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A Case Study on Learning Values and Insects through Instant Messaging Application

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ABSTRACT

This study investigated if the use of Whatsapps (WA) raised the appreciation and awareness of insects, and able to facilitate knowledge sharing on insects in the campus among the trainee teachers in a teacher training institution. The instruments consisted of pre-survey and post survey to investigate their appreciation and awareness on insects, and a survey to investigate their views on the use of WA in facilitating knowledge sharing on insects. The pre-survey and post survey consisted of ten close ended items on appreciation, and seven close ended items on awareness. The survey on WA consisted of eight items. All the instruments were with five-point Likerts-scale required the respondents' agreement/disagreement on the statement. There were open ended items requested the respondents' opinion. Conversations through WA were screenshotted, to examine the opinion of the respondents. There were 17 respondents in this study. The mean for appreciation increased by 0.17 (N = 17), while the mean for awareness increased by 0.11 (N = 17) after the intervention. The mean for the survey of using WA was 4.35 (N = 17, S.D. = 0.63). Study showed that there were increment in the means of appreciation and awareness. WA was an important tool that facilitated learning.

Keywords:
Whatsapps, 21th century learning, awareness and appreciation of insects, education industry 4.0

1. Introduction

WA (Whatsapps) is one of the Smartphone application that operates on most current types of devices and operating systems. It is one of the Instant Messaging (IM) application which is replacing the existing SMS platform rapidly, as it is free of charge. It includes a variety of functions such as text messages, attached images, attached contact, audio files, video files, Microsoft office documents, pdf files, location tag; and links to web addresses [1]. Technically, this application is a social network application that allows people to exchange a great deal of information rapidly. It enables communication among Smartphone users when there is an active internet connection and if the application is installed. One of the application's unique features is having the option to create groups,

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and to communicate within its boundaries. The administrator(s) of the group has the privilege of adding and removing participants while all the participants in the group enjoy equal opportunities to response. The application enables the participants to receive an alert for each message sent and offer the alternative to mute the in-coming alerts for the duration of their choices. Furthermore, the desktop version is available providing more conveniences to its users.

2. My Reflection

I noticed that Smartphones were a necessity for trainee teachers and lecturers in this teacher training institution, and all of us used high level operating system such as Apple iOS and Android. We engaged ourselves actively with android applications range from casual activities such as entertainment; selfie/wefie and photos/videos edition, to serious activities such as recording important notes, updates of formal activities, collaborations and sending documents. We loved being digitally connected and we spent as much time socializing with friends/colleagues online than we did in person. Many of us had our own classes/courses/tasks/departments chat group, to communicate on matters related to us. For students, their chat groups were related to their class such as in-house keeping, information retrieval, organization, informal chats, discussions on tutorials and other matters related to their studies. I have chosen WA to execute my study because it was the main preference among my respondents.

Findings from Chiam [2] reported that trainee teachers lacked appreciation and awareness of the biodiversity found in the campus, even though the surroundings of the campus had much to offer meaningful learning on biodiversity. I was curious to investigate if I could introduce the knowledge sharing habit on insects through WA among the trainee teachers and to get digitally connected with them, as I visualized that there was possibility for IM to be employed as a tool for better communications and collaborations in teaching and learning, since 21st century learning has been given much emphasis.

3. The Purpose of the Study

The purpose of this study was to investigate if WA raised the appreciation and awareness of insects, and able to facilitate knowledge sharing on insects in the campus among the science option trainee teachers in this teacher training institution.

4. The Limitation of the Study

As this study only involved 17 respondents, normal distribution was not available from the data since it was a very small sample size. Therefore, analysis of quantitative data only confined to descriptive statistics, where only means and standard deviation (S.D.) were discussed. The qualitative data were analysed through statements from screenshots of WA messages. The data was collected from the foundation science option July 2017 Intake only. Therefore, the result was only confined to this group of science trainee teachers in this teacher training institution, and it was only a preliminary study. In this study, random access memory (RAM) limits were not an issue as all of us were able to accept the idea of having this application installed on our desktops/laptops, and we were heavy users of desktops/laptops.

5. The Research Question of the Study

The research questions of the study are as follow:

1. Does IM through WA increase the appreciation of insects among the respondents?
2. Does IM through WA increase the awareness of insects among the respondents?
3. Does IM through WA able to facilitate knowledge sharing on insects in the campus among the respondents?
4. How does WA facilitate knowledge sharing on insects in the campus among the respondents?

6. Literature Review

21th century is an era of technology that we can access to abundance of information and to experience rapid changes in technological tools. There is a need to acquire the ability to collaborate and to communicate with others on an unprecedented scale, and being able to exhibit a range of skills related to information, media and technology. There are many mobile devices including laptops and Smartphones which can make learning portable, spontaneous, personal and exciting. The growing popularity of mobile learning brings a shift in the impact on educators as learners carry the mobile devices with them. Kulkulka-Hulme and Traxler [3] suggest that there is an unexploited potential for using mobile devices in student projects, investigation, collaborative learning and fieldwork. Many researchers have informally reported that students collaborate on shared tasks [4]. To conclude, as this technology has become more powerful and robust, collaborations through mobile learning can be used as one of the pedagogy in teacher training institution. It can support and to enhance teaching, learning and comprehensive guidance for students.

In recent years, Smartphones has initiated the growing use of WA as a communication platform in academic institutions [5]. Church *et al*., [6] explain that people adopted WA as their main communication channel because of its low cost and its ability to send unlimited number of messages. Besides satisfied the users being part of the trend to conduct on-going conversation with many friends simultaneously, it gives them a sense of privacy relative to other social networks. Rambe *et al*., [7] found that the use of WA in a higher academic institution registered a positive feedback from students. They claimed that it was an easier way to communicate with their teachers and classmates. They agreed that it was a fruitful discourse on relevant issues in an informal environment and the application enabled them to learn intimately and authentically. Such cooperation was important to bridge the gaps in knowledge and physical distance. To summarize, WA enhanced accessibility, encouraged cooperation, and it intensified students' motivation to engage actively in academic assignments [7, 8].

Jordan [9] suggested a few guidelines to use social media and internet in teaching and learning collaborations. The applications should be easy to set up and to update, and users must aware and agree on ethical considerations, group members' privacy concern and the scopes of discussions. To uphold our professionalism, we constructed agreements on the considerations that agreed by the group members before this study was executed.

Biodiversity is a treasure that will be inherited by future generations. Many biologists describe it as the wealth of living organisms from the ecosystem [10], and CVB 2010, as in Chung *et al*., [10] says that Malaysia is one of the twelve countries which is given the recognition in her mega-diversity. As educators, it is important for teachers to instill this awareness and appreciation among their pupils, as they will inherit this wealth.

Addressing Education Industry 4.0, its issues and challenges, universities and higher institutions in Malaysia were urged to change their curriculum and mode of delivery [11]. Jeschke [12] suggested that universities and higher institutions in future need to have a few characteristics such as changes in teaching and learning methods which include new teaching concepts, infrastructures, digital management, massive learning and distance learning. There is a need to have digital culture, where digital technologies connect all aspects of daily life, social communications and globalization of education. Learning would become more individual, as self-paced learning is much encouraged. Therefore, teachers need to leave their present comfort zones and flow with the current trends in the teaching profession.

The first wave of the Malaysia Education Development Plan (Pelan Pembangunan Pendidikan Malaysia, PPPM 2013-2025) [13] focused on the supports of teachers and pupils' skills development. Extra teaching hours were allocated, and emphasis were given on the application of knowledge, practical work and project based learning for science, technology, engineering and mathematics (STEM) subjects. As for the second waves (2016-2020), more efforts are to draw attentions and awareness of the society in STEM through resources and information centers [14]. The conclusion from the reviews on the trends of education in Malaysia, teacher training institutes need to equip their trainee students with content knowledge, pedagogies and the awareness on STEM.

The learning objectives of the KSSR syllabus on science education, social and environment are to instill interests on science and environment among pupils, to assist them to master observation and investigation skills, to recognize and to appreciate environment, and to build positive attitudes through their daily life [15]. Therefore, it is important for trainee teachers to equip themselves with the competencies and moral values to deliver the learning outcomes of these subjects, when they are appointed as primary school teachers in future.

The role of schools is to build on and supplement the value children have already began to develop by offering further exposure to a range of values that are currently in the society [16]. Therefore, it is important that teachers themselves need to equip themselves with values and the skills of teaching values.

7. Methodology

There were 17 respondents from the foundation science option 2017 Intake and myself as the researcher in this study. We agreed to form a group in WA to share knowledge which was beyond the courses offered in the foundation science option, specifically knowledge sharing on insects. We also agreed to be ethical on media ethnics and to be intelligent in media literacy, that we only discussed matters on insects found in the campus. All responses were meant for knowledge sharing and constructive discussions. The chat groups must be set in silent mode, so that we would not produce disturbances to others through the ring tones of our Smartphone when messages were received. The group was created by selected administrator, the group's icon and group's name was given according to the agreements the group members. The last 10 - 15 minutes of our lecture would be on knowledge sharing, discussions and reflections on insects besides closures and in housekeeping of the day. There would be further communications after lecture hours if needed. The teaching aids included photos on insects taken from the campus itself, and relevant power point presentations [17, 18, 19, 20]. Some of the conversations were screenshotted to supplement the data of the study.

The instruments were constructed based on the insights obtained from literature reviews. The pre-survey and post survey consisted of two parts. Part A consisted of ten closed-ended items on appreciation, while Part B consisted of seven items on awareness. Items in Part A and Part B were with 5-point Likert-scale, requiring the respondents' degree of agreement and disagreement based

on the statements given and an open-ended item. For Part A, scale 1 represented very agree and scale 5 represented very disagree. In Part B, scale 1 represented very disagree and scale 5 represented very agree. The survey on WA consisted of eight items with 5-point Likert-scale, requiring the respondents' degree of agreement and disagreement based on the statements given. Scale 1 represented very disagree and scale 5 represented very agree, and an open-ended item.

8. Findings

8.1 The Comparison of the Pre-Survey and Post Survey on Appreciation

Table 1 showed the comparison of the findings from the pre-survey and post survey on Appreciation.

Table 1
The comparisons of the mean and standard deviation (S.D.) of the pre-survey and post survey on appreciation

Item	Mean (N=17)			S.D.		
	Pre	Post	**Diff**	Pre	Post	Diff
Part A: Appreciation						
1. I doubt the existence of insects in the campus	3.41	3.54	**0.13**	0.40	0.23	0.17
2. Insects are ugly animals	3.93	3.93	**0.00**	0.41	0.25	0.16
3. Insects are slimy animals	3.47	3.78	**0.31**	0.32	0.25	0.07
4. Insects are scary animals	2.62	3.07	**0.45**	0.37	0.24	0.13
5. It is fine for me that insects smell bad	3.22	3.32	**0.10**	0.32	0.24	0.08
6. Insects are animals that bite	2.84	3.36	**0.52**	0.36	0.27	0.09
7. I am phobia towards insects	3.36	3.53	**0.17**	0.34	0.31	0.03
8. I hate insects	3.56	3.76	**0.20**	0.35	0.28	0.07
9. Insects in the campus are nuisance to me	3.23	3.78	**0.55**	0.34	0.27	0.07
10. I prefer to ignore insects	3.36	3.68	**0.32**	0.36	0.26	0.10
Average differences	3.30	3.60	**0.30**	0.36	0.26	0.10

* Diff = Difference

The average mean of the post survey on appreciation was 3.60 (N =17, S.D. = 0.26). The differences between the average mean of the pre survey and post survey was 0.30 (N = 17, S.D = 0.10).

8.2 The Comparison of the Pre-Survey and Post Survey on Awareness

Table 2
The comparisons of the mean and standard deviation (S.D.) of the pre-survey and post survey on awareness

Item	Mean (N=17)			S.D.		
	Pre	Post	**Diff**	Pre	Post	Diff
Part B: Awareness						
1. Insects have a lot of importance to the environment	4.59	4.65	**0.06**	0.43	0.45	0.02
2. Insects have a lot of importance to mankind	4.41	4.47	**0.06**	0.23	0.27	0.04
3. Insects have a lot of importance to biodiversity	4.65	4.82	**0.17**	0.37	0.34	-0.03
4. Insects play an importance role to the ecosystem	4.76	4.88	**0.12**	0.34	0.24	-0.10
5. It is important to be knowledgeable in insects	4.65	4.71	**0.06**	0.36	0.30	-0.06
6. There are many insect's species exist on planet earth	4.76	5.00	**0.24**	0.37	0.33	-0.04
7. I have the responsibility to convey knowledge on insects to my pupils	4.59	4.65	**0.06**	0.46	0.27	-0.19
Average Mean	4.63	4.74	**0.11**	0.37	0.30	-0.07

The average mean of the pre-survey on awareness was 4.63 (N = 17, S.D. = 0.37) while the average mean of the post survey on awareness was 4.74 (N =17, S.D. = 0.30). The differences between the average mean of the pre survey and post survey was 0.11(N = 17, S.D = -0.07).

8.3 Findings on Appreciation and Awareness of Insects Obtained from WA Chatgroup

Figure 1 recorded some examples of guided conversations to raise the awareness and appreaciation on insects. The screenshots showed examples of discussions on the differences between butterflies and moths, where appreciation and awareness on insects were raised through guided conversation. Through the example conversations, respondents were guided to explore on the meaning of "Geometrid".

Fig. 1. Examples of guided conversation

Cigu pun x tau kenapa author *kejap sebut* butterfly *kejap sebut* moth. *Tp* based on *ciri2..lebih kpd* moth
I also don't know why the author sound like there if no differences between butterfly and moth. But based on the characteristics it is more of moth – me (11/9/2017)

Tahniah..skrg cikgu ada 1 Q. Apa beza butterfly n moth?
Congrats…now I have a question. What is the difference between butterfly and moth? – me (11/9/2017)

Figure 2 recorded some conversations that meant to re-inforce appreciation and awareness on insects when there were opportunities. Respondents were reminded not to harm insects, and they agreed that insects were "cute".

Jangan plak kamu pukul dia kalo jumpa ya…cikgu akan sedih kalo kamu buat gitu
Please don't hit them (insects) if you see them…I will feel sad if you do so. - me (28/9/2017)
Tidak cikgu. Sy takkan pukul…it's so cute and adorable
No teacher. I won't hit (insects)..it is so cute and adorable – respondent #8

Iya…sape berani pukul insect *cikgu pukul balik dia haha…*
Yes…who dare to hit insect I will hit you back haha… - me (28/9/2017)

Hahahahha..iya ckg..comel bha

Hahaha…yes teacher..it is adorable – respondent #10 – respondent #8

Fig. 2. Conversations to re-inforce intended values to be instilled

8.4 The Findings from WA Survey

Table 3 showed the findings from the WA survey.

Table 3
The mean and standard deviation (S.D.) of the survey on WA

Item	Mean	S.D.
WA group…		
1. helps me to learn knowledge on insects	4.29	0.69
2. creates a space for me to ask and answer questions about insects	4.29	0.59
3. is ideal to post videos, photos, documents, and other resources about insect	4.65	0.49
4. offers opportunities for knowledge sharing on insects	4.53	0.51
5. enable me to showcase my findings about insects	4.24	0.75
6. encourage debate and answer queries on insects	4.18	0.73
7. create constructive online discussion on insects	4.53	0.62
8. provoke more thoughtful responses about insects from me	4.06	0.66
Average mean/S.D.	4.35	0.63

The average mean for WA survey was 4.35 (N =17, S.D. = 0.63).

8.4 The Learning Outcomes Obtained through IM Application

Conversations from Figure 3 was a conversation on the in housekeeping of the chat group. It showed that how the agreements and common understanding were obtained before we started on this study.

Fig. 3. Agreement and common understanding in the chat group

Refleksi hari ini (25/7/2017): Cikgu akan ambil masa 10-15 min utk tayangkan slid serangga setiap minggu seblm kuliah tamat. Soaan akan d poskan d WA grp kita kemudian. Anda dgalakkan buat reseacch sikit n jwb soalan cikgu. Cikgu ada token untuk sesiapa yg rajin fikir n cuba mjwb.
Today's reflection (25/7/2017): I will take 10-15 mins to show you slides on insects every week before we end our lecture. Questions will be posted in our WA group later. I encourage you to do a little research and answer my questions. To those who are conscientious, there will be token for you. – me (25/7/2017)

Okay cikgu
Okay teacher – Respondent #15 (25/7/2017)

Okay thank u cikgu
Okay thank you teacher – Respondent #2 (25/7/2017)

Okayy cg
Okay teacher – Respondent #14 (25/7/2017)

Conversations from Figure 4 showed some of the relevant photos obtained from the campus, which were used as teaching aids to start off the discussions on insects.

Fig. 4. Some of the teaching aids

Kita mula dgn pic ni…rasanya apa ini ya?
We start with this picture, what do you think it is? – me (27/7/2017)

Hmmm bentuk nya bulat2
Hmmm it has the shape of circles – respondent #4

Warnanya maam cendawan
Its colour looks like mushroom – Respondent #4

Macam telur serangga je..
Looks like the eggs of insect.. respondent #5
Macam telur lizard
Looks like lizard's egg…respondent #7

Ya macam telur serangga
Yes it looks like the eggs of insect – respondent #2

Saya sokongg (sic)
I agree – respondent #17

Morning*, cuba tengok pada gambar ni dan cuba teka nama dia*
Good morning, try to see this picture and try to guess its name – respondent #11 (1/8/2017)

Leaf mimicking moth – respondent #16
Tak
No – respondent #8

Conversations from Figure 5 showed that through relevant teaching aids/ topic of discussions, the respondents were led to do their own research through resources from internet. Questions were forwarded to the respondents to encourge learning and to strengthen knowledge that they have learned.

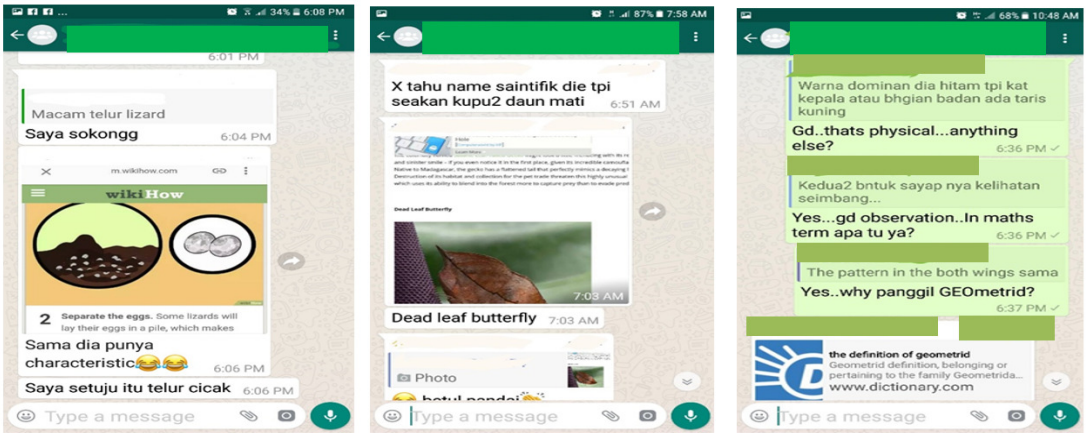

Fig. 5. Examples of research done by the respondents

Sama dia punya characteristic
It has similar characteristic – respondent #6 (22/7/2017)

Saya setuju itu telur cicak
I agree that it is lizard egg – respondent #4

X tahu name *saintifik die tpi seakan kupu2 daun mati*
Don't know its scientific name but it looks like dead leave moth – respondent #2 (1/8/2017)
*Gd (sic)…*that's physical…anything else?
Good…that is physical…anything else? -me (24/8/2017)

Yes…gd observation… In maths term *apa tu ya* (sic)?
Yes…good observation…In maths what is the term we use? – me (24/8/2017)

Yes…why *panggil* (sic) GEOmetrid (sic)?
Yes…why do we call it GEOmetrid (sic)? – me (24/8/2017)

9. Discussion

As this study only involved 17 respondents (as mentioned in limitation of the study), it served as a pilot/ preliminary study to explore the learning of values and insects through WA. To explore further and to triangulate the findings from this study, the qualitative data was examined besides the quantitative data.

From the findings, the mean for appreciation increased by 0.17 (N = 17). It showed that IM through WA increased the appreciation of insects among the trainee teachers. While the mean for awareness increased by 0.11 (N = 17). It showed that IM through WA increased the awareness of insects among the trainee teachers. The mean for the survey of using WA was 4.35 (N = 17, S.D. = 0.63). It showed that IM through WA was able to facilitate knowledge sharing on insects in the campus among the respondents.

Findings showed that knowledge sharing through WA allowed the respondents to have the sense of ownership, as they agreed on the interaction mechanism and honoured the ethnics of their chat group. Relevant teaching aids were convenient and related to the real life situation in the campus, and it assisted respondents to involve in the discussions actively. Through the discussions and questions posted by group members, it offered opportunities for further research and sharing of information from suitable websites. Their discussions and collaborations improved their learning process and my role was more of facilitator. Even though it was agreed that the chat group was not for casual inputs, it provided opportunities for us to re-inforce the value of appreciation and awareness on insects in casual ways.

10. Conclusion and Further Recommendations

A few insights were obtained from the discussions and interactions through WA. According to Fisk [21], he foresees that future education has a few trends that stand out. These include diverse time and place, where eLearning tools will facilitate opportunities for self-paced learning. There will be more personalized learning that adapt to the capabilities of learners, and the free choice of learning method that uses different devices and techniques. Project based will enable learners to apply their skills, and to collaborate with others in shorter terms to a variety of situations. As learners

will be more involved in constructing their own curricula, this will increase the learners' sense of ownership. As for teachers, their roles will be more of mentoring as learners will be much independent in their learning process. Teacher and educational institutions will be more vital to academic performance. As these provocative and potential far-reaching challenges are approaching rapidly, new educational tools and resources are very important to empower individuals to develop a fuller array of competencies, skills and knowledge. Findings from this study showed that IM through WA has promising potential.

From this study, it was concluded that WA has the potential to instill appreciation and awareness on insects among trainee teachers. It has penetrated in my lecture as a pedagogy and a teaching tool, as it supported and enhanced knowledge sharing on insects, and showed its potentials for me to facilitate learning among them. Further studies need to be carried out, involving more respondents and different cohorts of respondents in order to explore this study in depth. This study showed that IM and its applications has offered an alternative to provide learning facilities in this institution, and contributed to 21th century learning. However, the findings are still at a very preliminary stage due to the limitations as discussed. Further explorations and more fine tunes should be investigated so that it could be employed in its maximum capacity in the teaching and learning. Further studies need to be carried out to find out more on the use of IM in the teaching and learning, involving more respondents from different age groups/cohorts and other courses.

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