

## COMPARISON OF PRE-SERVICE AND IN-SERVICE SCIENCE TEACHERS' PERCEPTIONS ABOUT GOOD SCIENCE TEACHERS' CHARACTERISTICS

### HİZMET ÖNCESİ VE HİZMET İÇİ FEN ÖĞRETMENLERİNİN İYİ FEN BİLGİSİ ÖĞRETMENİ ÖZELLİKLERİNİ ALGILAMALARININ KARŞILAŞTIRILMASI

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**ABSTRACT:** The purpose of this study was to find out how pre-service and in-service science teachers' perceptions differ on the characteristics of good science teachers. In order to obtain this information, 29 pre-service science teachers who are senior students studying science teaching in English and 29 in-service science teachers who are science teachers in Anatolian and Private high schools in central Ankara were given a questionnaire about good science teachers' characteristics. The questionnaire has 50 questions and established over six categories that are teachers' classroom behavior and relationships, teaching and other experiences, school and community relations, confidence on subject matter, professional activities, and bilingualism. For analyzing the data, mean and standard deviation and frequency analysis of each category were used. The results indicated that in-service science teachers' perceptions were significantly different than pre-service science teachers' perceptions about all categories except confidence on subject matter.

**KEY WORDS:** *Good science teachers' characteristics, pre-service teachers, in-service teachers.*

**ÖZET:** Bu çalışmanın amacı hizmet öncesi ve hizmet içi fen bilgisi öğretmenlerinin iyi bir fen bilgisi öğretmeni özelliklerini algılamadaki farklılıklarını ortaya koymaktır. İngilizce fen bilgisi eğitimi alan 29 fen bilgisi öğretmen adayı ile Ankara'da şehir merkezinde Anadolu ve Özel Liselerde çalışan 29 fen bilgisi öğretmenine, iyi bir fen bilgisi öğretmeni özelliklerini belirleme anketi uygulandı. Ankette öğretmenin sınıf içi davranışları ve ilişkileri, öğretme şekli ve diğer deneyimler, okul-toplum ilişkileri, kendi alanında yeterlilik, profesyonel çalışmalar ve iki dillilik bölümlerinden oluşan, altı kategoride toplam 50 soru yer aldı. Bu anketten elde edilen veriler, her bir kategori için ortalamaları, standard sapmaları ve frekans analizleri kullanılarak analiz edildi. Sonuçta, hizmet içi

öğretmenlerin algılamaları, hizmet öncesi öğretmenlerin algılamalarından kendi alanındaki yeterlilik dışında bütün kategorilerde anlamlı olarak farklıdır.

**ANAHTAR SÖZCÜKLER:** *İyi fen bilgisi öğretmeni karakteri, öğretmen adayları, çalışan öğretmenler.*

#### 1. INTRODUCTION

It is generally accepted that science education is in serious difficulty. The number of students taking science courses in secondary and high schools drops by more than 50 percent [1]. One aspect of this difficulty arises from the fact that there is a continual narrowing of the pipeline in science throughout the period of formal education. One of the most important factors affecting this narrowing is the science teachers who are in need to teach science effectively. Science education suffers from teaching it ineffectively. Teachers just try what requires minimum effort and also the students just do whatever they are asked with minimum effort unwillingly. Of course all the teachers cannot be included in this category, but most of them obey this rule after spending an average of 5 or 6 years in occupation. The roots of this fact extend down into the teacher preparation courses even to the teachers' high school years. There, lacking the proper background to teach with enthusiasm and confidence, teachers often transmit to the students a dislike of science [1]. Incompetent teaching may leave the students

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with serious deficiencies that may make science difficult for them.

Focusing on teachers may provide improvement of science education. In this point of view, there are two different populations: 1) pre-service (or prospective) teachers who are not certified yet and 2) in-service (or practicing) teachers who are certified.

How these two different groups perceive themselves as science teachers is important for the understanding of their teaching characteristics. Pre-service teachers are told and educated about science teaching and they have an imagination of good science teacher, which at least will be tried to be in the near future. As they are still students, they are aware of the problems with the alternative solutions. There may be difference between the pre-service and in-service teachers due to the interactions between students and teachers. These influence the development of the teachers' perspective on how learning occurs in the classroom and shape the characteristics of the teacher. Also students' reactions can be an important constraint on teachers' behavior [2]. The main differences between the pre-service science teachers and the in-service science teachers can be observed in the perception of classroom behavior, teaching and other experiences, school-community relations, professional activities and bilingualism [3].

The purpose of this study is to determine the level of agreement or disagreement between pre-service and in-service teachers about the description of the good science teachers' characteristics over a criterion established on teachers' classroom behavior and relationship, teaching and other experiences, school and community relations, confidence on subject matter, professional activities, and bilingualism.

## 2. LITERATURE REVIEW

Teaching profession attracts both men and women who desire to serve and to lead the

children and adolescents toward intellectual and moral growth [4]. Teaching is also a valuable service of moral worth and provides job security and preference for vacations. The continuation in the school setting, the influences of parents spouses, former teachers and the general respect of others with psychological motivations such as wishing to be in authority, to have children's love, to entertain people or to be in a friendly, and non-competitive field are the major reasons for becoming teachers. Teaching is a serious work that needs a great deal of altruism. Education is the cooperative production of the teacher, school and of course students.

Pre-service teachers in Turkey enroll in regular undergraduate courses administrated by the faculty of education and the faculty of arts and science. Faculty of education offers courses on the methodology and on the psychological, social and cultural aspects of teaching. Faculty of arts and science offers courses in the subject matter. Students take the courses in an order determined by the science education department of faculty of education. The courses, specified to science teaching, are in the curriculum of the third and fourth years. Curriculum development, measurement and evaluation, methods of science teaching courses are the theoretical considerations of science teacher preparation. The last semester, just three and a half months before the graduations of the pre-service teachers, the "practice teaching" course take place, during which they are acquainted the profession. Although they are told theoretically about teaching until the last semester, they are lack of opportunity to feel the classroom atmosphere, to experience student-teacher relations and to practice. Let alone practicing fully, this period is not enough to be get used to the school environment. After a short time, they find themselves to be dumbfounded (no observation, no improvement) with their certificate.

Besides this, no special effort is made to address the common conceptual difficulties that

the pre-service science teachers encounter. Reasoning limitations of pre-service science teachers are a cause for concern because effectiveness might be reduced in materials centered activities in which teachers need to be responsive to diverse situations that arise [5]. The routine problem solving, that characterizes most introductory courses, does not help the teachers' reasoning abilities necessary for handling the unanticipated questions that are likely to arise in a classroom situation.

The laboratory sequence that accompanies the introductory course also does not address the needs of the science teachers. Often the equipment used is not available in the teachers' schools and no provision is made for showing them how to plan laboratory experiences that utilize simple apparatus. A more serious shortcoming is that experiments are mostly limited to the verification of known principles. The pre-service science teachers have little opportunity to make observations and perform the reasoning, involved in formulating these principles [1].

Most of the beginning teachers even faced with a severe problem related to their teaching preferred to seek help from a close friend or family member [6]. The frequently cited problems of beginning teachers are discipline, isolation, evaluation of student work, and use of appropriate materials. In addition to discipline there are other problems: motivating students, dealing with individual differences, assessing students, insufficient preparation time, preparing for the school day, and relationships with colleagues.

Beginning teachers' concerns focused on discipline methods and administrative approval communication in school social setting [7]. Also there are several areas of difficulty for first year teachers such as personal life adjustments, teachers' expectations and perceptions of teaching, the strains of daily interactions and the teaching assignment.

The challenge faced by pre-service science teachers is complex. As opposed to many other subject areas, there is often fewer consensus about what the curriculum should comprise or how it should be taught. Loughran [8] had conducted a study to better understand how student-teachers make the transition from university education to full time teaching, how the pre-service learned about their role and adjusted to the culture of science teaching. He verified and analyzed the pre-service teachers' views and developments from their beginning to the second year of science teaching. He pointed that pre-service teachers tried to develop their pedagogy to maintain students' interests by using different teaching strategies that helps students to learn the content in more meaningful way according to them. They were not comfortable in the classroom with a lack of confidence in carrying out the teaching. The second year teachers saw themselves having lack of time, self-confidence and collegial support, which affect their pedagogical development.

The formal education of beginning teachers may be in conflict with the actual demands of practice. Loughran calls the difference between teachers' expectations from their pre-service teacher education programs and that of the real world of schools as the "gap". According to him, bridging the gap from the ideals of pre-service education to the real world of school is bound in a context in which expectations are pitted against the practicalities of doing the job. For many, there is a struggle of what beginning teachers presently face and a lack of impact from their pre-service education course.

The reality of having to work in highly structured organized bureaucracies is inevitably a shock to every thoughtful person [9]. In the university, knowledge is often derived from rational sources where every procedure can be openly criticized that the rest of the world should also be operated on rational, fair means. The bureaucratic control involves regulations

and social hierarchies in the school. Technical control is supplied a result of scheduling of classes, building designs, texts and other materials for instruction and sometimes may be the events that occur in the classroom.

Ingersoll [10] identified seven areas most needed by the in-service teachers: interpersonal communication and administration, developing pupil self, individualizing instruction, assessment of performance discipline, developing personal self and classroom management. Also ability to motivate students, apply skills of maintaining order in a classroom are the most needed competencies among the in-service science teachers. Most of them develop the needed proficiencies to maintain order through experiences. Least of the in-service science teachers say, they developed the needed proficiencies in this area through pre-service education [11].

In the thinking of various populations, diversity exists regarding the characteristics of good science teachers. Pre-service and in-service teachers may place a different priority on the desirable attitudes of good science teachers. Pre-service science teachers represent the initial position of a production and in-service science teacher represents the worked up position of the same production with different interactions.

### 3. METHODOLOGY

#### 3.1 Sampling

An ideal population is all pre-service and in-service teachers of Turkey. Because of lack of time and financial problems, the study was conducted over a sample of 29 senior students (pre-service science teachers) who are studying science teaching in Middle East Technical University (METU) and 29 in-service science teachers that are conveniently selected from Ari College, Bilim College, Atatürk Anatolian High School and Gazi Anatolian High School in Ankara.

#### 3.2 Variables

In this study the independent variable is the position of the teachers: pre-service and in-service teachers. The dependent variable is the good science teacher characteristics. Pre-service teachers are the senior students who are studying science teaching and expecting to be graduated in a few month periods. In-service teachers are the practicing science teachers who are already in the classroom. Good science teacher characteristics are defined by using an established criterion. This criterion consists of teacher's classroom behavior and relationships, teaching and other experiences, school and community relations, confidence on subject matter, professional activities, and bilingualism.

The null hypothesis of the study is:

There is no significant difference between pre-service teachers' and in-service teachers' perceptions about teachers classroom behavior and relationships, teaching and other experiences, school and community relations, confidence on subject matter, professional activities, and bilingualism.

#### 3.3 Instruments

In this study, the instrument used was constructed from a modified version of the questionnaire of Searles and Kuderski [3] about the outstanding science teacher and the questionnaire of Özyürek [12] about physics teacher characteristics scale. The attributes of a good science teacher characteristics were categorized as following:

- 1) teacher's classroom behavior and relationship (questions 1, 3, 6, 7, 9, 18, 19, 22, 23, 24, 31, 33, 34, 37, 39, 40,41,42, 43, 45, 47 and 49),
- 2) teaching and other experiences (questions 4, 5, 17, 20, 25, 32, 35, 36, 38, 44, 46, 48 and 50),
- 3) school and community relations (questions 10, 11, 12, 21 and 28),

- 4) confidence on subject matter (questions 2, 8 and 14),
- 5) professional activities (questions 13, 15, 16, 26 and 27),
- 6) bilingualism (questions 29 and 30).

There are 50 Likert-type items placed randomly, in order to avoid the respondents from assigning a biased value to criterion. The items are to be graded 5 for strongly agree, 4 for agree, 3 for neutral, 2 for disagree and 1 for strongly disagree. The questionnaire was given in Turkish in order to make the teachers understand and answer easily. The questions are given in the appendix.

### 3.4 Reliability

The reliability of the instrument was tested for categories 1, 2, 3 and 5. The reliability coefficient of category 1 for pre-service teachers is 0.80 and 0.50 for in-service teachers. Category 2 has the reliability coefficient of 0.64 for pre-service teachers and 0.43 for in-service teachers. Category 3 has the reliability coefficient of 0.64 for pre-service teachers and 0.32 for in-service teachers. Category 5 has the reliability coefficient of 0.59 for pre-service teachers and 0.57 for in-service teachers. Since the number of questions for the categories 4 and 6 are few and as the number of questions decreases, the reliability coefficient also decreases, the reliability coefficients of the categories 4 and 6 were not calculated.

### 3.5 Procedure

For the literature review, METU Library was used. Journals were scanned by using the key words, in order to see the conducted studies about this subject. The pre-service science teachers are the 29 senior students studying science teaching and are conveniently selected. The in-service science teachers were the 29 working science teachers in Anatolian and Private high schools. The researcher, herself went to Ari College, Bilim College, Atatürk Anatolian High School and Gazi Anatolian High

School. She gave the questionnaires to an average of seven or eight conveniently selected in-service science teachers in every school. The names of the participant teachers were kept secret in order to protect them against any defects. The data obtained from the two populations were separated into the mentioned six categories and then mean, standard deviation, possible minimum and maximum values were calculated and the frequency and percentage analyses were done for each independent variable and the dependent variable. For the inferential statistics, the independent t-test was used.

## 4. RESULTS

### 4.1 Descriptive Statistics

Each item was analyzed by finding their frequencies, percentage, mean and standard deviation for the pre-service science teachers and the in-service science teachers. While doing this analysis, the total number of data, number of teachers times number of questions in the category, was taken into account. For calculating the frequencies in Table 1, data were divided into the number of questions in each category. In the table, Q, f, m and sd refer question, frequency, mean and standard deviation of the items, respectively.

In category 1, except for item 9, "a good science teacher shows concern for personal growth", the mean of pre-service teachers is greater than 4. For item 9, it is 3.93, slightly less than 4. This indicates that all the pre-service science teachers agree on teachers' classroom behavior and relationships. For all items, the mean of the in-service science teachers is greater than 4, even it is 5 for items 1 "a good science teacher makes preparation and plan for the lessons", 6 "a good science teacher shows the ability to inspire self-confidence in students", and 24 "a good science teacher is able to develop a classroom climate conducive to learning." The in-service science teachers

Table 1. Frequency analyses and descriptive statistics for categories

Category	The pre-service science teachers							The in-service science teachers						
	5	4	3	2	1	m	sd	5	4	3	2	1	m	sd
1 f	16	11	1.5	0.3	0.2	98	6.6	22.4	6.4	0.2			105	2.7
%	54	39	6	0.7	0.3			77	22	1				
2 f	16	11	1	0.5	0.5	57	3.7	23.4	4	1	0.3	0.3	61	2.1
%	55	38.2	3.4	1.6	1.8			82	13	3	1	1		
3 f	9.8	13.8	4.8	0.6		21	2.4	22	7				24	1.1
%	34	48	6	2				75	25					
4 f	12	9.6	5.3	2		12	1.2	16.6	5.3	5.6	1.3		12	2.1
%	42	33	18	7				58	18	20	4			
5 f	10.2	13.8	3	1	1	20	2.9	22.6	3.6				24	1.3
%	34	48	10	4	4			69	22					
6 f	24	20	5	7	2	8	1.8	40	18				9.4	0.6
%	12	10	2.5	3.5	1			20	9					

Category 1: Possible total minimum value is 22, possible total maximum value is 110.

Category 2: Possible total minimum value is 13, possible total maximum value is 65.

Category 3: Possible total minimum value is 25, possible total maximum value is 5.

Category 4: Possible total minimum value is 3, possible total maximum value is 15.

Category 5: Possible total minimum value is 5, possible total maximum value is 25.

Category 6: Possible total minimum value is 2, possible total maximum value is 10.

strongly agree on these items and agree on the rest of the items of category 1. The standard deviation of the pre-service science teachers is greater than that of the in-service science teachers for every item in this category. The category means of the in-service science teachers and the pre-service science teachers are approximately same and very close to the total maximum value. Although both teachers agree on the items in this category, the in-service science teachers gives slightly greater importance on teachers' classroom behavior and relationships category than the pre-service science teachers.

For category 2, teaching and other experiences, except for item 46, "a good science teacher has another part-time job", both the pre-service science teachers' and the in-service science teachers' means were greater than 4. This shows that they both agree on this category. Moreover all in-service science teachers strongly agree on item 36, "a good science teacher relates new learning to phenomena within experience of students to develop

meaningful association". Although both the pre-service and the in-service science teachers agree on teaching and other experiences, the in-service science teachers' category mean is greater than that of the pre-service science teachers' category mean.

For category 3, school and community relations, except for item 10, "a good science teacher has a regular life outside the school", the mean of the pre-service science teachers is greater than 4. For item 10, their mean is slightly less than 4. The means of the in-service science teachers are greater than 4 for all the items in this category. Both the pre-service science teachers agree on a good science teachers' school and community relation. In the overall analyses, 100% of the in-service science teachers and 82% of the pre-service science teachers strongly agree or agree on school and community relations.

For category 4, confidence on teaching, except for the item 14, "a good science teacher has a high grade point average in the

undergraduate programs in the university”, the mean of the pre-service science teachers is greater than 4. On these items, they agree but, for item 14, they were neutral on the confidence on subject matter category. On item 2, “a good science teacher is confident in his/her subject matter”, all of the in-service science teachers strongly agree. The in-service science teachers were neutral on the rest of the items. In overall analyses, 76% of the in-service science teachers and 75% of the pre-service science teachers strongly agree or agree on this category.

For category 5, professional activities, the mean of the pre-service science teachers is greater than 4, except for items 13, “a good science teacher has taken some fundamental courses in science” with a mean of 3.8, and 26, “a good science teacher shows great interest and enthusiasm in all aspects of science” with a mean of 3.8. For all of the items the mean of the in-service science teachers is greater than 4. The over all frequency and percentage analyses show that 100% of the in-service science teachers and 83% of the pre-service science teachers strongly agree or agree on professional activities. The category mean of the in-service science teachers is greater than that of the pre-service science teachers. Here, we can say that professional activities were more important to the in-service science teachers than the pre-service science teachers.

For category 6, bilingualism, item 29, “a good science teacher should always lecture in Turkish”, has a less mean value for the pre-service science teachers than that of the in-service science teachers. Item 30, “a good science teacher explains the points in Turkish where the students have difficulties”, has a greater mean value for the pre-service science teachers. The category mean of the in-service science is greater than that of the pre-service science teachers and as a result, bilingualism seems to be more important to the in-service science teachers than the pre-service science teachers.

In general, among the six categories, category 2, “teaching and other experiences”, has 82% of the strongly agree responses by the in-service science teachers that is the highest percentage. This category also has 55% of the strongly agree responses by the pre-service science teachers that is the highest percentage. In this point of view, “teaching and other experiences could be judged to be the most important of the attributes of the good science teachers characteristics.

Category 4, “confidence on subject matter”, has 58% of the strongly agree responses by the in-service science teachers that is the lowest percentage. The in-service science teachers do not consider the “confidence on subject matter” category as strong as the other categories.

Category 3, “school and community relations”, has 34% of the strongly agree responses by the pre-service science teachers that is the lowest received percentage among the pre-service science teachers. The pre-service science teachers do not consider the “school and community relations” as strong as the other categories.

#### 4.2 Inferential Statistics

Table 2 summarizes the independent sample t-test for the difference between the in-service teachers' and the pre-service teachers' means in the six categories. The pre-service and the in-service teachers responded differently for “teachers' classroom behavior and relationships”, “teaching and other experiences”, “school and community relations”, “professional activities” and “bilingualism”. These results were statistically significant at the 0.05 level of significance ( $p \leq 0.05$ ). For the category of “confidence on the subject matter”, the result is not significant at the 0.05 level of significance ( $p > 0.05$ ). This means that pre-service and in-service teachers did not respond differently for this category. Therefore we reject the null hypotheses for categories 1, 2, 3, 5 and 6 and fail to reject the

null hypothesis for category 4. Then we can state that, there is significant difference between the pre-service science teachers' and the in-service science teachers' perceptions about teachers' classroom behavior and relationship, teaching and other experiences, school and community relations, professional activities and bilingualism but there is no significant difference between the pre-service science teachers' and the in-service science teachers' perceptions about confidence on subject matter.

**Table 2.** Summary of the independent sample t-test for the in-service science teachers' and the pre-service science teachers' means

Category	t	Df	Sign. (2-tail)	Mean Dif.
1	5.18	36.93	0.00*	6.83
2	4.81	44.53	0.00*	3.83
3	6.27	38.55	0.00*	3.07
4	-0.22	43.33	0.83	-0.12
5	5.99	38.28	0.00*	3.52
6	3.99	33.27	0.00*	1.41

\*  $p \leq 0.05$

## 5. CONCLUSIONS

In-service teachers' perceptions of good science teacher characteristics have a higher level of importance attributed to teachers' classroom behavior and relationships, teaching and other experiences, school and community relations, professional activities and bilingualism than that of the pre-service teachers' perceptions of those have. For the category of confidence on the subject matter in good science teacher characteristics, in-service teachers are agree with the pre-service teachers.

According to the descriptive statistics, the in-service science teachers give slightly greater importance on teachers' classroom behavior and relationships than the pre-service science teachers do. This result may be due to the pre-service science teachers' imagination of teachers' classroom behavior and relationships. As both the pre-service and the in-service

science teachers were in different environments, they experience different facts that affect their view, such as, schooling has a positive effect on teachers' classroom behavior and relationships about being a good science teacher, as Ingersoll [10] identified.

The in-service science teachers mostly gave higher importance on "teaching and other experiences" where the pre-service science teachers gave lower importance. This result is also supported by Pigge [11] who stated that least of the in-service science teachers developed the needed proficiencies by pre-service education. At this point, the idea of "teaching is an interactively experienced profession" emerges.

On the contrary of Haberman's [9] view about the bureaucracy in schools, this study shows that bureaucracy does not affect the teachers' perception of good science teacher characteristics that the in-service science teachers have a more positive perception of school and community relations than the pre-service science teachers.

This study also showed to both the in-service science teachers and the pre-service science teachers that having a high grade point average does not mean being a good science teacher. Their concern is focused on discipline methods, administrative approval and communication in school social settings [7].

As in the every step of the life, here we also perceive the importance of experience which is growing by the time and having a positive affect to find the truth, "the best mean to teach" for teachers and also "good science teachers". This study abolishes the general idea due to "the expectation for better efforts of pre-service science teachers to realize", opposite of the gains of the experienced ones to define the best means to teach. As a final analysis, it can be stated that the pre-service science teachers develop the needed proficiencies by experiencing in the profession and by this way

the pre-service science teachers could replace the priorities on their attitudes for becoming good science teachers.

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## APPENDIX

### A GOOD SCIENCE TEACHER,

1. Makes preparation and plan for the lessons.
2. Is confident in his/her subject matter.
3. Is able to make provisions for different student interests and abilities.
4. Makes an effort to encourage students to develop hypotheses and theories.
5. Changes teaching methods to keep up to date with developments in his/her methods of teaching.
6. Shows the ability to inspire self-confidence in students.
7. Is able to encourage self-motivation in students.
8. Has an undergraduate degree in one of the sciences.
9. Shows concern for personal growth.
10. Has a regular life outside the school.
11. Cooperates with colleagues.
12. Shows concern for school and community relations.
13. Has taken some fundamental courses in science.
14. Has a high grade point average in the undergraduate programs in university.
15. Shows evidence of resourcefulness.
16. Reads scientific journals to keep update with new scientific developments.
17. Provides students to learn the scientific facts by living.
18. Shows tolerance to events.
19. Shows concern for students' personal involvement in learning activities.
20. Is able to organize laboratory experiences those present thought provoking problems.
21. Willingly consults colleagues in case of professional difficulties.
22. Is available to help students after school.
23. Is able to facilitate worthwhile student interaction.
24. Is confident at ease when teaching.
25. Helps students to gain a criticizing point of view and to improve it.
26. Shows great interest and enthusiasm in all aspects of science.
27. Shows interest in academic improvement.
28. Is favorably perceived by students.
29. Should always lecture in Turkish.
30. Explains the points in Turkish where the students have difficulties.
31. Has a practical intelligence.
32. Is able to use a variety of materials and methods in teaching.
33. Is able to develop a classroom climate conducive to learning.
34. Helps students develop an appreciation of the benefits and misuse of science.
35. Shows evidence of creativity in learning.
36. Relates new learning to phenomena within experience or the students to develop meaningful association.
37. Shows concern for students' understanding of the concepts.
38. Is able to use effective methods of teaching.
39. Shows patience when dealing with students.
40. Shows evidence that he/she understands the learning process.
41. Is consistently fair and emotionally calm when enforcing rules.
42. Develops interest in science his/her students.
43. Shows evidence of ingenuity.
44. Teaches for understanding rather than reproduction of learned material.
45. Is able to perceive individual students needs.
46. Has another part-time job.
47. Uses the lesson time effectively.
48. Prepares examinations that can measure the success of students.
49. Is open to being criticized.
50. Prepares home works for students to strengthen their understanding of lessons.