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Towards Efficient Monitoring of Online Distance Learning with Google Meet Intelligent Attendance (GMiA2021)

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Abstract

The use of Google Meet has grown since the Covid-19 pandemic hits the world. Google Meet is an effective platform for delivering online education. Currently, Google Meet attendance sheets are only available through 'G Suite Enterprise for Education', requiring a subscription fee. For other user types, the Google Meet attendance extension is a good alternative. However, it comes with several disadvantages, including the inability to identify absent students and summarise the monthly attendance of students. As a solution, Google Meet Intelligent Attendance (GMiA2021) was developed, which includes a more systematic and easy-to-use multi-functional coordination and help track student absenteeism. This intelligent attendance system can connect directly to WhatsApp to remind students of class absences. GMiA2021 also allows lecturers to keep proof of absence and documents provided by the students and prepare monthly attendance reports, in line with academic rules to enable students with 80% attendance to sit for the examination. GMiA2021 is expected to help efficient monitoring of the student's attendance and collaborations with university academic administration for a systematic attendance system.

Keywords: Google Meet, Smart Attendance System, Educators and Students, Online Distance Learning, Higher Learning Institutions

Introduction

The global outbreak of Covid-19 has had an unprecedented impact on the education sector, leading to the closure of educational institutions (OECD 2020). Consequently, Malaysian higher learning institutions are prompted to conduct teaching and learning sessions from remote locations, primarily through online platforms which limit physical and face-to-face meetings with students. In this new environment, a dependable and efficient system for monitoring, verifying, and ensuring that students attend the online scheduled sessions is critical in assessing their academic performance. However, the current attendance system in Microsoft Teams, Google Forms, Google Classroom, and the uFuture system is relatively inefficient for the lecturers to check on absent students or other issues. Instead, the lecturers must manually check the attendance to detect the absentees for follow-up purposes, resulting in inefficient time management in class. Observation also discovered several other problems with the current attendance system. Such as its lack of accuracy, the inconvenience of calling the students' names and filling in a form each time they attend class, and the difficulty of procedures for collecting and recording excuses of absence from absentees. This project aspires to address the said issues by introducing a new system that allows lecturers to monitor attendance more efficiently in an online teaching and learning environment. In this light, the main objective of this project is to develop a less-hassle and integrative attendance tracking system. It is anticipated that this particular system may serve the following functions, (a) manage students' absenteeism, (b) calculate the amount of time spent in class, (c) link letter of excuses to the attendance sheet, (d) send WhatsApp reminder, (e) facilitates the task of attendance taking, and (f) serve as an efficient communication tool between students, lecturers, and faculties for supervision purposes. The remainder of this paper entails other crucial information about this project. It commences with a review of the literature pertaining to Covid-19 and the shift of teaching and learning approach as well as Google Meet and attendance tracking. It is followed by the methodology section, outlining the step-by-step guide undertaken to develop and use GMiA 2021. This section is followed by a discussion on the project outcomes, the product's novelty, and a conclusion.

Literature Review

Covid-19 and Shift of Teaching & Learning Approach

The Covid-19 pandemic has become a global and national health crisis for most countries worldwide (Jena, 2020). It is an infectious disease caused by a recently identified coronavirus. Most patients will experience mild to moderate respiratory illness and may recover without the need for special treatment. However, people with underlying medical conditions such as cancer, diabetes, and chronic respiratory disease are more likely to develop severe illnesses. One of the most preferred methods for preventing the spread of Covid-19 is through containment measures, which are being implemented across the globe (De Brouwer et al., 2020). This is also in line with World Health Organisation (2020)'s recommendation that large scale physical distancing and movement restrictions can stop the Covid-19 transmission by limiting contact between people.

While effective, these measures also have a negative impact on individuals, communities, and various industries, including the education sector. According to Lokanath et al (2020), the movement restriction measures have disproportionately disrupted the worldwide educational system. On this note, El Khatib and Chizzotti (2020) reported that 61 countries across Africa, Asia and Europe (among others) had closed their schools and universities. Like

other countries, the Malaysian government has issued a movement control order (MCO) to control the spread of Covid-19, but such an initiative has also dampened the learning institutions' operational activities (Abdullah et al., 2020; Chinazzi et al., 2020). Following this, the Malaysian Ministry of Higher Education had instructed all private and government-funded educational institutions to conduct teaching and learning via online platforms (Yiswaree, 2020; Bernama, 2021). Consequently, the closure of all learning institutions had dramatically increased the use of web-based learning platforms such as Google Meet, Google Classroom, Microsoft Teams, Cisco Webex, Youtube and Zoom Cloud Meeting (Kamal et al., 2020).

Google Meet and Attendance Monitoring

Google Meet is a platform for groups of people to communicate or conduct meetings virtually. The goal is to make enterprise-grade video conferencing available practically to everyone. On top of its standard features (e.g. polls and live streaming), users can also use its advanced features, which allow for meetings with a maximum of 250 participants and live-streaming to up to 100,000 viewers within a domain. Be that as it may, one feature that is relevant to online class monitoring is attendance tracking. Khan et al (2020) emphasised the importance of attendance monitoring as a component of an effective organisational information system. Likewise, in an academic setting, attendance records are critical for lecturers to monitor the students' performance and determine their eligibility to sit for the final exam. Additionally, Elisabeth et al (2019) contended that attendance generally reflects students' level of engagement and commitment to their course. Prior research has demonstrated that students (especially those who are academically weak) tend to gain better marks when they attend classes more regularly; however, additional research is needed to substantiate this premise (Muir, 2009).

The standard method of recording the attendance requires the students to sign the attendance sheet personally each time they attend face-to-face meetings. This conventional method evolved into a more convenient and time-saving online class attendance system in light of the ever-changing educational environment. As regards this feature, Google Meet's online attendance tracking is only available in certain selected Google Meet editions, such as Google Workspace Essentials, Enterprise Essentials, Business Plus, and Education Plus. For ordinary users, they can still use the Google Chrome extensions or require the students to fill up a Google Form. However, the information in the attendance report contains limited details of participants, such as names, emails, and timestamps for when they joined and left the call. In view of the above, it is submitted that an online attendance system should be more practical, comprehensive, and inclusive. In other words, it should be comprised of automated processes that generate attendance reports, instantly notify relevant students of their absence, and keep any supporting documents in one place. This is to ensure that recording and reporting on student attendance are more efficient and well-organised.

Methodology

The discussion in the preceding section motivates the project team to develop GMiA2021. Essentially, GMiA2021 is an Excel-based spreadsheet attendance system developed using technical knowledge of Excel's tools and programming language. Figure 1 illustrates an overall step-by-step guide in the development of GMiA2021.

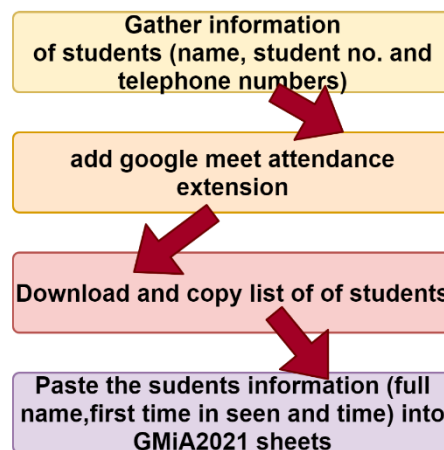


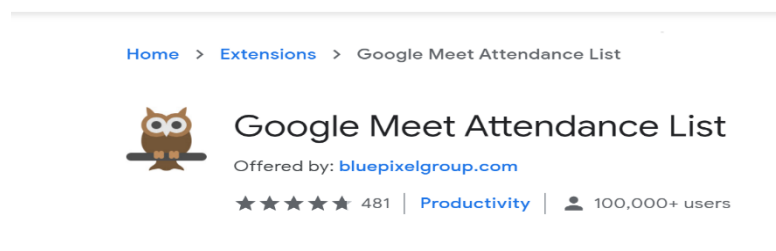
Figure 1. The Methodology of GMiA2021

STEP 1. Gathering Student’s Information (Google Form, uFuture, SIMS)

The first step is to collect the students’ personal data. These may include details such as their full names, telephone numbers, identification numbers, and email addresses (if necessary). This exercise should ideally be conducted at the beginning of class, during the first week of the semester, by using Google Forms, WhatsApp, or email. The form containing these details will then be converted into excel format for the purpose of systematic information labelling.

STEP 2. Google Meet Attendance Extension and Download Attendance Report

The second step is to install Google Meet Attendance Extension. From the Google Chrome Webstore, search Google Meet Attendance List from Bluepixelgroup.com (as shown in Figure 2 below). This extension is preferable for this project because it is highly recommended by



previous users (due to its high rating). It is also user-friendly as it includes a feature that automatically generates a pop-up notification to download the attendance sheet, following the conclusion of the Google Meet sessions. The attendance report generated (“Export as CSV”) from this phase is crucial as it contains students’ information that will be used in the following step.

Figure 2. The Google Meet Attendance List (Extension) by Bluepixelgroup.com

STEP 3. Copy and Paste Students’ Information

The third step is to copy the students’ information downloaded from the previous step (saved as an Excel document). Figure 3 below is a snapshot of the Excel document, detailing the “First Seen (the exact time students check in the Google Meet session) and the “Time in Call (the total number of hours spent in class)”.

1	* Meet - vku-gkxo-fsy						
2	* Meeting code: vku-gkxo-fsy						
3	* Created on 2021-05-04 07:44:46						
4	* by https://chrome.google.com/webstore/detail/google-meet-attendance-li/appcnhiefcidclcdjeahgklghihfok						
5	Full Name	First Seen	Time in Call				
6	ZAHARI BIN MD RODZI	4/5/2021 7:56	1:58:59				
7	SAIBATUL ASMALIAH BINTI AMRAN	4/5/2021 7:58	1:23:35				
8	NURUL MAISARAH BINTI TAJUDDIN	4/5/2021 7:58	1:48:25				
9	NUR SYAFIQAH BINTI ABDUL GHANI	4/5/2021 7:59	1:58:51				
10	NUR ASYIKIN BINTI ABDULLAH	4/5/2021 7:59	1:58:43				
11	NURZHULAIKA BINTI YAHYA	4/5/2021 7:59	1:56:34				
12	MUHAMMAD AIEZUDDIN HAFIZAT BIN	4/5/2021 7:59	1:54:59				
13	ISMA ALIESYA BINTI ISKANDAR	4/5/2021 7:59	1:44:32				
14	NOOR IZZAH BINTI AGIL	4/5/2021 7:59	1:58:44				
15	NURUL NAULA BINTI JAFRI	4/5/2021 7:59	1:57:42				
16	MUHAMMAD HANIF BIN MOHD DUL WA	4/5/2021 7:59	1:50:59				
17	MUHAMMAD AFIQ BIN AHMAD ZAKI	4/5/2021 8:00	1:28:21				

Figure 3. The Google Meet Attendance Report by Bluepixelgroup.com

Once the information is copied, the next step is to paste the same information into the relevant column of GMiA2021. Figure 4 below depicts a snapshot of this step. As shown, Column 1 of GMiA2021 is for Week 1, which is generated based on the information from Figure 3. The difference is that GMiA2021 produces more detailed information about the students.

	A	B	C	D	E	F	G	H
1	Full Name	Join Time	Duration	h	m			
2	ZAHARI BIN MD RODZI	4/5/2021 7:57	118	0.083	119			
3	SAIBATUL ASMALIAH BINTI AMRAN	4/5/2021 7:58	83	0.058	84			
4	NURUL MAISARAH BINTI TAJUDDIN	4/5/2021 7:58	108	0.075	108			
5	NUR SYAFIQAH BINTI ABDUL GHANI	4/5/2021 7:59	118	0.083	119			
6	NUR ASYIKIN BINTI ABDULLAH	4/5/2021 7:59	118	0.082	45			
7	NUR ASYIKIN BINTI ABDULLAH	4/5/2021 8:52	118	0.083	49			
8	NURZHULAIKA BINTI YAHYA	4/5/2021 7:59	116	0.081	117			
9	MUHAMMAD AIEZUDDIN HAFIZAT BIN A	4/5/2021 7:59	114	0.08	115			
10	ISMA ALIESYA BINTI ISKANDAR	4/5/2021 7:59	104	0.073	105			
11	NOOR IZZAH BINTI AGIL	4/5/2021 7:59	118	0.082	119			
12	NURUL NAULA BINTI JAFRI	4/5/2021 7:59	117	0.082	118			
13	MUHAMMAD HANIF BIN MOHD DUL WA	4/5/2021 7:59	110	0.077	50			
14	MUHAMMAD HANIF BIN MOHD DUL WA	4/5/2021 8:39	118	0.082	5			
15	MUHAMMAD HANIF BIN MOHD DUL WA	4/5/2021 9:06	118	0.083	30			
16	MUHAMMAD AFIQ BIN AHMAD ZAKI	4/5/2021 8:00	88	0.061	67			
17	MUHAMMAD AFIQ BIN AHMAD ZAKI	4/5/2021 9:18	118	0.083	40			
18	NUR ATHIRAH BINTI NURUL AZAM	4/5/2021 8:00	83	0.058	84			
19	NUR KAMILIA BINTI SALLEH	4/5/2021 8:00	118	0.082	118			
20	NUR FARAHIN ELIANA BINTI MOHD NOOF	4/5/2021 8:00	118	0.083	119			
21	NUR ALIA NATASYA BINTI MOHD HANAFI	4/5/2021 8:00	118	0.082	118			
22	SOFFEA BINTI AHMAD TAUPEK	4/5/2021 8:00	118	0.082	119			
23	NURSHAHEILA BINTI SHARULAZAM	4/5/2021 8:00	118	0.083	119			
24	SYASYA SAHIRA BINTI SAIDI	4/5/2021 8:01	98	0.068	98			
25	NURUL AINA BINTI SOLIHIN	4/5/2021 8:01	118	0.083	119			
26	NAZIRA SUHANA BINTI MOHAMED JALAL	4/5/2021 8:01	118	0.083	119			
27	MUHAMMAD FIRDAUS BIN SAHIM	4/5/2021 8:01	106	0.074	107			
28	AKMAL HAKIM BIN TAJUDIN	4/5/2021 8:02	111	0.078	112			
29	SITI NUR ASYURA BINTI SANADI	4/5/2021 8:02	118	0.083	119			
30	NUR 'AFINI BINTI NORDIN	4/5/2021 8:02	118	0.082	119			
31	ALYAA UZMA BINTI NOR ZLAN	4/5/2021 8:02	118	0.083	119			
32	SITI NUR AISHAH BINTI ROSLAN	4/5/2021 8:02	118	0.082	119			

Figure 4. Paste the information into a relevant column of GMiA2021

Step 4. Visit the Main Layout of GMiA2021

The final step is to visit the main layout of GMiA2021. As illustrated in Figure 5, GMiA2021 generates and presents concise information about the students' attendance. This (colourful) layout enables the lecturers to have an overview of the students' attendance and quickly extract any relevant information (e.g. the total number of present students).

GOOGLE MEET INTELLIGENT ATTENDANCE (GMIA2021)

MONTH: JUN
COURSE : MAT422 (MATHEMATICAL LOGIC AND PROVING TECHNIQUES) GROUP : N4CS2492A2

UNIVERSITI TEKNOLOGI MARA

NO.	PHONE NO.	NAME	4/5/2021		6/5/2021		9/5/2021		AT	MM	AT	MM	AT	MM	AT	MM	Total
			AT	MM	AT	MM	AT	MM									
1	0143730329	AKMAL HAKIM BIN TAJUDIN	1	55	1	101	1	55									3
2	+60106057011	ALYAA UZMA BINTI NOR ZLAN	1	106	1	99	1	102									3
3	0127659603	ISMA ALIESYA BINTI ISKANDAR	1	109	MC	0	1	101									2
4	0185712685	MUHAMMAD AFIQ BIN AHMAD ZAKI	1	107	1	98	1	108									3
5	172852081	MUHAMMAD AIEZUDDIN HAFIZAT BINTI	1	115	1	115	1	102									3
6	0167105403	MUHAMMAD FIRDAUS BIN SAHIM	1	107	1	102	1	101									3
7	6.01128E+11	MUHAMMAD HANIF BIN MOHD DUL	0	0	1	112	1	97									2
8	0174102941	NAZIRA SUHANA BINTI MOHAMED	1	119	1	108	1	108									3
9	0187637659	NOOR IZZAH BINTI AGIL	1	119	1	105	1	119									3
10	0162367454	NOSHRINA BINTI MOHAMAD	1	119	1	119	1	115									3
11	0199352471	NUR AFINI BINTI NORDIN	1	119	1	108	1	101									3
12	0138147290	NUR ALIA NATASYA BINTI MOHD HA	1	118	1	118	1	98									3
13	0109248368	NUR ASYIKIN BINTI ABDULLAH	1	103	1	115	1	101									3
14	01111902792	NUR ATHIRAH BINTI NURUL AZAM	1	104	1	101	1	101									3
15	1139002151	NUR FARAHIN ELIANA BINTI MOHD	1	119	1	119	1	99									3
16	0194364982	NUR IZZAH BINTI ROHAIDAR	1	119	1	116	1	100									3
17	60126421237	NUR KAMILIA BINTI SALLEH	1	118	1	106	1	108									3
18	01124309215	NUR SYAFIQAH BINTI ABDUL GHANI	1	119	1	108	1	101									3
19	1119883401	NURSHAHEILA BINTI SHARULAZAM	1	58	1	101	1	101									3
20	01110856068	NURUL AINA BINTI SOLIHIN	1	119	1	99	1	99									3
21	011-33729420	NURUL FARAHANA BINTI ADNAN	1	99	0	0	1	119									2
22	0129347494	NURUL MAISARAH BINTI TAJUDDIN	1	108	1	97	1	106									3
23	0108108938	NURUL NAJLA BINTI JAFRI	1	118	1	108	1	107									3
24	0136713372	NURZHULAIKA BINTI YAHYA	1	117	1	117	1	101									3
25	0174674134	SAIBATUL ASMALIAH BINTI AMRAN	0	0	1	111	1	101									2
26	6.01128E+11	SITI NORHAFIEZA BINTI HARUN	1	130	1	99	1	106									3
27	0175952368	SITI NUR AISHAH BINTI ROSLAN	1	119	1	108	1	100									3
28	012-6227038	SITI NUR ASYURA BINTI SANADI	1	119	1	106	1	119									3
29	013-4496306	SOFFEA BINTI AHMAD TAUPEK	1	119	1	117	1	101									3
30	012-9368516	SYASYA SAHIRA BINTI SAIDI	1	98	1	118	1	109									3
TOTAL			28		28		30		0	0	0	0	0	0	0	0	86

ARI BIN MD ROD
PENSYARAH KANAN (MATEMATIK)
UITM CAWANGAN NEGERI SEMBILA

Figure 5. The Main GMiA2021 Layout

Additionally, the novelty of GMiA2021 lies in its unique features (as shown in Figure 6 below) that are not shared by any other existing attendance tracking system. Among these features is the “Send” function, allowing lecturers to relay WhatsApp reminders to absent students. The lecturers can also keep relevant documents (e.g. medical certification) from absent students through GMiA2021. This function assists lecturers in keeping and managing the relevant documents in one place, which is extremely useful for audit purposes. A well-organised system for document management (transpired via this function) is also in accordance with the Academic Affairs Department’s instructions.

NO.	PHONE NO.	NAME	4/5/2021		6/5/2021		Total
			AT	MM	AT	MM	
1	0143730329	AKMAL HAKIM BIN TAJUDIN	1	55	1	101	3
2	+60106057011	ALYAA UZMA BINTI NOR ZLAN	1	106	1	99	3
3	0127659603	ISMA ALIESYA BINTI ISKANDAR	1	109	MC	0	2
4	0185712685	MUHAMMAD AFIQ BIN AHMAD ZAKI	1	107	1	98	3
5	172852081	MUHAMMAD AIEZUDDIN HAFIZAT BINTI	1	115	1	115	3
6	0167105403	MUHAMMAD FIRDAUS BIN SAHIM	1	107	1	102	3
7	6.01128E+11	MUHAMMAD HANIF BIN MOHD DUL	0	0	1	112	2
TOTAL			28		28		86

Figure 6. The features of main sheet of GMiA2021

Project Outcomes, Uniqueness and Marketability

The expected outcomes of GMiA2021 are numerous. Firstly, it helps lecturers to have a better experience with Google Meet, particularly with the attendance management system. Remote users, particularly lecturers who use GMiA2021, will find it easier to manage from home lives. Secondly, an integrated attendance management system such as GMiA2021 also provides the flexibility, ease of use and access across devices and platforms that modern higher education institutions require.

The marketability of GMiA2021 lies in its unique features, which will help educators manage their attendance tracking system better. The following are some of the features that distinguish GMiA2021 as an intelligent attendance management system from its counterparts. Firstly, GMiA2021 identifies student absentees and links scanned copies of documents evidencing their absence (e.g. medical certificates) to the attendance sheet. These documents are also kept in the system. Secondly, GMiA2021 can send WhatsApp messages to students to remind them of their class absence. This feature has yet to be integrated into any existing attendance tracking platforms, thereby establishing the novelty and uniqueness of this product. Thirdly, GMiA2021 displays the number of minutes spent by students and their instructors in class. This feature will allow educators to monitor and keep track of the time spent with them.

GMiA2021 stands out due to its unique features that no other existing attendance tracking system has. With the current work-from-home situation, remote users across the field are looking for a reliable tool for attendance management, time-tracking with some other analytics features and configurations – which in an academic setting, can be accomplished with GMiA2021. Additionally, most educational institutions (schools, public and private higher learning institutions) use an online attendance tracking system. In this light, GMiA2021 can be further commercialised to teachers and lecturers in these institutions. In other words, the product's target user is not limited to UiTM staff per se but also includes a diverse group of potential users from other educational institutions.

Conclusion

The objective of this project is to create a more convenient and integrated attendance monitoring system. In order to achieve the said objective, this project has developed GMiA2021 by combining technical knowledge of Excel's tools, the programming language and a third-party application available on Google Chrome. It is a more systematic and user-friendly multi-functional coordination system that assists in the tracking of student absence. This sophisticated attendance system may communicate directly with students' WhatsApp accounts to notify them of class absences. Additionally, GMiA2021 enables educators to keep track of students' absences and documentary evidence, as well as generate monthly attendance reports in accordance with academic standards, allowing students with an attendance rate of at least 80% to sit for the final examination. As GMiA2021 is a relatively new and innovative product, the team recommends that a survey be conducted in the future to ascertain its effectiveness and make any necessary improvements. Regardless, the team anticipates that this product will assist the educators in monitoring student attendance effectively and collaborating with university academic administration to establish a systematic attendance system.

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