Game on: A future-proofing approach to programme redevelopment
Team members:-

• Prabhat Chand
• David Clarke
• Rob Moir
• Dr Mary Panko
Automotive Engineering Programmes

• Certificate in Automotive and Mechanical Engineering- level 3
• Certificate in Applied Technology – Automotive / Autoronics - Level 4
• Bachelor Of Applied Technology - Level 7
• **National Certificate In Motor Industry (NCIM) - Level 4- Part-time programme**
  - Managed Apprenticeship – Unit standard based
Challenges of NCMI programme

• Programme has more than 100 unit standards
• On / Off job training and assessments
• Rolling enrolments throughout the year
• Each student has their own study plan
• Results can be from multiple sources
• Hard to track progress
• Currently paper based, theory and practical assessment's
• The programme is overly complex and hard for the students to be manage their learning progress

David Clarke
Programme Review: Relook, Rethink, Redesign

- investigate a more flexible approach to the enrolment, delivery and assessment of students’ work

- Initial project e-portfolio assessment in 2011

- Regrouped in 2014, gamification idea was born
E-Portfolio assessment

• In search of a better way
Portfolio assessment

Paper based assessment

Custom E-portfolio mechanism
Moodle

Programme page

Welcoming point of contact
Common link to staff

Course page

Links to course material
Glossary of terms
Teacher resource

David Clarke
Unravelling the chaos

Six Unit Standards with an attempt to map associations and duplications
Rob Moir

Using Mind-Mapping software

Overview of the engines task

Tools and equipment needed

Criteria to assessment task association

Break-down of the theory knowledge
• Gamification
• Reality check
Gamification a concept in the making

• Automotive qualifications have presented Unitec with ongoing issues since the inception of the Unit Standards based model we currently use. This has now been in effect since 1993 and looks to continue for the foreseeable future

• Technology was seen as a keystone in overcoming the identified issues

• Gamification quickly became the glue that brought together all aspects of the technological solutions we discovered.

• Initial vision, was to create an all encompassing game style interface that would allow students to contain, track, maintain their learning programme that for Automotive is Unit Standard based with its resulting complexity
User name

john smith

Password

**********

Login
### National Certificate in Automotive Engineering (Light Vehicle) Scoreboard

<table>
<thead>
<tr>
<th>Location</th>
<th>Compulsory Credits</th>
<th>Elective Credits</th>
<th>Total Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto Admin</td>
<td>30</td>
<td>24</td>
<td>54</td>
</tr>
<tr>
<td>Chassis Shop</td>
<td>34</td>
<td>29</td>
<td>63</td>
</tr>
<tr>
<td>Engine Shop</td>
<td>27</td>
<td>20</td>
<td>47</td>
</tr>
<tr>
<td>Transmission Shop</td>
<td>30</td>
<td>21</td>
<td>51</td>
</tr>
<tr>
<td>Electrical Shop</td>
<td>30</td>
<td>24</td>
<td>54</td>
</tr>
</tbody>
</table>

**Whole Qualification Total Credits:** 271

**STOP**

**WAY**

**GIVE WAY**

**STOP**
National Certificate in Automotive Engineering (Light Vehicle)
Scoreboard

Engine Shop

Cooling systems
236

Engine repair
244

Lubricants & sealants
245

Compulsory Credits
E elective Credits
Total Credits
# National Certificate in Automotive Engineering (Light Vehicle)

## Scoreboard

### Engine Shop

<table>
<thead>
<tr>
<th>Course</th>
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<tr>
<td>Cooling systems</td>
<td>236</td>
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<td>Engine repair</td>
<td>244</td>
</tr>
<tr>
<td>Lubricants &amp; sealants</td>
<td>245</td>
</tr>
</tbody>
</table>

### Total Credits

- **Compulsory Credits**: 63
- **Elective Credits**: 63
- **Total Credits**: 126
Engine Shop

Cooling Systems
236

Knowledge Development

Skills Development

Knowledge Assessment

Skills Assessment

Total Credits
271
Total Credits
56
Total Credits
4

Logout
### National Certificate in Automotive Engineering (Light Vehicle)

#### Scoreboard

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#### Engine Shop

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</table>

Rob Moir
Engine Shop

Engine repair

244
Evidence Requirements

2.9 - The cooling fan is inspected and damage to the blades and hub is located and reported to the supervisor.

Range mechanical type, electrical type.

Select for an complete version
Evidence Requirements
2.9 - The cooling fan is inspected and damage to the blades and hub is located and reported to the supervisor.

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Select for an incomplete version
National Certificate in Automotive Engineering (Light Vehicle)

User name

Password

Login

Rob Moir
Outcomes (practical)

**Outcome 2** - Demonstrate knowledge of engine cooling system operation.

**Outcome 3** - Determine the condition of the coolant and renew to specifications.
**OutCome 2** - Service an indirect (coolant filled) cooling system.

**Evidence requirements**

| 2.1 | 2.2 | 2.3 |
| 2.4 | 2.5 | 2.6 |
| 2.7 | 2.8 | 2.9 |
| 2.10 | 2.11 | 2.12 |
| 2.13 | 2.14 | 2.15 |
Outcome 3 - Determine the condition of the coolant and renew to specifications.

Evidence requirements

3.1 - Safe working practices are observed throughout the task.
      Range personal safety, safety of others, no damage to equipment, vehicle safety.

3.2 - The coolant is inspected visually and tested for specific gravity, and its suitability for further use is determined.

3.3 - The cooling system is flushed to remove all contaminants and in accordance with manufacturer's instructions and legislation.

3.4 - The need for antifreeze and inhibitor is determined, and a coolant complying with manufacturer's specifications is selected.

3.5 - The cooling system is filled with the manufacturer's recommended coolant, to the manufacturer's specified level.

3.6 - The cooling system is bled of all air.
Website tracking system

Future Proofing in the Faculty of Transport Technology
Mobile online enrolment

• Tablet based data collection and enrolment process is currently operating successfully, saving many pages and time consuming manual handling.
• Student’s enrolment progress
Rob Moir

**Tracking web page**

- Student Provisional report
Track web page

- Student’s Certificate Progress
Further development ongoing
• Personalised
  • calendar
  • Study plan
  • Enrolment planning
• Employer
  • Apprentice success tracker
• Admin/staff
  • Enhanced student tracking
  • Email prompts of success
  • Enrolment facilitation
Where to next

• Look for opportunities to improve this initial model by adding a more game elements (incentives and badges) that improve motivational elements.

• Greater investment/funding is needed to implement these gamified components especially if these mechanisms are to be integrated with institutional administration systems.