


Implementation of L-Qibla for Qibla Direction Indicators in Graves

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ARTICLE INFO	ABSTRACT
<p>Article history: Submitted Okt 09, 2024 Accepted Des 30, 2024 Published Jun 01, 2025</p>	<p><i>The issue of determining the Qibla direction in Indonesia is a problem in worship that is rarely considered by Muslims, as they typically follow the established direction without rechecking its accuracy. This is especially true for the Qibla direction of graves, which is seldom addressed by academic experts in astronomy or the general public. However, the majority of scholars agree that aligning the deceased towards the Qibla is mandatory. Many people, however, overlook this issue. This neglect is due to the general lack of knowledge about how to accurately determine the Qibla direction, especially for graves. Therefore, there is a need for tools that can be easily understood by the general public. L-Qibla could serve as an alternative for the public to determine the Qibla direction for graves. This research is qualitative, using data collection techniques such as observation, interviews, and comparison. Data was obtained from measuring graves using several criteria and then tested for accuracy with the Istiwa'aini method. The findings are: 1) Many graves have their Qibla direction deviating by up to 40°. 2) The accuracy test of L-Qibla compared to Istiwa'aini showed a small difference, with an average deviation of 0° 46' 48", which is still within an acceptable range of Qibla direction deviation.</i></p>
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kiblat makam, jarang sekali akademisi ilmu falak memperhatikan hal ini terlebih masyarakat umum. Padahal jumbuh ulama mengatakan bahwa menghadapkan jenazah ke arah kiblat merupakan wajib hukumnya. Namun banyak masyarakat yang mengabaikan permasalahan ini. Hal ini disebabkan karena minimnya pengetahuan masyarakat umum mengenai cara menentukan arah kiblat yang benar apalagi untuk makam, maka diperlukan alat yang dengan mudah dapat dipahami oleh masyarakat umum. L-Qibla dapat menjadi alternatif masyarakat umum untuk menentukan arah kiblat makam. penelitian ini merupakan penelitian kualitatif dengan teknik pengumpulan data berupa observasi, wawancara, dan komparasi. Data didapatkan dari pengukuran makam dengan beberapa kriteria kemudian diuji keakurasiannya dengan Istiwa'aini. hasil penelitian yang didapatkan adalah 1.) banyak sekali makam yang arah kiblatnya melenceng jauh hingga 40°. 2.) uji akurasi L-Qibla dengan Istiwa'aini didapatkan selisih yang kecil yaitu dengan rata-rata 0° 46' 48" yang masih masuk dalam batas wajar kemelencengan arah kiblat.

INTRODUCTION

Facing the deceased toward the qibla is one of the problems regarding the direction of the qibla that is rarely considered by academics of astronomy or even the general public. The direction of the qibla is one of the topics discussed by academics of astronomy, but not many of them mention the direction of the qibla of graves. In reality, people only follow the direction of the graves that are already next to them when digging, without checking whether the direction is in accordance with the direction of the qibla or not.¹

This is evidenced by the large number of graves whose qibla direction is significantly off, raising doubts that the bodies

¹Ahmad Izzuddin, "Typology Jihatul Ka'bah on Qibla Direction of Mosques in Semarang," *Ulul Albab: Jurnal Studi Dan Penelitian Hukum Islam* 4, no. 1 (November 1, 2020): 1-15, <https://doi.org/10.30659/JUA.V4I1.12186>.

were not laid to rest in accordance with the correct qibla direction. The families of the deceased sometimes simply follow the gravediggers, who do not all understand the qibla direction for the deceased.² Not all gravediggers consider this important. Some of them believe that facing the body towards the qibla is merely a recommendation. This will continue to be a mistake if no one educates them otherwise.

The recommendation to face the deceased towards the qibla can be proven by the opinions of scholars on this matter. Islamic jurists are divided into two groups on this matter, some ruling it obligatory and others ruling it sunnah. The group that rules it obligatory consists of the Shafi'i and Hambali scholars. The legal basis used comes from the hadith of the Prophet Muhammad, narrated by Imam Abu Dawud and At-Tirmidzi, which means: *"The direction of prayer for those who have passed away is the same as that for those who are still alive"*.³ In addition, the burial of the Prophet Muhammad, which faces the direction of the qibla, also serves as the basis for the law used. The Hanafi and Imami scholars also agree on this matter.⁴ In addition, Imam Taqiyuddin Ad-Damsyiqy (author of the book *Kifayatul Akhyar*) argues that it is obligatory to re-dig the grave of a deceased person who is not facing the qibla while the body is still intact and has not yet decomposed.⁵ On the other hand,

² Misbahul Khoironi, "Penentuan Arah Qiblah Pemakaman (Persepsi Masyarakat Dalam Penentuan Arah Qiblah Pemakaman Di Kecamatan Ngunut Kabupaten Tulungagung)" (IAIN Tulungagung, 2018), 75.

³ Hafidh Dasuki, *Ensiklopedia Islam*, 1st ed. (Jakarta: PT Ichtiar Baru Van Hoeve, 1996) HR. Imam Abu Dawud nomor 7.875, Imam an Nasa-i Juz 2 halaman 165, hasan oleh Syaikh Muhammad Nashiruddin al Albani - Kitab Irwa al Gholil Juz 3 halaman 154.

⁴ Muhammad Jawad Mughni, *Fiqih Lima Madzhab*, XXI (Jakarta: Lentera, 2008), 54-55.

⁵ Al-Zumri Al-Ghomrowi, *Al-Syarkh 'Ala Matan Al-Minhaj*, 1st ed. (Beirut: Dar Al-Kutub Al-'Ilmiyyah, 1996), 111.

Malikiyah scholars argue that facing the deceased towards the qibla is sunnah because it is not specifically mentioned in the Quran and hadith.⁶

The reality on the ground is that although the bodies are buried facing the direction of the qibla, they never correct the accuracy of the qibla direction. Correction of the qibla direction can be done using an astronomical instrument that points to the direction of the qibla, but in reality, the majority of grave diggers do not use such instruments. The reason gravediggers do not use instruments to indicate the direction of the qibla is because the instruments available are too difficult to learn and most require sunlight, making them ineffective in all conditions.⁷

Like the use of Istiwa'aini, Mizwala, and Rubu' Mujayyab; although they have a fairly high level of accuracy, their use requires sunlight.⁸ This cannot be applied to grave excavations carried out at night. In addition, its use requires a fairly complicated formula for calculating the direction of the qibla using a calculator. Therefore, an effective and efficient tool is needed that can be used by the general public to determine the direction of the qibla of a grave.

Several studies and research on the direction of the qibla of graves serve as references that this problem needs to be solved. For example, research by Muhammad Maknan Ma'nawi explains the application of calculating the direction of the qibla for prayer to the direction of the qibla of graves. It also explains that the BHRD of Rembang Regency has measured the direction of the

⁶ Sayyid Sabiq, *Fiqh Sunnah*, 1st ed. (Jakarta: Darul Fath, 2004), 180.

⁷ Eka Nurhalisa, "Akurasi Arah Kiblat Pemakaman Desa Ponteh Kecamatan Galis Kabupaten Pamekasan," *Al-Marshad: Jurnal Astronomi Islam Dan Ilmu-Ilmu Berkaitan* 5, no. 2 (2019): 146-76.

⁸ Arwin Juli Rakhmadi et al., "Frequency-Based Analysis of Mosque Qibla Errors in Medan," *Al-Hilal: Journal of Islamic Astronomy* 7, no. 1 (2025): 37-50, <https://doi.org/10.21580/AL-HILAL.2025.7.1.24203>.

qibla of graves and provided markers (reference points) for the correct direction of the qibla.⁹ Another study by Zaqila Nurul Ramadhani explains the perspective and methods used by Wahdah Islamiyah in determining the direction of the qibla for graves and the level of accuracy.¹⁰

Furthermore, research conducted by Nur Zafitri, Rahmatiah, and Amiruddin explains that the method used to determine the direction of the qibla at the Pinrang Regency Heroes Cemetery is by looking at the direction of the sunset, but the results of the study found a significant deviation from the correct direction.¹¹ Based on the above research, discussions regarding the direction of the qibla for graves still revolve around the methods used and their accuracy. However, there are still no detailed discussions on solutions to overcome inaccuracies and educate the public, so solutions to this problem are needed.

The purpose of this article is to provide insight to the public that determining the direction of the qibla for graves needs to be taken into consideration, as there are many graves whose qibla direction is incorrect or even deviates significantly from what it should be. Although it may seem trivial, the above studies show that the qibla direction of graves needs to be taken into consideration, corrected, and solutions need to be found to address these errors. In addition, this paper aims to provide a solution through the creation of a simple tool to determine the

⁹ Muhammad Mannan Ma'nawi, "Studi Analisis Metode Penentuan Arah Kiblat Maqbarah" (IAIN Walisongo Semarang, 2011).

¹⁰ Zaqila Nurul Ramadhani, "Posisi Arah Kiblat Pemakaman Wahdah Islamiyah Desa Moncongloe Lappara Kabupaten Maros Perspektif Ilmu Falak" (UIN Alauddin Makassar, 2021).

¹¹ Nur fitri Zafitri and H L Rahmatiah, "Penggunaan Metode Bayangan Matahari Terhadap Uji Akurasi Arah Kiblat Taman Makam Pahlawan Kabupaten Pinrang" *Hisabuna: Jurnal Ilmu Falak* 3, no. 1 (2022): 17-31.

direction of the qibla of a grave. The tool was developed to be as simple as possible so that it can be easily used by people who are unfamiliar with the direction of the qibla. This tool is designed to be used in various conditions because it does not depend on the direction of the sun, so it can be used at night.

METODE

This research is field research with a qualitative data presentation model. This study was conducted to test a tool for measuring the direction of the qibla in graves in order to determine the effectiveness and accuracy of the tool. Therefore, the primary source used was the results of testing the L-Qibla. The L-Qibla is a simple tool for indicating the direction of the qibla in graves that can be used in various situations, making it more effective and efficient than other instruments for measuring the direction of the qibla. The secondary data used in this study were literature from books and journals related to this study. The data collection technique used was observation of graves whose qibla direction was not correct or deviated significantly from what it should be. Next, a comparison was made to test the accuracy and effectiveness of the tool using Istiwa'aini. The results of the comparative test were discussed through interviews with Falak expert Mutoha Arkanuddin (director of the Institute for the Study and Development of Falak Science - Rukyatul Hilal Indonesia (LP2IF-RHI)) regarding the tolerance of deviation.

RESULTS AND DISCUSSION

Description of L-Qibla

L-Qibla is a tool designed to make it easier for people who are unfamiliar with the direction of the qibla. This tool is

specifically for measuring the direction of the qibla of a grave.¹² The main component of this tool is a compass, making it easier to use. The L-Qibla was created because of the issue of the direction of the qibla in graves, which is rarely or never considered by the general public and academics in the field (astronomy).¹³ The fact on the ground is that most graves are not precisely aligned with the direction of Mecca. As the direction of Mecca is the main problem, this is part of the discussion of astronomy.



Figure 1. *L-Qibla*

L-Qibla is made of clear acrylic with a thickness of 2x3 mm or 6 mm. It is called L-Qibla or Kiblat Siku because its design resembles an inverted letter "L". The specifications for the L-Qibla are 50 cm in vertical length, 20 cm in horizontal length, and 10 cm in width. The inverted "L" shape is intended to make it easy for the general public to use, as the L-Qibla has indicators for the direction of the head, the direction of the body, and the direction of the qibla, and the only other components used are a compass and a spirit level. The Q-L-Qibla is also equipped with usage instructions printed on the back of the device to guide

¹²Cut Nazar Mutia Hanum and Ismail Ismail, "Pandangan Tokoh Agama Jungka Gajah Terhadap Arah Kiblat Bagi Orang Yang Jauh Dari Ka'bah," *Astroislamica: Journal of Islamic Astronomy* 1, no. 2 (December 28, 2022): 169–86, <https://doi.org/10.47766/ASTROISLAMICA.V1I2.934>.

¹³Ismail Ismail, Dikson T. Yasin, and Zulfiah, "Toleransi Pelencengan Arah Kiblat Di Indonesia Perspektif Ilmu Falak Dan Hukum Islam," *Al-Mizan* 17, no. 1 (June 30, 2021): 115–38, <https://doi.org/10.30603/am.v17i1.2070>.

users on how to use it. The features of the L-Qibla are expected to provide accurate guidance for grave diggers to create graves aligned with the qibla direction, as facing the deceased toward the qibla is a sunnah and even obligatory according to some scholars.

The first component in the L-Qibla is a compass, which is the focal point. The compass needle is made of magnetic metal so that it automatically points north. The north indicated is not true north, but magnetic north. Therefore, when using a compass, avoid objects or buildings that contain magnets as they will reduce its accuracy. The stronger the magnetic field, the weaker the accuracy of the compass. To obtain true north, it is necessary to make a magnetic declination correction. The magnetic declination correction for each location is not always the same.¹⁴

Some of the components in this tool and their functions are as follows::

1. Compass

The compass used is a magnetic compass with a diameter of approximately 4.4 cm. Compass 4 shows the four cardinal directions on a 360° scale, namely S (South), W (West), E (East), and North, which is marked with an arrow. The compass, as the main part, functions as a reference point for the north direction.¹⁵ The compass is placed at the end of the L-Qibla to make it easier for users to determine the direction of the qibla.

¹⁴ Muhyiddin Khazin, *Ilmu Falak Dalam Teori Dan Praktik: Perhitungan Arah Kiblat, Waktu Shalat, Awal Bulan Dan Gerhana* (Buana pustaka, 2004), 3.

¹⁵ Laiyina Ukhti Santi Okta Sriani, "Uji Akurasi Arah Kiblat Menggunakan Fitur Kompas Kiblat Pada Aplikasi Quran KEMENAG Versi 2.1.4," *Astroislamica* 1, no. 2 (2022): 219, <https://doi.org/https://doi.org/10.47766/astroislamica.v1i2.951>.



Figure 2. *Compass*

2. *Waterpass*

The function of waterpass in the L-Qibla is to assist the use of the compass, ensuring that the indicated direction is more accurate. When using a compass, a spirit level is required to confirm that the surface is flat and level. The spirit level is positioned on the elbow of the L-Qibla to provide balance during tripod calibration, ensuring that the device remains in a stable and level position..



Gambar 3. *Waterpass*

3. Head pointer

The head direction indicator is located at the top of the L-Qibla design. This part functions as a sign indicating the direction in which the head of the deceased should be placed, thereby assisting the gravedigger or person using the L-Qibla.



Figure 4. *Head pointer*

4. Body Direction Indicator

This direction indicator is located on the L-Qibla section. This section is useful for indicating the position in which the body should be laid. This device clearly shows the direction in which the feet and head of the body should be placed.



Figure 5. *Body Direction*

5. Qibla Direction Indicator

The Kaaba symbol in L-Qibla is a guide to the correct direction of the qibla. The azimuth of the qibla has been calculated using the average azimuth of the qibla in Indonesia, which has been corrected for magnetic declination, so that the correction of the azimuth of the qibla is not too far from what it should be and is still tolerable.



Figure 6. *Qibla Direction*

6. String

On the side of the L-Qibla, there is a string that functions as an extension of the instrument when needed during field measurements, since the L-Qibla is only 50 cm long. It is placed on the side to make it easier to adjust the shape of the instrument without the risk of misalignment.

How the tool works:

1. Place the L-Qibla on the area of land to be excavated. When placing the L-Qibla, also pay attention to the precision of the flatness and balance of the ground height by observing the waterpass. Adjusting the waterpass is done by rotating the tripod (legs) until the waterpass bubble is exactly in the center of the small circle. If it is balanced, then the ground surface is flat and level.
2. Adjust the direction of the L-Qibla by turning or moving it while paying attention to the direction of the compass. The north direction of the compass must be parallel to the north direction indicated by the L-Qibla. To make it easier for users to determine this, the north direction in the L-Qibla is 0° , which is indicated by the red triangle.
3. Once the precision and alignment are correct, the correct direction of the qibla is the direction indicated on the image of the Kaaba on the L-Qibla.

4. Mark the excavation site in the shape of an L-Qibla using stones or other sharp tools.
5. Head and body direction indicators to provide guidance on the position of the body so that the gravedigger can easily determine the direction in which the body is facing.
6. Use string to mark a longer excavation so that you don't have to change the position of the L-Qibla to get a longer one.

Accuracy Test of Instrument

The L-Qibla testing process uses two types of accuracy tests, namely tool usage tests and comparison tests. Tool usage tests are intended to test the suitability of using L-Qibla in accordance with its purpose and function. Tool usage tests are carried out by testing the use of the tool directly in the field. The tool usage test was conducted on several graves using several selected grave criteria for testing the use of L-Qibla. The tool usage test was conducted on several graves with the following criteria:

1. Closed Gravesite

A closed gravesite refers to a burial area surrounded by many tall and dense trees, making it difficult for sunlight to reach the site. Gravesites with such characteristics are used to test the effectiveness of the L-Qibla instrument in determining the qibla direction without relying on sunlight or shadow-based methods, in comparison with existing qibla direction instruments. The sample used for this category was the Muslim Kramatan Cemetery, located in Gamping District, Sleman Regency, Special Region of Yogyakarta.

2. Open Gravesite

An open gravesite refers to a burial area without large or dense trees, making it easy for sunlight to reach the site. This type of gravesite was selected as one of the criteria for the instrument usage test to demonstrate that the presence or

absence of sunlight does not affect the instrument's performance in determining the qibla direction.

The sample used for this category was the Joglo Muslim Cemetery, located in Mlati District, Sleman Regency, Special Region of Yogyakarta.

3. Roadside Gravesite

A *roadside gravesite* refers to a burial area located adjacent to a public road, whether a main road or a smaller street accessible by vehicles. Gravesites with this criterion were selected to examine whether the graves' orientation aligns merely with the direction of the nearby road or truly corresponds to the correct qibla orientation. The sample used for this category was the Karang Tengah Muslim Cemetery, located in Gamping District, Sleman Regency, Special Region of Yogyakarta.

4. Village Gravesite

A *village gravesite* refers to a burial area located within a residential settlement, not situated along a public road. This type of gravesite was selected to examine whether the orientation of the graves follows the actual qibla direction or merely adapts to the limited space available within the burial area. The sample used for this category was the Krapyak Muslim Cemetery, located in Ngemplak District, Sleman Regency, Special Region of Yogyakarta.

Comparative testing is a test of the accuracy of the device compared to other qibla measuring instruments. The comparative test of the device is conducted to determine the accuracy of the L-Qibla when compared to popular qibla direction measuring instruments, thereby establishing its level of accuracy as evidence of its suitability for field use. The comparison device used is the Istiwa'aini. The Istiwa'aini is a qibla direction indicator device developed by Slamet Hambali.

L-Qibla Accuracy Test Analysis

After conducting accuracy tests in the field, the measurement test results obtained are as follows:

1. Instrument Usage Test

The measurement data obtained indicate that the deviation of the grave orientations from the four samples tested exceeded 5.00° in all cases. In fact, three out of four samples showed deviations greater than 10.00° . Meanwhile, the village gravesite exhibited the smallest deviation compared to the other three samples.

Table 1. Data from Instrument Usage Tests

Criteria for Graves	Direction of the Grave	Direction of the Qibla	Difference
Open	281° 51' 57,53"	295° 00' 00"	13° 08' 02,47"
Closed	257° 35' 40,74"	295° 00' 00"	37° 24' 19,26"
Roadside	268° 26' 05,82"	295° 00' 00"	26° 33' 54,18"
Village	290° 13' 19,34"	295° 00' 00"	4° 46' 40,66"

2. Comparative Testing of Tools

A comparative test between L-Qibla and Istiwa'aini was conducted at the Condrokiranan Sonobudoyo II mosque, located in the Kraton District of Yogyakarta City, with geographical coordinates of $7^\circ 48' 15.73''$ south latitude and $110^\circ 21' 59.42''$ east longitude. The test was conducted at one location but took different points. The average difference between the direction of the Istiwa'aini building and the L-Qibla was $0^\circ 46' 48''$; meaning it did not reach 1.00 or 1° . Four of the five accuracy tests conducted obtained a difference of less than 1.00 or 1° . Meanwhile, the 5th test obtained a difference of up to $1^\circ 37' 12''$. This difference is estimated to

be due to the magnetic field affecting the accuracy of the compass because the 5th test was conducted at a prayer point where there were many objects containing magnetic fields.

Table 2. Comparison Test Results Data

Test	Building Orientation (Istiwa'aini Method)	Building Orientation (L-Qibla Instrument)	Difference (Δ)
Test 1	275° 48' 00"	276° 15' 36"	0° 45' 36"
Test 2	275° 48' 00"	276° 05' 24"	0° 17' 24"
Test 3	275° 48' 00"	276° 16' 12"	0° 28' 12"
Test 4	275° 48' 00"	276° 34' 48"	0° 46' 48"
Test 5	275° 48' 00"	277° 25' 12"	1° 37' 12"
Average Difference			0° 46' 48"

The research data was collected in the Yogyakarta area, so the difference between the accuracy test value of the device and Istiwa'aini is not significantly different. The azimuth of the qibla in the Yogyakarta area is 294° 42' 46.29", and the azimuth of the qibla used in L-Qibla is 295° 00' 00". Therefore, if this device is used in Aceh (5° 33' 19" N and 95° 19' 4" E, with a qibla azimuth of 292° 09' 46.35") or Tanjung Selor, North Kalimantan (2° 51' 00" N and 117° 22' 0" E, with a qibla azimuth of 291° 19' 19.74"), the accuracy test results may have a difference of up to 3° 00' 00" - 4° 00' 00" due to the significant difference in qibla azimuth.

There are many errors in determining the direction of the qibla. The contributing factors include human error or decreased instrument performance. This is normal because measuring the direction of the qibla cannot be separated from human intervention. However, there is a limit to the acceptability of such

errors, such as the tolerance for deviation from the direction of the qibla.¹⁶

Indonesian astronomers and astrologers have expressed their opinions on the tolerance of deviation from the direction of the qibla, citing various reasons and variations. For example, Prof. Thomas Jamaludin explained that a deviation of 2° from the direction of the qibla is still within the tolerance limit because we cannot truly face the '*ain qiblah*'.¹⁷ In addition, Mutoha Arkanudin (an expert in astronomy) explained that the acceptable deviation of the qibla direction is around 1°-2° from the correct azimuth value, because according to him, the issue of the qibla direction is a serious matter, especially since Allah has clearly commanded in the Quran that it must be paid close attention to.¹⁸

Based on the results of the accuracy test of the qibla direction indicator, two sets of data were obtained, namely the tool usage test and the tool comparison test. The device comparison test showed a difference between the direction of the Istiwa'aini building and the direction indicated by the L-Qibla, with the lowest value being 0° 17' 24" and the highest value being 1° 37' 12", which means that it did not reach a value of 2.00 or 2°. This shows that the accuracy of L-Qibla is still within the acceptable tolerance based on the opinions of contemporary Indonesian scholars and jurists. In addition, the tolerance for deviation in the direction of the qibla of the tomb is not too small, so that the results of the instrument accuracy test conducted by

¹⁶ Fajrullah, "Qibla Box Dalam Penentuan Arah Kiblat" (UIN Walisongo Semarang, 2022), 84.

¹⁷ Kathon Bagus Kuncoro, "Arah Kiblat Komplek Pemakaman Sewulan Kabupaten Madiun Berdasarkan Metode Imam Nawawi Al-Bantani" (Universitas Negeri Islam Maulana Malik Ibrahim, 2016).

¹⁸ Wawancara Mutoha Arkanudin, 2022

the researcher meet the criteria for the accuracy of the qibla direction instrument.

Analysis of the Advantages and Disadvantages of L-Qibla

Here are the advantages and disadvantages of L-Qibla:

a. Advantages

Most commonly used qibla direction instruments rely on sunlight to determine the correct orientation. In contrast, L-Qibla was developed to meet community needs in various conditions, including emergency situations. Unlike other instruments, L-Qibla does not depend on sunlight because it utilizes a built-in compass, allowing it to be used at any time, including in the afternoon or at night. Moreover, L-Qibla eliminates the need for manual calculations based on qibla direction formulas, making it particularly effective in urgent or field conditions. The device is designed for simplicity and accessibility, enabling the general public to easily understand and operate it without specialized knowledge. Its lightweight acrylic construction also enhances portability, durability, and resistance to damage, ensuring that it can be conveniently carried and used anywhere.

b. Disadvantages

The compass serves as the main component of the L-Qibla device, meaning that the accuracy of the qibla direction entirely depends on the performance of the compass needle. As previously explained, a compass's reliability is influenced by environmental conditions during use. The presence of magnetic interference or surrounding metallic objects can reduce its precision, consequently affecting the accuracy of the determined qibla direction. According to Mutoha Arkanuddin, the tolerance for qibla direction deviation differs between graves and mosques. The L-Qibla is not recommended for determining the qibla direction of mosques

or prayer rooms, as its level of precision is insufficient for worship purposes that require exact alignment. For graves, however, a deviation of up to 6° is still acceptable, considering the practical difficulties involved in precise grave excavation. Furthermore, when used at night or in low-light conditions, the device requires an external light source, such as a flashlight or lamp, to clearly visualize the indicated direction.

CONCLUSION

The L-Qibla was developed to assist gravediggers who are unfamiliar with the qibla direction in determining the proper orientation for grave excavation. Two types of accuracy tests were conducted in this study: the instrument usage test and the comparative test using the Istiwa'aini method.

The results of the instrument usage test showed that the deviation between the sample graves' orientations and the correct qibla direction indicated by the L-Qibla reached up to 40° , indicating that many graves are still oriented significantly away from the true qibla direction. Meanwhile, the comparative test conducted in the Yogyakarta area showed an average difference of $0^\circ 46' 48''$ between the L-Qibla instrument and the Istiwa'aini method, which remains within the acceptable tolerance limit for qibla deviation.

However, when the L-Qibla is used outside Java Island – such as in Aceh or North Kalimantan – the difference in accuracy may reach $3^\circ 00' 00''$ to $4^\circ 00' 00''$. According to Mutoha Arkanudin, the maximum permissible deviation of up to 6° for graves is still considered acceptable..

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