OCHS12019 *Human Factors*
Term 2 - 2021

All details in this unit profile for OCHS12019 have been officially approved by CQUniversity and represent a learning partnership between the University and you (our student).The information will not be changed unless absolutely necessary and any change will be clearly indicated by an approved correction included in the profile.

General Information

Overview
This unit introduces you to the discipline of human factors and how a knowledge of human strengths and limitations, both cognitive and physical, can lead to better safety outcomes. This unit addresses end-user design issues and human variability in occupational contexts. You will explore human factors principles and learn to assess human interaction concerns using a variety of human factors methods. You will also develop skills to make human factors design recommendations to enhance human performance.

Details
Career Level: *Undergraduate*
Unit Level: *Level 2*
Credit Points: *6*
Student Contribution Band: *8*
Fraction of Full-Time Student Load: *0.125*

Pre-requisites or Co-requisites
Pre-requisite study of 24 credit points.
Important note: Students enrolled in a subsequent unit who failed their pre-requisite unit, should drop the subsequent unit before the census date or within 10 working days of Fail grade notification. Students who do not drop the unit in this timeframe cannot later drop the unit without academic and financial liability. See details in the [Assessment Policy and Procedure (Higher Education Coursework)](#).

Offerings For Term 2 - 2021

- Online

Attendance Requirements
All on-campus students are expected to attend scheduled classes – in some units, these classes are identified as a mandatory (pass/fail) component and attendance is compulsory. International students, on a student visa, must maintain a full time study load and meet both attendance and academic progress requirements in each study period (satisfactory attendance for International students is defined as maintaining at least an 80% attendance record).

Website
[This unit has a website, within the Moodle system, which is available two weeks before the start of term. It is important that you visit your Moodle site throughout the term. Please visit Moodle for more information.](#)

Class and Assessment Overview

Recommended Student Time Commitment

Each 6-credit Undergraduate unit at CQUniversity requires an overall time commitment of an average of 12.5 hours of study per week, making a total of 150 hours for the unit.

Class Timetable

Regional Campuses

Bundaberg, Cairns, Emerald, Gladstone, Mackay, Rockhampton, Townsville

Metropolitan Campuses

Adelaide, Brisbane, Melbourne, Perth, Sydney

Assessment Overview

1. **Portfolio**
Weighting: 25%
2. **Written Assessment**
Weighting: 25%
3. **Group Work**
Weighting: 50%

Assessment Grading

This is a graded unit: your overall grade will be calculated from the marks or grades for each assessment task, based on the relative weightings shown in the table above. You must obtain an overall mark for the unit of at least 50%, or an overall grade of 'pass' in order to pass the unit. If any 'pass/fail' tasks are shown in the table above they must also be completed successfully ('pass' grade). You must also meet any minimum mark requirements specified for a particular assessment task, as detailed in the 'assessment task' section (note that in some instances, the minimum mark for a task may be greater than 50%). Consult the University's Grades and Results Policy for more details of interim results and final grades.

CQUniversity Policies

All University policies are available on the CQUniversity Policy site.
You may wish to view these policies:

- Grades and Results Policy
- Assessment Policy and Procedure (Higher Education Coursework)
- Review of Grade Procedure
- Student Academic Integrity Policy and Procedure
- Monitoring Academic Progress (MAP) Policy and Procedure – Domestic Students
- Monitoring Academic Progress (MAP) Policy and Procedure – International Students
- Student Refund and Credit Balance Policy and Procedure
- Student Feedback – Compliments and Complaints Policy and Procedure
- Information and Communications Technology Acceptable Use Policy and Procedure

This list is not an exhaustive list of all University policies. The full list of University policies are available on the CQUniversity Policy site.

Previous Student Feedback

Feedback, Recommendations and Responses

Every unit is reviewed for enhancement each year. At the most recent review, the following staff and student feedback items were identified and recommendations were made.

Feedback from Teacher reflection and Student Unit Evaluation comments (Have Your Say)

Feedback

Students really enjoyed the practical nature of the assessment items that are authentic to the discipline and on occasion improve the user experience and conditions in the community or workplace.

Recommendation

Continue to offer authentic learning experiences for students. Consider moving this 'blended' model of enrolment to 'distance only' to increase student interaction opportunities during the weekly class sessions that focus on practical work.

Feedback from Student Unit Evaluation comments (Have Your Say)

Feedback

Students requested earlier framing of assessment requirements for the Team Proposal Document.

Recommendation

Provide more detailed information about the proposal document in week 8, when teams begin to populate their proposals.

Feedback from Teacher reflection

Feedback

Teamwork has become a positive experience for most students due to the attention on teamwork in this Unit.

Recommendation

Continue to focus on teamwork skills in this unit. This is an appropriate unit to address teamwork, as human-to-human interactions is a human factors area of interest.

Unit Learning Outcomes

On successful completion of this unit, you will be able to:

1. Apply knowledge of the discipline of human factors including physical, cognitive and organisational ergonomics in a variety of contexts
2. Analyse work systems and equipment design in accordance with user needs, capabilities and limitations
3. Demonstrate the use of human factors assessment tools for addressing human interaction problems within various occupational contexts
4. Develop teamwork and project management skills through the application of human factors assessment and problem solving.

Alignment of Learning Outcomes, Assessment and Graduate Attributes

| — | N/A Level | ○ | Introductory Level | ○ | Intermediate Level | ● | Graduate Level | ○ | Professional Level | ○ | Advanced Level |

Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes			
	1	**2**	**3**	**4**
1 - Portfolio - 25%				●

Assessment Tasks	Learning Outcomes			
	1	2	3	4
2 - Written Assessment - 25%	•	•	•	
3 - Group Work - 50%	•	•	•	•

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes			
	1	2	3	4
1 - Communication	•		•	•
2 - Problem Solving		•	•	•
3 - Critical Thinking	•	•	•	•
4 - Information Literacy		•	•	•
5 - Team Work				•
6 - Information Technology Competence	•	•	•	•
7 - Cross Cultural Competence		•		
8 - Ethical practice			•	•
9 - Social Innovation	•	•	•	•
10 - Aboriginal and Torres Strait Islander Cultures				

Alignment of Assessment Tasks to Graduate Attributes

Assessment Tasks	Graduate Attributes									
	1	2	3	4	5	6	7	8	9	10
1 - Portfolio - 25%	•	•	•	•		•		•	•	
2 - Written Assessment - 25%	•	•	•	•					•	
3 - Group Work - 50%	•	•	•	•	•	•	•	•	•	

Textbooks and Resources

Textbooks

OCHS12019

Prescribed

Introduction to Human Factors
Edition: First (2017)
Authors: Stone, Nancy J., Chaparro, Alex, Keebler, Joseph R., Chaparro, Barbara S., and Mcconnell, Daniel S
CRC Press
ISBN: 9781315153704
Binding: eBook
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Supplementary

Introduction to Human Factors and Ergonomics
Edition: Fourth (2017)
Authors: Bridger, Robert
CRC Press
ISBN: 9781498796118
Binding: eBook

Additional Textbook Information
Both of these eTextbooks are freely available to you. Access these via the eReading List within the Unit Learning Management System (Moodle).
If you prefer to study with your own copy, both paper and eBook versions can be purchased at the CQUni Bookshop here: http://bookshop.cqu.edu.au (search on the Unit code).

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)

Referencing Style

All submissions for this unit must use the referencing style: Harvard (author-date)
For further information, see the Assessment Tasks.

Teaching Contacts

Elise Crawford Unit Coordinator
e.crawford@cqu.edu.au

Schedule

Week 1 - 12 Jul 2021

Module/Topic	Chapter	Events and Submissions/Topic
Introduction to Human Factors	Chapter 1: Introduction to Human Factors (Bridger 2018)	• Do the Belbin Team Role Quiz • Introduce yourself in the Arrivals Lounge and • Complete the Teamwork Role Selection query (**?**)

Week 2 - 19 Jul 2021

Module/Topic	Chapter	Events and Submissions/Topic
Human Factors Research	Chapter 2: Research methods (Stone et al. 2017)	• Start forming teams of four (based on the Team Role Section query (**?**) located in the Assessment forum in Moodle. Assessment 1 Tip: Google Scholar and the CQUni Library Databases are useful for findings scholarly articles.

Week 3 - 26 Jul 2021

Module/Topic	Chapter	Events and Submissions/Topic
Physical Ergonomics: Work physiology	Chapter 7: Work capacity, stress, fatigue, and recovery (Bridger 2018)	• Form team in the Team Selection list (**?**) located in the Assessment forum in Moodle. Assessment 1 Tip: Use the current Harvard Reference Style Guide located in the Unit Profile. **Human Factors Portfolio** Due: Week 3 Friday (30 July 2021) 11:59 pm AEST

Week 4 - 02 Aug 2021

Module/Topic	Chapter	Events and Submissions/Topic
Physical Ergonomics: The body as a mechanical system	Chapter 2: The body as a mechanical system (Bridger 2018) Chapter 3: Anthropometry (Bridger 2018)	Assessment 3 Tip: If you are not yet in a team by Friday night you will be placed in a team.

Week 5 - 09 Aug 2021

Module/Topic	Chapter	Events and Submissions/Topic
Cognitive Ergonomics: Senses, perception, attention, and memory	Chapter 10: Visual environment (Bridger 2018) Chapter 6: Attention, memory and multitasking (Stone et al. 2017)	Assessment 2 Tip: Watch the tutorial on Human Factors principles for poster design. **MSD Risk Poster** Due: Week 5 Friday (13 Aug 2021) 11:59 pm AEST

Vacation Week - 16 Aug 2021

Module/Topic	Chapter	Events and Submissions/Topic
		Assessment 3 Tip: Keep an eye out for usability problems for the final assignment. Assessment Tip: Use the *Peer Review* forum to get feedback on parts of your assessment pieces. You can learn a lot by reviewing each other's work.

Week 6 - 23 Aug 2021

Module/Topic	Chapter	Events and Submissions/Topic
Human Factors in Design	Chapter 5: Methods of Evaluation (Stone et al. 2017)	Assessment 3 Tip: Decide on the Human-Machine Interaction problem (usability issues) for Assessment 3. **Team Contract** Due: Week 6 Friday (3 Sep. 2021) 11:59 pm AEST

Week 7 - 30 Aug 2021

Module/Topic	Chapter	Events and Submissions/Topic

	Chapter 12: The mind at work (Bridger 2018)	Assessment 3 Tip: Conduct preliminary analysis to understand the needs, limitations and capabilities of your user population.
Cognitive Ergonomics: Displays, Workload, Usability	Chapter 13: Displays and controls (Bridger 2018)	Assessment 3 Tip: For best results, reflect regularly on the design project and team performance.

Week 8 - 06 Sep 2021

Module/Topic	**Chapter**	**Events and Submissions/Topic**
Organisational Ergonomics: Environment (physical & psychosocial)	Chapter 10: Environmental Design (Stone et al. 2017)	Assessment 3 Tip: Conduct secondary analysis to define the problem.

Week 9 - 13 Sep 2021

Module/Topic	**Chapter**	**Events and Submissions/Topic**
Organisational Ergonomics: Human Error & Fatigue	Chapter 11: Human Error (Stone et al. 2017)	Assessment 3 Tip: Systematically evaluate redesign options

Week 10 - 20 Sep 2021

Module/Topic	**Chapter**	**Events and Submissions/Topic**
Organisational Ergonomics: Selection & training		Assessment 3 Tip: Upload the proposal and 'save' (not submit) to check the TurnitIn score. Adjust as necessary.

Week 11 - 27 Sep 2021

Module/Topic	**Chapter**	**Events and Submissions/Topic**
Human Factors Analytical Tools (Safety & Investigations)	Chapter 15: HFE in Accident Investigation and Safety Management (Bridger 2018)	Assessment 3 Tip: Each team member should read through the proposal to ensure it flows well and is compelling. Imagine an entrepreneur is looking to fund your project. **Team Concept Proposal** Due: Week 11 Friday (1 Oct. 2021) 11:59 pm AEST

Week 12 - 04 Oct 2021

Module/Topic	**Chapter**	**Events and Submissions/Topic**
Future Trends in Human Factors	Chapter 12: Future Trends (Stone et al. 2017)	**Self & Peer Assessment** Due: Week 13 Monday (11 Oct. 2021) 11:59 pm AEST. **Design Project & Reflections** Due: Week 12 Friday (8 Oct 2021) 11:59 pm AEST

Review/Exam Week - 11 Oct 2021

Module/Topic	**Chapter**	**Events and Submissions/Topic**

Exam Week - 18 Oct 2021

Module/Topic	**Chapter**	**Events and Submissions/Topic**

Assessment Tasks

1 Human Factors Portfolio

Assessment Type
Portfolio

Task Description
Purpose
The purpose of this portfolio is to give you an opportunity to build underpinning skills that will support subsequent assessment work. These skills include communication (verbal and visual), information literacy (academic writing,

research and referencing), collaboration, critical thinking, teamwork, and IT competence.

Instructions

There are two tasks that must be completed in Moodle and then submitted for assessment as a single document in the form of a portfolio. The three tasks are as follows:

Task One: Personal team role strengths

1. Undertake the Team Role Quiz (based on Belbin) provided on Moodle.
2. Go to the Your Team Role Strengths - **?** in the Assessment Block and indicate:

- As per the test, your team role strengths lie by selecting the relevant three broad personality categories (people, action or thinker). See [Belbin Team Role Handouts](#) for guidance.
- Also indicate whether you identify with any of the other attributes (i.e. English not my first language, Not worked in OHS, Live outside QLD, Travel a lot, and Other challenge). These attributes can offer greater challenges to teamwork, and hence worthy of acknowledgement. The results of this query (**?**) will help you form teams strategically for Assessment Item 3.

Task Two: Review and discuss Human Factors research

You are required to 1)review **one research article** that no-one else has reviewed for **one** of the three main domain areas of Human Factors, i.e. physical, cognitive, and organisational; 2) reply to another student's review in the other two domain forums. A forum for each of these domains is set up in the assessment block for your convenience. It is recommended that you develop your review off-line before posting it in the associated forum. When you are ready to post your review, go to the relevant domain forum: start a new topic, add your review, and provide the citation of the article in the topic header: e.g. (Smith 2020). This will make it easier for other students to know which articles have been reviewed. In **150 words or less**, your post should include:

- The **research article** review (study aim, study participants, methods, results and conclusions)
- A complete reference and publication number (at the end of the review)
- Attach or link to the article

In the **other two** forums, **reply** to another student's review and discuss the topic at hand in a meaningful way in **under 100 words**. To be meaningful, the discussion needs to extend the topic. You can do this in several ways, such as:

- relating information from another source
- illustrating a point with an example

Ensure you have a contribution in each of the three domain forums (1 Review + 2 Reply posts).

NOTE: all **reviewed articles** must be a **published research in a peer-reviewed journal**. Therefore, do not review theoretical discussions, chapters, books, white papers, conference papers, workbooks, handbooks, and the like. However, these items are acceptable in a reply post where appropriate.

Assessment Due Date

Week 3 Friday (30 July 2021) 11:59 pm AEST

Return Date to Students

Week 5 Friday (13 Aug 2021)

Weighting

25%

Assessment Criteria

Out of a possible score of 25, the marks awarded for the Human Factors Portfolio are as follows:

- Your team role strengths (5 marks)

- Human Factors research posts: Review - 10 marks, Reply One - 5 marks, Reply Two - 5 marks (20 marks)

Referencing Style

- [Harvard (author-date)](#)

Submission

Online

Submission Instructions

The portfolio is to be presented as one document and include: 1) Your team role strengths, 2) Visual representation of effective teamwork and 3) Research Posts. Please use one of the following formats: doc, docx, pdf.

Learning Outcomes Assessed

- Develop teamwork and project management skills through the application of human factors assessment and problem solving.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Information Technology Competence
- Ethical practice
- Social Innovation

2 MSD Risk Poster

Assessment Type
Written Assessment

Task Description
Purpose
An important skill of OHS professionals to identify work tasks that present Musculoskeletal Disorder (MSD) risks. This assignment is about developing your understanding of the principles of assessment for physical *human-task interactions* while at work.
Instructions
You are required to identify a manual handling task at work (or one at home that can be applied to a working environment) that involves a **static two-handed lift**. That is a task that involves lifting an object from A to B without stepping.
You are required to use three human factors analytical tools (HFATs), namely: 1) **Hierarchical Task Analysis**, 2) **Revised NIOSH Lifting Equation** and 3) **Rapid Entire Body Assessment**.
From the findings of your study you are to offer redesign recommendations to reduce the MSD risk. Your work is to be presented in poster abstract format. The poster is to be suitable for display at a conference to inform delegates of the physical task you have assessed. Your poster should contain the following:

- Introduction (the MSD concern),
- Background (context of work, details of worker),
- Methods (task, worker, materials, process, analysis conducted),
- Analysis (visual representation),
- Results: the risk factors found,
- Discussion: implications for worker, organisation, other,
- Recommendations: redesign of task,
- References: list of scholarly articles, and
- Title and researcher contact details.

Assessment Due Date
Week 5 Friday (13 Aug 2021) 11:59 pm AEST

Return Date to Students
Week 6 Friday (27 Aug 2021)

Weighting
25%

Assessment Criteria
Out of a possible 100 marks, the MSD Poster will be assessed on the following:

- Introduction 10 marks
- Background 10 marks
- Methods 10 marks
- Analysis 10 marks
- Results 10 marks
- Discussion 10 marks
- Recommendations 10 marks
- References 10 marks
- Poster design 20 marks

Referencing Style

- [Harvard (author-date)](#)

Submission
Online

Submission Instructions
Please use the poster template provided in Moodle to populate and submit your poster. Submit in ppt, pptx, or pdf formats only.

Learning Outcomes Assessed

- Apply knowledge of the discipline of human factors including physical, cognitive and organisational ergonomics in a variety of contexts
- Analyse work systems and equipment design in accordance with user needs, capabilities and limitations
- Demonstrate the use of human factors assessment tools for addressing human interaction problems within various occupational contexts

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Social Innovation

3 Design Project & Reflections

Assessment Type
Group Work

Task Description
Purpose
This project has three main objectives: 1) to develop teamwork and project management skills, 2) to develop systems approaches, design thinking and user-centred design skills, and 3) to develop reflective practice.

Instructions
You are required to submit the following items:

1. Team Contract
2. Team Concept Proposal
3. Individual Reflective Essay
4. Self & Peer Assessment

Team Contract (20 marks)
As a team, you are to develop a team contract to establish lines of communication and rules of process. A template will be provided on Moodle for you to use as well as instructions for forming teams. In **1000 words**, the contract should contain:

- Team profile and contingencies
- Communication plan
- Schedule of milestones
- Rules of process including an issues resolution plan

All team members to agree and sign the contract

Team Concept Proposal (30 marks)
As a team, your task is to find a usability problem, more specifically a human-machine interaction problem. You are to take a user-centred approach to assess and resolve the problems found. To assess the problem, you will use various human factors analytical tools. Based on findings and knowledge of human needs, capabilities and limitations, your team is to propose redesign changes to improve use of the problematic product. In **3000 words,** the proposal should include:

- Title page
- A before and after visual executive summary
- Table of contents
- Introduction
- User population

- Methods
- Results and discussion
- Problem definition
- An evaluation of redesign options
- Justification and details of chosen concept
- References
- Appendices

The proposal should be presented in CQUni Harvard Style:

- Single document
- 1.5 line spacing
- Numbered sections
- Total file size cannot exceed 10 MB.

It is up to the individual team members to negotiate how the final proposal will be written. It is highly recommended to have one-person curate (put it together) the final document. After which, all team members should review the entire document to ensure it flows well and is persuasive to a prospective entrepreneur. Unless there are exceptional circumstances, all team members will receive the same grade for team submissions.

Individual Reflection Essay (30 marks)
As an individual team member, you are to keep a reflective record of work done for the team effort. In less than **600 words**, the The essay is to contain your reflections on the project completed and teamwork. These reflections need to include both successful and challenging events experienced. The STAR approach is a useful way to approach this (Situation, Thoughts, Action, Results).

Self & Peer Assessment (20 marks)
You are to complete a short *Self & Peer Assessment* to rate the teamwork performance of yourself and your team members. This survey can be accessed from the Assessment folder in Moodle.

Assessment Due Date
Week 12 Friday (8 Oct 2021) 11:59 pm AEST

Return Date to Students
Exam Week Friday (22 Oct 2021)

Weighting
50%
Assessment Criteria
Marks awarded include a team grade (50 marks) and an individual grade (50 marks)
Team Contract (20 marks)

- Team profile and contingencies - 5 marks
- Communication plan - 5 marks
- Schedule of milestones - 5 marks
- Rules of process and an issues resolution plan - 5 marks

Team Concept Proposal (30 marks)

- Integrates human needs, capabilities and limitations into the design - 5 marks
- Analyses the human-machine interaction problem including the environment of use - 5 marks
- Develops a suitable problem definition statement and success criteria - 5 marks
- Systematically evaluates potential concept solutions - 5 marks
- Creatively develops a design concept that meets the problem definition from a human perspective - 5 marks
- Format is consistent with a professional design proposal - 5 marks

Individual Reflective Essay (30 marks)

- Demonstrates the ability to critically reflect meaningfully on performance situations – 10 marks
- Demonstrates the ability to develop an evidence-informed cohesive account - 10 marks
- Written expression, format, word count, referencing and structure - 10 marks

Self & Peer Assessment Survey (20 marks)

- Demonstrates an ability to be a team player (respectful, positive, communicable, and supportive) – 20 marks

Referencing Style

- [Harvard (author-date)](#)

Submission
Online

Submission Instructions
The Team Contract and Concept Proposal are submitted by one team member. The Individual Workbook and Self & Peer Assessment is submitted by each student. The Team Contract is due Friday of Week 6, The Team Concept Proposal is due Friday of Week 11, The Individual Workbook and Self & Peer Assessment is due Week 12.

Learning Outcomes Assessed

- Apply knowledge of the discipline of human factors including physical, cognitive and organisational ergonomics in a variety of contexts
- Analyse work systems and equipment design in accordance with user needs, capabilities and limitations
- Demonstrate the use of human factors assessment tools for addressing human interaction problems within various occupational contexts
- Develop teamwork and project management skills through the application of human factors assessment and problem solving.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Team Work
- Information Technology Competence
- Cross Cultural Competence
- Ethical practice
- Social Innovation

Academic Integrity Statement

As a CQUniversity student you are expected to act honestly in all aspects of your academic work.

Any assessable work undertaken or submitted for review or assessment must be your own work. Assessable work is any type of work you do to meet the assessment requirements in the unit, including draft work submitted for review and feedback and final work to be assessed.

When you use the ideas, words or data of others in your assessment, you must thoroughly and clearly acknowledge the source of this information by using the correct referencing style for your unit. Using others' work without proper acknowledgement may be considered a form of intellectual dishonesty.

Participating honestly, respectfully, responsibly, and fairly in your university study ensures the CQUniversity qualification you earn will be valued as a true indication of your individual academic achievement and will continue to receive the respect and recognition it deserves.

As a student, you are responsible for reading and following CQUniversity's policies, including the **Student Academic Integrity Policy and Procedure**. This policy sets out CQUniversity's expectations of you to act with integrity, examples of academic integrity breaches to avoid, the processes used to address alleged breaches of academic integrity, and potential penalties.

What is a breach of academic integrity?
A breach of academic integrity includes but is not limited to plagiarism, self-plagiarism, collusion, cheating, contract cheating, and academic misconduct. The Student Academic Integrity Policy and Procedure defines what these terms mean and gives examples.

Why is academic integrity important?
A breach of academic integrity may result in one or more penalties, including suspension or even expulsion from the University. It can also have negative implications for student visas and future enrolment at CQUniversity or elsewhere. Students who engage in contract cheating also risk being blackmailed by contract cheating services.

Where can I get assistance?
For academic advice and guidance, the Academic Learning Centre (ALC) can support you in becoming confident in completing assessments with integrity and of high standard.

What can you do to act with integrity?

Be Honest
If your assessment task is done by someone else, it would be dishonest of you to claim it as your own

Seek Help
If you are not sure about how to cite or reference in essays, reports etc, then seek help from your lecturer, the library or the Academic Learning Centre (ALC)

Produce Original Work
Originality comes from your ability to read widely, think critically, and apply your gained knowledge to address a question or problem