CHAPTER 3
RESEARCH METHODOLOGY

The previous chapter has provided the literature related to the current study. This chapter outlines the methodology used in this study. The chapter begins with a discussion of the mixed methods used in this study. After that, it discusses the research site and participants of the research. It then presents the research instrument. The research instruments include student questionnaires, interview questions for students, and observations made in class. The next stage describes the data collection process and data analysis procedure. There is also a brief discussion of ethical issues. Finally, the chapter ends with a summary of the mixed methods used in this study which is useful for presenting the results.

3.1. Research Design

The present study employed a mixed methods design to investigate the level of autonomy of Indonesian university students and its relationships to English proficiency. Mixed method design is the research paradigm which aims to put quantitative and qualitative data together. As a method, mixed method research focuses on data collection, data analysis and combination of both quantitative and qualitative method in a single study or a series of studies (Creswell & Clark, 2017). The premis of mixed method approach is that by combining quantitative and qualitative approach it provides better understanding of research problems than either approach alone (Hamied, 2017).

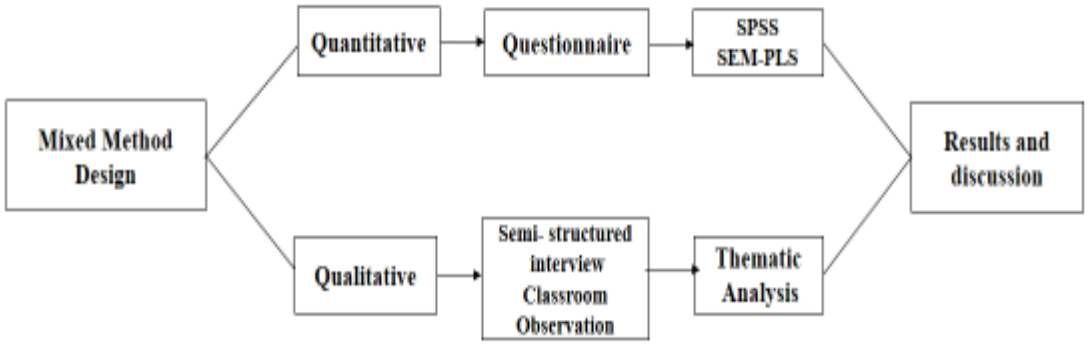
Numerous researchers and experts have employed this method as one of the most important research approaches used today (Agustina, 2017a; Cheng, 2019; Cirocki et al., 2019; Ivankova, 2004; Ivankova et al., 2006; Nguyet, 2019; Nguyen, 2014; Szőcs, 2017). Mixing both quantitative and qualitative data within one study can provide a more complete understanding of the research problem, complement each

other and allow robust analysis, take advantages of the strengths of each method (Creswell & Creswell, 2005; Green & Caracelli, 1997; Ivankova, 2004; Miles & Huberman, 1994; Tashakkori & Teddlie, 2003).

Creswell and Clark (2007) list four types of mixed methods design most commonly used by researchers. They are: triangulation design, explanatory design, exploratory design, embedded design, and convergent parallel design. This present study used triangulation design. Triangulation design is the most common approach to mixed methods design. It is used to obtain complementary quantitative and qualitative data on the same topic (Hamied, 2017). The rationale for using triangulation design in this study is to directly compare and contrast quantitative and qualiataive results with qualitatitave data. The quantitative data and qualitative data were collected at the same time and with equal weight. The two types of data were collected and analyzed separately. Then, the findings were merged together. The research design is illustrated in figure 3.1.

Figure.3.1

Triangulation design procedure in this study



(Modified from Creswell, 2009)

The questionnaire was used to collect quantitative data. While interview questions for students, and classroom observation were used to collect qualitative data. For addressing research question one "To what degree are the undergraduate EFL learners autonomous?" descriptive analysis of quantitative data was used to describe undergraduate EFL learners' degrees of autonomy. While thematic analysis of qualitative data was applied to get undergraduate EFL learners' in-depth perceptions of learner autonomy and their experiences related to autonomous learning. The mixture of them could complement each other, thus it can provide a holistic interpretation of undergraduate Indonesian EFL learners' autonomy. For addressing the second research question "How do undergraduate EFL learners learn autonomously viewed from four aspects of learner autonomy?" thematic analysis was conducted to find out the ways students learn English autonomously in a classroom setting. Dealing with the third research question "What is the influence of learner autonomy on English Proficiency?" Partial Least Square - Structural Equation Modeling (PLS-SEM) analysis was used to demonstrate statistically the relationship between learner autonomy and English proficiency and the influence of learner autonomy on English proficiency. In this research, there are four independent variables (technical, psychological, political, and sociocultural) and one dependent variable (language proficiency). Furthermore, thematic analysis of qualitative data helped to explore more the contribution of learner autonomy on English proficiency.

3.2. Research Site and Participants

This study was conducted at a state university in Bandung. This university represents itself as one of the best, oldest and most popular universities in Bandung, especially for the English Education program. This university has a good qualification in its curriculum, educators, students, facilities, administration, and implementation of education. Additionally, this university has many qualified professors who graduated from reputable universities abroad. This site was chosen because of its accessibility

and the lecturers as well as students in the English education program responding to the researcher's invitation.

The participants of this study were second year undergraduate students. Specifically, they were in semester four. They were chosen as the participants because they had experience in learning autonomously such as searching for relevant learning materials and information from the internet by themselves, learning the materials before entering the class, solving their learning problems individually or with lecturers' or classmates' helping, and completing the task either individually or collaboratively in group presentation.

Forty students participating in quantitative research were recruited conveniently as participants for quantitative research. The number of participants in this research had met the sample size requirement of PLS-SEM. According to Chin (2000) and Ghozali (2014), the minimum sample size used in PLS-SEM is 30-100.

To carry out a qualitative study, Stake (2011) recommends sampling of four to ten participants. This study used a simple random sampling method to select 15 participants among those who volunteered to participate in a semi-structured interview. For classroom observation, purposive sampling was chosen. It is recommended by Hamied (2017) who remarks that the sample in the qualitative study is characteristically purposive. Two classes were selected purposively based on some considerations. Firstly, the lecturers who taught in these classes have had sufficient knowledge about learner autonomy and have implemented it in their teaching practices. Secondly, the lecturers as well as students responded to the researcher's invitation. In this case, they agreed their classes to be observed.

The present study limited to the English major students focuses on the undergraduate EFL students. Then, EFL learning context is restricted to the subjects concerned with English language skills. Listening, speaking, reading, and writing for academic purposes 1 courses are taken as the specific context of this research.

3.3 Research Procedure

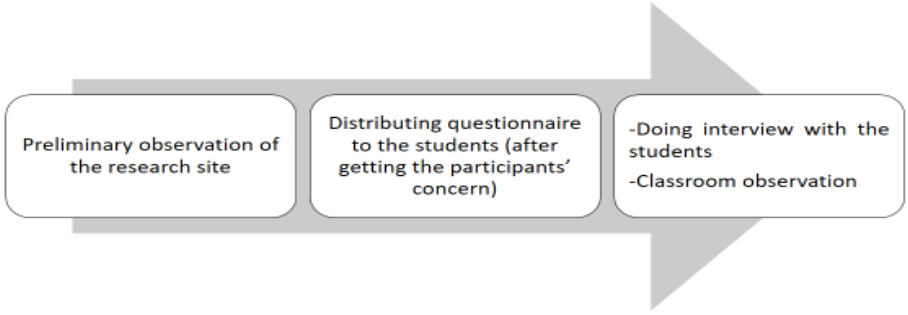
The present study was carried out in three phases. In the first phase, the researcher contacted the faculty administator to obtain the formal research permit letter. Then, the researcher contacted the lecturers whose class would be observed to get approval. After getting approval, then the researcher did a preliminary observation about the research site, such as: the location, the class, and the students. In this phase, the researcher also asked learners' willingness to participate in this research.

In the second phase, students' questionnaires were distributed to the students to gain the information about their perceptions of autonomy. The selected participants were told that the information collected is confidential and that their participation is voluntary. They were also asked to use pseudonyms instead of their real names in the questionnaire.

In the last phase, an interview and observation were performed with the students. The researcher used a simple random sampling method to select 15 participants among those who volunteered to participate in semi-structured interviews. Fifteen participants who answered the questionnaire and signed the concern form previously were interviewed. Classroom observation was conducted to gain specific information about how learners learn autonomously viewed from four aspects of learner autonomy. All the phases above are summarized descriptively in Figure 3.2 below.

Figure 3.2

Research Procedure



3.4 Data Collection Techniques

3.4.1 Instrumentations

To decide which instruments should be used in the research is a difficult and complex task. It is suggested to use the principle of fit for purpose (Hesse-Biber, 2010). Questionnaire, interview, and classroom observation were chosen as research instruments in this present study to collect rich and credible data according to the fit for purpose principle.

The numerical data can be gotten from questionnaires, while in-depth data can be derived from the interview and observation. It can be concluded that the strong points of interviews and observation can complement the weak points of questionnaires and vice versa. It is supported by Haris and Brown (2010), they state that the combination of questionnaires and interviews could generate complementary findings and increase the reliability and validity of the study. There are many similar studies on learner autonomy using questionnaires and interviews to collect research data: Boonma & Swatevacharkul (2020); Cheng (2019); Ja (2017); Jianfeng et al (2018); Öztürk (2019); Swatevacharkul & Boonma (2021); Wang & Ryan (2020) employed questionnaires and interviews to study learner autonomy. The researchers in all these studies had proved the validity and reliability of the combination of questionnaire and interview methods.

3.4.1.1 Questionnaire

The first instrument for collecting data in this research was a questionnaire. The questionnaire was administered to the participants to investigate their level of learner autonomy based on the four aspects of learner autonomy, namely technical, psychological, political-philosophical, and sociocultural, by exploring learning behavior. Through questionnaires, the researcher can gather data on students' learning behaviors through a set of questions. It can also help the researcher identify important beliefs and attitudes of individuals (Creswell, 2012). According to Dörnyei and Taguchi, (2009), using questionnaire could save time, money, and human resources

compared to other research approaches; otherwise it had better get real information owing to participants' anonymity, and generate a great deal of quantitative data in a short time.

There are some reasons why the questionnaire was used in this study. First, the standardization of questionnaire. Dörnyei & Taguchi (2009) affirms that the strength of the questionnaire is in the standardization. The standardization makes data collection objective and feasible. Second, the questionnaire was adopted to get answer from all subjects on the same questions in the same order. Of course, it is highly desirable for the researcher to tabulate and compare the answer because it is easy and consistent. Third, the questionnaire can be distributed to a large number of respondents at the same time, so it saves time, money and manpower compared to other approaches. Then, respondents are anonymous while fulfilling questionnaires. Therefore, they can freely express their opinions and views. Next, in a short time, a large quantity of quantitative data can be generated (Dörnyei & Taguchi 2009). Finally, in the questionnaire all items were coded, so the data can be put into computers easily and analyzed statistically

Questionnaires are the most frequently used method in current studies on learner autonomy in the research field of English as a second or foreign language. (Spratt et. al, 2002; Borg and Al-Busaidi, 2012; Murase 2015; Cheng, 2019). To collect the quantitative data, Measuring Instruments for Language Learner Autonomy (MILLA) was adopted from Murase (2015). MILLA consists of four dimensions or aspects of learner autonomy (technical, psychological, political-philosophical, and sociocultural). In the technical aspects, the participants were asked to respond to the items based on their experiences in four Likert-type scales from never to always, which show how often they do the statements. In terms of psychological side preceded political-philosophical and sociocultural, the participants were asked to express their opinions on each statement in four Likert-type scales from strongly disagree to strongly agree, which shows how often a statement is true based on their beliefs. The items of the questionnaire are presented in Table 3.1.

Table. 3.1

The Items of Questionnaire (Adopted from Murase, 2015, p. 56)

Aspects of Learner Autonomy		**The Items of Questionnaire**
Technical	**Behavioral** (*the ability to use cognitive and metacognitive strategies, such as setting goals, planning and monitoring, in order to take control of one's learning*)	1-20
	Situational (*the ability to take control of one's learning in the situation where the learners need to study independently*)	21-23
Psychological	**Metacognitive** (*the capacity to take control of one's learning by knowing about one's own learning (needs, preferences, strengths/weaknesses) and metacognitive strategies)*	24-37
	Affective (*the capacity to take control of one's learning by knowing about one's affective states: anxiety, self-esteem and other emotions, and how to control these affective factors)*	38-43
	Motivational (*one's intrinsic/extrinsic motivation towards learning English, the capacity to take control of one's own learning by knowing about the strategies to motivate oneself, and one's responsibility for success/failure in learning English)*	44-51
Political-Philosophical	**Group autonomy** *(one's view/awareness of 'teachers as authority' and other kinds of authorities, such as parents or government policy)* **Individual autonomy** *(one's view of taking control of, and one's ability to make decisions about, the content/goals/purposes in learning English)*	52-65
	Freedom *(one's views of freedom in the context of learning English where the learners have the freedom to control their learning (content/goals/purposes)*	66-69
Sociocultural	**Social Interactive** *(one's views of learning with/from teachers and/or other learners)*	70-81
	Cultural *(one's views of learning in different cultures (Western/Indonesian cultures)*	82-87

Measuring instruments for language learner autonomy (MILLA), adopted from Murase (2015, p. 56) comprised four dimensions or aspects of learner autonomy: technical, psychological, political-philosophical, and sociocultural. The technical autonomy consisted of two sub-dimensions: behavioral autonomy and situational autonomy. The psychological autonomy included metacognitive, affective, and motivational sub-dimensions. The political-philosophical autonomy included group/ individual autonomy and freedom dimensions. Sociocultural autonomy comprises of

two sub-dimensions, namely social-interactive and cultural. The technical dimension included 23 items, the psychological dimension included 33 items, the political-philosophical dimension included 13 items, and the sociocultural dimension included 18 items.

The questionnaire was translated into the Indonesian language. It is necessary for the researcher to write the questionnaire in both English and Indonesian language versions. The main reason is that the success of this study depended very much on the students' feedback. In addition, a good understanding would increase the accuracy of their responses. The translation was proof-read by the researcher's supervisor who is expert in learner autonomy and very proficient in English.

The questionnaire was tried out to students who were not included in the sample of the actual study. The main objectives of the try out was to assess the clarity of the language and words used in the instruments. The convenient sampling method was employed to select the subjects who participated in the survey. The try out was carried out by 11 students on February, 10th 2020.

3.4.1.2 Interviews

The second instrument for collecting data in this research was a semi-structured interview. It was conducted to get useful information that cannot be gained through questionnaires. Specifically, the semi-structured interview questions for students were designed to gather detailed information on students' learner autonomy and students' practice of learner autonomy.

The use of interviews as one of the instruments in this research is based on several reasons. The research questions can be explored comprehensively; the interview questions can be explained or restated if respondents do not understand them; the respondents' various opinions about the same research questions can be collected; more reliable and comprehensive qualitative data could be obtained (Cheng, 2019). Moreover, the participants are allowed to use their own words or language in the interview (Burns, 2000).

The students were interviewed using several questions adapted from Le Thanh Nguyet (2019). The interview questions were categorized into four parts. The first part students were asked about the definition and role of learner autonomy. The second part students had to answer their practices of learner autonomy. The third part related to the students' self-assessment of their learner autonomy. The last part related to students' reflections regarding their LA practices in improving their language proficiency. To ensure clarity in the wording, the interview questions were checked by the researcher's supervisor before the collection of the final data.

Table 3. 2

The Interview Guidelines

Categories	***Questions***
Students' knowledge about learner autonomy.	1,2,3,4
Students' practices of leaner autonomy.	7,8,9,10,11,12,13,14
Students' self-assessment of their LA.	5,6
Students' reflections regarding their LA practices in improving their language proficiency	15

3.4.1.3 Classroom Observation

The third instrument in this research was classroom observation. Similar to interviews, classroom observations were used for qualitative data. The observation is one of the popular instruments in most qualitative research. Observation methods are powerful tools for gaining insight into situations (Cohen et al., 2000). Observations make it possible for researcher to gather firsthand information in a natural setting. In this observation, the researcher observed how students learn English autonomously. Classroom observation was conducted during the teaching process, and it aimed at observing and understanding the natural environment as lived by the participants without altering or manipulating it (Gay et al., 2009).

In this present study, classroom observation was held by the researcher. The researcher put herself as a non-participants observer. It has advantages of not being

emotionally participated with the people being involved (Hamied, 2017). The observation focused on exploring how students learn English autonomously viewed from the four aspects of learner autonomy. During the observation the researcher used the observation checklist as an instrument which was organized from the theories of an autonomous learning by Benson (1997), Oxford (2003), Chan et al., (2002), and Sakai et al. (2010). It covered several autonomous learning aspects, such as taking responsibility, taking the initiative, less teacher involvement, find out English resources to learn autonomously, preparing for lessons by reading, making suggestions, learners' freedom to control learning (content/goals/purposes), learning with/from other learners. The observation checklist was checked by the researcher's supervisor before the collection of the final data.

3.4.1.4 English Language Proficiency Measure

This study also investigated the relationship between learner autonomy and English proficiency. English proficiency in the present study is represented by the students' final grade related to English-related subjects they took in the previous semester in which the study was conducted. York et al. (2015) state that although there are several ways to evaluate learner's proficiency, grades and grade point averages (GPA) measures are the most common tools as they are readily available assessments for institutions, and they enable us to measure the accomplishment of learning objectives as well as the acquisition of skills and competencies. The consent form was taken first from each participant to obtain and use their scores for this study. The consent form was taken first from each participant to obtain and use their scores for this study. The researcher accessed the students' scores in the department with the student's permission.

The students' scores of language skills subjects, including listening, speaking, reading, and writing in professional context, which reflect the students' English proficiency were used to calculate the correlations between learner autonomy and English proficiency. In listening skills, about 67.5% of the sample had a score of the A

level, and 32.5% of the B level. In speaking skills, about 27.5% of the sample had a score of level A, 62.5% had a score of level B, and 10.0% had a score of level C. For reading skills, about 90.0 % of the sample had a score of level A, and 10.0% had a score of level B. While writing skills, about 62.5% of the sample had a score of level A, and 37.5% had a score of level B. (see Table 3.3)

Table. 3.3

The students' score of English language skills subjects

English Skills	***Grade***	***F***	***%***
Listening	A	27	67.5
	B	13	32.5
Speaking	A	11	27.5
	B	25	62.5
	C	4	10.0
Reading	A	36	90.0
	B	4	10.0
Writing	A	25	62.5
	B	15	37.5

3.4.2 Procedure

Since the present study employed a mixed-method design, quantitative data were collected first, through the questionnaire, and then followed by qualitative data through interviews and observation. The procedures of gathering the data were conducted as follows

3.4.2.1 Quantitative Data Collection

There were 40 students who participated in the quantitative data collection from February, 12th to 15th, 2020. Before the commencement of the survey, participants were asked to sign a consent form, which included information related to the purpose of the study, data collection method, the estimated time for completing questionnaires, assurances of anonymity and confidentiality, potential risks, and the right to withdraw the research. The consent form is written in the Indonesian language for a better

understanding. With the help of English language teachers, the researcher distributed questionnaires to the participants. For those who were not sure about the terms of the questionnaire, they could inquire with the researcher immediately. Before collecting questionnaires, the researcher reminded the participants to carefully check whether they had completed all the items or not. After that, the researcher collected the questionnaires by collaborating with language teachers. During the whole process, the participants' information and answers were kept confidential.

3.4.2.2 Qualitative Data Collection

Fifteen students were interviewed with semi-structured interview questions. Before the interview the participants were asked to sign the consent form. To get rich qualitative data, Indonesian language was adopted in the whole interview process. One smartphone was used to record the interview data. In order to avoid background noise, the interviews took place in an empty quiet classroom.

Before the interview was conducted, the researcher made an appointment first to the students about the time and place for the interview. There were four students who agreed to join an interview on March 9^{th,} 2020. The researcher interviewed them before the class started. Moreover, the other seven students agreed to have an interview on March 12th, 2020. The researcher interviewed them after their class finished. Unfortunately, an interview with the other five students who have an appointment on March 16th, 2020 was canceled because the university decided to lockdown campus and hold learning online for students during the Covid-19 outbreak in Indonesia. Finally, the interview was conducted on April 5th, 2020 using voice notes WhatsApp application.

In this study, the observation was conducted in the classroom. It used to find out how the undergraduate EFL learners learn English autonomously based on the four aspects of learner autonomy, namely technical, psychological, political, and social-cultural. In other words, this observation is intended to perceive the learners' practice in fostering learner autonomy that were shown in the classroom context. The type of

non-participant observation was used. In this case, the researcher did not get involved in the activities of the group but remained a passive observer, watching and listening to its activities and drawing conclusions from the activity. In order to record the data from observation, observation checklists were used to observe the observable behaviors that can be seen in the classroom activities. Observation was done six weeks from February 4, 2020 to March 12, 2020. The schedule of the observation is explained in Table 3.3 below.

Table.3.3

The schedule of the observation

No	Days/Date/time	Time
1	Tuesday, February 4, 2020	13.00- 14.40.
2	Monday, February 13, 2020	13.00- 14.40.
3	Monday, February 17, 2020	07.00- 08.40.
4	Monday, February 17, 2020	10.20- 12.00.
5	Tuesday, February 18, 2020	10.20-12.00.
6	Tuesday, February 18, 2020	13.00- 14.40.
7	Wednesday, February 19, 2020	13.00- 14.40
8	Thursday, February 20, 2020	13.00- 14.40
9	Monday, February 24, 2020	07.00- 08.40.
10	Monday, February 24, 2020	08.40-12.00
11	Monday, February 24, 2020	10.20-12.00
12	Monday, February 24, 2020	13.00-14.40
13	Tuesday, February 25, 2020	10.20-12.00
14	Tuesday, February 25, 2020	13.00-14.40
15	Thursday, February 27, 2020	13.00- 14.40
16	Monday, March 2, 2020	07.00- 08.40
17	Monday, March 2, 2020	08.40-10.20
18	Monday, March 2, 2020	10. 20 -12.00

19	Monday, March 2, 2020	13.00 -14.40
20	Tuesday, March 3, 2020	10.20- 12.00
21	Tuesday, March 3, 2020	13.00-14.40
22	Tuesday, March 10, 2020	13.00- 14.40
23	Thursday, March 12, 2020	13.00- 14.40

3.5. Data analysis

3.5.1. Quantitative Data Analysis

Data gathered from questionnaires was put into Microsoft Excel. Then the data was analyzed by Statistical Package for the Social Sciences (SPSS) 22.0. Data analysis technique was done descriptively. Descriptive statistics, including frequencies, percentages, means, standard deviations, and index score was conducted to analyze students' degree of learner autonomy. The scale was quantified by the 4-point Likert scale, in which the highest score of every item was 4 points, and the lowest score was 1 point. There were two kinds of four Likert scale answers used in this research. The scale of questionnaire items are presented in Table 3.4.

Table 3.4

Scale of Questionnaire's Items

Frequency	Agreement	Scale point
Always	Strongly agree	4
Frequently	Agree	3
Rarely	Disagree	2
Never	Strongly disagree	1

The frequency scale included never, rarely, frequently, and always indicated how often the learners did the statements. While, the agreement scale included strongly disagree, disagree, agree, and strongly disagree indicated how often the statements were true based on the learners' belief. Descriptive statistics for all variables were interpreted.

The degree of learner autonomy was categorized into three. Learners with the index score above 80 were categorized as high-level autonomy (> 80 %), those with a score from 60 to 80 (60% to 80%) were identified as mediate level autonomy, whereas learners with a score below 60 (< 60 %) were considered low-level autonomy (Elizondo and Garita, 2013).

Due to the limitation of multivariate techniques such as multiple regression which can only test one relationship between the dependent and independent variables, the researcher decided to use partial least squares structural equation modeling (PLS-SEM) to test the relationship between several independent and dependent variables in this research model. Smart PLS 3.0 version 3.2.7 was utilized in this study to find out the correlations among four aspects of learner autonomy and language proficiency. To analyze data using the Smart PLS software application, the researcher followed some procedures according to Ghozali (2014). The procedure is begun by building the inner model and outer model. Then, assessing reflective measurement models and structural models. And the last is resampling bootstrapping (see figure 3.3). The detailed explanation of the procedures is as follows.

1. Developing a path model

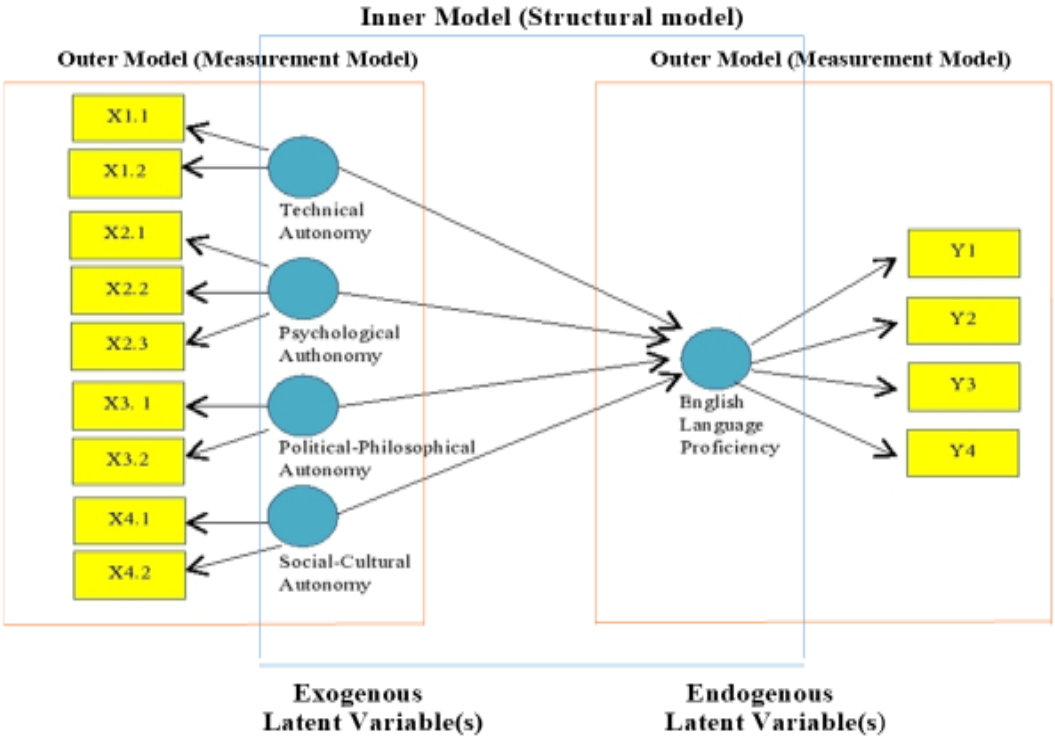
Path models were made up of two elements, the structural model and the measurement models. The first step in this stage is building the inner model. Inner model is also known as inner relation, structural model, and substantive theory, which describes the relationship between latent variables based on substantive theory. In this research, the endogenous latent variable is English language proficiency. While exogenous latent variables are technical autonomy, psychological autonomy, political-philosophical autonomy, and sociocultural autonomy.

After determining the relationship between latent variables in the inner model, the next step is building the outer model. Outer model is also called the outer relation or measurement model, which describes the relationships between the latent variables and their indicators. There are two broad types of measurement specification; they are formative and reflective measurements. This research used reflective indicators.

Outer model is developed based on indicators previously mentioned. Endogenous variable is English language proficiency which is developed with four indicators, namely listening, speaking, reading, and writing (Y1, Y2, Y3, and Y4). Exogenous variables includes technical autonomy is developed with 2 indicators, namely behavioral and situational (X1.1 and X1.2); psychological autonomy is develop with three indicators, namely metacognitive, affective and motivational (X2.1, X2.2, and X2.3); political-philosophical autonomy is developed with two indicators, namely group/individual autonomy and freedom (X3.1 and X3.2); socio-cultural is developed with two indicators, namely social interactive and cultural (X4.1 and X4.2). The following is an image of the research model design (figure 3.2).

Figure.3.3

Research Model



(Source: Processed by Smart PLS 3.0 version 3.2.7)

2. Evaluation of Reflective Measurement Models (Outer Model)

PLS does not assume a specific distribution for parameter estimates, so parametric techniques to test parameter significance are not required. The measurement model or outer model with reflective indicators is evaluated with convergent and discriminant validity and composite reliability for indicator blocks. This evaluation analyzed the validity, reliability and looked at the level of prediction of each indicator on the variables by analyzing the following.

a. Convergent Validity.

The convergent validity of the measurement model with reflective indicators was assessed based on the correlation between item scores/component scores and construct scores calculated by PLS. The individual reflevtive measure is said to be high if it has a correlation of more than 0.70 with the construct to be measured. However, according to Ghozali (2014), for the initial research the value of loading factors from 0.5 to 0.6 is considered quite good.

b. Discriminant Validity

Discriminant validity was evaluated by examining the cross loading of the indicators. Specifically, an indicator's outer loading on the associated construct should be greater than all of its loadings on other constructs (Hair et.al, 2014). Besides, it also can be assessed by the Fornell-Larcker criterion. It compares the square root of the AVE values with the latent variable correlations. Specifically, the square root of each construct's AVE should be greater than its highest correlation with any other construct.

c. Average Variance Extracted (AVE)

Average Variance Extracted (AVE), which is a test to assess the average commonality of each latent variable in the reflection model. The AVE value must be above 0.50, which means that at least the latent factor can explain each indicator by half of the variance.

d. Composite Reliability

Composite reliability was done to measure internal consistency or measure the reliability of the measurement model, and its value must be above 0.70. Composite reliability is another alternative test of Cronbach's alpha. When compared to the test results, composite reliability is more accurate than Cronbach's alpha.

3. Evaluation of Structural Model (Inner Model)

When the outer model assessment is satisfactory, the next step in evaluating PLS-SEM results is assessing the inner model. Evaluation of the structural model or inner model is conducted to ensure that the structural model built is robust and accurate. This model was evaluated using R-square for the dependent construct, Stone-Geisser Q-square test for predictive relevance, Goodness of Fit, t-test, and the significance of the coefficients of structural path parameters. The explanation is as follows:

a. R-Square (R2) Analysis

Assessing the inner model with PLS begins by looking at the R-Square for each dependent latent variable. R-Square (R2) analysis for endogenous latent variables. The R-square results of 0.67, 0.33, and 0.19 for endogenous latent variables in the structural model indicate that the model is good, moderate, and weak. The changes in the R-Square value can be used to assess the effect of certain independent latent variables on the dependent latent variable whether it has a substantive effect.

b. Effect Size (F2) Analysis

F2 analysis is an analysis conducted to determine the predictor level of latent variables. F2 values of 0.02, 0.15, and 0.35 indicate the predictor of latent variables has a weak, medium, or large influence on the structural level.

c. Q-Square Analysis

Q-Square Predictive Relevance analysis is an analysis to measure how well the observed values are generated by the model and parameters estimated. A Q-square value greater than 0 (zero) indicates that the model has predictive relevance, while a Q-square value less than 0 (zero) indicates that the model has no predictive relevance. The formula for finding the Q-Square value is as follows:

$$Q2 = 1 – (1 – R12) (1 – R22$$

d. Goodness of Fit (GoF) Analysis

In contrast to covariance-based SEM, GoF analysis on PLS-SEM was done manually because it is not included in the Smart PLS output. The criteria for GoF values are 0.1, 0.25, 0.38, which are categorized as small, medium, and large. The formula used is as follows:

$$GoF = \sqrt{AVE\ x\ R}$$

4. Hypothesis Testing (Resampling Bootstrapping)

The next step in evaluating PLS-SEM is to perform statistical tests by analyzing the results of bootstrapping or path coefficients. Hypothesis testing is conducted to compare the results of t-count and t-table. If t-count is higher than t-table ($t\text{-}_{count} > t\text{-}_{table}$), the hypothesis is accepted. Besides, in PLS-SEM hypothesis testing can be conducted by looking at the probability value. If P-values < 0.05, the hypothesis is accepted and vice versa.

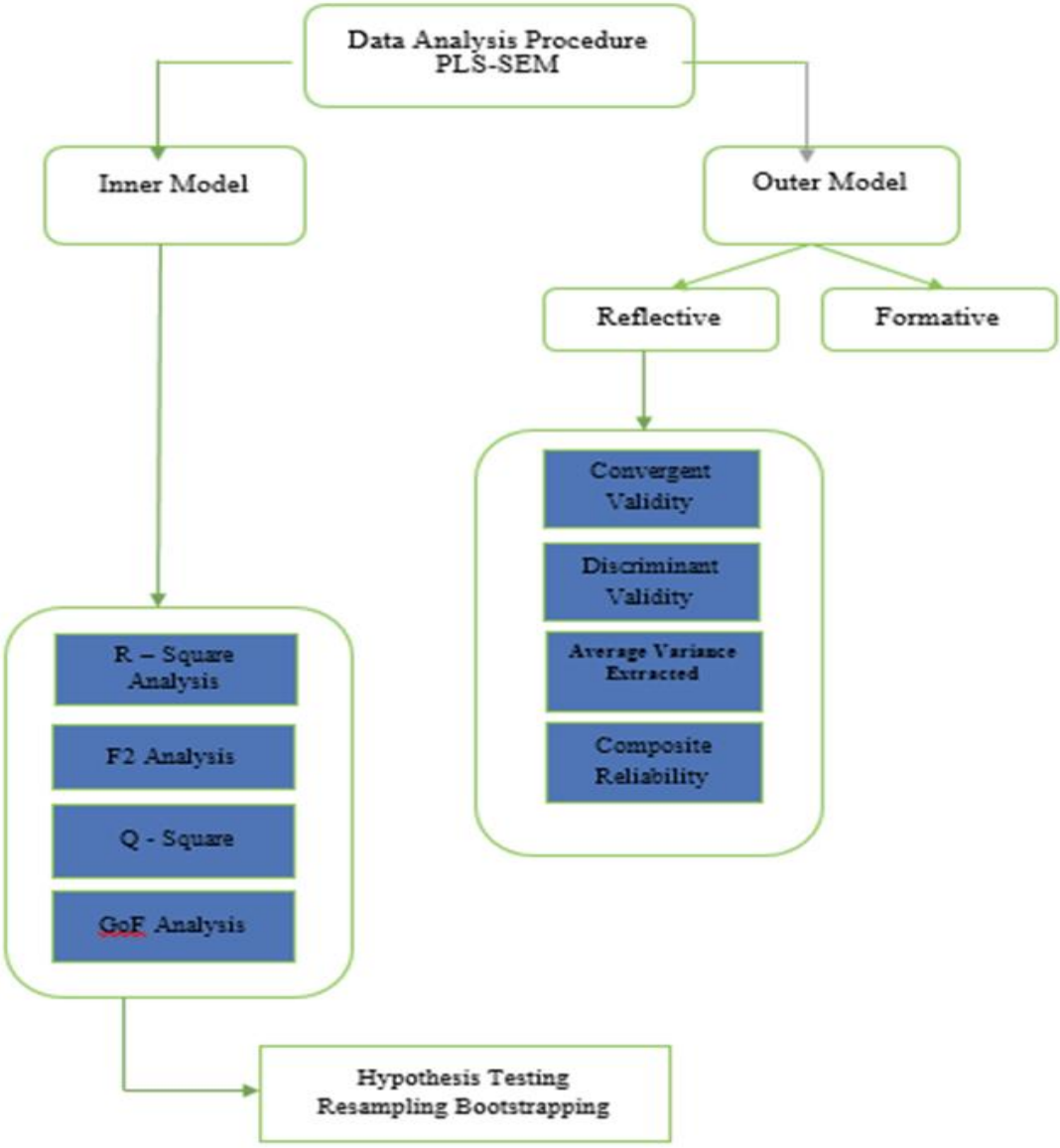
The hypothesis testing of this research is as follow.

a. H1
   H0: β = 0, technical autonomy has no positive effect on English language proficiency
   Ha: β > 0, technical autonomy has a positive effect on English language proficiency.
b. H2
   H0: β = 0, psychological autonomy has no positive effect on English language proficiency.
   Ha: β > 0, psychological autonomy has a positive effect on English language proficiency.
c. H3
   H0: β = 0, political-philosophy autonomy has no positive effect on English language proficiency.

   Ha: β > 0, political-philosophy autonomy has positive effect on English language proficiency.
d. H4
   H0: β = 0, sociocultural autonomy has no positive effect on English language proficiency.
   Ha: β > 0, sociocultural has positive effect on English language proficiency.

Figure 3.4

The procedure of PLS-SEM data analysis



(Source: adopted from Ghozali, 2014)

3.5.2. Qualitative Data Analysis

To analyze the qualitative data, the researcher adopted thematic analysis to identify, analyze, and report themes within qualitative data (Braun & Clarke, 2006). The process of thematic analysis is familiarizing the researcher with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report.

Before analyzing the qualitative data, the audio recording data was first transcribed into written data. In order to ensure the reliability of the data, a colleague of the researcher was invited to check the transcriptions of the data with the researcher. Together, the researcher and her colleague compared the original oral and written transcripts for several times to ensure the accuracy of the transcription. Then, the transcribed data was classified regarding the research questions. After that, the researcher translated the Indonesian transcripts into English. To familiarize the researcher with the data, the researcher read the data more than twice.

The next step was data coding and analysis. In this step, the researcher highlighted the data to be analyzed, identified interesting elements in data, and documented anything that seems useful. Useful quotations in interview data were colored in yellow. Then, the researcher kept a document trail of each step and documented the main codes that were found in the data. After that, finding the themes in data. In this step, the researcher searched for themes in the data, documented the themes, looked for data that is relevant to each theme, and kept record of each and every step. After searching for the themes, it is also important to finalize the themes and their name, and look for the data that can be analyzed under each theme. Next, reviewed each theme and checked that no data is missing for being sorted in some theme. Then, defined and named the finding themes related to the focus of the research. A sample coding procedure was presented in Table 3.5

The last step is interpreting. The qualitative data were presented and analyzed in terms of quotes from the semi-structured interview transcripts. Meanwhile, the observations results were summarized to filter unnecessary activities during the

classroom practices. Data from the classroom practices observation (transcript) are elaborated in one subtitle. The result of each recorded classroom practice is visualized in the form of an elaborated paragraph.

Table 3.5

A sample coding Procedure

Theme	Sub-themes	code	Selected excerpts
Students' conception of learner autonomy	Independent learning. Learning independently outside the classroom minus the assistance of the teacher. Independent learning with the teacher's assistance or friends collaboratively. Students should take charge of the process of their learning. Student's self-awareness and self-initiated to learn outside the classroom in order to find ways of learning and collaborate with others. Learning English anywhere and anytime by using technology.	Independent learning Without the help of lecturer Needs guidance from lecture Needs guidance from friends and parents Learning is not always alone It can be shared with friends Collaboratively with friends Initiative to learn Finding out what is needed Finding out what will be studied Reading books Learn from the internet Take full responsibility Responsible for learning	In my opinion, learner autonomy is learning that is carried out outside the classroom by students without the help of lecturers or teachers. Learner autonomy is independent learning. Learner autonomy makes learners responsible for their learning. (S1) Learner autonomy is independent learning by finding out what is needed or what will be studied on the internet or reading books, but it still needs guidance from lecturers, friends, and parents. (S3) I think that independent learning is not always alone. It can be shared with friends. So, the students have the initiative to learn collaboratively with friends. (S6) Learner autonomy means independent learning in which the students take full responsibility for the process of learning. (S14) We as students do not only depend on the material or instructions given by the lecturer. We can take the initiative on our own to find and learn other material by ourselves. (S14) Students can learn from the internet because there are so many learning resources on the internet. (S7)

Students' practices of learner autonomy	Setting up learning goals both for the short and long term goals. Setting goal in the earlier first semester Make study plans in learning English Revising study plan when it did not work well.	Setting goals Able to speak fluently Able twrite properly Continue study abroad Setting goal in early semester Setting goal in the end of semester Make a study plan to face the test. Rearrange the study plan	Yes, I have set my goals. I want to be able to speak fluently. Furthermore, in writing, I want to be able to write properly. (S10) I want to continue my master's degree abroad (S14). Yes, I set my goals in every early semester (S6). I set the goals at the end of the semester (S5). I make a study plan to face a quiz, progress test or post-test (S14). I have study plans at the beginning of the semester. Unfortunately, they didn't run well, so I have to rearrange the planning (S1).

3.6 Credibility and Dependability

The credibility and dependability is necessary in the research. To ensure credibility and dependability some steps were utilized.

3.6.1. Member checking

In this stage, during the interview, the researcher restated information and then questioned the participants to determine accuracy. Besides, the transcripts of the interview were sent to the participants for member check in terms of the accuracy and credibility of the data. Then, the participants checked the transcript of the interview and gave feedback to the researcher. The results were not any discrepancies emerged.

3.6.2 Triangulation of data and analysis.

This study used multiple sources of evidence for collecting data. Questionnaires and interviews were used to collect data to investigate the autonomy of undergraduate students in learning English. Class observations were used to collect data on how undergraduate students learn autonomously. The data obtained from the questionnaire were analyzed and triangulated with the data obtained from the interview and observation. Using this technique, findings could be more reliable.

3.7 Ethical Issue

The researcher contacted the faculty administrator to obtain the research permit letter. After receiving an official letter from the faculty, the researcher handed it over to the four lecturers whose students and classes were studied. Before starting the survey, interview, and observation, participants were asked to sign a consent form, which contained information relating to the research objectives, data collection methods, guarantees of anonymity and confidentiality, potential risks, and the right to withdraw the research. The researcher explained the goals of her research carefully and asked for their voluntary participation. She also gave students time to read the consent form and to consider their participation. The consent form is written in the Indonesian language for better understanding. Before the recording, the participants were informed to have the right to withdraw when they felt uncomfortable.

This research mandatory the researcher to have access to the participants' academic record to run a correlation test on the relationship between learner autonomy and their English proficiency. For this reason, it was crucial that the researcher have permission to use the participants' scores.

In the collection of quantitative data, participants' identities were protected by being anonymous. Before conducting the survey, participants were advised not to write their names. The researcher can access the original data to conduct research only, and her two supervisors can also have access to the original data and transcripts to instruct her to analyze quantitative and qualitative data.

Ethical behavior to conduct research is necessary to maintain participant confidentiality. To meet the ethical standards established for conducting research, information regarding the identity of each participant would not appear in the dissertation or publication related to the research findings. Participants were notified through the consent form that their personal information would only be used to collect and analyze data in the process of dissertation writing. For interviews, the researcher used a number as a code to replace the real name of each interviewee. Interviews were conducted informally. With this situation, the participants were more comfortable and willing to be interviewed.

All data collected were kept under lock and key during the conduction of the research. Only the researcher, her two supervisors, and the thesis committee could be accessible to the data. After the completion of the research, the data would be destroyed.

3.8.Summary

This chapter presented the research design with a mixed methods design. The information of the participants was mentioned. Each instrument of quantitative and qualitative research was introduced. To be specific, a triangulation study with questionnaire, interview, and classroom observation was discussed with their benefits and the ways to conduct them. The data analysis both quantitative and qualitative was also explained. In the end, this chapter mentioned credibility, dependability, and ethical issues.