CHAPTER 2

REVIEW OF RELATED LITERATURE

2.1. Introduction

In an attempt to understand the two approaches in teaching English speaking skills i.e., blocking and interleaving, and its effect on the four components of speaking in the study-interaction, pronunciation, fluency, and vocabulary & grammar- a review of the literature is presented in this chapter. Additionally, the effects of the two task scheduling techniques of blocking and interleaving on the stimulus appraisal are also reviewed elaborately. The first section of this chapter deals with an explanation of the two approaches of teaching-blocking and interleaving. The specific advantages of blocking and interleaving and the combination of using both methods in teaching are reviewed in this section. The second section specifically explains the effect of blocking and interleaving on L2 learning and how the methods aided in the learning of L2 in different contexts. In the third section, the impact of blocking and interleaving is discussed extensively concerning L2 interaction on how learners develop their language skills and learn to modify their language use to fit into particular communication contexts. The enhancement in the pronunciation performance of the learners and the progress in their level of proficiency are reviewed in the fourth section which explains the effect of blocking and interleaving in learning and retention of L2 pronunciation rules. In addition to that, a review of the impact of the task scheduling methods on L2 fluency is taken into account and how proper scheduling of task repetition enhances the fluency performance of the learners through the release of attentional resources is thoroughly discussed in the fifth section. A review of the impact of the two task scheduling methods on the retention of L2 vocabulary and grammar rules is mentioned in the sixth section. It is followed by the review of the seventh section on SA based approach to motivation of language learning, and also counting on the significance and emotional implications of the stimuli during the appraisal process including the five stimulus appraisal criteria or checks. The seventh section reviews the longitudinal studies on the motivation of learning L2 which deals with the attitudinal and motivational changes towards learning English and how second

language learning is based on the choice of the learning environment and other motivational factors. The final section presents the research gap of the study.

2.2. Interleaving and Blocking

2.2.1. Definition

When the set of skills is mixed and sequenced in a less predictable way for learning, it is called interleaving. Research showed that interleaving may be more fruitful for learners due to the arrangement of the skills in mixed and random order (e.g., Battig, 1972; Brown et al., 2014; Carpenter, 2014; Dunlosky et al., 2013; Kang, 2016; Kornell & Bjork, 2008; Pan et al., 2019; Roediger & Pyc, 2012; Schmidt & Bjork, 1992; Soderstrom & Bjork, 2015; Yan et al., 2017). On the contrary, the kind of practice involved in a traditional classroom setting where the learners practice the set of skills arranged according to the level of difficulty established in a predictable order and, eventually they get to grasp and become proficient by practising a set of skills and move to the subsequent set is called as blocked practice (Kakoti & Doley, 2021; Nakata & Suzuki, 2019; Suzuki, 2021; Suzuki & Sunada, 2020; Suzuki et al., 2022).

2.2.2. Advantages of Interleaving

Rohrer and Taylor (2007) conducted an experiment where 18 undergraduate students including 13 female participants at the University of South Florida were asked to calculate the volume of four solid geometric figures. Among those participants, 15 of them attended the first session but could not contribute to the second or the third one. Two groups of students participated in the study. The problems concerning the blocked practice were prepared in an order that the participants solved one type of figure and moved to the next type. On the other hand, the same problems were shuffled in an unpredictable order following the interleaved method and the students had to switch between various figures and their corresponding volumes. The results demonstrated that the students kept in the interleaved condition outperformed those who were kept in the blocked condition. The volumes of four solid figures could be calculated by them with more accuracy

and efficiency. This implies that the interleaving method requires students to switch between various topics continuously thereby improving their capacity to apply their knowledge with flexibility. The findings of the study are consistent with the notion of desirable learning challenges. When learners are presented with challenges by using the interleaved method, it can result in stronger long-term retention and transfer of skills. Additionally, it also allows the students to retrieve and apply knowledge from memory in a more effective way. Thus, their research showed that interleaved practice can be a more successful learning strategy than blocked practice that uses a predetermined order.

Another advantage of interleaving was shown by Kornell and Bjork (2008) in the learning of painting styles of specific painters. The participants were divided into two groups. The participants were instructed to learn each artist's style of painting which was exhibited one after another both in massed and spaced conditions. The paintings of 12 artists represented different subjects. The paintings kept in mass condition were categorized according to the artists so that the number of paintings by each artist would follow one by one grouping the works by the same artist. Whereas, in the interleaved practice the collection of paintings was mixed in a random order and intermixed with works by various artists and their painting styles. Thereafter, the subjects of the paintings were presented to the participants in both groups. The final task was to identify which subject matched the paintings of the 12 respective artists. Contrary to those who classified paintings in a blocked arrangement or who followed a predictable sequence, participants who came across paintings mixed randomly with paintings by various artists performed better. Since participants had to connect and differentiate between artists when the paintings were intermixed, it enabled them to understand the paintings and enhance their ability to distinguish them appropriately.

So, the method of interleaving or combining different types of information can enhance the learning and performance of the participants in the classification of paintings. Similar experimentation was conducted by Kang and Pashler (2012)

who reported the advantage of interleaving. They looked into how interleaving affected the identification and classification of different species of birds. In this study, the participants were divided into two groups. 88 undergraduates from the University of California, San Diego Psychology Subject Pool were shown the paintings of 3 artists. They were required to distinguish the style of each of them. It was informed to the participants that later on they would be presented with unseen paintings by the same 3 artists and lastly, they would be asked to find out the artists who painted those pieces of art. In one group, the different bird species were mixed randomly and presented in an interleaved order. The other group was given a demonstration of various bird species in a blocked order, with similar species grouped. When a comparison was done between the participants of both groups, they found that the interleaved group demonstrated an advantage in their performance. It indicated that participants performed better in identifying and differentiating different species of birds when the items were mixed in contrary to when they came across the items kept in a blocked or predictable order. As the participants were allowed to make connections between different characteristics of the birds by intermixing the varied species, it enabled them to have a better comprehension and improved their ability to identify and classify the bird species correctly. Interleaving, thus, enhances learning and performance in the identification and classification of different species of birds.

Wahlheim et al. (2011) also revealed the effectiveness of interleaved practice while classifying the different families of birds and in the study of metacognitive judgments. There were 48 undergraduates from Washington University among whom 24 of them were allocated in groups of singles and pairs randomly. The participants were given a list of birds belonging to 12 families and were asked to predict and identify the name of the correct family of each bird. Due to the shared similarity of the physical features of the birds, it was difficult to find out the uniqueness that demarcated a particular family of birds. The experiment investigated the effects of blocking and interleaving on the study of natural conceptions to the classification and identification of birds of various species.

Interleaving resulted in the mixing of birds from different categories which made it convenient for the participants to explore the patterns and find out the variations. Additionally, it improved their learning as compared to mass learning. The benefits of interleaving or spaced sessions and variations in categorization across different categories were both thoughtfully distinguished by metacognitive measures. Their findings support reports of the spacing effect in concept learning which occurs naturally and is grounded on discrimination as well as attention.

Learning algebraic rules using interleaved practice was also proved to be beneficial in a study conducted by Mayfield and Chase (2002). They aimed to find out how students' ability to learn and remember algebraic rules was affected by interleaving. They took 33 students from West Virginia University out of which 11 of them were male and 12 female. The participants were kept in two groups. They were poor in mathematics and were taught five algebraic rules. Worksheets were delivered to them which had descriptions of the algebraic rules along with examples and problems that needed to be practiced. Students who belonged to the blocked group learned each rule and practised the problems comprehensively and then moved to the next rule and practised the tasks. The same rules were learned by the interleaved group but a skill was added to each practice set which was followed by an intermixing of the problems of the earlier-taught skills. As the training sessions came to an end, the students gave a test to showcase their understanding of the five algebraic rules. When a comparison was made between the groups, it was found that the participants kept in interleaved condition demonstrated more efficient learning of the algebraic rules than those who were kept in blocked condition. Because, the rules that were provided during practice were mixed the learners encountered challenges to build connections, identify patterns, and flexibly apply their knowledge. So, it enhanced their understanding and improved their ability to solve algebraic problems.

Zulkiply and Burt (2013) found that interleaving was more effective than blocking for learning retention of high-similarity categories of exemplars sharing high

similarity both within and between the categories. The exemplars were categorized by shared features or patterns, both within and across categories. The participants were divided into groups of two. During the treatment, interleaved practice combined exemplars from different categories, whereas blocked practice emphasized one category at a time. They found that in contrast to blocked practice, the method of interleaving was more effective at the promotion of learning and retention with regards to between and within categories of exemplars having a high degree of similarity. Interleaving allowed the students to identify small differences and establish connections between similar exemplars, which improved their ability for differentiation and retention of information. On the other hand, their research also showed that the method of blocking improved learning and retention when they made use of low-similarity categories. Each exemplar varied significantly from items in similar and different categories. Thus, it's important to note that depending on a certain task, or domain of learning, the effectiveness of practice techniques may differ accordingly.

2.2.3. Advantages of Blocking

The advantage of blocking, on the other hand, could be found in a study conducted by Goldstone (1996) on 26 undergraduates at Indiana University. They were presented with line segments that did not match their respective patterns and accordingly, two prototypes of the line segments were created which had two variations of line segment positions- 8 diagnostic and 12 non-diagnostic. In the blocked condition, the line segments fitting similar categories followed one after another consecutively but, the same line segments were spaced out and altered repeatedly in the case of interleaving. They conducted a final test where the participants were instructed to categorize and identify new line segments. Their findings concluded that in contrast to the interleaved group, the blocked group demonstrated more effective learning in identifying and discriminating the variations in line segments. This suggested that blocking was successful in making it easier for the participants to learn about line segment variations. It also provided them the opportunity to compare and contrast the features and facilitate more

specialized and targeted learning. Thus, blocking was found to be helpful in the context of recognizing the variations in line segments.

Carvalho and Goldstone (2014) conducted research where they found that blocked practice is more effective at helping learners learn and retain patterns that are similar within and between categories of exemplars with low similarity than that of interleaving. 96 undergraduate students from Indiana University took part in this study for a portion of their credit requirements. It was their third experiment where they compared the simultaneous and successive research on categories with low similarity. The participants were exposed to a variety of exemplars bearing patterns and were grouped according to their degree of similarity. Their findings suggested that presenting the exemplars in a blocked condition, where participants concentrated on one category at a time, resulted in better learning and retention related to low-similarity categories. Due to the unique characteristics and similarities found within each category blocked practice resulted in more effective learning of pattern recognition and also, retention of learning.

2.2.4. Specific Advantages of Both Methods

However, the effects of the combination of blocking and interleaving were also examined in certain studies. Carvalho and Goldstone (2014) experimented to note whether 96 undergraduate students from Indiana University could find similarities among items that belonged to a similar group or could trace the dissimilarities between items belonging to different groups. It was limited to examining the effect of only low-similarity categories. Both blocked and interleaved conditions were used for keeping the participants- 48 in each group- using varied categories of exemplars and assignments. The exemplars in the interleaved categories were framed between different subjects of each group and those kept under blocked categories were put within subjects of a single group. Therefore, interleaving was beneficial in learning high-similarity categories as it helped to differentiate the characteristic features among the categories. Blocking worked immensely for low

similarity categories as it facilitated the identification of the common characteristics among subjects within similar categories.

Blocking may be useful for identifying the commonality within each category, whereas interleaving may be useful for drawing dissimilarity between various categories (Kang, 2016). In his article, it was described how practice schedules could be used to make the most of the instructional time available at hand rather than discussing the amount of time devoted to school as well as class work. They expressed their concern for their American students as they were not as proficient in math, science, and reading as students in other nations because they wanted to know if the American students spent most of the hours in school. In some studies, they found that repetition of a lesson at different times over time resulted in better long-term retention contrary to repeated activities that were grouped. Their article also mentioned that multiple learning processes such as memory, and problem-solving were improved by spaced sessions, and the effectiveness of learning could be increased through spaced practice. On the other hand, they also mentioned the benefits of blocked practice depending on the specific learning goals and tasks. Organization of teaching-learning materials such as textbooks and practice worksheets facilitated mass practice. When teachers frequently assigned homework to their students, they could practice the materials they covered the same day.

2.2.5. Advantages of Using a Mixed Method

Many studies in the past suggested using a mixed method of practice because both methods have their benefits (e.g., Porter et al., 2007; Porter & Magill, 2010; Wong et al., 2013). Kang (2016) demonstrated the advantages of the two approaches-blocking and interleaving- that blocking might help to recognize similarities within a single category while interleaving might be more successful than blocking at helping students learn to distinguish clearly between different categories. The effects of combining the two, however, were the focus of a small number of non-L2 studies (Porter et al., 2007; Porter & Magill, 2010; Wong et al., 2013).

2.3. Interleaving and Blocking in L2 Learning

2.3.1. A General Overview

Research in several L2 studies has stated the effectiveness of interleaving than blocking (e.g., Finkbeiner & Nicol, 2003; Miles, 2014; Nakata, 2015; Nakata & Suzuki, 2019; Rogers, 2017; Suzuki, 2017, 2021). Finkbeiner and Nicol (2003) conducted a translation task at the University of Arizona on 47 undergraduate English speakers- 18 male and 29 female - who were monolingual. The participants were taught 32 pseudo L2 words or an "alien" language for learning concepts that belonged to four semantic types kept under either of the two conditions- the words that could be related or that couldn't be connected. The items that belonged to a similar semantic group were kept under the blocked condition while a particular semantic item was mixed with an item from another category in the interleaved condition. The participants were first given vocabulary training, and then they were required to recognize the tasks. A translation task was given where they had to translate four blocks- from L1 to L2 and vice versa. The participants' speed of recalling vocabulary after training was faster in interleaving than blocking. Therefore, their study showed that interleaving had a better impact than blocking concerning L2 vocabulary learning in a translation task. It suggested that mixing various vocabularies during practice following the interleaved method may speed up recall during the learning and retention of L2 vocabulary.

Miles (2014) showed the advantage of learning L2 grammar rules through quasi-experimental research using interleaving. Research on the retention of L2 grammar rules was conducted which showed the nature of memory when grammar items were kept in spaced and massed conditions. After the rules were taught, three tests were conducted to check the retention of those rules- a pre-test, post-test, and delayed post-test on selected items. Among all the tests, the results of the delayed post-test showed that interleaving helped in learning and remembering the L2 grammar rules than blocking. According to their study, participants who learned by the strategies of spacing and mixing in an interleaved learning method retained L2 grammar more effectively than the ones who followed a massed order of

learning using the blocked practice approach. So, contrary to the massed order of instruction in blocked practice, interleaving is more beneficial in helping learners in the retention of L2 grammar rules.

Additionally, Nakata (2015) conducted an experiment on learning L2 vocabulary where the large effect size exhibited the effectiveness of interleaving and spacing. 128 Japanese college students participated in this study. They were given pairs of 20 English-Japanese words which were further classified into 2 sets of items- 10 items in each set. The items in the massed group were put all in a row without disruption. While the interleaving group had four spaced sessions- massed, short, medium, and long. The delayed post-test was taken one week after the L2 vocabulary items were taught which showed the efficacy of spaced learning over massed learning. Their results showed that spacing had a small yet statistically significant advantage over blocking. It was the first study on L2 vocabulary learning which confirmed that increasing spacing may aid vocabulary learning. The effect on the amount of spacing was also significant as the effect sizes were quite large. Therefore, according to their research, the retention of L2 vocabulary may be improved by spaced-out sessions and by combining and mixing different vocabulary words during practice as opposed to repeatedly studying the same vocabulary words without breaks. One significant argument in favour of interleaving is that, unlike practising without breaks in blocked learning, practice session distribution and chances for practice introduce the crucial factor of spacing into training sessions (Rogers, 2017; Suzuki et al., 2022).

A theoretical discussion on the spacing effect was described by Rogers (2017) while supporting the practice of interleaving. The concept of mass learning was described as analogous to overlearning as it involved learning and reviewing the items so that one could immediately acquire mastery over the skills. In support of the interleaving, it was suggested that the longer the gaps between the duration of the learning sessions the better the performance. Moreover, interleaving introduced occasions for practice that led to spacing which directed towards better

performance and long-term retention of the items learned. The spaced-out training sessions followed a U-shaped inverted curve where the retention of the skill enhancement took place over some time, touched the highest point, and then fell off which indicated maximum retention of a mixture of skills and spacing in between the sessions. During study sessions, switching various topics created natural breaks between each topic. Instead of concentrating solely on one topic at a time, learners had the opportunity to engage with various topics. It happened because interleaving incorporated spacing into the learning process. On the contrary, students repeatedly practised a single topic without any breaks in the blocked learning which lacked the useful aspect of spacing. Hence, interleaving is more beneficial than blocking as it makes way for spacing through distributed practice and introduces different topics.

Suzuki et al. (2022) studied the benefits of interleaving and spacing on the proceduralization of L2 syntax and the role of working memory by scheduling varied practice sessions in blocked and interleaved conditions. Instructions for learning forms of 5 relative-clause constructions were given to 60 English learners using blocking or interleaving. The group kept in the interleaved condition received a mix of exemplars from various categories while the blocked practice group was given speaking tasks which were systematic and form-focussed arranged according to syntactic category. A picture description test was administered one week after the practice sessions to measure their speed and accuracy and also to examine the proceduralization of grammatical knowledge. Their findings revealed that interleaved practice resulted in more accurate performance than blocked practice as it bore the element of spacing. But in terms of the speed aspect of performance, it was not very effective. Additionally, the use of relative clauses was accelerated in interleaving than blocking which was likely a reflection of the stage of proceduralization and automatization.

Pan et al. (2019) conducted a study on the effectiveness of interleaving on the learning of L2 grammar where they could not observe the advantage of

interleaving in the initial two tests. Even though interleaving had higher post-test scores than blocking, the benefits of interleaving were not found. They recruited two groups of undergraduate students from a significant U.S. research university who could speak English. They took part in exchange for course credit. The participants were taught Spanish preterite and imperfect past tense grammar rules by training them using the two methods-blocking and interleaving. The results showed no significant difference in learning and retaining Spanish grammar rules in the initial phase of the study. Their study, however, suggested that interleaving could still result in long-term retention of Spanish grammar rules than blocking, even though its instant effects might not be immediately noticeable. According to some researchers, interleaving might be advantageous for advanced L2 learners while blocking may be more successful for novices (e.g., Rey et al., 1982; Taylor & Rohrer, 2010)

It was noted that interleaving and blocking were specifically useful may be due to the impact of a desirable difficulty framework (Bjork, 1999; Porter & Magill, 2010). If used at the proper difficulty level, both methods are applicable and may help in the long-term retention of learning. Although beginners may find difficulty in the interleaved condition and result in ineffective learning, it may be successful in facilitating the more experienced learners to the suitable difficulty level. After examining the applicability of both methods in L2 learning, it may be suggested that the practice of interleaving should be continued to train more proficient learners as there is an increase in contextual interference which requires greater practice, but less proficient learners have a level of low proficiency should be taught using the blocked practice approach in their initial phases of learning (Bjork, 1999; Porter & Magill, 2010). Interleaving can create anxiety in the learners' initial performance as it introduces a desired level of difficulty in the case of some particular learners. Moreover, the transfer of performance and long-term retention may be made easier with the help of interleaved practice (Bjork, 1994). However, long-term retention is not derived from blocking, even though it may

speed up the early expressions of learning compared to interleaving (Soderstrom & Bjork, 2015).

2.3.2. Blocking and Interleaving in L2 Interaction

Adoption of people's interaction strategies in different contexts of communication plays a vital role in constraining and regulating language learning (e.g., Canals, 2022; Cash & Pianta, 2022; Tekin et al., 2022; Thoms, 2012). The interaction strategies set boundaries and guidelines for language use, guiding the linguistic development of learners. By observing and taking part in interactions, learners become conscious of the appropriate language forms and their conventions. They attain language proficiency through this process and learn to adapt their use of language to fit into specific contexts of communication. Social interactions and active participation in communication with people who have more experience, knowledge, and competence in the language are effective ways to develop language competence (Thoms, 2012). When learners come in contact with proficient language users through regular communication, they are exposed to different forms of language, registers, and context. They observe how their interlocutors frame sentences, use appropriate vocabulary and use idiomatic expressions. When the learners communicate with the experienced interlocutors, they provide feedback to the learners on their language use with corrections and recommendations thereby helping the language learners to improve their language. They attain communication competence through active participation and develop skills such as turn-taking, listening, and responding correctly in various social contexts. Therefore, language proficiency is formed by active participation in social interactions and is not solely acquired using individual study. These interactions help the learners to get practical use of language, active participation, and feedback that helps them enhance their linguistic skills.

According to the communicative approach to language teaching, interaction is the primary strategy to learn a second language (L2) in a classroom or other setting (Hall & Walsh, 2002). Contrary to conventional techniques, which focus on rote

memorization of grammar rules, it emphasizes improving the capacity of the learners for the production of meaningful messages, comprehension, as well as communication. Their research was based on three types of classrooms: first language classrooms, second language classrooms where the language taught is also the community's language and foreign language classrooms. Schools and their classrooms play an important role in sociocultural contexts. To be more specific, classrooms form instructional environments as a result of the interaction between teachers and students. It shapes the language of a learner and also impacts significantly the development of a cooperative learning environment. Their review's objective was to look at recent progression in the understanding of classroom interaction and language learning and also, to point out the main principles of sociocultural viewpoint on language learning and the importance of classroom interaction. Because a large area of our linguistic, cognitive, and social knowledge is directly associated with our sociocultural activities. That is why, teacher-student interaction shapes effective learning environments and shapes the language of learners.

Interaction is a productive means of communicating ideas, emotions, or thoughts between individuals (Brown, 2014). It implies that interaction helps to achieve an individual's intended goal. Communication happens in a group where individuals actively participate in the conversation. It includes the dissemination of theoretical ideas, the subjective perspectives of individuals, the emotional experiences, or other information that people exchange with each other. Interaction offers chances for conversational negotiation and linguistic adaptation which is necessary for producing comprehensive input which leads to language acquisition (Hermanto, 2015; Mayo & Soler, 2013; Van Lier, 1988). According to them, through this process of negotiation, learners can clear the misunderstandings and make sense of the language being used. They can also modify their language depending on the context. The use of appropriate language and extensive interaction can help language learners create a setting where they can receive inputs that are logical thereby speeding up their language learning. By providing many opportunities to

use an L2, interaction creates awareness among language learners about linguistic errors and the necessity of reconstructing language production (Mackey et al., 2012). This awareness emerges as a result of feedback given during interaction or generates a sense of introspection of one's language use. When L2 learners become aware of their mistakes, they feel the need to make corrections and improve their language.

Also, in the reconstruction and modification of linguistic output, they put efforts to become appropriate in the areas where their use of language is less effective. Therefore, the creation of an environment for interaction motivates language learners to actively participate in using the second language which includes tasks like group projects, discussions, and cooperative learning. As a result of the exchange of language between language learners, they become aware of their errors and make improvements in language learning. A conversation exchange system that involves oral interactions is commonly used as a model in language classrooms. Reflecting the various aspects of larger social interactions taking place outside the classroom, these systems might function cooperatively between teachers and students as well as among peers (Markee & Kasper, 2004; Seedhouse & Jenks, 2015). They discussed the function of a language classroom which acts as a setting for the exchange of conversation that supports oral interactions. In a situation like this, teachers generally play an agentive role in modifying and simplifying classroom interactions for learners' comprehension, correcting or facilitating feedback on learners' mistakes, and initiating and providing guidance in classroom interaction (Murray & Christison, 2011; Ur, 2009; Walsh, 2011). They discussed how teachers played an active role in several aspects of classroom interactions. This might involve shifting their language, providing more details, or application of instructional techniques that promote understanding. Therefore, language learners can improve their comprehension and usage of the language through this process of feedback and correction. Providing students plenty of opportunities to practice their language is the main objective of the teacher's agentive role in fostering opportunities for oral interaction in the classroom. It's

because most of the activities in the classroom involve language use. Thus, language interaction facilitates general activities such as accessing new knowledge and skills, recognition of issues, and management of the relationships between the teachers and students and among the learners in a language classroom (Long, 1983; Walsh, 2011).

The exchange of ideas, the sharing of information, and the learning from one another's experiences can happen through discussions and collaborative activities. The importance of learner-teacher interaction has been recognized to be of utmost importance not only for the social development of the students but also for acquiring the desired level of competence in communicating in the target language (Murray & Christison, 2011). This interaction is vital in assisting learners to develop their social skills. The learners get the opportunity to participate in discussions and collaborative activities through interactions with the teacher. These interactions encourage socialization, help in improving interpersonal skills, and also, develop their language skills for clear communication. Interaction between teachers and students is necessary for enhancing communicative competence. The teacher provides feedback, correction, and appropriate guidance which allows students to practice and improve their interaction skills in a supervised setting. It has been demonstrated through the analysis of interactions in L2 classrooms and students' perceptions of such interactions that an asymmetrical conversation pattern existed in which students encounter oral proficiency barriers and it is expected from the teachers that they should have a higher level of competence in communicating in the L2 for a better classroom management and enhancement of the oral proficiency of the students (Seedhouse & Jenks, 2015). They reviewed the studies on the evaluation of L2 classroom interactions and how students view them. Due to their limited language proficiency, the students hesitate to express themselves and communicate in the L2. On the other hand, it is anticipated that teachers should have a superior level of L2 proficiency. That is why, teachers are in charge of running the classroom successfully and they also strive to improve the oral proficiency of the students in a language classroom.

Therefore, their research highlighted the importance of teachers in successfully running the classroom and also, for facilitating the student in the development of their oral L2 skills. The direction and nature of the interactions are initiated, maintained, and directed by the teacher because their role in the classroom is primarily agentive which may have a substantial effect on how much students participate in the interactions (Hall, 2011; Thoms, 2012). The amount of learner participation is influenced by the function and involvement of the teachers with the students in the classroom. The teacher's approach facilitates learning techniques that enable the students for active interact. Insufficient facilitation may lead to passive involvement of the students. The possibility of evolving L2 interaction in the classroom either between the teachers and students or among students themselves, by influencing the orders of L2 practice sessions, however, has received little attention.

It may be meaningful to explore the different ways to maximize the opportunity for interactions of such kind in the L2 classroom as they may be significantly relevant to the L2 proficiency development which would be an important input to L2 study (e.g., Hermanto, 2015; Mayo & Soler, 2013; Van Lier, 1988). This investigation of practical strategies and finding effective methods for motivating L2 interactions in the classroom would spread advancement in L2 research and also enhance language learning outcomes. Therefore, providing opportunities for students in meaningful L2 interactions may help them become more proficient in the learning of L2.

The spacing and mixing technique is a significant method of practice followed in interleaved approach at the more advanced level of L2 learning (e.g., DeKeyser, 2007; Ellis & Shintani, 2014; Nakata & Suzuki, 2019; Suzuki, 2017, 2021; Suzuki & Sunada, 2020; Suzuki et al., 2022), the present study aims to examine this fact by contrasting it with the effects of the predictable arrangement technique followed in blocked practice method about the interaction performance of adolescent L2 learners of India who have been exposed to the learning of English

as an L2 for 12-15 years. Performance differences have been observed in the effects of the two methods at different phases of L2 learning in some studies (e.g., Kang & Pashler, 2012; Rey et al., 1982; Rohrer & Taylor, 2007; Taylor & Rohrer, 2010), the present study also attempts to make a comparison between the two methods at the beginning and end of the STSs.

2.3.3. Blocking and Interleaving in L2 Pronunciation

Contrary to the studies demonstrating specific advantages of interleaving, some studies (e.g., Brunmair & Richter, 2019; Carpenter & Mueller, 2013; Dunlosky et al., 2013; Goldstone, 1996; Rohrer, 2012; Schneider et al., 1998, 2002; Wahlheim et al., 2011) were unsuccessful in demonstrating any particular benefit of interleaving over blocking. In one of these studies (Schneider et al., 2002), 25 French words were taught to 64 English-speaking undergraduate students. These words belonged to five semantic categories, including body parts, vehicles, kitchen, food, and clothes. In the initial phases of learning, the students who were taught using the blocked practice method were able to outperform the students who were taught using the interleaved method. The findings did not show any significant difference in performance between the two groups neither in the intermediate nor in the final stage of the study (Schneider et al., 1998). However, the participants in the blocked practice group showed improvement than the participants in the interleaving group in the post-test that was administered right after the end of the practice sessions. The performance did not continue in the post-test that was administered a week later (Schneider et al., 2002). Their research indicated that during the initial stages of learning, students who focussed on one category at a time performed better in terms of remembering French words. At first, the blocked practice method showed an advantage, but this advantage could not be sustained. However, when participants in blocking outperformed the participants in interleaving during the post-test, it concluded that the enhancement in performance in the blocked practice group happened because they were tested right after the end of the teaching sessions which helped in remembering the French words.

Carpenter and Mueller (2013) conducted a study on L2 pronunciation rules where a group of English-speaking college students learned French pronunciation rules and it was found that in comparison to the interleaved group, the blocked group did better in terms of their performance. There were 19 native English speakers from Iowa State University, who claimed to have unfamiliarity with the French words took part in the study. They were taught several French words that adhered to particular rules of pronunciation. The presentation of these rules was done using two methods- blocked (e.g., bateau, carreau, fardeau…mouton, genou, verrou) and interleaved (e.g., bateau, mouton, tandis, genou, verglas…). The pronunciation skills of the participants were assessed using recall tests or multiple-choice tests. They conducted 4 experiments and the participants in blocking consistently performed better than the interleaving ones in all the experiments. According to this study, interleaving may not be helpful when learning tasks that call for discriminative contrast or when learning tasks that require retrieving stimuli (Brunmair & Richter, 2019; Carpenter & Mueller, 2013).

Interleaving doesn't help students in learning pronunciation rules because it requires more attention to common characteristics among stimuli than focusing on discriminative contrast. Due to the limited opportunity for retrieving prior examples in L2 pronunciation tasks, the retrieval advantages of interleaving in observing discriminative contrast are reduced when learning L2 pronunciation rules (Carpenter & Mueller, 2013). Recalling the phonological characteristics of a previous item is challenging (Carpenter & Mueller, 2013; Kakoti & Doley, 2021) because the tasks of pronunciation call for an understanding of auditory-to-visual mapping and also, the traces of auditory memory are brief (Baddeley et al., 1975). Therefore, it may be challenging to distinguish the items for pronunciation because the memory for the phonology of the previous item may have been already erased in the memory when the presentation of the next auditory item is done for learning through the method of interleaving (Brunmair & Richter, 2019; Carpenter & Mueller, 2013).

24-day experimental research was conducted by Kakoti and Doley (2021) to examine the pedagogical effects of interleaving and blocked practice in English speaking skills. 36 undergraduate ESL learners from Tezpur University participated in their study. The four components of speaking examined in the study were: interaction, pronunciation, and vocabulary & grammar. The results demonstrated that the participants in the interleaving group performed better than the ones in the blocked practice group, although it was not statistically significant. They examined the English-speaking proficiency of both groups by making a comparison of their pre-test and post-test results at different time frames. It was observed that the blocked practice group demonstrated an enhancement in their performance in the pre-test as well as in the post-test across all the components compared to the interleaving group. More specifically, in terms of L2 pronunciation, the participants kept under blocked conditions performed better during the pre-test. But, the interleaving group showed improvement in the post-test than in the pre-test across the 4 components. With regards to L2 pronunciation, the participants did not show any progress in the proficiency level. The findings implied that the blocked practice method helped the participants improve their speaking skills in all 4 components except for the interleaving group which could not demonstrate any improvement in their performance in L2 pronunciation. However, the differences between the two methods were not significant enough to make a firm conclusion. It may be noted that individual learners may respond differently to each approach.

2.3.4. Blocking and Interleaving in L2 Fluency

Task repetition has been recognized as an important technique for the improvement of L2 fluency performance according to various studies (e.g., Ahmadian, 2011; Ahmadian & Tavakoli, 2011; Lambert et al., 2017; Thai & Boers, 2016). Ahmadian (2011) conducted a study where the results of a six-month study examined if the effects of repeated practice of the same task are taken up to the performance of a different task. 30 intermediate EFL students belonging to two

complete classes participated in this study. The participants kept under the experimental group had to participate in a narrative task based on dialogue from occasions 1 to 11. An interview task had to be performed by them on Occasion 12. The only tasks that were required to be completed by the control group participants were the oral narrative task scheduled at Time 1 and also, to perform the interview task at Time 12. The results showed that the students in the experimental group performed better than those kept in the control group with regards to the complexity of the tasks and fluency in performance, however, in terms of accuracy it did not yield better results. The study concluded that performing a new task would benefit from mass repetitions of the previous task, but not in every performance category.

A study by Ahmadian and Tavakoli (2011) determined the effects of scheduled online arrangement and repetition of tasks on the EFL learners' accuracy, complexity, and fluency in their speech production. 60 Iranian intermediate-level EFL students were divided into four random task settings. The results of one-way ANOVA showed that accurate online planning and proper arrangement of task repetition at the same time significantly increased the ESL learners' accuracy, complexity, and fluency in their oral performance.

Thai and Boers (2016) suggested that providing opportunities for task repetition helps to enhance the performance of the students. 20 Vietnamese EFL learners were asked to deliver talks in the 4/3/2 activity where they had to repeat a monologue under increasing time constraints. The findings revealed that even though there was a less noticeable increase in fluency performance during the constant-time period, slight improvements could be observed in terms of complexity and accuracy. They suggested that 4/3/2 implementation may not be beneficial if instructors wanted to use repeated narrative activities to enhance other qualities beyond the component of fluency.

Task repetition improves L2 fluency performance by releasing the attentional resources of the language learners according to research based on Levelt's (1989)

speech production model and the bilingual production model of Kormos (2006) which includes the modules of conceptualizer, formulator, and articulator (e.g., Fukuta, 2016). When L2 learners are presented with a task, the attentional resources are typically distributed for conceptualization in the L2 learners' working memory. So, only a few attentional resources are left for formulation and articulation. As L2 learners become accustomed to a particular task, they can release their attentional resources for linguistic formulation (Fukuta, 2016). According to Fukuta (2016), the performance of the learners is temporarily aided by task repetition as they become acquainted with the content of the task during the first enactment due to which during the subsequent enactment, they can concentrate on linguistic form. In this study, 28 Japanese English language learners were required to complete two rounds of narrative tasks to study their attention shifts during repeated task management. The results showed that when a similar task was performed twice by the learners, they focussed less on the conceptualizing process and concentrated on the encoding of the rules of syntax.

Lambert et al. (2017) engaged EFL students from Japanese universities in their study to participate in a classroom-based task repetition practice. These tasks included instruction, narration, or opinion tasks done in pairs. A balanced and significant improvement was noticed in the fluency performance of the L2 learners. The progress was made in case of a decline in mid-clause pauses and the amount of self-repairs. With regards to the speech production of the L2 learners, while engaged in the practice of task repetition, the enhancement of fluency performance is somewhat accelerated by the potential proceduralization or automatization of basic linguistic knowledge (Lambert et al., 2017).

An investigation on the effects of similarity and variability of content in the repetition of tasks was done by de Jong and Perfetti (2011) on L2 fluency performance. They used a variation in the technique of task repetition. In the study, nine monologues 4/3/2 minute tasks of speech were performed by English L2 learners from an American university who were divided into three groups: a group

of 9 participants who followed no repetition, and the other consisted of two repetition groups of ten. The results of the post-test revealed that only the speech behaviours of the repetition groups experienced significant fluency enhancement associated with proceduralization. This variation in proceduralization or cognitive fluency of the L2 learners caused by task repetition led to enhanced L2 fluency development. By systematically changing the order of practice tasks, de Jong and Perfetti (2011) showed through their study of task repetition that it is possible to enhance the level of L2 proceduralization. However, their study received criticism for having a small sample size consisting of only 24 participants and for conducting the experimentation in an environment where English was the chief mode of communication outside the classroom (Suzuki, 2021).

A significant study of the impact of task repetition on the improvement of English fluency was conducted at a university in Japan by involving 68 students in the study (Suzuki, 2021). The division of the students was done in three groups- a group of 18 students following the task of no-repetition, a group of 24 students practising the blocked practice method, and a group of 26 students following the interleaving method. The groups engaged in task repetition performed three oral narrative tasks using six-frame cartoons over three days. The findings of the study demonstrated that the participants kept under blocked conditions developed their fluency more than those kept under interleaved conditions in terms of a faster rate of articulation and shorter duration of the mid-pause clause (Suzuki, 2021). However, it should be noted that the research done by Suzuki (2021) had some limitations despite its thorough explanation of the various linguistic aspects of the participants' fluency behaviour. Firstly, only three days were spent conducting the study bearing a very small number of repetition practice tasks. The findings may have been affected by certain extraneous factors as the training and observation period was very brief. It might have been influenced by the participants' health, emotional state as well and familial issues having an impact on the cognitive condition of the participants during the three days of the experimentation. Secondly, each session of the fluency training program lasted for only 30 minutes.

As there were more than 20 participants in each repetition group, it may be inferred that it must have been very challenging to cater to the unique learning preferences of each participant and explanation requirements. Moreover, only two tests were administered to assess the fluency growth of the participants. The tests comprised a pre-test and a post-test which separated a three-day fluency training program. By using only one achievement test at the end of the treatment period, the evaluation of the effectiveness of repetition practice may be challenging. Certain L2 studies on repetition of such tasks (e.g., Carpenter & Mueller, 2013; Pan et al., 2019; Schneider et al., 1998, 2002) perceived a curve of difference in the effectiveness of blocking and interleaving at the initial and later phases of the training program.

2.3.5. Blocking and Interleaving in L2 Vocabulary & Grammar

There are various L2 studies where the effect of blocked practice and interleaving are studied extensively on the learning of L2 vocabulary and grammar. The findings yielded mixed results concerning the relative merits of the two approaches (e.g., Ferguson, 2001; Finkbeiner & Nicol, 2003; Miles, 2014; Nakata, 2015; Pan et al., 2019; Schneider et al., 1998, 2002). For instance, in learning L2 grammar rules (Pan et al., 2019), no specific advantage was observed when the rules were taught using the method of interleaving. Two groups of English-speaking students were kept in two conditions- one group was taught using the interleaved method and the other group using the blocked practice method. They were given the retention exercises of Spanish grammar rules. There was no statistically significant difference observed in performance between the two groups. The post-test results of the participants in the blocked group outperformed those of the interleaved group.

In a different study by Tan Li Ning et al. (2020), no statistically significant difference was found between blocking and interleaving on the rate of retention of L2 vocabulary. The participants were 56 children who lived in the UK and spoke native English between the ages of 6 and 10. They were given two online L2

vocabulary learning exercises kept in two different conditions: blocked and interleaved. One task involved identifying uttered words to pictures of novel animals. The other involved the arrangement of objects relating to the spatial associations in a spoken sentence. Although L2 vocabulary learning took place in both conditions, there were no statistically significant variations found in the rates of learning between the two groups (Tan Li Ning et al., 2020). The absence of a statistically significant difference between the two methods suggested that the instructional strategy, vocabulary tasks, and learning context may vary depending on the preferences of particular students.

However, a study conducted by Suzuki et al. (2022) showed specific benefits of interleaved practice. 60 English language learners learned five different types of relative-clause construction during the study with the help of the two methods of practice-blocking and interleaving. The learners who were taught using the interleaved methods were given mixed exemplars for practice chosen from various categories. On the other hand, the learners who followed the blocked practice method were allowed to practice form-focused exemplars which were arranged in a predictable order according to the same syntactic category. The results demonstrated that the learners who were given the treatment by using the interleaved practice performed better in the immediate and delayed post-tests than the learners who were taught using blocked practice. The findings also showed an improvement in the skill of the learners who practised using the interleaving method irrespective of the learners' working memory capacity.

Additionally, in a research conducted by Miles (2014) learned that interleaved practice was superior to blocking with regards to its effectiveness when it came to learning L2 vocabulary and grammar. Similar benefits of interleaved practice were noted in a study by Nakata and Suzuki (2019) on the retention of L2 grammar rules. The learning and retention of five grammatical structures in English were examined by distributing 115 Japanese students into three groups and administering interleaved, blocked, and increased conditions to each group. During

the delayed post-test, the participants following interleaved practice generated more responses than those participants who followed blocked order, which demonstrated the effectiveness of interleaved practice in helping students retain L2 grammar rules (Nakata & Suzuki, 2019). They also found that the effects of interleaving were moderated by learners' prior knowledge levels. More specifically, interleaving was more advantageous for participants with lower pre-test scores than those who scored high on the pre-test. Their results indicated that interleaved practice may improve L2 grammar learning.

2.4. L2 Attitude and Motivation

2.4.1. Stimulus Appraisal (SA) - based Approach to Motivation

In the 1980s, research on the various facets of the system of stimulus appraisal in human cognition came into existence (Schumann, 1998). The stimulus appraisal system is a cognitive mechanism by which people assess and make sense of external stimuli. The significance and emotional implications of the stimuli are evaluated during the appraisal process. The processes involved in stimulus appraisal, the variables affecting individuals, and the impact of the outcomes on cognitive and emotional responses have been explored in Schumann's (1998) study. To investigate the function of stimulus appraisal in SLA more thoroughly, Schumann (1998) turned to autobiographies and diary studies. Before explaining how diary studies opened a way for the researchers to understand learners' views on novelty, pleasantness, need significance, coping potential, and self-compatibility related to the language learning environment, he provided a variety of interpretations of the learners towards L2 learning. He also made a convincing case as to how stimulus appraisals aid or hinder the cognitive effort of an individual during L2 learning. His work played a crucial role in advancing this research and throwing light on the cognitive processes of the individuals involved in evaluating and responding to different environmental stimuli.

The personal relevance of knowledge is evaluated using the stimulus appraisal system, which measures the emotional experience brought on by a stimulus agent, action, or object (Smith & Lazarus, 1993). The stimulus appraisal system is

fundamental in determining emotional experiences as well as reactions. Emotional experiences are directly linked to this system. When people are exposed to a stimulus, their emotional reaction is influenced by their cognitive assessment of the personal relevance of the stimulus. Their study used a directed imagery task involving a two-stage (Stage 1 & Stage 2) to investigate the roles that particular appraisals play in the four emotional experiences: anger, guilt, fear/ anxiety, and sadness. They took these roles categorized into components of appraisals and fundamental relational themes. The findings denoted strong support for the relationships between anger, guilt, and fear/ anxiety in the emotional appraisal model. So, the appraisal process evaluates the personal relevance of knowledge which is related to the stimulus. Individuals draw upon their experiences of the past, beliefs, values, and comprehension of the world to evaluate the significance of the stimulus.

The stimulus appraisal criteria or checks of novelty, intrinsic pleasantness, goal/need significance, coping potential, and norm/self-compatibility were identified by Scherer (1984) as the first psychological model of stimulus appraisal. The degree of novelty or unfamiliarity of the stimulus is considered by the novelty criterion. This stimulus grabs attention more quickly and causes stronger emotional reactions. The pleasantness criterion evaluates whether the stimulus is naturally pleasant or unpleasant. The criterion of goal/need significance assesses the applicability of the stimulus in light of the individual's objectives, requirements, or preferences. The perceived capacity to manage or deal with the stimulus is reflected in the coping potential criterion. Lastly, the criterion norm/self-compatibility involves contrasting the stimulus with the standards of the individuals, ideals, and self-perception.

Based on the investigation of Gehm and Scherer (1988) of the correlation between the criteria of stimulus appraisal and a range of experiences of emotion, Scherer (1993) created a computer program that digitally stimulated the excitement of particular emotions by the five stimulus appraisal criteria. It was argued that the

appraisal theories were prevented by three issues from being widely accepted. Firstly, psychologists who study affective phenomena criticized extreme cognitivism. The second reason was the failure to tie appraisal to the multifaceted description of emotional experiences over time due to the absence of process orientation. Thirdly, the disagreement among experts in this field posed a challenge regarding the number and different standards of evaluation. The third issue was based on an empirical study that used computerized experimentation. This computer program helped to advance knowledge regarding the function of cognitive appraisal in emotional experiences. It also offered an important resource for further research into the complexities of people's emotional experiences. Although several additional models of the stimulus appraisal system have been put forward by other researchers (e.g., Smith & Ellsworth, 1985; Lazarus & Smith, 1988; Ortony et al., 1988), an agreement on the thorough explanation of the appraisal system has not been achieved yet.

L2 learning is seen as performance or as learning that occurs over several stages when used in an SA-based approach. The performance or use of the L2 is characterized by Schumann (1998) as an evaluation of the stimulus appraisal system of the L2 learners. An L2 learner's causal attributions are evaluated by taking into account the dimensions of locus, stability, and controllability (Weiner, 1986). Certain causal ascriptions produce particular emotions that lead to the motivated behaviour of an individual (Weiner, 1985). The concept of L2 learning is a performance-based process that holds that a second language is influenced by how the learners view the environment in which they are learning the language. Particular emotions can be caused by how well they are learning a language. This, in turn, affects their motivation and actions during language learning. Schumann (1998) developed the theory that the five stimulus appraisal checks (Scherer, 1984) serve as a roadmap for the sustained deep learning which is required to achieve mastery of skills. Therefore, the stimulus appraisal system is theorized as the basis of motivated behaviour. It initiates the cognitive power in sustained deep learning

which is necessary for the acquisition of a broad range of proficiency in an L2 (Schumann, 1998).

2.4.2. Longitudinal Studies on L2 Motivation

L2 motivation is conceptualized by Dörnyei and Ushioda (2011) as an emotional experience that is based on cognition. It means that motivation is influenced by the emotional states, thoughts, and beliefs of the learners and also their capability to form rational decisions. In the L2 learning process, the effort and engagement of the learners are thought to be driven by motivation. Motivation is regarded as a complex interplay of emotional experiences such as interest, anxiety, or enjoyment. L2 motivation is viewed from a socio-dynamic perspective which emphasizes the interaction between people and their social environment. In other words, motivation is influenced by socio-cultural factors and individual characteristics. Dörnyei and Ushioda (2011) also emphasized that the learning context is related to L2 motivation. They mentioned particular circumstances and environments in which language learning takes place which include the classroom, interpersonal relationships, cultural norms, and institutional factors. So, the context of learning context shapes and influences the motivation of the L2 learners when they are facilitated for interaction, autonomy, recognition, and social recognition. However, it can vary depending on the context that can impact their attitudes, engagement, and determination in language learning. Thus, in addition to having a close relation with the sociocultural context in which language learning occurs, it is influenced by cognitive and emotional experiences.

If these complex factors can be understood, it can make way for researchers to devise practical methods for enhancing L2 learners' motivation. L2 motivation is now assumed to be a complicated and constantly evolving process that varies over time (Ryan & Dörnyei, 2013). It suggests that their research emphasizes the complexity of L2 motivation and highlights a variety of interconnected factors-both internal and external that affect an individual's desire to learn a second language. These variables include personal opinions, views on the target language,

and social and cultural influences including individual traits. The degree of motivation of language learners may change over time. Factors such as difficulty level, the learning environment, the support received, and the progress achieved can have an impact on motivation. That is why, L2 motivation is a complex and dynamic process that is influenced by different factors. Their research makes clear that L2 learners' motivation levels can change over time, and that proper support to them on their journey of language learning depends on an understanding of these variations.

Fluctuations concerning L2 motivation may be correlated with various changes occurring in a young learner's life (Ushioda, 2009) due to its non-linear progress which involves the impact of several factors (Dörnyei et al., 2014). This implies that motivation at the L2 level does not always steadily increase from low to high or vice versa. It is subject to change and tends to fluctuate over time. The factors which lead to non-linear development in L2 motivation are individual characteristics, the environment, social and cultural influences, one's goals, and external support in learning a language. As young learners mature and change, they go through various transitions which include adjustments to their interests, social networks, learning environment, and family circumstances. These changes may have a positive or negative impact on their desire to learn a second language. By addressing young learners' diverse needs, educators can create an encouraging language learning environment by understanding the complexity of L2 motivation and its relationship with life changes.

According to a quasi-longitudinal study (Kim & Kim, 2016) conducted between 2002 and 2010 on South Korean high school students, the shifts in the motivation and attitudes of the students towards English over 8 years were a reflection of the changing socio-political environments regarding the status of English in Korea and across the world. They identified nine motivational factors over time which were: instrumental, extrinsic, intrinsic, cultural exchange, heuristic, international posture, self-development, competitive, and amusement motivation. Competitive

motivation was one of the factors that became more important in the learning of the English language. It also showed a significant as well as positive correlation between 2006 and 2010. Although English is a global language, the students in high schools in Korea do not put much emphasis on adopting it. Therefore, over time the factors of attitude and motivation did not hold much importance for L2 proficiency which led to a gradual decline among the learners learning English. Thus, their findings suggested that emphasis should be put on assisting the L2 learners by a reflection on their personal needs and interests in learning English instead of encouraging peer competition among them.

Another longitudinal study was conducted by Lasagbaster and Doiz (2017) where a comparison was done on two groups of 304 students belonging to secondary schools. The students were kept in two different environments English learning-CLIL and non-CLIL. Their findings showed that the motivation in learning the subject matter was sustained in CLIL classes but CLIL did not support the motivation to learn over some time. By observing the differences in L2 motivation, they found that the nature of the L2 learning methodology may eventually have an impact on L2 attitude and motivation. Therefore, the study suggested that the attitudes and motivation of the students to learn a second language can be influenced by the choice of their learning environment as well as methodology. So, informed choices may be made about strategies for language teaching and designing the curriculum by observing these changes.

San Isidro and Lasagabaster (2022) also conducted a two-year longitudinal study related to L2 attitude and motivation. There were four groups of participants and the groups were divided into two categories- two L2 learners groups (N=20 & N=24) of a rural medium-sized high school in Galicia, Northern Spain, and two groups of the learners' family members (N=20 & N=24) over two years. Even though the CLIL groups showed an improvement in L2 attitude and motivation over two years, no significant difference was found between the groups on L2 attitude and motivation. This implies that the attitudes and motivation of the family

members towards the L2 did not differ significantly from those of the learners, even though the learners were actively engaged in language learning.

2.5. The Present Study

Although the studies provided various inputs and insights for a better perspective on the issues, certain limitations have also been found in these studies on L2. Firstly, the time frame of the practice sessions on L2 interaction, pronunciation, fluency, and vocabulary and grammar (e.g., Ahmadian, 2011; Carpenter & Mueller, 2013; de Jong & Perfetti, 2011; Miles, 2014; Nakata & Suzuki, 2019; Schneider et al., 1998, 2002; Suzuki et al., 2022 Tavakoli & Hunter, 2018; Thai & Boers, 2016) were very short. These findings may not be completely taken into account as there may be limitations on the part of the participants. Sessions of shorter duration may be subjected to psychological constraints or may not meet the physiological requirements of the participants. Secondly, in most of the studies conducted to observe the effect of blocking and interleaving, a very limited number of speaking tasks was designated for practice (e.g., Carpenter & Mueller, 2013; Nakata & Suzuki, 2019; Pan et al., 2019). When the language tasks are specified and limited in number, then it may only inspire the participants to follow rote memorization. Thirdly, to examine the differences in the effect of blocking and interleaving, only two tests were executed in most of the studies: a pre-test and a post-test (e.g., Miles, 2014; Nakata & Suzuki, 2019; Suzuki et al., 2022). In an attempt to examine the effect of scheduling task repetition practices, research on several aspects of speaking performance of the L2 participants (e.g., Carpenter & Mueller, 2013; Pan et al., 2019; Schneider et al., 1998, 2002) showed that differences in effects can be well comprehended if other language tests may be added that may provide necessary data for the relevant study. Keeping these limitations in view, the prime focus of the present study was to measure the difference between blocking and interleaving. Furthermore, an attempt was made to study the effect of blocking and interleaving on English interaction, pronunciation, fluency, and vocabulary and grammar performance of two groups-

an interleaved (IL) and a blocked practice (BP) group in the course of a three-month-long Scheduled Training Sessions (STSs).

It may also be noted that L2 attitude and motivation are subject to vary over time. Language motivation and the environment of learning are intricately related as per the cognition-based conceptualization of motivation (e.g., Dörnyei & Ushioda, 2011; Ryan & Dörnyei, 2013). Motivation is viewed as a complex and gradually developing process in fluctuation which is non-linear in development and is open to the continuous influence of numerous factors (Dörnyei et al., 2014). Even though L2 attitude and motivation may be impacted by task scheduling or may be immediately apparent at a particular time for a brief period, the consistency and continuity of that impact or effect over time may be of concern using such methods. The consistency or uniformity in motivation, whether positive or negative, towards learning a language may not be sustained for a very long period of time as per the longitudinal studies done in the past on that kind of fluctuations of L2 motivation (e.g., Kim & Kim, 2016; Lasagabaster & Doiz, 2017). In addition to that the process-based approach related to L2 motivation, there are many inter-related factors which combine to produce motivational behaviour that also comprises of task strategies (e.g., Dörnyei& Ushioda, 2011, Khatib & Dehghankar, 2018). The SA-based parameters of L2 motivation- novelty (N), pleasantness (P), coping potential (CP), need significance (NS), and self/social image (SI)- were used in the present study as the scales of attitude and motivation to measure the potential fluctuation using Schumann's (1998, 2001) neurobiological interpretation of Gardner's AMTB (1985), which followed Scherer's (1984) psychological model of affect.

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