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PIITRAM

PRE-UNIVERSITY MATRICULATION INNOVATION COMPETITION 2024

"From Ideas To Impact : Igniting Innovation"

Certificate of Award

This is to certify that

SANDRAN BIN ABDULLAH
SHAFIQ BIN RASULAN
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has been awarded the

SILVER MEDAL

for

CATEGORY C
LESSON CRAFTER

in

THE 4TH PRE-UNIVERSITY MATRICULATION INNOVATION COMPETITION 2024 (PIITRAM 2024)
UNIVERSITI SAINS ISLAM MALAYSIA
20, 23 & 24TH OF FEBRUARY 2024

MAJLIS DEKAN / PENGARAH ASASI UNIVERSITI AWAM
PIITRAM

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PITRAM 2024

LESSON CRAFTER

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ABSTRACT

The "Lesson Crafter" presents a tailored solution to the challenges faced by academic departments of Sarawak Matriculation College in optimising their teaching strategies. In educational settings, departments struggle with the time-consuming nature of manual lesson planning and the need for personalised approaches within diverse learning environments. This innovation addresses the problem by streamlining the lesson planning process within the context of a specific academic department. The system aims to alleviate the burden on lecturers, enabling them to design and implement customised lesson plans that efficiently cater to their department's curriculum's unique requirements. The objectives of the Lesson Crafter for this academic group include increasing overall teaching efficiency, fostering collaborative lesson development, and ensuring that the educational content aligns seamlessly with the department's academic goals. The system encourages communication among department members through intuitive interfaces and collaborative features, facilitating a cohesive approach to lesson planning. The innovation's development involves close collaboration with lecturers within the academic department, ensuring that the system is finely tuned to the nuances of the department's curriculum specifications and teaching methodologies. Feedback loops and iterative design processes are employed to create a solution that is both user-friendly and highly relevant to the specific needs of the academic group. The commercial potential within this context is substantial as Lesson Crafter offers a specialised tool designed for the unique challenges academic departments face. Its adaptability to specific curriculum structures and the seamless integration into existing departmental workflows position it as an invaluable asset for institutions seeking to enhance teaching quality within specific academic disciplines. In conclusion, the Lesson Crafter emerges as a tailored innovation for academic departments, streamlining lesson planning processes and promoting collaborative teaching strategies. With its potential to enhance efficiency and coherence within a specific academic context, this system stands as a promising advancement in education technology for targeted groups within the academic landscape.

Keywords: Teaching efficiency, Collaborative lesson development, User-friendly, Specialised tool designed

Lesson Crafter

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***Abstract*— The "Lesson Crafter" presents a tailored solution to the challenges faced by academic departments of Sarawak Matriculation College in optimising their teaching strategies. In educational settings, departments struggle with the time-consuming nature of manual lesson planning and the need for personalised approaches within diverse learning environments. This innovation addresses the problem by streamlining the lesson planning process within the context of a specific academic department. The system aims to alleviate the burden on lecturers, enabling them to design and implement customised lesson plans that efficiently cater to their department's curriculum's unique requirements. The objectives of the Lesson Crafter for this academic group include increasing overall teaching efficiency, fostering collaborative lesson development, and ensuring that the educational content aligns seamlessly with the department's academic goals. The system encourages communication among department members through intuitive interfaces and collaborative features, facilitating a cohesive approach to lesson planning. The innovation's development involves close collaboration with lecturers within the academic department, ensuring that the system is finely tuned to the nuances of the department's curriculum specifications and teaching methodologies. Feedback loops and iterative design processes are employed to create a solution that is both user-friendly and highly relevant to the specific needs of the academic group. The commercial potential within this context is substantial as Lesson Crafter offers a specialised tool designed for the unique challenges academic departments face. Its adaptability to specific curriculum structures and the seamless integration into existing departmental workflows position it as an invaluable asset for institutions seeking to enhance teaching quality within specific academic disciplines. In conclusion, the Lesson Crafter emerges as a tailored innovation for academic departments, streamlining lesson planning processes and promoting collaborative teaching strategies. With its potential to enhance efficiency and coherence within a specific academic context, this system stands as a promising advancement in education technology for targeted groups within the academic landscape.**

Keywords*— *Teaching efficiency, Collaborative lesson development, User-friendly, Specialised tool designed

I. Introduction

In an era where educational delivery increasingly integrates digital tools, Microsoft Excel remains a powerful and accessible platform for teachers to plan, track, and refine their instructional activities. Though originally designed for data analysis and accounting, Excel's versatility in organizing structured information has made it a favoured tool among educators for creating customizable lesson plans.

This report provides a focused analysis of a lesson planning template found in the "Lesson Plan" sheet of an Excel workbook. It explores the sheet's structure, functionality, and pedagogical alignment, with the aim of informing educators and instructional coordinators on how best to utilize or improve such templates in their teaching workflows.

The examined sheet serves as a digital space where weekly topics, learning outcomes, teaching strategies, and assessment methods are clearly laid out. It is tailored for structured curriculum delivery while allowing flexibility for updates or contextual adjustments. As schools move toward more data-driven and transparent instructional methods, mastering the use of such spreadsheets can offer significant benefits for teaching quality, accountability, and planning efficiency.

II. Structural Analysis of the "Lesson Plan" Sheet

The "Lesson Plan" sheet is thoughtfully constructed to support systematic and curriculum-aligned lesson planning. Each row in the sheet corresponds to a specific instructional week, allowing teachers to build a clear, time-bound overview of their teaching progression. The structure promotes a logical planning flow that guides educators from scheduling to content selection, instructional strategy, and assessment design.

At the beginning of each row, the sheet includes columns for "Week" and "Date," which serve as temporal anchors. These entries help teachers track their pacing across the academic calendar and ensure that each lesson falls within an appropriate time frame. The "Topic/Subtopic" column follows, allowing educators to outline the key content or themes they intend to teach. This can include unit titles, subject matter focus areas, or detailed subtopics, offering a quick reference for lesson content.

Lecturer :	SHAFIQ RASULAN		
Course Code :	SP015		
Week :	1		
Chapter :	-		
	-		
Mode :	Lecture		
CLO :	CLO1: Solve problems related to mechanics, waves, matter, heat and thermodynamics.		
SLT:	F2F (Hours)	NF2F (Hours)	

Figure 1: Heading of the Lesson Crafter Interface

The next section includes columns labelled "Learning Standard" and "Learning Objectives." The learning standard column typically contains curriculum codes or reference numbers that directly tie the lesson to national or institutional guidelines. This helps ensure compliance with formal educational frameworks and makes the plan suitable for administrative review. The learning objectives column expands on this by describing specific outcomes that students are expected to achieve by the end of the lesson. These objectives are written in measurable terms and encourage teachers to define clear expectations for student performance.

Further along the row, the "Teaching and Learning Activities" column provides space for educators to describe the instructional methods they will use. This could include lectures, group discussions, problem-solving tasks, hands-on experiments, multimedia presentations, or other approaches suited to the topic and learning goals.

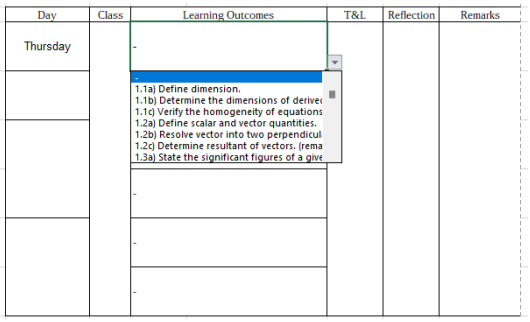

Figure 2: Lesson Crafter Interface with dropdown options allowing lecturers to choose relevant learning outcomes

The inclusion of this column helps teachers stay focused on active delivery and student engagement. Adjacent to this, the "Notes/Reflection" column allows for personal annotations and professional reflection. Teachers can record observations from the lesson, note student responses, or highlight areas for future improvement. This encourages a habit of reflective practice and continuous refinement of teaching strategies.

The final column, "Assessment Strategy," plays a critical role in aligning instruction with evaluation. Teachers are prompted to indicate how they will assess student learning, whether through quizzes, oral questioning, group projects, written assignments, or informal observations. This inclusion supports an integrated approach to planning, where assessment is not an afterthought but an integral part of the teaching process.

From a formatting perspective, the sheet is visually clean and user-friendly. Column headers are clearly labeled, and text wrapping is enabled to accommodate longer entries without disrupting the layout. The use of consistent fonts, row heights, and alignment improves readability and reduces visual fatigue. The overall layout reflects a logical progression that mirrors how teachers typically approach lesson planning, moving from schedule and content to objectives, activities, and assessment.

In summary, the "Lesson Plan" sheet is both structurally sound and pedagogically aligned. It provides a practical framework that supports detailed planning while remaining flexible enough to accommodate different teaching styles. Its layout encourages clarity, reflection, and accountability, making it a valuable tool for educators engaged in systematic lesson delivery.

III. Functional Review of Excel Features Used

The "Lesson Plan" sheet demonstrates a practical use of Microsoft Excel's formatting and layout tools to support structured and readable instructional planning. Although it does not make use of advanced functions such as macros, pivot tables, or complex formulas, it effectively utilizes basic Excel features that are well-suited to the needs of educators who require a clear and adaptable planning document.

One of the most noticeable features is the use of merged cells in the header row. This allows multi-word headings to be neatly displayed across multiple columns, improving clarity and visual alignment. Merging is used selectively, helping to avoid unnecessary disruption to the table structure

while enhancing the presentation of category labels. In addition, the sheet uses text wrapping across most content cells. This feature ensures that longer entries, particularly in the learning objectives and teaching activities columns, remain fully visible within each cell without requiring horizontal scrolling or excessive resizing.

Cell formatting throughout the sheet is consistent. Font size, typeface, row height, and column width are standardized, contributing to a professional and uniform appearance. This consistency improves readability and supports easy navigation, especially when the sheet is printed or shared among colleagues. The vertical alignment of text within each row also supports ease of review, allowing users to scan through weekly plans quickly without getting lost in misaligned entries.

The sheet does not currently incorporate conditional formatting, which could be used to highlight overdue entries, completed lessons, or certain types of assessments. It also does not use data validation tools such as drop-down menus or predefined lists. These features could potentially enhance data consistency by reducing input errors in repetitive fields like assessment types or learning standards. Additionally, the absence of formulas means that the sheet does not automatically calculate summaries or generate status indicators. While this keeps the sheet simple and accessible, it also means that users must manually update and review the contents without automation or feedback mechanisms.

Freezing panes is not applied in the current sheet, which could be a drawback in longer documents where scrolling down might cause users to lose sight of the header row. Adding this feature would improve usability for teachers working with plans that span multiple months. Despite the lack of advanced interactivity, the sheet remains functional and efficient for its intended purpose.

In summary, the "Lesson Plan" sheet leverages core Excel features to create a clean and accessible planning environment. While its functionality is basic, this simplicity likely benefits educators who may not be highly proficient in Excel. With minor enhancements, such as adding data validation, conditional formatting, or basic automation, the sheet could become an even more powerful tool for instructional planning and documentation.

IV. Pedagogical Usefulness for Teachers

The "Lesson Plan" sheet provides strong pedagogical support by offering a structured, curriculum-aligned template that encourages clarity, intentionality, and reflective practice. Its layout mirrors the thought process of effective lesson planning, prompting teachers to move systematically from selecting content to setting objectives, outlining teaching methods, and planning assessment strategies. This alignment with common instructional planning models ensures that the sheet is not only a documentation tool but also a guide for high-quality teaching.

One of the key pedagogical strengths of the sheet is its emphasis on learning objectives and standards. By requiring teachers to identify specific learning outcomes for each lesson, the sheet promotes an outcome-based education approach. This helps educators maintain a clear focus on what students should learn, rather than simply what content is covered. It also supports backward design, where lessons

are planned with the end goals in mind. The inclusion of curriculum reference codes further reinforces alignment with national or institutional standards, which is essential for formal accountability and coherence across teaching teams.

Another valuable feature is the column dedicated to teaching and learning activities. This section encourages teachers to be deliberate in their instructional strategies, whether they choose direct instruction, group work, hands-on tasks, or technology-assisted methods. The sheet allows for brief but focused descriptions, helping teachers visualize the flow of each lesson while leaving room for flexibility during actual delivery. It supports both novice and experienced teachers in articulating their pedagogical choices, which can lead to more effective classroom execution.

The "Notes/Reflection" column adds a metacognitive dimension to the planning process. By providing space for teachers to record observations or reflections after each lesson, the sheet promotes a culture of continuous improvement. Teachers can note what worked well, what challenges arose, and what adjustments may be needed in future lessons. This habit of reflection is a key characteristic of professional teaching practice and contributes to more responsive, student-centred instruction.

Finally, the presence of an "Assessment Strategy" column helps teachers align instruction with evaluation. Rather than treating assessment as a separate phase, the sheet encourages educators to plan how learning will be measured as an integrated part of the lesson. This supports formative assessment practices and encourages a balanced approach to evaluating student understanding throughout the learning process.

Overall, the sheet's structure encourages teachers to be purposeful, consistent, and reflective in their planning. It supports pedagogical best practices by reinforcing the alignment between content, outcomes, activities, and assessment. Whether used by individual educators or as part of a collaborative planning process, the "Lesson Plan" sheet functions as both a practical tool and a framework for effective teaching.

V. Recommendations for Improvement

While the "Lesson Plan" sheet is functionally sound and pedagogically aligned, several improvements could enhance its usability, efficiency, and long-term adaptability. These recommendations focus on leveraging additional Excel features, improving user experience, and increasing the depth of planning support for teachers.

A key area for enhancement is the incorporation of data validation and drop-down menus. For example, the "Assessment Strategy" column could include a predefined list of assessment types such as quizzes, presentations, exit tickets, or observations. This would standardize entries, reduce spelling inconsistencies, and improve the ease of data sorting or analysis later. Similarly, a drop-down list for frequently used learning standards or topics could streamline input and ensure curriculum fidelity across multiple teachers or departments.

The sheet would also benefit from the use of conditional formatting. This feature could be used to highlight

incomplete fields, flag past-due lesson dates, or visually differentiate lessons based on instructional modes such as theoretical, practical, or project-based. Conditional formatting could also help indicate whether a lesson has been delivered or requires follow-up, turning the sheet into a semi-dynamic tracking tool.

From a layout perspective, applying freeze panes to lock the header row would significantly improve navigation, especially in longer lesson plans. This small change ensures that column titles remain visible as the user scrolls through the document. It reduces cognitive load and prevents confusion, particularly when reviewing weeks far down the list. Additionally, adjusting column widths and enabling cell alignment features such as vertical centring could further enhance readability and presentation.

The sheet currently does not use formulas or automation, which presents an opportunity to introduce basic calculations or summary features. For instance, formulas could be used to count the number of planned lessons, calculate how many lessons address a particular learning outcome, or track coverage of different assessment methods. While advanced automation such as macros may not be necessary, the addition of simple summaries at the bottom of the sheet would support instructional oversight and data-driven decision making.

Another recommendation is to incorporate a color-coded key or legend. This would guide users in interpreting different text colours, activity types, or assessment categories if colour is used for organization. Teachers often work in fast-paced environments where quick visual cues are highly valuable. Including such a guide would make the sheet more intuitive, particularly for new users or when the document is shared among multiple collaborators.

Lastly, the sheet could link to external teaching resources. This could be achieved by adding a dedicated column for digital links to slide decks, worksheets, videos, or online quizzes. Embedding such resources into the lesson plan not only centralizes preparation materials but also supports blended learning environments where digital content plays a larger role.

In summary, while the "Lesson Plan" sheet is already a useful tool, the integration of simple interactive features, formatting enhancements, and resource linking could greatly expand its functionality. These improvements would not only save time for teachers but also increase the sheet's utility as a living document that evolves with teaching needs.

VI. Conclusion and Future Outlook

The "Lesson Plan" sheet demonstrates a practical and thoughtful approach to instructional planning using Microsoft Excel. Its structure aligns well with pedagogical best practices by guiding teachers through a logical sequence of scheduling, content selection, objective setting, activity design, reflection, and assessment. Although the template is simple in design, it supports clear and intentional teaching, making it a valuable tool for educators across a range of experience levels.

The sheet's main strengths lie in its clean layout, curriculum alignment, and emphasis on outcome-based education. It promotes clarity and professionalism in lesson documentation while also encouraging reflective teaching

practices. Its tabular format supports easy weekly planning, and its simplicity ensures accessibility, even for those who may not be highly proficient with Excel. The existing structure provides a strong foundation for teachers to document, adjust, and improve their instructional strategies throughout the academic term.

However, there remains significant potential for enhancing the sheet's interactivity and efficiency through more advanced Excel features. The inclusion of data validation, conditional formatting, freeze panes, and basic formulas could improve usability and reduce manual work. Additional improvements such as resource linking and visual indicators could further modernize the tool, making it better suited to contemporary teaching contexts that blend face-to-face and digital instruction.

Looking ahead, the future of lesson planning in education will likely continue to evolve toward more dynamic, integrated, and collaborative platforms. While dedicated software tools and learning management systems offer more automation, Microsoft Excel retains an important role due to its flexibility, accessibility, and familiarity among educators. When thoughtfully designed, Excel-based templates like this one can continue to bridge the gap between traditional documentation and digital adaptability.

In conclusion, the "Lesson Plan" sheet is a strong example of how simple digital tools can support professional teaching practices. With targeted improvements, it can evolve into an even more effective planning and tracking tool that enhances both teacher efficiency and instructional quality.

Expert Review Report: Lesson Crafter Innovation

By Shafiq R

1.0 Introduction

This report details the findings from an expert review conducted for the "Lesson Crafter" innovation. The primary objective of this review was to gather qualitative feedback from subject matter experts on the pedagogical utility, functional design, and overall effectiveness of the Excel-based lesson planning template. The insights gained will inform future development cycles and ensure the "Lesson Crafter" optimally addresses the needs of academic departments at Kolej Matrikulasi Sarawak.

2.0 Methodology

An expert review panel comprising three experienced lecturers from diverse academic disciplines (Physics, Mathematics, and English Language) and one curriculum development specialist from Matriculation Division was convened. These individuals were selected based on their extensive experience in lesson planning, curriculum implementation, and familiarity with educational technology tools.

Each expert was provided with:

- Comprehensive documentation of the "Lesson Crafter," including its abstract, structural analysis, functional review, and pedagogical usefulness.
- A functional prototype of the Excel "Lesson Plan" sheet for hands-on evaluation.
- A structured questionnaire designed to elicit feedback across key domains: Pedagogical Alignment, Usability and User Experience, Functional Adequacy, Curriculum Adaptability, and Collaborative Potential.

Feedback was collected through individual consultations and written responses to the questionnaire over a two-week period. The qualitative data was then collated and analysed to identify recurring themes, strengths, weaknesses, and actionable recommendations.

3.0 Findings and Key Observations

The expert review revealed several key observations regarding the "Lesson Crafter":

3.1 Pedagogical Alignment:

- **Strength:** Experts highly commended the template's clear alignment with outcome-based education principles, noting that the emphasis on "Learning Objectives" and "Assessment Strategy" columns strongly encourages purposeful planning. The "Notes/Reflection" column was particularly praised for fostering reflective teaching practices.
- **Observation:** The structured flow, mirroring typical lesson planning thought processes, was identified as a significant aid for both novice and experienced educators.

3.2 Usability and User Experience:

- **Strength:** The clean layout, consistent formatting (font, row heights, column widths), and clear labeling of headers were universally appreciated, contributing to high readability and ease of navigation for basic users. The text wrapping feature was noted as essential for accommodating detailed entries.
- **Observation:** Experts found the MIS number lookup feature (as described in the related dashboard documentation) to be intuitive and efficient for individual performance tracking,

suggesting its underlying logic could be adapted for other data lookups within the lesson planner if needed.

3.3 Functional Adequacy:

- **Strength:** The current use of basic Excel features (merged cells, text wrapping) was deemed effective for creating a foundational, accessible planning document.
- **Area for Improvement:** A consistent and strong recommendation across all experts was the integration of more advanced Excel functionalities. Specifically, the lack of data validation (e.g., dropdowns for "Assessment Strategy" or "Learning Standard"), conditional formatting (e.g., to highlight incomplete sections or upcoming deadlines), and basic formulas (e.g., to track lesson count or objective coverage) was noted as a missed opportunity to significantly enhance efficiency and reduce manual input errors. The absence of freeze panes was also highlighted as a minor usability issue for longer plans.

3.4 Curriculum Adaptability:

- **Strength:** Experts recognized the template's inherent flexibility, noting that its generic structure allows for adaptation to various subjects and curriculum specifications with minimal modification.
- **Observation:** The ability to customize "Topic/Subtopic" and "Learning Standard" fields was seen as crucial for cross-disciplinary application.

3.5 Collaborative Potential:

- **Strength:** The simple, shareable Excel format was acknowledged as a good foundation for collaborative planning within departments, facilitating a cohesive approach to curriculum delivery.
- **Area for Improvement:** While basic sharing is possible, experts suggested that features like integrated resource linking (e.g., direct hyperlinks to shared drives or online resources) would further streamline collaborative material preparation.

4.0 Recommendations

Based on the expert review, the following practical recommendations are proposed for the iterative development of the "Lesson Crafter":

1. **Implement Data Validation:** Introduce dropdown menus for repetitive fields such as "Assessment Strategy," "Learning Standard," and frequently used "Teaching and Learning Activities" to standardize entries and minimize errors.
2. **Integrate Conditional Formatting:** Apply conditional formatting rules to visually highlight key information, such as overdue lesson dates, completed sections, or specific instructional modes.
3. **Add Basic Automation/Formulas:** Incorporate simple Excel formulas to provide automated summaries (e.g., number of lessons planned, coverage of specific learning outcomes) to support instructional oversight.
4. **Apply Freeze Panes:** Implement freeze panes to lock the header row, improving navigation and user experience, especially in longer planning documents.

5. **Enable Resource Linking:** Add a dedicated column or mechanism for embedding direct hyperlinks to external digital teaching resources (e.g., slide decks, worksheets, videos) to centralize preparation materials.

5.0 Conclusion

The expert review confirms the significant potential of the "Lesson Crafter" as a valuable tool for streamlining lesson planning and enhancing teaching quality. The positive feedback on its pedagogical alignment and basic usability is encouraging. By systematically addressing the identified areas for improvement, particularly through the integration of more advanced yet accessible Excel features, the "Lesson Crafter" can evolve into an even more robust, efficient, and interactive solution, further empowering educators at Kolej Matrikulasi Sarawak.

Expert Review Report v2: Lesson Crafter Innovation

By Shafiq R

1.0 Introduction

This report details the findings from a comprehensive expert review conducted for the "Lesson Crafter" innovation. The primary objective of this review was to gather qualitative feedback from subject matter experts regarding the pedagogical utility, functional design, and overall effectiveness of the Excel-based lesson planning template. The review specifically leveraged a SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis framework to provide a structured evaluation, with insights intended to inform future development cycles and ensure the "Lesson Crafter" optimally addresses the evolving needs of academic departments at Kolej Matrikulasi Sarawak.

2.0 Methodology

An expert review panel comprising three experienced lecturers from a local university. These individuals were selected based on their extensive experience in lesson planning, curriculum implementation, and familiarity with educational technology tools. The review process was structured to facilitate a thorough SWOT analysis of the "Lesson Crafter."

Each expert was provided with:

- Comprehensive documentation of the "Lesson Crafter," including its abstract, structural analysis, functional review, and pedagogical usefulness.
- A functional prototype of the Excel "Lesson Plan" sheet for hands-on evaluation and practical assessment.
- A structured questionnaire designed to elicit feedback across key domains: Pedagogical Alignment, Usability and User Experience, Functional Adequacy, Curriculum

Adaptability, and Collaborative Potential. The questionnaire was specifically designed to guide experts in identifying and categorising observations into Strengths, Weaknesses, Opportunities, and Threats.

Feedback was collected through individual consultations and written responses to the questionnaire over a two-week period. The qualitative data, directly categorised into SWOT elements by the experts, was then collated and analysed to identify recurring themes, critical observations, and actionable recommendations.

3.0 SWOT Analysis Findings

The comprehensive expert review yielded a detailed SWOT analysis of the "Lesson Crafter," as summarised below:

3.1 Strengths

- **Strong Pedagogical Alignment:**

  Experts universally commended the template's clear alignment with outcome-based education principles. The inclusion of dedicated sections for "Learning Objectives" and "Assessment Strategy" was highlighted as a significant strength, encouraging purposeful and integrated lesson design. The "Notes/Reflection" column was particularly valued for fostering continuous professional development through reflective teaching practices.

- **High Usability and Accessibility:**

  The clean layout, consistent formatting (e.g., font, row heights, column widths), and clear labelling of headers were universally appreciated, contributing to high readability and ease of navigation for basic users. The text wrapping feature was noted as essential for accommodating detailed entries without compromising visual clarity. This simplicity and

low barrier to entry were identified as key strengths, promoting broad accessibility among educators with varying levels of Excel proficiency.

- **Foundational Functional Adequacy:**

  The current utilisation of basic Excel features, such as merged cells and text wrapping, was deemed effective for creating a functional and accessible planning document.

- **Inherent Adaptability:**

  The generic and flexible structure of the template was recognised as a significant strength, allowing for straightforward adaptation to various subjects and curriculum specifications with minimal modification. This inherent adaptability supports its potential application beyond the initial Physics department.

- **Basic Collaborative Potential:**

  The simple, shareable Excel file format was acknowledged as a practical foundation for basic collaborative planning within departments, facilitating a cohesive approach to curriculum delivery.

3.2 Weaknesses

- **Limited Advanced Functionality:**

  A consistent and strong recommendation across all experts highlighted the absence of more advanced Excel functionalities. Specifically, the lack of data validation (e.g., dropdown menus for "Assessment Strategy" or "Learning Standard"), conditional formatting (e.g., to highlight incomplete sections or upcoming deadlines), and basic formulae (e.g., to track lesson count or objective coverage) was identified as a significant weakness. These

omissions limit the tool's efficiency and potential for automated data analysis, increasing manual effort and potential for input errors.

- **Suboptimal User Experience for Long Documents:**

  The absence of freeze panes was noted as a minor but impactful usability weakness, particularly for longer lesson plans, as users lose sight of header information when scrolling.

- **Lack of Robust Version Control:**

  While basic sharing is possible, the inherent limitations of standard Excel regarding robust version control were identified as a potential weakness for large-scale, complex collaborative efforts, where multiple users might simultaneously edit the same document.

3.3 Opportunities

- **Standardisation Across Departments:**

  The "Lesson Crafter" presents a clear opportunity to serve as a standardised, yet flexible, planning tool across all academic departments at Kolej Matrikulasi Sarawak. This could potentially reduce reliance on disparate and inconsistent individual planning methods, fostering greater institutional coherence.

- **Enhanced Data-Driven Insights:**

  By integrating basic formulae, there is an opportunity to generate simple automated summaries (e.g., total teaching hours, coverage of specific learning outcomes), which could support more data-driven decision-making for both individual lecturers and departmental heads.

- **Integration with External Resources:**

The ability to embed direct hyperlinks to external digital teaching resources (e.g., slide decks, worksheets, videos) presents an opportunity to centralise preparation materials and support blended learning environments.

3.4 Threats

- **Competition from Advanced Platforms:**

  A significant threat identified was the increasing availability and adoption of more sophisticated, dedicated lesson planning software or integrated Learning Management System (LMS) features. Without continuous enhancement and feature expansion, the "Lesson Crafter" risks being perceived as less robust or comprehensive compared to these commercially available platforms, potentially limiting its long-term adoption if not actively developed and updated.

- **User Proficiency Barrier (Advanced Features):**

  While its simplicity is a strength, the introduction of more advanced Excel features, if not carefully implemented with clear instructions, could pose a minor threat by increasing the learning curve for less Excel-proficient users.

4.0 Recommendations

Based on the comprehensive SWOT analysis, the following practical recommendations are proposed for the iterative development and strategic positioning of the "Lesson Crafter":

1. **Prioritise Functional Enhancements:**
    - **Implement Data Validation:** Introduce dropdown menus for repetitive fields (e.g., "Assessment Strategy," "Learning Standard," "Teaching and Learning Activities") to standardise entries and minimise errors.
    - **Integrate Conditional Formatting:** Apply conditional formatting rules to visually highlight key information, such as overdue lesson dates, completed sections, or specific instructional modes.
    - **Add Basic Automation/Formulae:** Incorporate simple Excel formulae to provide automated summaries (e.g., number of lessons planned, coverage of specific learning outcomes) to support instructional oversight.
    - **Apply Freeze Panes:** Implement freeze panes to lock the header row, improving navigation and user experience, especially in longer planning documents.
    - **Enable Resource Linking:** Add a dedicated column or mechanism for embedding direct hyperlinks to external digital teaching resources (e.g., slide decks, worksheets, videos) to centralise preparation materials.

2. **Explore Scalability and Integration Strategies:** Given the identified opportunities for standardisation and the threat from alternative platforms, begin exploring strategies for future scalability. This includes assessing the feasibility of integration with existing LMS platforms or the development of a more robust, cloud-based version, to ensure its long-term relevance and competitiveness within the educational technology landscape.

3. **Develop User Training and Support:** To mitigate the potential threat of increased complexity with new features, develop clear user guides and provide targeted training sessions for educators on how to effectively utilise the enhanced functionalities of the "Lesson Crafter."

5.0 Conclusion

The comprehensive expert review, systematically structured around a SWOT analysis, confirms the significant potential of the "Lesson Crafter" as a valuable tool for streamlining lesson planning and enhancing teaching quality within Kolej Matrikulasi Sarawak. Its current strengths in pedagogical alignment and basic usability provide a robust foundation. By strategically addressing identified weaknesses through targeted functional enhancements, leveraging opportunities for wider institutional adoption, and proactively mitigating threats from competing platforms, the "Lesson Crafter" can evolve into an even more robust, efficient, and interactive solution, thereby further empowering educators and contributing to improved educational outcomes.