SELP Case Study Executive Summary: Year 10 Challenge
Kimberley McLean – Unley High School

Objectives:
• To present contemporary challenges to students using a Problem Based Learning (PBL) approach;
• To demonstrate the importance of STEM knowledge and skills in solving problems and;
• To increase teacher capacity in implementing PBL programs and uncover the barriers to their participation.

Student cohort:
Year 10 students. While half of the cohort undertakes work experience during semester one, the remaining students participate in an alternative, weeklong program.

Description of the Year 10 Challenge:
For each Challenge edition, teachers identify a current issue which poses problems for our society. This year’s theme of ‘Food, Glorious Food’ aimed to expose students to the difficulties the global community faces in feeding the world by 2050. Six specific challenges were offered to students.

Students selected the challenge they were motivated to solve, and worked in teams of approximately 20 students and three supporting teacher mentors.

Students engaged in various activities to ‘understand’, ‘explore’ and ‘solve’ their challenge (according to PBL methodology), including gathering data through field trips and excursions, conversing with guest speakers, conducting scientific experiments, and evaluating alternative solutions.

At the end of the week, each Challenge team presented a portfolio documenting research undertaken and options explored and presented the case for their determined best-fit solution. A panel of community members and experts evaluated students’ achievement.

A self-evaluation tool for students based upon the DECD Skills and Capabilities was implemented. Evaluation questionnaires were administered to students, and mentors involved since the program’s inception in 2012.

Links to ACARA
Several Science as a Human Endeavour and Science Inquiry Skills strands are addressed by the Challenge, including:
• Advances in scientific understanding often rely on developments in technology and technological advances are often linked to scientific discoveries (ACSHE192)

Outcomes:
• Student evaluation surveys show that more than 80% of students enjoyed acquiring new knowledge in STEM, working in teams, solving problems and generally had fun.
• More than 90% of students reported believing that advances in STEM improve the world we live in as a result of participating in the Challenge.

• Teachers report that the Challenge offers meaningful learning opportunities to students and presents organic opportunities to discuss STEM careers and to develop science inquiry skills.

• Barriers to participation for teachers were overwhelmingly logistical, suggesting a need to develop a more sustainable and less time intensive future model.

Issues encountered include:

• Many students did not recognise the relevance of STEM knowledge and skills to their challenge or to their future lives and careers. Links between STEM careers and society’s problems need to be explicates.

• Reluctance from teachers to participate as mentors due to the intensive time commitment.

• Teachers reported a need for more comprehensive professional development in PBL methodology.

Future refinements:

• Facilitating greater student involvement from the earliest planning stages to increase relevance;

• Increasing accountability for students by reporting achievement against Australian Curriculum descriptors;

• Incorporating more community involvement and consultation on local challenges by adopting a “Think Global, Act Local” approach

• Seeking out relevant professional development opportunities for teachers