UNIVERSITY OF CANBERRA

School of Information Technology and Systems

Learning Experience with AWS - A Pilot Study

(Project Proposal and Plan Report)

Project ID: 2024-S2-51

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Group ID: 11522-S2-14

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1. Problem Definition and Scope

In today's rapidly evolving technological landscape, gaining industry-relevant knowledge and skills is important for students to remain competitive and successfully transition into the workforce. Cloud-based learning platforms like AWS (Amazon Web Services) Skill Builder offer over 600 free courses that help individuals build cloud computing skills, develop technical proficiency, and apply their knowledge to real-world scenarios. These resources also prepare learners for AWS certifications and enhance their industry-relevant expertise (https://skillbuilder.aws, 2024).

The University of Canberra collaborated with AWS to build skills that align with industry needs (Awasthy, 2023). This collaboration was carried out to enhance students' technical abilities and prepare them for the job market. This collaboration effort focuses on skill development and certification but does not fully explore the individual learning experiences of students throughout their educational journey.

This project seeks to address this gap by documenting students' learning experiences for skill development with the AWS Skills Builder platform. The project will capture team members' reflection on the learning experience using a template. The focus is on understanding the factors that influence their learning journey, including ease of use, skill confidence, relevance to career objectives, and how these platforms contribute to job readiness.

The main objective of this project is to document and analyze the learning experiences of team members while using AWS Skill Builder. Through a combination of background research and literature review, the project will explore how platforms like AWS help students develop technical skills and prepare for future job opportunities.

Team members will dedicate up to 20 hours per week to AWS Skill Builder for the remainder of the semester. The study will capture both quantitative data (e.g., topics covered, time spent, skill confidence levels, difficulty ratings) and qualitative data (e.g., key takeaways, challenges faced, reflections on how the platform influenced their learning journey) through a structured reflection process using a template with set of parameters. This combination of data will provide insights into students' learning processes and experiences, contributing to a research paper that will benefit faculties and future researchers in understanding the effectiveness of such industry-based platforms.

1.1. Project Scope

1. **Background study and literature review**

The team will review at least 20 research papers or articles published after 2020, focusing on cloud-based learning platforms like AWS Skill Builder and their impact on skill development. This will establish a theoretical foundation and provide context for the project.

2. **Usage of AWS Skill Builder for skill development**

Team members will engage with different topics assigned by the project sponsor, focusing on developing skills and enhancing their technical proficiency to prepare for future job roles.

3. **Documenting the learning experience**

A standardized reflection template will be developed to guide team members in recording their learning experiences. Some of the parameters include time spent, challenges faced, ease of use of platform, and the overall effectiveness of the platform in contributing to their skill development.

4. **Drafting the outcome as a research paper**

The reflections and data collected will be consolidated into a research paper detailing the findings, evaluating the effectiveness of AWS Skill Builder, and offering recommendations for future use.

1.2. Out of Scope

The project will not include:

- Recommending the integration of AWS Skill Builder into academic curricula.
- Comparing AWS Skill Builder with other cloud-based platforms such as Microsoft Learn.
- Pursuing AWS certification on topics assigned by the project sponsor.

2. Background Study and Literature Review

Cloud computing has transformed education, offering new opportunities for students to engage with cutting-edge technologies that are increasingly critical to the global workforce. Cloud-based platforms like AWS Skill Builder help obtain job-ready knowledge and skills. These platforms provide hands-on, scenario-based learning experiences, enabling students to bridge the gap between theoretical knowledge and practical application (Flood & Hall, 2022).

Several research papers show that there is increasing collaboration between universities and industries to enhance graduate employability. Studies on university-industry collaboration emphasize the need for educational institutions to incorporate industry-relevant curricula. Doing this helps students to be equipped with the technical skills demanded by the job market (Awasthy, 2023; Chew et al., 2021, Ha, 2021).

However, the adoption of cloud platforms in education presents challenges. Some educators' express concerns about an over-reliance on vendor-specific content, which could limit students' exposure to alternative technologies and inhibit broader critical thinking skills (Correia & Tasker, 2022). Furthermore, challenges with infrastructure, training, and digital access must be resolved to fully integrate cloud computing into education (Al-Sharafi et al., 2021).

Despite these challenges, the benefits of cloud platforms in education are significant. Studies show that students who engage with AWS and similar platforms are better prepared for the workforce due to their practical, hands-on experience with real cloud environments (Correia & Tasker, 2022; Flood & Hall, 2022). These platforms also support the development of key technical competencies, making them a valuable resource for students and employees alike (Mphasis, 2023). The AWS Skill Builder platform has been used by organizations like Vietnam International Bank (VIB) and Mphasis to enhance the cloud skills of their workforce, leading to improved operational efficiency and workforce retention (Vietnam News, 2024; Mphasis, 2023).

The integration of cloud platforms like AWS into educational curricula has been adopted to enhance learning outcomes by providing students with real-world, hands-on experience. Studies highlight how cloud computing environments support scenario-based learning, which fosters both technical proficiency and job readiness (Correia & Tasker, 2022; Flood & Hall, 2022). Coventry University has integrated AWS into its Cloud Computing BSc program (Flood & Hall, 2022) and University of Canberra collaborated with AWS and experimented by embedding industry-developed content in one of the units (Awasthy, 2023).

While cloud platforms offer significant benefits, their implementation in educational institutions is not without challenges. One of the primary concerns is the over-reliance on vendor-specific content, which may limit students' exposure to a broader range of technologies and critical thinking opportunities (Correia & Tasker, 2022). Additionally, resource constraints, institutional resistance, and concerns about data privacy are significant barriers to the effective adoption of cloud computing in education (Al-Sharafi et al., 2021). These challenges highlight the need for a balanced approach that incorporates both industry-relevant skills and broader educational goals.

According to Veine et al. (2020), reflective learning techniques, particularly journaling, play a critical role in enhancing students' understanding of complex technical concepts. In the context of our project, engaging with AWS Skill Builder and using reflective journaling will provide a clear structure for team members to document their learning journeys, including the topics explored, time spent, challenges faced, and the platform's impact on our skill development. Analyzing this data will not only help faculties gain insights into the factors that contribute to better learning experiences for students and the effectiveness of cloud platforms, but also support students in reflecting on their learning processes, improving their confidence, and increasing their readiness for future job roles.

Although cloud-based learning platforms like AWS have gained traction in education, some gaps remain in the research. One gap is the lack of studies assessing the long-term impact of these platforms on students' career outcomes. Additionally, there is a need to explore the reflective learning process specifically with AWS Skill Builder. Our study aims to address these gaps by systematically recording students' learning experiences through reflective journaling using a predefined template. This process will capture both quantitative and qualitative data, such as topics explored, time spent, ease of use, and platform effectiveness. The study will contribute new insights into how industry-based platforms improve students' skills and job readiness, while identifying the key factors that influence their learning journeys.

3. Requirement Analysis

3.1. Technical Requirements

Use of AWS Skill Builder Platform

All team members must have continuous access to the AWS Skill Builder platform. The platform must remain stable and functional throughout the project duration. Additionally, it should provide accurate tracking of user progress (e.g., time spent, topics completed) and allow for data extraction to support analysis in the research paper. All team members must complete their assigned AWS Skill Builder topics within the scheduled timeline.

Communication and Collaboration Tools

Communication channels (WhatsApp, Email, Microsoft Teams, OneDrive) agreed upon by the team members must be used throughout the project. All team members must use a shared workspace (GitHub, Teams, or OneDrive) that will be set up for collaboration and document sharing. In addition to weekly meetings, team members are encouraged to use the communication channels for daily check-ins to ensure ongoing progress.

3.2. Functional Requirements

These requirements define the specific behaviors and actions that the project team needs to perform to meet the objectives.

Meeting and Reporting

Weekly progress meetings will be held, and attendance is mandatory for all team members. During meetings, team members must report progress, including topics completed, time spent, and reflections documented. Any issues or concerns should be raised during weekly meetings or escalated to the project mentor or sponsor if unresolved. Key decisions and action items from each meeting will be documented and shared with the team to ensure clarity and accountability.

Documenting Reflection

Team members must journal their learning journey on the AWS platform using a predefined template. Reflections must be detailed, following parameters in the template, and submitted weekly or as required by the project sponsor. Reflections will also highlight challenges faced with the AWS platform and how these challenges were overcome, providing insights for future learners.

Research Paper Drafting

The research paper must follow academic writing standards, including the use of APA referencing style. Team members will contribute equally to different sections of the research paper, including the literature review, methodology, results, discussion, and recommendations. A timeline will be established to ensure each section of the research paper is completed promptly.

3.3. Non-Functional Requirements

These requirements define the quality attributes and constraints within which the project operates.

Timeliness

All team members are expected to adhere to project deadlines, including the timely submission of reflections and progress updates. Delays in meeting deadlines will be addressed promptly by the team through additional meetings or reallocation of tasks.

Availability and Support

The project mentor and sponsor are expected to provide timely guidance and support, especially during critical phases such as template design, literature review, and research paper drafting. The team will proactively seek guidance by scheduling additional meetings with the mentor or sponsor during critical phases, if necessary.

Team Commitment

Each team member is expected to dedicate approximately 20 hours per week to complete assigned learning tasks, reflections, and contribute to the research paper. Team members unable to meet the weekly time commitment must inform the team leader in advance to discuss task reallocation.

Effective Communication

Team members are expected to communicate effectively through the agreed-upon channels and raise issues or concerns promptly to avoid delays in project progress. Team members are also expected to respond to communication within 24 hours to maintain project momentum.

4. Project Deliverables

a. Project Plan and Proposal

A detailed blueprint outlining the project's goals, boundaries, approach, schedule, and necessary resources for the successful execution of the research project.

b. Literature Review Document

An analysis of 20 recent articles above 2020 examining the role of cloud platforms like AWS in enhancing student learning, summarizing the current knowledge and highlighting gaps where further research is required.

c. Reflection Report on AWS Skill Builder Platform

A report capturing students' personal experiences, challenges, and insights while using the AWS Skill Builder platform.

d. Research Paper

A formal academic paper presenting the findings of the study including the impact of AWS on student learning.

e. Poster

A visual summary of the project, designed to communicate key findings and insights to a broader audience.

f. Presentation

A structured presentation of the project, covering the objectives and scope, outcomes achieved, lessons learned, and recommendations for the sponsor or panel.

g. Final Report

A comprehensive document combining all elements of the research, including the literature review, methodology, findings, reflections, and conclusions, serving as the definitive record of the project.

5. Project Options and Justification

For this project, we have chosen to adopt a mixed-methods approach, combining both quantitative and qualitative data collection to document and analyse the learning experiences of team members using AWS Skill Builder. This approach aligns with the project's objective of providing a thorough understanding of how industry-based platforms like AWS contribute to skill development and prepare students for future job roles.

The decision to integrate both quantitative data (e.g., topics covered, time spent, skill confidence levels, difficulty ratings) and qualitative data (e.g., key takeaways, challenges faced, reflections) is driven by the need to capture a complete view of the learning process. The quantitative data will allow us to measure specific outcomes, such as the time dedicated to learning and the difficulty of topics, which are key indicators of the platform's effectiveness in fostering technical skills. Meanwhile, the qualitative data will offer more profound insights into learners' personal experiences like exploring the challenges they encountered, the impact on their confidence, and their preparedness for future roles.

This approach was chosen to meet the project requirements outlined by the sponsor, which include having the team members engage in learning on the AWS platform, document their experiences in reflection journals, and subsequently produce a reflection report based on those journals.

Alternative approaches, such as relying solely on quantitative metrics or qualitative reflections, were considered. However, these methods alone were deemed insufficient to meet the project's objectives. A purely quantitative approach would lack the depth needed to understand the learners' experiences, while a purely qualitative approach might not provide the measurable outcomes necessary for a thorough evaluation of the platform's effectiveness. As a result, the mixed-methods approach was selected as the most suitable to provide a balanced and comprehensive analysis, ensuring that both measurable outcomes and personal reflections contribute to our findings.

6. Project Plan and Schedule

6.1. Resource Requirements

Hardware

1. Computers: Personal computers or laptops with adequate processing power and memory.

2. Network: Reliable internet connectivity to access the AWS platform and facilitate online collaboration and data sharing.

Software

1. AWS Skill Builder Platform: Access to AWS Skill Builder for learning modules and practice environments.

2. Document Creation Tools: Software like Microsoft Word or Google Docs for writing and formatting literature reviews, research papers, and reports.

3. Presentation Software: Tools like Microsoft PowerPoint or Google Slides for creating posters and presentation materials.

4. Communication Tools: Microsoft Teams and WhatsApp for team collaboration, meetings, and real-time communication among project members.

5. Academic Repository: Google Scholar and research gate to retrieve articles for the literature review and other related articles for the project.

People

1. Sponsor: The main client for the project who provides the overall direction, requirements, and funding.

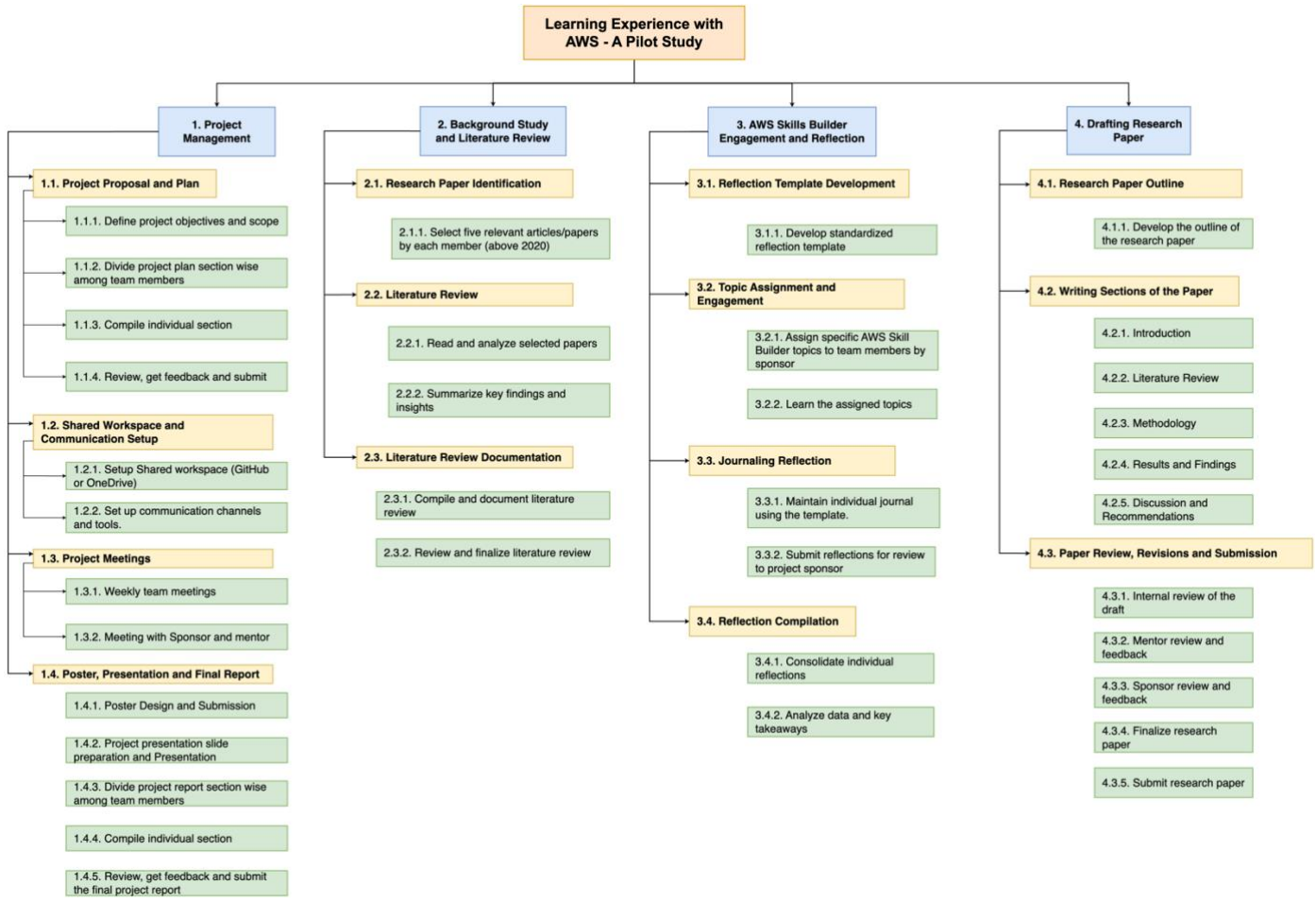
2. Mentor/Tutor: Guide the project team throughout the project execution, offering expertise, feedback, and support.

3. Team Members:
   - Responsible for conducting literature reviews, analyzing data, and drafting the research paper.
   - Engage with the AWS Skill Builder to document their learning experiences.

4. Team Leader: Oversee the project timeline, coordinating tasks, and ensuring effective communication among team members.

6.2. Milestones

	Task Name	Duration	Start	ETA
1	Project allocation	1 week	05/08/24	11/08/24
2	Project Proposal and Plan	2 weeks	12/08/24	25/08/24
3	Background study and Literature review	2 weeks	19/08/24	01/09/24
4	AWS platform setup and Learning	4 weeks	26/08/24	29/09/24
5	Individual reflection journal on AWS platform	4 weeks	26/08/24	29/09/24
6	Reflection report compilation	1 week	30/09/24	06/10/24
7	Draft Research Paper	2 weeks	07/10/24	20/10/24
8	Poster preparation	1 week	21/10/24	27/10/24
9	Project Presentation	1 week	21/10/24	27/10/24
10	Final report preparation and submission	11 weeks	05/08/24	27/10/24

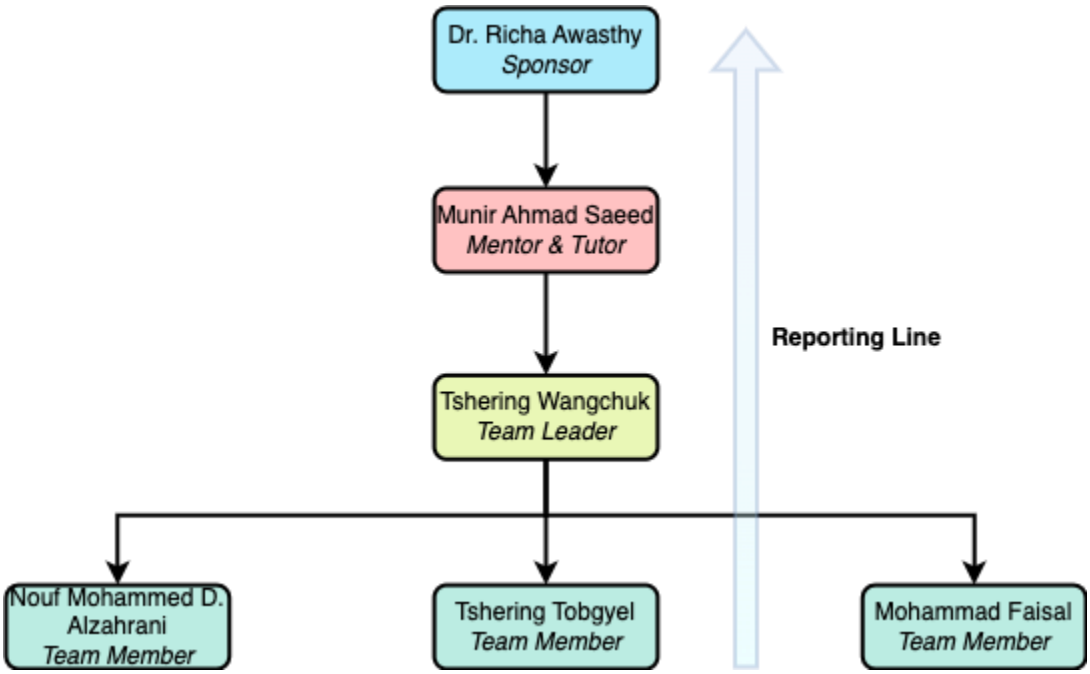


6.3. Work Breakdown Structure

The following is the WBS for our project which will help us track progress and ensure timely completion of all project components.

7. Project Governance

7.1. Organizational Chart



7.2. Roles and Responsibilities

Name	Role	Responsibilities
Tshering Wangchuk	Team Leader	– will act as the primary contact with stakeholders. – manage the project plan, assign tasks, ensure deadlines are met. – track progress to guarantee deliverables align with project objectives and timelines. – Also perform the responsibilities of a team member.
Tshering Tobgyel	Team Member	– Drafting the project proposal and plan. – literature review of past research papers. – Contribute and compile the research paper. – Engage with the AWS skill builder platform to learn specific topics given by the sponsor. – Record experiences on AWS skill builder platform and contribute to writing the reflection report. – Design and create the poster and presentation. – Compile the final report.
Mohammad Faisal	Team Member	
Nouf Mohammed	Team Member	

8. Risk Analysis and Mitigation Strategies

SL	Risk	Likelihood	Impact	Mitigation
1	Platform Downtime (AWS Skill Builder)	Low	High	Ensure team members complete tasks ahead of deadlines. Have alternative study materials prepared.
2	Delays in Reflection Submission	Low	High	Regular reminders via communication channels. Monitor progress closely during weekly meetings.
3	Team Member Unavailability	Low	High	Establish clear backup roles. Encourage early communication of availability issues to reassign tasks.
4	Technical Issues with Communication Tools	Low	Medium	Set up multiple communication channels (e.g., WhatsApp, Email, Microsoft Teams) as backups.
5	Missed Weekly Meetings	low	Medium	Record minutes of meetings and distribute notes.
6	Failure to Meet Research Paper Standards	Medium	High	Conduct regular peer reviews and seek mentor/sponsor feedback throughout the drafting process.
7	Unforeseen Personal Commitments	Medium	Medium	Encourage early communication of potential issues and reassign tasks among team members if necessary.
8	Lack of Access to Necessary Research Papers	Low	Medium	Identify multiple access points (university library, open-access journals) in advance.
9	Miscommunication Among Team Members	Medium	Medium	Foster open communication and frequent updates via established channels; clarify tasks and expectations.

9. Stakeholder Analysis and Communication Plan

SL	Stakeholder	Interest in Project	Influence	Information Needs	Communication
1	Project Sponsor	High: Ensures the project meets academic standards and objectives.	High	Regular progress updates, project challenges, final outcomes.	Weekly meetings, formal reports, email updates.
2	Project Mentor/Tutor	Medium: Provides guidance and ensures quality of research and deliverables.	High	Detailed updates on challenges, research paper drafts, final review.	Fortnightly face to face meetings, email, Tutorial class
3	Team Leader	High: Oversees project progress and team coordination.	High	Status updates, task assignments, issues faced by team members.	Daily/weekly updates, Microsoft teams, WhatsApp, email.
4	Team Members	High: Responsible for executing tasks, learning, and project success.	High	Task assignments, deadlines, peer feedback, project progress.	Daily meetings, WhatsApp, Microsoft Teams, email

10. Quality Assurance and Measure of Success

10.1. Quality Assurance

Quality Assurance in the project involves ensuring that all project processes, deliverables, and outcomes meet the predefined standards and expectations. It includes regular reviews, monitoring progress, and applying corrective actions to ensure quality in the project deliverables. We have identified some practices to ensure the quality of the project meets the requirements.

1. **Use of a Standardized Reflection Journal Template**
   A predefined reflection journal template will be used by all team members to document their learning journey on the AWS Skill Builder platform. This will ensure consistency and synchronization of data across reflections, allowing for systematic analysis and comparison of experiences.

2. **Peer Reviews**
   Regular peer reviews will be conducted to assess the quality and completeness of individual tasks, such as literature reviews and journal entries. Peer reviews will be conducted periodically to ensure that all work meets the required standards.

3. **Mentor and Sponsor Feedback**
   Drafts of deliverables, including the research paper and final report, will be reviewed by the project mentor and sponsor. Their feedback will be incorporated to ensure adherence to project goals.

4. **Regular Progress Monitoring**
   Weekly progress meetings will be held to monitor the project's trajectory. These team meetings will ensure that milestones are met on time, and any quality concerns are promptly addressed. Timely feedback from mentor and sponsor will be asked to ensure quality.

5. **Adherence to Academic Writing Standards**
   The research paper will follow academic writing standards, including proper formatting, clarity, correct citation using APA referencing and using the latest articles (2020 and above) for literature review. The structure and content will be checked to meet academic expectations.

10.2. Key Performance Indicator/Critical Success Factors

SL	KPI/CSF	Description	Measure of Success
1	Timely Submission of Reflections	Reflections are submitted by each team member as per the weekly deadlines using the standardized template.	100% on-time submission rate for weekly reflection journals.
2	Quality of Reflection Journals	Journals are comprehensive, addressing all required parameters (challenges, time spent, learning outcomes).	Stakeholders feedback indicates a high level of completeness and insight in journals.
3	Completion of AWS Skill Builder Topics	All assigned topics on the AWS platform are completed by the end of the project.	100% completion rate of AWS topics assigned to each team member.
4	Literature Review Quality	The literature review provides in-depth analysis and synthesizes key findings from research articles.	Mentor and sponsor feedback affirm the literature review's depth, coherence, and relevance.
5	Adherence to Project Timeline	Milestones such as reflections, literature review, draft submissions, and final deliverables are completed on time.	90% or higher adherence to the established project timeline for all key deliverables.
6	Research Paper Quality	The research paper meets academic standards, is well-structured, and provides meaningful insights.	Positive reviews from peers, the mentor, and the sponsor. Acceptance of final paper without significant revisions.
7	Team Collaboration and Communication	Effective collaboration and communication are maintained throughout the project.	No major communication breakdowns. Regular participation in meetings and collaborative platforms.
8	Overall Project Outcome	The project meets its objectives and provides valuable insights into the AWS Skills Builder platform's effectiveness.	Successful completion of the research paper, poster, presentation, and final report with high evaluation scores.

11. References

https://skillbuilder.aws/. (2024). Self-paced digital training on AWS - AWS Skill Builder. https://skillbuilder.aws/

Awasthy, R. (2023). Improving Graduate Skills through an Innovative Industry- Improving Graduate Skills through an Innovative Industry- Collaboration Pedagogy: Going beyond the traditional unit-delivery. In Association for Information Systems Electronic Library (AISeL). https://aisel.aisnet.org/cgi/viewcontent.cgi?article=1001&context=siged2023

Vietnam News. (2024). VIB: the first local bank to deploy AWS Skill Builder. https://ezproxy.canberra.edu.au/login?url=https://www.proquest.com/newspapers/vietnam-vib-first-local-bank-deploy-aws-skill/docview/3081394640/se-2?accountid=28889.

Flood, D., & Hall, A. (2022). Application of Amazon Web Services within teaching & learning at Coventry University Group. Computing Education Practice 2022. https://doi.org/10.1145/3498343.3498350

Chew, C. M., Ng, L. Y., Mah, S.-K., & Ng, Y.-S. (2021). Development of a university-industry collaboration model towards work-ready engineering graduates. Research in Science & Technological Education, 1–19. https://doi.org/10.1080/02635143.2021.1917535

Ha, N. T. N. (2021). The involvement of industry professionals and barriers to involvement in work-integrated learning: the case of the profession-oriented higher education framework in Vietnam. Journal of Education and Work, 35(1), 92–107. https://doi.org/10.1080/13639080.2021.2018408

Correia, Eduardo & Tasker, Shayle. (2022). The Cloud, the Curriculum and the Classroom: The Case of AWS at one Public Tertiary Institution. https://www.researchgate.net/publication/360216432

Al-Sharafi, M. A., Qasim Alajmi, Mostafa Al-Emran, Yousef, & Al-Dheleai, Y. M. (2021). Cloud Computing Adoption in Higher Education: An Integrated Theoretical Model. 191–209. https://doi.org/10.1007/978-3-030-64987-6_12

Mphasis. (2023). Mphasis leverages AWS Skill Builder to drive digital transformation for clients globally.

https://ezproxy.canberra.edu.au/login?url=https://www.proquest.com/wire-feeds/mphasis-adopts-aws-skill-builder-enhance-cloud/docview/2899139853/se-2?accountid=28889

Veine, S., Anderson, M. K., Andersen, N. H., Espenes, T. C., Søyland, T. B., Wallin, P., & Reams, J. (2020). Reflection as a core student learning activity in higher education - Insights from nearly two decades of academic development. International Journal for Academic Development, 25(2), 1–15. https://doi.org/10.1080/1360144x.2019.1659797

Project Management Institute. (2021). The Standard for Project Management and A Guide to The Project Management Body of Knowledge Seventh Edition. https://ibimone.com/PMBOK%207th%20Edition%20(iBIMOne.com).pdf