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# THE EFFECTIVENEES OF INFORMATION PROCESSING TEACHING MODEL OF THE INDUCTIVE AND CONCEPT ATTAINMENT IN TEACHING ESP AT UNIVERSITAS BUMIGORA

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***Abstract***

*This research has five goals. If there is an effectiveness among IT, CA, and conventional models; the second is if the IT the model is more effective than the conventional one; the third is if the CA model is more effective than the conventional one; the fourth is if the IT model is more effective than the CA model; and the fifth is if the IT model is the most effective among the three models in the teaching ESP at Universitas Bumigora. This research is quasi-experimental with a randomized pretest-posttest control group design. The population is all of the students of ESP at Universitas Bumigora. The sample used the simple cluster random sampling technique. The instruments used are assessment rubric and English assignment sheet. The data is collected through the assignment of English and assed with English assessment rubric. The data analyzed using two-way ANOVA. The result of this study shown that there is significance difference among three teaching model one with sig. value 0.169. IT is less effective than conventional with sig 0.28 ≤ 0.05 or Ho is accepted; CA is more effective than conventional model with sig value 0.723 ≥ 0.05.*

***Keywords :*** *Information Processing Model, Inductive Thinking, Concept Attainment, ESP*

## INTRODUCTION

Introducing the models of learning to educators and students is important to build learning achievement especially in teaching ESP at Universitas Bumigora. Nowadays, teaching is taught through distance course (online learning) and face-to-face. Those are able to give the same treatment. It is accordance with (Joyce, B., Weil, M., & Calhoun, 2009) the instructor has to manage the distance student and face-to-face with similar treatment. Based on the explanation, distance students and face-to-face students should be given similar treatment by using models of learning. English learning is very important. English is one of subject that must be learned by the student especially ESP. English has a vital part in learning process for advance students. English should be mastered primarily in the face of Industrial ERA 4.0. College graduates must be trained with English language skills in order to compete on an international scale.

Meanwhile nowadays educators are required to teach more creatively then need more explicit learning instructions. Therefore it is necessary to implement the learning model. Teaching is a complex. (Sabzian, F., Ismail, Z., & Ismail, 2013) "teaching is a complex job; involving classroom management, lesson's preparation and organization of teaching and learning process creating and keeping a certain climate, evaluation and feedback. One of the learning activities conducted in high education so that students are able to speak English. Many efforts are government and high education has been done in which students are able to communicate in English.

(Jacobsen, D. A., Eggen, P., & Kauchak, 2009) lead educators to implement appropriate learning strategies because the roles of educators transfer knowledge and guide learning with explicit instruction. Therefore, it needs ne innovation in learning English especially English for specific purpose (ESP). One of the learning models that can be offered is information processing learning models. The learning model is one of the learning models that guides students to acquire, manage, and explain information well. The information processing model can be used to direct learners to learn thinking inductively. Furthermore, the inductive learning of information processing is whether needs to be considered as one of the referral ways or styles of teach Joyce, Calhoun & Hopkins (2009:17).

(Joyce, B., Weil, M., & Calhoun, 2011) implementation goals the information processing learning model directs students to become excellent learners. This learning model emphasizes that students can interpret things by obtaining, processing data, looking for problems, and making solutions that are appropriate and able to develop concepts and languages to explore solutions or information. The advantages of the information processing learning model compared to other learning models according to Joyce, Calhoun, & Hopkins (2009: 124), (1) information processing models suitable for independent learning and groups, and can be used to achieve personal and social goals in education, (2) this model helps students to learn to build direct knowledge, and (3) this model can also help students operate information obtained from students' direct experience, so they can develop conceptual control in all fields

they learned. This model also directs students towards student-centered learning. It is expected to have an influence on student achievement at the end of learning. According to McCombs & Miller in (Jacobsen, Eggen, & Kauchak, 2009: 197) Student-centered learning can foster students' responsibility in building their own knowledge, while the active role of students in the learning process can make them more independent in building their knowledge. Meanwhile, according to Eggen & Kauchak (Jacobsen, Eggen, & Kauchak, 2009: 197) student involvement in learning is very important for understanding and motivation.

There are 8 types of information processing model namely, *inductive thinking, picture word inductive, concept attainment, scientific inquiry, mnemonics, syntactic and advance organizer.* Information processing learning model inductive thinking type and concept attainment as an alternative in learning English especially for ESP compared to the model already used by English lecturers at Universitas Bumigora in the academic year 2020/2021 Joyce & Weil in (Rusman, 2014) states that the information processing learning model is a model that can direct students to be more active in the learning process. So, inductive thinking learning model and concept attainment is expected to make students more active in learning English especially ESP.

The learning model of information processing of concept attainment type provides opportunities for students to learn to find concepts from information found by understanding the characteristics of each attribute is given. According to Guthric, *et al*., in (Boulware, B., & Crow, 2008) states that the importance of identifying concepts in language learning. The lecturer needs to create opportunities for students try to express understanding related to ideas and texts in the learning process. Meanwhile, (Xuan Jiang & Perkins, 2013) the aim of the concept attainment learning model is "to develop vocabulary concepts, sentence and paragraph structure in the fields of general education, mathematics, reading and social science and English for specific purposes. Thus the researchers feel that it needs to be used as an alternative in learning English, especially English for specific purpose.

The information processing learning model of inductive thinking type has a vital place in teaching students how to teach better (Joyce, B., Calhoun, E., & Hopkins, 2009). Furthermore, the inductive thinking model causes students to collect information and examine it closely, to organize in into concepts and to learn to manipulate those concepts. This strategy increases students' abilities to form concepts efficiently and increases the range of perspectives from which they can view information. From those statements, it can be conclude that inductive thinking is efficient to use in teaching English especially English for specific purpose because students learn to build, classify and extend concepts and take responsibility on learning process.

## METHODOLOGY

This study uses a quantitative approach that aims to prove the theory of facts in the field. This type of research is quasi-experimental because not all variables that arise from experimental conditions can be tightly controlled or controlled. Quasi-experimental research is research carried out by holding manipulations of objects research and control. The purpose of quasi-experimental is to examine whether there is a causal relationship and how big the causal relationship is. The experimental design used in this study was the Randomized Pretest-posttest Control Group Design (Campbell,Donal T & Stanley, 1963).

## RESULT/FINDINGS

1. Research Description

Students' speaking score was obtained from the speaking rubric assessment. Prior to the treatment students' were given pre-test and post-test to obtain the data. Pre-test was given to both control and experimental class and to get the final result post-test are given to both classes.

2. Pre-Experimental

Students' speaking data obtained using speaking test instrument. Speaking Scoring is done by giving a speaking test. The pre-test on experiment was done if the groups were not equated. Therefore, it must be equated. This aims to determine that the initial ability between the experimental group 1 using the concept attainment learning model, the experimental group 2 using inductive thinking, and the control group using the conventional learning model.

3. Treatment Description

   Treatment is a step that is carried out after being given a pre-test. The treatment was carried out to determine the effectiveness of each learning model in teaching speaking, namely the experimental group 1 used the concept attainment-learning model, the experimental group 2 used the inductive thinking learning model and the control group used the conventional learning model.

4. Experimental Group 1

   Speaking learning in the experimental group 1 used the concept attainment-learning model. The treatment was carried out before the treatment was carried out. There was a discussion with the English lecturer with the aim of equating the perception of the Lesson Plan used in the implementation of the treatment. The allocation of learning time is 2 x 50 minutes per meeting. The treatment schedule was adjusted to the schedule set at Universitas Bumigora.

5. Experimental Group 2

   Speaking learning in the experimental group 2 used the inductive thinking learning model. The treatment was carried out before the treatment was carried out, there was a discussion with the English lecturer with the aim of equating the perception of the Lesson Plan used in the implementation of the treatment. The allocation of learning time is 2 x 50 minutes per meeting. The treatment schedule was adjusted to the schedule set at Universitas Bumigora.

6. Control Group

   In the control group, the treatment was carried out differently from the experimental group 1 and the experiment group 2. In this group, conventional

learning models or models that were used by lecturers who taught at several campuses, especially English lecturers at Universitas Bumigora, used lecture method.

7. Post-test Data Description

The post test was carried out after being given treatment to each group, both the experimental group 1, the experiment group 2, and the control group. This is done to get the final result data to help researchers to conduct further data analysis to find out which model is the most effective in learning speaking for English for Specific Purpose students at Universitas Bumigora. Further information can be seen in the results of the following data analysis.

*Table.1. Between Subject Factors*

**Between-Subjects Factors**

| | | Value Label | N |
|---|---|---|---|
| METODE | 1 | CONCEPT ATTAINMENT | 27 |
| | 2 | INDUCTIVE THINKING | 27 |
| | 3 | CONTROL GROUP | 29 |
| GENDER | 1 | LAKI-LAKI | 37 |
| | 2 | PEREMPUAN | 46 |

From the table Between-subjects Factor, it can be seen that the number of groups in speaking learning and using 3 different learning models, namely the concept attainment learning model, inductive thinking, and the learning model in the control group group, namely the conventional model or models that can be used by implementing in class learning speaking at Universitas Bumigora. While the number of students in the speaking class was 37 consisting of male students and 46 female students. Here's the next analysis.

*Table.2. Descriptive Statistics*

**Descriptive Statistics**

Dependent Variable: NILAI

| METODE | GENDER | Mean | Std. Deviation | N |
|---|---|---|---|---|
| CONCEPT ATTAINMENT | LAKI-LAKI | 73.17 | 8.043 | 12 |
| | PEREMPUAN | 69.53 | 5.167 | 15 |
| | Total | 71.15 | 6.718 | 27 |
| INDUCTIVE THINKING | LAKI-LAKI | 65.27 | 4.197 | 11 |
| | PEREMPUAN | 70.31 | 5.930 | 16 |
| | Total | 68.26 | 5.782 | 27 |
| CONTROL GROUP | LAKI-LAKI | 70.43 | 6.333 | 14 |
| | PEREMPUAN | 74.13 | 4.596 | 15 |
| | Total | 72.34 | 5.721 | 29 |
| Total | LAKI-LAKI | 69.78 | 7.024 | 37 |
| | PEREMPUAN | 71.30 | 5.537 | 46 |
| | Total | 70.63 | 6.250 | 83 |

Based on the descriptive data, it can be seen the description of the results of the student achievement scores from each group based on gender. Experimental group 1 using the concept attainment learning model obtained mean score for male students of 73.17 and a standard deviation of 8,043 and female students had mean score of 69.53 with a standard deviation of 5.167, the experimental group 2 used the inductive thinking learning model to have a mean score for male students is 65.27 with a standard deviation of 4.197 and female students with a mean score of 70.31 with a standard deviation of 5.930, while the control group that used the conventional learning model has a mean score for male students 70 , 43 with a standard deviation of 6.333 and female students had a mean score of 74.13 with a standard deviation of 4.596. From this explanation, it cannot draw conclusions about the learning achievement of the group, because it is only a description of the data. Here's the next analysis .

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## DISCUSSION

1. Data Analysis
   a. Assumption Test
      a). Normality Test

The normal distribution test is a test to measure whether it is normally distributed (normal distribution) so that it can be used in parametric statistics (inferential statistics). Based on the empirical experience of several statisticians, the data is more than 30 digits (n> 30), it can be assumed that it is normally distributed. Usually said to be a large sample. However, to provide certainty, whether the data that is owned is normally distributed or not, the normality test used. Because it is not certain that data that is more than 30 can be confirmed to be normally distributed, on the other hand, data that is less than 30 does not necessarily have a normal distribution, for that we need proof. statistical tests of normality that can be used, one of which is the Kolmogorov-Smirnov.

- **Hypothesis**

  Ho: The population of student's scores is normally distributed

  H1: The population of student's scores is not normally

  Distributed

  Distributed

- **Alpha : (level of significance) = 5% (0.05)**
- **Statistics Test**

  Using a formula : $D = |F_s x - F_t x| \, max$

  | t_hitung | <| t table | ; means Ho means Ho is accepted

  It can be seen on the following statistical table:

*Table.2. One-Sample Kolmogorov-Smirnov Test*

**One-Sample Kolmogorov-Smirnov Test**

| | | Unstandardized Residual |
|---|---|---|
| N | | 83 |
| Normal Parameters[a,b] | Mean | 0E-7 |
| | Std. Deviation | 6.17917412 |
| Most Extreme Differences | Absolute | .099 |

| | | |
|---|---|---|
| | Positive | .099 |
| | Negative | -.043 |
| Kolmogorov-Smirnov Z | | .905 |
| Asymp. Sig. (2-tailed) | | .386 |

a. Test distribution is Normal.
b. Calculated from data.

Based on the SPSS output table, it is known that the significance value is greater than alpha (0.386> 0.05). So in accordance with the basis of decision making in the Kolmogorov-Smirnov Normality Test, it can be concluded that the data is normally distributed.

b. Homogeneity Test

*Table.3. Levene's Test of Equality of Error variance*

**Levene's Test of Equality of Error Variances[a]**

Dependent Variable: NILAI

| F | df1 | df2 | Sig. |
|---|---|---|---|
| 1.331 | 5 | 77 | .260 |

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + METODE + GENDER + METODE * GENDER

From the Figure Levene's Test of Equality of Error Variances (homogeneity), the Sig value is 0.260 or this sig value is> 0.05 (homogeneity requirement), meaning that the three samples have the same variance (fulfilled Anova test requirements). Here's the next analysis.

c. Results of Hypotheses Test

*Table.3. Test of Between-Subject Effects*

**Tests of Between-Subjects Effects**

Dependent Variable: NILAI

| Source | Type III Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 597.240[a] | 5 | 119.448 | 3.529 | .006 |
| Intercept | 404978.355 | 1 | 404978.355 | 11965.144 | .000 |
| METODE | 302.097 | 2 | 151.048 | 4.463 | .015 |
| GENDER | 59.171 | 1 | 59.171 | 1.748 | .190 |
| METODE * GENDER | 291.415 | 2 | 145.708 | 4.305 | .017 |

| | | | | | |
|---|---|---|---|---|---|
| Error | 2606.181 | 77 | 33.847 | | |
| Total | 417216.000 | 83 | | | |
| Corrected Total | 3203.422 | 82 | | | |

a. R Squared = .186 (Adjusted R Squared = .134)

From the table, ***Corrected Model,*** it can be seen how much influence the independent variable has on the dependent variable of the group, model and gender. From the results shown in the table, it can be said that the model obtained is valid with a sig value. 0.006 < 0.05.

The intercept of the table shows that the student's score on the value v1ariable that contributes to the value itself is not affected by the independent variable, meaning that changing the value of the dependent variable is not influenced by the independent variable at all. From the table above we can see based on the value (sig), if the sig value <0.05, that is (0.000 <0.05) it means that this intercept contributes significantly.

**Gender** has an effect on or not gender on learning outcomes indicated by a significant value, from the table the sing value of 0.17 or value (0.17> 0.05) in this case gender does not have a significant effect on learning outcomes.

**Model* Gender** This test aims to determine whether there is a significant relationship between 2 factors, in this case we will test whether or not there is an interaction between the learning model and the gender group.

This test aims to determine whether there is a significant relationship between 2 factors, in this case the researcher tested whether or not there is an interaction between the learning model and the gender group.

**Hipotesis:**

H0: there is no interaction between the learning model and the gender group.

H1: there is an interaction between learning models and gender groups

**Assumption making :**

If F count <F table or sig value > 0.05, then H0 is accepted if F count > F table or sig value <0.05, then H0 is rejected, then H1 is accepted.

**Assumption:**

From the table, it can be seen that the value of F count 4.,305 and F table (Sig. 0.017). So it can be concluded: there is an interaction between learning models against gender groups. Because there is an interaction between the learning model and the gender group of each kelas, here the researchers needed to continue the Post Hoc test. Here's how to continue the 2-way Post Hoc ANOVA test.

*Table.4 2-way ANOVA*

**Multiple Comparisons**

Dependent Variable: NILAI

Tukey HSD

| (I) METODE | (J) METODE | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound |
| CONCEPT ATTAINMENT | INDUCTIVE THINKING | 2.89 | 1.583 | .168 | -.90 | 6.67 |
| | CONTROL GROUP | -1.20 | 1.556 | .723 | -4.91 | 2.52 |
| INDUCTIVE THINKING | CONCEPT ATTAINMENT | -2.89 | 1.583 | .168 | -6.67 | .90 |
| | CONTROL GROUP | -4.09* | 1.556 | .028 | -7.80 | -.37 |
| CONTROL GROUP | CONCEPT ATTAINMENT | 1.20 | 1.556 | .723 | -2.52 | 4.91 |
| | INDUCTIVE THINKING | 4.09* | 1.556 | .028 | .37 | 7.80 |

Based on observed means.

The error term is Mean Square(Error) = 33.847.

*. The mean difference is significant at the .05 level.

From the Multiple Comparisons table, there are differences in the effectiveness of the three learning models used in speaking learning for ESP students at Universitas Bumigora. From this table it can be seen that:

1. There is a significant difference between the Concept Attainment learning model, inductive Thinking and the conventional model in speaking learning. Then It can be said that H1 is accepted and Ho is rejected..
2. Inductive Thinking learning model is more effective than conventional learning one, then it can be said that $H_{1\ is}$ accepted and Ho is rejected.
3. Concept Attainment is more effective than inductive thinking one, than it can be said that $H_1$ accepted and Ho is rejected in learning speaking of English for Specific Purpose.
4. Concept Attainment is more effective than model conventional one, then it can be said that $H_1$ accepted and Ho is rejected.
5. Concept attainment learning model is the most effective than inductive learning model and conventional one in speaking learning of English for specific purpose, then it can be said that $H_1$ is accepted and Ho is rejected.

## CONCLUSION

The findings and discussions of the study indicate that learning English for Specific Purposes concerning speaking using inductive thinking and concept attainment is more effective than conventional learning models. Theoretically, this study proves that inductive thinking and concept attainment are effective in learning English for Specific Purposes concerning speaking. The findings of this study also prove that inductive thinking can help students develop confidence because these two models make students more active and emphasize vocabularies and confidences. This study also shows that concept attainment is more effective than the inductive thinking model in learning English for Specific Purposes concerning speaking in Universitas Bumigora. Concept attainment is the most effective than inductive thinking and model conventional. This research can be practically used as an alternative in learning,

especially a lecturer who teaches English in a non-English Department so that they can encourage students more in the learning process. The lecturer can teach speaking using a learning model that makes students find problems or manage, and solve the problems themselves, namely by using the concept attainment model students are given learning through explicit topics with videos and texts by that displayed in the class than given additional knowledge towards certain topics.

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