

Application of Beyond Centers and Circles Time Method to Improve Writing Skills and Scientific Attitude of Prospective English Learners

Muhammad Zuhri Dj^{1*}, Sadieli Telaumbanua², Rugaiyah³, Silvy Sondari Gadzali⁴, Faizatul Husna⁵, Ignatius Septo Pramesworo⁶

¹Department of English Education, Institute Agama Islam Negeri Bone, Sulawesi Selatan, Indonesia

²Department of Indonesian Education, Universitas Prima Indonesia, Indonesia

³Department of English Education, Universitas Islam Riau, Pekanbaru, Indonesia

⁴Department of Business Administration, Universitas Subang, Indonesia

⁵Department of English Education, Sekolah Tinggi Agama Islam Negeri Teungku Dirundeng Meulaboh, Indonesia

⁶Management Study Program, Perbanas Institute, Jakarta, Indonesia

Received June 20, 2020; Revised August 14, 2020; Accepted August 28, 2020

Cite This Paper in the following Citation Styles

(a): [1] Muhammad Zuhri Dj, Sadieli Telaumbanua, Rugaiyah, Silvy Sondari Gadzali, Faizatul Husna, Ignatius Septo Pramesworo, "Application of Beyond Centers and Circles Time Method to Improve Writing Skills and Scientific Attitude of Prospective English Learners," *Universal Journal of Educational Research*, Vol. 8, No. 10, pp. 4939 - 4945, 2020. DOI: 10.13189/ujer.2020.081066.

(b): Muhammad Zuhri Dj, Sadieli Telaumbanua, Rugaiyah, Silvy Sondari Gadzali, Faizatul Husna, Ignatius Septo Pramesworo (2020). *Application of Beyond Centers and Circles Time Method to Improve Writing Skills and Scientific Attitude of Prospective English Learners*. *Universal Journal of Educational Research*, 8(10), 4939 - 4945. DOI: 10.13189/ujer.2020.081066.

Copyright©2020 by authors, all rights reserved. Authors agree that this article remains permanently open access under the terms of the Creative Commons Attribution License 4.0 International License

Abstract The study aimed to prove the effectiveness of the application of the Beyond Centers and Circles Time methods on coursework writing, measuring improved writing skills and the attitude of prospective English lecturers' learners after applying the methods of Beyond Centers and Circles Time and knowing learner responses to the application of the methods of Beyond Centers and Circles Time. This type of research is a quantitative approach with a quasi-experimental design using posttest Experiment Group design pretests. The result shows the changing occurs in learners' writing skill which means that there is an increasing in the pretests value to the posttest with an average N-Gain of moderate criteria is 0.56, from the test results the P-value is 0.000, if the P-value < 0.005 can be concluded that the method Beyond Centers and Circles Time effectively applied to the course of writing, there is a percentage increase in scientific stance at each of the lowest meetings of 52.00% and the highest percentage of 84.80. Conclusion of the results that the implementation of the method of Beyond Centers and Circles Time was obtained that the increase in writing skill and the scientific attitudes of prospective lecturers and learners gave positive

responses to the application of Beyond Centers and Circles Time method.

Keywords Beyond Centers and Circles Time Method, Writing Skills, Scientific Attitude, Prospective English Learners

1. Introduction

The nature of education, according to UNESCO integrates four pillars of education, namely *learning to know, learning to do, learning to be, and learning to live together* [1]. Learning in higher education is a process of changing learner behavior through interaction with the environment. Learners must have independence in learning. During this time in teaching and learning activities, learner dependence on information provided by lecturers still dominates. The learning process is expected to be done with a learner-centered methodology so that learners can develop their thinking skills, practice their skills and can

change their attitudes so that they are more responsible for the tasks given by the lecturer.

Prospective English lecturer learners must have the ability to be excellent facilitators in the learning process. Learners must be able to find their knowledge and transform complex information by solving problems and finding everything for themselves [2]. For this reason, learners must be able to find and build their knowledge with responsibility in planning and carrying out activities that encourage learning.

Learning must be contextual so that learners find meaning in their learning by connecting academic material based on content in their daily lives. Also, learners must be trained to be able to conduct research related to the material and concepts being studied in order to gain a more comprehensive understanding.

In each college and in each subject, strategies are needed for transferring knowledge: As Brown [3] has mentioned - teaching is exhibiting or serving to somebody to discover ways to do something, giving directions and/or guidance within the research of one thing, offering individuals with knowledge and/or inflicting individuals to know or to grasp something. Therefore, learning models must be precise and not monotonous in the classroom. Learning models must also be able to facilitate and support learners in learning a language in particular writing where it is easy to learn.

As a step to provide fun English learning this study implemented Beyond Centers and Circles Time method. That is, learners are stimulated to actively conduct exploration activities according to the topic of each group. For that, the centers of learning are prepared, complete with the necessary facilities and always use a circular sitting footing before and after conducting activities in the center. In other words in this approach, all learning activities focus on learners as learning subjects so that learners are assisted in their development according to their potential.

Beyond Centers and Circle Time Method applied to the study was intended to help learners in the English language Education Department to develop writing or writing skills. In this learning model, learners are divided into groups, where each group will be equipped with different facilities in each group. This is in order to develop the potential and power of learner creativity and certainly teaching English with a pleasant method. Each group is a center of activity where lecturers organize learners to sit circular at the beginning and end of learning activities.

Beyond Centers and Circle Time methods are conducted to help educators who want a balance between skills and concept/knowledge. Kaplan [4] states; "Beyond Centers and Circles Time curriculum, provide college learners with emergent literacy experiences inside properly planned and carried out play alternatives that use cooking, dramatic play, fluid and structured development, and high quality and gross motor alternatives to fulfill the individual and cultural needs of every learner whereas providing him

opportunities to develop."

In the process of cognitive development, it is absolutely necessary utilization and optimization of natural and environmental potentials. The process of cognitive development involves the balance of skill and concept/knowledge, so that the balance of cognitive and psychomotor elements. When college learners are supplied opportunities to be taught in safe, loving, thrilling environments they will develop the ability to persist at tasks, in addition to an eagerness and curiosity about their world. Once they can handle with and experiment with materials and objects, they will develop inventiveness and creativity and after they can play with other college learners and adults who encourage their ideas or concepts they will be taught to plan and reflect on their actions [4].

The success of learner cognitive and psychomotor development depends on how the learning approach is applied. So that the right approach to learning will positively impact the interest and motivation to learn and will foster the confidence to continue to explore and develop yourself Beyond Centers and Circle Time to facilitate learners with the right learning experience that is how to explore the potential of the media and the potential of the surrounding and the environment.

In English language teaching, Idham et al. [5] emphasizes that learning should meet learners' requirement so that they would be able to apply their knowledge into their own lives. Thus, final outcome, or final evaluation, accordingly encompasses authenticity which, as Gulikers [6] refines, involves authentic task, physical context, social context, assessment result, and assessment criteria. Teaching productive skills, like writing skills, should embrace those crucial factors. Indeed, helping learners to be competent at writing is a challenging task for lecturers of English as this requires effective instructions and long endeavor [7,8].

A college as an institution that will produce intellectual circles carry out the writing activities as an integrated part from the entire learning process. With this writing activity learners are expected to have a wider insight on the topic he wrote. Writing in college requires requirements both in terms of language, content and writing techniques. So in addition to the process of habituation and practice, learners should also have knowledge of the material to be written.

Writing is considered an activity that cannot be unleashed from the academic life of a learner especially writing in the form of scientific works. Drafting a scientific work can be part of a lecture assignment given by lecturers to learners, either in the form of essays, reviews, scientific articles, papers, or as a requirement for completion of study to obtain a bachelor's degree, Master's, or doctor in the form of a thesis, thesis, and dissertation. Through the writing of scientific work, learners are expected to communicate information, new knowledge, ideas, studies, and research results.

Writing is one of the most essential abilities which

should be mastered by each first and second language learners. It's lively talent that requires learners to be lively in producing language. Furthermore, writing is assumed to be a difficult activity because it requires vital opinion for creating and expressing concepts clearly.

Further, writing skills are an ability to make notes, information or ideas using a set of signs or symbols. Writing is also a language skill that must be mastered, because so many activities in the process of learning teaching must be done in writing [9]. Later, Sinclair [10] also states writing is one way to communicate others in writing. To be able to produce good writing, needed process. Zemach & Rumisek [11] Submit the writing process consisting of preparation, rough drafts, sharing, repairing, editing, rewriting, and evaluation. This process is done as a step in generating good writing in terms of content and other writing components.

Besides, scientific attitude is part of the scientific process. Scientific attitudes represent the suitability of learner behavior towards the teaching and learning process. There are characteristics of learners having a scientific attitude among others having curiosity, not accepting the truth without proof, honest, thorough, respecting the opinions of others, accepting new gifts and new enthusiasm. Wahyudi [12] states that scientific attitudes can affect learning achievement both in cognitive, affective, and psychomotor aspects. If learners have scientific thinking, they have high motivation to continue to develop their potential and improve understanding of concepts which will ultimately improve learner learning outcomes [13].

According to Harlen [14], there are four types of attitudes that need attention in developing learners' scientific attitudes: (1) attitudes towards assignments, (2) attitudes towards themselves as learners, (3) attitudes toward science, especially science, and (4) attitudes towards objects and events in the surrounding environment. These four attitudes will form a scientific attitude that influences one's desire to participate in certain activities, and the way a person responds to other people, objects, or events.

Based on explanation above, it is necessary to apply learning that is associated with local potential and can provide the provision of learning how to learn as well as learning how to unlearn, not only learning theory, but also practicing it to solve problems of daily life in learners. Therefore, through the application of the Beyond Centers and Circles Time method, it is expected to improve writing and scientific attitudes of prospective English lecturer learners. Then, the aim of the study was to prove the effectiveness of the application of Beyond Centers and Circles Time method on coursework writing, measuring improved writing skills and the attitude of prospective English lecturers' learners after applying the methods of Beyond Centers and Circles Time and knowing learner responses to the application of the methods of Beyond Centers and Circles Time.

2. Method

This type of research is a quantitative descriptive study with a quasi-experimental research method. The study design used a pretest and post-test experiment group design. The subjects of the study were the fourth semester English Language Education learners who were taking writing II. The population is 110 learners. The research sample was taken by cluster random sampling of 40 people. Data collection techniques using research instruments is a test to measure writing skills and questionnaires to determine the scientific attitude of learners. Data analysis techniques used for writing skills are 1) using the N-Gain Score which is analyzed by comparing the pretest and posttest scores; 2) prerequisite tests are tests for normality and homogeneity; and 3) Hypothesis Test with t-test to determine the effectiveness of the applied learning model. While the scientific attitude questionnaire was analyzed descriptively quantitatively by calculating the percentage of scoring from the statements contained in the questionnaire.

3. Result and Discussion

This research was preceded by a preliminary study in the form of a literature study and an empirical study. The literature study includes a study of research results related to research. Empirical studies include the study of initial conditions on research subjects through observation. Next, an analysis of the needs of the object of study is carried out and a research instrument is arranged. Furthermore, the design of instruments and devices is applied in writing learning. Analysis of the trial data can be seen in table 1.

Based on table 1 it can be seen that the test results of the validity of test questions, obtained the results of the validity with *r* product moment 0.436. From the questions as many as 40 items, as many as 15 items are invalid, 25 questions are valid, then there are invalid questions that are not used and some are revised and then added as many as 6 items so that the test items for research as many as 30 items . The results of the reliability test analysis, namely: for reliability the test results of learning outcomes have $r_{11} = 0.786$ including the very high reliability criteria. The results of the analysis of the level of difficulty of the 40 test questions, namely: criteria for difficult questions, there are 3 item items, criteria for medium questions are 32 questions and criteria for easy questions are 5 items. Problems that are too easy and difficult are not used. About 30 items were used for the experimental trials.

Table 1. Result of learners' writing test

	Data	Result	Explanation
1	Validity	Validity range 0,155 - 0,595 <i>R product moment</i> 0,436	25 items Valid, 15 Items invalid
2	Reliability	0,786	High Reliability
3	Index Difficulties	range 0,282 - 0,774	3 items high, 32 items fair, and 5 item low

Application of Beyond Centers and Circles Time Method to
Improve Writing Skills and Scientific Attitude of Prospective English Learners

Table 2. Data of pretest, posttest, and N-gain values

Learner's Code	Pretest	Score	Posttest	Score	N-Gain	Criteria
E1	13	43	22	73	0.61	Fair
E2	14	47	24	80	0.65	Fair
E3	11	39	19	65	0.50	Fair
E4	12	40	19	65	0.57	Fair
E5	11	39	25	83	0.74	High
E6	12	40	24	80	0.67	Fair
E7	14	47	23	77	0.63	Fair
E8	13	43	20	67	0.52	Fair
E9	11	39	16	52	0.24	Low
E10	23	78	25	83	0.56	Fair
E11	12	40	29	95	0.82	High
E12	12	40	22	73	0.64	Fair
E13	11	39	23	77	0.63	Fair
E14	11	39	16	52	0.24	Low
E15	12	40	24	80	0.74	High
E16	11	39	23	78	0.61	Fair
E17	13	43	21	70	0.57	Fair
E18	12	40	22	73	0.63	Fair
E19	14	47	21	70	0.61	Fair
E20	12	40	22	73	0.65	Fair
E21	13	43	24	80	0.65	Fair
E22	11	39	16	54	0.29	Low
E23	12	40	24	80	0.67	Fair
E24	11	39	25	83	0.65	Fair
E25	14	47	24	80	0.79	High
E26	14	47	24	80	0.65	Fair
E27	12	40	22	73	0.65	Fair
E28	12	40	23	77	0,56	Fair
E29	11	39	25	83	0.65	Fair
E30	11	39	29	95	0.86	High
E31	11	39	24	80	0.65	Fair
E32	14	47	22	73	0.60	Fair
E33	12	40	24	80	0.67	Fair
E34	13	43	24	80	0.65	Fair
E35	11	39	25	83	0.65	Fair
E36	13	43	22	73	0.60	Fair
E37	13	43	23	77	0.67	Fair
E38	11	35	22	73	0.58	Fair
E39	13	43	26	87	0.81	High
E40	11	39	24	80	0.67	Fair
Average	12,50	42,50	22,875	76,35	0,56	Fair

The application of the Beyond Centers and Circles Time method in sentence learning in this study was carried out in eight face-to-face meetings (theory and practice). In collecting research data, which included observations of learners' writing skills and scientific attitudes, the researcher was assisted by three observers. Retrieval of research data begins by conducting a pretest to determine the initial conditions of writing skills of prospective English lecturer learners, then after the application of the learning model, the posttest is carried out. Data on the pretest, posttest and N-gain values can be seen in table 2.

Based on the table above, it can be recapitulated the results of the lowest, highest and average pretest, posttest and N-gain values. Recapitulation data can be seen in table3.

Table 3. Recapitulation of Pretest, Posttest and N-gain Scores

No.	Scores	Highest	Lower	Average
1	Pretest	75	35	42,50
2	Posttest	95	52	76,35
3	N-gain	0,86	0,24	0,56

Based on table 3 it can be seen that there is an increase between the pretest and posttest scores. Based on the results of the calculation of N-gain results obtained an average of 0.56 including fair criteria. The classical calculation results of the N-gain gain can be seen in table 4.

Based on table 4., it can be seen that the percentage of learners who entered the criteria of gain was high 15%, moderate gain was 77.50% and low gain was 7.5%. With

the increase in the value of the pretest and posttest, the application of the model has been effectively carried out. To test the effectiveness of the learning model that has been applied to do hypothesis testing using t test (t-test) t test results can be seen in table 5.

Table 4. Result of N-Gain Criteria Percentage

No.	Value Range	Learner (Person)	Percentage (%) Gain	Criteria
1	$g > 70$	6	15,00	High
2	$30 < g < 70$	31	77,50	Moderate
3	$g < 30$	3	7,50	Low

Based on table 5, it can be seen that there is an increase in the pretest to posttest and from the t test results obtained p value 0,000, with significant criteria. If p value <0.005, it can be concluded that the Beyond Centers and Circles Time method is effectively applied to writing learning.

The scientific attitude observed at four meetings in learning writing, includes 10 indicators, namely curiosity, honesty, discipline, responsibility, cooperation, polite, conscientious, diligent, open and confident. The observed indicators were assessed using scoring and rubrics with a Linkert scale assessment (1-4). The percentage increase in the scientific attitude of prospective lecturer learners at each meeting which can be seen in table 6. below.

Based on table 5. it can be seen that there is an increase in the scientific attitude of prospective lecturer learners in each indicator at each meeting, with the lowest percentage of 52.00% at the first meeting on the indicator of curiosity, and the highest percentage of 84.80% on the indicator of responsibility at fourth meeting.

Table 5. T-Test results improved writing ability

No.	Data	Mean	N	t- counting	P value	criteria
1.	Pretest	42,50	40	7,585	0,000	Significant
2.	Posttest	76,35	40			

Table 6. Percentages of scientific attitudes for prospective lecturer learners

No	Indicators	Percentages				Average
		1	2	3	4	
1	Curiosity	52,00	53,60	60,42	68,50	58,63
2	Honesty	76,20	77,40	78,30	80,20	78,03
3	Discipline	70,20	72,40	78,76	80,38	75,44
4	Responsibility	81,20	81,90	82,48	84,80	82,60
5	Cooperation	58,90	59,20	68,70	74,50	65,33
6	Polite	80,50	82,50	83,70	84,90	82,90
7	Conscientious	78,50	78,70	79,20	79,64	78,36
8	Diligent	76,40	78,20	79,30	80,48	78,60
9	Open minded	78,50	78,84	79,68	82,62	79,91
10	Confident	60,70	65,90	70,40	72,90	67,48

4. Discussion

Learning can be carried out optimally of course requires several components that need to be prepared include human resources and equipment needed. From the observations it is known that the Beyond Center and Circle Time method is implemented in the learning process of writing with a focus on activities in group activities or centers of seven centers, where each center has a specific topic complete with media related to the topic. From observations, it is known that the smooth implementation of the Beyond Center and Circle Time method in writing learning is also influenced by the organization of teaching and learning activities. At the beginning of the lecture the lecturer clearly stated the rules of the game, including dividing learners into seven groups. Then the lecturer has also prepared a glossary (examples / vocabulary lists that are used according to the topics studied in each group). This vocabulary briefing is important because learners are helped in understanding the context and then discussing it with group friends. At the core, the group is actively discussing in inventorying new vocabulary based on the topics and media provided, and then they discuss arranging simple sentences, multilevel or compound sentences. Then at the end of the lecture, the group presents their work in front of the class and the lecturer gives appreciation and evaluation, and no less important learners are directed to make conclusions about what they have learned and also reflect what they have learned according to the topic of the group.

In the learning process, by applying practical activities and also assigning research projects to the seven priority centers it is expected that learners will have learning outcomes in the form of thinking and acting skills based on scientific knowledge. In addition, mastery of concepts, Higher Order Thinking Skills and Problem Solving skills can also be improved. The existence of practical activities and research exercises are very effective to reach all domains of knowledge simultaneously, including training so that theory can be applied to real problems (cognitive), training planning activities independently (affective), and training the use of certain instruments (psychomotor) [15].

The scientific method is very effective for obtaining, organizing, and applying new knowledge for learners [16]. Therefore, learners must not only understand concepts that are relevant to the problem at the center of attention but also gain learning experiences related to the skills of applying scientific methods in problem solving and fostering critical thinking patterns [17].

Theoretically, the existence of practical and research activities is a special activity that functions to train and obtain feedback and increase learner motivation [18]. Learning through observation does not only increase the psychomotor domain of learners, but also cognitive and affective. Practical activity plays an important role in developing cognitive, psychomotor, and affective. Thus

through the provision of practical and research activities, it is expected to improve learners' writing abilities.

According to Gott and Dugan [19], practical activities have three interrelated domains, namely motivational aspects that will encourage social interest and ability, application of substantive knowledge, development of experimental skills. The results of his research indicate there is a relationship between practical and learning activities. Joyce and Weil [20], suggested that practical activities have positive potential for learners and lecturers. There are four main potentials of implementing practical activities including interpersonal and intrapersonal potential. Colburn [21], states that practical activities have an influence on the development of learner skills including experimental skills and social skills which include questioning, communication, discussion skills.

Knowledge constructed by the learner in this case learners as subjects makes the knowledge more meaningful. Learning like this can encourage learners to be actively involved in building their own knowledge in depth (deep learning). As for the knowledge gained through direct notice or lecture will not be meaningful knowledge, this knowledge will be remembered while after it is forgotten is not stored in long term memory.

5. Conclusions

Based on the results and discussion, it can be concluded that there is an increase in the pretest to posttest with an average N-Gain of 0.56 moderate criteria, from the t test results obtained p value 0,000, if p value <0.005 then the Beyond Center and Circle Time method effectively applied to learning to write and there is an increase in scientific attitudes at each meeting the lowest of 52.00%, and the highest percentage of 84.80%. This can indicate that the learner lecturer candidates initially did not show enthusiasm for learning and assignment of projects given, but at the next meeting, learners began to be interested and enthusiastic and worked well together in designing practical and research activities related to the seventh center, then make observations properly and be able to make reports on the results of research. Research project assignments can be completed in a timely manner with good results.

The scientific attitude observed at the time of the study included: an attitude of curiosity is an attitude and an action that always seeks to find out more deeply and extends from what it has learned, seen and heard. Curiosity in the learning process can be shown by expressing opinions from various sources, and always asking the lecturer or friend if you have not mastered the material. An honest attitude is a behavior that is based on efforts to make oneself a person who can always be trusted in words, actions and work. Discipline is an action that shows orderly behavior and obeys to various rules and regulations. Discipline in the

learning process in class can be demonstrated by arriving on time, paying attention to the explanations and opinions of lecturers and friends, and following the activities in an orderly manner. Responsibility is the attitude and behavior to carry out duties and obligations as they should be done, both to yourself, friends and lecturers. In the process of learning the responsible attitude can be represented by carrying out the appropriate tasks, play an active role in the group and dare to bear the risk of the actions that have been done. Cooperation attitude is an activity carried out jointly by more than one person in order to realize a common goal.

REFERENCES

- [1] Delors, J. (1998). *Learning: The treasure within*. Unesco.
- [2] Trianto. 2007. *Model-Model Pembelajaran Inovatif Berorientasi Konstruktivistik*. Jakarta : Prestasi Pustaka
- [3] Brown, D. (2004). *Language assessment: Principles and classroom practices*. New York: Longman.
- [4] Kaplan, 2009. *Beyond centers and Circles time*. Kaplan Early Learning Company.
- [5] Idham, F. Islami, Nadrun, Darmawan (2015). The use of authentic assessment in English writing skill to the eleventh grade learners. *E-Journal of English Language Teaching Society*, 3(1), 1-13.
- [6] Gulikers, J. T. M. (2006). *Authenticity in the eye of the beholder: Beliefs and perceptions of authentic assessment and the influence on learner learning*. Maastricht: Datawyse.
- [7] Aziz, Noor bin A. Muhammad & Yusoff, M. Nurahimah (2016). Improving process writing with the use authentic assessment. *International Journal of Evaluation and Research in Education*, 5(3), 200-204
- [8] Barkaoui, K. (2007). Teaching writing to second language learners: Some insights from theory and research. *TESL Reporter*, 40, 35-48.
- [9] Harmer J. 2007. *The Practice of English Language Teaching*. Fourth Edition. England. Pearson Education Limited.
- [10] Sinclair, J. (1987). *Collocation: A Progress Report*. Amsterdam: Benajmins
- [11] Zemach, D. E., & Rumisek, L. a. (2006). *Academic Writing: From Paragraph to Essay*. Macmillan Publishers.
- [12] Wahyudi (2011)
- [13] Yani, Ahmad. Haerunnisa, Sahriah. (2017). "Analisis Aktivitas dan Sikap Ilmiah Mahasiswa melalui Model Pembelajaran Project Based Learning (PjBL) pada Perkuliahan Biologi Air Tawar STKIP Puangrimaggalatung Sengkang Sul-Sel". Prosiding Seminar Nasional III, tahun 2017.
- [14] Harlen, W. (2005). *Teaching, learning and assessing science 5-12*. Sage.
- [15] Pritchard, A. (2017). *Ways of learning: Learning theories for the classroom*. Routledge.
- [16] Deporter, B. (2000). *Quantum Learning*. Bandung: Kaifa.
- [17] Ho, B. (2006). Effectiveness of using the process approach to teach writing in six Hong Kong primary classrooms. *New Horizons in Education*, 17(1), 1–52. Retrieved from <http://www.cityu.edu.hk/en/research/spring2006ho.pdf>
- [18] Grossman, R., & Burke-Smalley, L. A. (2018). Context-dependent accountability strategies to improve the transfer of training: A proposed theoretical model and research propositions. *Human Resource Management Review*, 28(2), 234-247.
- [19] Gott and Dugan. 1996. Practical work: Its Role in the Understanding of Evidence in Science. *Journal Science Education*, 791-806.
- [20] Joyce, Bruce; Well, Marsha and Calhoun, Emily, *Models of Teaching*, Pearson. Boston: Prantica Hall, 2000.
- [21] Coburn, C. E. (2003). Rethinking scale: Moving beyond numbers to deep and lasting change. *Educational researcher*, 32(6), 3-12.