Part 1: Rationale

Digital collaborations for sustainability:
Innovative and practical models of practice utilising virtual collaboration.

Study Focus:

My proposal is a study of how virtual collaboration balances a technical virtual experience with a student centred real-life experience in a climate that fosters creativity and innovation, particularly in the context of Education for Sustainability.

Connection to quality creativity and innovation in educational practice:

As a teacher in an Environmental Education Centre (EEC), my role is to support educational practice in the areas of cross-curricular integration and Education for Sustainability (EfS). A proven approach is the sustainability action process which can be summarised in the following steps:

- making a case for change
- exploring options
- developing and implementing a proposal for change, then
- evaluating and reflecting.

The sustainability action process is a cross-curricular template that applies higher-order thinking for a purpose. All students have their unique talents and style of intelligence, which shape the outcomes of their own conceptual sustainability journeys.

This process lends itself to the concepts of creativity and innovation given that creativity involves creating something new, such as a new method, idea or concept, while innovation is in the use and application of that which has been created.

Field of Mars EEC is a leader in using virtual collaboration (VC) to facilitate a real world, problematic approach to EfS by supporting schools all over NSW and Australia with their sustainability action journeys.

VC is an ideal method for the sustainability action process because the innovation required to meaningfully tackle complex, inclusive sustainability problems requires multiple people interacting creatively - in different ways, and sometimes at different times and places - in order to innovate and develop unique solutions.
What is virtual collaboration?

VC is a blending of modern interactive technologies and teaching practices for student centred collaboration that provides the opportunities for creativity and innovation to flourish.

The technologies include:
• video conferencing,
• web based data collaboration software,
• social learning networks, Wikis and blogs
• web conferencing software

The teaching and learning itself is carefully planned to be student-focused and driven in line with contemporary educational best practice\(^2\) that allows for intellectual quality, significance and quality learning environments.

Building on existing resources:

Field of Mars EEC has worked closely with many agencies on the following VC resources:

• Curriculum consultants:
  Teacher Professional Development programs utilising VC (eg literacy and sustainability in the early years program)

• Non-DET VC outreach providers:
  State Video conference provider working group (museums, art galleries, heritage organisations, writers, performers and storytellers)

• DEC Rural and Distance Education unit:
  Support and standards for virtual educational outreach

• Department of Primary Industries:
  2011 Clickfest National Science week virtual outreach event

• NSW Curriculum and Learning Innovation Centre (CLIC):
  “Next practice” Connected learning support program and web-conferencing trial

• Environmental trust:
  Virtual workshops for Eco-schools grant program

• AARNET, the national academic and research network:
  Presenter at National Questnet ICT conferences

One of the best examples of our virtual collaboration programming is the annual Field of Mars EEC Learning for sustainability VC Festival\(^3\) (see appendix), which is now the leading interactive learning event in Australia. It is an intensive fortnight of student-to-student collaboration, creative outreach and teacher professional development (TPD) that showcases and shares unique and independent ideas and best practice in the area of VC and EfS with around 10,000 participants annually.
Part 2: Relationship to Creativity and Innovation

Relevance to creativity and innovation in syllabuses:

Field of Mars EEC strongly links its digital outreach and collaboration programs to current Board of Studies syllabuses across all stages of learning, and also the Australian Curriculum through supporting specific content as well as prescribed cross-curricular priorities including:

- critical and creative thinking
- education for sustainability
- information and communication technology
- literacy and numeracy
- intercultural understanding

It is this intersection of authentic sustainability action, curriculum content, and cross-curricular contexts that informs the design of our numerous digital outreach programs, such as:

- **Interactive invertebrates** - an interactive VC session where students create their own invertebrate designs and habitat survey methods for their local area using data collaboration tools.
- **Digital Habitats** - a sustainability action process VC that guides students in developing and implementing a unique proposal for change by producing a blueprint for a habitat area in their school grounds using desktop sharing.
- The **Learning for Sustainability VC Festival** which provides a coaching service to student and teacher presenters and provides them with exhaustive constructive feedback and evaluation.

The study will provide the means for innovative and creative practice as it will:

Provide me with the insight, knowledge and experience to:

- inform Field of Mars EEC strategies to support creative and innovative approaches to EfS
- support student-created EfS initiative in schools
- design and deliver professional development in VC techniques for school teachers and leaders
- work in collaboration with educators and other EECs to continue developing resources and programs specific to creative EfS
- refine and develop existing large scale VC events such as the VC Festival and Clickfest
- design and implement innovative digital outreach and field work activities into existing Field of Mars programs and share these with other EECs and school teachers
- create relationships between international schools for EfS collaborations
- provide for a meta-knowledge analysis of VC techniques as 21st century learning tools for EfS
- enable me to perform as a VC consultant to many schools and VC providers around NSW.
Part 3: Scope and feasibility

Budget:

<table>
<thead>
<tr>
<th>Expense</th>
<th>Cost: ($AUD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Travel</strong></td>
<td>$4400 flights</td>
</tr>
<tr>
<td>Accommodation</td>
<td>$890 Bus, Car hire, train</td>
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<tr>
<td><strong>Sustenance</strong></td>
<td>$4620 (33x$140)</td>
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<tr>
<td></td>
<td>(2 nights on plane)</td>
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<tr>
<td><strong>Conference + course fees</strong></td>
<td>$3300 (33x$100)</td>
</tr>
<tr>
<td>Medical &amp; Travel Insurance</td>
<td>$428.55</td>
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<tr>
<td>US ESTA fee</td>
<td>$379</td>
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<tr>
<td></td>
<td>$13</td>
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<tr>
<td></td>
<td>TOTAL $14,030.55</td>
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</tbody>
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Itinerary:

<table>
<thead>
<tr>
<th>Date</th>
<th>Locations</th>
<th>Organisation / Contact name / Activities</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>23/2</td>
<td>Flight - LA</td>
<td></td>
<td></td>
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<tr>
<td>24/2</td>
<td>Flight - Anchorage</td>
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</table>
| 25/2  | Anchorage     | Alaska Society for Technology in Education Annual Conference
- There are many similarities between the Alaskan & NSW educational contexts. Besides a program of relevant workshops & seminars, this conference will allow me to access a cluster of international experts from key organisations. | Conference $445USD |
| 26/2  |               |                                                                                                          |              |
| 27/2  |               |                                                                                                          |              |
| 28/2  |               |                                                                                                          |              |
| 1/3   | Anchorage     | GCI SchoolAccess
- Sustainability School showcase + Peer coaching discussion. |              |
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<thead>
<tr>
<th>Dates</th>
<th>Locations</th>
<th>Organisation / Contact name / Activities</th>
<th>Budget</th>
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</thead>
</table>
| 2/3   | Seward / Anchorage | **Alaska Sealife centre**  
- Architecture of student collaboration channels |        |
| 3/3 Sun | Flight - Edmonton  
Travel - Medicine Hat | Reflection, Reporting. |        |
| 4/3   | Medicine Hat | **Cypress Hills IPP**  
- Demonstration of mobile fieldtrip technologies 
& open ended investigations. |        |
| 5/3   |           | **Royal Tyrell Museum:**  
- Differentiated programming |        |
| 6/3   | Edmonton | **The Centre for Global Education**  
- Online tools for asynchronous collaboration. |        |
| 7/3   |           | **Queen Elizabeth HS**  
- Workshop & international programming |        |
| 8/3   |           | **Greater Yellowhead region of schools**  
- Interview & classroom showcase |        |
| 9/3   |           | **Edmonton Resiliency Community Sustainability Group**  
- Community collaborations stakeholder discussion |        |
| 10/3 Sun | Flight - Indianapolis | Reflection, Reporting. |        |
| 11/3  | Indianapolis | **Educational informatics**  
- Digital Portfolio structure for collaboration |        |
| 12/3  |           | **Center for Earth & Environmental Science**  
- Models for environment centres managing 
community partnerships for VC collaboration programs. |        |
| 13/3  |           | **Center for Interactive Learning & Collaboration**  
- I am really excited to work with these people:  
They have committed 48hrs for my visit to work on:  
• The KC3 - Student Created Content Program competition.  
• Creating collaborative communities  
• Interdisciplinary Instruction + PBL  
• Program Differentiation |        |
| 15/3  |           | **Blackboard Collaborate**  
- Integrating collaboration methods for easy school management. |        |
<p>| 16/3 Sat | Flight - New York | Reflection, Reporting. |        |</p>
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<thead>
<tr>
<th>Dates</th>
<th>Locations</th>
<th>Organisation / Contact name / Activities</th>
<th>Budget</th>
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<tbody>
<tr>
<td>17/3</td>
<td>New York</td>
<td>American Museum of Natural History Manhattan School of Music</td>
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<tr>
<td>18/3</td>
<td>Eastchester HS</td>
<td>Educational technologist</td>
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<td></td>
<td></td>
<td>- School visit. demonstration &amp; interview.</td>
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<td></td>
<td>Eastview Middle School</td>
<td>- Collaborations with community/social outcomes. &quot;Global run&quot; project</td>
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<td>19/3</td>
<td>NYC iSchool</td>
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<td>- Creating student culture for engagement when using potentially distracting web tools.</td>
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<tr>
<td>20/3</td>
<td>Flight - London</td>
<td>Reflection, Reporting.</td>
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<tr>
<td>21/3</td>
<td>London</td>
<td>Natural History Museum -</td>
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<td></td>
<td></td>
<td>- Large-scale VC Collaboration structures Meeting: VC working group.</td>
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<tr>
<td>22/3</td>
<td>Museum of London (Docklands)</td>
<td>- 'Interactive TV' multipoint approach.</td>
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<tr>
<td>24/3 Sun</td>
<td>Travel - Exeter</td>
<td>Reflection, Reporting.</td>
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<tr>
<td>25/3</td>
<td>Exeter</td>
<td>Devon Curriculum Services</td>
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<tr>
<td></td>
<td></td>
<td>- Chittlehampton PS showcase &amp; Interview. International program design</td>
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<tr>
<td>26/3</td>
<td>Travel - Shropshire</td>
<td>Shropshire Council - Lifelong learning using VC</td>
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<tr>
<td>27/3</td>
<td>Shropshire</td>
<td>The Priory School - VC as a tool in Business &amp; Enterprise learning partnerships</td>
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<tr>
<td>28/3</td>
<td>London</td>
<td>London Grid for Learning</td>
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<tr>
<td></td>
<td>(Flight 10.30pm)</td>
<td>- Interview</td>
<td></td>
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<tr>
<td>29/3</td>
<td>Flight</td>
<td>Reflection, Reporting.</td>
<td></td>
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<tr>
<td>30/3 Sat</td>
<td>Sydney 8 am</td>
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Part 4:

The study enriches the body of professional knowledge and builds the capacity of teachers in terms of knowledge gained and study-informed teaching practices by:

- providing a documented showcase of individual and whole school approaches to EfS using VC techniques which allow for creative and innovative approaches for teachers in schools and EECs to discuss and apply
- providing creative, differentiated learning strategies that nurture individual talent, and are connected to the world outside the classroom
- informing the design of TPD courses that support teachers to integrate EfS, technology, local contexts and critical and creative thinking into authentic open-ended learning collaborations with other schools from different social and community contexts
- developing ideas for student collaboration and EfS work that require and reward critical open-ended thinking as per sustainability action process
- improving leadership skills by empowering students to act for sustainability in creative ways
- developing applied technology skills that are mandatory for all students.

The study impacts on learning and teaching beyond the individual school by:

- implementing the objectives of the Department of Education, Northern Sydney regional plan, specifically:
  - “Schools use ICT learning tools, interactive technologies and ICT-based curriculum resources to engage learners, support innovation and enrich learning”
  - “Schools engage with local community organisations to maximise support for every student including building opportunities for community-based learning."
- creating strong multi-partner collaborations within the community, such as VC-enabled artists-in-residence programs
- informing the form of, and methods used in, national VC events such as the annual Field of Mars Learning for sustainability VC Festival, which will involve over 10,000 participants in 2012
- influencing the ongoing development of statewide EfS projects undertaken by students who participate in Field of Mars programs every year (12,874 physical students from 139 schools in 2011).
- cultivating and facilitating global collaboration between international and NSW schools from across the educational spectrum, and
- sharing and showcasing new ideas and methods with national networks such as universities, museums and cultural outreach bodies (further detail is provided in the dissemination of findings section overleaf).
Dissemination of findings:

A report and presentation will be written after the completion of the study and findings shared through the following methods:

• sequenced TPD video conferences on creative and practical VC methods that foster innovative, student driven approaches to open-ended sustainability problems

• presentations and workshops for cultural organisations seeking to engage with schools at bi-monthly Video conference provider working group meetings

• contributing to meetings and forums with colleagues with a particular or developing interest in digital collaboration as well as the annual DEC EEC and Zoo Ed Centre conference and EEC technology sharing days

• TPD programs and workshops for teachers on the new EfS policy and Australian Curriculum demonstrating the creative utilisation of VC

• input to the “connected classrooms cafe” group on “Maang” (the DEC staff microblogging space)

• the Field of Mars EEC website

• personal and professional blog

• Association for Environmental Education network

• presentations at ICT and digital outreach conferences

• on-demand student-focused VC coaching, and

• my continued input into the illustrations of best practice website of the Australian Institute for teaching and school leadership