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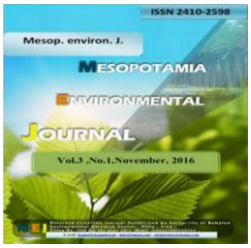

The levels of noise recorded in the campus of Babylon University

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Abstract:

The noise levels were measured in different colleges of Babylon university campus and throughout each department of colleges. The measurements were done by using the devise of noise meters (NM 104) at three points which is the entrance of the department, the hallways and inside classes and take the average value.

The result showed the level of noise in all colleges range 50.4 -77.3, 52.4 - 77 and 60.3-85 decibel at entrance, hallways and classes respectively. All the colleges and there departments exceeded the limits proposed by WHO which 35 dB in classes and 55dB outside, which can led to loss of communication between the teachers and the students in classroom, and lowering the comprehension of students

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Introduction:

Community and individuals are in continuous encounter with the problem of noise and its effects on the heath, there are so many sources that can be considered as source of noise such as airplanes, cars, as well as, the different factories, workshops and home [1].There are so many health effects related with exposure to noise ranged from hypertension , reduction of efficiency in work, exhaustion, to mental illness and heart diseases, as well as, the noise effect the sleep winch lead to loss of creativity in work[2],the WHO state that the noise can induce the loss of hearing, effect personal communication, scattering sleep, cardiovascular diseases, hinder performance as well as the effects of noise on the behavior[3].

There are a continuous concern with noise and its effect on humans, many studies investigate the effects of noise , Dalton and Boehm [4]mention the effects of noise on health and performance, while Keppler,et al. [5] mention that introduction humans to unnecessary noise can effects the corti which lead to hearing loss induced by noise. The noise can cause sleep disruption, noise lead to communication errors, as well as, induce stress, and the infants suffer the most as found by Verburg [6].

There are so many research the effects of the noise inside the universities' campus [7, 8, 9,10]. This study was a simple effort to make data base for the levels of noise in Babylon University campus

Material and Methods :

The measurement of this study was done in different days in December of 2017, within the Official working time for students, noise levels were measured in Babylon University campus and throughout the different colleges of it, including Electro-Chemical Engineering Dept., Mechanical Engineering Dept., Environmental Engineering Dept., Materials Engineering College, Architecture Engineering Dept., Electrical Engineering Dept., Chemistry Science Dept., Biology Science Dept., Physics Science Dept., Physics Education Dept., Mathematics Education Dept., Physical Education College, Information Technology College, Archaeology Dept., Law College, Arabic language Education Dept., Geography Education Dept., History Education Dept., Psychology Education Dept., Arabic Basic Education Dept., Geography Basic Education Dept., Sciences Basic Education Dept., English Basic Education Dept., History Basic Education Dept. and Arabic Sciences of Quran, respectively. The noise levels in each department of each college in the university were measured at three points which is the entrance of the department**,** the hallways and inside classes and take the

average value. Correlation coefficient between areas of classes with noise levels was used to determine the relationship according to the following equation.

Study Area

The study was carried out inside the Babylon University campus, the noise levels was measured in all the colleges that found inside the campus and as shown on the map in Plate 1.

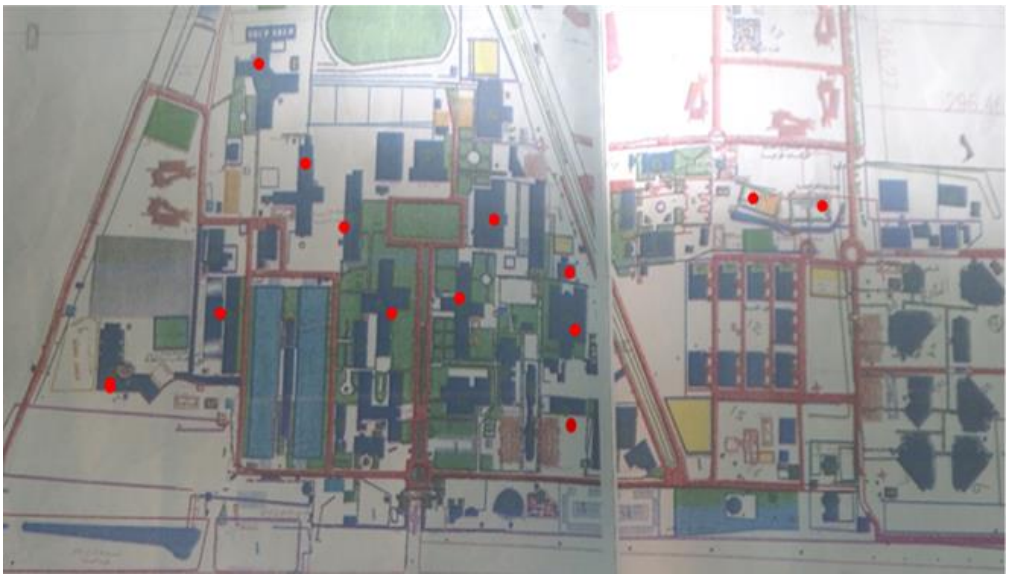

Plate 1: The measured position on Babylon University map

Measurement

The measurement of noise level was done by using noise meters (NM 104), and the measurement was carried-out inside the university campus during December of 2017, during day-time from 9 am. to 12 am. In each college within the campus, the levels of noise were identified for each department of these colleges, three points were decided for recording noise levels, which are the entrance, the hallways and classroom.

Results and Discussions

The study was conducted in order to determine the levels of the noise in the campus of Babylon University, the noise levels were measured for 4 colleges and 21 departments, the measurements were done for three point for all stations, which are entrance, hallway, and classrooms. Table 1 shows the levels of noise at the entrance of all site, the minimum noise level was recorded 50.5 decibel at the entrance of Physics Science Dept. and the maximum noise level recoded was 77.5 at the entrance of Information Technology College, the limits for noise levels outside must not

surpassed 55 dB according to WHO [3], and according to that limits all site exceeded the limits except Physics Science Dept.Statistical analysis indicated that slight positive correlation (0.06) between area of classes with noise levels.

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Table (1): Level of noise average in departments and colleges studied at entrances of buildings

The measured position	The noise level (dB)	The measured position	The noise level (dB)
Electro-Chemical Engineering Dept.	67.5	Archaeology Dept.	71.4
Mechanical Engineering Dept.	72.5	Law College	68.0
Environmental Engineering Dept.	60.5	Arabic language Education Dept.	66.5
Materials Engineering College	67.5	Geography Education Dept.	66.5
Architecture Engineering Dept.	55.0	History Education Dept.	57.5
Electrical Engineering Dept.	54.2	Psychology Education Dept.	66.5
Chemistry Science Dept.	55.6	Arabic Basic Education Dept.	70,7
Biology Science Dept.	61.0	Geography Basic Education Dept.	65.0
Physics Science Dept.	50.5	Sciences Basic Education Dept.	68.2
Physics Education Dept.	55.0	English Basic Education Dept.	62.0
Mathematics Education Dept.	58.0	History Basic Education Dept.	60.0
Physical Education College	64.5	Arabic Sciences of Quran	70.4
Information Technology College	77.5		

After that the levels of noise in the hallways, the results illustrated in Table 2, show that the highest noise level recorded was 77 decibel at the hallways of Mathematics Education Dept. and the lowest value was 52.4 decibel registered at hallways of Physics Science Dept. and according to WHO [3] the noise level was exceeded the limits in all sites except for Chemistry Science Dept. and Physics Science Dept. the results of this study agrees with the findings of [15].

Table (2): Level of noise average in departments and colleges studied at hallways of buildings

The measured position	The noise level (dB)	The measured position	The noise level (dB)
Electro-Chemical Engineering Dept.	65.0	Archaeology Dept.	66.1
Mechanical Engineering Dept.	72.0	Law College	67.5
Environmental Engineering Dept.	64.4	Arabic language Education Dept.	57.0
Materials Engineering College	76.7	Geography Education Dept.	65.5
Architecture Engineering Dept.	62.0	History Education Dept.	62.1
Electrical Engineering Dept.	63.9	Psychology Education Dept.	64.8
Chemistry Science Dept.	53.5	Arabic Basic Education Dept.	72.5
Biology Science Dept.	60.8	Geography Basic Education Dept.	73.0
Physics Science Dept.	52.4	Sciences Basic Education Dept.	66.0
Physics Education Dept.	69.0	English Basic Education Dept.	67.9
Mathematics Education Dept.	77.0	History Basic Education Dept.	71.0
Physical Education College	71.4	Arabic Sciences of Quran	55.7
Information Technology College	68.6		

Table 3 shows the levels of noise measured in classroom, the results indicate that the highest noise levels recoded was 85 decibel at Mathematics Education Dept. classroom and the lowest noise level recorded was 61 at both Information Technology College and Science Basic Education Dept. classroom respectively, as mentioned by Greaves [11] the daily or weekly limit for personal bare of 87 dB, according to that all the noise levels detected in this study were within the limit.

While WHO [3] mentioned that noise level in classroom should not exceeded 35 dB, and according to that all results in classroom is higher than this limits, The loss of hearing due to noise above or equal to 85 dB for prolonged period as mentioned by [1]. Whereas Khopar [12] found that humans can tolerate from 45 to 60 dB but above that it can cause mental illnesses. The results of this agrees with results found by [13, 14, 15] but with higher levels on noise recorded in classes.

Table (3): Level of average noise in departments and colleges studied at classes of buildings

The measured position	The noise level (dB)	The measured position	The noise level (dB)
Electro-Chemical Engineering Dept.	76.0	Archaeology Dept.	68.0
Mechanical Engineering Dept.	68.0	Law College	79.0
Environmental Engineering Dept.	63.7	Arabic language Education Dept.	67.0
Materials Engineering College	71.0	Geography Education Dept.	67.0
Architecture Engineering Dept.	77.0	History Education Dept.	68.0
Electrical Engineering Dept.	67.0	Psychology Education Dept.	67.0
Chemistry Science Dept.	71.9	Arabic Basic Education Dept.	77.0
Biology Science Dept.	66.7	Geography Basic Education Dept.	66.0
Physics Science Dept.	63.6	Sciences Basic Education Dept.	61.0
Physics Education Dept.	82.0	English Basic Education Dept.	75.5
Mathematics Education Dept.	85.0	History Basic Education Dept.	80.0
Physical Education College	67.0	Arabic Sciences of Quran	78.0
Information Technology College	61.0		

Throughout the whole study the results show that the noise levels recorded was the highest in classroom and the lowest in entrance as shown in Fig.2, and the high noise levels in the classrooms would effects the accommodation of the students, and effects their mental state and that lead to lost effort from both the lecturers and the students.

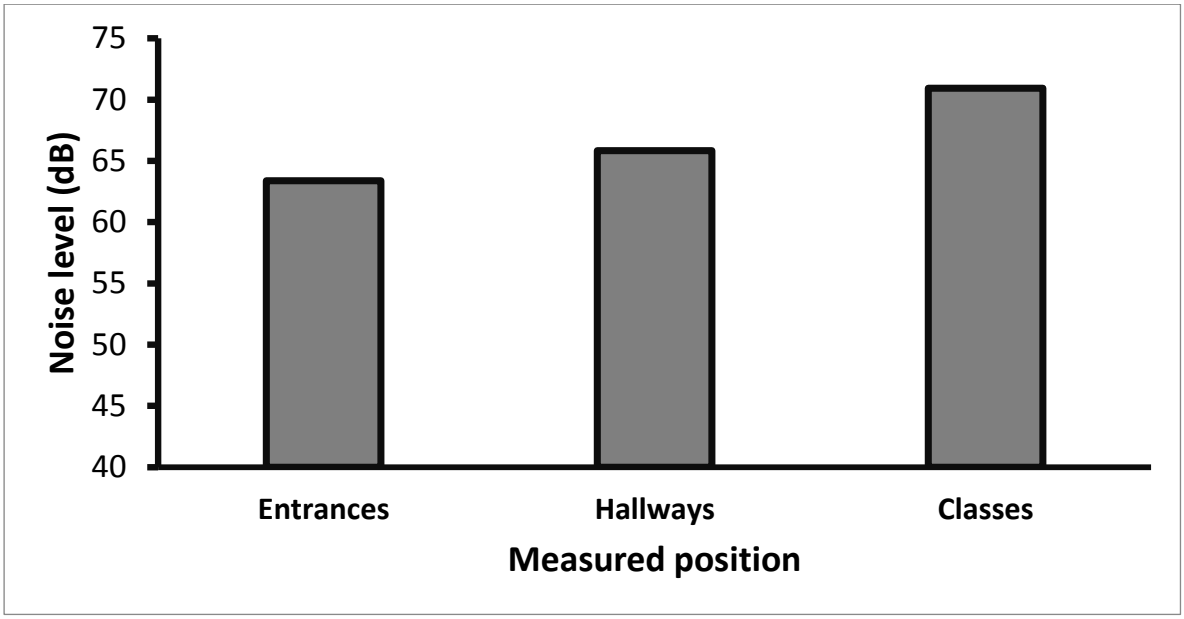

Figure (1): The average of noise level in different positions of Babylon University

Conclusion

The measurements of noise levels were obtained for several sites at Babylon university. This study was concluded that the noise levels inside and outside classes were exceeded the adapted limits by WHO. These results can be affect scientific procession as well as the direct impact on health of both lecturers and students in Babylon University. Thus, in this study the following suggestions are adapt to reduce the noise levels inside study area:

1- Emphases on providing quit atmosphere inside the colleges hallways and classes as well as using low voice tone in lectures.
2- Prevention of student aggregation in the hallways during the lectures time to reduce the noise which may affects the comprehensive of students.
3- There is a necessity for adding insulators materials within the buildings of the classrooms to reduce the noise.
4- Using the modern designs in building of colleges that aid to reduce the noise, and the inclination to the distant building designs.

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