

WRITTEN TECHNICAL REPORT

Weighting: 70%

Module: ACMA4039 – Engineering Applications & Study Skills

Assessment: Root Cause Analysis – Technical Report

Student: Joshua Ludlow

Student ID: 2517369

Engagement with Literature Skills (15 marks)

Mark awarded: 12 / 15

Joshua showed good engagement with literature relevant to risk management and RCA within manufacturing. The report references both academic and professional sources, including Oduoza (2020), industry guidance articles, and the IMechE Code of Conduct. The inclusion of peer-reviewed research strengthens the academic grounding of the work.

However, some sources are explanatory or web-based in nature, and the literature is often presented sequentially rather than compared or synthesised.

What was done well

- Inclusion of peer-reviewed academic literature.
- Clear explanation of how risk management links to manufacturing performance and safety.
- Appropriate use of professional and ethical guidance.

What could be improved

- More direct comparison between sources would strengthen critical engagement.
- Greater use of standards or legislation (e.g. ISO 31000, UK H&S law) would improve alignment with the brief.

Suggested enhancement

- Add a comparison table linking *academic research, professional guidance, and legal requirements* to the identified risks in the RCA.

Knowledge and Understanding Skills (25 marks)

Mark awarded: 20 / 25

The report demonstrates a good understanding of risk management principles and the role of RCA in manufacturing. Joshua clearly explains why risk management is important in engineering practice and correctly outlines the purpose and structure of an RCA.

The discussion of severity, likelihood, detection, and residual risk shows understanding of how risks are prioritised and controlled.

What was done well

- Clear explanation of RCA methodology.
- Good understanding of how training, equipment condition, and controls affect risk.
- Appropriate discussion of residual risks.

What could be improved

- Manufacturing context could be described in more detail earlier in the report.
- More explicit linkage between risk management theory and shop-floor practice would add depth.

Suggested enhancement

- Include a simple system diagram showing the angle grinder task, operator interaction, and hazard points.

Cognitive and Intellectual Skills (20 marks)

Mark awarded: 16 / 20

Joshua demonstrated sound analytical reasoning when justifying severity, likelihood, and detection scores. The explanation of why certain risks (e.g. untrained operator, tool kickback) have high severity but lower likelihood is logical and clearly reasoned.

The discussion of why severity could not be reduced shows awareness of inherent risk.

What was done well

- Logical justification of scoring decisions.
- Clear understanding of inherent vs controllable risk.
- Appropriate consideration of residual risk.

What could be improved

- Some justifications could be expanded to show deeper evaluation.
- Numerical comparisons before and after controls could be summarised more clearly.

Suggested enhancement

- Add a before-and-after risk ranking table summarising severity, likelihood, detection, and overall priority.

Practical Application Skills (20 marks)

Mark awarded: 15 / 20

The application of RCA to the use of an angle grinder is relevant and realistic within a manufacturing environment. The identified hazards and corrective actions are sensible and aligned with common industrial practice.

However, the application would be stronger with more detailed reference to workplace data, procedures, or standards.

What was done well

- Relevant and realistic case study.
- Practical and achievable corrective actions.
- Clear focus on training and supervision.

What could be improved

- Greater use of real workplace documentation or standards (e.g. PUWER, task risk assessments).
- Clearer prioritisation of corrective actions.

Suggested enhancement

- Include an example task risk assessment table showing hazards, controls, and residual risks.

Transferable Skills for Life & Professional Practice (20 marks)

Mark awarded: 16 / 20

The report is clearly structured and follows a logical progression from introduction through to conclusion. The tone is appropriate for an engineering audience, and sections are clearly labelled.

Minor issues with grammar, clarity, and repetition slightly reduce overall fluency.

What was done well

- Clear structure aligned with the brief.
- Appropriate technical language.
- Logical flow of ideas.

What could be improved

- Proofreading would improve clarity and accuracy.
- Some sections could be more concise.

Suggested enhancement

- Add a summary flowchart showing *hazard* → *RCA* → *controls* → *residual risk*.

Written Report Mark Summary (70%)

Criterion	Mark
Engagement with Literature	12 / 15
Knowledge & Understanding	20 / 25
Cognitive & Intellectual Skills	16 / 20
Practical Application Skills	15 / 20
Transferable Skills	16 / 20
Total (Written Report)	79 / 100

Weighted Contribution to Module (70%):
55.3 / 70