**Workify: Streamlining Senior High School Work Immersion**

**Management System with Data Analytics**

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**ABSTRACT**

This study developed and evaluated Workify, an innovative data analytics-driven work immersion management system intended to address the issues of managing senior high school work immersion programs. The solution seeks to streamline traditional manual processes that have previously hindered effective program management. This study utilized and followed the Scrum Model with the following stages: Planning, Design, Development, Testing and Feedback, Iterative Improvements, and Deployment. Using the quantitative method of conducting a research, the proponents were able to develop the system. IT professionals such as IT instructors and IT practitioners assessed the ISO 25010 survey questionnaire due to their technical proficiency and familiarity with industry standards, while end-users such as teachers, students, and training supervisors assessed the Technology Acceptance Model (TAM) survey questionnaire to gather important information on the acceptance of the Workify. The assessment of the technical qualities were based on the following criteria: functionality, reliability, usability, efficiency, maintainability, portability, security, and compatibility. On the other hand, the assessment on the quality of using the application was based on the following criteria: external factors, perceived usefulness, perceived ease of use, attitude towards using, behavioral intention to use, and actual use. Workify effectively integrated a variety of functions, including data gathering, analytics, dashboard reporting, and student-workplace matching capabilities. The approach has shown substantial promise in improving work immersion experiences by facilitating accurate placement matching and standardizing performance ratings. The project supported several Sustainable Development Goals, particularly those related to education quality, decent labor, innovation, and partnerships. IT professionals, teachers, and students reported high user acceptance and system effectiveness, indicating successful adoption in streamlining work immersion management operations.

1. **INTRODUCTION**

Work immersion exposes senior high school students to real-world workplace settings where they can use their knowledge and earn experience relating to their selected tracks or specializations. This helps students enhance their work-related skills and knowledge. As stated by Ador et al, (2023), work immersion experience improved and equipped students for their professions. According to Gurobat et al, (2021), K to 12 Program in the Philippines aims to develop competencies and work ethic among learners, and work immersion has been found to enable students to acquire skills such as teamwork, communication, and professionalism.

Senior high school students explore professional interests through research and self-evaluation, and they participate in work immersion programs supervised by their professors and advisors. To acquaint oneself with the field in which they will be immersed, they attend seminars. Throughout the eighty (80) hours of the work immersion, students completed various duties that were delegated to them by the supervisors of the partner university (Acut et al, 2021).

However, limited options sometimes result in work immersion placements that do not align with students' interests. According to Insorio et al (2023) with student participants, a majority of them acknowledged a lack of prior knowledge or familiarity with the tasks and responsibilities assigned to them within their respective sectors during the Work Immersion course. As stated by Sidek et al, (2023), students may struggle to complete tasks efficiently and may lose interest in work immersion experiences that are unrelated to their intended college courses if there is a mismatch between their interests and the workplaces that are available.

The United Nations has established the Sustainable Development Goals (SDGs), consisting of 17 global development objectives. The mission of the SDGs, established in 2015, is to promote peace and prosperity for people and the planet, both now and in the future.

The study being conducted can be aligned with several SDGs, including SDG 4 (Quality Education) and SDG 17 (Partnerships for the Goals).

SDG 4 aims to ensure inclusive, equitable, and high-quality education for all, as well as promote lifelong learning opportunities. According to Cassar (2022), by streamlining the management system for senior high school work immersion, the study can contribute to enhancing the quality of education by improving the effectiveness of work-based learning experiences for students.

SDG 17 emphasizes the importance of partnerships and collaboration in achieving the SDGs. In the context of creating and implementing the streamlined management system, the study may involve cooperation between academic institutions, governmental organizations, and business partners (Vaghar, 2023). This highlights the significance of partnerships in attaining sustainable development goals.

Additionally, two more SDGs that could be relevant for the website streamlining the Senior High School Work Immersion Management System with Data Analytics are:

SDG 8 (Decent Work and Economic Growth): This goal focuses on promoting inclusive and sustainable economic growth, employment, and decent work for all. By leveraging data analytics in the management system, the project can contribute to aligning work immersion experiences with industry trends, thereby enhancing students' preparedness for successful careers and contributing to economic growth (Salahudin et al, 2023).

SDG 9 (Industry, Innovation, and Infrastructure): This goal aims to build resilient infrastructure, promote sustainable industrialization, and foster innovation. Implementing data analytics in the work immersion management system can facilitate the alignment of the curriculum with industry needs and trends, supporting the development of an innovative and dynamic workforce. This approach not only supports sustainable industrialization but also enhances the overall efficiency and effectiveness of work immersion programs, contributing to the development of a skilled workforce ready to tackle the challenges of the modern industrial landscape (Gera et al, 2023).

Therefore, integrating these additional SDGs into the project's framework can further enhance its contribution to sustainable development and create a comprehensive approach to streamlining the Senior High School Work Immersion Management System.

The goal of this project is to organize and simplify the work immersion program administration process. A work immersion management system can benefit students' employability, improve employment opportunities, and make a contribution towards achieving sustainable development goals (SDGs). As elaborated in the study of Pfeiffer et al, (2021), work immersion management systems have the potential to contribute to the achievement of the Sustainable Development Goals (SDGs) by addressing challenges related to awareness, motivation, information transfer, and education for sustainable behavior

To address these challenges, the proponents aim to create a project that specifically benefits senior high school students, making it easier for them to choose work placements compatible with their interests, tracks, and specializations. The primary objective of this project is to enhance the management of Senior High School (SHS) work immersion programs through the implementation of data analytics. By streamlining the system, the proponents aspire to provide administrators, educators, and students with a robust and user-friendly platform for data collection, integration, and analysis. This platform will facilitate data-driven decision-making, accurate matching of students with suitable work placements, standardized performance evaluation, and alignment of the curriculum with industry trends. Additionally, the project aims to incorporate feedback analysis and risk assessment to ensure a positive and impactful work immersion experience for students. Leveraging the transformative potential of data analytics, the proponents seek to revolutionize SHS work immersion management.

Furthermore, the proponents intend to create a comprehensive and dynamic work immersion management system by harnessing the power of data analytics. This system will promote efficiency, effectiveness, and continuous improvement. It will empower stakeholders to make informed decisions, optimize student placements, provide personalized feedback, and proactively address challenges. Ultimately, this system aims to enhance the overall educational journey and equip students with the necessary skills for successful careers.

The 21st century has brought about rapid changes in technology that have significantly impacted various aspects of society, including education. According to a journal titled “A Glimpse of the Past-and the Present” (2023), in the Philippines, the implementation of the K to 12 programs by the Department of Education aims to better prepare students for the demands of the modern workforce through an enhanced curriculum and the inclusion of work immersion. As stated by Amper (2022), as one of the required components of the senior high school curriculum, work immersion provides senior high school students with preparation for their future endeavors, including work, entrepreneurship, and higher education. However, managing the work immersion programs across different schools and industries remains challenging due to inefficient manual processes and a lack of data-driven decision making. (Dela Cruz et al, 2020).

This study recognizes the need to streamline work immersion management through a web-based portal that facilitates collaboration between schools and partner industries. According to Franco et al, (2022), by integrating relevant data from stakeholders, a digital solution has the potential to address current issues related to coordination, monitoring, and alignment with industry needs. A review of related literature reveals that data-driven strategies play a crucial role in enhancing customer experiences (Kim, 2023). As industries increasingly rely on digital platforms and social media for recruitment, an online portal aligns with these modern trends and provides a centralized hub for work immersion opportunities.

Under the K to 12 programs implemented in 2013 by the Department of Education, work immersion is a graduation requirement for senior high school students aimed at helping them apply classroom lessons to real work settings. According to Ann Ma., (2023) work immersion is needed to graduate in Senior High School (SHS) because it prepares students for college life and future careers. However, coordinating placements across multiple schools and industries remains challenging using existing manual processes. According to initial interviews with work immersion coordinators, common problems include inconsistent data collection from students and partner companies, difficulty monitoring student progress, and a lack of integration between systems.

Furthermore, as sectors swiftly embrace digital technology, the existing dependence on paper-based forms is increasingly incongruent with recruitment trends. Research indicates that social media has become a primary avenue for companies to recruit and employ students (Singh, 2023). To resolve these challenges, cultivate industry-relevant abilities in students, and enhance their preparedness for future employment, it is essential to optimize work immersion management via a centralized online site. Workify is a platform created by its proponents to assist senior high school students in locating appropriate employment opportunities within their specific academic strands, allowing them to gain insight into their prospective careers and experiences. Utilizing pertinent data and incorporating stakeholder input, this digital system might enhance procedures, align students with appropriate placements, and facilitate data-informed decision-making.

* 1. **Statement of the Objectives**

This study primarily aims to develop a Workify: Streamlining Senior High School Work Immersion Management System with Data Analytics.

Specially, it aimed to:

1. Assess the developed system/device based on the quality characteristics outlined in ISO 25010:

1. Functionality;
2. Reliability;
3. Usability;
4. Efficiency;
5. Maintainability;
6. Portability;
7. Security;
8. Compatibility

2. Evaluate the developed system based on the following construct of the Technology Acceptance Model (TAM):

1. External;
2. Perceived Usefulness;
3. Perceived Ease of Use;
4. Attitude Towards Using;
5. Behavioral Intention to Use;
6. Actual Use

## Methodology

A quantitative research approach was used in this study to give proponents a wider understanding of how to improve Workify: Streamlining Senior High School Work Immersion Management System in Data Analytics. According to Little T. D. et al (2024), quantitative method focuses on the reliability and validity of data collection instruments, ensuring that the data accurately reflects the phenomena being studied

The quantitative method provides objective and robust information useful in making data-based decisions, deciding which interventions should be prioritized, and analyzing successfully implemented improvements using structured instruments such as surveys. According to York R. O. (2022), quantitative methods in mental health research offer reliable data for decision-making, prioritizing interventions, and evaluating implemented improvements through structured tools like surveys, enhancing policy effectiveness

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# Research Instrument

ISO 25010 is an international standard used for evaluating software quality (Al Rahmad et al, 2023). It provides a framework for assessing various attributes of software, such as functionality, performance efficiency, usability, and portability. Studies have applied ISO 25010 to assess the quality of different applications, including Learning Management Systems (LMS), VR applications for music learning, transportation services applications, reproductive health monitoring apps, and toddler nutritional status monitoring apps. By utilizing ISO 25010, researchers can identify strengths and weaknesses in software systems, make recommendations for improvement, and ensure that applications meet established quality standards. Overall, ISO 25010 serves as a valuable guideline for evaluating and enhancing the quality of various software applications across different domains.

A research instrument utilizing the Technology Acceptance Model (TAM) was developed and validated in various studies. In one study, an instrument was created to assess the performance of university lecturers, incorporating elements from the TAM model. Another study focused on digital natives' acceptance of interactive kiosks in museums, adapting TAM constructs like perceived usefulness and ease of use (Manan et al, 2022).

The proponents of this study utilize ISO 25010 which includes functionality, reliability, usability, efficiency, maintainability, portability, security, and compatibility. They will also use in this study the TAM or Technology Acceptance Model which consists of perceived usefulness, perceived ease of use, attitude towards using, and behavioral intention to use. The items in the questionnaire were evaluated on a five-point scale with the following descriptions: 5 - strongly agree, 4 - agree, 3 - neutral, 2 - disagree, and 1 - strongly disagree.

# Analysis of Data

The application assessment provided by the respondents was subjected to analysis and interpretation using the rubric to guide the scoring. The respondents' mean rating served as the basis for determining the created application's qualitative rating. Positive quality was indicated by a high mean rating for the quality factors, whereas negative characteristics were indicated by a low mean rating.

Table 1. Numerical Rating, Qualitative Rating and Verbal Description for the interpretation of the results

|  |  |  |
| --- | --- | --- |
| **Numerical Rating** | **Qualitative Rating** | **Verbal Description** |
| 4.20 – 5.00 | Excellent | The statement performs and has an excellent standard, surpassing expectations in the specified aspect. |
| 3.40 – 4.19 | Very Good | The statement meets expectations and demonstrates effectiveness in the specified aspect. |
| 2.60 – 3.39 | Good | It meets basic expectations in the specified aspect but lacks notable strengths or standout features. |
| 1.80 – 2.59 | Fair | It needs major improvements due to features with noticeable weaknesses in the specified aspect. |
| 1.00 – 1.79 | Poor | The statement has serious problems and weaknesses and fails to meet expectations in the specified aspect. |

1. **RESULTS AND DISCUSSION**
   1. **Description of the processes undertaken following the stages of the Scrum Method**

**Planning**

In this phase, the proponents gather the project requirements, brainstorm ideas, and define the scope of the work immersion management system. As stated by Gordon et al, (2011) by gathering project requirements, proponents can ensure that they have a clear understanding of what needs to be achieved and can align their efforts accordingly.

**Design**

In the design phase, the proponents create the system’s architecture, user interface, and database structure. They will focus on creating a user-friendly dashboard for monitoring progress and making data-driven decisions. In the study of Tang et al, (2022) a well-designed dashboard enables decision-makers to make better decisions, expedite procedures, and improve student learning support. The design will incorporate visual representations of key metrics and performance indicators.

**Development**

This phase involves the actual coding and implementation of the system. The proponents will utilize programming languages, frameworks, and technologies suitable for web application development. Database management systems will be used for data storage, and data analytics tools will enable analysis and insights generation. (Byung-Kwon, 2003).

**Testing and Feedback**

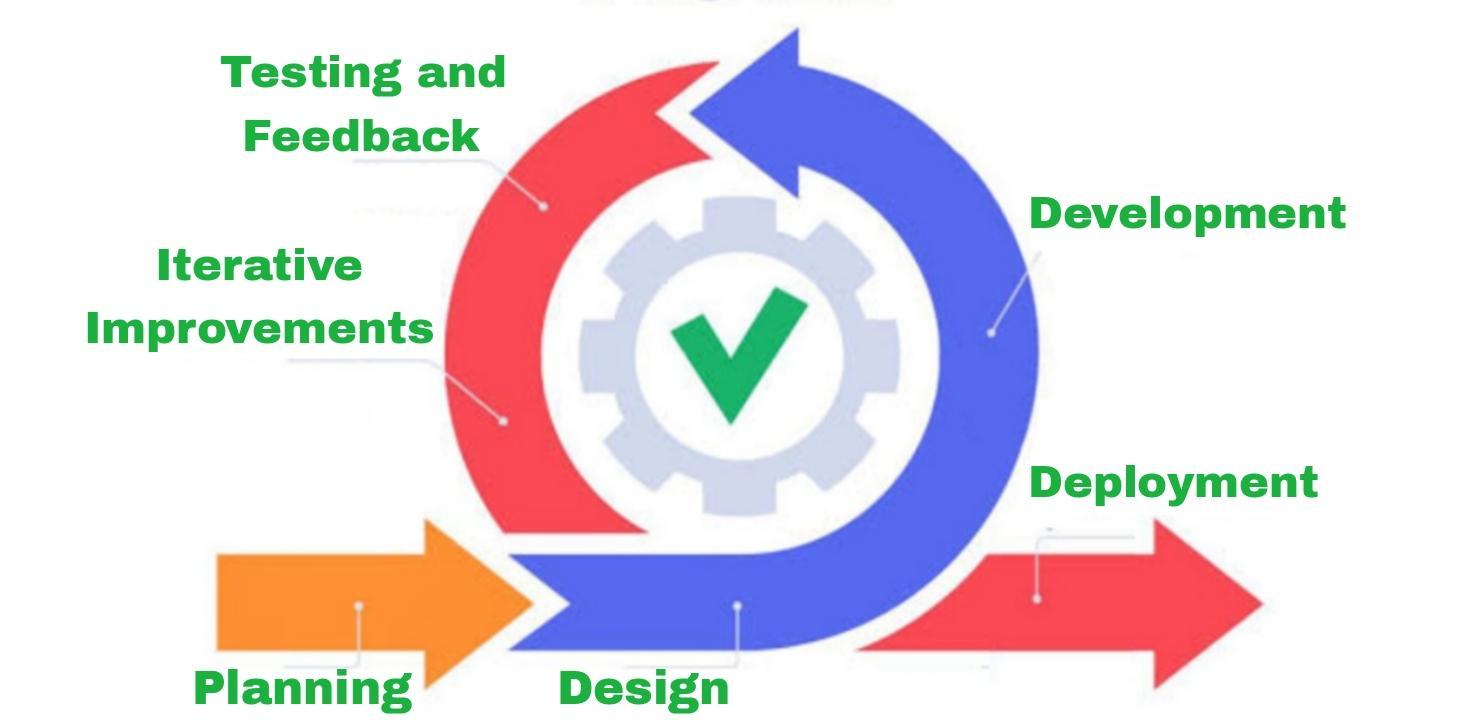
Throughout the development process, the proponents will conduct continuous testing to ensure the system's functionality, performance, and security. According to an article entitled “Analyzing the effectiveness of different testing techniques in ensuring software quality”, (2023) various testing techniques, such as unit testing, integration testing, and user acceptance testing, will be employed to identify and resolve any issues or bugs.

**Iterative Improvements**

Agile methodology promotes continuous improvement. After the initial deployment, the proponents will gather feedback from stakeholders and analyze data from the work immersion program. This feedback and data analysis will guide us in making iterative improvements to the system, enhancing its effectiveness, and addressing any emerging needs or challenges. As stated by Yadav et al, (2017), organizations can identify areas for improvement, develop and implement change interventions, and track the impact of these interventions by analyzing feedback and data.

**Deployment**

Once the system has undergone thorough testing and quality assurance, it will be deployed to a production environment. This phase includes setting up the necessary infrastructure, configuring servers, and ensuring a smooth transition from development to production. (Florist, 2023).

Figure 1 Shows the Scrum Method, the Developmental Framework of the Proposed System.

**Figure 1: The Scrum Method**

## The results on the evaluation made on the technical qualities of the application based on ISO 25010

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| --- | --- | --- |
| **Descriptors of ISO 25010** | **Over-All Mean** | **Verbal Description** |
| Functionality | 3.88 | Very Good |
| Reliability | 3.58 | Very Good |
| Usability | 4.10 | Very Good |
| Efficiency | 3.97 | Very Good |
| Maintainability | 3.95 | Very Good |
| Portability | 3.98 | Very Good |
| Security | 4.12 | Very Good |
| Compatibility | 4.10 | Very Good |
| **Grand Mean** | **3.96** | **Very Good** |

The table presents the comprehensive outcomes of an evaluation performed by IT specialists utilizing ISO 25010 standards, evaluated across eight criteria: Functionality, Reliability, Usability, Efficiency, Maintainability, Portability, Security, and Compatibility to assess the system's capabilities. Every criterion attained an average score, all of which were classified under the verbal descriptor "Very Good". The criteria of Usability, Compatibility, and Security achieved the highest average means, which ranged from 4.10 to 4.12. The overall mean scores for Reliability, Functionality, Maintainability, Efficiency, and Portability ranged from 3.58 to 3.98. The aggregated mean from each criterion yielded a grand mean of 3.96, indicating that Workify, according to the ISO 25010 evaluation results, exhibits robust performance across the diverse quality attributes specified in the standard's product quality model.

The ISO 25010 quality model enhances systems by offering a standardized framework for assessing software quality. It reduces subjective biases in evaluations, guaranteeing objective assessments based on established product criteria, hence improving software reliability and customer satisfaction (Kashamova, 2021). An approved ISO 25010 outcome signifies a software product's compliance with the quality attributes delineated by the standard, encompassing functionality, reliability, usability, efficiency, maintainability, and portability (Moumane et al., 2024).

The comprehensive evaluation of Workify using ISO 25010 indicated that the system fulfilled expectations and addressed the users' requirements. The overall mean of ISO 25010, recorded at 3.96 and classified as "Very Good," indicates that while the system meets the required level, more modifications are necessary to enhance its acceptability and ensure its endurance.

## The results on the assessment made on the quality of using the application based on Technology Acceptance Model (TAM)

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| --- | --- | --- |
| **Descriptors of TAM** | **Over-All Mean** | **Verbal Description** |
| External Factors | 3.98 | Very Good |
| Perceived Usefulness | 4.01 | Very Good |
| Perceived Ease of Use | 3.76 | Very Good |
| Attitude Towards Using | 3.97 | Very Good |
| Behavioral Intention to Use | 3.78 | Very Good |
| Actual Use | 3.80 | Very Good |
| **Over-All Grand Mean** | **3.88** | **Very Good** |

The table evaluates six critical system capabilities: External Factors, Perceived Usefulness, Perceived Ease of Use, Attitude Towards Using, Behavioral Intention to Use, and Actual Use, employing the Technology Acceptance Model (TAM) to gauge users' perceived utility. External elements obtained a mean score of 3.98 ("Very Good"), signifying that consumers recognize favorable conditions, including institutional support and resources, that facilitate technology uptake. Perceived usefulness had a score of 4.01, indicating "Very Good," which suggests that users believe Workify improves productivity and effectiveness under favorable conditions, including institutional support and resources. The perceived ease of use was graded 3.76, indicating a "Very Good" assessment, which demonstrates a favorable perception of the platform's usability, albeit marginally lower than the perceived usefulness. The attitude towards utilizing Workify received a score of 3.97, categorized as "Very Good," signifying a positive inclination towards the platform that encourages ongoing participation. The behavioral intention to utilize Workify was rated 3.78, indicating "Very Good" and showing that consumers are inclined to persist in its use, as intention is a strong predictor of usage. Ultimately, actual usage received a score of 3.80, categorized as "Very Good," indicating that favorable perceptions are reflected in practical application. An average score of 3.88, categorized as "Very Good," signifies a successful implementation of the technology, demonstrating its efficacy and user-friendliness as assessed by users.

The Technology Acceptance Model (TAM) emphasizes perceived usefulness and perceived ease of use as essential determinants in technology adoption. Elevated scores in these domains signify robust user acceptability and satisfaction, implying that users perceive the system as advantageous and user-friendly, fulfilling their requirements (Burgess & Worthington, 2021). According to the Technology Acceptance Model (TAM), when these qualities receive high ratings, users are more inclined to cultivate favorable attitudes, strengthen their intention to persist in utilizing the technology, and demonstrate consistent usage behavior. The results validate the system's efficacy in meeting user expectations and enhancing engagement (Wicaksono & Maharani, 2020).

The results from the Technology Acceptance Model (TAM) demonstrate that Workify has been favorably received by consumers, indicating significant potential for sustained utilization. Users regard the platform as exceptionally advantageous, enhancing productivity and performance, while also being user-friendly. The system's usability and utility have fostered robust intents for ongoing use, evidenced by users' persistent involvement. The average score of 3.88 indicates substantial satisfaction, aligning with TAM's standards for successful system adoption based on perceived value, usability, and favorable user feedback.

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