触覚の取得：粘土造形に関する研究

北海道言語文化研究
No. 21, 95-115, 2023.
北海道言語研究会

Getting tactile: A study of plasticine modelling

John Guy PERREM

触覚の取得：粘土造形に関する研究

ジョン ガイ ペレム

Abstract: This paper examines student attitudes regarding the use of plasticine as a learning tool in the university language classroom. Plasticine clay was used as a tool where students had the opportunity to create models of vocabulary using their imagination and hands through pair work. The study in question introduced plasticine as a tactile learning tool in two English Communication EFL classes across three sessions. These sessions were then evaluated regarding the use of plasticine and its potential from a student perspective and using teacher reflections. This potential was rooted in factors such as memory, enjoyment, timing and future frequency. This research was undertaken to establish a baseline regarding the feasibility and levels of engagement around plasticine modelling which is rarely used in university language class settings. A survey questionnaire was utilized to garner the students' attitudes. The results show that there was a positive endorsement of using plasticine and that there is potential to increase the frequency with which it could be deployed in the university classroom.

Key words: modelling, plasticine, tactile, university

1. Introduction

Students in primary and secondary level education are often exposed to a wide range of tactile learning and educational experiences which engage a variety of their senses. In this way, different learners are exposed to myriad different techniques when they are young/er learners. However, as students progress towards tertiary level, opportunities to engage with more tactile elements, such as plasticine, become lost in favour of other traditional media which skew away from manual creativity (Califf, 2020; Mobley & Fisher, 2014). This relegation of the kinesthetic within university classrooms raises the questions of why educators often sideline or abandon tactile creative methods so easily when learners are perceived to be beyond a certain age range and furthermore when some students' learning is enhanced by using their hands depending on their learning style.

For some decades now research (Kolb, 1984; Heilman, Blair & Rupley, 1990; Herman, 2021) has shown that regarding diverse methods of vocabulary instruction,

a multisensory approach is recommended. This is because knowledge is stored in numerous forms and students have different ways of processing information. As Herman (2021) notes, this knowledge can be in things “such as mental pictures, kinesthetic associations, smells, and tastes”, and further that, “direct vocabulary instruction should take advantage of these different sensory forms of knowledge” (p. 3). Additionally, more recent research testing the use of clay modelling at secondary school level for vocabulary acquisition in hard science biology classes has shown that there were positive emotional, behavioral and physical experiences resulting from the deployment of clay as a learning tool (Bailey et al., 2022).

Being cognizant of this gap between the research recommendations/positive aspects of a multi-sensory approach and the paucity regarding tactile classroom elements on the ground, this study sought to explore the attitudes of students in relation to using plasticine in university level English communication classes to tease out this issue. From a student perspective, is there a valid place in the university pedagogical toolbox for what may be perceived by some as a whimsical tool such as plasticine?

The author was initially inspired to delve into this issue and indeed to start using plasticine as a tool after reading Kolb’s (1984) *Experiential learning: Experience as the source of learning and development*, in which Kolb states, "learning is the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping experience and transforming it" (Kolb, 1984, p. 28). This idea of both “grasping” and “transforming” inspired me to turn towards plasticine as an explorable option.

2. Learning styles, strategies and motivation

Learning styles are rooted in how students incorporate and process information in different ways. For example, these styles can include students that learn best through audio stimuli, trial and error, visual stimuli or kinesthetic associations (Kolb, 1984). To engage adequately with students’ different learning styles, different teaching methodologies can be deployed to increase engagement from students. As Elgmen and Henriksson (2014) note “teachers need not ask ‘Does this student have the ability to learn?’ but rather ‘How does this student prefer to learn?’” (p. 92). The aforementioned preference of learning styles become manifest in students in different ways as a result of environmental surroundings and other factors such as learned behaviour (Pritchard, 2014).

Kolb’s (1984) initial research and ensuing research (Elmgren & Henriksson, 2014) on the learning process (refer to Figure 1) has led to four learner style profiles being identified. These four learner profiles have four different key questions (Why? What? How? If?) connected to their learning approach:

1. The diverging learner (Why?)
2. The assimilating learner (What?)
3. The converging learner (How?)
4. The accommodating learner (If?)

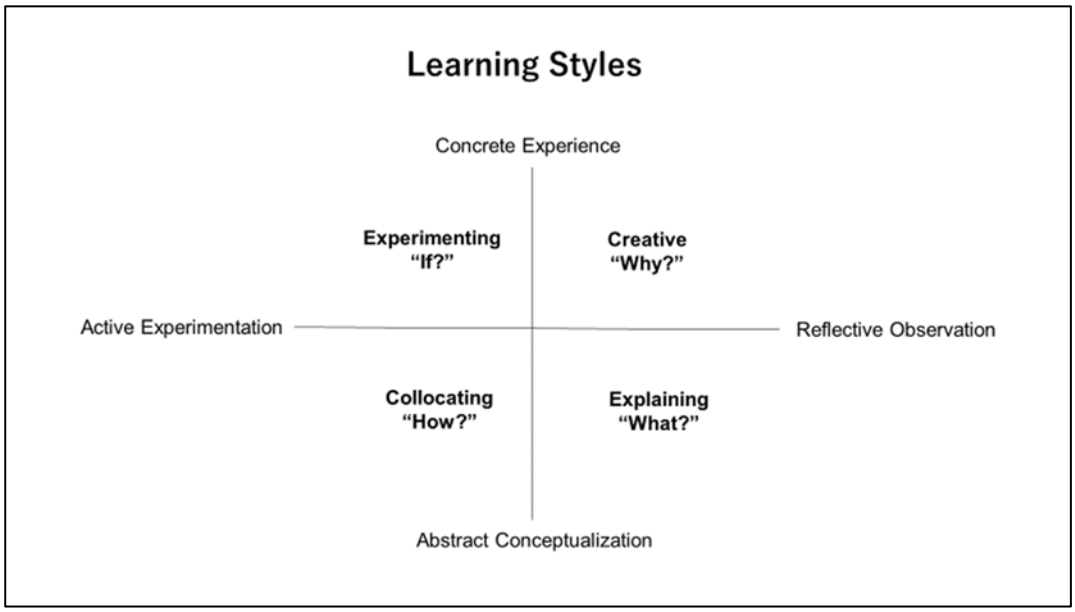

Figure 1. Adaptation by the author of Kolb's (1984) learning styles.

These learners occupy different spaces (Elmgren & Henriksson, 2014) within Kolb's (1984) learning process system and have different activity needs to support and motivate their learning. For example, the 'diverging learner' can be mapped to the area between concrete experience and reflective observation. These learners find emotional links beneficial and excel in discussion based activities. The 'assimilating learner' exists between reflective observation and abstract generalization. These learners absorb data and theories well and lean towards individual tasks. The 'converging learner' exists between abstract generalization and active experimentation (Pritchard, 2014). These learners are focused on logical reasoning and problem solving tasks. Finally, the 'accommodating learner' is found in the zone between active experimentation and concrete experience. These learners enjoy tactile and kinesthetic activities and are "not fond of passive learning methods" (Elmgren & Henriksson, 2014, p. 98). I was particularly aware of how 'accommodating learners' may be limited in the amount of tactile activities they encounter during university language lessons and thus the plasticine modelling seemed an apt medium to use. It should be noted that students are not completely boxed within one learning style and many are able to learn though a multi-sensory approach (Herman, 2021).

Retaining engagement with students via their learning style as a connective thread can be crucial as this links to wider learning strategies. There is a distinction here between learning styles and learning strategies. Learning strategies connect to motivation and development rather than the ways in which a learner processes information. These strategies bring students through a journey from an initial basic duality where information is conceived of as being polarized into 'right' or 'wrong', towards a realization of relativism where knowledge is seen as contextual, and finally into an evolving of commitments where they can express their views on life and feel invested (Perry, 1998). Within an EFL university classroom context examples of learning strategies featuring dualistic thinking might include reading on the elementary rules of comparative adjectives. Relativism could involve essays where students critically assess diverse sources of information and analyze how comparative adjectives are used in different contexts. Finally, the evolving of commitments could involve real-world applications, such as creating a travel article that compares different destinations using comparative adjectives. By using a variety of activities that align with students' learning styles and preferences, teachers can help them engage with the language more deeply and develop a broader perspective on how to use it in different contexts.

There is a risk however that students may deviate from this development through deflections which Perry labels as retreat, escape and temporizing (see Figure 2). Retreat refers to a deterioration in the students' development. Escape is linked to disassociation and disengagement. Finally, temporizing means a pause in the development (Perry, 1998).

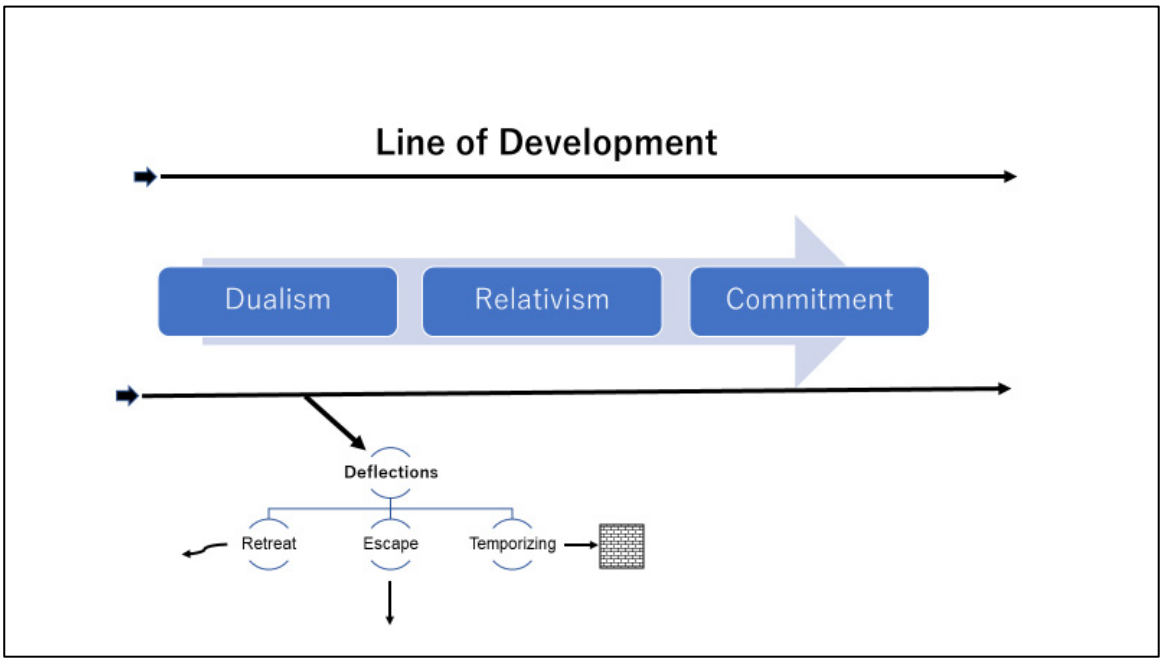

Figure 2. Adaptation by the author of Perry's (1998) model of development.

To counter these deflections, constructive links can be established between learning strategies and learning styles to encourage a sense of motivation and commitment to grow. For example, if a learner excels in tactile associations, by the teacher incorporating and carefully designing relatable pedagogic activities (Johnson, 2018) that allow for these to be present in the classroom, the student will in turn feel more motivated and engaged. Because classrooms have a diverse set of learners and learning styles it is useful to integrate a range of activities that cater to that diversity.

The logic behind deploying the use of plasticine modelling was twofold. Firstly, at a focused level, it allowed students with a tactile/kinesthetic learning style to feel specifically catered to. Secondly, at a broader level, it could potentially shift students' perceptions within the first stage of dualism by allowing for individual expression via the modelling of a word/phrase rather than a straightforward right or wrong answer. In this way, the students could express how they viewed vocabulary in a three dimensional and personalized way though model making. This could be viewed as a relativistic view and thus they are supported in the main line of development within the wider learning strategy.

A key factor here is also how being cognizant of learning styles has the potential to build motivation and enthusiasm to move forward. As Csikszentmihalyi (1990) notes:

> The chief impediments to learning are not cognitive. It is not that students cannot learn; it is that they do not wish to. If educators invested a fraction of the energy they now spend trying to transmit information in trying to stimulate the student's enjoyment of learning we could achieve much better results (p. 115).

It is incumbent upon the teacher then, to create a motivating learning environment by arousing and keeping students' interest through their approach (Elmgren & Henriksson, 2014). To drill down into the practicalities of creating a motivated learning environment, Turner and Paris (1995) have identified six worthwhile characteristics as shown in Table 1.

Deploying plasticine modelling within classes touches on Turner and Paris's (1995) motivating characteristics in different beneficial ways. For example, the model making is a collaborative endeavor as students are placed in pairs to show each other their creations and also guess the meaning of the models in a speculative phase of the activity. The plasticine modelling activity also incorporates aspects of control as students are free to choose how they envisage a word/phrase and sculpt that individualized image into a physical model. Plasticine modelling also allows for what Turner and Paris (1995) call consequences, where positive feedback is possible from the teacher as the models can be viewed and discussed, learning praised and creativity highlighted.

Motivating Learning Environment Characteristics	Description
1. Choice	Giving students latitude to make selections in learning.
2. Challenge	Incorporating sufficient challenge to avert boredom due to ease or frustration due to being overtaxed.
3. Control	Allowing students some autonomy within their learning.
4. Collaboration	Social interaction and opportunities for peer to peer tasks.
5. Constructing meaning	Demonstrating and finding the value of knowledge.
6. Consequences	Positive feedback for demonstrations of learning and student creations.

Table 1. Motivating Environment Characteristics according to Turner & Paris (1995)

Scientific rather than communication oriented classes have deployed plasticized clay in creative ways for studying anatomy and biological vocabulary, but research into this has been focused on pre-elementary, elementary and second level schooling (Bailey et al., 2022; Chumark & Puncreobutr, 2016; Dubey & Rule, 2007).

3. Methodology

The methodological approach to the study was threefold. Firstly, plasticine sessions were conducted where students could actively use the plasticine within classes through a vocabulary review activity. Secondly, a survey was used to gauge the students' attitudes towards the plasticine sessions (this survey can be viewed in the Appendix A). Thirdly, my own teacher reflections were used as I consciously observed how the plasticine sessions unfolded.

The plasticine sessions were conducted during the fall term of 2022 with two English Communication classes at Muroran Institute of Technology (MuroranIT). MuroranIT is a national university situated in Hokkaido, northern Japan. The university has approximately 3,000 students who pursue engineering, technology and other hard science degrees. The English Communication course at MuroranIT is mandatory for all students and runs over a period of 15 weeks in total. The course content is targeted towards second year undergraduate students and class sizes average 25 students per class. Both of the English Communication classes who participated in the study followed the same syllabus and content.

Plasticine is not a readily available tool within the university and so these were purchased by the author on a personal basis. To add a sense of variety and vibrancy to the plasticine, a multitude of colors were purchased rather than only one. Prior to the plasticine sessions the plasticine was separated into fist size pieces and these were then stored in a large Tupperware box to retain pliability within the clay to ensure they could be used sustainably and

repeatedly. Enough plasticine was purchased to ensure that each student had their own piece of plasticine to work with during the sessions.

Each plasticine session was focused around a vocabulary review activity. Students had previously completed a speaking only version of the activity and so they were familiar with the basic activity concept which supported them in conducting the plasticine version of the exercise. In the speaking only version of the activity the students were put in pairs and one student had to describe some target vocabulary by paraphrasing. They were not allowed to state the target vocabulary directly. The other student had to guess what the target word was based on the description given by their partner. The plasticine activity was initiated with the distribution of a piece of plasticine to each student. They were free to choose which color they preferred to use by selecting it from a large Tupperware box which was passed around the classroom. To keep the individual colors vibrant, mixing of different plasticine colors together in one model was not permitted. This was also due to the need for reusing the plasticine multiple times. Students were put in pairs and asked to pick up their plasticine to make it pliable and ready to use. The pairs were seated side by side with two students allocated to one desk. Each desk usually fits three students but due to COVID-19 restrictions the middle seat was kept empty to ensure appropriate social distancing was maintained during the plasticine sessions.

Each pair then played rock, paper scissors to determine a nominal ‘winner’ and a ‘loser’. Having piqued their interest, at this point I explained the instructions for how to conduct the activity in detail. The losers would all close their eyes and the winners were asked to look at the blackboard. The winners would see vocabulary (refer to Appendix B) from the previous lesson written on the board. The selected vocabulary was primarily concrete with a minority of abstract words also included. After a ten second countdown from the teacher the vocabulary was then erased and the winners needed to begin making a plasticine model of the word they had seen.

The ‘losers’ were allowed to open their eyes from the moment the countdown timer ended and they could make guesses and comments as to the vocabulary that the plasticine model linked to. The students were free to create the model in any way they wanted to, based on their own imagination and creativity. A two minute timer was allocated per round and then the winners and losers would switch roles. New review vocabulary was written on the blackboard and then erased for each round. Once the vocabulary was revealed between rounds a brief listen and repeat activity was also conducted with the whole class to practice pronunciation.

Each plasticine session took approximately 16 minutes out of a total of 90 minutes class time. Eight vocabulary items were reviewed during each session and three sessions were conducted with both classes. This timing was based on non-systematic plasticine piloting I had conducted in the spring term of 2022 with two Freshman English classes and during an evening public lecture for adults at MuroranIT in October 2022. That piloting revealed that

students needed enough time to create their models but not an excessive amount so that the activity lost its vibrancy. A two minute timer for each round allowed for a sense of urgency but usually enough time for model completions.

Once the 16 minutes had elapsed the students were asked to roll their piece of plasticine into a ball and place it back in the Tupperware box. Wet tissues were provided to students to clean their hands at the end of each session. To ensure cleanliness in the era of COVID-19, hand sanitizing spray was also used by the students upon entering the classroom to reduce risks. On a practical note, the style of plasticine used leaves no residue or markings on desks but teachers can distribute sheets of paper to be put under the plasticine if they wish to try this activity in their own classes and are worried about dirtying their classroom furniture.

To gauge students' attitudes of the plasticine sessions an optional survey was distributed at the end of the third session. In total, 30 students chose to answer the survey across the two classes. These survey responses were combined given that the classes follow the same syllabus, content and are in the same year of their undergraduate degree. The formulation of the survey questions was adapted from Bailey et al. (2022) work on the use of clay modelling for vocabulary learning in high school biology classes. While Bailey et al. (2022) largely focused on testing, I was more concerned with the attitudes of students towards the use of plasticine to establish a baseline regarding how engaging the activity is. The value of using plasticine in a pre-test/post-test scenario is outside the scope of this particular study, although, as I will subsequently suggest, that would be a useful next research step. Students were informed verbally and through the written survey instructions that it was optional for them to respond. The survey was provided in both English and Japanese and students could decide which language they preferred to use.

Being cognizant of ethical considerations the survey was anonymous. This meant students could potentially feel freer to give negative feedback regarding the plasticine sessions should they wish to without any fear of repercussions from the teacher. Anonymity is important as the collection of the survey took place in the physical classroom rather than in an online setting. The survey itself was comprised of a total of eight closed questions. Responses were possible across a five-point Likert scale ranging from 'strongly agree' to 'strongly disagree' to gauge the intensity of the participants' attitudes.

Lastly, my own teacher reflections on the plasticine sessions were used to explore which points of interest emerged from my observations. Bailey et al.'s (2022) previous larger scale research incorporated high school teacher interviews who had facilitated the use of plasticine clay in their classrooms, but as I did not have university colleagues using plasticine as a tool I adopted a reflective approach. Kyriacou (2007, p. 121) notes that reflection is an "essential part" of developing and evaluating both teaching skills and practices. These reflections are discussed in the following paragraphs.

The reflections during the study consisted of field-note style documents containing my observations from the lessons. These documents were written directly following the completion of each one of the plasticine study lessons. This immediate post-lesson writing approach was adopted to ensure that the observations and reflections I was making were fresh and not skewed by the passing of too much time. For the reflective notes, one class was labelled as Class A and the other as Class B. Approximately one page was written per class and per lesson. This gave a total of six reflective pages for the study as a whole.

In those notes, I had commented that students in Class A seemed to be 'very surprised and interested' in the plasticine from the outset of the first lesson. A similar positive aspect was noted in the initial lesson with Class B, and a reflection was made that the 'class got off to a positive start'. One interesting observation in Class A was that many students smelled the plasticine and in the notes I reflected upon the fact that this sensory aspect seemed to 'stir some nostalgic aspect within them'. In the second lesson, I noted that students in Class A had 'begun making the plasticine pliable without needing to be told to do so' and that I could 'feel their eagerness to start'. One environmental aspect was reflected upon in the second lesson with Class B concerning the necessity for wet-wipes for students to clean their hands. In that lesson I observed that I 'may need to use a staggered approach' to the activity to reduce the usage of such resources. Additionally, I had reflected upon the need to 'consider a faster version' if the plasticine activity is used in subsequent college terms. Regarding the third and final plasticine study lesson, with Class A I observed that 'a small number of students seemed disinterested in the activity' but that 'students were collaborating very well overall'. I had also noted that there was a 'slight issue with a calm atmosphere after the intensity of the plasticine activity'. This was an indication of the high level of enthusiasm I sensed amongst the students and bringing that energy down made me consider the timing and placement of the activity within the structure of future lessons. For the third lesson with Class B, I observed that the 'flow of the activity proceeded smoothly' and that 'students seemed disappointed that it was the final plasticine lesson'. While teacher reflections are an important part of pedagogy it is also crucial to garner the opinions of students themselves regarding learning activities. Thus, the following section turns to the results of the plasticine study survey conducted with both Class A and Class B.

4. Results

This section presents the results based on the student responses to the eight survey questions. In total, 30 respondents completed the survey. The responses indicated that an overall endorsement was present from the learners regarding using plasticine in the classroom with some caveats which will be detailed presently.

Question 1 began the survey by seeking to assess how many students agreed that working with their hands helped them to learn. This question links to the learning styles discussed earlier in the paper. 20% (refer to Figure 3) of respondents strongly agreed that working with their hands did help them to learn and this sizable percentage indicates that a greater number of tactile activities should be considered for inclusion in classes going forward. Their inclusion may be beneficial to engage such students. If a similar percentage of students who strongly agree that working with their hands are present in other classes it may be worthwhile conducting a learner styles questionnaire at the outset of a course to gain an insight into which types of learning activities would periodically connect best with learners.

However, a notable result was that 36% of respondents were undecided regarding if working with their hands helped them to learn or not. This may indicate that there have not been enough opportunities for such students to be able to explore tactile aspects of learning in their recent experience. 10% of respondents strongly disagreed that working with their hands helped them to learn. This is an important reminder that not all students learn in the exact same way and that incorporating a variety of techniques to connect with different learners in diverse ways is prudent. Teachers will struggle to have each activity universally connect with all students and so it is a matter of creating a diverse set of activities where different learners can feel engaged at different times and avoid the pitfalls of retreat, escape or temporizing (Perry, 1998) presented previously in Figure 2.

Figure 3. Survey Q1. Respondent replies gauging if working with their hands helps them learn.

Question 2 (refer to Figure 4) wanted to assess how effective plasticine was in relation to picturing the meaning of words. This 'picturing' aspect differs from Question 1 in a nuanced way because students were in pairs during the plasticine sessions. This means, for example, that during a round of the vocabulary model making activity

Student A could view Students B's three dimensional plasticine model even if Student A did not have to create it with their own hands during a round. And Student B could of course view their own model as the sculptor of the designated word. In this way both students in a pair were able to view the created plasticine models to picture meanings. The responses to this question showed that 27% strongly agreed that they could picture the meaning of words better with plasticine. 6% of respondents strongly disagreed while 17% disagreed. 20% of students were undecided if they could picture the meaning of words better with plasticine or not.

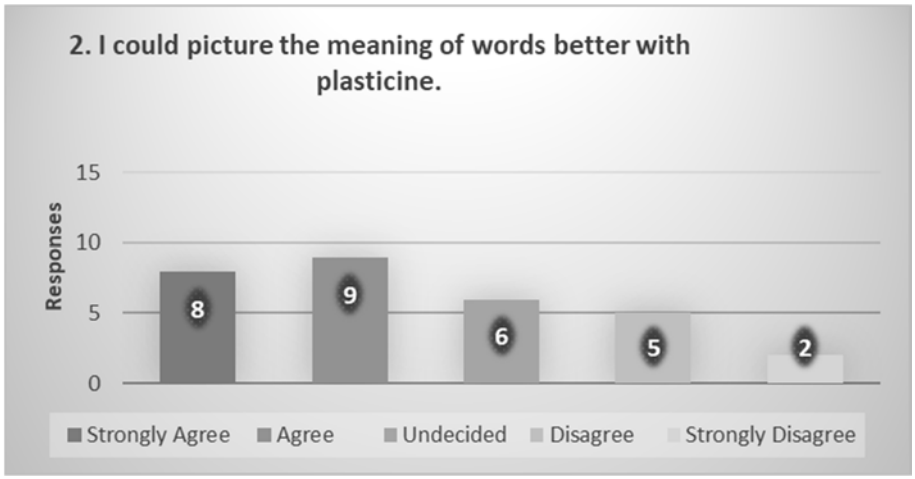

Figure 4. Survey Q2. This question garnered responses about picturing the meaning of words better with plasticine.

The perceptions of respondents regarding if they remembered words better after using plasticine was examined in Question 3 (see Figure 5). This question served a dual function of also further investigating the statement posed in Question 1 regarding students working with their hands to help them learn. While Question 1 was a general question about working with hands, Question 3 focused on specifically using plasticine. A combined majority of respondents at 56% strongly agreed or agreed that they remembered words better after they used plasticine. This indicates that plasticine may serve a valuable function in aiding students' memory for vocabulary retention. A substantial percentage of 27% were undecided, while a combined figure of 17% disagreed or strongly disagreed that using plasticine helped them to remember words better.

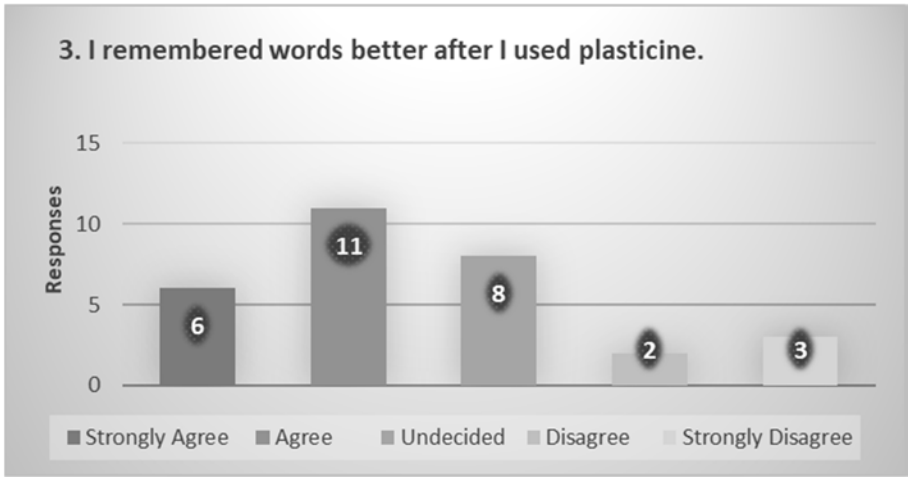

Figure 5. Survey Q3.This question examined memory in relation to using plasticine.

As using plasticine modelling in lessons was atypical for the students in English Communication classes, Question 4 wanted to gain an insight into how difficult making models of words was for the students. A large combined majority of 67% (see Figure 6) strongly disagreed or disagreed that it was too difficult. This means that the task itself is not overly taxing and this is promising as students could potentially avoid feeling overwhelmed by the challenge of model making. 13% strongly agreed that making plasticine models for words was too difficult and this may flag that additional scaffolding and support may be beneficial from the teacher in helping students reduce their perceptions of difficulty. This links back to Turner and Paris's (1995) concept of 'challenge' (refer to Table 1) and the need to generally find a middle ground regarding difficulty to support engagement.

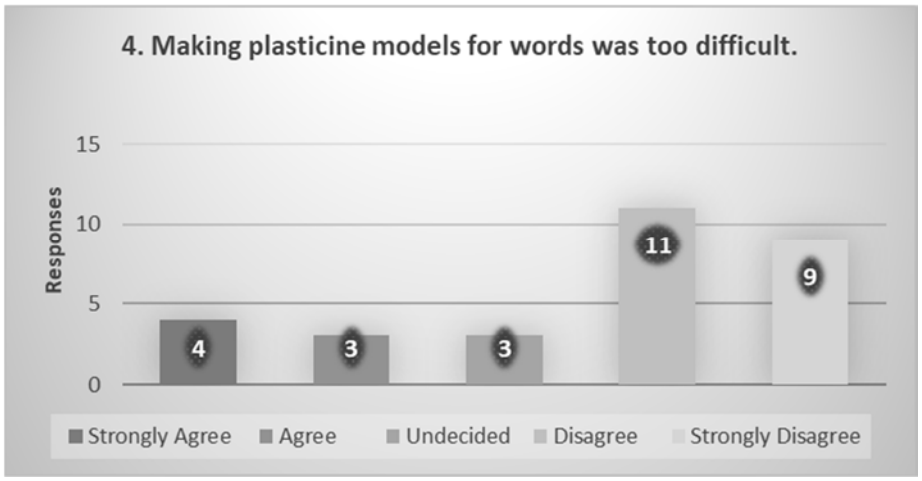

Figure 6. Survey Q4. This question explored respondents' attitudes towards the difficulty of making plasticine models.

Question 5 examined if the respondents found that the plasticine was boring to use after a while. A large percentage of 53% (refer to Figure 7) disagreed that it became boring while 17% strongly disagreed. This means that 70% of the respondents overall did not think the plasticine became boring and is a useful snapshot that it was perceived as an interesting activity. From my own observations and reflections during the plasticine sessions the social and peer interactions aspect of students using the plasticine was noticeable in a positive way. This social aspect also links to 'collaboration' and the importance of peer to peer tasks identified by Turner and Paris (1995). Research (Johnson, 2018) on student motivation has noted that the selection of materials can be demotivational and hampering for students if they are inappropriate and that these materials can be perceived of as being "uninteresting" or "poorly designed" (Johnson, 2018, p. 15). Given that 70% of respondents did not find that the plasticine became boring, it is a positive sign towards the activity avoiding the demotivational hazard that Johnson (2018) references.

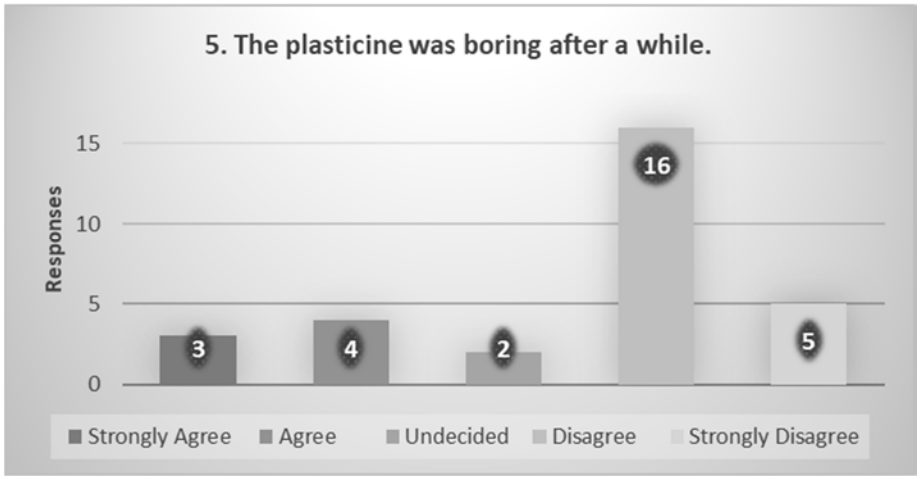

Figure 7. Survey Q5. This question wanted to explore if the plasticine became boring to the respondents.

The temporal aspect of the plasticine activities was examined in Question 6. Here I wanted to check if the respondents thought that too much time had been allotted to using plasticine. As mentioned previously, 16 minutes had been allocated for each plasticine session out of a total of 90 minutes class time. The 16 minute limit was based on piloting that had been undertaken the previous term by using plasticine with Freshman English classes and a public lecture. According to the survey respondents, 50% disagreed (see Figure 8) that too much time was spent using the plasticine, while 23% strongly disagreed. This means that 73% did not think too much time had been dedicated to the activity. A combined percentage of 14% strongly agreed or agreed that too much time had been allotted. During my observation of the plasticine sessions no student completely disengaged with the plasticine modelling during the 16 minute period. However, given the results of Question 6 it may be prudent in future to reduce the allocated activity time to 14 or even 12 minutes to reflect the preceding 14%'s opinion.

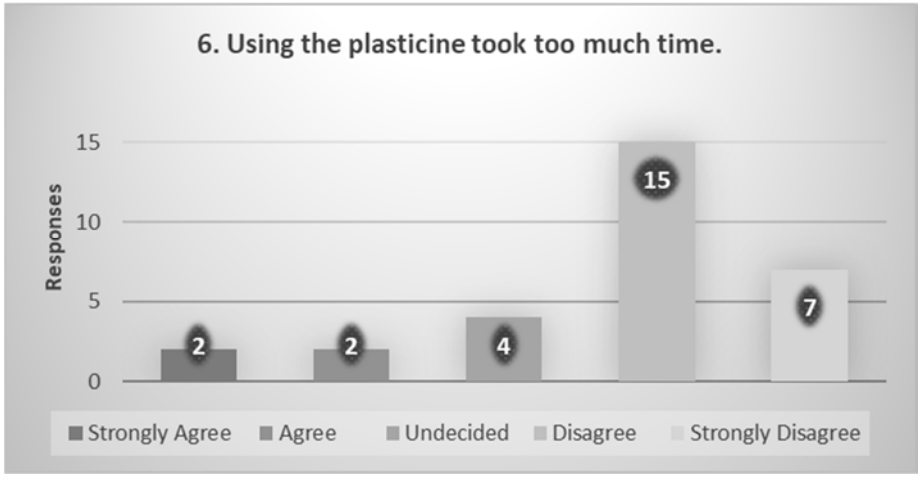

Figure 8. Survey Q6. This question examined if the length of the plasticine activities were too long.

How enjoyable using plasticine in class was explored in Question 7. While enjoyment is not a sole determining factor in relation to learning it is a worthy factor to consider. This is because if students are consistently not enjoying the activities chosen by the teacher their motivation (Johnson, 2018) and the classroom atmosphere may be negatively impacted upon. The rationale underlying this question linked to the concepts of 'choice' and 'control' proposed by Turner and Paris (1995) by giving students latitude to make selections in their learning and allowing for autonomy respectively. For example, if students overwhelmingly reject a particular activity set forth by the teacher, that would be worthy of reflection and a reassessment of what alternatives could be introduced to give students a greater choice and a sense that their voices matter within the learning practice. The responses to Question 7 showed that 43% (see Figure 9) strongly agreed and 27% agreed that they enjoyed using plasticine in class. Only 3% of respondents strongly disagreed that they enjoyed using the plasticine while 17% remained undecided. Given this result it is feasible to integrate using plasticine as an enjoyable activity for most students.

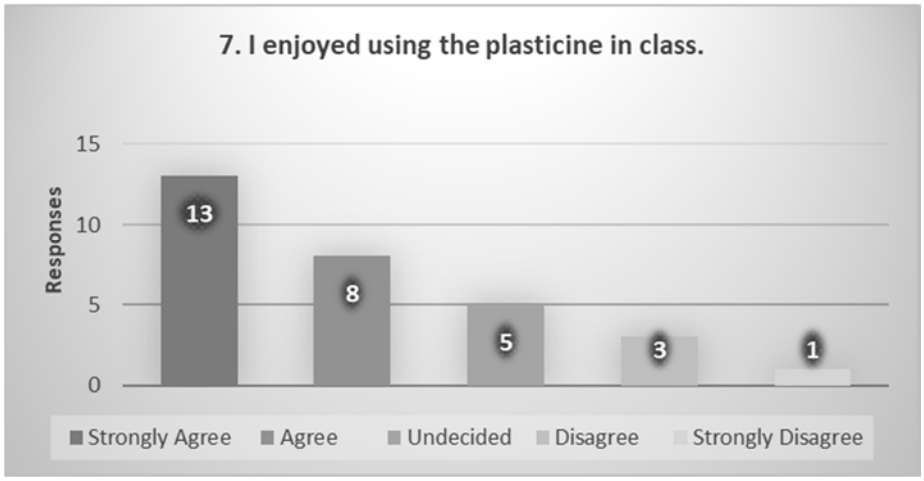

Figure 9. Survey Q7. This question gauged respondents' enjoyment of using plasticine in the classroom.

Question 8, the final question in the survey, looked at how much the respondents agreed with using plasticine more frequently in class. The responses revealed that a combined percentage of 66% (refer to Figure 10) strongly agreed or agreed that they would like to use plasticine more frequently. At the time of the survey completion the respondents had experienced three plasticine sessions. This allowed them to give their opinion from a stronger base rather than from a once off scenario.

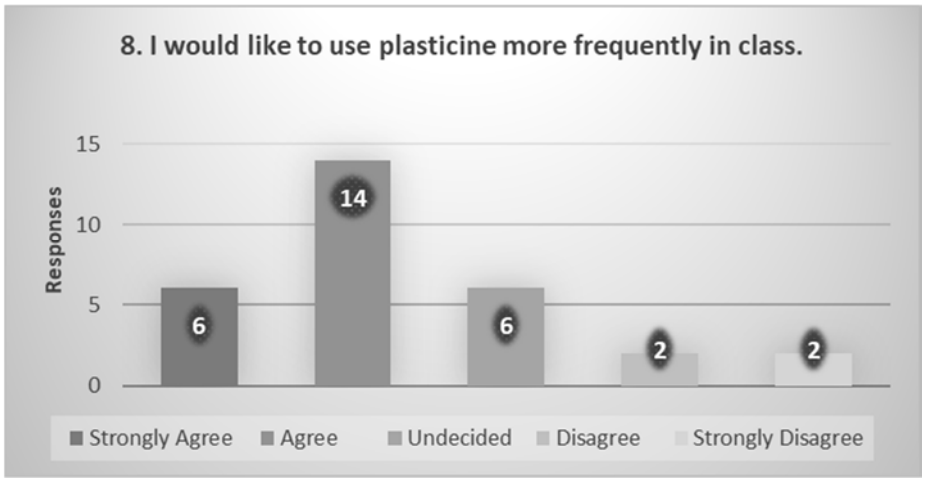

Figure 10. Survey Q8. This question explored if the respondents would like to use plasticine more frequently in class.

7% strongly disagreed and the same percentage disagreed about using plasticine more frequently. 20% remained undecided about increasing the usage frequency. As stated in the Question 6 reflection regarding the time allocated to the plasticine activity, it is possible to speculate that if the timing of the activity is reduced that those

who felt against the idea of doing plasticine activities more frequently may become less opposed. This would need to be confirmed in a subsequent survey however.

5. Discussion

The results of the study show that there are several points to be reflected upon. Overall a majority of the respondents engaged with the plasticine modelling in a positive manner and their responses indicated that there is scope to increase the frequency of using such a tool in the university language classroom. According to the responses, the merits of the plasticine modelling were rooted in improved memory and meaning connected to words for a moderate amount of respondents. Furthermore, a majority of the respondents found the activity enjoyable and that it did not become boring. This is an important factor when considering a motivating learning environment based on activities that students can engage with enthusiastically.

Based on the results, one key change going forward would be the adjustment of the timing dedicated to the plasticine modelling as a way to potentially counteract disengagement from the minority of learners surveyed who did not feel as engaged or enthusiastic about the plasticine tasks as their peers in the majority. Given that increasing the frequency of using plasticine modelling is reasonable based on this study, I propose four main ways in which adjustments could be made beyond the allocated timing issue.

Firstly, during the plasticine sessions the pairs of students were fixed for the duration of the activity. This could be altered to have an alternative rotating partner system to increase the social and peer to peer aspects of the task.

Secondly, a speed version of the plasticine modelling activity may be worthy of adopting where students could have micro-sessions that bring tactile learners bursts of engagement. These bursts could be interspersed throughout a lesson if students are provided plasticine at the start of a lesson to save on distribution time. For example, each student could collect their piece of plasticine upon entry to the classroom. The number of rounds could be limited to four and a 75 second timer per round could be trialed in the speed version.

Thirdly, in the plasticine sessions, I as the teacher selected the particular word to be modelled based on the vocabulary that had been studied in the previous lesson's class. This could be flipped to allow for students to select from a designated range of vocabulary and execute the task with the teacher adopting a purely facilitatory role. This role flipping would link well with Turner and Paris's motivating learning environment concepts in myriad ways (see Table 1), but in particular control, collaboration and choice.

Lastly, if the preceding flipping of roles occurs, the teacher should be able to increase their positive feedback regarding the created plasticine models, draw the attention

of the class to particularly creative outputs and be cognizant of the ‘consequences’ (Turner & Paris, 1995) to enable building motivation and confidence in the students through praise.

6. Conclusion

The aim of this study was to examine the attitudes of students in English Communication classes regarding the use of plasticine modelling. The overall positive endorsement by the respondents indicates that plasticine is indeed a potentially worthy tool in the university teacher’s toolbox and that it could serve to bring largely sidelined tactile aspects into the classroom. This would be helpful for those learners who are of a kinesthetic/tactile disposition and who are currently not adequately catered to in traditional classroom activities.

The scope of this study was limited to attitudes to establish baseline feasibility from an engagement perspective but future research would benefit from examining the issue from a pretest/posttest standpoint. Such research in a language classroom setting would bring new strands for consideration into the discussion beyond the attitudinal findings this paper hitherto set out.

It is hoped that this paper may be a first step in a wider consideration and integration of tactile activities into university language classrooms and to help provide students with more diverse learning opportunities.

REFERENCES

Bailey, R., Kim, D., Bochenko, M., Yang, D., Dees, D., & Jung, J. (2022). The use of clay modelling to increase high school biology vocabulary learning. *Journal of Research in Innovative Teaching & Learning*, *15*(12), 1-14. https://doi.org/10.1108/JRIT-07-2021-0053.

Califf, C. (2020). Incorporating Kinesthetic Learning into University Classrooms: An Example from Management Information Systems. *Journal of Information Technology Education: Innovations in Practice*, 19, 31-45.

Chumark, C., & Puncreobutr, V. (2016). Developing basic mathematical skills of pre-school children by using plasticized clay. *Journal of Education and Practice*, *7*(12), 180-183.

Csikszentmihalyi, M. (1990). Literacy and intrinsic motivation. *Daedalus*, *119* (2), 115–140.

Dubey, M., & Rule, A.C. (2007). Seventh grade students learn about the use of clays in everyday products. *Journal of Geoscience Education*, *55*(4), 282-288.

Elmgren, M., & Henriksson, A. (2014). *Academic teaching.* Lund, Sweden: Mediapool Print.

Heilman, A.W., Blair, T., & Rupley, W.H. (1990). *Principles and practices of teaching reading.* Indianapolis, Indiana: Merril.

Herman, L.A. (2021). *The effects of multisensory imagery on vocabulary learning.* [Doctoral thesis, The City University of New York]. CUNY Academic Works https://academicworks.cuny.edu/gc_etds/4224

Johnson, M. (2018). Exploring flow experiences in the EFL Classroom through industrial design. *Journal of Language and Culture of Hokkaido*, (16), 15-23.

Kolb, D. (1984*). Experiential learning: Experience as the source of learning and development.* Hoboken, New Jersey: Prentice-Hall.

Kyriacou, C. (2007). *Essential teaching skills* (3rd ed.) Cheltenham, United Kingdom: Nelson Thornes.

Mobley, K., & Fisher, S. (2014). Ditching the desks: Kinesthetic learning in college classrooms. *The Social Studies*, 105(6), 301–309.

Perry, W.G. (1998). *Forms of ethical and intellectual development in the college years: a scheme.* Hoboken, New Jersey: Wiley.

Pritchard, A. (2014). *Ways of learning: learning theories and learning styles in the classroom* (3rd ed.). Abington, Oxfordshire: Routledge.

Turner, J., & Paris, S.G. (1995). How literacy tasks influence children's motivation for literacy. *The Reading Teacher*, 48(8), 662-673.

Author's Information
Name: John Guy Perrem
Faculty: Muroran Institute of Technology
Email: jgperrem@mmm.muroran-it.ac.jp

Appendix A

Using Plasticine Survey

This is an optional survey. Any answers you provide will be anonymous.

Please feel free to answer honestly regarding how you feel.

This survey is about the plasticine clay we used in class.

It is being conducted to get your opinions.

Please draw a circle to answer. For example: (Agree)

Q1. Working with my hands helps me learn.

Strongly Agree Agree Undecided Disagree Strongly Disagree

Q2. I could picture the meaning of words better with plasticine.

Strongly Agree Agree Undecided Disagree Strongly Disagree

Q3. I remembered words better after I used plasticine.

Strongly Agree Agree Undecided Disagree Strongly Disagree

Q4. Making plasticine models for words was too difficult.

Strongly Agree Agree Undecided Disagree Strongly Disagree

Q5. The plasticine was boring after a while.

Strongly Agree Agree Undecided Disagree Strongly Disagree

Q6. Using the plasticine took too much time.

Strongly Agree Agree Undecided Disagree Strongly Disagree

Q7. I enjoyed using the plasticine in class

Strongly Agree Agree Undecided Disagree Strongly Disagree

Q8. I would like to use plasticine more frequently in class.

Strongly Agree Agree Undecided Disagree Strongly Disagree

粘土の使用に関するアンケート

これは任意のアンケートです。回答は匿名となります。感じたことを正直にお答えください。

このアンケートは、授業で使用した粘土についてのアンケートです。

皆様のご意見をお伺いするために実施しています。回答は丸で囲んでください。例えば (同意する)

Q1. 手仕事は勉強になる。

強く同意する　同意する　どちらともいえない　同意しない　強く反対する

Q2. 粘土を使うと、言葉の意味がよくわかる。

強く同意する　同意する　どちらともいえない　同意しない　強く反対する

Q3. 粘土を使うと、言葉をよく覚えられるようになった。

強く同意する　同意する　どちらともいえない　同意しない　強く反対する

Q4. 粘土で単語を作るのは難しすぎた。

強く同意する　同意する　どちらともいえない　同意しない　強く反対する

Q5. 粘土に飽きた。

強く同意する　同意する　どちらともいえない　同意しない　強く反対する

Q6. 粘土を使うのは時間がかかりすぎる。

強く同意する　同意する　どちらともいえない　同意しない　強く反対する

Q7. 授業で粘土を使うのは楽しかった。

強く同意する　同意する　どちらともいえない　同意しない　強く反対する

Q8.　授業でもっと頻繁に粘土を使いたい。

強く同意する　同意する　どちらともいえない　同意しない　強く反対する

Appendix B

		Lesson 1	Lesson 2	Lesson 3
Word	**1**	bunch	passport	adventurous
	2	vinegar	money exchange	scuba diving
	3	carton	boarding card	expensive
	4	piece	baggage	sailing
	5	slice of ~	vaccinations	scary
	6	can of ~	flight number	horse riding
	7	bowl of ~	cabin crew	skydiving
	8	jar of ~	ticket	hot-air ballooning