Great Southern Grammar's approach to Education for Sustainability and developing a whole school Action Plan

A. Context

Purpose

To illustrate how an integrated curriculum approach to Education for Sustainability (EfS) in one year level can invigorate thinking about a whole school approach in a K-12 School in the context of an inspiring and engaging natural and cultural environment. Critical thinking, patience and an overarching vision for the school community encourage small steps to links with the components of the Australian Sustainable Schools Initiative WA (AuSSI-WA) framework.

Curriculum links

General Capabilities	• Critical and creative thinking • Ethical understanding • Literacy • Numeracy
Cross Curriculum Priorities	• Sustainability • Aboriginal and Torres Strait Islander histories and cultures
Learning Areas	• Science; English; Mathematics; History; Geography

Background

Great Southern Grammar is a fairly new school located in a special natural environment and community. With strong links to Aboriginal origins and current productive uses that support local communities, our students are encouraged to appreciate and sustain this exceptional regional space.

Nestled on the edge of Oyster Harbour, adjacent to the King and Kalgan Rivers, Great Southern Grammar School is in a unique region of Western Australia. In the midst of a 'biodiversity hotspot' close to the Stirling and the Porongorup Ranges and adjacent to the Two Peoples Bay Conservation area, students have a rich and diverse classroom just outside the door. The grounds on which the classrooms are built have a rich history embedded in the Noongar culture. The Menang pathways from the Stirling Range to Oyster Harbour fish traps would have crossed over the land that has been ceded by the local Noongar people to be used by the school as 'a place of learning'. Interaction and engagement with the Noongar community is ongoing and the flourishing exchange reflects the special 'learning community' that has evolved.

Creating a sense of 'place and space' for students, who come from diverse communities around the Great Southern, is an important part of establishing identity and ownership for these young people. In classrooms throughout the school, the aim is to raise awareness, develop a sense of responsibility and value for the sustainability of the geography and community, now and for the future.

Actions of the whole school include infrastructure for waste water management on site, tree planting, kitchen garden, worm farming, water quality testing, data analysis, seed propagation, identification of native plant species endemic to the area, Noongar connections and preparation of art inspired by Noongar events and activities, examination of sustainability themes in literature and developing a student voice for action. Further, the school has placed the Johnston Creek Precinct Project on its master plan.

Sustainability action planning

The school's sustainability action plan is a work-in-progress and will be informed by utilising AuSSI-WA's three core review, planning and celebration tools:

1) Key Elements Rubrics (KER)

   a) Leadership
      i) Individuals are looking at the role a class or classes could play in sustainability
      ii) An individual is working to build support for sustainability to be a key context for learning across the school
      iii) Individual planning includes EfS considerations

   b) Teaching and Learning
      i) Individual teachers are involved in environmental and/or socio-cultural education activities
      ii) Individual teachers use a collaborative, action learning approach to teaching and learning (transformative education).
      iii) Individual teachers use sustainability as a context for teaching
      iv) A number of staff are aware of key sustainability issues and reflect this in their programs
      v) Individual teachers collect information on students leaning related to EfS

   c) Community
      i) Individual teachers recognise the importance of students voice in EfS
      ii) Occasional links are made with other schools to share resources and discuss activities related to EfS
      iii) The School communicates with parents about some EfS activities
      iv) A class has been acknowledged for EfS activity in the school newsletter and in the broader community

2) Ecological Footprint

   a) Waste
   b) Biodiversity
   c) Water

3) Social Handprint

   a) Student wellbeing
   b) Community partnerships
   c) Indigenous culture

To date, EfS actions indicate individuals in the school are *starting* to act in all three sections of the KER: Leadership; Teaching and Learning; and Community. Review, planning and celebration using the KER will be ongoing (see AuSSI-WA website at: http://www.det.wa.edu.au/curriculumsupport/sustainableschools/detcms/navigation/aussi-wa-toolkit/ .

Great Southern Grammar is beginning to create a whole school approach and vision for EfS and registration as a participant in AuSSI-WA is a part of that process. A transformative education approach is being applied within the Year Seven teaching group. Students in Year Eight have been recognised for their engagement in the Johnston Creek Precinct Project in the quarterly school publication 'The Griffin' and students in Year Seven made a presentation to the South Coast Natural Resource Management Group and others in 2012 about the success of the Precinct Project.

Links and connections/partnerships developed in the integrated study of the environment and community include:

- Albany City Council
- Department of Indigenous Affairs
- Department of Fisheries
- Department of Water
- Great Southern Grammar Parents & Friends
- Kalgan River Stewards
- Kalgan Progress Association
- Planet Ark (National tree Day)
- Oyster Harbor Catchment Group
- Scientists in Schools (CSIRO)
- South Coast Natural Resource Management Group
- Toyota (Sponsor of National Tree Day planting 2011)
- Walk to School Day
- Waste Wise Schools
- Wellstead Community Resource Centre

Evaluation

Quantitative and qualitative data is being collected to evaluate the success of the integrated study initiative in Year Seven. The quantitative data being collected from Johnston Creek is shared with the Department of Water and provides ongoing evidence of the health of Johnston Creek and the interventions and impact of the school. Qualitative evidence is in the form of photographs of the Johnston Creek Precinct Project, field notes on species, student surveys, public display of student artwork inspired by Noongar culture, presentations to groups and agencies outside of the school and successful support of grant applications in collaboration with volunteer groups such as the Kalgan River Stewards.

B. Action

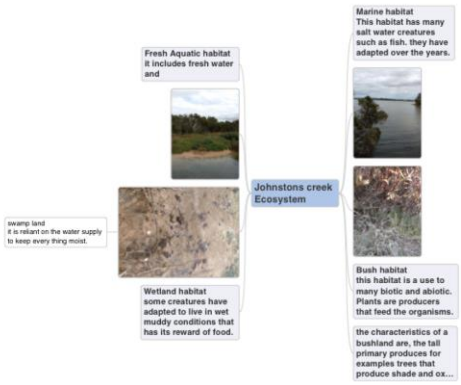
Students in Year Seven are exposed to the natural environment and Aboriginal culture frequently and early in Term One. This immerses them in aspects of the local environment and engages curiosity. Students walk to the fish traps across Johnston Creek, learn of Aboriginal use of the plant materials and Oyster Harbour for catching fish for ceremonial uses. A few weeks later they walk three peaks of the Stirling Ranges and travel the pathways of the Menang.

<u>Ecological Footprint Action Learning Areas</u>

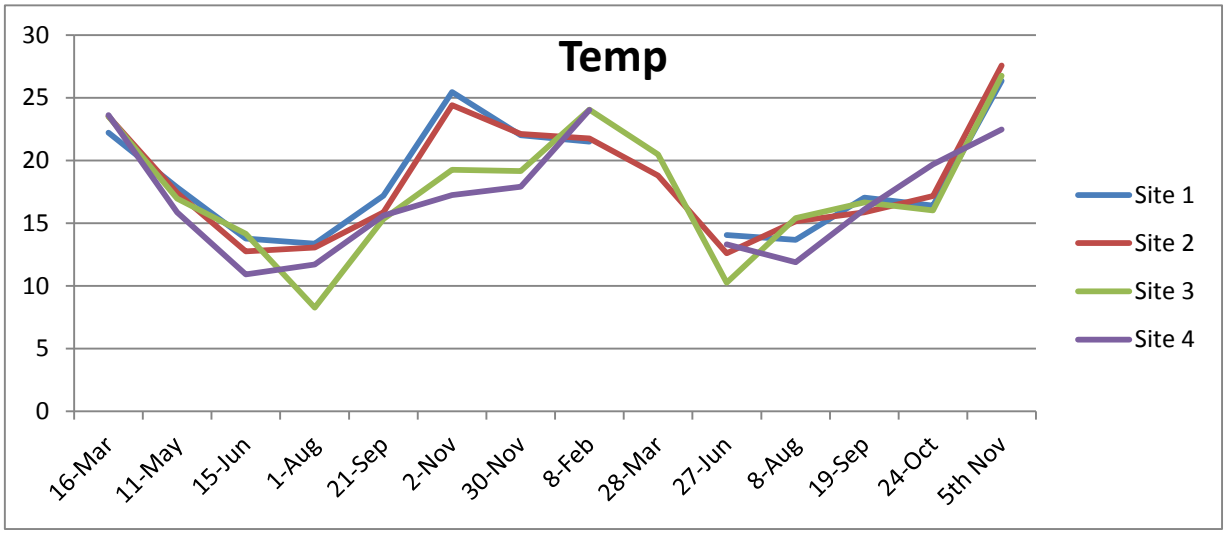
In an integrated cross-curriculum program, students in Year Seven:

- Explore the ecosystem of the Oyster Harbour and its connected waterways in ***History*** and ***Geography***, with particular emphasis on human impact.

- Record and examine the diversity of habitats at Johnston Creek.



- Record water quality data at Johnston Creek at least six times each year (***Science***), using a Hydrolab borrowed from the Department of Water.
- Develop an understanding of the value of long term data collection for monitoring and managing natural environments.



			TEMPERATURE											
TEMP	16-Mar	11-May	15-Jun	1-Aug	21-Sep	2-Nov	30-Nov	8-Feb	28-Mar	27-Jun	8-Aug	19-Sep	24-Oct	5th Nov
Site 1	22.2	17.84	13.78	13.37	17.18	25.46	22	21.49		14.05	13.67	17.04	16.4	26.34
Site 2	23.5	17.41	12.74	13.06	15.85	24.4	22.11	21.74	18.8	12.59	15.14	15.85	17.15	27.57
Site 3	23.5	16.96	14.15	8.27	15.32	19.24	19.16	24.05	20.48	10.25	15.41	16.64	16	26.74
Site 4	23.6	15.85	10.91	11.71	15.6	17.23	17.9	24.02		13.32	11.87	16.09	19.68	22.47

- Analyse water quality data in ***Mathematics***. Determining mean, mode, range for data including temperature, salinity, dissolved oxygen, turbidity and pH. A 'Scientist in Schools' participant, Kim Brooksbank, has assisted in this.
- Share water quality data with the Department of Water.

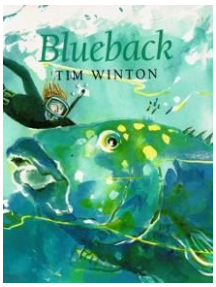
- Engage in activities that assist understanding of the indigenous history of the area as part of ***Art*** and ***History*** and ***Geography***.

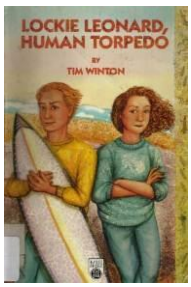
- Create artwork for public display in the heritage listed Fish Traps area and in school grounds. Artwork already exists in the school grounds, created by Year Sevens.

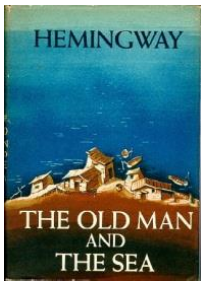
- Propagate provenance seed as part of the elective *Environment and Community*.

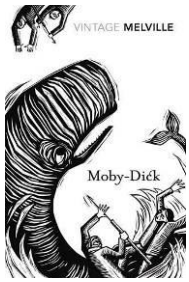
- Revegetate the Johnston Creek fringes (as Part of National Tree Day and ongoing Johnston Creek Precinct Project). This is an annual event.

- Examine sustainability themes in ***English*** in the literature of *Blueback* (Tim Winton), *The Old Man and the Sea* (Earnest Hemingway), *Lockie Leonard Scumbuster* (Tim Winton), *Moby Dick* (Herman Melville). Students engage in visible thinking strategies in text studies and respond in persuasive texts. In *Blueback* the themes of life cycles, the marine environment and management of marine stock, sustainable living and conservation are raised. In *The Old Man and the Sea*, themes of survival, management of marine stock and community are raised. In *Lockie Leonard Scumbuster*, themes of individual and community action for change, commercialism, pollution and marine environments are raised. In *Moby Dick*, the theme of the marine environment and marine stock, as well as the impact of over-fishing on species is raised. Further links are made with understandings in ***Science***, ***History*** and ***Geography***.









- Engage with local volunteer groups (Kalgan River Stewards, Oyster Harbour Catchment Group) supporting a recent grant application which will see the students propagating seeds collected by the group and returning them to be planted along the Kalgan River.

- Explore the nearby community of Wellstead, its history and efforts to be economically sustainable in changing economic times in ***History*** and ***Geography***. The community opened in 1962 with Conditional Purchase blocks released for agriculture. Since then, agro-forestry and now mining alongside tourism and minerals sands contribute to the economy of the small town and its community.

- Walk the coastline recalling historical maritime events that shaped the south coast of Western Australia and observe whales as they traverse the coast.

- Walk the Stirling Ranges with respect and acknowledgement of the Menang People.

- Coordinate paper recycling in classrooms (student leaders).

Social Handprint Action Learning Areas

- Strong links exist with the local Noongar people who have invited Great Southern Grammar students to provide artwork for display in the heritage-listed fish traps area. This relationship has evolved over nearly six years of invitation and inclusion in the *Environment and Community* elective. The relationship is highly valued and mutually beneficial.

- Volunteer groups have played a major role in supporting in real and in-kind ways to establishment of the Johnston Creek Precinct Project. The Oyster Harbour Catchment Group and Kalgan River Stewards are local community groups with interest in the sustainability of the waterways and native remnant zones in the vicinity of the school. An ongoing relationship exists with the Kalgan River Stewards who have asked the school to engage in propagation of provenance seed.

- Government agencies have been supportive in provision of expertise, equipment and support in the development of the Johnston Creek Precinct Project. The Departments of Fisheries and the Department of Water along with the Department of Parks and Wildlife. Another Agency of significance is that of the South Coast Natural Resource Management Group who have communicated and supported and followed efforts to establish initiatives at Great Southern Grammar.

Australian Curriculum links in Year Seven (Content Descriptions; Organising Ideas):

SCIENCE	ENGLISH	HISTORY/GEOGRAPHY	MATHEMATICS
human impact on interactions (ACSSU112); resource renewability (ACSSU116); water recycles through the environment (ACSSU222); new scientific understandings change our view of the world (ACSHE119); ethical considerations (ACSHE120); Science understanding influences the development of practices (ACSHE121); conduct investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed (ACSIS125); collect data with accuracy (ACSIS126); represent data, including graphsto represent and analyse patterns or relationships, (ACSIS129); Summarise data, draw conclusions (ACSIS130); Communicate ideas (ACSIS133)	evaluations about a text can be substantiated by reference to the text and other sources (ACELA1782); text structures and language features of texts become more complex in informative and persuasive texts (ACELA1531); modality is achieved through discriminating choices in modal verbs, adverbs, adjectives and nouns (ACELA1536); Identify and explore ideas and viewpoints about events, issues and characters represented in texts drawn from different historical, social and cultural contexts (ACELT1619); Reflect on ideas and opinions about characters, settings and events in literary texts, identifying areas of agreement and difference with others and justifying a point of view (ACELT1620); Use comprehension strategies to interpret, analyse and synthesise ideas and information, critiquing ideas and issues from a variety of textual sources (ACELY1723)	flows of water connect places as it moves through the environment and the way this affects places (ACHGK038); The nature of water scarcity and ways of overcoming it (ACHGK040); The economic, cultural, spiritual and aesthetic value of water for people, including Aboriginal Peoples (ACHGK041); The factors that influence the decisions people make about where to live and their perceptions of the liveability of places (ACHGK043); The influence of environmental quality on the liveability of places (ACHGK045); The influence of social connectedness, community identity on the liveability of places (ACHGK046); propose individual and collective action in response to a contemporary geographical challenge, taking account of environmental, economic and social considerations, and predict the expected outcomes of their proposal (ACHGS054); Sequence historical events, developments and periods (ACHHS205)	Identify and investigate issues involving numerical data collected from primary and secondary sources (ACMSP169); Calculate mean, median, mode and range for sets of data. Interpret these statistics in the context of data (ACMSP171); Describe and interpret data displays using median, mean and range (ACMSP172)

Results

This integrated curriculum approach to EfS signifies an attempt to preserve and sustain the natural environment and recognises the value of Aboriginal history and culture and our responsibility to the wider community. It is the beginning of an overarching vision for the school community that reflects components of the AuSSI-WA framework.

C. Reflection

What facilitated the process?

The process of cross-curricular integration at Year Seven level grew from the need to contextualise studies in an easily accessible, shared experience that was valued by the students. The vulnerable expanses of water, native vegetation, creek and rivers near to the school provided the most obvious and relevant context.

Later, an observant and visionary Curriculum Coordinator would initiate the first idea for a Year Eight programme to engage students in the marine and natural environments. About five years ago, the program emerged as an elective unit in Year Eight. It then became a Year Seven elective. Community agencies were supportive and encouraging in the early research and development phase of the Year Eight elective programme.

What were the challenges?

Challenges to the integrated Year Seven Programme have been lack of awareness of decision-makers of the rich curriculum connections of excursions and limited value or realisation of the resources outside the classroom.

In the early years of the Year Eight elective the challenge was to be creative in the way in which the elective was timetabled and a commitment to the value and endurance of the programme.

Recommendations for the future at Great Southern Grammar

It is hoped that the efforts of individual staff across the K-12 School can be affirmed in a whole school Sustainability Action Plan. Existing activities that can be brought together in a unified approach to EfS include the following

- Junior School 'Waste Wise'.
- The development of a foreshore pathway that will enable students to walk to school and the community to access the school's frontage onto the foreshore
- Kitchen garden
- Junior School worm farms
- Registration with AuSSI-WA.

Other initiatives that may contribute to the whole school Sustainability Action Plan could include:

- student exchanges to resource-poor regions of the state, nation, world;
- development of the community service program;
- integration of eco-critical reading of authors such as John Kinsella;
- critical thinking on the economy of Wellstead – a project for Y11-12;
- development of 'travelsmart' initiatives like walking to school, car-pooling; and
- planning for infrastructure build that is energy efficient.

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