

Testing the Mediating Role of Management Commitment to Enhancing Workplace Behaviour and Personal Compliance within the University Environment

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I. INTRODUCTION

Abstract: In line with the 2020 Occupational Safety and Health (OSH) Master Plan, a continuous proactive commitment from the university's management is called for to ensure that its campus community can enjoy working in an environment that is mutually trusting, happy, productive, and safe. This study investigates the management commitment of several local universities through the eyes of its students and staff totalling 221 respondents. Assessment of the three regression models found Management Commitment significantly mediating the Behavioral and Personal Compliance relationship. This increased Management Commitment level subsequently pushes the average agreement level that the students and staff have for Personal Compliance. That management commitment has a mediating role to play in the interaction of these variables in the university environment confirms the Social Exchange Theory, where the students and staff would give back to the university what they have taken as a token of appreciation for top management's effort at looking after their well-being. This study implicates management commitment as a critical component for achieving safety, health, and well-being of every employee under its charge. Upholding OSH reflects an acceptance of all the priorities set out in the master plan that will nurture a working environment that cares about safety and health.

Index Terms: Compliance, Management Commitment, Occupational Safety and Health, Safety Behaviour.

The pressure to adhere to Occupational Safety and Health (OSH) can be felt in many developing countries of the 21st century. The concept of OSH in terms of recognition, prevention, and control of hazards must be the first thing that must be incorporated into the work environment. OSH is therefore at the top of the organisational list of priorities if Malaysia wants to spur rapid development.

This means proactive steps must be taken to strategise a preventive culture successful at producing healthy, productive and innovative workers. Many developed countries started this safety and health process in the last 200 years and as a result, they now possess a solid regulatory and enforcement system [1].

As shown in Table 1, OSH transformation of the Malaysian people's quality of life is discussed in detail at the national level in the master plan (OSHMP 2016-2020) set out by the Department of Occupational Safety and Health [2]. Driven by the Tenth Malaysia Plan, the most recent government initiatives are the Government Transformation Programme (GTP) and the Economic Transformation Programme (ETP). These initiatives are considered crucial in navigating the nation's transformation towards a Preventive Culture by 2020. Accordingly, the government launched the 2020 OSH Master Plan (OSHMP 2020), a tool for addressing OSH related issues.

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Table. 1 The Outcome of the OSH Master Plan

Ownership	Self-regulation	Prevention Culture
SPBP 2006-2010	OSHMP 2011-2015	OSHMP 2016-2020
Increased efficiency of OSH officers and practitioners •Strategic alliances •Increased enforcement activities •Focuses on critical sectors (SMEs, Construction Sites, Transportation and Schools) • R&Ds • Increased Government leadership •OSH Management System	National OSH Framework Policy •Increased tripartite cooperation •Promotion of a Prevention Culture •Obtained and developed new skills and competencies • Regionally strategic alliances •Increased enforcement activities •Focuses on ergonomic, stress issues moreover, other •R&Ds – structured and pre-defined • Increased leadership (employers / unions) •Business focus – an increase of SMEs •OSH Management System in place	Increased public awareness of OSH •Practice of Self-regulation •National OSH policy and framework established •Promotion of preventive culture and best practices •Development of a team of experts in multiple areas and skills •Internationally strategic alliances •Increased enforcement activities •Focuses on new hazards •R&Ds – results-driven research • Increased leadership •OSH Management System as part of business

Source. Occupational Safety and Health Master Plan 2016-2020 OSH Transformation – Preventive Culture (2016)

Workplace safety is vital in the education industry as both staff and students can be exposed to hazards and accidents if safety is neglected. The role of top management is crucial in ensuring that safety is in place in any organisation particularly in the education sector. Management commitment towards safety is defined as the degree to which excellent management or organisation shows commitment to improving workplace safety that is often displayed in the safety-related encouragement and support accorded to employees.

Top management of higher education institutions is required to provide a safety program for the students and frequent safety training for the employees to ensure that safety compliance is in place. A workplace with high safety compliance will see employees following safety procedures

and using personal protective equipment while working. Employees who positively perceive management’s commitment to safety tend to take safety matters seriously, thus warranting an overall reduction in accident and injury rates [3]. With top management’s strong support and commitment level, universities ultimately become a safe and comfortable environment that will benefit both employees and students alike.

The OSH preventive measures which focus on the rate of fatality, accidents and incidents are considered as passive measures [4][5]. In the proactive mode, a preventive culture requires at least four elements: responsibility and commitment between employers and workers, respect the right of workers to OSH, the involvement of workers in OSH activities, and OSH knowledge and skills enhancement. While self-regulating and complying to minimum requirements are greatly encouraged, the focus at this point is on the recognition, prevention and control of hazards and the promotion of the workers’ health.

Safety and health at the workplace need to be managed to perfection as most people are at work at least a third of their waking lives. With today’s research focus being on compliance, this study feels that although OSH compliance plays only a small part in many of the OSH programs, it is essential that the program is supported through the management of OSH issues itself. Only then can we expect a better understanding of OSH knowledge and a subsequent increase in OSH compliance at the workplace as this is still a grey area for many working people, particularly at the university level. This study, therefore, aims to identify the personal safe compliance of the university community members so that management commitment can catalyze the change towards a safe workplace behaviour. On that note, the main purpose of this paper is to highlight the importance of management commitment in OSH by analyzing safe workplace behaviour and personal safe compliance in the work context of a university.

II. LITERATURE REVIEW

Safe Workplace Behavior and Management Commitment

Safety behaviours are defined in several ways. Mahmood et al. [6] described safety behaviour as one that supports safe practices such as when the management of an organization provides relevant safety-type of training for its employees. This also includes carrying out safety activities and applying safety compliance behaviours to support occupational safety and health requirements in order to minimise workplace accidents. Neil and Griffin [7], on the other hand, described safety behaviour as contributing to the behaviour of an individual in an impersonal way as they participate in voluntary safety activities, help others with safety-related issues, and attend safety related gatherings.



Behavioural factors like safety knowledge, skill and motivation help these individuals develop an environment that supports safety.

To Neil and Griffin [8], management safety commitment is “the extent to which management is perceived to place a high priority on safety and communicate and act on safety issues effectively” (p. 26). According to Fruhen et al. [9] evaluation, the behaviours of senior level management did demonstrate safety commitment towards the workforce. The senior-level managers’ strong safety commitment is reflected in their competent engagement in workplace problem-solving activities, as well as showing a personal understanding of employee intentions. Another relevant behaviour that supports commitment to safety is the management’s ability to communicate safety matters itself efficiently. They also seemed highly motivated when upper management communicated safety issues and positive attitudes that employees must have about safety at the workplace.

Safe and Personal Safe Compliance

For Neil and Griffin [7], safety compliance comprises core activities like adhering to safety-related procedures that need to be carried out by individuals when maintaining safety standards. A study done by Fernández-Muñiz et al. [10] confirms that safety compliance is usually reinforced by support, work pressure as well as environmental conditions and occupational hazards. The study shows that working in a safe and healthy environment alongside one’s colleagues tends to encourage not only safe behaviours among individuals but also promote compliance with safety procedures.

To achieve safety compliance, it is essential that organisations set up their own legal or regulatory safety requirements such as a safety policy in order to lay the platform for others to follow [11]. This is because personal safety compliance will consequently lead to overall organisational compliance in line with the standards established by the management. Christian et al.’s [12] research demonstrated the positive relationship between safety compliance and safety participation in influencing safety climate. In conjunction with this, leaders need to play a role in influencing participation such as when enforcing safe practices and procedures that contribute to safety compliance. This will contribute to behaviours which will serve as the main ingredient of a safe environment.

III. RESEARCH METHODOLOGY

This study conducted a survey of 20 local universities, with a total of 221 respondents participating in the survey. The questionnaire’s quantitative approach adopted 6-point *Likert* scale ranging from “1” (strongly disagree) to “6” (strongly agree) as the measurement. The rationale for choosing university employees and students as respondents of the survey stems from the fact that in a safe and healthy workplace they have a stake in the success of the university’s business operations. They are merely exercising one of their many rights guaranteed under the OSH Act 1994.

With regard to the validity of the items, factor loading and communalities value of more than .55 was considered a significant contribution towards respective variables or factors for practical purposes [13] since the sample size was considered as relatively small ($n = 221$). The reason for using .55 as the threshold. Lastly, an internal test of consistency for the items grouped by the EFA will be analysed using the Cronbach’s Alpha reliability test.

Cronbach’s Alpha reliability test was used to measure the internal consistency of the variable items. Nunnally and Bernstein [14] suggested that the cutoff .70 and above to indicate the reliability and validity of items. As for measuring the effect of Management Commitment towards the relationship between Behavioral and Personal Compliance, a combination of regression and PROCESS analysis was used. Three models of regression analysis as suggested by Baron and Kenny [15] were tested for accessing the mediating effect. PROCESS analysis, as suggested by Hayes [16], was also performed to validate the results from these three regression models. PROCESS analysis is a combination of Bootstrapping analysis for accessing the indirect effect of mediating variables towards a set of independent and dependent variables as well as the Sobel’s Test.

According to Hair et al. [17], the indirect effect concept of bootstrapping works well for simple and multiple analysis of mediators. Furthermore, this approach is said to be the best because it does not make any assumption about the distribution of the variables [18]. Moreover, it can be applied to a small sample and is also a more powerful test of indirect effect compared to the Sobel’s test [16].

IV. ANALYSIS AND RESULTS

Assessment of Validity and Reliability Analysis

Table 2 represents the perspective of the EFA analysis where all the fifteen items have been grouped into three groups of factors. This is because only the first three eigenvalues from the Kaiser’s Criteria were above 1. Also, the three eigenvalues (i.e. 7.103, 1.816, 1.679) exceeded the first three eigenvalues obtained from the parallel analysis (i.e. 1.464, 1.366, and 1.285). Also, these three extracted factors exceeded 60% of the cumulative percentage of the variance explained (i.e. 70.65%). Hence, it can be confirmed that of the fifteen items extracted only three factors were worth extracting.



Table. 2 Multiple Criterion for Factors to be Extracted

Component Number	Initial Eigenvalue (Kaiser's Criteria)	Parallel Analysis Simulation Eigenvalue	Cumulative % Variance Explained	Decision
1	7.103	1.464	24.71	Accept
2	1.816	1.366	49.31	Accept
3	1.679	1.285	70.65	Accept
4	0.795	1.211	-	Reject

Note. Only four out of fifteen components number reported; Component number = number of items in the questionnaire.

Referring to Table 3, it can be concluded that all of the fifteen items extracted were suitable for the EFA analysis since the covariance matrices for fifteen items were not identity matrices. This is because the KMO index for this analysis was above .60 (.917) and Bartlett's Test for sphericity for this set of items was largely significant ($X^2 (105) = 2380.21, p < .01$).

Table. 3 Summary results of EFA analysis

Factors and Items Included	Loading	Communalities
Behavioural		
University actively leads to safety matters.	.885	.899
OSH management is helpful in day-to-day activities at the university.	.834	.793
University takes responsibility for health and safety as well as quality and productivity.	.792	.777
University considers that it is fundamental to monitor activities to maintain and improve safety activities.	.751	.776
Safety is a requirement and condition in the university.	.686	.584
Eigenvalue = 7.103, % variance explained = 24.71%, Cronbach's alpha = .888		
Management Commitment		
Systematic inspections conducted periodically in the university to ensure the effective functioning of the whole system.	.827	.797
Periodic checks conducted on the execution of prevention plans and compliance level of regulations in the university.	.761	.772
Any accident or incident reported has been investigated, analysed, and recorded.	.677	.709
University provides safety equipment (i.e. fire hose reel, fire	.640	.616

extinguisher).

University provides overall safety environment for student / classroom / lecture / admin welfare. .611 .597

Eigenvalue = 1.816, % variance explained = 24.61%, Cronbach's alpha = .901

Personal Compliance

I protect myself against a hazard such as (electricity hazard and physical hazard) during university. .845 .767

I ensure the highest level of safety during university. .835 .752

I use the correct safety signage. .812 .715

I use all necessary equipment during in universities such as fire extinguisher and fire hose. .724 .611

I feel that the university provide a safe environment. .651 .579

Eigenvalue = 1.679, % variance explained = 21.34%, Cronbach's alpha = .823

Note. KMO-index = .917; Bartlett's Test of Sphericity, ($X^2 (105) = 2380.21, p < .01$).

By using the PC extraction method combined with the Varimax rotation method as reported in Table 3 of the following section, all fifteen items exceeded the threshold value of .55 (Range: .651 to .885) factor loading and also had a communalities value of at least .55 (Range: .579 to .899). On the other hand, all these items were also grouping at their respective variables. Hence, these three grouped items were maintained as Behavioral, Management Commitment, and Personal Compliance. As for the reliability analysis, each factor had a value of more than .80 and .90 Cronbach's Alpha, hence it can be concluded that a reliability level for each factor was at a good to excellent level. Therefore, all these twelve items can be considered valid and reliable for measuring the targeted variables in this study.

Assessment Mediating Using Regression Approach
Cronbach's Alpha test values in this study were above .70, indicating all study variables are "good to excellent" levels (Behavioural = .888, Management Commitment = .901, Personal Compliance = .823). Therefore, all items can be considered valid and reliable for measuring the targeted variables in this study. Three regression analyses were performed to examine the effect of Management Commitment as a mediator variable in the relationship between Behavioral and Personal Compliance.

The analysis reported in Table 4 indicates that for Model 1, Behavioral (B = 0.498, t = 10.689, p < .01) positively and significantly affected Personal Compliance.



The same scenario was also found in Model 2. The analysis indicates that ($B = 0.759$, $t = 18.111$, $p < .01$) had a positive effect on Management Commitment. Hence, if the average level of Behavioral was high, it would increase the average level of Personal Compliance and Management Commitment without the simultaneous effects. The analysis also reveals that Behavioral was able to explain about 58.6% and 59.8% respectively of the total variation for Personal Compliance and Management Commitment.

Model 3's regression analysis indicates that Behavioural ($B = 0.167$, $t = 2.455$, $p < .05$) and Management Commitment ($B = 0.436$, $t = 6.305$, $p < .01$) had a positive effect on Personal Compliance. It clearly demonstrates that if the average level of Behavioral and Management Commitment was high then the average level of Personal Compliance would also be high. Also, both variables were able to explain around 43.9% of the total variation for Personal Compliance.

Table. 4 Summary Results of MLR Analysis

	B(SE)	beta	t-statistic	TOL, VIF
Model 1				
DV: Personal Compliance				
IV: Behavioural	0.498 (0.047)	0.586	10.689**	N/A
<i>Summary for Model 1: R^2 adjusted = .586; Model Fits = $F(1, 219) = 114.26$, $p < .01$</i>				
Model 2				
DV: Management Commitment				
IV: Behavioural	0.759 (0.042)	0.774	18.111**	N/A
<i>Summary for Model 2: R^2 adjusted = .598; Model Fits = $F(1, 219) = 328.03$, $p < .01$</i>				
Model 3				
DV: Personal Compliance				
MV: Management Commitment	0.436 (0.069)	0.503	6.305**	0.400, 2.498
IV: Behavioural	0.167 (0.068)	0.196	2.455*	0.400, 2.498
<i>Summary for Model 3: R^2 adjusted = .439; Model Fits = $F(2, 218) = 87.11$, $p < .01$; Maximum Mahalanobis Distance = 11.257</i>				

Note. DV = Dependent Variable; MV = Mediator Variable; IV = Independent Variable; B = Unstandardized Coefficient; beta = Standardized Coefficient; TOL = Tolerance; VIF = Variance Inflation Factor; N/A = Not Applicable; ** $p < .01$; * $p < .05$.

Evaluation of the three models reported in Table 4 indicates that all models were good since the data significantly fitted the model in the ANOVA test. Besides, the Normal Probability plot (i.e. Figure 1, Figure 3, and Figure 5) also indicates that the residual of these three models was normally distributed because the majority of the observed values (small dots) lies on a straight line. As for the homoscedasticity residual assumption, the pattern of the scatter plot of the standardised residual value against the standardised predicted value (i.e.

Figure 2, Figure 4, and Figure 6) was random. Hence, all these models do not have a serious issue where this assumption is concerned. Also, by looking at the scatter plot of the standardised residual value against the standardised predicted value, no outlier existed in these three models from the aspect of the dependent variable, as no residual value was outside the boundary of ± 3.0 standard deviation.

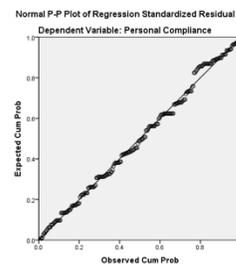


Fig. 1 The Normal Probability Plot of Standardized Regression Residuals value for Model 1

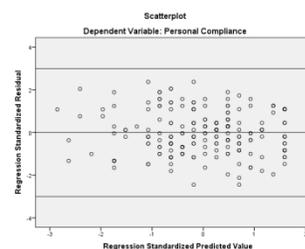


Fig. 2 Scatter plot Standardized Regression Residuals and Standardized Regression Predicted value for Model 1

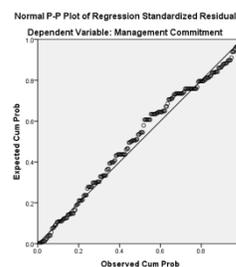


Fig. 3 The Normal Probability Plot of Standardized Regression Residuals value for Model 2

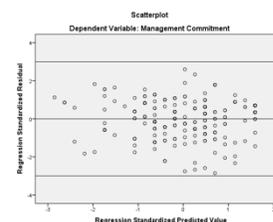


Fig. 4 Scatter plot Standardized Regression Residuals and Standardized Regression Predicted value for Model 2



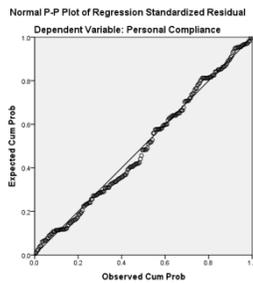


Fig. 5 The Normal Probability Plot of Standardized Regression Residuals value for Model 3

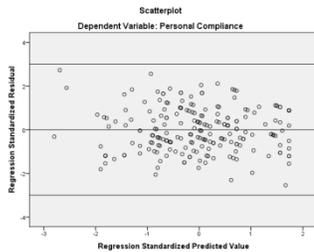


Fig. 6 Scatter plot Standardized Regression Residuals and Standardized Regression Predicted value for Model 3

However, for the regression model (Model 3), two additional assumptions were added to the independent variables; multicollinearity and outliers. Firstly, there was no multicollinearity problem in this regression model since the value of VIF and TOL was below 10.0 and above 0.2. For the second assumption, the maximum value of the Mahalanobis distance for this mode was below 13.82 (Maximum Mahalanobis Distance = 11.257). This confirms that outliers did not exist among the independent variables. Therefore, it can be concluded that all three regression models produced valid and unbiased results [19] [20].

Assessment of the three regression models in Model 2 and Model 3 found Management Commitment significantly mediating the Behavioral and Personal Compliance relationship [15] [16]. This increased Management Commitment level subsequently pushes the average agreement level that the students and staff have for Personal Compliance. The bootstrap analysis and the Sobel’s Test reported in Table 5 confirms that Management Commitment mediated the relationship between Behavioral and Personal Compliance. The result of bootstrapping test reveals that the 95% confidence interval (Indirect Effect = 0.331, BCa Bootstrap = (0.230, 0.439)) did not include zero, hence the indirect effect existed (i.e. statistically significant). Besides that, the Sobel’s test of indirect effect also confirms the result of the bootstrapping analysis, since the indirect effect based on the Sobel’s test analysis was significant (Indirect effect = 0.331, $Z = 5.947$, $p < .01$). The overall results confirm all the three hypotheses posited in this study.

Table. 5 Bootstrap and Sobel’s Test for Indirect Effect using PROCESS Analysis

Indirect Path	Indirect Effect	Sobel’s Test	95% Confidence Interval	BCa
BE → MC → PC	0.331	5.947**	(0.230, 0.439)	

Note. BE = Behavioural; MC = Management Commitment; PC = Personal Compliance; BCa = Bias Corrected Bootstrap; Number of Bootstrap Resamples was 5000; $p < .01$.

V. DISCUSSIONS

Safe Workplace Behavior and Management Commitment

The results of this study reveal that there is a strong relationship between safe workplace behaviour and management commitment. A strong safety climate in the workplace is dependent on the commitment of higher-level management’s propensity to instil safety matters in daily activities. This can be translated into the implementation of safety policy within the establishment, the participation of higher-ranking officers in the safety committee, consideration of safety aspects in job design or work pace, as well as the introduction of safety training programs. This is similar to Zohar’s [21] discussion on the main implication of management commitment to safety that relies on the success of safety programs in the organization. Some management may view safety as a technical and independent entity outside that of management operations. However, such a view may not be constructive as many studies have shown that an increase in management commitment is prerequisite to improvement in safety level within an organization. The result is also aligned with Chong [22], which confirmed that behaviours appeared to affect organizational commitment based on daily occurrences as influencing someone else to get something done is central in most organizations. It was further indicated that the soft influence tactics of behaviours (i.e. rational persuasion, consultation, collaboration, inspirational appeals and ingratiation) had positive effects on organizational commitment and seemed to be able to provide “long-lasting” effects. It can be summarized that OSH related behaviours by employees as well as students may give a positive impact on management’s commitment to further pursue their effort on the subject.

Safe Workplace Behavior and Personal Safe Compliance

The study shows that safe workplace behaviour has a significant relationship with personal compliance. This relationship strengthens with management commitment as the mediating factor.

A safe climate in the workplace can be explained when employees follow and implement safety aspects in performing their daily routines. Similar to a study of Kvalheim and Dahl [23], this study indicates that safety compliance could be effectively enhanced by focusing on safety competence and usability of the safety system. To enhance the awareness to comply, organizations should focus on safety concerns and procedures which would eventually contribute to safe behaviours. Management, therefore, needs to look into priorities that would inculcate safety as committing to such behaviours would only contribute to a positive connection towards safety compliance.

The evidence was also highlighted by Xia [24] on construction workers where safe behaviours of the workers had a significant impact on their compliance. This could be seen through the employees' behaviours of adhering to safety procedures and regulations and carrying out work in a safe manner as they were more likely to undertake safety compliance in order to avoid any mitigating risk. Obviously, these actions are proven to be effective to prevent workers themselves from any accidents or fatalities. A similar relationship may be applied to universities where the safebehaviour of employees and students may eventually lead to personal safe compliance.

Management Commitment in Mediating Safe Workplace Behaviour Compliance

The results of this study confirm that management commitment mediates the relationship between behavioural and personal compliance. This is because management commitment is reflected in its seriousness towards managing safety-related matters as well as supporting the implementation of safety-related programs in the organization [25]. Management commitment is vital in reducing occupational accidents at work. When management is committed towards safety, it is likely that it would be proactive in identifying hazards may cause accidents. When employees are aware that management is committed to their safety, they too will look at safety issues seriously, thus reducing the overall accident and injury rates. Without management commitment, it is unlikely that safety interventions would be effective in preventing accidents and injuries. In the context of the university too, management commitment is critically needed for the prevention of accidents in particular and the general safety of the students and staff.

The results also suggest that the universities' top management commitment can enhance employees' positive behaviours when everybody in the organization works towards creating a trusting climate through their routine safety practices. When employees are aware that management is committed into providing proper safety training and safety policies that are credible and trustworthy, they are more likely to be committed and willing to invest in the well-being of the university. According to Allen and Meyer [26], management commitment is the psychological relationship that binds employees to the organization and is also the reason why

employees generally find it difficult to voluntarily leave the organization.

VI. CONCLUSION AND RECOMMENDATIONS

This study investigated if the university's commitment could mediate the relationship between staff and students' safe workplace behaviour and their personal safety compliance. Several theoretical and practical implications can be derived from the findings of this study. Theoretically, this study implies that there is a possible application beyond the Social Exchange Theory that it supports. One of the most practical applications that are worthy of future research is the strong relationship that exists between safe workplace behaviour, OSH personal compliance and management commitment. Importantly, the findings reveal that the increase in management commitment further increases the ability of the students and staff to increase their personal compliance. OSH must be more than just a moral obligation. OSH presents the university an opportunity to strengthen its educational system. The OSH policy can be realized with increased leadership in OSH and when the OSH management system becomes a part of the education business. This strong support culture prioritizes preventative measures for all old and new hazards in the classroom or administrative office and also for all campus activities. Hence, periodic checks on the execution of prevention plans and best practices must focus on identified unsafe acts and unsafe conditions throughout the campus. Any accident or incident should be reported, investigated, analyzed and recorded for further action. The university should also encourage more results-driven research in OSH, covering physical, chemical, biological, radiological, ergonomic, and behavioural hazards. Overall, the university should take full responsibility for minimizing risks or unwanted circumstances, thus fostering a safe and healthy environment.

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