

A Psychological Study of Cognitive Learning Through Drama and Action Using Piaget's Process of Adaptation and Assimilation

M. Vimochana¹, Dr. M. R. Bindu²

¹M.A, M.Phil., Research Scholar, Assistant Professor, Department of English
Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology Avadi,
Chennai-62, Email: vimvijay210@gmail.com

²Research Supervisor, Head, Department of English, Vel Tech Rangarajan Dr.
Sagunthala R&D Institute of Science and Technology, Avadi, Chennai-62.

Received: 14- June -2023

Revised: 26- July -2023

Accepted: 22- August -2023

Abstract

A great deal of psychological research has been done on Theory of Cognitive Development by Jean Piaget in the recent times. Any researcher attempting to study child growth and psychology in relation to education would never skip mentioning Piaget. Piaget proposes four stages of development in children which are cognitive in nature. These stages are sensorimotor stage, preoperational stage, concrete operational stage and formal operational stage. Though Piaget's theory has invited a lot of criticism, one cannot reject its purpose completely. This research work is an attempt to throw light on the possibilities of improvising the learning process by including actions form such as action songs, role plays, skits and dramas which can help students learn better. This work intends to evaluate Piaget's process of assimilation and the possibility of creating new schema if action is involved in teaching – learning process. Children learn, understand, and remember better by seeing a text enacted.

Keywords: Cognitive Development, Psychological Development, Drama and Action, Assimilation process and Piaget theory.

Introduction

Piaget is a Swiss psychologist who focused on the study of learning stages in children. He classifies his Theory of Cognitive Development into four stages. In the first sensorimotor stage (0-2years), children learn through their sensory stimulations. The second state is the preoperational stage (2-7 years) it is a crucial period wherein majority of the schema formation happens. Schema is a mental script that the child had already created depending on its previous knowledge or experience. The third stage (7-12 years) is known as the concrete operational stage, in this stage the children become more logical in their perceptions and acquire the ability to understand concrete concepts. The fourth stage (Above 12 years) is the formal operational stage. This stage involves in manipulating abstract ideas and problem-solving by using systematic approaches. This study focuses on the formal operational stage.

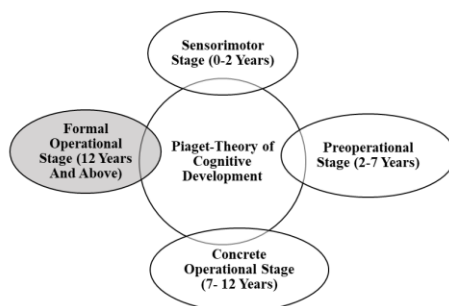


Figure 1.1: Theory of Cognitive Development

Piaget further describes the adaptation of children to new learning through his process of assimilation. "Piaget popularized the terms "assimilation," "accommodation," and "equilibration" among the psychological scientific community, despite repeated criticism" (Hanfstingl, Barbara & Arzenšek, Ana et al ,2021)

When children are taught stories, poems, historical events or even some scientific concepts through dramas or skits their retention improves. People tend to remember rhymes and songs learnt at a very young age because most of these are taught in the form of action songs. "Drama is viewed as an act of using the imagination to become something or someone other than oneself." (Subbulakshmi T.V.,2016, P. 89)

1.1 Research Questions

1. Does enactment of text in the form of drama enhance students' learning?
2. Did the intervention show improvement according to Piaget's Theory of Cognitive Learning?
3. Did the activity promote experiential learning and observation learning in students?

1.2 Hypothesis: This research intends to prove that intervention in teaching in the form of enacting drama in classroom influences the teaching-learning process in a positive way.

2. Literature Review

Charlotte Nickerson. (2021) explains in detail about Piaget's cognitive development through the research work titled 'Understanding Accommodation and Assimilation in Psychology'. All the four stages are highlighted in her explanations.

Subbulakshmi T.V.(2016) has done her Ph.D. titled "An Analysis of The Techniques of Teaching Drama to ESL Learners" in which she elaborates on the various techniques to be implemented while teaching drama to English second language students.

Dimiter M. Dimitrov and Phillip D. Rumrill, Jr. (2003) in their research work titled 'Pretest-posttest designs and measurement of change' expound on one of the most effective methods for data collection which is pretest and posttest design.

Hanfstingl, Barbara & Arzenšek, Ana et al (2021) in their research work titled 'Assimilation and Accommodation: A Systematic Review of the Last Two Decades' have gathered data from two decades which is from 1998 to 2018. In their study they have systematically summarized their findings of assimilation and accommodation in the area of psychology.

Hemlatha, Sharma (2021) in her phd titled 'Teaching Communication Skills and Life Skills through Contemporary Indian Drama A Study of Selected Plays of Mahesh Dattani and Vijay Tendulkar', explains how communications skills and life skills can be improved using contemporary Indian drama.

Robert D. Tennyson & Mariana Rasch (1988) in the research article titled 'Linking Cognitive Learning Theory to Instructional Prescriptions' elaborate on how cognitive learning directly influences learning process. they present an initial model of instructional design to substantiated this method.

Zana Babakr & Mohamedamin, & Kakamad, Karwan. (2019) have published an educational quarterly titled 'Piaget's Cognitive Developmental Theory: Critical Review' in Asian Institute of Research. In this work they explain in detail about Piaget' cognitive development and the various stages.

After having read a considerable amount of literature to develop this research work, the researcher has identified that sources for Cognitive Development, teaching through drama and pre-test post-test design of analysis. However, a combination of the three is not easily available, this may be considered the research gap identified by the researcher.

3. Methodology

3.1 Sample / Participants

The study targets on students in the formal operational stage, that is above 12 years. Piaget's process of adaption and assimilation is tested in this study. The study aims to test on the level of understanding in students before and after watching a poem in the form of drama or skit. The research methodology used is pretest-posttest

design “Pretest-posttest designs are widely used in behavioral research, primarily for the purpose of comparing groups and/or measuring change resulting from experimental treatments.” (Dimitar M. Dimitrov and Phillip D. Rumrill, Jr, 2003, p.159). The poem “The Ant and The Cricket” an extraction from the Aesop Fables was chosen for the study. The poem is a part of the curriculum for 8th class students of CBSE Board and 10th class of Matriculation Board in Tamil Nadu. This poem is present in the syllabus in Unit IV, chapter II of Samacheer Kalvi of Tamil Nadu State Government. The test was conducted on 35 students of class 10, Matriculation students of St. Johns Matric higher Secondary School, Thirunindravur, Tiruvallur District, Tamil Nadu, India.

3.2 Instruments and tools

Pre- test and post- test were conducted and questionnaires containing almost similar questions were given to the students through google forms for both the tests. The responses were used for the evaluation. Using google forms to conduct the evaluation automated and simplified the whole process for the researcher. For the intervention part, the poem was enacted by the student volunteers with the guidance and practice given by the class teacher and the researcher. Online classes during the pandemic lockdown have made it convenient for data collection. All the students were familiar with google forms and have the necessary email access for it.

The researcher did not use special costumes as in usual dramas, rather, placards with pictures of ant and cricket were hung on the students who played the respective roles. Properties available within the classroom were made use, lunchboxes for food, tables arranged to show the ant’s house, strips of paper for snow and so on.

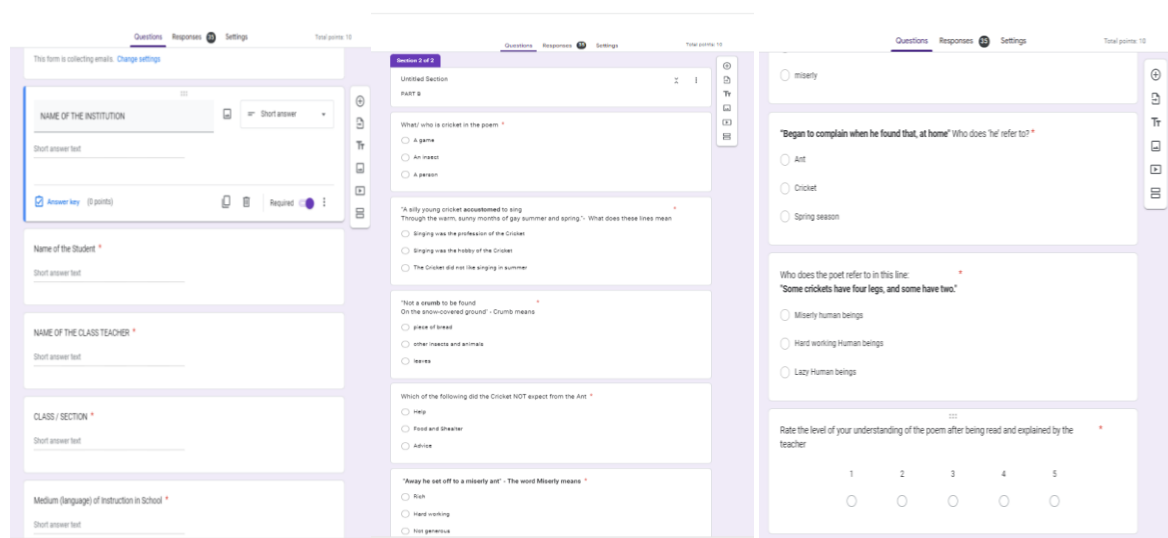


Figure 3.1: Samples of Google forms

3.3 Data collection procedures

The study was conducted for 3 sessions of 40 minutes each. During the first session, a brief introduction to the poem was given. Later the poem was read and explained to the class. During the second session, a few student volunteers were chosen and practice was given to them to enact the poem as a skit. YouTube access made it easy for the student volunteers to understand their roles and enact them easily. The third session served as the intervention and post-testing session. In this session, the poem was enacted as a skit and the same questions used for pre-test were shared again for Post-test data collection.

Split up of the sessions:

| | | | |
|--------------------------------|----------------|----------------|----------------|
| Session/Date & Time | 10 mins | 25 mins | 15 mins |
|--------------------------------|----------------|----------------|----------------|

| | | | |
|--|--|--|---|
| Session 1 17.08.2022 (1.45pm-2.35pm) | Introduction to the activity | The class teacher read the poem about 3 times and explained the same to the students | Students were made to fill pre-test Google form |
| Session 2 17.08.2022 (2.45pm-3.35pm) | Choosing student volunteers to enact the poem | Practice was given to the volunteers. Meanwhile, the other students were asked to find meanings for the difficult words from the dictionary. | Oral discussion to find the students' understanding of the poem |
| Session 3 18.08.2022 (11.45am-12.35pm) | General instructions to stay attentive and watch the play. | Enaction of the play by student volunteers of the class | Students were made to fill post- test Google form |

Table 3.1: Split up of the session conducted

3.4 Method of Data analysis

Testing of the data was done through the Pretest-posttest design adopted from Dimiter M. Dimitrov and Phillip D. Rumrill, Jr in their research work titled "Pretest-posttest designs and measurement of change". the method of calculation is as follows:

Notations used in this section are: Y1 = pre-test scores, T = experimental treatment, Y2 = post-test scores, D = Y2 – Y1 (gain scores), and RD = randomized design (random selection and assignment of participants to groups and, then, random assignment of groups to treatments) (2003, p.159)

4. Results

Data collected from 35 students were tested using the Pretest-posttest design as mentioned above. The result is obtained by applying the formula Y1 = pretest scores, T = experimental treatment, Y2 = posttest scores, D = Y2 – Y1 (gain scores), The formula used for calculation is given below:

S= Student
 T= Total score for which the test was conducted
 Y1 = pretest scores
 Y2 = posttest scores,
 D = Y2 – Y1 (gain scores),

| Sl. No | T | Y 1 | Y 2 | D = Y2 – Y1 |
|--------|----|-----|-----|-------------|
| S 01 | 10 | 2 | 9 | 7 |
| S 02 | 10 | 3 | 8 | 5 |
| S 03 | 10 | 5 | 9 | 4 |
| S 04 | 10 | 3 | 9 | 6 |
| S 05 | 10 | 3 | 9 | 6 |
| S 06 | 10 | 5 | 9 | 4 |
| S 07 | 10 | 3 | 9 | 6 |
| S 08 | 10 | 7 | 8 | 1 |
| S 09 | 10 | 3 | 6 | 3 |
| S 10 | 10 | 6 | 4 | -2 |
| S 11 | 10 | 5 | 9 | 4 |
| S 12 | 10 | 2 | 8 | 6 |
| S 13 | 10 | 9 | 9 | 0 |

| | | | | |
|------|----|---|----|----|
| S 14 | 10 | 5 | 9 | 4 |
| S 15 | 10 | 7 | 9 | 2 |
| S 16 | 10 | 8 | 9 | 1 |
| S 17 | 10 | 8 | 9 | 1 |
| S 18 | 10 | 3 | 9 | 6 |
| S 19 | 10 | 7 | 8 | 1 |
| S 20 | 10 | 8 | 8 | 0 |
| S 21 | 10 | 9 | 8 | -1 |
| S 22 | 10 | 9 | 8 | -1 |
| S 23 | 10 | 9 | 10 | 1 |
| S 24 | 10 | 9 | 10 | 1 |
| S 25 | 10 | 8 | 7 | -1 |
| S 26 | 10 | 5 | 10 | 5 |
| S 27 | 10 | 9 | 7 | -2 |
| S 28 | 10 | 6 | 9 | 3 |
| S 29 | 10 | 9 | 9 | 0 |
| S 30 | 10 | 8 | 9 | 1 |
| S 31 | 10 | 5 | 10 | 5 |
| S 32 | 10 | 8 | 9 | 1 |
| S 33 | 10 | 9 | 9 | 0 |
| S 34 | 10 | 3 | 9 | 6 |
| S 35 | 10 | 2 | 8 | 6 |

Table 4.1: Result of pretest-posttest design ($D = Y2 - Y1$)

The result of pre- test and post-test show that there is a noticeable difference in the scores obtained by the student before and after the intervention. The intervention happened in the form of the enactment of the poem as a drama. This helped in understanding the words and context better. This is shown through the results of pre-test and post-test given in the figure below:

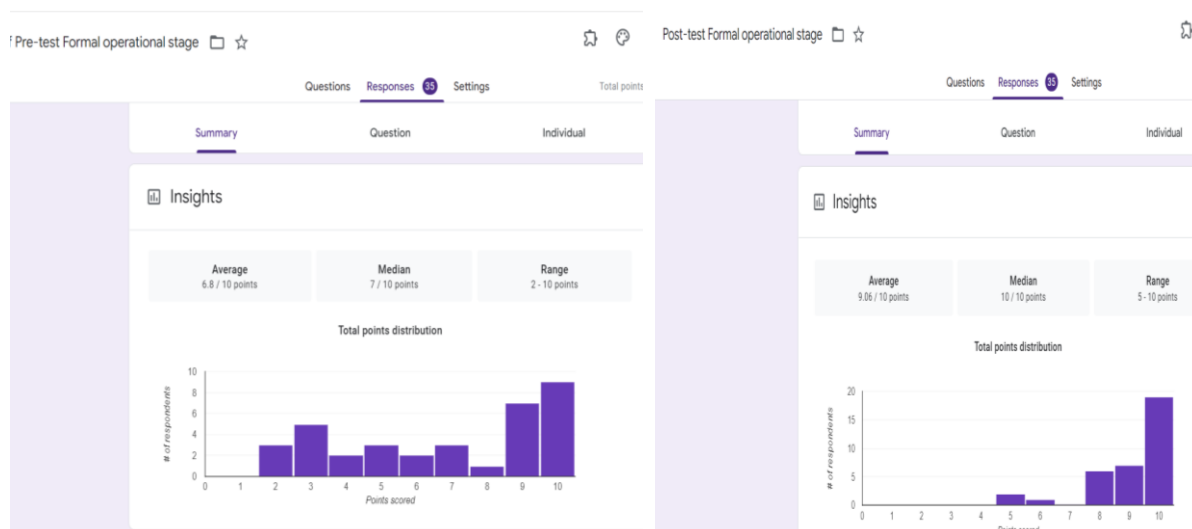


Figure 4.1: Pictorial Representation of Pretest and Posttest Results

The figure shows that in the pre-test students' score ranges from 2-10 whereas in the posttest the range has increased to 5-10 which is considered a positive growth in the numbers.

5. Findings and Discussion

The results of the pretest and post test showed a noticeable change after intervention. It showed that students understood the poem better after watching it being enacted in front of them. Most of these students come from Tiruvallur District, Tamil Nadu. This region is still a suburb and does not come into the mainframe of Chennai city. The students are not much exposed to a high level of language. This being the case the students are not well versed in language and vocabulary. For example, in the pretest questioning session, when the question “who/what was the cricket in the poem, many answered they are talking about the game of cricket” was asked, many of them answered that it was the game of cricket that was being mentioned. Two things were noticed majorly, firstly students paid attention while the poem was being enacted, and secondly, their level of understanding had improved.

Piaget in his processes of assimilation explains the progressions of learning that happens in children. Children understand a concept based on their learning exposure to that concept, this is called assimilation, this learning is stored as a schema in the mind of the child. Later when new learning happens the child either equalize the similarities or modifies its thought according to the difference observed. This process of analysis done by the child is called equilibrium and disequilibrium. When the child finds that the new learning is similar to its previous assumptions, it equalizes its learning along with new inclusions. Likewise, if the child understands that the new learning is different from its previous assumption it modifies its thought and adapts to the new exposure.

The students tested were in the formal operational stage. According to Piaget, children in this stage can think, analyze, manipulate and problem-solve. Piaget describes the process of assimilation as a continual process. The child has a schema in mind based on previous learning and knowledge. When the child is exposed to a new method of teaching the child moves forward from the Assimilation level. The child acquires the new concept, analyses it, and comes to a newer understanding which is most often correct. Nickerson, C (2021, n.p) describes the process of assimilation using the following figure:

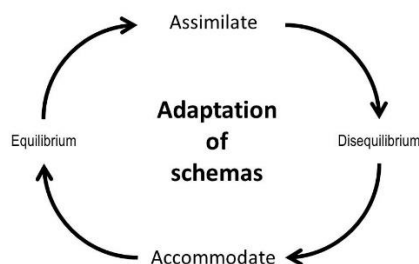


Figure 5.1: Process of Assimilation adapted from Nickerson, C. (2021).

The intervention in the form of enactment of the drama showed a drastic change in the children’s scores. The reason may be that when children see the enactment of drama, they get a visual representation of what they are learning which helps in aiding their memory to retain better. Moreover, when content is read out or explained, it is possible that the student is physically present in class but mentally absent. When the same content is enacted as a drama it induces to view attentively. At this point the child moves from assimilation to accommodation. Accommodation is defined by Nickerson, C. (2021, n.p) as:

Accommodation is a term normally associated with the developmental theory of Jean Piaget and refers to a type of adaptation in which a child or adult develops new schema or modifies existing ones.

6. Conclusion

A picture speaks a thousand words likewise action retains in the mind better than words. When the poem “The Ant and The Cricket” was enacted, students showed signs of better understanding. Hence it could be concluded that using drama as a teaching method enhances comprehension, memory, and application of complex concepts

among students. Cognitive includes various modes of learning like explicit learning, implicit learning, emotional learning, experiential learning, observation learning, and so on. This research hence concludes that in accordance to the given hypothesis, the results have proven to show improvement in the learning process due to the intervention. Hence this research recommends teaching through dramas, skits, and action songs.

6.1. The scope of the study

This research gives scope for further study in various dimensions. If the focus is on drama, the further research can be conducted on the impact of reading the script of drama on spoken language. While focusing on the Theory of Cognitive development, future researcher can focus on the learning abilities in other cognitive stages.

6.2. Limitation of the Research

This study focuses only on one of the cognitive stages which is formal operational stage while the other three stages are omitted. Moreover, only Piaget's Cognitive Learning Theory is adapted for the study and other equivalent theories or even advance theories are neither included nor compared with in the study.

Reference

1. Babakr, Zana & Mohamedamin, Pakistan & Kakamad, Karwan. (2019). 'Piaget's Cognitive Developmental Theory: Critical Review'. Asian Institute of Research. DOI:[10.31014/aior.1993.02.03.84](https://doi.org/10.31014/aior.1993.02.03.84)
2. Dimiter M. Dimitrov and Phillip D. Rumrill, Jr. "Pretest-posttest designs and measurement of change" 507 White Hall, College of Education, Kent State University, Kent, OH 44242-0001, USA, Work 20 (2003) 159–165, IOS Press Speaking of Research.
3. Hanfstingl, Barbara & Arzenšek, Ana et al (2021). 'Assimilation and Accommodation: A Systematic Review of the Last Two Decades'. European Psychologist. https://www.researchgate.net/publication/356591472_Assimilation_and_Accommodation_A_Systematic_Review_of_the_Last_Two_Decades
4. Hemlatha, Sharma. (2021) 'Teaching Communication Skills and Life Skills through Contemporary Indian Drama A Study of Selected Plays of Mahesh Dattani and Vijay Tendulkar', Ph.D. thesis, Sardar Patel University.
5. Nickerson, C. (2021, Dec 03). Understanding Accommodation and Assimilation in Psychology. Simply Psychology. www.simplypsychology.org/what-is-accommodation.html
6. Subbulakshmi T.V. 'An Analysis of The Techniques of Teaching Drama to ESL Learners' Bharathidasan University, 2016. <http://hdl.handle.net/10603/248564>
7. Tennyson, R.D., Rasch, M. (1988). 'Linking Cognitive Learning Theory to Instructional Prescriptions'. Instr Sci vol. 17, pp.369–385, Issue Date December 1988. DOI <https://doi.org/10.1007/BF00056222>
8. Yilmaz, Kaya (2011), 'The Cognitive Perspective on Learning: Its Theoretical Underpinnings and Implications for Classroom Practices'. The Clearing House. DOI: 10.1080/00098655.2011.568989