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## Improving Chinese Language Learning through Collaborative Kahoot Mode

### Cover Page Footnote

Thanks to My CSU.

# Improving Chinese Language Learning through Collaborative Kahoot Mode

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## Abstract

This study used quantitative methods to assess students' Chinese language learning attitudes and learning habits on Kahoot, a game-based learning platform. Kahoot enables teachers to transform bland Chinese vocabulary memorization into exciting, game-like situations. It makes Chinese language learning fun and interactive. The study aims to compare Kahoot team play mode with individual play mode. Sixty-four fifth graders participated. In the experimental group, students grouped by themselves or the teacher to compete with one another. They enjoyed working together to share what they knew and learned from each other. Students were tested prior to the course (pretest) and following the course (post-test). Observation notes, lesson plans, and surveys were also included. Analysis of the multiple types of data strengthens the conclusion that Kahoot can be an effective tool for teaching Chinese vocabulary, sentences, and culture.

*Keywords:* Motivation, Collaborative, Game-based Learning, Differentiation.

## Introduction

Game-Based Learning is widespread globally; gaming is inherently motivating, which allows students to learn skills and knowledge by leveraging entertainment and relieving quiz stress pressure (Licorish, George, Owen, & Daniel, 2017). In this study, I use Kahoot as a quiz in every class. All the Kahoot quizzes consist of multiple-choice questions, where the student is asked to match the Chinese Pinyin with the corresponding Chinese words, sentences, and culture. Kahoot games are displayed on the classroom smartboard, and students answer on their own Chromebooks. Students earn points for selecting the correct answer and potentially additional points for answering quickly. At the conclusion of each game, the top three students' names are shown on the screen. These winners then receive an award from the teacher.

In almost every class, students of various Chinese language levels keep asking me if we will play Kahoot that day. Students are naturally motivated to participate in the gaming experience. I focus on how to make Kahoot more than just a fun game, but rather an effective method for improving the students' level of Chinese. The top three students' names are listed on the screen after the Kahoot quiz. Students are usually encouraged by their good performance. On the other hand, how can lower-level students also enjoy the game and be encouraged to keep learning when their name never shows up on the leaderboard? I noticed that students performing poorly are more likely to use nicknames so that the teacher and students do not see their poor performance.

This action research project offers a potential solution. The students who typically perform poorly teamed up with students who do well and learned from their classmates. As they answered questions, with their classmates' support, they became more confident and were more likely to win. Accordingly, more students were then willing to use their real names.

I made my Kahoot rules; I wanted to investigate which Kahoot quiz modes would be more effective for learning Chinese language and culture. Is it individual learning mode or teamwork mode? Which mode would be a better match for the differentiation of instruction?

## Literature review

Digital game-based language learning has increasingly been implemented in foreign language learning courses (Alyaz & Genc, 2016). Cong-Lem (2018) concluded that web-based language learning (WBLL) reduced L2 learners' learning anxiety while taking the formative quizzes, making them more active, motivated language learners and enhancing language learners' performance. Bawa (2017) articulated that Kahoot is inherently entertaining by integrating instructional content with an assessment in a gameplay context. Kahoot can mesh with any discipline or subject matter (Aldana, 2020). It provides an engaging environment to support significant academic improvement (Iwamoto, Hargis, Taitano, & Vuong, 2017). Iaremenko et al. (2017) stated that Kahoot could foster intrinsic motivation and engage students in learning activities. Research on online learning games indicates a positive relationship between learning on Kahoot and increased achievement and motivation.

Kahoot can increase motivation for learning a language and improve vocabulary acquisition for later exams (Medina & Hurtado, 2017). Zarzycka-Piskorz (2016) outlines the influence of Kahoot, which increases motivation to participate and engage in a grammar learning game in the General English language course. Extrinsic motivation is enhanced by the desire to win and receive a reward (Iaremenko 2017). Even difficult or complex grammar structures knowledge can be introduced by Kahoot activity (Zarzycka-Piskorz, 2016).

Gamification benefits in various subjects include second language (Gürleyik, & Akdemir, 2018), foreign language (Ho, 2018), English art (Wichadee, & Pattanapichet, 2018), mathematics (Ting, Lam, & Shroff, 2019), and psychology (Warsihna, Ramdani, & Prakoso, 2019). Besides, it offers many effective include Elementary (Halim, Hashim, & Yunus, 2020) and University level (Andzik, Gist, Smith, Xu, & Neef, 2019). A high level of fun competition results in a more relaxed atmosphere regarding failure and increased focus on the educational material.

In a survey of 593 students at Norwegian University, 92% agreed that Kahoot quizzes were fun, and 95% felt they learned something from playing Kahoot quizzes (Wang & Lieberoth, 2016). Prieto, Palma, Tobías, and León (2019) showed that competition games enhance the active participation of students. These research results are based on Kahoot with students in mathematics, biology, geology, physics, and chemistry during 2017/2018. Singh, Ganapathy, and Lin (2019) concluded that students could acquire knowledge by interacting with one another by playing Kahoot, which aligns with Albert Bandura's Social Cognitive Theory (SCT). Kahoot is also a project-based learning platform as collaborative learning is involved (Ashtari & Taylor, 2021). Kahoot is beneficial for teamwork (Zucker & Fisch, 2019).

## Methodology

This study used mixed methods with an experimental method as the primary method. Quantitative data collection included a) pre-surveys and post-surveys to assess students' attitudes towards Chinese language learning, b) theme units' pretests and post-tests to evaluate learning effectiveness. Each student was randomized into either an experimental group, where Kahoot

was used in a collaborative or control group, where individual students used Kahoot. In the experimental groups, the groups were self-organized by the students, often forming around friend groups of 2-3 students.

## Setting and Participants

Participants were recruited from fifth grade at an elementary public-school class in Ohio, USA. The sample included sixty-four students randomly selected from four classes. Students were excluded if their parents did not sign the consent form to permit them to participate. Among the participants, thirty-five were White/Caucasian, sixteen were African American, six were multi-racial, five were Asian American, and two were Hispanic/Mexican American.

The participants were 37, ten years old, and 27, eleven years of age. Based on survey data, 100% of the students are native English speakers, and there was only one student whose home language is English and Chinese. Students in this elementary school have Chromebooks, which they use to play Kahoot as a formative assessment in each Chinese class.

## Data Gathering

At the beginning of the semester, each student submitted a formal consent form signed by their parents for the action research survey and video recording. The four classes were randomly separated into experimental and control groups. Each group contained two classes.

Students in the experimental group learned collaboratively with Kahoot team mode group quizzes, while students in the control group played Kahoot individually. The team mode group worked with two or three students together. Most of the students grouped working together by themselves. The teacher also arranged for some students who did not have a partner.

Quantitative data was collected using the scores from unit pre- and post-tests. Instructors created different Kahoot quiz activities in each class and updated each category's Kahoot quiz based on previous learning results. Kahoot quizzes focused on the Chinese words' meaning and Chinese cultural comprehension. Students were to choose the Chinese words and Pinyin that matched the pictures. A modified Kahoot quiz includes Sentences' meaning and culture's questions. Students liked the upgraded Kahoot, which typically had 20 questions and included words and sentences from previous lessons. Before class every day, students would ask if they would play Kahoot that day, and after playing the upgraded Kahoot, some students would run to the teacher and ask if they could play it again. Data on the students' performance can still be downloaded from the Kahoot account. The teacher can quickly identify which questions were especially easy or difficult, which students performed well, and which students needed more help. In the experimental groups, the top three groups were reported. In the control groups, the top three individual students were reported.

The post-test scores were compared to the pretest to examine the effects of the Kahoot intervention. The pretest and post-test were both tested in individuals; every student finished by themselves using a multi-choice question. The pretest and post-test questions for both groups were identical. The post-test was held at the end of each theme unit before the new topic was introduced. The pretest and post-test were identical and covered the basic and essential Chinese words introduced in the specific unit. Students were not allowed to use any notes or search the web when taking the pretest or the post-test.

Qualitative data were also collected using one survey containing sixty-five multiple-choice questions, including three sections: Beliefs about Chinese learning, Confidence & ability to learn Chinese, and Language learning strategies.

## Data Analysis

Students played the Kahoot quizzes every class; the assessment data in the Kahoot account kept a clear and detailed record of their participation and performance. The teacher can quickly determine how many students obtained the correct answer (Figure 1) in how much time. The Kahoot report can show each student/team's performance in data order. Moreover, the teacher can also see the process of their score changing from the diagram of player progress, the questions each student or team has answered correctly, the total points earned, and the questions they have answered incorrectly (Figure 2).

Figure 1. Response accuracy, completion status, help seeking, and difficulty feedback

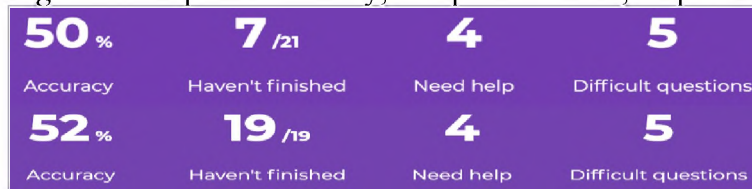
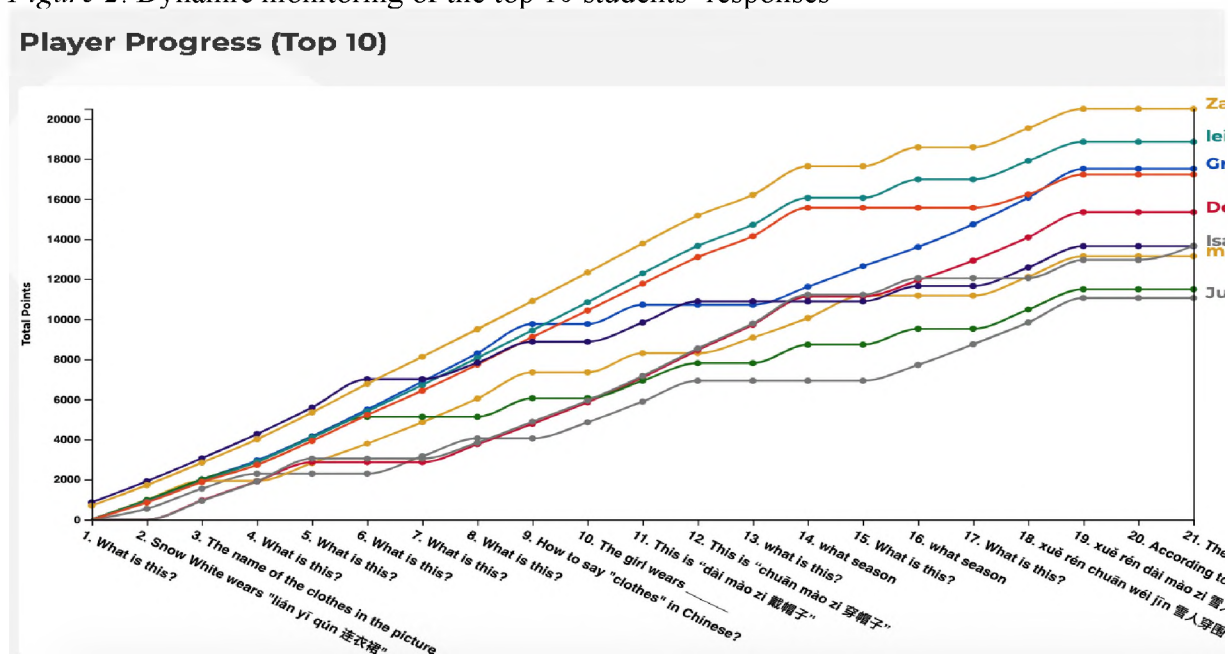


Figure 2. Dynamic monitoring of the top 10 students' responses



Note: Student names are excluded purposely.

The teacher could quickly identify which questions were more challenging for my students to review and practice the relevant concepts. I then analyzed the particular topics on which students were confused and lost points. I analyzed and updated my questions to test the same concepts from a different perspective. For instance, when first learning colors, most students chose 白色 as black and 黑色 as white. I created several Kahoot quizzes to test them; students will quickly realize their mistakes and obtain the correct answers. Kahoot can help them focus, as they naturally want higher scores.

After comparison, a substantial difference was found between students' pre-survey and post-survey scores. The control group had a higher score than the experimental group in the pre-survey. This means the control group had a more positive attitude towards Chinese language learning than the experimental group. Both groups improved their scores in the post-survey, while, in the post-test, the experimental group's score was significantly higher. The result also showed that the experimental group's mean score is higher than the control group's.

My teaching goal for fifth-grade students is to focus on Chinese words and challenge them to make Chinese sentences of their own; the questions connect cultural knowledge as well. I found the students want more challenging Chinese tasks. They performed excellently.

Students were looking forward to the Kahoot portion of our classes. They all agreed that they could retell in English what they read. Students were able to communicate the main points of what they wished to say in Chinese; they could give supporting details and explanations at a listener's request. Students understood word meanings and placed each word correctly in a sentence. They were able to read sentences with these words and understand the meaning of the sentences. Students could recognize each word's meaning even a month later. They obtained high scores in the post-test. Students expressed strong agreement that they understood the material, and they used the learned words in a real-life setting during Chinese conversations which took place in every class. A major portion of each class was dialogue. For instance, "How is the weather today?" "What clothes do you wear today? I am wearing a T-shirt, what color do you like? I like red." Students all wanted to perform in front of the whole class. The survey findings (Table 1) also confirmed that all students had improved their scores in the questions listed. The scores represent the averaged self-rated learning skills of the 64 students in the experiment.

Table 1. *Self-assessment score (%) of students learning skills*

Survey Questions	Control Group (n=32)		Experimental Group (n=32)	
	Pre-survey	Post-survey	Pre-survey	Post-survey
R4 ...retell in English what you read.	45.60	49.00	42.50	43.80
S1 ...communicate the main point(s) of what you want to say.	42.80	47.90	44.10	45.44
S2 ...give supporting details and explanations at a listener's request.	38.75	43.89	36.25	37.40
V1 ...learn what each word means.	52.50	53.10	50.94	52.53
V2 ...use each word correctly in a sentence.	55.60	60.20	50.00	51.56
V3 ...hear or read sentences with these words and understand the meaning of the sentences	50.63	55.79	50.31	51.88
V4 ...remember the meaning of each word a month later	41.88	50.98	33.75	34.80
V5 ...understand or use the word in a real-life setting	44.80	50.87	45.31	46.73



Compared with the pretest, the students' performance in the post-test increased substantially. The experimental group's average score was 36.78 in the pretest and 86.09 in the post-test. The control group's score was 40.28 in the pretest and 81.41 in the post-test. Fifteen students obtained full scores (100% correct) in the experimental group, and 11 students obtained full scores (100% correct) in the control group. The results indicate that the control group scored higher than the experimental group in the pretest, but the experimental scored higher than the control group in the post-test. The experimental group improved more than the control group through playing the Kahoot quiz in a group collaborative mode.

Figure 3. Control group unit pre-test and post-test score comparison

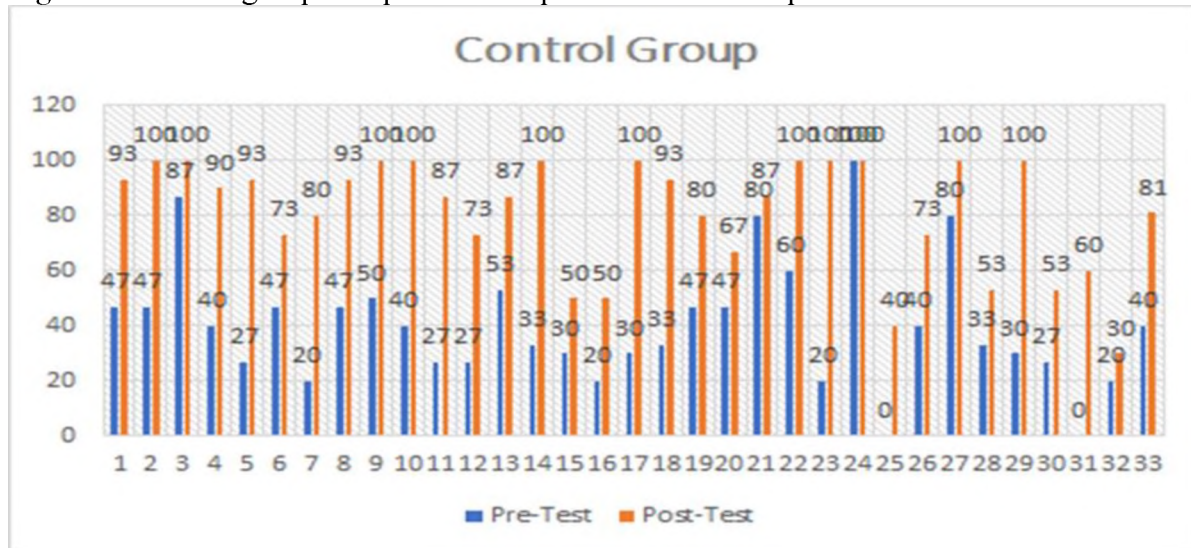
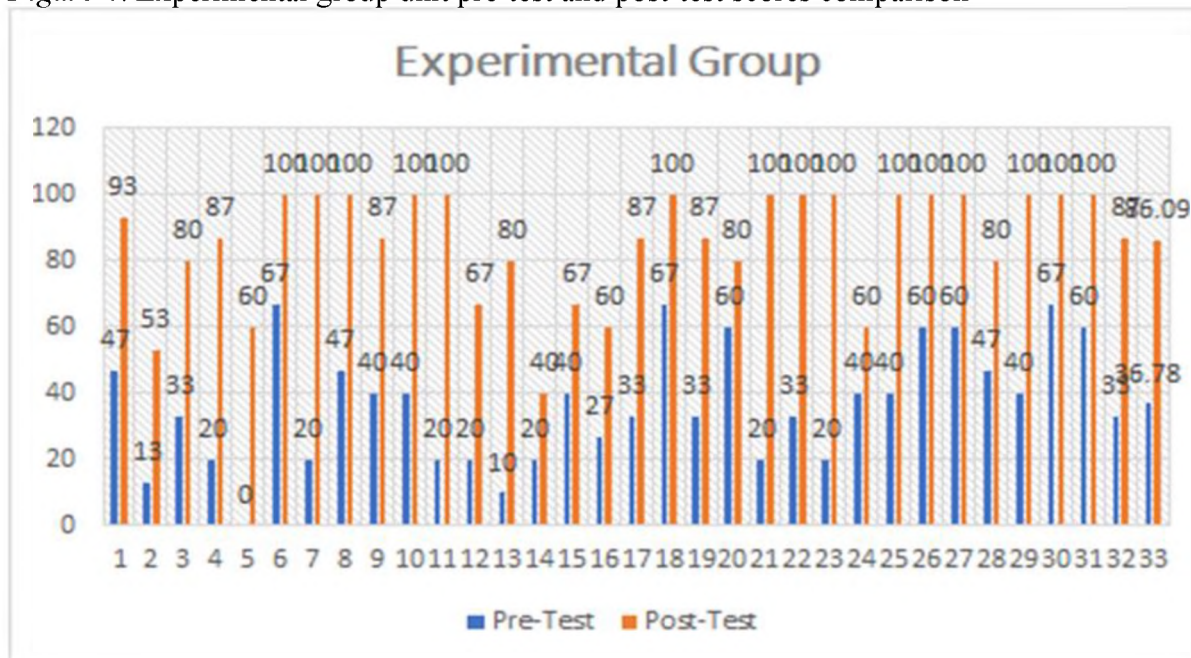


Figure 4. Experimental group unit pre-test and post-test scores comparison





## Discussion and Results

When I started with Kahoot, I only used it as a fun break in class for students and did not explore other possibilities. Students directed their full attention to the Kahoot games to guess and "learn" Chinese words. At the beginning and end of class, I always had students ask me, "will we play Kahoot today?" or "Can we play again?" Their passion motivated me as well. The student feedback helped me realize the power of the Kahoot platform for teaching Chinese. I learned about the collaboration mode of Kahoot, which is the subject of this study. My students' enthusiasm for Kahoot motivated me to use Kahoot as a game-based instructional strategy in class.

When using Kahoot in my classes, I started with simple questions and then gradually increased the difficulty as we moved further. I started with "easy" true or false questions that cover the core content in the unit. Then I modified the test every day by creating a simple Kahoot with "What is X?" type of questions to test students' understanding of Chinese words. I used visual pictures to match Chinese words. Next, I worked towards more challenging practice questions. I created "find details and determine" quizzes that required students to combine several Chinese words matching the picture talk. For instance, which Chinese words match the picture? Students loved this challenging quiz. They can guess the correct answer by getting rid of the wrong words and making the right decision. After we practiced some topic words several times, I decreased the time allowed to answer each question so that students were required to answer more quickly. For some updated, more challenging exercise questions, I gave them a few more seconds to choose.

I found that students would always attempt to answer correctly, even if it was a guess. In each quiz, I would keep some previously asked questions so that students could reinforce their knowledge and score higher. During the second or third round, some students, in particular, said they felt smart because they had retained the knowledge from the first round of Kahoot. They thought they made significant progress!

I explored Kahoot's team mode so that students could play in small groups of two or three. In some cases, I mixed different levels of students to help scaffold learning for some students who were struggling with the material. Some students were happy to play with better Chinese language level students. Most of the students participated in their preferred group, often with their good friends.

The results were extremely encouraging. The post-test scores increased significantly, which shows that this action-based research was successful. It matched the literature review of classroom engagement and motivation (Licorish, George, Owen, & Daniel, 2017) and helped students learn the foreign language Chinese (Ho, 2018). Not only the vocabulary (Medina & Hurtado, 2017) but also grammar (Zarzycka-Piskorz, 2016) and curriculum design (Gürleyik & Akdemir, 2018). Two groups improved in both the attitude and test scores. These results encouraged me to discover more Kahoot features and update my Kahoot questions every day. I reviewed the Kahoot data report every day and analyzed it to determine which question was difficult, who needed more help, who were the top 10 players, and what students' strengths and weaknesses were in terms of content mastery. Then I updated my lesson plan for the next day, grouped the students who needed more help with high-level students, and let them be the partner in the experimental group. I used the Kahoot quiz as a post-review formative quiz, which connected what students learned during regular class time—using game-based technology to teach new content and reinforcing what we learned. Every student loved the quizzes. Students did not feel afraid or stressed from the examinations; instead, they enjoyed them.

## Conclusion

This action research verified that game-based Kahoot could improve students' attitude in learning Chinese regarding students' perceived achievement. The progressive performance helps increasing learning motivation. For example, some students initially felt the Chinese language was too hard for them. By letting these students learn by game-based Kahoot, they soon started to have less pressure about Chinese word learning and had more fun instead.

Furthermore, Repeat Kahoot was used to reinforce the knowledge by playing the same Kahoot more than once. Students liked nothing better than beating their previous score! When they knew their answers, they became more confident, intelligent, and happy. Even if they didn't win, they were often pleased that they did better than last time.

The experimental group performed significantly better than the control group. This is because the students were allowed to work together. Collaborative learning can help scaffold learning for struggling students, and social interaction can get them excited about learning (Zucker & Fisch, 2019). Therefore, students were able to motivate one another to get higher Kahoot scores. In addition, most of them found it fun to answer Kahoot questions together and did not find it too difficult.

Moreover, students worked on the same interaction and presentation performance every class to practice practical Chinese dialogues; they all felt improvement and a sense of achievement. This led to increased self-confidence in speaking the Chinese language. Students would line up in front of the whole class; they were not afraid of speaking Chinese.

As a teacher, I believe it is critical to provide opportunities for students of all achievement levels to pursue their success. Even the best students can become frustrated and demotivated when they feel like they're not getting the recognition to match their effort, not to mention struggling students. Therefore, it is critical to ensure that all students get a chance to play to their strengths and feel included and valued through a game-based Kahoot to have fun, learn to cooperate, recognize their improvement, and learn Chinese words—all while enjoying the process. It can make a world of difference in their motivation.

My research paper focuses on collaborative team mode and content development updates every day to customize student-center learning. Compared to previous research on Kahoot, my angle is unique and practical. My research explored how to build Kahoot quizzes into lesson plans. Every day, the Kahoot quiz equipped my students with the Chinese language, cultural knowledge, and conversation skills to face their daily tests with joy.

Their teamwork in the experimental group considerably enriched the students' Chinese learning experience. Following the group cooperation mode's rules and norms may have allowed students to go beyond just learning the content. It makes learning purposeful and lets individuals relate to one another. Having fun with others is not stressful; it is enjoyable. The overwhelming majority of students admitted that they would like to see more games in their classes. Overall, playing Kahoot has a positive impact on learning both knowledge and skills. Students noted that they wanted to perform well. Kahoot led to increased attention, focus, interaction, and engagement and strongly supported their learning in the course (Licorish, George, Owen & Daniel, 2017).

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