three weeks every two years from 1 July 2005. The Waste Management Sub-Committee will monitor use.
- An on-line booking system is developed on DDROC's website so that member councils can book the Waste Wagon for periods up to a month. Block bookings of one week will be the minimum. DDROC will need to undertake some coordination of this and monitoring in the early stages to ensure that the system is effective.
- Councils should consider booking the Wagon for major local events and then building the schools program bookings around that time. This will require communication and DDROC coordination.
- In order to make this system work the following documents and protocols are required. Human and minimal dollar resources need to be found to produce these. Note; it is anticipated that approximately six weeks of work would be needed to complete the entire development process. Some existing Toowoomba and Envirocom products could be adapted for use across the ROC.
 - Booking system and Wagon Use Manual [e.g. towing etc]
 - A brochure, which forms the marketing tool for the Wagon
 - Generic press and banner advertisements which could be placed locally to inform the community that the Wagon will be in town
 - Teacher Kit so that local schools lessons and activities can be conducted by teachers in each school and not use council presenters
 - Material to assist councils to deliver presentations to community groups and at community events.
 - Information about the best ways of using the Wagon at community events, use as a static or staffed display. Using volunteers to staff the Wagon should also be canvassed.
 - Evaluation forms etc [see below]
- A mandatory teacher training requirement could be put in place, so that all schools using the Wagon could be required to have a member of staff trained in education about waste. Envirocom would be best placed to develop a cost effective training process.
- A feedback/evaluation protocol is developed as follows.
 - Feedback: This would involve a simple council user survey that is completed on-line by each council after each block visit.
 - Evaluation of students, teachers and adult community knowledge and behaviour, adapting the surveys developed in this facilities education evaluation project. It would be the responsibility of each booking council to ensure that an evaluation report is produced about each block booking and placed on the DDROC website.
- A Waste Wagon Annual report will be produced by the Waste Management Sub-Committee to be tabled at all councils. This will provide details of use, knowledge growth and behaviour change prompted by the Wagon's visit and resulting education programs.

Recommendations about Program Administration

T5. It is recommended that Toowoomba City Council and the Queensland Environmental Protection Agency place the Waste Wagon Program case study on their web sites.

T6 More could be made of the results of local competitions in Toowoomba. It is recommended that every time a Wagon competition is run, the sponsoring council collates and reports on results. This will assist in furthering waste reduction, reuse and recycling messages through the media.

T7. For a limited amount of money each council in DDROC could individualise education material for use in the Wagon. Velcro tabs could be used so that the Wagon could take on a more local flavour in each shire. It is recommended that each DDROC council considers the development of purpose built material and that Envirocom facilitates the development of this material by providing technical and logistic input.

T8. As part of a broadened approach to targeting adults it is recommended that Toowoomba City Council identifies and implements ways to use the Wagon to promote recycling and waste reduction by visitors.

Recommendations about Evaluation

T9. It is recommended that Toowoomba City Council, DDROC Waste Management Sub-Committee and Envirocom review the evaluation strategy for the Waste Wagon and develop a more in-depth and strategic approach to the evaluation of the program. As part of this, new surveys should be developed and implemented. These need to evaluate for knowledge, attitudes and behaviour changes as a result of the program and could be conducted pre and post the program. Evaluation should not just collect data about use and service satisfaction and improved evaluation forms are required for all program components and targets [e.g. one for adults, one for teachers and one or more for students].

T10. It is recommended that as part of the revised evaluation strategy, Waste Wagon use, effectiveness and efficiency data is collected by DDROC, and impacts on waste to landfill and recycling are also monitored. The collection of data, collation of data and reporting on the evaluation findings should be the responsibility of every user of the Waste Wagon.

T11. Toowoomba City Council is missing lots of valuable information about the community's waste management behaviour by not collecting information at community events. It is recommended that data collection methodology is developed for use at these events when the Wagon is on display.

T12. It is recommended that Toowoomba City Council identifies ways of assessing the extent to which education efforts are reducing the waste stream, increasing recycling rates and reducing contamination. At this stage a rudimentary analysis does not demonstrate that it is having an impact. A process undertaken in conjunction with the contractor needs to find ways of linking behavioural outcomes impacted upon by education with waste reduction.

Appendix 1. Waste Education Facilities Evaluation Outcomes Hierarchy: Reduce Reuse Recycle Wagon Toowoomba/EDROC Project.
[Waste Wagon]

This outcomes hierarchy frames the entire evaluation of this project. The outcomes to be measured are to be found in the first column of the table below. They have been developed specifically for the Toowoomba/EDROC Waste Wagon. The hierarchy should be read from the bottom of the table [outcome 1, upwards]. The outcomes are related to the program objectives by number in column 2. Key evaluation questions for each outcome are indicated in the third column and data sources are identified in column 4.

Project Outcome	Relevant project objective	Evaluation Question	Data Source
7. Reduced waste generation/improved recycling rates and compliance in Toowoomba across EDROC Councils	Objectives 1, 2 , 3	Is there evidence of increased recycling rates, reduced contamination, reduced waste generated in Toowoomba and/or across EDROC?	<ul style="list-style-type: none"> • Council data on recycling rates and level of compliance • Household data on waste reduction behaviour • Community survey
6. Improved recycling/waste reduction behaviour and/or behavioural intention as a result of the Waste Wagon	Objective 3	Has the Waste Wagon affected the recycling/waste reduction behaviour of those students and community members who accessed it?	<ul style="list-style-type: none"> • Data from project informants • Community survey • Project reports • Key informant data
5. Improved attitudes towards waste management and recycling as a result of the Waste Wagon	Objective 2	Has the Waste Wagon affected the attitudes towards waste and recycling of those students and community members who accessed it?	<ul style="list-style-type: none"> • Data from project informants • Community survey • Project reports • Key informant data

4. Improved knowledge about waste/recycling/reuse/reduce issues and choices as a result of the Waste Wagon	Objective 1 and 2	Is there evidence of improved knowledge about recycling/waste reduction in students and community members who accessed the Waste Wagon?	<ul style="list-style-type: none"> • Project evaluation results • Key informant data • Community survey
3. Schools and the community see the Waste Wagon as useful and appropriate	Objective 1	Is there evidence that the target groups see the Waste Wagon as a useful and appropriate education project	<ul style="list-style-type: none"> • Project admin, rebooking rates etc
2. Schools and the community access the Waste Wagon	Objective 1	What is the current level of access to the Waste Wagon	<ul style="list-style-type: none"> • Level of uptake of the program
1. The Waste Wagon project is implemented as it is intended to be	Objective 1	Has the EDROC Waste Wagon Project been implemented in the manner in which it was planned	<ul style="list-style-type: none"> • Program delivery compared to program intent.

Reduce Reuse Recycle Wagon Project Objectives

1. To increase knowledge in the community of how recycling, reusing and reducing waste can reduce the amount of landfill needed by the community.
2. To increase knowledge of what can be recycled.
3. To create awareness of the new waste contract.

Appendix 2: Data Collection Instruments

What Did You Learn? What Will You Do? Toowoomba Reduce Reuse Recycle Wagon Visit: Adult Community Questionnaire

Thank you for filling out this form. It will take you about five minutes. Your feedback will help us to improve our education services. Please circle the best answers for you and add your comments in the spaces provided.

DO NOT WRITE YOUR NAME ON THIS FORM.

Please give the completed form to the staff member on site

1	Were the educational materials/activities in the Wagon interesting? 1 Not interesting 2 Quite interesting 3 Very interesting
2	Were they easy to understand or difficult? 1 Very difficult 2 Quite difficult 3 Quite easy 4 Very easy
3	Did you agree with what they were saying? 1 No, I disagreed with most 2 Yes, I agreed with most 3 I agreed with all of it
4	Did you learn anything you didn't know before? 1 No, nothing new 2 I learned a bit 3 I learned a lot What were the main things you learned? _____
5	Do you now know more about why recycling is important? 1 No more 2 More 3 Much more 4 I already knew a lot
6	Do you now know more about how recycling is done? 1 No more 2 More 3 Much more 4 I already knew a lot
7	Do you now know how to tell which things are recyclable and which are not? 1 No 2 Maybe 3 Yes 4 I already knew
8	Do you now know why it is important not to put things that are not recyclable into recycling bins? 1 No 2 Maybe 3 Yes 4 I already knew
9	Do you now know why it is important to reduce waste? 1 No 2 Maybe 3 Yes 4 I already knew
10	Do you now know more about how to reduce waste? 1 No 2 A bit more 3 Much more 4 I already knew
11	Do you now know more about why littering is a problem? 1 No 2 A bit more 3 Much more 4 I already knew
12	Do you now know more about penalties for littering? 1 No 2 A bit more 3 Much more 4 I already knew
13	Have you changed what you think about recycling?

	<p>1 No change, I don't support recycling</p> <p>3 I'm much more in favour of recycling</p>	<p>2 I'm more in favour of recycling now</p> <p>4 I already strongly supported recycling</p>
14	<p>Do you think you will do anything differently in future?</p> <p>1 No 2 Maybe 3 Yes</p> <p>If yes, what will you do differently?</p> <hr/>	
15	<p>Which of the following things might you now do?</p> <p>1. Recycle more 1 No 2 Yes</p> <p>2. Make less waste 1 No 2 Yes</p> <p>3. Reuse more things 1 No 2 Yes</p> <p>4. Buy less packaging 1 No 2 Yes</p> <p>5. Litter less 1 No 2 Yes</p> <p>6. Talk with people about reducing waste 1 No 2 Yes</p>	

Thank you very much for your help

What Did You Learn? What Will You Do?
Reduce Reuse Recycle Wagon: School Students Survey

Thank you for filling out this form. Your answers will help us to improve our lessons. Please circle the best answer for you and add your comments in the spaces provided. **DO NOT WRITE YOUR NAME ON THIS FORM.**

Please give the form back to your teacher

1	Was the Wagon interesting? 1 Not interesting 2 Quite interesting 3 Very interesting
2	Were the activities easy to understand or difficult? 1 Very difficult 2 Quite difficult 3 Quite easy 4 Very easy
3	Did you agree with what they were saying? 1 No, I disagreed with most 2 Yes, I agreed with most 3 I agreed with all of it
4	Did you learn anything you didn't know before? 1 No, nothing new 2 I learned a bit 3 I learned a lot What were the main things you learned? _____
5	Do you now know more about why recycling is important? 1 No more 2 More 3 Much more 4 I already knew a lot
6	Do you now know how to tell which things are recyclable and which are not? 1 No 2 Maybe 3 Yes 4 I already knew
7	Do you now know why it is important not to put things that are not recyclable into recycling bins? 1 No 2 Maybe 3 Yes 4 I already knew
8	Do you now know why it is important to reduce waste? 1 No 2 Maybe 3 Yes 4 I already knew
9	Do you now know more about how to reduce waste? 1 No 2 A bit more 3 Much more 4 I already knew
10	Do you now know more about littering? 1 No 2 A bit more 3 Much more 4 I already knew
11	Do you now know more about the fines for littering? 1 No 2 A bit more 3 Much more 4 I already knew
12	Have you changed what you think about recycling? 1 No change, I don't support recycling 2 I'm agree more with recycling now 3 I agree much more with recycling 4 I already strongly supported recycling
13	Do you think you will be less likely to drop litter in future? 1 No change 2 Less likely to litter 3. much less likely to litter 3 I already never litter
14	Will you talk to your parent/s about recycling and reducing waste? 1 No 2 Maybe 3 Yes
15	Which of the following things would you like your parents to do? a. Recycle more 1 No 2 Yes b. Make less waste 1 No 2 Yes

	c. Reuse more things	1 No	2 Yes
	d. Buy less packaging	1 No	2 Yes
	e. Litter less	1 No	2 Yes

Thank you very much for your help

What Did You Learn? What Will You Do?
Reduce Reuse Recycle Wagon Visit: Teacher Feedback Questionnaire

Thank you for filling out this form. It will take you less than ten minutes to complete. Your feedback will help us to improve our educational services. Please circle the best answers for you and add your comments in the spaces provided. **DO NOT WRITE YOUR NAME ON THIS FORM.**

Please give the completed form to the staff member on-site.

1	<p>Did your students find the educational materials in the Wagon interesting? 1 Not interesting 2 Quite interesting 3 Very interesting</p> <p>If interesting, what made it interesting?</p> <hr/> <hr/> <p>If <u>not</u> interesting, how could it have been more interesting?</p> <hr/> <hr/>
2	<p>Did they find these materials/activities easy to understand or difficult? 1 Very difficult 2 Quite difficult 3 Quite easy Very easy</p> <p>If difficult, what made it difficult? What could have made it easier?</p> <hr/> <hr/> <p>If easy, what made it easy?</p> <hr/>
3	<p>Did your students learn anything they didn't know before? 1 No, nothing new 2 They learned a bit 3 They learned a lot</p> <p>What were the main things they learned?</p> <hr/> <hr/>
4	<p>Do they now have a better understanding of why recycling is important? 1 No better 2 Better 3 Much better 4 Most already knew</p>
5	<p>Do you they now have a better understanding of how recycling is done? 1 No better 2 Better 3 Much better 4 Most already knew</p>
6	<p>Are they now better able to tell which things are recyclable and which are not? 1 No better 2 Better 3 Much better 4 Most already knew</p>
7	<p>Do they now have a better understanding why it is important to keep non-recyclable items out of recycling bins?</p>

	1 No better 2 Better 3 Much better 4 Most already knew
8	Do they now have a better understanding why it is important to reduce waste? 1 No better 2 Better 3 Much better 4 Most already knew
9	Do they now know more about how to reduce waste? 1 No 2 A bit more 3 Much more 4 Most already knew
10	Do they now know more about the cost of littering? 1 No 2 A bit more 3 Much more 4 Most already knew
11	Do they now know more about penalties for littering? 1 No 2 A bit more 3 Much more 4 Most already knew
12	Did you find the messages in these materials appropriate? 1 No, I disagreed with most 2 Yes, I agreed with most 3 Yes, I agreed with all Which messages did you disagree with or find problematic, if any? _____ _____ _____
13	If you noticed any gaps in the information provided, what were they? _____ _____ _____
14	Please outline how this session fits in with other lessons or school activities. _____ _____ _____ _____
15	Can you suggest any ways to improve waste education for school children or the community in general? _____ _____ _____ _____

16	Are there any other comments you would like to make? <hr/> <hr/> <hr/> <hr/>
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Thank you very much for your help