

The English Training for Youth with Problem-Based Learning Model

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Abstract: This article is entitled English training for youth with Problem-Based learning model. The participants involved in this study were 13 youth from two villages, Desa Adatadang Luwih and Desa Belantih. The training was divided into two different subjects, English for Tourism given for participants in Dalung village and English for Agriculture was given for participants from Belantih village. The trainings were undertaken for about three months. Upon the trainings, there were some outputs obtained, such as learning modules for both groups of learner, SOP for carrying out problem-based learning and handy books for both groups. Achievement of participants were also measured three times, namely T1 (prior training test), T2 (during-the- training test), and T3 (upon-the-training test). Clearly, all participants could successfully obtain good mark.

Keywords: English learning, problem-based learning model, youth

1. Introduction

Padang Luwih Village in North Kuta – Badung and Belantih Village in Kintamani – Bangli are the villages which have special potential to support the development of tourism in Bali. Padang Luwih village has a strategic location in North Kuta. Situated in the tourism area, this village becomes a supporter of tourism activities in Kuta, Badung. The economic development of this village grows very well and it switches from an agricultural field to the business and services field. The societies do many things related to the business and services to support the tourism activities, such as furniture business, villas, lodging house, foodstall, minimarket, restaurant, cars rental, and travel services. In addition, the existence of several tourism vocational schools and also tourism colleges strongly support the growth of tourism in North Kuta because tourism field needs so many graduate students of those schools. They will be employed in the hotels, restaurants, travel agencies, or tourists' house.

Belantih village, on the other hand, has a good atmosphere which support the potential of tourism development in that village. It is located on the main road of Badung - Kintamani and has attracted the attention of tourists and investors. The tourists who love nature, especially mountains, often come to this area in order to enjoy the views and breathe the fresh air. In addition, the agricultural products of this village are one of the commodities which can fulfill the needs of the tourism industry over the years. The agricultural products are like coffee and orange. Kintamani's coffee has been popular and even gone international. This coffee could be marked as one of the best coffee for the coffee addicts. As well as the coffee, the orange also got a good welcome from the tourists. Kintamani's orange has become a mainstay product for Belantih village because of its quality. Both coffee and orange are also exported to other countries. Another special thing about this village is the tradition and the culture which is so unique. It has been developing and soon will be one of the commodities to support the tourism in Kintamani, Bangli.

According to the facts stated above, it is necessary to develop the quality of human resources (HR) in those villages so the tourism field will grow better. English training will be a good solution to make the human resources (HR), especially the youth, have a good quality. It can be a first step to support the tourism development in the future. By getting English training, the youth could prepare themselves to face the industry field which will thrive in these two villages. English training for the youth in Padang Luwih Village and Belantih Village has been started and are being implemented in order to obtain the expected result.

2. Literature Review

English training with problem-based learning (PBL) method is an appropriate solution to be implemented. This learning method relies on the concept of innovative learning. PBL is a learning approach which makes a confrontation for the learners with practical problems, in the form of ill-structured, or open-ended through stimulus in learning activities (Santayasa, 2012:19). He further said that there are some characteristics of this learning method, such as: (1) The learning process is started by having an issues, (2) Ensure that the issues

are related to the real learning activities, (3) Organizing the lessons around the issues, not in the surrounding knowledge of disciplines, (4) Giving responsibility for the learners to get experience in their own learning process directly, (5) Using a small group in learning activities, (6) Demanding the learners to demonstrate what they have learned in the form of a product or performance. Jonassen (1999) designed a model of constructivist learning environment which can be applied in contextual learning with problem-based learning approach. The model contains some essential components, they are: (1) questions, case, problem or project, (2) the cases which are related to one another, (3) the source of information, (4) cognitive tools, (5) dynamic model, (6) conversations and collaboration, (7) contextual or social support. The problems in this learning model integrate the components of problem context, representation or simulation problems, and manipulation of problems' scope. The problems given to the learners are packaged in the form of ill-defined. The representation or simulation problems can be created narratively, which refers to contextual, real, and authentic problems. Meanwhile manipulation of problems' scope contains some objects, signs, and tools for the learners to solve the problems.

The cases which are related to one another will help the learners to understand the basic issues implicitly. In the model of constructivist learning environment, those cases support the learning process by two ways; the first is by providing scaffolding to assist learners' memory and second is by increasing cognition flexibility of the learners. Cognition flexibility represents contents in order to make the learners understand about the complexity which are related to domain knowledge. Cognition flexibility can be improved by providing opportunities for the learners to express their ideas, which describes their understanding of the issues. Cognition flexibility builds creativity of divergent thought in the process of problem representation.

The sources of information are useful for the learners in investigating the problems. The information is constructed in mental models and hypothesis formula which become the starting point in manipulating problems' scope.

Cognitive tools are scaffolding for the learners to improve their ability in order to accomplish the tasks. Cognitive tools help the learners to present what they know or what they have learned, or to do in thinking about the activity through assignments.

Dynamic modeling is the knowledge which gives the ways of thinking to analyze, organize, and provide a way to express the learners' understanding of a phenomenon. This modeling type helps the learners to answer the questions like "What do I know?" and "What does it mean?"

Conversation and collaboration are done with the discussion in the problem-solving process. The informal discussion can build an atmosphere of collaboration. On the other hand, social support and contextual support are accommodated by the teachers and the technical staffs. Those are accommodated to succeed the learning implementation. The teachers and also the technical staffs exchange their ideas of solutions which can help problem-solving. The design of constructivist learning environments is supported by modeling, coaching, and scaffolding. **Modeling** is in the form of behavior which encourages work performance and cognitive modeling is for pushing the cognition process. Modeling is focused on the expert performance as a model. **Coaching** is used to develop learners' performance which is complex and unclear. Coaching includes the activities of giving motivation, monitoring, regulating the learners' performance, and also encouraging reflection. **Scaffolding** is the most systematic approach compared to modeling and coaching. It is focused on the task, learning environment, teachers, and learners. Scaffolding gives temporal support which follows the capacity of learners' ability. Scaffolding covers the determination of the tasks' difficulty level, tasks restructure, and alternative assessment giving.

According to Fogarty (1997), there are 8 steps conducted in English learning by applying problem-based learning approach, such as: (1) finding problems, (2) defining problems (3) collecting the facts, (4) arranging hypothesis, (5) investigating, (6) enhancing the problems which have been defined, (7) summing up the alternatives of solution collaboratively, (8) testing the problems-solving.

1) Finding Problems

The learners are given ill-defined structured problems which are taken from the daily life context. The problems' statements are expressed with short sentences. Those statements are arranged to inspire the learners so they can remember and explore things by using their inter intelligence and intra-personal intelligence.

2) Defining Problems

The learners define the problems with their own sentences. They make the definition as preliminary information to gather the facts.

3) Collecting the Facts

The learners search some information related to the problems. In this case, they organize the information by using the terms like "what is known?" and "what is needed?"

4) Arranging Hypothesis

In this step, the learners arrange the hypothesis of the problems by involving logical-mathematical intelligence. The learners also use their interpersonal intelligence to reveal what they think and to create relationships, hypothesis' answer, and also their logic with logical steps.

5) Investigating

The learners conduct an investigation of obtained data and information. Meanwhile the teachers make learning structure which allows the learners to be able using various ways in order to know and understand their own world.

6) Enhancing the Problems which Have been Defined

The learners revise the statements of problems by reflecting the real illustration they have been understood. They involve verbal-linguistic intelligence to improve the statements of problems by using more appropriate words.

7) Summing Up the Alternatives of Solution Collaboratively

The learners collaborate with their friends to discuss the data and information which are relevant to the problems. The members of each group discuss the problem from various points of view. In this step, the problem-solving process is in the phase of concluding the alternatives of problem-solving which are produced by collaborating. Collaboration becomes a mediator to collect some better alternatives than what have been done individually.

8) Testing the Problems-solving

Alternative problems' testing is done through comprehensive discussions between the group's members to get the best results of problem-solving. The learners use multiple intelligences to examine alternative of problem-solving by making sketch, writing debate, and creating plot to express their ideas in making problem-solving's alternatives.

PBL learning which is derived from constructivist learning contains non-linear sequence procedure, which means that the learning process has no beginning and no ending (Willis & Wright, 2000). The learning process runs in one cycle and through repeated stages or recursive (Wilson & Cole, 1996). The PBL approach gives chance for the learners to use their multiple intelligences (Fogarty, 1997; Gardner, 1999b). This is a positive stimulus for them to be able to maximize the use of their ability to solve the problems. In the implementation, the teachers arrange some groups consisting of 4-5 people, where each group should collect the facts from the problem, represent the problems, elaborate the model, perform testing, and present the discussion results in front of the class (Boud & Felletti, 1997). On the other hand, Polya (1981) said that there are four basic steps to implement PBL, such as (1) understanding the problem, (2) arranging the solution plan, (3) practicing the plan solution, and (4) retesting the result obtained. However Dwiyo (2000) found some steps in the PBL, they are: understanding the problem, presenting the problem, elaborate the model, calculating the result, and summing up the answer.

The assessment in PBL is done authentically. O'Malley and Pierce (1996) defined that authentic assessment is assessment in the classroom that reflects the learning process, learning outcomes, motivation, and attitude towards the relevant learning activities. Assessment can be done with portfolio. It is a systematic collection of learners' works which are analyzed in order to see the learning progress in a certain time to achieve the learning objectives. According to Marzono (1993), the assessment with portfolio can be used for learning assessment which is done collaboratively. Meanwhile, Oliver (2000) said that collaborative assessment in PBL approach is done by self-assessment and peer-assessment. Self-assessment is an assessment of the learner itself towards their efforts and the work result by referring to the goal that they want to achieve in the learning process (Griffin and NIX, 1991).

The assessment process of problem-solving learning includes the assessment of processes and assessment of products. It refers to the steps of learning with PBL approach by Fogarty (1997), which is coherent with the authentic assessment's steps of contextual learning by Johnson (2002); Marzono et al (1993), as well as the steps of problem solving according to Polya (1981) and Dwiyo (2000).

There are several items of work procedures which become the basis of learning implementation by using the model Learning Center (LC), they are:

- a. The establishment of group study consisted of 20 people in each group.
- b. Prepared the modules or handbook for students which will be used as a learning standard before it is developed according to the learners' needs.
- c. The learning process is conducted by the instructors who are experienced in applying the problem-based learning model.
- d. The Learning is done in the classroom by using the environment as a place to explore the problem and find out the solutions.

To realize the study with LC model, an action plan that includes a step-by-step solution should be made. These steps will be used as a guide in applying the study. The steps are mentioned as follows:

- a. Preparing the learning materials (modules, supported devices, and handy book which contain summaries and standard expressions based on their needs in the real life).
- b. Preparing the groups study (a group of teachers and a group of students).
- c. Determining the learning schedule.
- d. Learning training.
- e. Conducting seminars or workshops by inviting the members of both groups.
- f. Making documentation of the training (such as reports, handy book, publications, etc.).
- g. Conducting final evaluation with the participants to revise the lacks of the learning model's implementation
- h. Making SOP learning implementation with PBL model.
- i. Organizing bookkeeping. This step is done by creating a book which reviews and introduces PBL models to be implemented by the teachers. The bookkeeping can be use as a documentation of PBL implementation so this model can always be remembered and studied by everyone both internal and external agencies. The documentation is also expected to be used as reference for developing related learning models. This attempt will be able to realize the sustainability of the learning model.

In the implementation of PBL learning model, the two youth groups (partners) will be very actively involved. Basically, two groups will be always active to assist the researchers in all activities which have been planned appropriate with the agenda. It is pursued to make those groups understand the procedure, the steps (from the preparation until the last activity), the methods and approaches, the learning processes, etc. The tasks that will be assigned to both groups are:

- a. Each village will provide group study as planned.
- b. Both villages will design the location for learning to make the learning atmosphere conducive.
- c. Both villages work collaboratively with the groups' leader and also the members to provide a coach or an instructor to guide the learning activity according to the schedule.
- d. Both villages will coordinate with the researchers to make SOP learning with PBL models.

After the implementation of action plan as reviewed in the previous, there are some results that will be generated. The results are summarized into two parts, micro and macro.

- a) On the micro level, learning results with problem-based learning (PBL) model are as follows:
 - 1) The learning training with PBL models for the youth of Padang Luwih Village and Belantih village has been implemented well.
 - 2) The learning by PBL model can be used as one of the featured products to enhance passion promotion of the agencies in order to increase the number of courses students.
 - 3) There are several people of the two villages which understand English and trained well. It will increase their passion for working, share their English knowledge to other members, and also motivate them to develop their English ability.
 - 4) The establishment of learning activities' center in the village which can be used as an embryo to develop similar training activities or other fields.
- b) At the macro level, there are some results which will be achieved with this model. The result which is wider than the micro level will give the continuous effect of sustainability toward this learning model, so the instructor will always be able to learn it, while others can learn it in the next day. It also might be passed for the next generations.
 - 1) The teaching learning process model generates Standard Operational Procedures which will be used as a guide for the instructor and also the trained youth.
 - 2) Book review is made to review the complete information about English learning with the teaching learning process model. By having books, the socialization of teaching learning process models will be spread more widely in the community.

3. Research Method

This English training was done by several steps, such as coordinating all the matters with village's officials, contacting and gathering the participants, conducting the inaugural meeting and also opening the program at the same time, determining schedule, conducting the training, and reporting all progress.

a. Coordinating with village's officials

The coordination with the village's officials was done by writing a letter to officials of both villages. Coordination meeting was conducted to inform the villagers that there would be a service program to all people in those villages which involved the youth. The coordination was an initial socialization to the officials. It was done before conducting the coordination to all villagers especially the youth who were interested in participating the training. In Padang Luwih Village, the coordination was conducted with the leader (bendesa) of Padang Luwih Village, I Gusti Ketut Suparta, S.Pd. Meanwhile, in Belantih village, the coordination was conducted with the headman (perbekel) of Belantih Village, I Nengah Wardana.

b. Contacting and gathering the participants

To gather the participants, we should send personal mail to them first, or asked the headman to give direct coordination for the participants. After all the names of participants gathered, the name list was submitted to us in order to create the data and also the attendance list. The next coordination would be done by contacting them directly on their cellphone. In Padang Luwih Village, the coordination with the participants was done by calling them personally and coordinating with the youth's leader of each village. Meanwhile, in Belantih Village, we coordinated with the principal of SMKN 1 Kintamani by coming to his office. The participants of this village were the students of SMKN 1 Kintamani who are originally from Belantih village. It is because the youth who were graduated from high school have been study in the college or work outside of Bangli.

c. Conducting the inaugural meeting and opening the program

The opening program was done by gathering the participants and inviting several villages' officials. In Padang Luwih Village, the opening program was conducted by inviting the participants and the village officials. The participants were consisted of 7 people, and the village officials were the village's leader/bendesa and secretary's village. The opening was done in the afternoon at the village's meeting halls. In the meeting, there was also a socialization of the goal, mechanisms, targets, and outcomes of the program.

In Belantih village, the opening program was done in a week after. The participants and two village's officials came to the program; they are the headman (perbekel) of Belantih village and the village's secretary. At the same time, we also discussed about the specified time to conduct the training, based on the readiness of the participants.

d. Determining schedule

After determining the schedule which was chosen by the participants, the schedule list was then made immediately before the training began. The schedule was made well but it would change anytime according to the participants' activities and other villagers.

e. Conducting the training

The training was held according to the schedule. In Padang Luwih Village, the training was held every day at 4 p.m. until 6 p.m. The training applied problem-based learning model. The learning process was guided by an instructor. The first meeting began with the general English learning. This was done to adjust the topic with the English ability's level of the participants. It was to avoid the inapplicability among the two variables in order to achieve the expected results and targets. The same thing was also done on the training in Belantih Village. The training involved 7 participants; six of them are high school students and one participant is college student.

During the training, several things were done, such as checking the attendance of the participants, providing the training materials, giving opportunities for the participants to discuss with their friends until they were able to produce something related to each unit of learning materials. The thing which was also very important was providing an assessment. It should be done to know the development of the participants' ability quantitatively and also to know whether the training was effective or not. The assessment was done three times, first at the beginning of the training period, then in the middle of the period, and the last was at the end of the period. So far, the assessment has been done 2 times for both groups. The final assessment would be done at the end of the meeting. By checking the assessment, we would be able to analyze the development of the participants' ability in both groups.

f. Reporting the progress

The report progress has also been made so we had a written documentation of the training program. To know the progress of this program, the user or other parties with the same interest towards the program can check the development of this training program's report. It will also be uploaded through social media so the funders could know the development of this program. This report was also completed by the budget's report, activities' reports, and physical evidence which support the use of budget.

4. Finding and Discussion

Based on the targets designed and the outcomes achieved in service program to the society, the results which can be presented are as follow: (A) The participants have already understood the training program very well; (B) The module has been designed up to 80% and will be finalized soon so it can be used as a practical guide; (C) The guides' organizations have formed.

The guides' organizations in Padang Luwih village consisted of 7 members, they are: (1) Gede Krishna Wedana Cahyadi; (2) Kadek Kristina; (3) I Gusti Agung Trisna Jayantika; (4) Ni Made Anie Wulandari; (5) Ni Made Kusuma Devi; (6) Ni Putu Riska Arsanti; (7) Yuni Kumala Dewi. The members have been trained during the program until now and they will accomplish the training program up to a few weeks. After being trained and observed by the instructor related to the development of their English ability in term of explaining information to the tourists through role play, the description of quantitative information has obtained. The quantitative data about the progress of the participants' ability can be described only for two tests (pretest early and mid-test). These results were still incomplete because the training is still ongoing. The final test will be conducted at the end of a training session. The quantitative data can be seen on the table below.

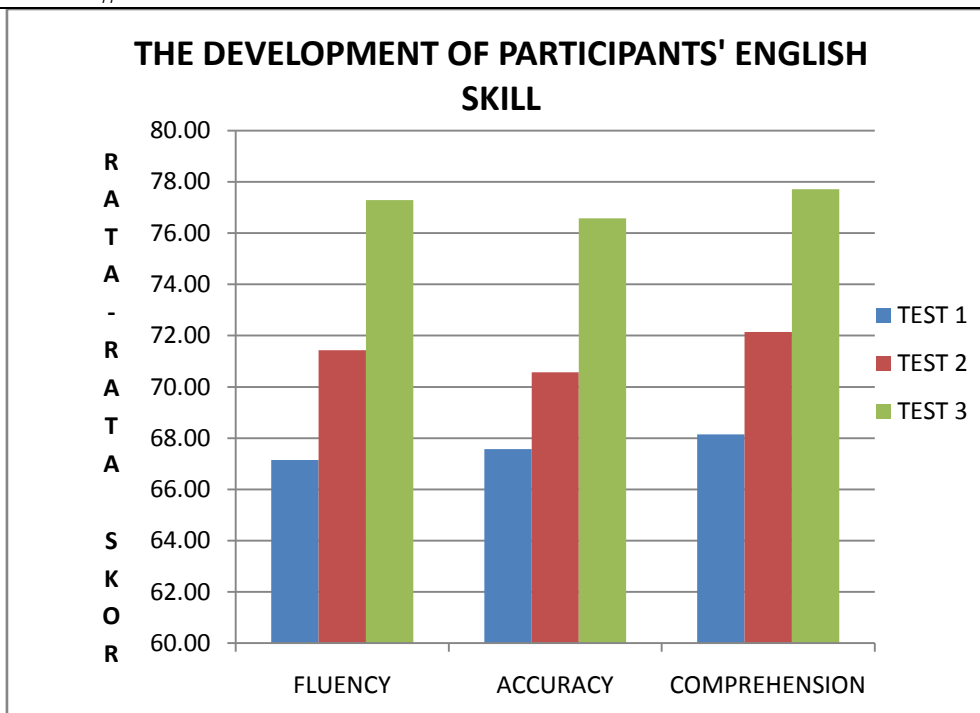
On the other place, the guides' organization in Belantih village consisted of 6 people, they are: (1) Pande Putu Sidurama; (2) Ni Komang Sri Wulandari; (3) Ni Kadek Budiastini; (4) I Gst. Ayu Rai Kertiasih; (5) Ni Putu Wisnuasih; and (6) Ni Made Ranten. The evaluation of their abilities' development was illustrated by the quantitative data below.

By establishing guides' organizations in those villages which was supported by the overview of quantitative data related to the development of their ability in explaining the products and informations in each village, it could be concluded that the training program has shown good result. We can see this in the table. Generally, though the result of T3 in each group has not been obtained, the rising curve can be noticed from the tendency of rising numbers reached by everyone on every item test. It means that the training has been successfully. However those results still should be compared with the result of T3 which has not been conducted. If the value curves of the participants in both groups kept rising, it could be said that the training is effective. But if the value curve went down, it means that the training is not successful. That's why, this training is very important to be continued so we can get the final result of the participants to gain trend of the overall value of each participant.

The analysis of the average of participants' English abilities was illustrated by the following table.

RESPONDENTS	FLUENCY			ACCURACY			COMPREHENSION		
	T1	T2	T3	T1	T2	T3	T1	T2	T3
1	70	75	81	70	74	81	72	76	82
2	70	75	81	74	74	81	72	75	82
3	70	74	80	70	73	80	70	74	80
4	65	69	75	65	68	74	66	70	75
5	62	65	72	61	65	70	63	67	72
6	68	73	78	68	73	78	68	73	78
7	65	69	74	65	67	72	66	70	75
Averages	67.14	71.43	77.29	67.57	70.57	76.57	68.14	72.14	77.71
Increment	-	4.29	5.86	-	3.00	6.00	-	4.00	5.57
Percentage of increment	-	6.38	8.20	-	4.44	8.50	-	5.87	7.72

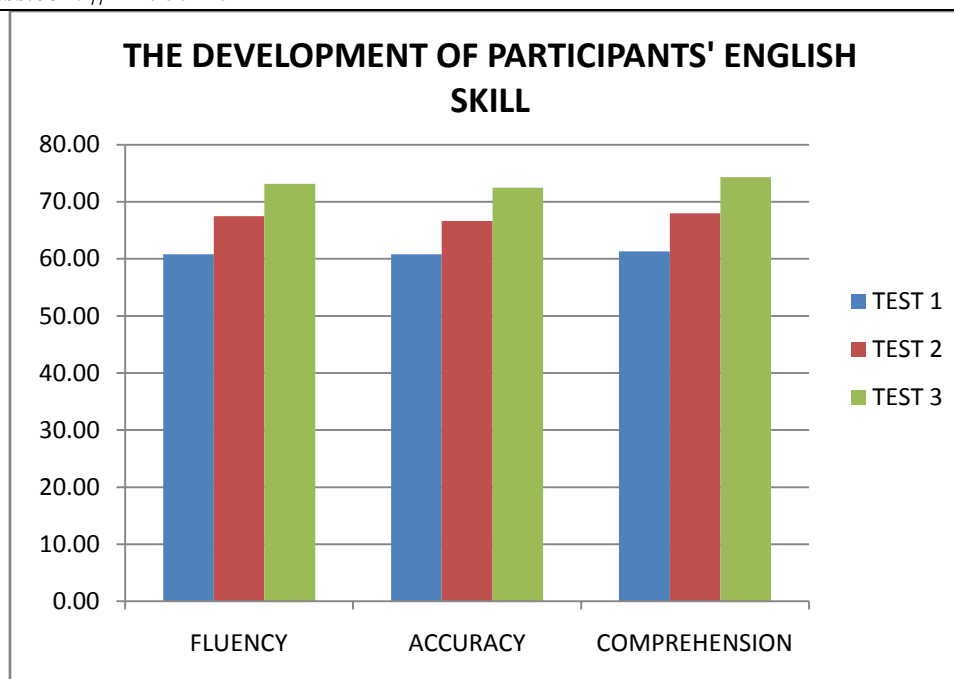
According to the averages, the results of each test have shown an enhancement. In the fluency domain, the average of T1 was 67.14, which increased into 71.43 at T2, and became 77.29 at T3. The average of value enhancement in fluency domain increased into the highest level at T2. Meanwhile the average of value enhancement which was the lowest at T2 is the accuracy domain (3.00). It was because the grammar became the most difficult lesson for the participants of training. However at T3, the value enhancement in accuracy domain got the highest level (6.00). The comprehension domain at T2 was also low, that is 4.00 and increased into 5.57 at T3. This was because they have difficulty in understanding the questions and sentences uttered by foreign speakers during the training or in the practice at several meetings. But their achievements were categorized very well. Those situations can also be seen in the following diagram.



In the group training of Belantih Village, there happened different things which showed different results.

RESPONDENTS	FLUENCY			ACCURACY			COMPREHENSION		
	T1	T2	T3	T1	T2	T3	T1	T2	T3
1	65	71	77	65	70	76	65	72	79
2	60	69	75	60	68	74	63	70	76
3	60	69	76	60	68	75	60	69	76
4	60	66	71	60	65	70	60	65	72
5	60	65	70	60	64	70	60	65	71
6	60	65	70	60	65	70	60	67	72
Averages	60.83	67.50	73.17	60.83	66.67	72.50	61.33	68.00	74.33
Increment	-	6.67	5.67	-	5.83	5.83	-	6.67	6.33
Percentage of increment	-	10.96	8.40	-	9.59	8.75	-	10.87	9.31

Based on the obtained results, the development of their understanding (comprehension domain) was noted as the best achievement (74.33). Then, their fluency in utterances (fluency domain) become the second of the best achievement with a mean of 73.17. The last but not least, their accuracy of using grammar in speaking (accuracy domain) were the lowest achievement with a mean of 66.67. They all had already had good understanding in listening to the speech on verbal interaction because they communicated with their friends. Although they had interacted to the foreign speakers several times, the intensity of their communication was still less than the guide's group in Padang Luwih Village. However, the averages of their achievement were categorized very well and can also be seen in the following table.



5. Conclusion

According to the reality of quantitative data and the targets as well as the achievements which have been gained in the implementation of this service program, it can be concluded that the program is effective and the situation is potential. This situation is expected to remain potential. The training is very necessary to be continued until 100% complete. By completing this program, the final value of each participant will be known. The program is still funded until finish to get the maximum level of effectiveness. It is also expected to be an embryo to conduct similar training or research with a grant of Dikti from other research scheme, such as the IbM.

6. Reference

- [1]. Ardana, I.W. & Willis, V. 1989. *Reading in Instructional Development; Volume Four*. Jakarta: Departemen Pendidikan dan Kebudayaan, Direktorat Jenderal Pendidikan Tinggi, P2LPTK
- [2]. Arsyad. 2005. *Media Pembelajaran*. Jakarta: PT RajaGrafindoPersada Basleman, AnisahdanSyamsuMappa. 2011. *Teori Belajar Orang Dewasa*. Bandung: PT. RemajaRosdakarya.
- [3]. Degeng, I.N.S. 1989. *Taksonomi Variabel*. Jakarta: P2LPTK Depdikbud Dick, W. & Carey, L. 1990.
- [4]. *The Systematic Design of Instruction. Second Edition*. Illinois: Scott, Foresman and Company Dirjen Dikti. 2004. *Instrumen PSABK PGSMP/SMA*
- [5]. Gene Maeroff. 1991. *Assessing Alternative Assessment*. Toronto Board Education: California Hart, D. 1994. *Authentic Assessment: A Handbook for Educators*. Wesley Publishing Group: California
- [6]. Henich, R., Smaldino, Shoron, E. & James, R.D. 2005. *Instructional Technology and Media for Learning*. New Jersey : Person Merrill Prentice.
- [7]. Hamalik, O. 2005. *Perencanaan Pengajaran Berdasarkan Pendekatan Sistem*. Jakarta: Bumi Aksara.
- [8]. Japa, I Wayan. 2001. *Self-Access Material on English Grammar: Facilitating the Students in Writing*. Makalah Lokakarya STKIPN Singaraja Mulyasa, E. 2002. *Kurikulum Berbasis Kompetensi 2002*. Bandung: RemajaRosdakarya O'Malley, J.M. & Pierce, L.V. 1996. *Authentic Assessment for English Language Learners. Practical Approach for Teachers*. Ontario: Addison: Wesley Publishing Company.
- [9]. Paramartha, S. 2005. *Keterampilan Menyimak dan Self Access Learning: Suatu proses Berbasis Individu*. Dalam PRASI Volume 3 No. 5 Januari-Juni 2005.
- [10]. Putra, K.D.C. 2009. *Pengembangan Model Pembelajaran Mandiri Bahasa Inggris Berorientasi TOEFL*. Laporan Penelitian Politeknik Negeri Bali Sadiman, S.A., Raharjo, S., Anung, H.R. & Rahardjito. 2005. *Media Pendidikan Pengertian, Pengembangan dan Pemanfaatannya*. Jakarta: PT. Raja Grafindo Persada.
- [11]. Sanjaya, W. 2008. *Strategi Pembelajaran*. Jakarta: Kencana.

- [12]. Santyasa, I Wayan. 2009. *Metode Penelitian Pengembangandan Teori Pengembangan Modul*. Makalahdisajikandalampenelitianbagi guru TK, SD, SMP, SMA dan SMK di kecamatan Nusa Penida, Klungkung, Bali.
- [13]. Stewart, L.J. & Wilkerson, L.V. 1999. *ChemConnection; A Guide to Teaching with modules*, (online), (<http://science.uniserve.edu.au>)
- [14]. Suparman, A. 1997. *DesainInstruksional*. Jakarta: DirjenDikti, Depdikbud Tegeh, I M. 2005. PengembanganPaketPembelajarandengan Model Dick & Carey pada Mata KuliahSinetronPendidikanJurusanTeknologiPendidikan IKIP Singaraja. *Tesis* (tidakditerbitkan). Malang: Program PascaSarjanaUniversitasNegeri Malang