An organisational response to Stage 3 Geography and the study of a contemporary bushfire event

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ABSTRACT

The NSW Geography Syllabus now requires that Stage 3 students (Years 5 and 6) study a contemporary bush fire event using an Inquiry Learning approach. The NSW Rural Fire Service (NSW RFS) estimates that in 2017 2,500 schools, 4,000 classroom teachers and 100,000 students will be undertaking this Unit.

The NSW RFS has supported the development of An evidence-based practice framework for children's disaster education. The Framework is a primary guidance to the Stage 3 Geography work now being undertaken by the NSW RFS, addressing the majority of elements identified under the Framework's 6 areas (Curriculum, Pedagogy, Assessment, Professional Development, Scaled Implementation, Monitoring and Evaluation).

This is an opportunity for inter-generational change. Stage 3 students will experience disaster resilience education framed around a contemporary bush fire event.

NSW RFS volunteers and staff already undertake numerous activities with schools and students, most commonly with the delivery of key fire and bush fire safety messages with younger children.

The Geography Syllabus change has required the NSW RFS to reflect on how to support explicit educational outcomes. The NSW RFS response to the change has four key elements:

- collaborations with NSW education sector, professional associations, schools and interested teachers to develop approaches and tools that can contribute to educational values and outcomes.
- Capability development for teachers through participation in professional learning events and communications as well as supporting resources.
- a revised NSW RFS Schools webpage that has a focus on Stage 3 Geography, reflects inquiry-based learning principles, and has information pathways for teacher, students and NSW RFS Members
- skills development for NSW RFS Members to support Stage 3 students and teachers, including an RFS Members pathway on the Schools Education landing page;

This work also complements key elements of the research utilization roadmap 2016-21 for the BNHCRC Building Best Practice in Child Centred Disaster Risk Reduction (CC-DRR) project. This work will help to create effective CC-DRR programs that can be sustainably implemented at scale, and that increase resilience and reduce current and future disaster risk.

SUMMARY OF THE NSW RURAL FIRE SERVICE RESPONSE

The body of evidence around disaster resilience education highlights the capacity of children and young people to be active participants in responding to disaster events can be built. No longer do they have to be passive bystanders needing adult direction and support. Further, children are also able to positively influence the actions of adults in disasters and emergencies.

The NSW Rural Fire Service (NSW RFS) has responded to the introduction of the NSW Geography Syllabus[i] changes by collaborating with the NSW education sector, revising the NSW RFS website, capability development for teachers and support to NSW RFS volunteer and staff Members.

This Stage 3 Geography approach reflects most elements of the evidence-based practice framework[ii] for children's disaster education developed under the Bushfire and Natural Hazards Cooperative Research Centre's *Child Centred Disaster Risk Reduction*[iii] (CC-DRR) project - Curriculum, Pedagogy, Assessment, Professional Development, Scaled Implementation, Monitoring and Evaluation.

This work will help to create effective CC-DRR programs that can be sustainably implemented at scale, and that increase resilience and reduce current and future disaster risk, particularly around bush fire.

NSW GEOGRAPHY SYLLABUS STAGE 3

In 2017 alone, it is expected that 2,500 schools, 4,000 classroom teachers and 98,000 students will be delivering or undertaking this Unit about the impact of one contemporary bush fire hazard in Australia. The key learning outcomes are that students can describe places and environments, explain interactions and connections, and compare and contrast influences.

Students will achieve these learning outcomes by a number of means including exploring the impact bush fires have on people, places and environments and propose ways people can reduce the impacts of bush fires; describing the impact of the disaster on natural vegetation and the damage caused to communities.

Inquiry learning is expected to be used, with students researching and investigating problems, and devising solutions and mitigation actions.

COLLABORATIONS

Delivery of Curriculum and Syllabus outcomes are not the province of the NSW RFS. The NSW RFS is seeking to position itself as a valid, valuable and authentic support organisation to the education sector.

The NSW RFS is collaborating with the three education providers in NSW (Department of Education, Catholic Education Commission, Association of Independent Schools) as well as with professional associations such as the Geography Teachers Association, schools and interested teachers to develop approaches and tools that can contribute to educational outcomes.

APPLICATION OF THE PRACTICE FRAMEWORK

The development of resources and materials by the NSW RFS for the Stage 3 Geography bush fire unit reflects key elements of *An evidence-based practice framework for children's disaster education* across the Framework's 6 areas (Curriculum, Pedagogy, Assessment, Professional Development, Scaled Implementation, Monitoring and Evaluation). That work is summarized in Table 1.

Area of the Framework: Curriculum
The Stage 3 bush fire Unit is within the NSW Geography Syllabus, aligned to the Australian Curriculum[iv];
Vertical integration occurs across STEM Science Technology Engineering and Mathematics[v];
Reflects current scientific knowledge of hazards and disasters.
Reflects relevant policy and practice of bush fire agencies.
Incorporates local and indigenous knowledge though cultural burning and Firesticks.
Area of the framework: Pedagogy
Clearly articulated learning objectives and outcomes from the Syllabus
Learning outcomes are achieved through child-centred Inquiry Learning[vi] approaches
Student participation in their schools and households
Area of the framework: Assessment
Assessment elements remain the province of schools and teachers. Generally assessment is both formative and summative, is directly aligned with stated learning objectives and outcomes, uses a range of assessment methods.
Area of the framework: Professional Development
Resources and materials to support teacher delivery of the Unit are collaboratively formed to meet the needs of teachers.
Educators are being provided with professional training via existing Sector channels, such as webinars
Area of the framework: Scaled Implementation
The approach is guided by the context of scale by explosion.
Enabling factors such as existing Curriculum support for teachers are being utilised.
Area of the framework: Monitoring and Evaluation
Monitoring and evaluation of student learning outcomes is generally being undertaken by teachers and schools
Unit resources and information is modified and updated to reflect M&E outcomes.

TABLE 1 - NSW RFS ACTION DIRECTED BY *AN EVIDENCE-BASED PRACTICE FRAMEWORK FOR CHILDREN'S DISASTER EDUCATION*

TEACHER CAPABILITY DEVELOPMENT

Teachers have clearly stated that they are seeking general knowledge about bush fire and confidence in delivering this Unit most effectively. Guidance and support is framed by what teachers actually need and want, rather than what the NSW RFS thinks teachers might want or like.

NSW Department of Education Curriculum Advisors created an initial Bushfire Mitigation Teaching and Learning Framework[vii] to support teachers with this Unit in its first year of implementation. The NSW RFS has worked with those Curriculum Advisors to enhance that Framework to include specific advice, direction and resources to support students' inquiry learning on bush fire.

The NSW RFS continues to engage with teachers in professional learning events, conferences and workshops, as well as through webinars and other online forums conducted through education providers.

CASE STUDY: ST IVES NORTH PRIMARY SCHOOL 'FIRESTORM' STEM PROJECT[viii]

In late 2016, St Ives North Primary School connected STEM (Science, Technology, Engineering and Mathematics) to link with the Stage 3 Geography bush fire unit through the Firestorm[ix] project. The success of Firestorm is a consequence of:

- Being real-life and authentic
- application of the Stanford University model of design thinking[x]
- A clear and open-ended driving question: how can the community of St Ives prepare for, survive and recover from a catastrophic bush fire?
- Knowledge integration of science - fire behaviour, material fire resistance
- Knowledge integration of mathematics - rates of spread, effect of wind and slope
- Technology - data logging, coding, and web design

NSW RURAL FIRE SERVICE SCHOOL WEBPAGES

The NSW RFS Schools website[xi] is designed the support Teachers and Students in the delivery of the Stage 3 Geography bush fire Unit. The pathway is Teachers, Stage 3 Geography, October 2013 fires. Content reflects Inquiry Learning principles. Information and resources represent key Geographical Tools identified in the Syllabus documents, including:

- Maps - bush fire prone land, fire impact areas,
- Graphs and statistics - Tables, graphs, statistics and indexes
- Visual representations - videos, images, aerial photos, webtools, apps, timelines
- Spatial technologies - fire related maps, satellite imagery, weather and climate, GIS layers, line scans

MEMBER CAPABILITY DEVELOPMENT

The NSW RFS respects that schools and teachers will determine how the Stage 3 Geography learning outcomes are met in the classroom. The Schools website goes a long way to provide authentic information that can be freely accessed in exploring problems and identifying solutions.

NSW RFS Members are actively engaged with Teachers and Students, from providing general advice and direction, to conducting bush fire expert visits to classrooms. In the first year of this Syllabus implementation, skills development workshops have been conducted with small groups of Members. Guidance and advice is regularly communicated through existing Member social media channels.

CONCLUSION

Internationally the UN Sendai Framework for Disaster Risk Risk Reduction 2015 – 2030[xii] sets out deliver substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries. This study of a contemporary bush fire event will contribute to broader resilience to disasters and emergencies.

Through the Bushfire and Natural Hazards Cooperative Research Centre, the Child Centred Disaster Risk Reduction (CC-DRR) project has developed an evidence-based practice Framework. The NSW RFS embraces the application of evidence based practice to producing disaster resilience education programs that reduce risk, increase resilience, and can be implemented at scale.

This Framework and the Stage 3 Geography Unit align very well through clearly articulated learning objectives and outcomes, adoption of child-centred learning approaches, promotion of student participation in the school, household and communities, providing professional development and support for teachers.

Together, teachers, students and the NSW Rural Fire Service together can build the capability of children and young people to be active participants in responding to disaster events, and not be passive bystanders needing adult direction and support.

REFERENCES

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iv Australian Curriculum, Assessment and Reporting Authority (2015) *Australian Curriculum*

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vii Human Society and Its Environment. (2016) K-10 Teaching and Learning Framework Stage 3 Geography Bushfire Mitigation

viii NSW Department of Education (2016) Science Technology Engineering and Mathematics – The Firestorm Project

ix NSW Rural Fire Service (2016) We had massive ideas Firestorm video

x Stanford University Institute of Design *Model of Design Thinking*

xi NSW Rural Fire Service *Schools webpage* http://www.rfs.nsw.gov.au/resources/schools

xii United Nations (2015) Sendai Framework for Disaster Risk Reduction