

Design a questionnaire: teacher guide

Updated 2023

NCEA Level 2. Supports AS91263.

This set of resources is a collection of internal assessment tasks that can be used to assess AS91263 Design a Questionnaire. This guide provides an overview of the tasks, background information for teachers and some links to teaching resources.

Resources and their road safety contexts

There are 4 internal assessment resources:

Drive website or mobile app survey

Students design a questionnaire for Driver users.

[Drive website](#) or [DriveGo app](#)

Community road safety concerns

Students design a questionnaire about a road safety issue relevant to their school or local community, the experiences and concerns of the community, and potential solutions.

Active modes for journeys to school

Students design a questionnaire about active modes of transport for journeys to school.

Rightcar website survey

Students design a questionnaire for visitors to the site, which helps New Zealanders buy safer, cleaner, and more efficient cars.

[Rightcar](#)

Supporting resources

Lotus diagram template

HookEd SOLO Hexagons Design a Questionnaire

Curriculum links

Mathematics and Statistics Achievement Objective at Level 7

In a range of meaningful contexts, students will be engaged in thinking mathematically and statistically. They will solve problems and model situations that require them to:

Carry out investigations of phenomena, using the statistical enquiry cycle:

- conducting surveys that require random sampling techniques, conducting experiments, and using existing data sets
- evaluating the choice of measures for variables and the sampling and data collection methods used
- using relevant contextual knowledge, exploratory data analysis, and statistical inference.

(Highlighted statements are the ones covered by these resources)

Key competencies

Participating and contributing.

Using language, symbols, and texts.

Principles and values

Community engagement

Innovation, inquiry, and curiosity by thinking critically, creatively, and reflectively.

Equity through fairness and social justice.

Community and participation for the common good.

Respect themselves, others, and human rights.

Road safety education as a context for Statistics

Our choice of contexts in Statistics teaching can increase student engagement and activate prior knowledge. It helps students to develop a meaningful purpose for their questionnaire design. It also helps to develop students' statistical thinking as they connect what they see in their analysis with their knowledge of the context. There is potential to develop citizenship skills and social competencies.

"...opportunities to explore authentic applications that arise out of real-life contexts can have a significant and sustained impact on student knowledge, attitude, self-esteem, independence, and confidence." (Alton-Lee, 2003)

Young drivers (aged 16-24) are over-represented in crashes in New Zealand. This is due to various factors, but a major contribution is lack of experience. At a time when students are becoming young drivers, or passengers of young drivers, these resources explore important topics.

- Relevant to students as they and their peers learn to drive.
- Accessible and engaging context.
- Develops citizenship skills as students consider their role in a wider community.
- Whanaungatanga – build relationships with your students by showing them that you care about what happens to them outside of the classroom.

A note of caution

Teachers should be aware that these resources might lead to discussion of road crashes or road trauma, although this is not the intended focus. Students may have first-hand experience of such issues and teachers should be discreet during discussions.

Guiding principles for the design of these resources

These resources are designed to be used by Mathematics and Statistics teachers with their classes to support the assessment of AS91263 in a meaningful context.

They are not intended to be 'something extra' the teacher is expected to do.

These resources align to evidence-based, effective road safety education strategies. These are outlined in the Good practice in road safety research summaries on the Waka Kotahi Education Portal.

[Good practice in road safety](#)

Importantly, these resources have been designed to empower students by developing their knowledge and competencies in road safety through the Statistics curriculum.

All resources avoid the use of fear tactics. Fear tactics have been shown to be at best ineffective and at times have negative unintended consequences by promoting the behaviour the intervention was designed to reduce.

The contexts have also been designed so that students responding to questionnaires are not being asked to reflect on their own behaviour with regards to a road safety concern (such as speeding, drink-driving, driving in breach of their restricted licence conditions) as this may unintentionally promote the behaviour to others.

Websites

Drive

[Drive website](#)

[DriveGo mobile app](#)

Road safety and schools

[Education Portal news](#) - contains stories of action taken by students and schools to address a local road safety concern.

[SADD](#) News and projects from Kaitiaki O Ara SADD.

Active transport to school

[New census data reveals more than half of NZ's students use private vehicles to commute \(Stuff\)](#)

[D Grade for active transport to school](#)

Vehicle safety

[Rightcar](#) How safe is your car?

[Safe vehicles campaign: the unsell \(Waka Kotahi\)](#)

Young drivers in New Zealand

[Young driver safety statistics \(Ministry of Transport\)](#)

Statistics education

[Census at School New Zealand](#)

Teaching resources and ideas

Understanding the context

Modelling how to understand the context supports students to develop their own skills by:

- removing any barriers created by the context in an assessment
- increasing statistical thinking in the PPDAC enquiry process by allowing students to connect contextual and statistical understanding
- providing an authentic learning opportunity as they experience the process a statistician uses to understand the context before defining the Problem and Plan (Pfannkuch & Wild, 2000).

There are tools that can be used to help students understand the context and help them develop their ideas around the purpose, audience and target population.

Lotus diagram

A lotus diagram puts the important ideas about a topic at the centre and encourages students to expand on these.

To find out more about lotus diagrams:

[Mind maps and lotus charts \(Virtual Library\)](#)

[Thinking tools: lotus diagram \(Vimeo\)](#)

You can do this with students working in a spreadsheet by printing the lotus diagram template in this unit.

In the spreadsheet update the labels in the centre and the labels around the outside will auto-update. Not all boxes need to be filled in. Students can also write questions in the boxes with things they are unsure about.

Mindmap

Mindmaps work in a similar way to the Lotus diagram to support students to organise their ideas.

[Mind maps and lotus charts \(Virtual Library\)](#)

Hexagonal thinking

Students organise SOLO hexagons (or post it notes) with single ideas on the context on each hexagon and start to explain the connections (relational thinking) and generalise (extended abstract thinking). These ideas are annotated and students can explain their thinking to their peers and teacher.

To find out more about hexagonal thinking:

[The Awesome Six Sided World of Hexagonal Thinking](#)

[How to make connections using SOLO Taxonomy Hexagons \(HookEd – YouTube\)](#)

You can use the Word file included with this resource or download SOLO hexagons here:

[HookED SOLO Hexagon Generator](#)

Critiquing a questionnaire

Students can be given questionnaires (or a subset of questions from a questionnaire) to identify the variable type (quantitative or qualitative) and question type (open, closed, ranking, single answer, multi-choice etc).

Students can also critique the questions, including the answer options, and identify how they could be improved.

Questionnaires to critique

[Explore the data \(CensusAtSchool\)](#) Download the questionnaires from previous years.

[Walking school bus \(Waka Kotahi Education Portal\)](#) Download the survey.

[Research and monitoring \(Auckland Transport\)](#) The active modes research reports include survey questions and summaries of answers.

Resources for designing a good questionnaire

[Resources \(CensusAtSchool\)](#)

[Best practices for survey creation \(SurveyMonkey\)](#)

[A guide to good survey design \(Stats NZ\)](#)

[Website surveys \(VWO\)](#)

[Designing a Questionnaire \(Dr Nic's Maths and Stats, YouTube\)](#)

[Writing Good Survey Questions \(Dr Nic's Maths and Stats, YouTube\)](#)

Ethics in questionnaire design

There are ethical considerations when students decide on the topic. They should not choose something which may have a negatively influence, by unintentionally normalising risk-taking behaviour, or which distresses students by discussing road trauma.

[Ethics in Statistics \(CensusAtSchool\)](#) Written by the NZSA Education Committee

[Ethics of Survey Research](#)

Who to contact

Your local Road Safety Coordinator (council) or School Community Officer (Police) may have ideas to help your students find a purpose and audience for the questionnaire design.

Your school's SADD group may also provide an issue or campaign they would like more information on and could become the audience for the student's survey.

Information on the assessments

The internal assessment tasks can be adapted to suit your students and local community. To protect the authenticity of these assessment tasks, examples of the types of responses that can be expected from students have not been included in the assessment schedules as these resources are not kept secure. A few notes for teachers are provided on the tasks.

Purpose

Students are provided with a primary audience and purpose for the questionnaire design, which they can further develop, refine, and justify.

When students identify secondary audiences for the data, they should be clear on the purpose and should be able to clearly justify why the group would be interested and how they might use the data collected. Students could consider as part of their reflection at the end possible extensions to the purpose and how the questionnaire would be altered to cater to this.

For the website survey tasks (Drive website/app survey and Rightcar website survey), they could consider the organisations who are funding the websites as secondary audiences.

For the community road safety concerns and active modes tasks they can think about other groups in the school and local community who might be able to use the data. This could include the Board of Trustees, whānau groups, the SADD group in the school, or community groups that support young driver education.

Survey questions

It will usually be appropriate to include screening questions in these questionnaires. For example, the website surveys have a target population which is a subgroup of all visitors to the sites. How will they screen for this and what message will those visitors outside of that group receive?

Reflection on the process

If students are completing the Drive or Rightcar survey, there is a rich discussion to be had about the limitations of the pilot study as the survey will not be embedded in the website.

References

Alton-Lee, A. (2003). *Quality teaching for diverse students in schooling: Best evidence synthesis*. Wellington: Ministry of Education.

Pfannkuch, M., & Wild, C. (2000). Statistical thinking and statistical practice: Themes gleaned from professional statisticians. *Statistical Science*, 15(2), 132–152.