UNIVERSITI SAINS ISLAM MALAYSIA
ISLAMIC SCIENCE UNIVERSITY OF MALAYSIA

KEMENTERIAN PENDIDIKAN TINGGI

MAJLIS DEKAN/PENGARAH ASASI UNIVERSITI AWAM

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
TEVYA A/P LETCHUMANAN

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.**

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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.

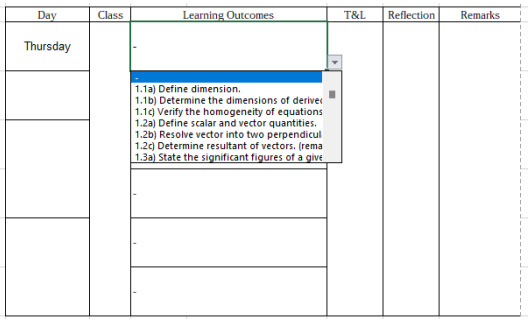

Figure 2: Lesson Crafter Interface with dropdown options allowing lecturers to choose relevant learning outcomes

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.