

# EFFECTIVE LEARNING DESIGN BEHIND CURRICULUM RESOURCES

The NZ Transport Agency creates curriculum resources based on evidence for effective learning. Covering years 1-8 and years 9-13, these are online for teachers to freely download, modify and use.

## SOCIALLY CONSTRUCTED LEARNING

Learning is often understood to be 'shaped by the context in which it is situated, and is actively constructed through social negotiation with others' (Dumont, Istance, & Benavides, 2012).

The Transport Agency supports a shift in road safety education from transfer of knowledge and skills, toward socially-constructed learning. The aim is relevant learning that helps young road users:

- understand the complexity of road safe behaviours
- understand the capabilities of being a citizen in skilled and active ways
- collaborate with community members to address safety issues (Chamberlain and Hook, 2012).

An implicit future focus arises through the need to build adaptive expertise - 'the ability to apply meaningfully-learned knowledge and skills flexibly and creatively in different situations' (Dumont et al). To collaborate at the community level, students need agency, defined by Hayward as 'a citizen's capacity for developing independent thought (will formation) and the capability for freely choosing to act on those ideas (volition)' (Hayward, 2012).

## CATALYST FOR PERSONALISED LEARNING

Curriculum resource writer Pam Hook designed the Transport Agency's secondary literacy and numeracy resource to ensure the teacher can build learning experiences based on students' interests, current abilities and future needs. Student engagement is critical for deep socially-constructed learning to eventuate.

'The breadth and depth of the learning activities is there because we know students will get hooked by different ideas. What's common across the resource is that students do the thinking themselves. Teachers can provide students with relevant information and guide them to share their thoughts and feelings, come to their own conclusions and then take some action.'

Pam Hook says the years 1-8 curriculum resource is designed to enable students' agency as active citizens so they can contribute to a safe road network through their learning.

'Students need a context where they have a voice and feel like they belong, matter and can make a difference. Learning activities encourage students to seek community-based solutions to help road users experience safer journeys.'

## CURRICULUM RESOURCE DESIGN

The Transport Agency's resources provide a good fit with research understandings about innovative learning environments, which are characterised by building blocks such as cooperative learning, authentic community situations, formative assessment, and inquiry learning (Dumont et al). The Transport Agency's design also responds to requests from user reference groups of teachers.

'Resources that get past surface learning outcomes and prompt for deep learning based on the New Zealand Curriculum... open-ended opportunities to identify, explore and manage transport challenges facing local communities... editable resources that relate to a young adult's lived experiences in being a passenger, learning to drive, buying a car, getting pink stickered, learning *The official New Zealand road code*.'

Each resource provides links to New Zealand curriculum values, key competencies and achievement objectives across diverse learning areas. Self-assessment rubrics and exemplars enable students and teachers to monitor and plan learning. Formative assessment is mapped using SOLO taxonomy, a model of learning that describes levels of surface, deep and conceptual understanding.

Breadth and flexibility is based on universal design for learning - providing students with multiple means of representation, action and expression, and engagement. When teachers build on prior knowledge, anticipate future needs and engage students in formative assessment, the result is unique, relevant and effective learning experiences.

## RICH CONTEXTS HELP LEARNING

Chief Researcher Rosemary Hipkins from the New Zealand Council for Educational Research writes:

'Candy wrapping' is when a teacher uses a context to 'wrap around' learning that basically doesn't change. I've seen students get confused about what they are supposed to be learning - the context or the concepts?

The road safety resources produced over the last few years model a much more effective way to use contexts for learning. Instead of candy wrapping a concept or skill, the context is used to enlarge the learning in a way that deepens its purpose, making strong links to students' interests and concerns in the process.

If we want to educate good citizens, we need them to care about their learning and to see ways they can be proactive in contributing to a better society for everyone. This is one of the key messages of the curriculum's key competencies. It's wonderful to see that potential brought vividly to life in the road safety resources.

## EVALUATIONS BY TEACHERS AND STUDENTS

'Students are taking away from this statistics investigation road safety messages about the issue of cell phone use during driving and the impact of being tired on concentration levels. They haven't been explicitly told these messages – instead they've looked at the evidence and formed meaning for themselves from the data.'

MATHEMATICS AND STATISTICS TEACHER WORKING WITH YEAR 11 STUDENTS

'Students responded really well to the context. They took on board the stopping distance message and researched to find other factors that influence it... I took the data and the context in general and I married that with the demands of the curriculum and assessment at level 3.'

MATHS TEACHER

'It's relevant; it's something they're interested in. They've got the basic skills in English for analysing the video and because they can relate to the target audience and the purpose of the text, they can relate to the assessment and the result is they show more understanding.'

ENGLISH TEACHER ON CLOSE VIEWING OF ROAD SAFETY AD CAMPAIGNS

'There are definitely more students that understand force and motion because we taught it this way... Science gives students the knowledge to make their own choices... We want our students to make decisions based on science and logic, rather than just remember rules.'

SECONDARY SCIENCE TEACHER

'I enjoyed doing the persuasive letter because we could change and help improve our roads.'

YEAR 9 STUDENT

'I started researching the Legend campaign and the thinking behind it, and I looked at some statistics around youth drink-driving. What I wanted to convey was a focus on the sober driver... I started looking at this comic-book style idea and I've created a character now, who is Soberman and he is a hero.'

YEAR 13 VISUAL ARTS STUDENT

## STUDENTS RELATE TO CONTEXT OF SAFE ROAD USE

Winsome Brown teaches an English programme for students with learning needs. She uses the Transport Agency's secondary literacy and numeracy resource. Winsome says the activities are engaging, in part because students connect learning to their motivations to drive. The design of the resource allows her to personalise learning to meet student needs and interests.

'I can find activities for all learning preferences, and the activities can be made part of a wider discussion about citizenship, with links to key competencies.'

Students calculated how far it takes a car to stop when the driver is distracted by using a cell phone. After doing the maths, they headed across to the playing fields.

'We ended up pacing the distances out over the field which really brought it home to them how much difference cell phone usage makes to stopping distance.'

## TEACHERS LOCALISE LEARNING

Teachers related the Transport Agency's year 1-8 curriculum resource to local and regional road safety concerns, at a workshop by council organisation Auckland Transport. Organiser Alex Elton-Farr.

'Problems often start at a community level and ways to overcome these problems must start on a local level so that solutions have the greatest impact. This knowledge helps teachers add depth to student inquiries brought about by the use of the *Everyone is a road user* curriculum resource.'

Teachers said they came away with ideas on integrating travel as a curriculum context, and how students could investigate safe travel problems and solutions in their school community.



Pam Hook

**Pam Hook** is an experienced educational consultant and curriculum resource writer.



DrRosemaryHipkins

**Dr Rosemary Hipkins** is a chief researcher at NZCER and leads work on understanding the key competencies in the NZ Curriculum.



DrSarahHowell

**Dr Sarah Howell** is a secondary maths and statistics teacher and teaching fellow of statistics at Victoria University of Wellington.



Winsome Brown

**Winsome Brown** is a learning support teacher at Rangiora High School.

## REFERENCES

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