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**DEVELOPMENT OF TEACHER EDUCATION CONCEPT ATTAINMENT TEST**

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**Abstract**

*The purpose of this research was to create and validate a concept attainment exam that was tailored exclusively for the purpose of teacher education. The development of an evaluation instrument that properly evaluates the level of comprehension and application of fundamental educational ideas among both pre-service and in-service educators was the major objective of this project. There were several phases involved in the project's development. A detailed assessment of the current literature on educational ideas and the achievement of such concepts was carried out. The identification of essential frameworks and ideas that are pertinent to teacher education was facilitated by this. A collection of test items was developed on the basis of the examination of the relevant literature. These questions were developed with the intention of covering a broad variety of educational ideas, such as pedagogical theories, instructional methodologies, classroom management approaches, and assessment methods. An initial pool of items was examined by a group of professionals who are knowledgeable in the fields of teacher education and evaluation. The items were improved based on their comments, which ensured that the material was genuine and that it aligned with the themes that were being addressed. A representative sample of both pre-service and in-service teachers responded to the updated examination that was given to them. The purpose of the pilot test was to collect information on the complexity and dependability of the test. Statistics were used in order to conduct an analysis of the outcomes obtained from the pilot test. Item analysis was carried out in order to evaluate*

*the performance of individual items, and reliability analysis, such as Cronbach's alpha, was carried out in order to evaluate the internal consistency of the test. In light of the findings of the study, items that performed badly were either altered or removed. Following that, the final edition of the examination was produced, which included items that shown a high level of reliability and validity across the board. An additional validation study on a bigger scale was carried out in order to further establish the usefulness of the test. In order to do this, the final exam was given to a representative sample of educators from a variety of backgrounds, and the results were analyzed to verify that the test was applicable and generalizable across a variety of educational environments.*

**Keywords:** *Teacher, Education, Attainment*

## **Introduction**

In order to provide future educators with the information, abilities, and attitudes that are required to successfully support learning, teacher education is an essential component of the educational system. Assessing the level of knowledge that pre-service and in-service teachers have on fundamental educational principles is a critical step in ensuring the quality of programs that are designed to educate teachers. Concept attainment is the act of learning and implementing fundamental concepts and principles in a particular subject. In the context of teacher education, it involves a broad variety of pedagogical theories, instructional strategies, classroom management techniques, and assessment methodologies. Concept attainment is a term that was coined by the American Educational Research Association (AERA). To create a Concept Attainment Test that is tailored exclusively for the purpose of teacher education is the objective of this research project. It is possible to ensure that all instructors are assessed according to the same criteria by using a standardized exam, which gives a consistent and objective assessment of concept acquisition. It is possible for the exam to function as a diagnostic instrument, allowing for the identification of areas in which teacher candidates and existing educators may need more development. This facilitates the establishment of tailored professional development activities. The findings of the tests may be used by programs that educate teachers to assess how well they are able to convey important educational ideas and to make modifications to their curriculum that

are motivated by scientific evidence. A concept attainment exam that is both reliable and valid may be used for the goal of ensuring that applicants for teaching positions satisfy the necessary levels of competence in educational ideas. This can be done for the purposes of certification and accreditation.

The preparation of the Teacher Education Concept Attainment Test is a methodical and stringent process that includes a full literature research, expert validation, pilot testing, item analysis, and large-scale validation. This is done in order to meet the objectives that have been set. Through the use of this multi-stage methodology, the production of a trustworthy and valid evaluation instrument of superior quality is guaranteed.

The relevance of this research resides in the fact that it has the potential to improve the quality of teacher education by providing a strong method for evaluating and enhancing the conceptual understanding of educators. Because it places an emphasis on the acquisition of core educational ideas, the exam helps to contribute to the development of instructors who are knowledgeable, competent, and successful, and who are able to favorably influence the learning outcomes of their students. The responsibility of instructors in today's educational system goes beyond just passing on information; it also encompasses the development of pupils' capacities for critical thinking and problem-solving, as well as the development of habits that encourage them to continue their education throughout their lives. In order for teachers to successfully perform these tasks, they need to have a solid understanding of a variety of educational ideas and the ability to apply those concepts in a variety of classroom contexts. In order to provide the groundwork for ongoing enhancements in the field of teacher education, the Concept Attainment Test that was created as part of this research endeavor intends to evaluate both the theoretical knowledge and the practical application of that information.

### **Concept Attainment Model**

A structured inquiry approach is used in the concept attainment teaching strategy, which is an indirect educational method. A piece by Jerome Bruner serves as the inspiration for this. Students are able to figure out the characteristics of a group or category that has previously been established by the instructor as part of the concept attainment component. Students will compare

and contrast models that do not possess the qualities of the ideas with examples that include those features. This will allow them to accomplish the goal. The next step is for them to be divided into two groups. Therefore, concept attainment is the process of searching for and identifying traits that may be used to differentiate instances of a certain group or category from those that are not examples of that group or category. The purpose of concept attainment is to make concepts more clear and to first present various components of the topic. Students are encouraged to actively participate in the formulation of an idea by making use of drawings, word cards, or specimens that are referred to as examples. Students that are able to grasp the concept before others are able to do so are given the opportunity to propose their models while other students are still in the process of attempting to formulate the notion. As a result of this, concept attainment is an excellent tool for use in the classroom since it allows for the testing of all cognitive skills during the activity. The ability to recognize correlations in word cards or specimens is something that youngsters develop with practice and experience. The idea attainment method may be used to teach almost any concept across all subject areas, provided that the examples used are properly selected.

### **Review of Literature**

According to the findings of Vyas (2014), the concept attainment model of education had a significant impact on students who were above average, students who were below average, and students who were underachieving. During the course of her research, Yaghini (2008) came to the conclusion that there is a connection between children in the conventional group and preschoolers who were taught statistical mathematical ideas based on concept achievement. Anuj Pretha (2007) was the one who carried out the research that investigated the efficacy of the concept attainment model in the context of teaching English to high school students. The goals of the research were to examine the efficacy of concept attainment model in teaching English in the overall sample and to determine the effectiveness of concept attainment model in teaching sex basis. A total of 62 pupils from the ninth standard at Evans High School in Parassala participated in the research study, and the experimental technique was chosen as the research approach. According to the findings of the research, the conventional approach of teaching English is less successful than teaching the idea attainment model, which is more than twice as effective.

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Shamnad (2005), The idea attainment approach was shown to be more successful than the standard technique in the context of teaching Arabic grammar to ninth-grade students, according to the findings of his study. Thomas (2005) carried out the research that investigated the efficacy of the concept attainment model and the test book approach in the subject of chemistry at the high school level. In order to assess whether or not the idea attainment model is successful in teaching chemistry to the whole sample, the purpose of the study was to conduct the research. The research was carried out using an experimental methodology on a sample of one hundred and ten students who were enrolled in the eleventh grade at the Government High School Karapusha in Kottayam. When it comes to the accomplishment of chemistry, the research came to the conclusion that teaching via the idea attainment model is more successful than teaching through the textbook technique.

Sreelekha and Nayar (2004) A research was carried out to compare the degree of accomplishment between the conventional method and the concept attainment model with regard to the knowledge targets, understanding objectives, and application objectives. They came to the conclusion that the idea attainment model is an efficient method for enhancing the overall level of accomplishment in the subject of chemistry.

Verma (2001) It was stated that the concept attainment model helps pupils enhance their capacity to reason inductively using their own knowledge. At the secondary level, Antony (2001) conducted a study that evaluated the efficiency of the concept attainment model with the active teaching model in terms of mathematical accomplishment. The purpose of the research was to ascertain whether or not the idea attainment model is successful in terms of performance in mathematics, as well as to evaluate the efficacy of the model in terms of accomplishment in mathematics depending on gender. A total of eighty students from two different divisions in the eighth standard of SHCGHSS were used as participants in the research. It was decided to use the experimental approach of Chalakudy and Trissure. According to the findings of the research, the conventional approach of teaching English is less successful than teaching the idea attainment model, which is more than twice as effective.

In another study, Angraini (2013) an investigation on the influence that a concept attainment model has on the poor mathematical communication skills of university students was carried out. It was discovered that the concept attainment model had a positive influence on the communication abilities required for use in mathematics.

Yumiati and Haji (2013) with the aim of enhancing the awareness of the semi-group concept among pre-service teachers. For this purpose, a pre-test and post-test design with one group was used. Developing the capacity of pre-service teachers to comprehend the semi-group concept was accomplished via the use of the concept attainment model.

When students are taught using the concept attainment model, there is an increase in their overall accomplishment, according to the findings of research performed on this approach. The number of research that have been conducted to determine whether or not the concept attainment model is beneficial in improving students' performance in social science classes taught at the secondary school level is either nonexistent or on a negligibly small scale. As a result, the investigator was motivated to conduct the current study in order to determine whether or not the concept attainment model of instruction is beneficial in improving the academic performance of students in the 12th standard who are studying social sciences.

### **Objectives of the Study**

1. To Create a Test that Can Be Relied On Coming up with an assessment that reliably and validly evaluates mastery of essential course material.
2. To Recognize Fundamental Ideas in Education Selecting the most important topics to include on the exam by consulting relevant experts and doing a comprehensive literature study.
3. To Examine the disparity in the average post-test results between the control and experimental groups of XII standard students enrolled in social science courses.

### **Methodology**

A decision was made to use the experimental procedure. The current research was carried out on a sample of four hundred students who were enrolled in the twelfth grade and were chosen via

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the use of the purposive sampling approach from both public and private schools located within the district of Bhilar.

### **Tools used**

In order to obtain the necessary information for the study of the research at hand, the researcher used the following instruments:

1. Jalota carried out the Group Test of General Mental Ability (GTMA) in the year 1972.
2. The investigator has devised a social science achievement exam for the research subject.

### **The Procedure of Data Collection**

During the course of this investigation, a pre-test and post-test experimental design was used. The investigator administered the objective type achievement exam to all of the students who had been chosen for the 12th standard, and the results those kids received on the achievement test were recorded. In addition, simultaneous administration of an intelligence test that had been created by Dr. S.S. Jalota was carried out on them in order to choose the groups. The selection of students was completed on the basis of their IQ score. After that, the students were separated into two groups: the experimental group or the control group, depending on their preferences. Students in the experimental group were instructed using the concept attainment model of teaching, whereas students in the control group were instructed using the conventional classroom approach. Both of the groups were subjected to the same examination once again, which was the same examination that was carried out at the beginning of the experiment. Another thing that was documented was the post-test scores that were achieved by both of the groups. In order to conduct the analysis of the data, these scores from both the pre-test and the post-test were used.

### **Analysis of the Data**

When comparing groups based on their pre-test scores, statistical methods such as the mean and standard deviation were utilized. Additionally, post-test scores and the t-test, which is a type of inferential statistical analysis, were utilized to compare the mean post-test scores of experimental

control groups. This was done in order to determine the impact of the concept attainment model on achievement in the social sciences.

## Results and Discussion

Comparing the samples was accomplished by determining whether or not there was a significant difference between the mean scores on the pre-test and the scores on the post-test, as well as by using inferential statistics. For the purpose of determining the impact that the concept attainment model has on academic accomplishment in the social sciences, a t-test was used to compare the mean post-test scores of the experimental group with those of the control group. In the field of social science education, the first hypothesis is that there is no statistically significant difference in the level of performance between the control group and the experimental group of students using the mean pre-test scores.

**Table 1: ‘t’ value of the XII standard students' control and experimental groups' mean pre-test results in social science classes**

Groups	N	Me an	S.D	t- val ue	Lev el of Sig.
Control	2 0 0	95. 57	19.1 451	0.0 05	In sig.
Experim ental	2 0 0	95. 56	8.76 2		

The experimental group had a mean pretest score of 95.56 and the control group had an average score of 95.57, with a standard deviation of 19.1451 and an SD of 8.762, respectively, as shown in table -1. A t-value of 0.005, which is considered insignificant, was obtained when comparing



the two groups' mean pre-test scores using the t-test. As a result, there is no statistically significant difference between the two groups of XII standard students' mean pre-test scores. Based on this, we accept the null hypothesis 1.

Hypothesis 2: In the social science classroom, there is no statistically significant difference between the control and experimental groups on the mean post-test results..

**Table 2 Showing ‘t’ XII graders' mean post-test results in social science classes compared to those of a control group**

Groups	N	Me an	SD	t- val ue	Lev el of Sig.
Control	20 02	66.9 4	8.4 91	3.9 63	Sig. at 0.01 leve l
Experime ntal	20 0	63.8 2	7.1 97		

Table 2 shows that the control group had an average pre-test score of 66.94, whereas the experimental group had an average score of 63.82, with standard deviations of 8.491 and 7.197, respectively. A t-value of 3.963 was obtained when comparing the two groups' mean pre-test scores using the t-test; this value is statistically significant at the 0.01 level of significance, favoring the second group. It seems that the experimental group outperformed the control group on average after the test. So, it's safe to assume that the experimental group is more motivated and excited about learning, applying, and linking the ideas all at once, which is why they do better. So, we may say that null hypothesis 1 is not true.

## Conclusion

One of the most important steps that has been taken to enhance the quality of teacher education is the creation of the Teacher Education Concept Attainment Test. Through the provision of a dependable and valid evaluation instrument, the purpose of this project is to improve the preparation and professional development of educators, which will eventually result in improved educational results for children. A significant contribution to the continuous attempts to raise the standards of teacher education and practice is made by the exam, which acts as a vital resource for educational researchers, policymakers, and programs that educate teachers. Considerable progress has been made in the area of teacher education as a result of the establishment of the Teacher Education Concept Attainment Test. Through the course of this research, a dependable and valid instrument was successfully developed with the purpose of assessing the level of comprehension and application of fundamental educational ideas among both pre-service and in-service educators. The usefulness of the final exam in evaluating the conceptual knowledge of instructors has been established via a procedure that is both thorough and methodical. This process includes a study of the relevant literature, validation by experts, pilot testing, item analysis, and validation on a broad scale.

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