

Exploring Learning Environment Through Bronfenbrenner's Ecological Systems Theory

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Abstract

One of the key elements to ensure learning effectiveness is by having a conducive learning environment. However, different parameters of the said environment have been exposed to changes due to the global pandemic period. Having experienced different styles of learning, learners' preferences regarding learning environment ought to be re-investigated. This research aims thus to (re)determine learners' preferred learning environment through Bronfenbrenner's ecological systems theory 1995. It is quantitative research using survey as the instrument in which there are 5 sections (demographic profile, microsystem, mesosystem, exosystem and macrosystem). The 4 factors of the ecological system are used to scaffold the types of learning environment by (Hassan et al., 2020). The 101 respondents are diploma and degree level university students who were taking French language courses in a public university in Malaysia. Findings revealed that, on microsystem level, usage of easy-to-understand language ought to be employed; on mesosystem level, a positive social environment should be established in class; on exosystem level, the presence of assessments and feedback for students' self-improvement ought to be favoured; on macrosystem, a learning approach through understanding minimising thus memorisation method should be adopted. It is also proven that the four Bronfenbrenner's environments have strong positive relationships between them. Taking into account all the environments that a learner interacts with is crucial to ensure a positive learning environment and experiences which in turn could manifest into positive motivation.

Keywords: Learning Environment, Foreign Language Learning, Bronfenbrenner's Ecological Systems Theory, Motivation

Introduction

Background of Study

Learning, as forwarded by Lachman (1997), is "the process by which stable modification in stimulus-response relations is developed as a consequence of functional environmental interaction via the senses" (p. 479). This definition validates the popular expression that we

learn every day and anywhere. However, when it comes to “real” learning, it is still anonymous to traditional learning cultures found in educational institutions such as schools, colleges and universities. Throughout history, the act of implanting and stigmatising the learning process in a fixed place represents exactly the importance of learning environment. Indeed, as advanced by Renald Legendre in *Dictionnaire actuel de l'éducation* (1988), the notion of *milieu* or in English, setting, became one of the crucial elements in relation to pedagogy. In the same year also, Houssaye (1988) also proposed the well-known pedagogical triangle. Although the author insisted on the three poles of the pedagogical actions i.e., the teacher, the pupil and knowledge, discussions regarding the place where these actions happen were also present because “the pedagogical triangle also finds itself in a circle which represents the institution” (Houssaye, 1993, p. 19).

Since in Malaysia there are several settings or places in which one could learn a new language according to one's level of study, research on learning environment ought to be done to ensure a conducive environment for these learners. With the incessant changes in learning cultures, as of now the presence of online and hybrid classes, it is imperative for researchers to continuously update their knowledge in regard to pedagogy, in general, and to learning environment for foreign language classes, in particular.

The learning environment plays a crucial role in shaping students' learning outcomes, attitudes, and behaviors. A positive and supportive learning environment can enhance students' motivation, engagement, and achievement, while a negative or unsupportive environment can hinder their learning and well-being. Therefore, understanding the factors that influence the learning environment and how to create a positive and effective learning environment is critical for educators, policymakers, and researchers.

One reason why the study of the learning environment is essential is that it can help educators and policymakers make informed decisions about educational practices and policies. For example, research has shown that school climate, teacher-student relationships, and classroom management practices are key components of the learning environment that can affect students' academic and social outcomes (Cohen et al., 2009; Hamre & Pianta, 2001). By studying these factors, educators and policymakers can develop interventions and policies that support a positive and effective learning environment for all students.

Moreover, understanding the learning environment can benefit students directly by improving their learning experiences and outcomes. For example, research has shown that a positive and supportive learning environment can enhance students' motivation, engagement, and achievement (Ryan & Deci, 2000; Skinner & Belmont, 1993). By creating a positive and effective learning environment, educators can help students develop a love of learning and achieve their full potential.

Statement of Problem

In order to establish an optimal learning environment, there are a plethora of parameters that the stakeholders, mainly the teacher and the learner, need to address. Once achieved, it may improve the overall result, affective and cognitive, of the class as shown in the two studies by Fraser and Fisher (1983a, 1983b). However, it is noteworthy to not generalize the findings into all educational contexts since those studies were carried out in accordance to the students' preferences in a traditional classroom setting. As affirmed by Roberge et al (2011), although certain learning styles are best for some groups, it may not be the case for others. In their studies, however, the students prioritized understanding of their role and responsibilities in regard to the course and the coursework over other components

in their learning. On the other hand, for distance learning, several studies proved that there is a positive relationship between collaborative learning, social presence and satisfaction or performance (So & Brush, 2008; Gasevic et al., 2019; Salam & Farooq, 2020). Students were perceived as more satisfied or well performed with their distance learning when completing coherent and well-planned assignments in groups.

However, there are also challenges when applying certain parameters to a language class whether online or face-to-face (Zakarnah et al., 2020; Halim et al., 2021). Furthermore, when reviewing distance learning modes, a study has revealed that even the definitions and characteristics of learning modes are often amalgamated and resulting in either a confusing or generalized view of a certain learning environment (Moore et al., 2011). As suggested by the authors, rooting from this problem, it is foreseeable that the preparation and planning of psychosocial aspects in any learning environment would be implemented in an incongruent manner. It should be noted that most research in foreign languages focuses on the outcomes of learning originating from a certain learning environment without taking into account the various interactions that a teacher initiates for his learners, especially with themselves, their community, and knowledge.

Hence, this study is done to investigate the relationship between the variables between a learner and his various interactions that the teacher initiates. Specifically, this study is done to answer the following questions:

- How does the microsystem influence the learning environment?
- How does the mesosystem influence the learning environment?
- How does the exosystem influence the learning environment?
- How does the macrosystem influence the learning environment?
- Is there a relationship between the variables for learning environment?

Literature Review

Motivators for Learning

Motivation is widely recognized as a key factor of academic achievement, playing an important role in promoting learners' long-term growth throughout the learning process (Murayama et al., 2013). The concept of motivation to learn can be defined as the willingness and readiness to engage with the materials presented in a developmental program (Cole et al., 2004). These motivators for learning have been found to influence learners' level of focus significantly and the extent of effort being put in during the learning process (Abeysekera & Dawson, 2015). According to Ryan and Deci's (2000) Self-determination Theory, learners' motivation can be divided into two main categories: intrinsic and extrinsic. Intrinsic motivation is characterized by a natural interest and enjoyment during classroom activities, while extrinsic motivation is driven by external factors such as rewards or punishments, the perceived value of the activities, or the desire for self-esteem (Ryan & Deci, 2020). It has been found that intrinsic motivation contributes to long-term growth, whereas extrinsic motivation tends to promote short-term growth and immediate achievement (Murayama et al., 2013).

Strategies for Learning Foreign Languages

During foreign language acquisition process, learners employ a number of different strategies. Oxford (1990) classifies these strategies into two categories, direct and indirect strategies. Direct strategies include memory strategies, cognitive strategies and

compensation strategies, whereas indirect strategies consist of metacognitive strategies, affective strategies and social strategies. Brown (2000) postulated that the choice of learning strategies varies from learners to learners. Some learners may adopt direct learning strategies while some will choose indirect learning strategies or it would also be possible that some choose a combination of direct and indirect learning strategies. A study by Rahmat (2020), also confirmed that students used more than one language learning strategy when they learned a foreign language.

Past Studies on Motivation for Learning Language

There are many recent studies that have been conducted to investigate the learning of foreign languages, notably in terms of learning environment and foreign language enjoyment. As such, an extensive study from Li et al (2020) investigates the independent and joint effects of classroom environment and trait emotional intelligence on foreign language enjoyment and anxiety. A substantial number of respondents (more than 3,000 secondary and university students) have participated in the research which utilized a composite questionnaire comprising What Is Happening in This Class Questionnaire, Trait Emotional Intelligence Questionnaire - Short Form, Chinese Version of Foreign Language Enjoyment Scale, and Foreign Language Classroom Anxiety. It is revealed that there is a strong correlation between learning environment and foreign language enjoyment which in turn translates into intrinsic motivation. This suggests that preparing a conducive environment and constructive climate for language learning would be beneficial for students and posed as a key element needed to be secured by the teacher.

Next, Wei and al (2019) explored the relationship between grit and foreign language performance with classroom environment and foreign language enjoyment as variables. Using Grit Scale - Short Version, Chinese Version of the Foreign Language Enjoyment Scale, The English Classroom Environment Inventory and the respondents' foreign language exam marks as instruments, there were a total of 832 middle school students participating in the research. It is concluded that the classroom environment has a "significant positive predictive effect on performance" (p. 6). It is also noteworthy to mention that only a positive learning environment, paired with grit, promotes foreign language performance. However, it is not the case in a negative learning environment. This study indicates that the learner's positive personality needs to be hand in hand with a positive learning environment. Hence, this highlights more the role of the teacher and the need of ensuring a positive environment in the classroom.

Conceptual Framework

Figure 1 shows the conceptual framework of the study. The anchor theory used in this study's framework is taken from Bronfenbrenner ecological systems theory. Bronfenbrenner (1995) found that human development is a transactional process in which an individual's development is influenced by his or her interactions with various aspects and spheres of their environment around them. In addition to that, the learners' behaviour is influenced by his/her environment. This means a positive environment will create a positive learning outcome and vice versa (Rahmat, 2018).

Bronfenbrenner (1995) divided the person's environment into five different systems and the systems are the microsystem, the mesosystem, the exosystem, the macrosystem, and

the chronosystem. In the context of this study, the types of learning environment by Hassan et al (2020) is scaffolded from Bronfenbrenner's (1995) selected categories.

The basic level is at (A) microsystem and these are the things that the learner is in direct contact with. In the context of this study, this environment is obtained from learner-centred environment. The next level is (B) mesosystem and in the context of this study, this is achieved through community-centred learning environment. Next is the (C) exosystem and this level incorporates both formal and informal social structures. In the context of this study, this is achieved through the assessment-centred environment. The next stage is the (D) macrosystem and this is the component that focuses on how the learners learn more than just the lesson provided in such a manner that they would gain knowledge in its general sense. In the context of this study, this is achieved through a knowledge-centred environment.

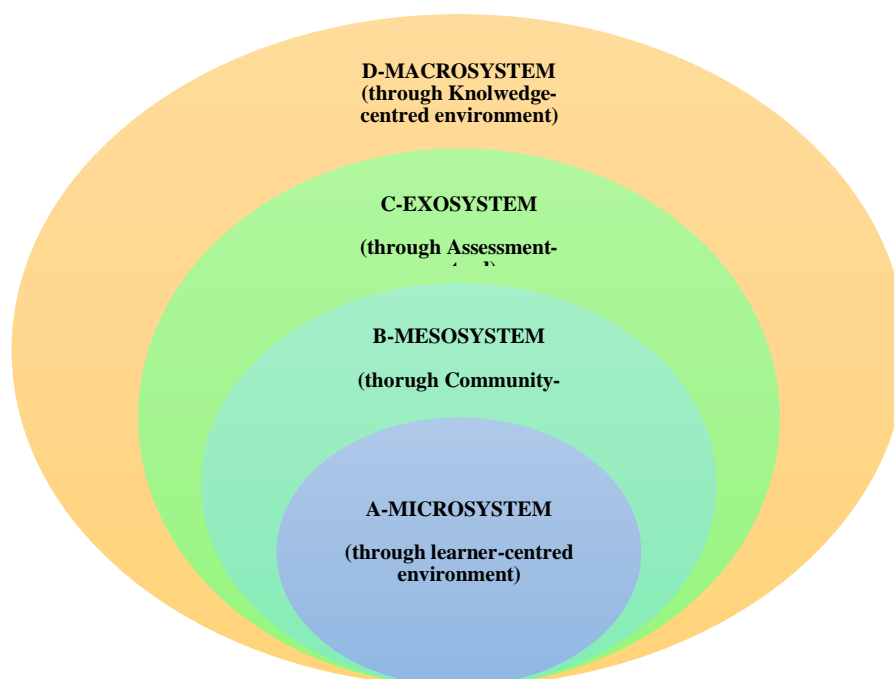


Figure 1 - Conceptual Framework of the Study
Exploring Learning Environment through Bronfenbrenner's Ecological Systems Theory

Methodology

This quantitative study is done to explore learners' preferred learning environment. A purposive sample of 101 participants responded to the survey. The participants were university students (diploma and degree level) who were taking French classes as their foreign language class. The sections in the instrument are rooted from Bronfenbrenner's (1995) ecological systems. These factors are then used to scaffold the types of learning environment by Hassan et al (2020) to reveal the sections as in Table 1. The instrument used is a survey with 5 sections. Section A has 2 items for demographic profile. Section B has 7 items for microsystem. Section C has 7 items for mesosystem. Section D has 8 items on exosystem. Section E has 8 items on macrosystem.

Table 1

Distribution of Items in the Survey

SECTION	BRONFENBRENNER'S ECOLOGICAL SYSTEMS THEORY (Bronfrenbrenner, 1995)	TYPE OF LEARNING ENVIRONMENT (Hassan, Majid & Hassan, 2020)	NO OF ITEMS
B	MICROSYSTEM	Learner-Centred	7
C	MESOSYSTEM	Community-Centred	7
D	EXOSYSTEM	Assessment-Centred	8
E	MACROSYSTEM	Knowledge-Centred	8
			30

Table 2

*Reliability of Survey***Reliability Statistics**

Cronbach's Alpha	N of Items
.967	30

Table 2 shows the reliability of the survey. The analysis shows a Cronbach alpha of 0.967; thus, revealing good reliability of the instrument chosen. Further analysis using SPSS is done to present findings to answer the research questions for this study.

Findings

Findings for Demographic Profile

Q1 Gender

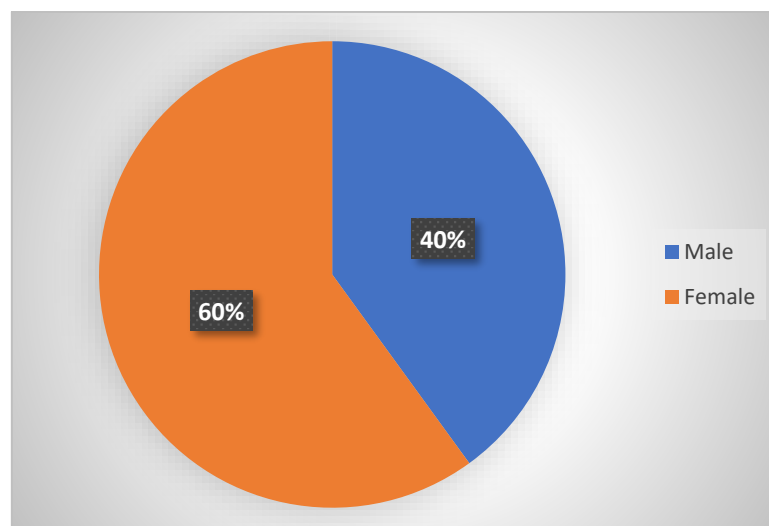


Table 3 - Percentage for Gender

As Table 3 enumerates, the female respondents are slightly higher than their counterparts. Nonetheless, it is still considered a fairly equitable distribution of respondents in terms of gender. This is important to acquire a fairly just overview of the current issue.

Q2 Level of Study

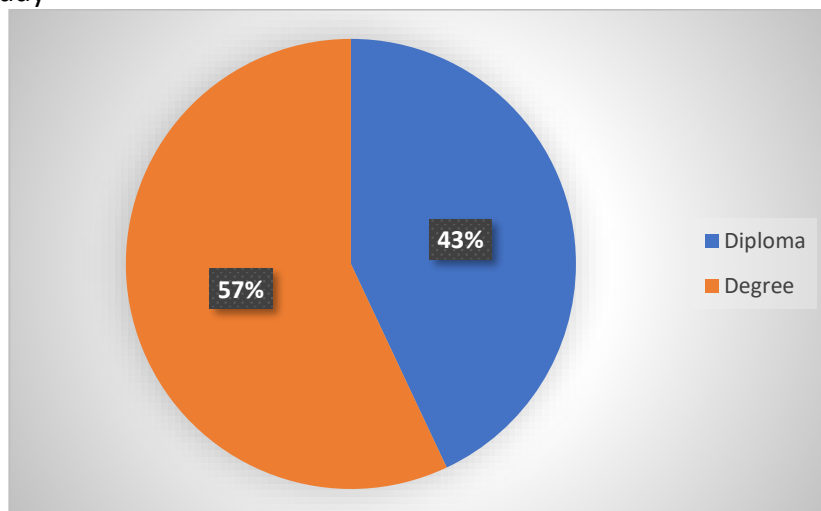


Table 4 - Percentage for Level of Study

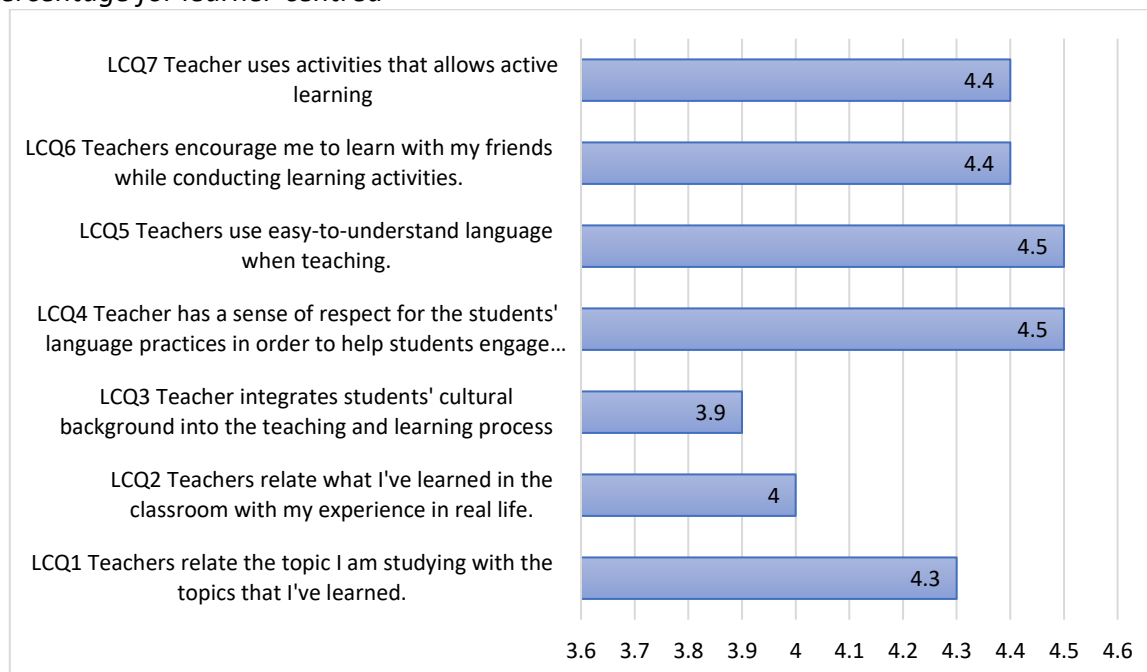
There is an equal percentage of respondents' level of study, in this case, diploma level and degree level. Since this article relates to learning environments, having two different ones is beneficial for the further analysis.

Findings for Microsystem

This section presents data to answer research question 1: How does the microsystem influence the learning environment? In the context of the study, microsystem is measured by learner-centred environment.

Learner-Centred (LC)

Table 5

Percentage for learner-centred

As can be seen from Table 5, the items LCQ4 and LCQ5 recorded the highest mean at 4.5. Learners prefer teachers who, when teaching, use easy-to-understand language and who have a sense of respect for the students' language practices. Subsequently, the two items LCQ6 and LCQ7 shared the same mean score of 4.4, which indicates that teachers encourage peer learning and use activities that allow active learning. The lowest mean at 3.9 was recorded by the item LCQ3, which implies unfavorable interest when teachers integrate students' cultural backgrounds into the teaching and learning process.

Findings for Mesosystem

This section presents data to answer research question 2: How does the mesosystem influence the learning environment? In the context of this study, mesosystem is identified by community-centred environment.

Community-Centred (CC)

Table 6

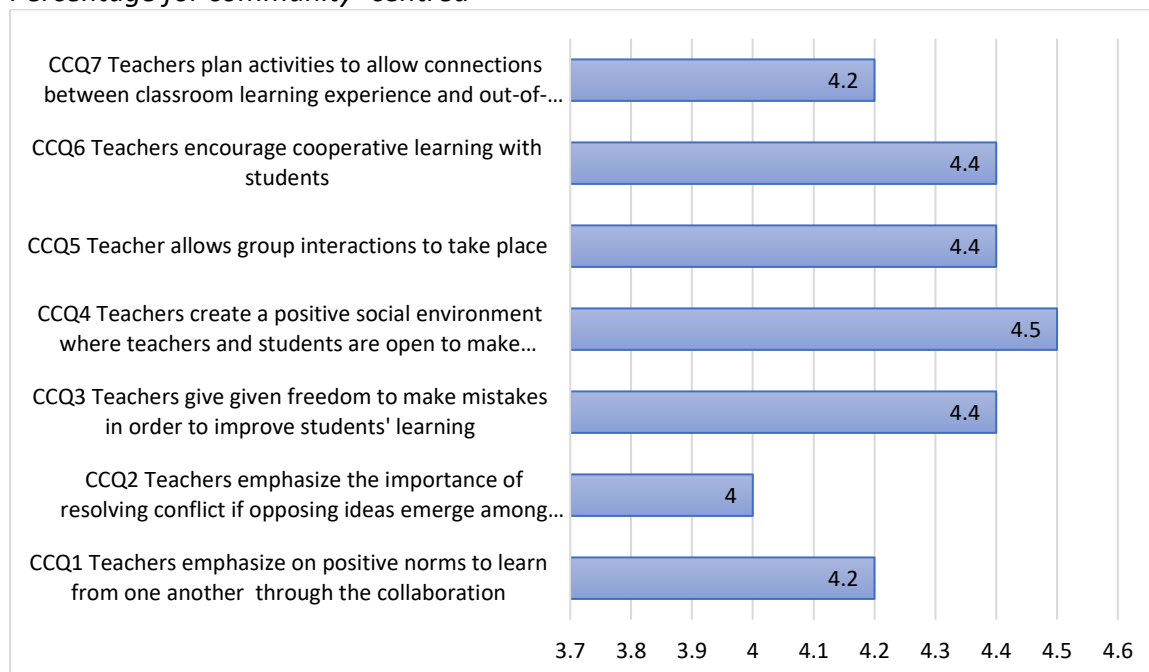
Percentage for community- centred

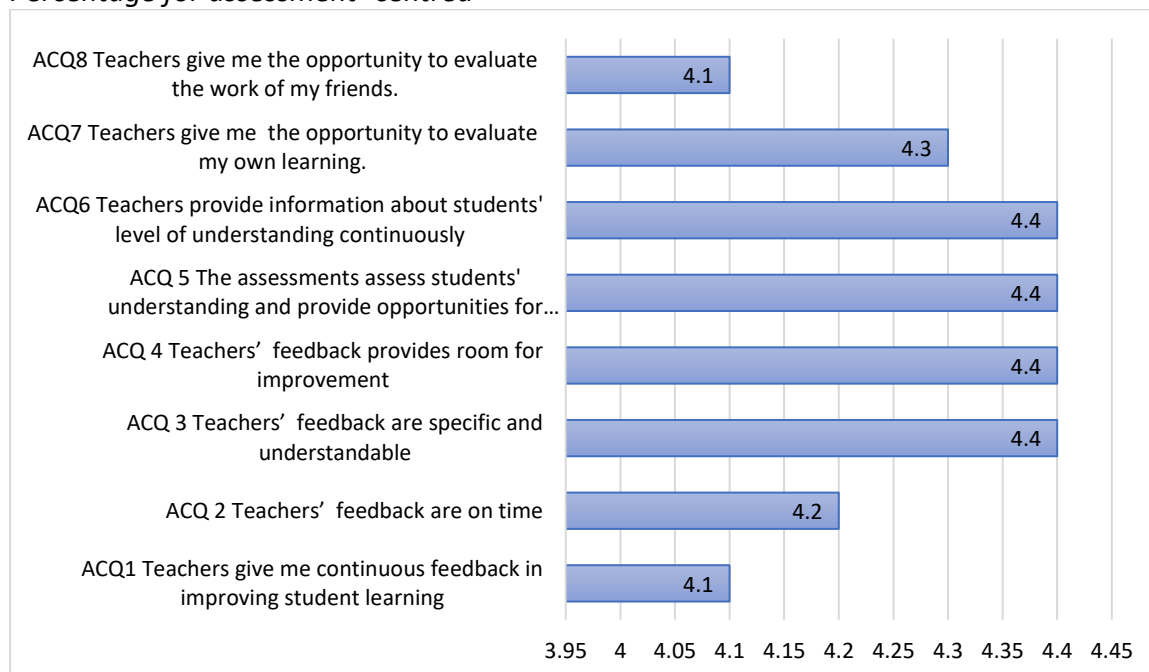
Table 6 shows that item CCQ4 (teachers create a positive social environment) has the highest mean ($M=4.5$) as positive environment would lead to non-judgement of mistakes by both the teacher and other students during the teaching and learning process. It is followed by item CCQ3, CCQ5 and CCQ6 with each a mean of 4.4. The lowest mean for community-centred is item CCQ2 ($M=4$) which places the importance of resolving conflicts.

Findings for Exosystem

This section presents data to answer research question 3: How does the exosystem influence the learning environment? In the context of this study, the exosystem is identified by assessment-centred environment.

Assessment-Centred (AC)

Table 7

Percentage for assessment- centred

Results obtained from the assessment-centred section presents lowest mean from ACQ1 and ACQ8 which pertain to the continuous feedback from the teacher and the presence of opportunities to evaluate peers' work. The items that share the highest mean are ACQ3, ACQ4, ACQ5 and ACQ6 that relate to feedback as being understandable and entailing improvement, assessments as means to assess students' understanding and information about their level of understanding on a regular basis.

Findings for Macrosystem

This section presents data to answer research question 4: How does the macrosystem influence the learning environment? In the context of this study, macrosystem is identified by the knowledge-centred environment.

Knowledge-Centred (KC)

Table 8

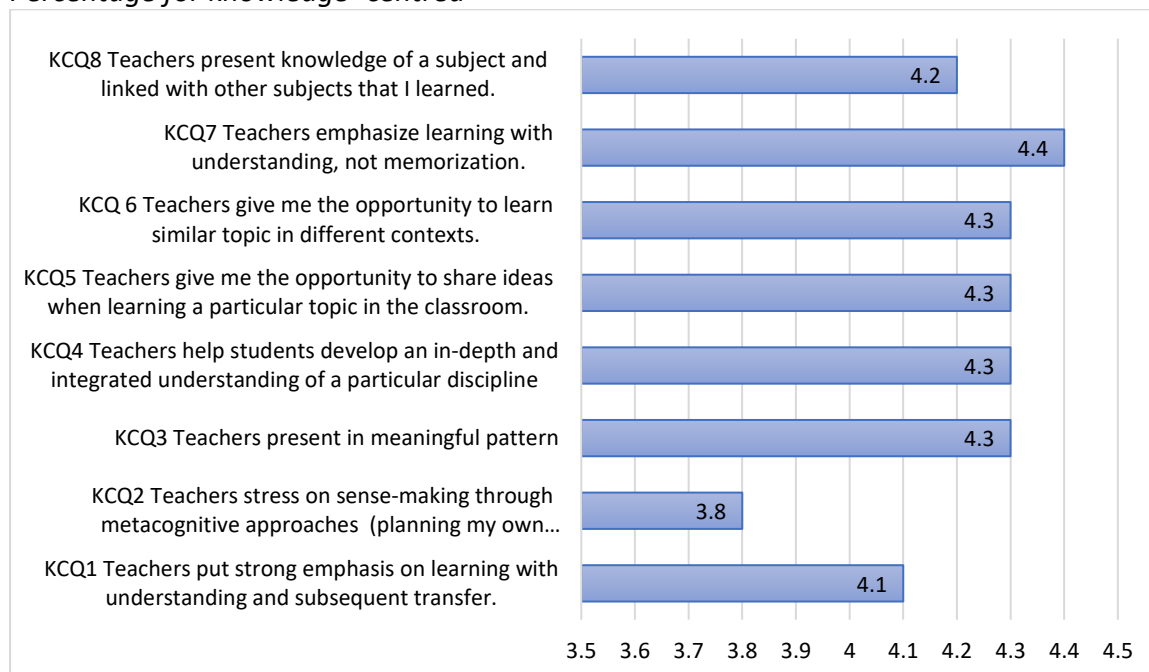
Percentage for knowledge- centred

Table 8 illustrates that item KCQ2 has the lowest mean which means students do not prefer to plan their own learning and rely on the teacher to convey information and lessons while KCQ7 has the highest mean. This translates as a fact that the students do not prefer the memorization method during the language acquisition process.

Findings for Relationship across variables for Learning Environment

This section presents data to answer research question 5: Is there a relationship between the variables for learning environment?

To determine if there is a significant association in the mean scores between microsystem, mesosystem, exosystem and macrosystem, data is analysed using SPSS for correlations. Results are presented separately in table 9, 10 , 11, 12 and 13 below.

Table 9
Correlation between microsystem and mesosystem

		TOTALMICRO SYSTEM	TOTALMESOS YSTEM
TOTALMICROSYSTEM	Pearson Correlation	1	.791**
	Sig. (2-tailed)		.000
	N	101	101
TOTALMESOSYSTEM	Pearson Correlation	.791**	1
	Sig. (2-tailed)	.000	
	N	101	101

** . Correlation is significant at the 0.01 level (2-tailed).

Table 9 shows there is an association between microsystem and mesosystem. Correlation analysis shows that there is a high significant association between microsystem and mesosystem ($r=.791^{**}$) and ($p=.000$). According to Jackson (2015), coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale. Weak positive correlation would be in the range of 0.1 to 0.3, moderate positive correlation from 0.3 to 0.5, and strong positive correlation from 0.5 to 1.0. This means that there is also a strong positive relationship between microsystem and mesosystem.

Table 10
Correlation between microsystem and exosystem

		TOTALMICRO SYSTEM	TOTALEXOSY STEM
TOTALMICROSYSTEM	Pearson Correlation	1	.837**
	Sig. (2-tailed)		.000
	N	101	101
TOTALEXOSYSTEM	Pearson Correlation	.837**	1
	Sig. (2-tailed)	.000	
	N	101	101

** . Correlation is significant at the 0.01 level (2-tailed).

Table 10 shows there is an association between microsystem and exosystem. Correlation analysis shows that there is a high significant association between microsystem and exosystem ($r=.837^{**}$) and ($p=.000$). According to Jackson (2015), coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale. Weak positive

correlation would be in the range of 0.1 to 0.3, moderate positive correlation from 0.3 to 0.5, and strong positive correlation from 0.5 to 1.0. This means that there is also a strong positive relationship between microsystem and exosystem.

Table 11
Correlation between microsystem and macrosystem

		TOTALMICRO SYSTEM	TOTALMACR OSYSTEM
TOTALMICROSYSTEM	Pearson Correlation	1	.808**
	Sig. (2-tailed)		.000
	N	101	101
TOTALMACROSYSTEM	Pearson Correlation	.808**	1
	Sig. (2-tailed)	.000	
	N	101	101

** . Correlation is significant at the 0.01 level (2-tailed).

Table 11 shows there is an association between microsystem and macrosystem. Correlation analysis shows that there is a high significant association between microsystem and macrosystem ($r=.808^{**}$) and ($p=.000$). According to Jackson (2015), coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale. Weak positive correlation would be in the range of 0.1 to 0.3, moderate positive correlation from 0.3 to 0.5, and strong positive correlation from 0.5 to 1.0. This means that there is also a strong positive relationship between microsystem and macrosystem.

Table 12
Correlation between Macrosystem and Mesosystem

		TOTALMACR OSYSTEM	TOTALMESOS YSTEM
TOTALMACROSYSTEM	Pearson Correlation	1	.857**
	Sig. (2-tailed)		.000
	N	101	101
TOTALMESOSYSTEM	Pearson Correlation	.857**	1
	Sig. (2-tailed)	.000	
	N	101	101

** . Correlation is significant at the 0.01 level (2-tailed).

Table 12 shows there is an association between macrosystem and mesosystem. Correlation analysis shows that there is a high significant association between macrosystem and mesosystem ($r=.857^{**}$) and ($p=.000$). According to Jackson (2015), coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale. Weak positive correlation would be in the range of 0.1 to 0.3, moderate positive correlation from 0.3 to 0.5, and strong positive correlation from 0.5 to 1.0. This means that there is also a strong positive relationship between macrosystem and mesosystem.

Table 13

Correlation between Macrosystem and Exosystem

Correlations

		TOTALMACR OSYSTEM	TOTALEXOSY STEM
TOTALMACROSYSTEM	Pearson Correlation	1	.908 ^{**}
	Sig. (2-tailed)		.000
	N	101	101
TOTALEXOSYSTEM	Pearson Correlation	.908 ^{**}	1
	Sig. (2-tailed)	.000	
	N	101	101

^{**}. Correlation is significant at the 0.01 level (2-tailed).

Table 13 shows there is an association between macrosystem and exosystem. Correlation analysis shows that there is a high significant association between macrosystem and exosystem ($r=.908^{**}$) and ($p=.000$). According to Jackson (2015), coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale. Weak positive correlation would be in the range of 0.1 to 0.3, moderate positive correlation from 0.3 to 0.5, and strong positive correlation from 0.5 to 1.0. This means that there is also a strong positive relationship between macrosystem and exosystem.

Conclusion

Summary of Findings and Discussion

On microsystem level, it is observed that language employed by the teacher plays a pivotal role in ensuring a conducive learning environment. This statement also aligns with the study by (Thompson & Harrison, 2014; Yusof & Halim, 2014). Indeed, in a foreign language classes where students are faced with new words and sounds, a familiar language would aid them in exploring the uncharted linguistic regions (Weinrich, 1986). On the other hand, students manifest disinclination towards getting included culturally during the learning process. On this note, this may be due to the fact that integrating their Malay cultural background to French culture would seem implausible.

On mesosystem level, students favor a positive environment where it is socially acceptable to make mistakes without getting punishment from the teacher or laughed at by other students. A number of studies also revealed that students are afraid of making errors whether when reading aloud or speaking exercises (Young, 1986; Melchor-Couto, 2016).

Next, in the context of foreign language learning for beginner's level, there is little to none occurrence of conflicting ideas among students, hence the low mean for the importance of conflict resolution between peers.

On exosystem level, students largely agree on receiving feedback or information coming from the teacher himself or via well-constructed assessments in order to improve themselves. This is in parallel to conclusions retained in a study by Ellis et al (2008) and Vattøy and Smith (2019). However, according to the findings, the feedback ought not to come on a regular basis nor punctually. In other words, the teachers' opinions are of the utmost importance, more than their temporal aspect. Moreover, students also show disinclination to peers' work evaluation. This may be relatable to contemporary shifts in learning cultures as it posits that the students prefer to focus on their own work and development before evaluating others' work.

On macrosystem level, foreign language students prefer that the teacher emphasizes learning with understanding and not with memorization, which is understandable since memorization has been, since the creation of more modern methodologies in foreign language didactics, considered as the "old" way of learning (Chacin et al., 2010). Nevertheless, in a foreign language class, especially at the beginner's level, one could not simply overlook its importance since early language acquisition relatively depends on it (Yu, 2013). Another interesting finding is that students agree that planning their own learning is not their preferred method of learning. This suggests that they much rather rely on the "traditional" method where principally the teacher relays information to the students which presents as consistent with the other items in macrosystem where the teacher should be able to convey lessons in an interactive and versatile manner.

Our findings have also proved that the interactions that the teacher initiates for his learners between them and his four environments i.e. microsystem, mesosystem, exosystem and macrosystem are strongly intercorrelated. This suggests that in ensuring a conducive learning environment for a foreign language class, all four of these environments ought to be well managed.

Pedagogical Implications and Suggestions for Future Research

In light of the current findings, teachers ought to be more aware of how to cater to the students' needs by firstly ensuring a positive learning environment. Since the students are, in behavioural terms, obedient and unquestioning to the disposition placed by the teacher (Violato et al., 2021), it is the teacher's role to employ suitable language, enact a socially safe place for and among the students, plan assessments timely and its feedback and teach with different styles to minimise memorisation method. All things considered, the current study provides several of many factors to take into consideration in establishing a conducive learning environment. Although essentially learners' performance is dependent on their own self, having a positive learning environment could greatly aid the students' acquisition of foreign language (Wei et al., 2019; Li et al., 2020).

Moreover, since the structure of the study explores the physical classroom environment, it is judicious to continue this sort of bottom-up approach investigations in other modes of distance learning environments. With a blossoming expansion of technology-inclusive education, the intricacies of each environment ought to be studied. Another direction of future research would be determining the relationship between the learning environment defined by the current four levels of environments and learning performance. It

is necessary, apart from securing the best learning experience for the students, to actually measure the outcome of the practices so as to align with both aspiring students' and institution's demands.

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