



## EVALUATING E-LEARNING IN THE SRI LANKA ARMY: A STUDY ON LEARNING OUTCOMES AND TECHNOLOGY USE

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**Abstract:** This study investigates the effectiveness of e-learning systems within the Sri Lanka Army (SLA) by exploring the factors that influence learning outcomes. The research employs a mixed-methods approach, combining quantitative data from a structured questionnaire with qualitative insights from interviews with subject matter experts. The sample includes student officers actively engaged in SLA training programs and knowledgeable professionals in modern technologies, such as artificial intelligence. Key variables examined include user interface, technical issues, real-time monitoring, feedback mechanisms, and accessibility. The study aims to identify strengths and weaknesses in the current e-learning framework and to propose recommendations for enhancing the overall effectiveness and efficiency of training initiatives. Validity and reliability are ensured through the use of established instruments and pilot testing. The findings are expected to provide valuable insights for improving e-learning practices in the SLA, ultimately contributing to better educational outcomes for personnel. This research not only addresses current challenges in the adoption of e-learning but also highlights the potential of innovative technologies to transform military training and development.

**Key words:** E-learning, Army, Sri Lanka, Technology, Learning

### 1. Introduction

E-learning is a modern educational approach that utilizes the Internet as a distance learning method, allowing learners to access educational content and engage in learning activities from any location with internet connectivity. This system provides flexibility, convenience, and opportunities for self-paced learning, distinguishing it from traditional educational frameworks (Shahmoradi, 2018). In the context of online or distance education, the conventional face-to-face interactions between instructors and students are supplemented—or in some cases replaced—by information technology. This shift enables enhanced communication and interaction, making education more accessible and effective. E-learning is particularly advantageous for non-traditional students, such as military personnel and individuals with full-time employment, who may face challenges in attending physical classrooms (Gunawardhana, 2020).

E-learning platforms offer personalized learning experiences that cater to individual needs and preferences. Learners have the autonomy to select specific topics of interest, bypass content they already understand, and revisit challenging material as necessary (Abed, 2019). Furthermore, as noted by Salloum et al., 2020, these platforms often incorporate features that promote collaboration and interaction among learners from diverse geographical locations. Additionally, e-learning can lead to significant cost savings, as many resources are available in digital formats, reducing the need for traditional textbooks and other materials. However, there are potential drawbacks to consider, including a lack of face-to-face interaction, challenges in maintaining self-discipline, technical difficulties, and limited opportunities for hands-on experience. Ultimately, the effectiveness of e-learning is heavily reliant on the underlying technology (Salloum et al., 2020).

The 2013 report by the Babson Survey Research Group from USA highlights significant growth in online education. According to the report, in the fall of 2012, approximately 7.1 million students were enrolled in at least one online course, showcasing the effectiveness of online education as comparable

*Received October 2024.*

**Cite as:** R. R. J. D. G., Jayakody, F. M. M. T. Marikar (2025). Evaluating e-learning in the Sri Lanka army: a study on learning outcomes and technology use. *Acta Didactica Napocensia*, 18(1), 1-14, <https://doi.org/10.24193/adn.18.1.1>

to traditional classroom learning. Among these, around 6.1 million were university students, representing a rapid growth rate of nearly 30%. (Allen & Seaman, 2014; Welsh and Dragu, 2018). This encompasses various formats, including online courses, hybrid courses, and web-based learning. The findings suggest that these educational methods have successfully met students' expectations. E-learning systems offer numerous advantages, including flexibility for both individuals and organizations, enabling students to tailor their study schedules to accommodate busy lifestyles (Alhazzani, 2020).

Online learning methods have gained significant popularity worldwide, particularly due to their accessibility for students who may not have the opportunity to attend traditional educational institutions. Among the most prominent formats are Massive Open Online Courses (MOOCs), with platforms such as Coursera, edX, and Udacity leading the way. These platforms are designed to deliver high-quality education to large audiences, often featuring courses taught by field experts and incorporating elements such as video lectures, readings, and discussion forums (Alnaqbi, 2021). Online learning in Sri Lanka has seen significant growth and importance in recent years, particularly due to the global COVID-19 pandemic. The crisis expedited the transition to online education as schools and universities were forced to close, prompting educational institutions to swiftly adopt digital platforms to maintain educational continuity. The Sri Lankan government has implemented various initiatives to promote online learning during this period (Hayashi et al., 2020). Additionally, many universities and higher education institutions have begun offering online courses and degree programs to accommodate the changing educational landscape. However, challenges remain, particularly regarding internet connectivity and infrastructure, especially in rural areas of Sri Lanka (Hettiarachchi et al., 2021; Marikar et al., 2017). Addressing these issues will be crucial for the sustained success of online learning initiatives in the country.

Online learning has created valuable opportunities for individuals to enhance their skills and participate in professional development courses. Platforms such as Coursera, Udemy, and LinkedIn Learning are widely utilized by Sri Lankans to access a variety of online courses and certifications (Ellapola, 2022). During the COVID-19 pandemic, the Sri Lanka Army (SLA) implemented online learning sessions to facilitate training. However, this initiative was not sustained as a regular practice once normal operations resumed. Nevertheless, some training institutes within the SLA, such as the Institute of Peace Support Operations Training Sri Lanka (IPSOTSL, 2024), have continued to offer courses through online platforms. These efforts demonstrate the SLA's capability to effectively leverage online learning as a method for training and development (IPSOTSL, 2024).

AI-powered intelligent tutoring systems offer personalized guidance and support to learners by leveraging advanced algorithms to analyze student data and behaviors. This capability enhances personalized learning experiences, significantly improving learner engagement and outcomes. For instance, AI can recommend tailored content, suggest optimal learning paths, and provide adaptive feedback that aligns with individual student needs. Such features not only help learners overcome challenges but also reinforce their understanding of the material (Alam, 2023). Additionally, AI algorithms can evaluate student preferences based on performance data and learning goals, enabling them to recommend relevant and engaging learning resources. These systems can also suggest supplementary materials or guidance, facilitating the discovery of new content and enhancing learners' self-directed learning capabilities (Al Kabi, 2023).

The SLA acknowledges the necessity to modernize and enhance its training and educational processes to effectively prepare its personnel. As e-learning methods gain popularity globally, the SLA has incorporated online educational approaches since 2019. However, the organization currently relies on outdated technological methods, which can be time-consuming and resource-intensive, and may not fully address the diverse learning needs of its personnel. Additionally, challenges persist in providing real-time access to learning sessions and resources. Consequently, there is a significant opportunity to explore alternative strategies, such as the implementation of modern e-learning systems. By adopting technology-based learning platforms, the SLA has the potential to enhance the efficiency and effectiveness of learning outcomes, improve productivity in training and development, and overcome traditional limitations related to resources and geographic constraints. This study mainly focused to investigate the existing e-learning methods and platforms utilized by the SLA, critically assessing their advantages and disadvantages in order to inform the development and implementation of an enhanced

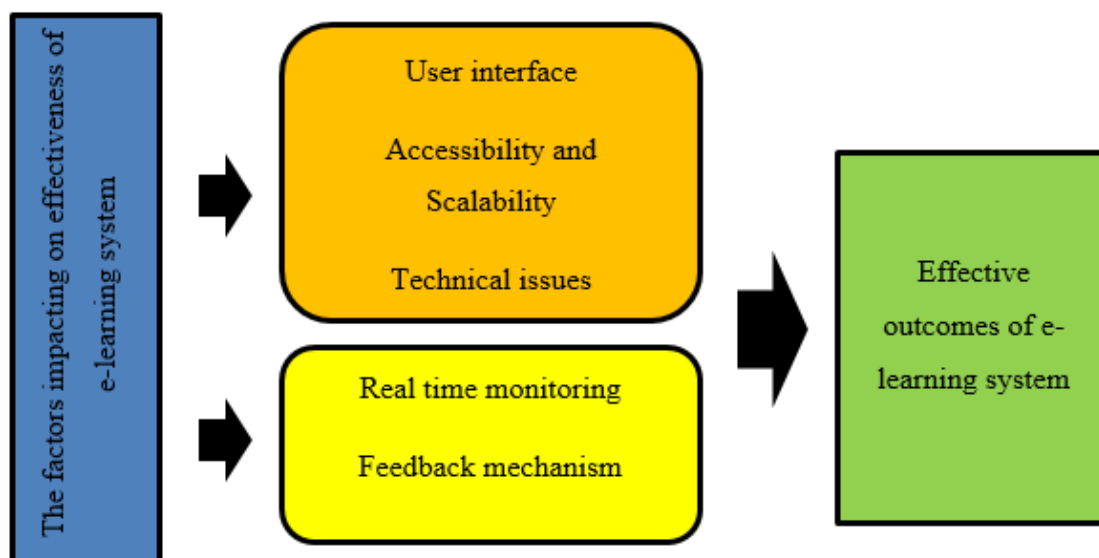
e-learning framework to Sri Lankan context.

## 2. Methodology

### 2.1. Research design

The descriptive design methodology employed in this study aims to systematically collect and analyze data regarding the existing e-learning methods and platforms used by the SLA. This approach involves qualitative and quantitative techniques to provide a comprehensive overview of current practices, including the strengths and weaknesses of each platform. By utilizing surveys, interviews, and observational studies, the research will gather insights from both learners and educators within the SLA. This methodology enables the identification of key trends and patterns, facilitating an informed evaluation of how these e-learning initiatives meet the diverse needs of personnel and highlighting areas for improvement.

### 2.2. Conceptual framework



**Figure 1.** Conceptual framework for SLA military personnel study

The conceptual framework of this study is structured to illustrate the relationship between the independent and dependent variables. The independent variable encompasses the factors influencing the effectiveness of the e-learning system, while the dependent variable pertains to the effective outcomes achieved through this system (Figure 1). Furthermore, the independent variable is categorized into five key factors: user interface, technical issues, real-time monitoring, feedback mechanisms, and accessibility and scalability. This framework aims to provide a comprehensive understanding of how these factors contribute to the overall effectiveness of e-learning initiatives within the context of the SLA.

### 2.3. Participants

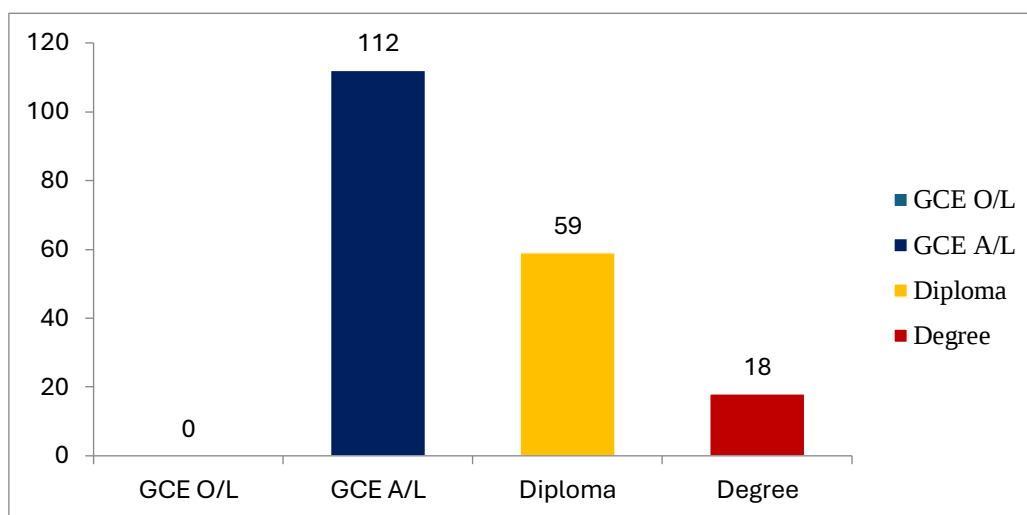
#### 2.3.1 Inclusion and Exclusion Criteria

Participants in this study will be selected based on specific inclusion and exclusion criteria. Individuals eligible for inclusion must be current student officers enrolled in or actively participating in SLA training

programs, with experience using the SLA's e-learning system within the last two years. Additionally, participants must be willing to provide informed consent and engage in the study, which includes completing questionnaires and participating in interviews. Conversely, individuals who are not currently enrolled in SLA training programs or have not engaged with the e-learning system will be excluded from the study. Furthermore, participants with minimal or no interaction with the e-learning platform will not be considered, and any individual who does not provide informed consent will also be excluded from the sample.

### 2.3.2 Demographic data

Demographic characters were discussed under four main sectors, Education level, Nationality, Gender and Marital status. Total 189 participants were expressed their positive responses and those responses were analyzed and presented. The education qualifications of the participants reveal a diverse range of backgrounds. A majority hold GCE A/L qualification, with 112 participants having completed this level (Figure 2). Also, 59 participants possess a diploma, it is indicating further specialization or vocational training. Further, 18 candidates have attained a degree; it's showcasing a commitment to higher education and advanced knowledge in their respective fields (Figure 2). The nationalities of the participants reflect a predominantly Sri Lanka representation, with 173 individuals identifying as Sri Lankan. In addition, there are 3 participants from the Moors community and 2 from the Tamil community, highlighting some ethnic diversity. Furthermore, 11 participants identify as Catholic, adding another layer of cultural variety to the group.



**Figure 2.** Educational level

The gender composition of the candidates is exclusively male, with a total of 189 individuals identified as male. This uniformity highlights a lack of gender diversity within this group. The marital status of the participants shows a significant majority are married, with 164 individuals in this category. There are 18 participants who are single, while no report being divorced. Also, 7 participants have opted not to disclose their marital status, indicating a small segment that prefers privacy regarding this personal information.

### 2. 3.3 Questioner design

Questionnaire A was meticulously designed to gather essential quantitative data to address the study objectives. It is organized into seven primary categories: respondent demographics, effectiveness of the e-learning system, user interface, technical issues, real-time monitoring, feedback mechanisms, and accessibility and scalability. These categories underscore the relevance of the hypotheses. Additionally, Questionnaire A is presented in clear and accessible language, available in both Sinhala and English. The questionnaire is primarily distributed online via Google Forms, with appropriate guidelines

provided in the introduction to assist respondents in completing the questions. A five-point Likert scale is employed to measure participant responses. Furthermore, Questionnaire B is structured to achieve the study's qualitative objectives through collected data from interviews. This section aims to explore how new technologies can enhance the overall effectiveness and efficiency of e-learning methods, as well as to gather further suggestions for improvement.

**Table 1.** *Structure of the questionnaire*

| <b>Questioner A (Quantitative Data)</b>                                                    |                               |                              |                        |
|--------------------------------------------------------------------------------------------|-------------------------------|------------------------------|------------------------|
| <b>Section</b>                                                                             | <b>Variables</b>              | <b>Part of Questionnaire</b> | <b>No of Questions</b> |
| <b>Respondent Demographics</b>                                                             |                               | Part A                       | 1 - 4                  |
| <b>Independent Variables</b>                                                               |                               |                              |                        |
| The factors impacting on effectiveness of e-learning system                                | User interface                | Part B                       | 5 - 8                  |
|                                                                                            | Accessibility and scalability | Part C                       | 9 - 12                 |
|                                                                                            | Technical issues              | Part D                       | 13 - 16                |
|                                                                                            | Real time monitoring          | Part E                       | 17 - 20                |
|                                                                                            | Feedback mechanism            | Part F                       | 21 - 25                |
| <b>Dependent Variable</b>                                                                  |                               |                              |                        |
| <b>Effective outcomes of E-learning platform</b>                                           |                               | Part G                       | 26 - 30                |
| <b>Questioner 0B (Qualitative Data)</b>                                                    |                               |                              |                        |
| <b>Section</b>                                                                             |                               | <b>Part of Questionnaire</b> | <b>No of Questions</b> |
| Modern technologies for increase overall effectiveness and efficiency of e-learning method |                               | Part A                       | 1 - 6                  |
| Recommendations                                                                            |                               | Part B                       | 7-8                    |

### 2. 3.4 Validity and Reliability of the Study

Ensuring the validity and reliability of this study is essential for producing credible findings. Validity will be enhanced by employing well-established instruments for data collection, such as validated questionnaires and structured interview protocols, along with triangulation to integrate qualitative and quantitative data. Reliability will be addressed through a pilot test of the questionnaire with a small sample to identify any issues, and internal consistency will be evaluated using Cronbach's alpha to confirm that the items reliably measure the same construct. By implementing these strategies, the study aims to achieve robust validity and reliability, thereby strengthening the integrity of the research outcomes. The reliability and validity test indicated that, Cronbach's alpha was 0.941 with a significance of  $p < 0.05$ . It defined that internal consistency was excellent, the research tool was reliable and will give credible results.

### 2. 4. Data Analysis Method

This study will employ established principles of research methodology to guide the investigation and determine appropriate procedures for theoretical exploration and data analysis. To analyze qualitative data, thematic analysis will be utilized, enabling the identification of common topics, ideas, and themes. For quantitative data, the analysis will be conducted using the Statistical Package for Social Sciences (SPSS), which will facilitate robust statistical examination to meet the study's objectives.

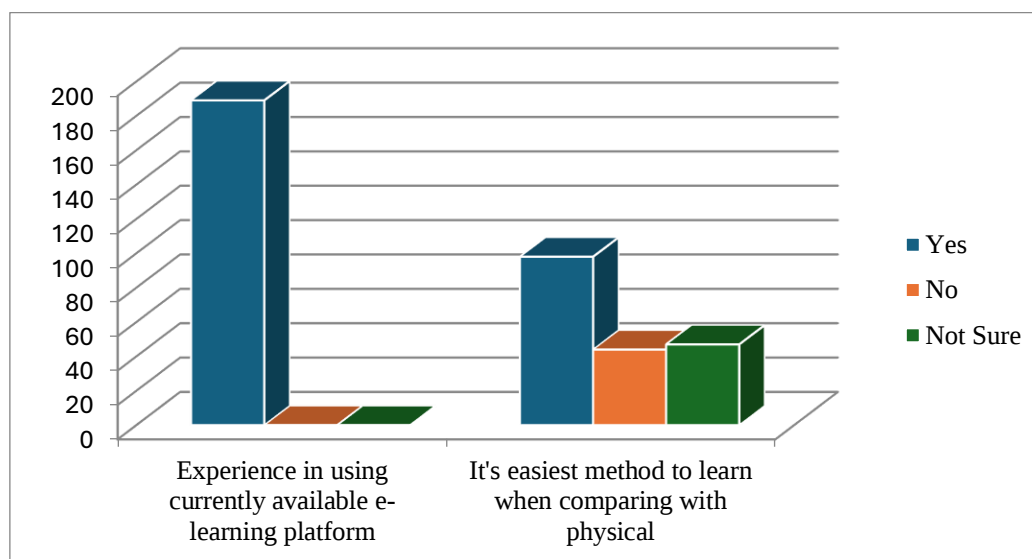
### 2. 8. Ethical Considerations

Prior to the commencement of the study, each participant will receive an informed consent form outlining the purpose of the research, its objectives, potential benefits, data anonymity, and the voluntary nature of participation. The questionnaire will be distributed only after participants have confirmed their consent, ensuring that their rights and privacy are respected throughout the research process. Ethical review committee of General Sir John Kotelawala Defence University had given the approval for the study.

### 3. Results

#### 3. 1. Examining Relationships Between E-learning Platform

All participants have utilized the currently available e-learning platform, highlighting its important adoption. Among them, 98 individuals noted that it provides an easier method for learning, suggesting a positive reception. Also, 44 participants indicated that they do not find it easier compared to traditional physical methods. Additionally, 47 participants expressed uncertainty regarding the effectiveness of the automation system in facilitating learning (Figure 3).



**Figure 3.** Usage of the E-Learning platform

**Table 1.** Pearson Correlation Analysis: Examining Relationships Between E-learning Platform Features and Learner Outcomes

|                                            |                     | Effective Outcomes of E-Learning Platforms | User Interface | Accessibility and Scalability | Technical Issues | Real Time Monitoring | Feedback Mechanism |
|--------------------------------------------|---------------------|--------------------------------------------|----------------|-------------------------------|------------------|----------------------|--------------------|
| Effective Outcomes of E-Learning Platforms | Pearson Correlation | 1                                          | .578**         | .502**                        | .678**           | .679**               | .543**             |
|                                            | Sig. (2-tailed)     |                                            | .000           | .000                          | .000             | .000                 | .000               |
|                                            | N                   | 189                                        | 189            | 189                           | 189              | 189                  | 189                |
| User Interface                             | Pearson Correlation | .578**                                     | 1              | .826**                        | .671**           | .535**               | .760**             |
|                                            | Sig. (2-tailed)     | .000                                       |                | .000                          | .000             | .000                 | .000               |
|                                            | N                   | 189                                        | 189            | 189                           | 189              | 189                  | 189                |
| Accessibility and Scalability              | Pearson Correlation | .502**                                     | .826**         | 1                             | .633**           | .478**               | .827**             |
|                                            | Sig. (2-tailed)     | .000                                       | .000           |                               | .000             | .000                 | .000               |
|                                            | N                   | 189                                        | 189            | 189                           | 189              | 189                  | 189                |
| Technical Issues                           | Pearson Correlation | .678**                                     | .671**         | .633**                        | 1                | .748**               | .852**             |
|                                            | Sig. (2-tailed)     | .000                                       | .000           | .000                          |                  | .000                 | .000               |
|                                            | N                   | 189                                        | 189            | 189                           | 189              | 189                  | 189                |

|                      |                     |        |        |        |        |        |        |
|----------------------|---------------------|--------|--------|--------|--------|--------|--------|
| Real Time Monitoring | Pearson Correlation | .679** | .535** | .478** | .748** | 1      | .692** |
|                      | Sig. (2-tailed)     | .000   | .000   | .000   | .000   |        | .000   |
|                      | N                   | 189    | 189    | 189    | 189    | 189    | 189    |
| Feedback Mechanism   | Pearson Correlation | .543** | .760** | .827** | .852** | .692** | 1      |
|                      | Sig. (2-tailed)     | .000   | .000   | .000   | .000   | .000   |        |
|                      | N                   | 189    | 189    | 189    | 189    | 189    | 189    |

\*\* Correlation is significant at the 0.01 level (2-tailed).

The correlation between the effective outcomes of e-learning platforms and user interface were statistically significant at the 0.01 level. Person correlation coefficient of 0.578 it shows that there is a strong positive relationship has between effective outcomes of e-learning platforms and user interface (Table 1). The correlation between the effective outcomes of e-learning platforms and accessibility and scalability were statistically significant at the 0.01 level. Person correlation coefficient of 0.502 it shows that there is a strong positive relationship has between effective outcomes of e-learning platforms and accessibility and scalability. The correlation between the effective outcomes of e-learning platforms and technical issues were statistically significant at the 0.01 level. Person correlation coefficient of 0.678 it shows that there is a strong positive relationship has between effective outcomes of e-learning platforms and technical issues (Table 1).

The correlation between the effective outcomes of e-learning platforms and real time monitoring were statistically significant at the 0.01 level. Person correlation coefficient of 0.678 it shows that there is a strong positive relationship has between effective outcomes of e-learning platforms and real time monitoring. The correlation between the effective outcomes of e-learning platforms and feedback mechanism were statistically significant at the 0.01 level. Person correlation coefficient of 0.543 it shows that there is a strong positive relationship has between effective outcomes of e-learning platforms and feedback mechanism (Table 1).

### 3. 2. Application of new technology for e-learning platform to increase overall effectiveness and efficiency

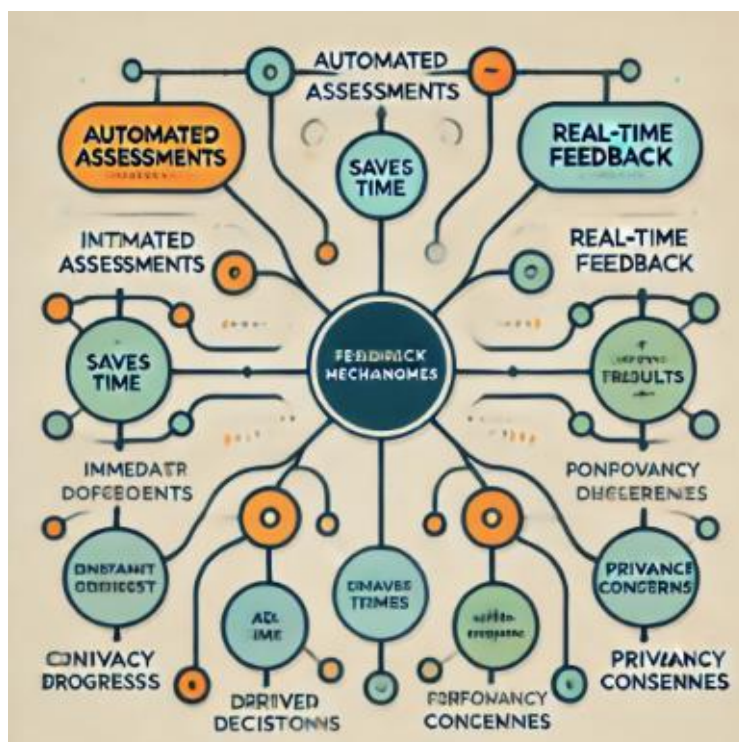
This phase is presenting the findings from a series of interviews conducted with 14 professionals in the fields of e-learning, information technology, and modern technology. These participants are each possessing extensive experience and expertise, provided valuable insights into the application of new technologies in military learning environments. Their perspectives were illuminated the challenges and opportunities associated with enhancing the efficiency and effectiveness of e-learning methods.

**Table 2.** Challenges and Opportunities Associated with Enhancing the Efficiency and Effectiveness of E-Learning Methods

| Theme                                       | Code                            |        |
|---------------------------------------------|---------------------------------|--------|
|                                             | Description                     | Number |
|                                             | Collaborative Tools             | 1.2    |
|                                             | User Feedback Mechanisms        | 1.3    |
|                                             | Live Streaming Features         | 1.4    |
|                                             | Artificial Intelligence (AI)    | 2.1    |
| <b>Integration of Advanced Technologies</b> | Virtual Reality (VR)            | 2.2    |
|                                             | Augmented Reality (AR)          | 2.3    |
|                                             | Mobile Learning Solutions       | 3.1    |
| <b>Accessibility</b>                        | Multilingual Support            | 3.2    |
|                                             | Content Accessibility Standards | 3.3    |
|                                             | Cloud-Based Solutions           | 4.1    |
| <b>Scalability and Flexibility</b>          | Modular Course Design           | 4.2    |

|                            |                                   |     |
|----------------------------|-----------------------------------|-----|
| <b>Feedback Mechanisms</b> | Integration with Existing Systems | 4.3 |
|                            | Cross-Platform Compatibility      | 4.4 |
|                            | Automated Assessments             | 5.1 |
|                            | Real-time Feedback                | 5.2 |
|                            | Performance Tracking              | 5.3 |

It clearly shows the interviews will categorically be divided into four themes (Table 2) and graphically represented in the Figure 4.



**Figure 4.** Mind Map of the Challenges and Opportunities Associated with e-Learning in military setup

E-learning has the potential to revolutionize military training and education, offering flexibility, accessibility, and cost-effectiveness. However, implementing e-learning in a military environment presents unique challenges that must be carefully considered. This mind map visualizes the key challenges and opportunities associated with e-learning in the military, providing a comprehensive overview of the factors that influence its successful adoption and integration.

The interviews can be read in the Annex.

#### 4. Discussion

E-learning platforms have become increasingly vital in modern military training, especially in the wake of the COVID-19 pandemic. As traditional training methods faced disruptions due to health and safety concerns, military organizations turned to digital solutions to ensure the continuity of education and skills development. These platforms offer flexible and accessible learning environments that can be tailored to the specific needs of military personnel. It's facilitating the acquisition of critical skills and knowledge without the constraints of physical classrooms (Ellapola, 2022). The COVID-19 pandemic highlighted the importance of adaptability in training; e-learning enabled the SLA and other military forces to maintain operational readiness while adhering to social distancing protocols (Hayashi et al., 2020). The integration of technology in training not only enhances engagement through interactive content but also allows for the efficient tracking of progress and assessment of competencies. The reliance on e-learning during this unprecedented period has underscored its importance as a foundational element in modern military training strategies.

The SLA has been using Learning Management System as their e-learning platform since from recent years. It is the primary e-learning system that enables access to all learning officers of Sri Lanka Army. This study used to evaluate the effectiveness of Learning Management System by focusing on its user interface, accessibility, scalability, technical issues, real time monitoring and feedback mechanism.

The user interface (UI) of the current e-learning platform utilized by the SLA is a critical factor influencing its effectiveness in training. Research suggests a strong positive relationship between the accessibility of these platforms and successful learning outcomes. A well-designed UI is essential for ensuring that SLA personnel can easily navigate the platform and access training materials, especially given the diverse technological proficiency levels among users. In the context of the SLA, an intuitive UI reduces cognitive load, allowing soldiers to concentrate on the content rather than grappling with navigation challenges. Features such as clear menus, responsive design and readily available support resources enhance user experience and facilitate efficient learning (Maslov et al., 2021). Additionally, when the e-learning platform prioritizes accessibility, it ensures that all personnel (including those with disabilities) can fully engage with the training materials. Investing in a user-friendly interface not only promotes inclusivity but also significantly enhances the overall effectiveness of the SLA's e-learning initiatives. As a result, the current platform can lead to improved training outcomes, reinforcing the importance of a strong UI in modern military education.

Accessibility and scalability are crucial elements of the Sri Lanka Army's e-learning platform, significantly impacting its effectiveness in training personnel. Data indicates a strong positive relationship between effective outcomes and the combination of accessibility and user interface. While the current platform provides essential training resources, there is a pressing need to enhance these features to improve overall learning outcomes (Adeniyi et al., 2024). Accessibility ensures that all SLA personnel, regardless of their location or technological proficiency they can engage with the training materials. Thereby promoting equitable access to educational resources by adopting more inclusive design principles, the platform can cater to a wider range of users. Scalability further allows the platform to accommodate varying numbers of users, it is ensuring that as the SLA grows or as training needs evolve, the system can adapt without compromising performance. To achieve better training outcomes, it is essential to invest in improving both accessibility and the user interface. Streamlining navigation can be optimizing content for different devices and enhancing support resources can create a more user-friendly environment. The SLA can foster a more effective e-learning experience, ultimately leading to improved skill acquisition and operational readiness among its personnel by focusing on these areas.

Technical issues are significant factor affecting the effectiveness of the Sri Lanka Army's e-learning platform. Data indicates a strong positive relationship between effective learning outcomes and the presence of technical issues. Technical challenges can hinder the learning experience and limit the potential for successful outcomes while the platform provides valuable training resources. Common technical problems, such as slow loading times, software glitches and connectivity issues can disrupt the training process. Also, it's leading to frustration among users. These issues may prevent personnel from fully engaging with the content or accessing necessary materials when needed. The results indicate that Sri Lanka Army provides impressive technical support for their personals. To improve training outcomes more, it is essential for the SLA to address technical faults when raise. Investing in regular system maintenance, upgrading infrastructure and providing adequate technical support can help minimize disruptions. The SLA can enhance the user experience by focusing on resolving technical issues. It's ultimately leading to more effective e-learning outcomes and better preparedness among its personnel.

Real-time monitoring is a critical component of the Sri Lanka Army's e-learning platform, yet data indicate a strong positive relationship between effective learning outcomes and the current state of real-time monitoring. Effective monitoring can provide valuable insights into learner progress and engagement which shortcomings in this area may hinder the overall effectiveness of the training experience (Liu, 2023; Marikar & Zayan, 2023). Poor real-time monitoring limits the ability to track individual performance and identify areas where personnel may struggle. This lack of visibility can prevent timely interventions and support and ultimately impacting the learning outcomes for SLA members. However, when instructors and administrators able to monitor progress effectively, they can provide opportunities to targeted feedback and adjust training methodologies. It will help to better meet

the needs of the learners. It is essential for the SLA to invest in improved real-time monitoring capabilities to enhance training outcomes. Implementing advanced tracking systems that provide insights into user engagement and performance can help educators identify challenges early and respond appropriately. The SLA can create a more responsive and effective e-learning environment by focusing on strengthening real-time monitoring.

The feedback mechanism within the SLAs' e-learning platform plays a major role in shaping effective training outcomes. However, data indicate a strong positive relationship between effective learning outcomes and the current feedback mechanisms in place. Feedback mechanism is essential for guiding learners and enhancing their educational experience, it can be direct to increase overall effectiveness of the training process. When feedback mechanisms are insufficient or poorly implemented, personnel may not receive timely or constructive insights on their performance. This perfect feedback mechanism leads to meet learning objectives. Also, having actionable feedback will help instructors to provide opportunity to adapt their teaching strategies to better address the needs of individual learners, further impacting overall effectiveness (Adeniyi et al., 2024). To improve training outcomes, the SLA must take more actions to the enhancement of its feedback mechanisms. Establishing structured, timely and constructive feedback processes can empower learners by providing clear guidance and fostering a supportive learning environment. The SLA can facilitate better communication between instructors and personnel by focusing on strengthening these mechanisms.

To enhance the overall effectiveness and efficiency of e-learning methods, the SLA can adopt a range of innovative tools and technologies. Integrating advanced learning management systems (LMS) can streamline course administration. It's allowing for better tracking of learner progress and easier access to resources. Incorporating multimedia elements, such as interactive videos and simulations, can make training more engaging and applicable to real-world scenarios, thereby improving retention and understanding.

## 5. Conclusion

Its needs to recognize the increase accessibility as a primary requirement of SLA e-learning platforms, this implication ensuring that all personnel can effectively engage in training regardless of their circumstances. More advance, SLA can implement mobile learning solutions, it enables soldiers to access educational content anytime and anywhere with accommodating the demanding and often unpredictable nature of military life. This flexibility is essential to allows personnel to continue their training while deployed or stationed in remote locations, it can be identified as a measure to ensuring that learning is always within reach. Additionally, it would better if SLA can prioritize multilingual support of e-learning platform. It can be direct to offering training materials in various languages to cater to its diverse workforce. This inclusivity fosters a sense of belonging and ensures that all service members can fully comprehend and engage with the course content and enhancing overall learning outcomes.

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## Acknowledgement

Authors would like to acknowledge for the people who participated in this study.

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## Annex. Interviews

Interviewer: How has e-learning influenced training in the Sri Lanka Army?

Person A: "E-learning has significantly improved how we train soldiers. It provides a more dynamic and engaging learning experience. Soldiers are able to learn at their own pace, revisit concepts as needed, and access a wealth of information and resources online. This has led to faster learning and better knowledge retention."

Interviewer: What challenges did you face while introducing e-learning?

Person A: "Initially, we encountered several challenges. Ensuring reliable internet connectivity and adequate technological infrastructure across all training locations was a major hurdle. Overcoming skepticism among some personnel who were accustomed to traditional training methods was also crucial. However, once we addressed these issues and demonstrated the effectiveness of e-learning, the resistance gradually diminished."

Interviewer: How do you assess the success of e-learning programs?

Person A: "We employ a multi-faceted approach to assess the success of our e-learning programs. Rigorous tests and examinations are conducted to evaluate knowledge acquisition and application. Additionally, we gather valuable feedback from soldiers through surveys and interviews. This feedback helps us identify areas for improvement and optimize the learning experience. Most importantly, we observe how effectively soldiers apply the knowledge gained through e-learning in real-world scenarios and field operations. The successful integration of e-learning into our training regimen has significantly enhanced the overall effectiveness and efficiency of our military operations."

Interviewer: Why is accessibility important in e-learning?

Person B: "Accessibility in e-learning is paramount. It ensures that all learners, regardless of their abilities, have equal opportunities to access and utilize e-learning resources. This includes individuals with visual, auditory, motor, cognitive, and speech disabilities. True inclusivity in education demands that we create learning environments that are accessible to everyone. When e-learning platforms and materials are designed with accessibility in mind, we empower all learners to reach their full potential."

Interviewer: What are the main challenges in improving accessibility in e-learning within the Sri Lankan military context?

Person B: "Several challenges hinder the improvement of e-learning accessibility in Sri Lanka. Infrastructure gaps, such as limited or unreliable internet connectivity in certain locations, pose a significant barrier. Furthermore, a lack of awareness among educators and developers regarding accessibility standards and best practices is prevalent. Many existing e-learning systems and materials are not designed with accessibility in mind, creating significant barriers for learners with disabilities."

Interviewer: How can accessibility in e-learning be improved within the Sri Lankan military?

Person B: "Addressing these challenges requires a multi-pronged approach. Adopting and adhering to internationally recognized accessibility standards, such as the Web Content Accessibility Guidelines (WCAG), is crucial. This involves ensuring that all e-learning materials, including videos, documents, and interactive elements, are accessible to individuals with disabilities. Raising awareness among educators, developers, and learners about the importance of accessibility is equally vital. Training programs and workshops can be conducted to equip them with the knowledge and skills necessary to create and utilize accessible e-learning resources. Finally, fostering a culture of inclusivity and

accessibility within the military is essential for long-term success."

Interviewer: Why are scalability and flexibility important for e-learning in the Sri Lankan military context?

Person C: "Scalability and flexibility are crucial for the successful implementation of e-learning within the Sri Lankan military. Scalability ensures that e-learning platforms can effectively accommodate a growing number of learners as the demand for online training increases. This is particularly important in a military context where training needs can fluctuate significantly based on operational requirements. Flexibility, on the other hand, is essential to ensure that e-learning content can be adapted to meet the diverse learning needs of different military personnel, including those with varying levels of prior knowledge, experience, and learning styles. This adaptability is crucial for maximizing the effectiveness of e-learning programs."

Interviewer: What are the main challenges in achieving scalability and flexibility in e-learning within the Sri Lankan military?

Person C: "Several challenges can hinder the achievement of scalability and flexibility. Limited and sometimes unreliable infrastructure, such as internet connectivity and computing resources, can pose significant limitations to the scalability of e-learning platforms. Additionally, many existing e-learning courses are designed with a rigid, linear structure, making it difficult to adapt to the diverse learning needs of different individuals or to accommodate changes in training requirements. This lack of flexibility can limit the effectiveness of e-learning programs and hinder their ability to meet the evolving needs of the military."

Interviewer: What are your recommendations for addressing these challenges and improving scalability and flexibility in e-learning within the Sri Lankan military?

Person C: "Investing in robust and scalable technology infrastructure, such as cloud-based solutions, is crucial. Cloud computing provides the flexibility and scalability required to accommodate a growing number of users and rapidly adjust to changing demands. Furthermore, adopting a modular approach to course design can significantly enhance flexibility. By breaking down complex training programs into smaller, independent modules, it becomes easier to customize learning pathways for individual learners, adapt to changing operational requirements, and update content as needed. Additionally, embracing open educational resources (OER) and leveraging existing online platforms can significantly reduce development costs and enhance accessibility. By adopting these strategies, the Sri Lankan military can overcome the challenges of scalability and flexibility, ensuring that e-learning programs are effective, efficient, and responsive to the evolving needs of the modern battlefield."

Interviewer: Why are feedback mechanisms important in e-learning?

Person D: "Feedback plays a crucial role in the e-learning process. It provides learners with valuable insights into their progress, identifying areas of strength and weakness. This information allows learners to understand their performance, adjust their learning strategies, and build confidence. Effective feedback motivates learners, encourages self-reflection, and fosters a deeper understanding of the subject matter. It's not just about grades; it's about providing constructive guidance that helps learners grow and develop."

Interviewer: What challenges do e-learning platforms in Sri Lanka face in providing effective feedback to learners?

Person D: "Several challenges hinder the provision of effective feedback on Sri Lankan e-learning platforms. Some platforms lack advanced feedback tools, such as automated grading systems and personalized feedback mechanisms. This can lead to delays in feedback delivery and limit the depth and quality of the feedback provided. Additionally, connectivity issues, particularly in rural areas, can further delay feedback delivery and disrupt the learning process. This can be particularly frustrating for learners who rely on timely feedback to stay motivated and on track."

Interviewer: How can feedback mechanisms be improved within Sri Lankan e-learning platforms?

Person D: "Integrating automated systems for grading and providing basic feedback can significantly improve efficiency and ensure timely delivery. These systems can provide immediate feedback on multiple-choice questions, identify common errors, and offer initial guidance to learners. Furthermore, prioritizing real-time feedback mechanisms, such as live chat support with instructors or peer feedback forums, can enhance the learning experience. By incorporating these improvements, e-learning platforms in Sri Lanka can provide more effective and timely feedback, fostering a more engaging and supportive learning environment for all learners."