



DAYLIGHT ILLUMINANCE IN A DOUBLE-LOADED CORRIDOR CLASSROOM: FIELD MEASUREMENT AND REVIT SIMULATION

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Abstract

This study evaluates daylight illuminance performance in a selected classroom located within a double-loaded corridor higher education building in Seri Iskandar, Perak, Malaysia. The case-study classroom measures 12 m × 6 m × 3.2 m and has a northwest-facing façade with one-sided tinted glazing. Field illuminance measurements were conducted using a 20-point grid at working-plane height, with representative readings reported at 8.00 a.m., 1.00 p.m. and 5.00 p.m. The results were assessed against the recommended 300–500 lux illuminance range for general teaching spaces. A Revit-based daylight simulation model was then developed to examine selected design variables, including glazing type, window height, floor reflectance and overhang provision. The field measurement results showed that the existing classroom performed below the recommended range at most measurement points, with 100% of readings below threshold at 8.00 a.m. and 1.00 p.m., and 98% below threshold at 5.00 p.m. Simulation results indicated that clear glazing, increased window height and higher floor reflectance improved daylight availability. However, several clear-glass scenarios also produced high above-threshold percentages, indicating possible over-illumination and visual comfort risks. Among the tested scenarios, the combination of larger window openings, clear glazing, higher floor reflectance and overhang provision offered a more balanced daylight improvement strategy. The findings are limited to the selected classroom and simulation assumptions but provide evidence-based guidance for improving daylight-responsive design in similar double-loaded corridor classrooms.

Keywords: Daylighting, Classroom illuminance, Revit daylight simulation, Double-loaded corridor, Glazing

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INTRODUCTION

Daylighting is an important environmental design consideration in educational buildings because it affects visual conditions, artificial lighting dependence and the quality of indoor learning spaces. In classrooms, adequate illuminance is required to support reading, writing and other visual tasks. For general teaching spaces, the recommended illuminance level is commonly placed within the range of 300–500 lux. Therefore, daylight design should not only increase the amount of natural light entering a classroom, but also provide an appropriate and relatively balanced distribution of illuminance across the working plane (Brink et al., 2021; Liu et al., 2022).

In tropical higher education buildings, achieving suitable daylight conditions can be challenging due to strong solar exposure, heat gain, glare risk and façade constraints. This challenge is particularly relevant in buildings with double-loaded corridor layouts, where classrooms are arranged on both sides of an internal corridor. Although this configuration is efficient for space planning, it can restrict daylight access and cause uneven illuminance distribution, especially where classrooms receive daylight from only one side of the façade (Alkhatatbeh et al., 2023; Kong et al., 2022).

Previous studies have examined daylighting performance in educational buildings and have highlighted the influence of window design, orientation, glazing type, shading devices and interior reflectance. However, fewer studies have focused specifically on field illuminance measurements and simulation-based daylight improvement scenarios for tropical higher education classrooms located in double-loaded corridor buildings. This creates a need for a bounded case-study investigation that links actual illuminance performance with tested design variables and a clear compliance benchmark (Syaheeza et al., 2018; Susan & Prihatmanti, 2017; Wan Abdullah et al., 2022).

This study therefore investigates the daylight illuminance performance of one selected classroom in a higher education building with a double-loaded corridor configuration. The study is guided by three research questions: (1) what are the existing daylight illuminance conditions in the selected classroom compared with the 300–500 lux recommended range; (2) to what extent does the Revit simulation reflect the daylight performance pattern of the existing classroom; and (3) how do selected design variables, namely glazing type, window height, floor reflectance and overhang provision, influence classroom illuminance distribution and the selection of a balanced daylight improvement scenario?

The contribution of this study is limited to evidence-based design guidance for classrooms with similar geometry, orientation and corridor typology. The study does not measure student learning performance, thermal comfort or glare perception directly. Instead, it focuses on illuminance

performance and daylight distribution as measurable indicators for evaluating potential daylight-responsive classroom improvements.

LITERATURE REVIEW

Daylight Metrics and Visual Comfort in Classrooms

Classroom lighting is an important environmental factor in supporting visual tasks such as reading, writing and viewing teaching materials. In daylighting studies, illuminance is commonly used to evaluate the amount of light received on a working plane, usually expressed in lux. However, classroom daylight performance should not be assessed only by the amount of light entering the space, but also by how evenly the light is distributed across the classroom. Poor daylight distribution may create under-lit areas that require artificial lighting, while excessive daylight may increase brightness contrast and visual discomfort. Therefore, effective classroom lighting design should consider illuminance level, distribution, visual comfort and the integration of artificial lighting where daylight is insufficient (Brink et al., 2021; Liu et al., 2022; Odiyur et al., 2021).

Daylight Constraints in Double-Loaded Corridor Classrooms

Double-loaded corridors, featuring a central hallway flanked by classrooms, are common in educational buildings for efficient space use but often limit natural light penetration. As noted by Alkhatatbeh et al., (2023), this layout causes uneven daylight distribution, classrooms near the façade receive more light, while inner or lower rooms depend on artificial sources. Such imbalance affects visual comfort and learning efficiency (Kong et al., 2022). To address this, strategies like light shelves, reflective surfaces, and optimized window placement can enhance daylight access and uniformity.

Field Measurement and Daylight Simulation

Field illuminance measurement is commonly used to evaluate actual daylight conditions in classrooms because it records the amount of light received at the working plane under real building and sky conditions. In classroom daylighting studies, measurement points are usually arranged across the occupied area to capture variation in illuminance distribution, including areas near the window and deeper parts of the room. Such measurements are useful for identifying whether a classroom meets the recommended illuminance range and for detecting uneven daylight distribution that may affect visual comfort.

Daylight simulation complements field measurement by allowing different design scenarios to be tested under controlled modelling conditions. Building Information Modelling (BIM) software such as Autodesk Revit can be used to model classroom geometry, window configuration, material properties and daylight distribution. Through simulation, the effects of design variables such

as glazing type, window size, surface reflectance and shading elements can be compared before physical modification is carried out. Combining field measurement with simulation therefore provides a more comprehensive approach for assessing existing daylight performance and evaluating potential improvement strategies in educational spaces (Bakmohammadi & Noorzai, 2020; de Lima Montenegro et al., 2021; Shoshev, 2022).

Standards for Daylighting in Classroom

In classroom or general teaching space environments, daylighting strategies must achieve a balance between reducing energy consumption and ensuring adequate visual comfort for students. Malaysian standards such as MS1525:2019 and the JKR guidelines, along with the international IESNA recommendations, prescribe comparable illuminance levels for teaching spaces in the range of 300-500 lux. These benchmarks highlight the dual objective of daylighting design: minimising reliance on artificial lighting while maintaining optimal visual conditions that support effective learning. Table 1 presents a summary of the recommended values.

Table 1: Illuminance level recommendations

Learning Space	Standards and Guidelines		
	MS1525	JKR	IESNA
General Teaching Space	300 - 500	300 - 500	300 - 500

Source: Syaheez et al., (2018)

RESEARCH METHODOLOGY

Research Design

This study adopts a bounded case-study approach to examine daylight illuminance conditions in a selected classroom within a higher education building designed with a double-loaded corridor. The research combines field measurement and Revit-based daylight simulation. Field measurement was used to determine the existing illuminance condition, while simulation was used to test selected improvement scenarios under controlled design assumptions. The development of the simulation scenarios was guided by daylighting design factors identified in previous work, including building form, orientation, window design, reflectance, special elements and obstructions.

For this paper, only variables that could be directly tested in the selected classroom model were modified: glazing condition, window height, floor reflectance and overhang provision. Room geometry and orientation were kept constant to maintain comparability between scenarios. Thus, the enhancements of daylighting in the classroom are based on the daylighting design factors listed in Table 2 by Wan Abdullah et al., (2022). Accordingly, the study is limited to

daylight illuminance performance and does not directly assess occupant perception, student learning performance, glare perception or thermal comfort.

Table 2: Suggested Checklist Items for Daylighting Design Factors

Checklist	Items
Building form	Site size and shape; Building size and shape; Depth of room; Height of room
Building Orientation	Building facing
Window design	Position; Size; Shape
Reflectance	Color and material of surfaces; Arrangement of furniture
Special elements	Overhang; Light shelves; Louvres; Blind; Tinted glazing
Obstruction	Trees; Facade

Source: Wan Abdullah et al., (2022)

Each daylighting design factor listed in Table 2 directly influences the amount and quality of daylight entering the classroom. The building form and orientation determine solar exposure and penetration, while window design affects light direction, intensity, and distribution. Interior surface reflectance enhances light diffusion, and elements such as overhangs and light shelves help control glare and improve daylight uniformity. Conversely, obstructions like nearby buildings or trees reduce indoor illuminance. Understanding these relationships is crucial for evaluating overall daylight performance in classrooms.

Study Area

The selected classroom is in a higher education building at UiTM Seri Iskandar, Perak, Malaysia. The building has a double-loaded corridor configuration, with classrooms arranged on both sides of a central corridor. The selected classroom is located at the first-floor level on the northwest side of a four-storey building. The classroom was selected because it represents a common classroom layout used in Malaysian higher education buildings and because it was accessible for field measurement and modelling. The classroom measures 12 m in length, 6 m in width and 3.2 m in height, giving a gross floor area of approximately 72 m².

The existing classroom has one-sided tinted glazing, no external shading, white-yellowish painted walls, light grey ceramic floor tiles, a white painted concrete slab ceiling and approximately 25 desks and chairs. Therefore, the findings should be interpreted as indicative for classrooms with similar geometry, orientation and corridor typology rather than as a general representation of all higher education classrooms. Table 3 summarises the case study building and classroom conditions.

Table 3: Summary of Case Study Building

Item	Description
Location	UiTM Seri Iskandar, Perak, Malaysia
No. of storey	Four-storey higher education building with double-loaded corridor
Measurement location	First floor level
Façade/Orientation	One-sided tinted-glazed façade facing northwest
Shading	No shading
Classroom size	12 m (length) x 6 m (width) x 3.2 m (height); GFA approximately 72 m ²
Interior condition	White-yellowish painted wall, light grey ceramic tile, white painted concrete slab ceiling, whiteboard and approximately 25 desks and chairs (Figure 2 – indoor view)

Source: Wan Abdullah et al., (2022)

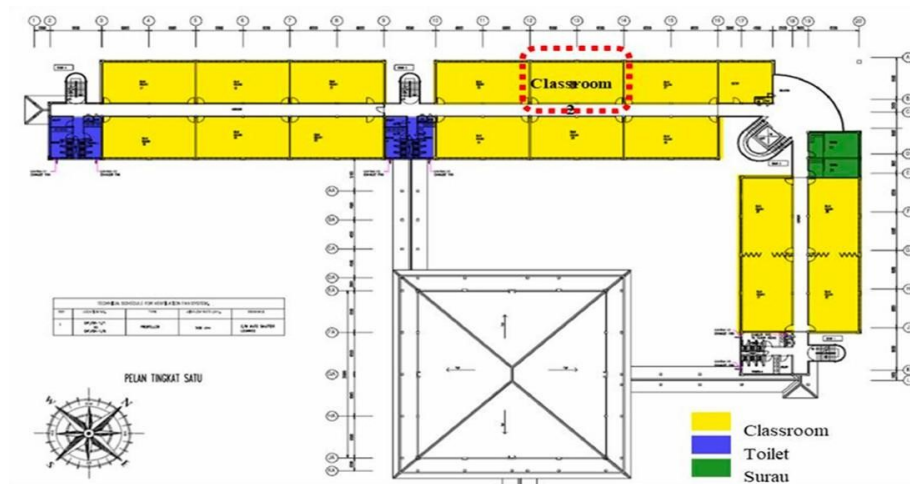


Figure 1: Location of the case study classroom at UiTM Seri Iskandar

Source: Wan Abdullah et al., (2022)



Figure 2: Classroom outdoor and indoor view

Source: Wan Abdullah et al., (2022)

Figure 1 shows the double-loaded corridor arrangement, with the selected classroom located on the northwest side of the building. In this configuration, the internal corridor separates classrooms from direct daylight access on one side, which may limit daylight penetration and contribute to uneven illuminance distribution. As shown in Figure 2, the classroom façade faces northwest and has limited external obstruction, with small trees located approximately 3 m from the building. Therefore, external obstruction was considered minimal in this study. The façade wall is finished in white and light blue, while the classroom uses one-sided, black-tinted glazing. These existing conditions were included in the field measurement and simulation model.

Fieldwork illuminance measurement

Figure 3 shows the fieldwork measurement grid and the placement of indoor and outdoor illuminance measurement equipment. Indoor illuminance was measured at 20 grid points distributed across the classroom working plane. The measurement points were arranged approximately 1.0 m apart to capture the daylight gradient from the window zone towards the rear of the classroom. Readings were taken at a working-plane height of 0.75 m above finished floor level, corresponding to typical desk height. The classroom was unoccupied during measurement, and all electric lighting and electrical appliances were switched off to isolate the contribution of daylight.

The analysis in this paper reports three representative time points, namely 8.00 a.m., 1.00 p.m. and 5.00 p.m. These time points represent morning, midday and late-afternoon daylight conditions during typical classroom operating hours. For each time point, every grid reading was classified as below threshold, within threshold or above threshold based on the recommended illuminance range of 300–500 lux. Readings below 300 lux were classified as below threshold, readings between 300 and 500 lux were classified as within threshold, and readings above 500 lux were classified as above threshold. The percentage of points in each classification was then calculated based on the 20 measurement points.

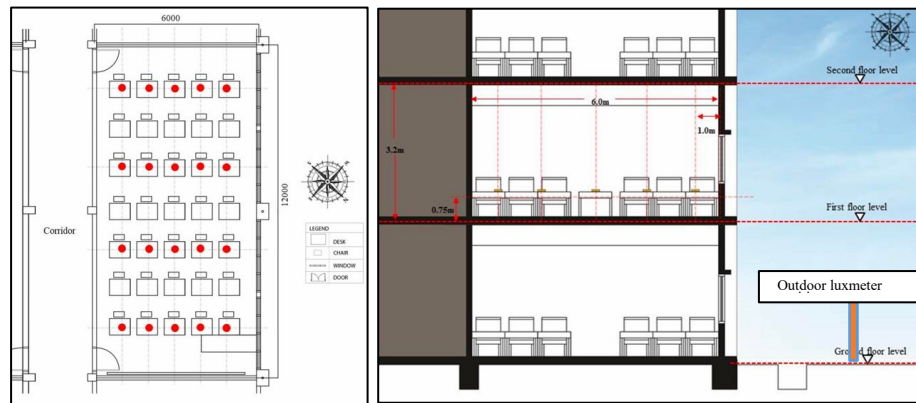


Figure 3: Fieldwork illuminance measurement grid and equipment placement
Source: Wan Abdullah et al., (2022)

Revit Daylight Simulation

BIM software such as Autodesk Revit was utilized to develop parametric models of the selected classroom. The accuracy of the Revit model was supported by incorporating exact measurements and visual data gathered during on-site investigation. The model included the classroom walls, windows, doors and interior elements. Precise measurements and digital photographs served as references, with particular focus given to ceiling height, room orientation and obstructions that might affect natural light.

The Revit daylight simulation model was developed based on the measured classroom dimensions, orientation, window configuration and interior surface characteristics. The model represented the selected classroom as a 12 m × 6 m × 3.2 m space with a northwest-facing façade. Simulation scenarios were created by varying only the design parameters tested in this study: glazing type, window height, number/location of window openings, floor reflectance and overhang provision. Other parameters, including room geometry and classroom orientation, were kept constant to allow direct comparison between scenarios. The existing classroom simulation was first compared with field measurements to check whether the model represented the general daylight performance pattern before testing the proposed design scenarios.

Some technical details from the original measurement and simulation records were not fully available for extended reporting in this manuscript, including sensor calibration records, exact optical transmittance values of glazing materials and complete point-by-point time-series datasets. Therefore, the simulation comparison focuses on the general daylight performance pattern and percentage classification relative to the 300–500 lux benchmark. This limitation was considered when interpreting the simulated scenarios, particularly in relation to over-illumination and visual comfort risk.

Table 4: Simulated Daylight Improvement Scenarios and Controlled Design Variables

Classrooms/Samples	Section layout	Data
Actual design - Window on one side of the wall - Tinted glass - White wall - Dark grey ceramic floor tile	Classroom height: 3.2m 	Window size: 0.6m (length) 1.2m (height) (1 panel) Total panel: 16
Sample 1 (a) Tinted glass – both side of the wall (b) Clear glass – both side of the wall		Window size: 0.6m (length) 1.2m (height) (1 panel) Total panel: 32 Floor: Dark grey ceramic floor tile
Sample 2 (a) Tinted glass – one side of the wall (window size increased) (b) Clear glass – one side of the wall (window size increased)		Window size: 0.6m (length) 2.8m (height) (1 panel) Total panel: 16 Floor: Dark grey ceramic floor tile
Sample 3 (a) Tinted glass – both side of the wall (window size increased) (b) Clear glass – both side of the wall (window size increased)		Window size: 0.6m (length) 2.8m (height) (1 panel) Total panel: 32 Floor: Dark grey ceramic floor tile
Sample 4 (a) Tinted glass – both side of the wall (floor reflectance increased) (b) Clear glass – both side of the wall (floor)		Window size: 0.6m (length) 2.8m (height) (1 panel) Total panel: 32 Floor:

Classrooms/Samples	Section layout	Data
reflectance increased)		White ceramic floor tile
Sample 5 (a) Tinted glass – both side of the wall (overhang included) Clear glass – both side of the wall (overhang included)		Window size: 0.6m (length) 2.8m (height) (1 panel) Total panel: 32 Overhang: 1m from the wall Floor: White ceramic floor tile

Source: Wan Abdullah et al., (2022) & Author's analysis

Table 4 summarises the simulated daylight improvement scenarios and the controlled design variables used in the Revit model. The actual design represents the existing classroom condition with one-sided tinted glazing, white walls and dark grey ceramic floor tiles. Sample 1 tests the effect of adding window openings on both sides of the wall using tinted and clear glazing. Sample 2 examines increased window height on one side of the wall, while Sample 3 tests increased window height on both sides. Sample 4 introduces higher floor reflectance through white ceramic floor tiles, and Sample 5 adds a 1 m overhang while maintaining the larger window height and higher floor reflectance. These scenarios were developed to compare how glazing condition, window height, floor reflectance and overhang provision influence daylight penetration, illuminance distribution and possible over-illumination.

ANALYSIS AND DISCUSSION

Measured Illuminance Performance of the Existing Classroom

Table 5 summarises the field measurement results based on the 300–500 lux reference range. Readings below 300 lux were classified as below threshold, readings between 300 and 500 lux as within threshold, and readings above 500 lux as above threshold. The existing classroom performed below the recommended range at most measurement points. At 8.00 a.m. and 1.00 p.m., all 20 measurement points were below 300 lux. At 5.00 p.m., 98% of points remained below 300 lux and only 2% were within the recommended range. These results indicate that the existing one-sided tinted glazing does not provide sufficient daylight at the working plane during the selected time points.

The dominance of below-threshold readings suggests weak daylight penetration and uneven daylight distribution across the classroom depth. In a double-loaded corridor classroom, the rear zone is expected to receive less daylight because the corridor side has limited direct contact with the exterior. This supports the need to test modifications that can improve daylight penetration and distribution.

Table 5: Field illuminance classification of the existing classroom based on 20 grid points

Time	Below threshold (<300 lux)	Within threshold (300-500 lux)	Above threshold (>500 lux)
8.00 a.m.	100%	0%	0%
1.00 p.m.	100%	0%	0%
5.00 p.m.	98%	2%	0%
n	20 grid points	20 grid points	20 grid points

Source: Adapted from Wan Abdullah et al., (2022) and author's analysis

The present analysis reports illuminance performance using percentage classification of measurement points below, within and above the 300–500 lux range. Complete point-by-point lux values were not available for additional statistical reporting in this manuscript. Therefore, mean, minimum, maximum, standard deviation, uniformity ratio and daylight penetration depth could not be calculated. This limitation was considered in interpreting the results, and the discussion therefore focuses on threshold classification, daylight distribution pattern and comparison between the field measurement and simulation outputs.

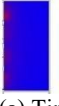
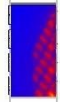
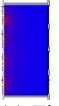
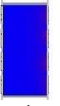
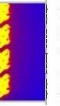
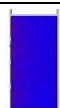
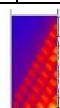
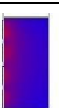
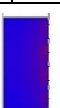
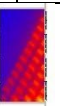
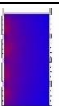
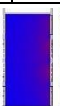
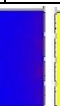
Simulation Results and Scenario Comparison

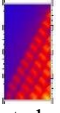
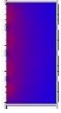
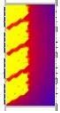
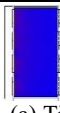
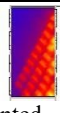
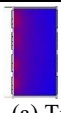
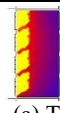
The simulation results shown in Table 6 indicate that the existing tinted-glass condition generally represented the weak daylight performance observed in the field measurement. For the actual simulated design with tinted glazing, 100% of points were below threshold at 8.00 a.m. and 1.00 p.m., while 81% remained below threshold at 5.00 p.m. The 5.00 p.m. simulated result also showed 17% above threshold, suggesting that late-afternoon daylight may create localised high illuminance near the façade even when the overall classroom remains under-lit.

Clear glazing increased daylight availability in almost all scenarios. For example, the clear-glass version of the actual design achieved 38% within threshold and 31% above threshold at 1.00 p.m. However, the results also demonstrate that higher illuminance is not automatically beneficial. Several clear-glass scenarios produced very high above-threshold percentages, particularly at 1.00 p.m. and 5.00 p.m. Since readings above 500 lux may indicate excessive brightness, potential glare and visual comfort risk, clear glazing and larger window openings should be recommended together with appropriate daylight control strategies.

Among the tested design options, Samples 2, 3, 4 and 5 improved daylight availability compared with the existing tinted condition. Sample 3(b) achieved 45% within threshold at 8.00 a.m., while Sample 5(b) achieved 41% within threshold at 8.00 a.m. with the addition of an overhang and higher floor reflectance. Nevertheless, the high percentage of above-threshold values at midday and late afternoon suggests that the preferred daylight strategy should balance useful daylight with glare control, rather than maximise illuminance alone.

Table 6: Simulated illuminance classification for existing and improved daylight scenarios

Scenario	8.00 a.m.			1.00 p.m.			5.00 p.m.		
	Within threshold	Above threshold	Below threshold	Within threshold	Above threshold	Below threshold	Within threshold	Above threshold	Below threshold
Actual (Simulation)									
(a)	0%	0%	100%	0%	0%	100%	2%	17%	81%
(b)	19%	8%	74%	38%	31%	32%	1%	99%	0%
									
	(a) Tinted	(b) Clear		(a) Tinted	(b) Clear		(a) Tinted	(b) Clear	
Sample 1									
(a)	0%	0%	100%	0%	0%	100%	4%	17%	79%
(b)	21%	8%	72%	35%	33%	32%	1%	99%	0%
									
	(a) Tinted	(b) Clear		(a) Tinted	(b) Clear		(a) Tinted	(b) Clear	
Sample 2									
(a)	0%	0%	100%	5%	0%	95%	38%	36%	26%
(b)	40%	58%	2%	3%	97%	0%	0%	100%	0%
									
	(a) Tinted	(b) Clear		(a) Tinted	(b) Clear		(a) Tinted	(b) Clear	
Sample 3									
(a)	0%	0%	100%	3%	0%	97%	25%	36%	39%
(b)	45%	55%	0%	3%	97%	0%	0%	100%	0%
									
	(a) Tinted	(b) Clear		(a) Tinted	(b) Clear		(a) Tinted	(b) Clear	

Scenario	8.00 a.m.			1.00 p.m.			5.00 p.m.		
	Within threshold	Above threshold	Below threshold	Within threshold	Above threshold	Below threshold	Within threshold	Above threshold	Below threshold
Sample 4									
(a)	0%	0%	100%	4%	0%	96%	35%	39%	26%
(b)	18%	82%	0%	1%	99%	0%	0%	100%	0%
	 			 			 		
	(a) Tinted (b) Clear			(a) Tinted (b) Clear			(a) Tinted (b) Clear		
Sample 5									
(a)	0%	0%	100%	3%	0%	97%	38%	28%	34%
(b)	41%	58%	0%	2%	98%	0%	0%	100%	0%
	 			 			 		
	(a) Tinted (b) Clear			(a) Tinted (b) Clear			(a) Tinted (b) Clear		

Source: Author's calculation

Table 7: Simulated illuminance heatmap comparison between the existing tinted design and Sample 5(b)

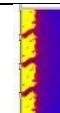
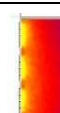
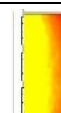
Scenario	8.00 a.m.			1.00 p.m.			5.00 p.m.		
	Within threshold	Above threshold	Below threshold	Within threshold	Above threshold	Below threshold	Within threshold	Above threshold	Below threshold
	0%	0%	100%	0%	0%	100%	2%	17%	81%
Actual (Simulation) Tinted									
Sample 5(b) clear glazing higher floor reflectance 1 m overhang									

Table 7 compares the simulated illuminance distribution between the existing tinted design and Sample 5(b), which combines clear glazing, increased window height, higher floor reflectance and a 1 m overhang. The existing tinted design shows a larger under-lit area, particularly deeper inside the classroom, indicating limited daylight penetration from the façade. In comparison, Sample 5(b) improves daylight availability across the classroom depth. However, the brighter zones near the window also indicate the possibility of over-illumination, particularly during midday and late-afternoon conditions. This supports the interpretation that daylight improvement should balance useful daylight penetration with glare and visual comfort control.

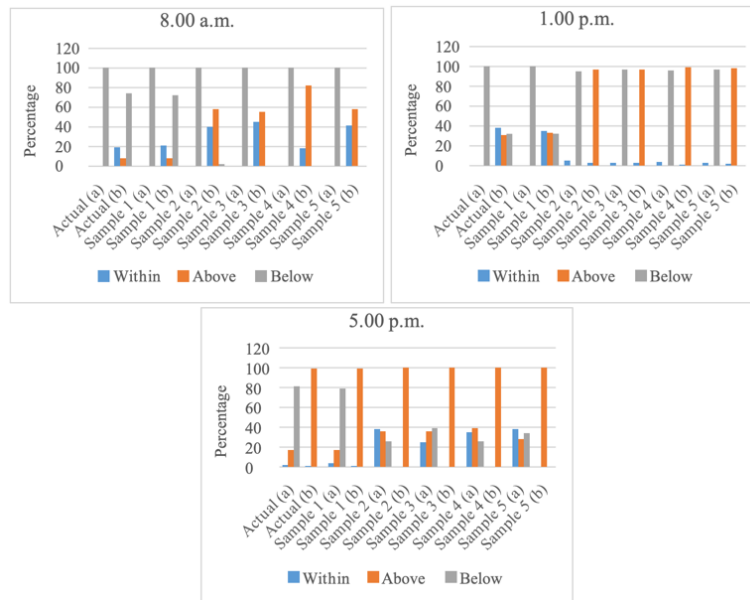


Figure 4: Illuminance level throughout the day (percentage)
Source: Author's Calculation

Figure 4 summarises the percentage distribution of simulated illuminance performance across the design scenarios at 8.00 a.m., 1.00 p.m. and 5.00 p.m. The actual tinted-glass design consistently recorded a high percentage of below-threshold points, indicating insufficient daylight availability. In contrast, the clear-glass scenarios generally increased daylight penetration, but several scenarios also produced high above-threshold percentages, particularly at 1.00 p.m. and 5.00 p.m. This pattern indicates that daylight improvement strategies should consider both daylight availability and visual comfort risk.

These findings are consistent with Syaheez et al. (2018) and Susan and Prihatmanti (2017), who reported that classroom daylight distribution is influenced by orientation, window design and interior conditions. This alignment supports the interpretation that façade design and window-related variables play an important role in classroom illuminance performance.

CONCLUSION

This study examined daylight illuminance performance in one selected classroom within a double-loaded corridor higher education building in Seri Iskandar, Perak. The existing classroom, which uses one-sided tinted glazing, did not meet the recommended 300–500 lux range at most measurement points. Field measurements showed that all points were below the recommended range at 8.00

a.m. and 1.00 p.m., while 98% remained below the range at 5.00 p.m. Revit-based simulation indicated that increasing window height, replacing tinted glazing with clear glazing, improving floor reflectance and adding an overhang can improve daylight availability. However, scenarios with clear glazing also produced a high proportion of above-threshold illuminance, suggesting potential over-illumination and visual comfort concerns. Therefore, daylight improvement should be evaluated not only by increased lux levels, but also by distribution, uniformity and avoidance of excessive illuminance.

The findings are limited to a single classroom, selected measurement times and the simulation assumptions used in the Revit model. Complete point-by-point lux datasets were not available for additional descriptive statistics such as mean, minimum, maximum, standard deviation, uniformity ratio and daylight penetration depth. External sky conditions, façade orientation, classroom geometry and material optical properties may influence the results. Future studies should include multi-day measurements, additional classrooms and building orientations, glare assessment, thermal performance analysis, occupant-based visual comfort evaluation and complete point-by-point illuminance data reporting.

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