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### **A study on social interactions among primary students in English vocabulary acquisition in a mobile learner-generated content learning environment**

#### **Bio data**

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#### **Abstract**

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This article reports on a study exploring primary students' after-class social interactions in English vocabulary acquisition using a mobile learner-generated-content (m-LGC) tool. A total number of 29 grade 4 students from an elementary school in Hong Kong were involved. A case study approach was adopted. Data collection included log data on the m-LGC tool and semi-structured interviews. Data analysis included content analysis, visualisation using Gephi, and thematic analysis. The results show two types of students' social interactions in a m-LGC learning environment. The interview results indicate that students held different perceptions of social interactions using the m-LGC tool. The implications are discussed.

#### **Conference paper**

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##### **Introduction**

The development of mobile technologies provides learners with a collaborative, flexible, real-time learning experience in which learners can study a second language regardless of time and location constraints (Jeong, 2022; Sung et al., 2015). Many studies suggest that mobile-assisted language learning (MALL) facilitates interactions and deeper integration of language learning with real-life needs and cultural experiences (Chen, 2016; Derakhshan & Khatir, 2015). In Long's Interaction Hypothesis (1996), interactive

tasks promote negotiation of meaning among learners, which can facilitate the development of a second language via connecting input, internal learner capacities and output in productive ways. However, few studies have been conducted which explore social interactions supported by mobile devices in English vocabulary acquisition.

This study adopted a case study approach to explore social interactions among Hong Kong primary students in English vocabulary acquisition within a mobile learner-generated content (m-LGC) learning environment.

## **Literature review**

The sociocultural theory was proposed by Vygotsky (1978) that stressed the role of community in the process of “making meaning”. Learning was at first social, later individual. The zone of proximal development (ZPD) occurs when the social interaction occurs between a student and a more knowledgeable individual (Vygotsky, 1978). Social networking tools provide extraordinary opportunities for students to make connections with peers and teachers regardless of time and location constraints (Akbari et al., 2015; Mellati et al., 2018).

However, previous studies have mainly addressed face-to-face interaction in second language acquisition (Barnes et al., 2017; Tratnik et al., 2019). Some have investigated the effects of peer interaction supported by digital technologies on second language vocabulary learning (Verga & Kotz, 2017; Mellati et al., 2018), but most of them were conducted using prescribed learning tasks (e.g. a vocabulary learning game designed by researchers, see for example Verga & Kotz, 2017), or only in classrooms (e.g. Mellati et al., 2018). Few studies have gained an understanding of how learners use digital tools beyond the classroom (e.g. Lai & Zheng, 2018) and how social interactions happen in user-generated learning content mediated by digital technology. In addition, only a few studies integrated social interaction with the curriculum to support learning beyond the classroom (Richards, 2015).

## **Research aims and questions**

This study aimed to understand how primary students use the mobile learner-generated content (m-LGC) tool in peer-to-peer interactions, while engaging in a user-generated learning environment outside of the language classroom. The following research questions were addressed:

- RQ1. What types of social interactions among students occurred in a mobile-user-generated-content (m-LGC) learning environment?
- RQ2. What was the student perception of involving social interactions during vocabulary acquisition in the m-LGC learning environment?

## **Research design**

### *The tool used in this study*

The mobile learner-generated content (m-LGC) tool used in this study was adapted from SCROLL (System for Capturing and Reminding of Learning Log) (see Ogata et al., 2011; Song & Ma, 2021; Song & Yang, 2019). Figure 1 shows the interface of the m-LGC tool on mobile devices. Learners can create a learning log via taking or uploading pictures, inputting the target word, describing the newly acquired vocabulary and making an audio recording. Learners can also input synonyms and collocations of the target words.



**Figure 1.** *The interface of creating a "learning log"*

The function used in this study focused on social interactions supported by a commenting function in Learning Community (refer to Figure 2). The m-LGC tool provides students with opportunities to learn from peers by giving text-based comments. Learners can not only generate their learning logs but also reflect on how peers describe the words and use the tool to discuss new words they encounter in real life. In Learning Community, learners can make comments on peers' learning logs.



**Figure 2.** *Social interactions among students in Learning Community on the m-LGC tool*

## *Participants*

A case study approach was adopted in order to uncover students' social interactions in English vocabulary acquisition in an m-LGC learning environment (Yin, 2002). Twenty-nine Grade 4 students (14 females and 12 males) aged between 10 and 11 in a primary school from Hong Kong were involved in this study. To consider the research ethics of a study that involved collecting data from the participants, a written informed consent form was obtained from both the participants and their parents.

## *Instructional design*

The study lasted for two weeks. Before performing the learning task, the teacher briefed the students on how to use the m-LGC tool. Students could practice and consolidate the words at home. The topic of vocabulary learning reported in this paper was 'a healthy life'.

## *Data collection and analysis*

Data collection included (1) log data on the m-LGC tool: raw event log data stored in MySQL database (for importing spreadsheet with relationship information, e.g. source, target), and students' comments on learning logs; and (2) semi-structured interviews: twelve students were invited to understand their perceptions of involving social interactions during vocabulary acquisition in the m-LGC learning environment.

Data analysis included content analysis, visualisation of network graph using Gephi and thematic analysis. To address RQ1, content analysis was adopted to analyse the students' comments. A coding scheme modified from Shea et al. (2010) was adopted to analyse types of students' comments on the m-LGC tool in terms of two dimensions (see Table 1): affect (AF) and open communication (OC). Two coders were involved in analysing the types of students' comments. The inter-rater reliability for the results of coding was 0.93. All the discrepancies were discussed and solved. Then, Gephi (<https://gephi.org>), an interactive visualisation platform, was used to visualise students' social connections on the m-LGC tool. The visualisation was done using Gephi's layout algorithm (ForceAtlas2), which was suitable for small sample sizes (Jacomy et al., 2014; Khokhar, 2015). The features of two types of students' social interactions were discussed. To address RQ2, thematic analysis was used to analyse focus group interviews. The interviewees were selected based on the frequency of students' comments on peers' logs. Students with high and low frequencies in each AF and OC social interactions were identified and invited. In total, twelve students were involved in the focus group interview. The interview lasted for 45 minutes and was recorded for further analysis. The interview was conducted in Cantonese and was transcribed into English.

## **Results**

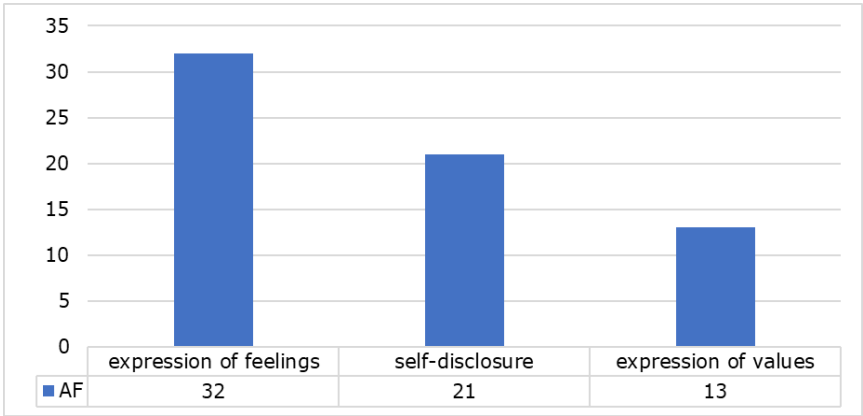
### ***Types of social interactions in a m-LGC learning environment***

To analyse the types of social interactions in an m-LGC learning environment, firstly, students' comments logged on the m-LGC tool were retrieved and categorised using content analysis. Secondly, students' log data on the m-LGC tool was transformed into data that could be read by the visualisation tool Gephi to show the overall picture of social interactions of students. The results are presented below.

**Table 1.** Coding scheme of types of social interaction

Categories	Items	Definition	Examples
Affect (AF)	expression of feelings	expressions of emotion, includes repetitious punctuation and emoji	e.g., I am excited to see this picture.
	self-disclosure	present details of life beyond the class; includes expression of likes or dislikes	e.g., I love eating sandwiches.
	expression of values	express personal values and beliefs	e.g., I feel our children should not eat junk food.
Open communication (OC)	asking questions	ask questions of other students	e.g., Do you know how to make sushi?
	answering questions	answer questions of other students	e.g., You can go to the website...to find more information:)
	referring explicitly to target learning logs	further illustrations of the learning logs using the target words	e.g., Curry beef is yummy. (Note: Curry beef is the target word)
	Expressing agreement/disagreement	Expressing agreement/disagreement with others or the descriptions of learning logs	e.g., You are right.../I don't think...

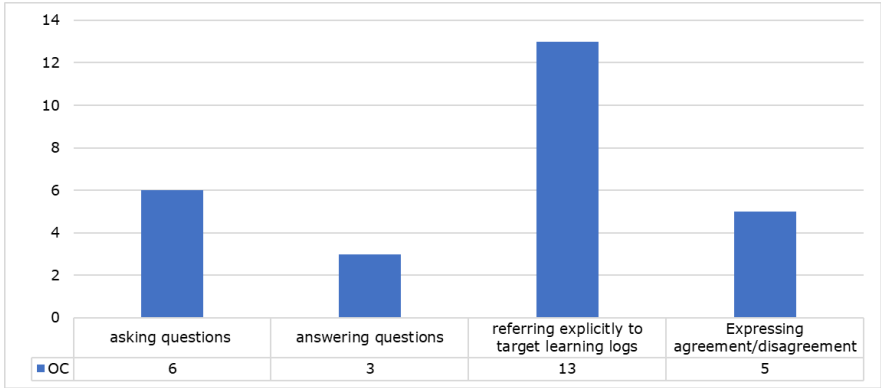
A total of 93 students' comments were collected in this study, of which 66 comments were classified as AF and 27 as OC. Figure 3 shows the distribution of students' social interactions in the category of AF. In the category of AF, 48.5% of comments ( $n=32$ ) were related to expressing feelings using emojis and words expressing likes or dislikes (e.g. Happy!/Good!/ ( $\geq \omega \leq$ )/), 31.8% ( $n=21$ ) presenting details of life beyond the class (e.g. I love eating vegetables), and 19.7% ( $n=13$ ) expressing personal values and beliefs (e.g. You can't eat too much junk food; Dairy products is good for your health.)



**Figure 3.** Distribution of students' social interactions in the category of AF

Figure 4 shows the distribution of students' social interactions in the category of OC. In

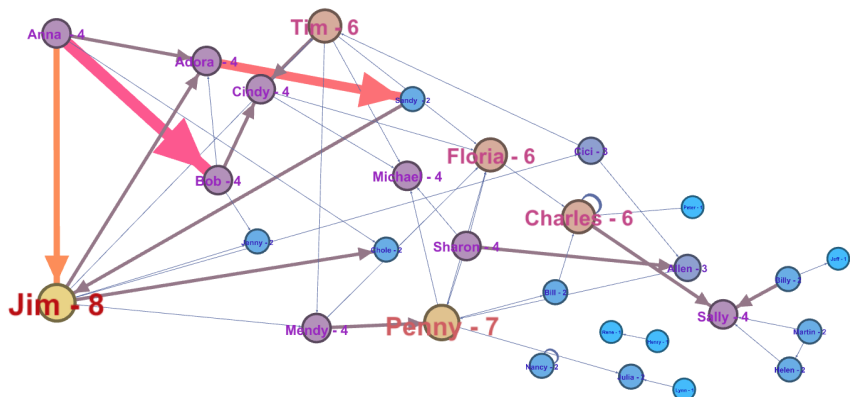
the category of OC, 48.1% of the comments ( $n=13$ ) were related to further illustrating the learning logs (e.g. I see tomatoes/ I put an apple in the fridge), followed by 22.2% of comments ( $n=6$ ) asking questions (e.g. Do you like drinking it?/ you make??) and 18.5% of comments ( $n=5$ ) expressing disagreements or agreements (e.g. Me too/Yes). Only three comments were answering questions raised by other students (e.g. Yes, I like drinking apple juice).



**Figure 4.** *Distribution of students’ social interactions in the category of OC*

Figures 5 and Figure 6 show students’ social interactions in a m-LGC learning environment in terms of categories AF and OC, respectively. The size of the node represents the ‘degree centrality’ (its number of connections). The larger the node, the higher degree of centrality it represents. The thickness of the edge represents the frequency of students’ comments on peers’ logs. The thicker the edge, the higher frequency it represents. An arrow indicates the direction of the target. For example, as showed in Figure 5, the arrow between the node of ‘Anna’ and the node of ‘Bob’ indicate that Anna made comments on Bob’s learning logs. The number on the node represents the total number of comments received. For, example, Bob received four comments in total.

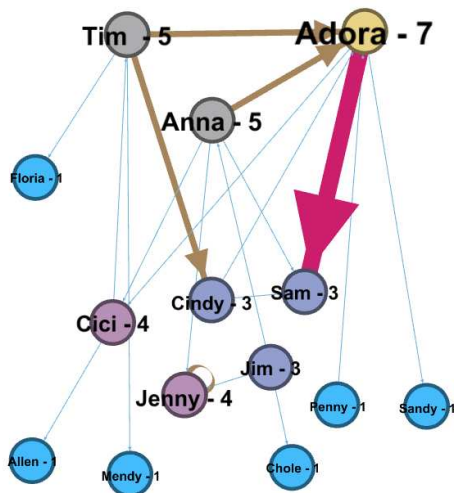
Figure 5 shows that in the category of AF, students were engaged in making comments on peers’ learning logs in general. According to the size of the node, Jim, Penny, Tim, Floria, and Charles had a higher number of received comments than other students. According to the thickness of the edge, Anna, Adora, Jim, Mendy, Sharon, Tim and Charles had a thicker edge than others, indicating that these students were active in making comments.



**Figure 5.** Visualisation of students' social interactions in the category of AF

Figure 6 shows the visualisation of students' social interactions in the category of OC. Compared with students' social interactions in the category of AF, students' social interactions in the category of OC were less frequent; only 14 students were involved in posting comments.

According to the size of the node, Adora, Tim, and Anna had a higher number of received comments than other students. According to the thickness of the edge, Anna, Adora, Tim had a thicker edge than others, indicating that these students were active in making comments.



**Figure 6.** Visualisation of students' social interactions in the category of OC

### *Students' perceptions of social interactions during vocabulary learning in the m-LGC learning environment*

The focus group interviews indicate that students held different perceptions of social interactions during vocabulary learning in the m-LGC learning environment. The thematic analyses identified factors that influenced students' engagement in posting comments in the m-LGC learning environments as follows.

#### *High frequency of social interactions*

For student who were active in posting comments to express their feelings, likes or dislikes and values and beliefs, or further illustrate the learning logs, or ask/answer questions, the three most mentioned reasons were identified:

- **Willingness to share personal feelings:** Many students said they were willing to share personal feelings with others. For example, one interviewee explained:  
*"When I found interesting logs posted by my classmates, I would make comments. I would like to share my feelings with others."* (Anna)
- **Positive mindset:** Students mentioned that they did not care about what other classmates thought of their comments. They tended to make positive comments, hoping to encourage classmates. For example, one interviewee explained:  
*"I hope my positive comments can make my classmates feel happy and motivated."* (Charles)
- **Treating making comments as a learning opportunity:** Students stated that they would make comments by using the target words to memorise them better. For example, two interviewees explained:  
*"I love viewing peers' learning logs. I asked myself about how I would describe the picture posted. So, I made sentences using the target words again in comments."* (Andora)  
*"I just felt the learning experience was interesting and novel."* (Tim)

#### *Low frequency of social interactions*

For students who were not active in posting comments to express their feelings, likes or dislikes and values and beliefs, or further illustrate the learning logs, or ask/answer questions, the three most mentioned reasons were identified:

- **Fear of losing face:** Students mentioned they were afraid of losing face. 'Face' is typical cultures in East Asian countries. People try to avoid being embarrassed. For example, one interviewee explained:  
*"It would be very embarrassed if I made inappropriate comments. Classmates may laugh at me."* (Martin)
- **Fear of hurting classmates:** Students mentioned they cared about what other people may think of their comments. They tried not to make others feel uncomfortable. For example, one interviewee explained:  
*"I was afraid that my true feelings may hurt my classmates. For example, some sentences were full of spelling mistakes. If I pointed them out, my classmates may feel embarrassed. So, I did not make any comment."* (Peter)
- **Less motivation:** Students mentioned they were bored of making comments because there were no rewards or benefits. For example, one interviewee explained:



"Making comments was a waste of time. There was no reward; why should I do that?" (Sandy)

## Conclusion and implications

The results of the study identified two types of students' social interactions in an m-LGC learning environment. Students were more engaged in posting comments related to the category of AF than posting comments related to the category of OC. In addition, the overall picture of students' social interactions in two types were visualised using Gephi. Students with high and low frequencies in each AF and OC social interactions were identified. The interview results indicate that students held different perceptions of social interactions during vocabulary learning in the m-LGC learning environment.

Considering the tentative nature of this study, this study has its limitations. First, this study had a small sample size and a short study duration. Thus, future research is needed to include a larger sample size over a longer duration. Second, the coding in this study was labour-intensive. In the future, text-mining techniques could be used to identify the characteristics of students' social interactions. Third, this study did not examine the relationship between students' social interaction patterns with their vocabulary learning performance. Future studies could be conducted in that direction.

The significance of this study lied mainly in three aspects: (1) it was a novel study that addressed social interactions beyond the classroom among primary students in vocabulary acquisition mediated by the m-LGC tool in Hong Kong; (2) it identified the features and patterns between social interactions and learners' vocabulary acquisition which has rarely been investigated in previous studies; and (3) the results can inform the pedagogical design of vocabulary acquisition involving students' online social interactions in a learner-generated-content learning environment. The factors influencing students' engagement in social interactions in this study may help teachers guide students to overcome negative mindset in learning.

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