

Needs Analysis Survey of Hearing Impaired Students' Teachers in Elementary Schools for Designing Curriculum Plans and Improving Human Resources

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Abstract—This paper intends to study needs analysis of hearing-impaired students' teachers in elementary schools all over Iran. The subjects of this study were 275 teachers who were teaching hearing-impaired students in elementary schools. The participants were selected by a quota sampling method. To collect the data, questionnaires of training needs consisting of 41 knowledge items and 31 performance items were used. The collected data were analyzed by using SPSS software in the form of descriptive analyses (frequency and mean) and inferential analyses (one sample t-test, paired t-test, independent t-test, and Pearson correlation coefficient). The findings of the study indicated that teachers generally have considerable needs in knowledge and performance domains. In 32 items out of the total 41 knowledge domain items and in the 27 items out of the total 31 performance domain items, the teachers had considerable needs. From the quantitative point of view, the needs of the performance domain were more than those of the knowledge domain, so they have to be considered as the first priority in training these teachers. There was no difference between the level of the needs of male and female teachers. There was a significant difference between the knowledge and performance domain needs and the teachers' teaching experience, 0.354 and 0.322 respectively. The teachers who had been trained in working with hearing-impaired students expressed more training needs (both knowledge and performance).

Keywords—Needs analysis, hearing impaired students, hearing impaired students' teachers, knowledge domain, performance domain.

I. INTRODUCTION

MAKING necessary changes in education systems according to technology development in the field of information and communications and at the same time increasing the level of productivity is one of the most needed 21st century changes in developed countries. The existence of productive teachers in an education system will help that system to adapt itself with the basic changes in other systems, especially technology and information, and serve its country more efficiently. Needs analysis is an indispensable component of curriculum planning and the system of improvement and development of human resources. During

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the process of needs analysis, the needs are carefully determined and on the basis of their priority they will be met. Before taking any action, needs are determined to help us choose the best action [1]. Therefore, to enhance the quality of teachers' performance and make the most productive use of these human resources, education systems have to evaluate their teachers' performance and make the best use of the results of that evaluation. Performance evaluation is one of the effective factors affecting organizational health and job satisfaction. The most common definition for needs analysis in the needs analysis studies is the one offered by Kaufman, saying that needs are the gaps between the current situation and the desirable situation [2]. He believes that a need is created when there is a distance between the current situation the desirable one.

It should be noted that the education system, as an area that intends to provide educational services for the society, has a close relationship with the subject of needs analysis [3]. Among different groups of teachers, needs analysis of teachers who work with hearing-impaired students are very important because if their needs in different domains such as motivational, communicational and professional domains are carefully analyzed, this can facilitate the learning conditions of hearing-impaired students and also increase these students' adaptability, independence and mental health because providing specialized services for hearing impaired students based on their needs can lead to positive consequences. As a result, needs analysis is the foundation of curriculum planning and the needs analysis of teachers who play a crucial role in implementing curriculum plans is really important and useful. Unfortunately, there have been only a few studies on teachers' needs analysis especially those teachers who work with hearing-impaired students. Therefore, the purpose of this study is to analyze the needs of hearing-impaired students' teachers throughout Iran.

II. METHOD

With regard to the purpose of this study, its use, and the way of collecting and analyzing the data, it is regarded as a descriptive research in the form of a survey. Lazarsfeld states that there are a lot of problems and issues in educational science which require fielding in order to be dealt with correctly [4].

A. Population, Sample and Sampling Method

The population of this study was all 1002 teachers of

hearing impaired students in Elementary Schools of Iran in the 2017-2018 school year. According to Krejcie and Morgan's table [5] for determining sample size, 275 teachers were selected as the subjects of the study. A Quota sampling method was used to select these participants; that is, from each province, a different number of teachers were selected according to the population of that province.

B. Instrument

Having selected the participants, this study used two questionnaires:

- (1) A demographic information questionnaire for hearing impaired students' teachers to collect basic and general information about their characteristics;
- (2) A teachers' training needs analysis questionnaire. The training needs analysis questionnaire had questions in two domains: knowledge and performance. In the knowledge domain, there are 41 questions and in the performance domain, there are 31 questions. Respondents indicated their levels with the statement using a Likert scale, ranging from too much, much, moderately, little, and too little.

Valizadeh examined the validity and reliability of the questionnaire in his study [6]. In this study, also, some actions were taken to test the reliability of the questionnaire. To do this, a random sample of a school was selected and then the questionnaire was given to a small number of 50 participants as a pilot study. After that, the reliability of the questionnaire was tested by using internal consistency with Cronbach's Alpha coefficient. The results indicated that the reliability of the knowledge domain questions was 0.979 and the reliability of performance domain questions was 0.976 and the reliability of the total questions was 0.988.

C. Procedures

To collect the data, the questionnaire was designed online and then the link was sent to the teachers of hearing-impaired students throughout the country so that they could answer the questionnaires immediately in each part of the country. With regard to the purpose of the study and the nature of the subject under study, the questions were designed on a Likert scale, which ranged from too much, much, moderately, little and too little. Then the collected data were analyzed by using SPSS software in two ways: descriptive analyses (frequency and mean) and inferential analyses (one sample t-test, paired t-test, independent t-test, and Pearson correlation coefficient).

III. RESULTS

Table I indicates the compound mean scores of teachers' ideas about their training needs in each item of the knowledge domain and the related compare means test with the average score of 3.

As indicated in Table I, in most cases (identified by a gray color), the mean scores of the responses are bigger than 3. So, regarding to this fact that the significance level is lower than 0.01, we can conclude with 99% certainty that in the items (those in gray color) the mean scores of the responses

regarding those needs are significantly higher than 3. Thus in these items of the knowledge domain, the need for teaching and training is clearly seen. In the items of early intervention, cochlear implant, Baghcheban oral hand alphabet, and hearing training of hearing impaired students, the need for training is average and in items including audiogram for hearing-impaired students, FM and Loop systems and other hearing aid devices, cued speech method, current theories in speech and sign language development and the activities of specialized foundations and support organizations in the field of teaching the deaf, the need for training is lower than the average.

Table II shows the compound mean scores of the teachers' ideas regarding each item of performance domain and the related t-test with the mean score of 3.

As indicated in Table II, in most cases (identified by a gray color), the mean scores of the responses are bigger than 3. So, regarding to this fact that the significance level is lower than 0.01, we can conclude with 99% certainty that the items (those in gray color), the mean scores of the responses regarding those needs are significantly higher than 3. Thus in these items of performance domain, the need for teaching and training is clearly seen.

In the items of the correct use of hearing aid devices for the child, teaching Baghcheban oral hand alphabet to hearing-impaired students and teaching cued speech the need for training is average and in the item of reading the audiogram of hearing-impaired students the need for training is lower than the average.

Table III shows the paired t-test for comparing the knowledge and performance domains.

As shown in Table III, with regard to this fact that the significance level is lower than 0.01, by comparing the mean scores of the needs in the two domains, we can conclude with 99% certainty that the level of performance domain needs are higher than the level of knowledge domain needs. In other words, the teachers have expressed a greater need for performance domain needs and as a result, this domain is of the first priority compared with knowledge domain needs.

Table IV shows the independent t-test for comparing the knowledge and performance domains according to gender variable.

As shown in Table IV, with regard to the fact that in the two domains of knowledge and performance and also in the total needs, the significance level is higher than 0.05, we can conclude that there is no significant difference between the educational needs of male and female teachers. In other words, both male and female teachers had the same educational needs.

Table V shows the correlation coefficient between the teaching experience and the number of educational needs.

As indicated in Table V, there is a positive and low correlation between teaching experience and the number of educational needs. Regarding the fact that the significance level is lower than 0.01, we can conclude that the calculated correlation coefficient is significant and it can be generalized to the whole group of subjects. In other words, with 99%

certainty it is concluded that as the teaching experience increases, the feeling for educational need is enhanced.

TABLE I
THE T-TEST IN COMPARING THE MEANS BETWEEN THE TEACHERS' NEEDS IN KNOWLEDGE DOMAIN ITEMS

Knowledge Domain Items	Mean Score	T Value	Sig. Level
the structure and function of ear	3.25	4.034	.000
the reasons for hearing impairment	3.41	7.102	.000
disabilities along with hearing impairment among students	3.30	5.223	.000
the processes related with early intervention	3.10	1.616	.107
the diagnosis processes and rehabilitation services	3.17	2.658	.008
the audiogram of hearing impaired students	2.78	-3.153	.002
the function of hearing aids	3.13	2.011	.045
the function of cochlear implant	2.99	-.173	.863
FM and LOOP systems and other hearing aid devices	2.17	-12.906	.000
the influence of hearing impairment on the students' communication skills	3.62	10.161	.000
the influence of hearing impairment on the students' language development	3.69	11.701	.000
the influence of hearing impairment on the students' speech production	3.65	10.556	.000
the influence of hearing impairment on the learning abilities of hearing impaired students	3.62	10.152	.000
the influence of hearing impairment on the students' academic development skills	3.76	13.297	.000
the influence of hearing impairment on the students' psychosocial development	3.68	11.809	.000
how to communicate with the students with hearing impairment	3.83	15.195	.000
auditory-verbal approach	3.32	5.142	.000
audio-oral approach	3.20	3.095	.002
sign language approach	3.19	2.685	.008
total communication approach	3.42	6.907	.000
Baghcheban oral hand alphabet	3.13	1.695	.091
cued speech method	2.75	-3.523	.000
teaching listening as a language skill to hearing impaired students	3.24	3.896	.000
teaching speaking as a language skill to hearing impaired students	3.42	6.825	.000
teaching reading and writing as language skills to hearing impaired students	3.52	8.674	.000
different methods of teaching reading and writing to hearing impaired students	3.42	6.873	.000
auditory training of hearing impaired students	3.09	1.500	.135
teaching the correct utterance of phones to hearing impaired students	3.30	4.676	.000
how to teach phonetics to hearing impaired students	3.19	2.883	.004
current theories in speech and sign language development	2.79	-3.398	.001
Standards of teaching environment appropriate for hearing impaired students (double-glazed windows, thick curtains, suitable floors, etc.)	3.20	2.951	.003
how to prepare hearing impaired students to learn oral lessons better in the classroom	3.35	5.423	.000
how to develop creativity among hearing impaired students	3.21	3.205	.002
How to develop abilities of hearing impaired students to express their thoughts and emotions	3.24	3.746	.000
how to develop self-confidence among hearing impaired students	3.40	6.481	.000
how to develop self-esteem among hearing impaired students	3.53	8.581	.000
how to make hearing impaired students sensitive to their own rights and privileges and also others'	3.34	5.182	.000
how to develop social communication among hearing impaired students	3.44	7.056	.000
the activities of specialized foundations and support organizations in the field of teaching the deaf	2.82	-2.708	.007
the use of teaching and teaching aid equipment	3.44	6.953	.000
the use of ICT in classroom	3.36	5.656	.000

Table VI shows the independent t-test for comparing the two domains of knowledge and performance and the total mean scores of the teachers' needs with regard to training status.

As indicated in Table VI, because in the two domains of knowledge and performance and also in the total number of needs, the significance level is lower than 0.01 and by considering the mean scores of the number of needs in each separate domain, the trained teachers felt more need in these domains and in the total number of educational needs.

IV. DISCUSSION AND CONCLUSION

The results of this study can be summed up as follows:

1. Teachers of hearing-impaired students all over the country have educational needs in both knowledge and performance domain.
2. In the knowledge domain, in 32 items out of the total 41, training needs are required.
3. In the performance domain, in 27 items out of the total 31, training needs are required.
4. The performance domain needs have more priority over those of the knowledge domain.

5. The number of needs in both domains is the same for male and female teachers.
6. As teachers gain more teaching experience, they feel more training needs in the knowledge domain, performance domain, and also in the total needs of these two domains.
7. Trained teachers, compared with untrained teachers, have expressed more need for training needs in the knowledge domain, performance domain, and also in the total needs of these two domains.

TABLE II
T-TEST OF COMPARING THE TEACHERS' IDEAS IN THE PERFORMANCE DOMAIN ITEMS

Performance Domain Items	Mean Score	T Value	Sig. Level
reading the audiogram of hearing impaired students	2.63	-5.380	.000
the correct use of hearing aid devices for the child	2.99	-.225	.822
using hearing aid (installing it and changing its battery)	3.26	3.795	.000
the use of appropriate communicative ways with hearing impaired students	3.52	9.425	.000
using auditory-verbal approach	3.22	3.561	.000
using auditory-oral approach	3.23	3.689	.000
using sign language approach	3.14	2.199	.029
using the total communication approach	3.49	7.899	.000
teaching Baghcheban oral hand alphabet to hearing impaired students	3.07	1.003	.317
teaching cued speech to hearing impaired students	2.88	-1.707	.089
teaching appropriate speech-reading and lip-reading skills to hearing impaired students	3.57	9.314	.000
auditory training of hearing impaired students	3.15	2.422	.016
teaching the correct utterance of phones to hearing impaired students	3.30	4.617	.000
correcting the class curriculum based on the students' vocabulary and grammar	3.37	5.936	.000
doing the necessary activities to make the speech comprehensible to the hearing impaired students	3.40	6.585	.000
using the appropriate language while speaking with hearing impaired students according their age level	3.50	8.078	.000
preparing the classroom for the entrance of hearing impaired students	3.62	10.738	.000
preparing the hearing impaired students for reading and writing	3.54	9.047	.000
the adaptation of teaching materials and techniques and the classroom setting to meet the language needs of the hearing impaired students	3.50	8.734	.000
a variety of teaching and learning methods	3.52	9.267	.000
correct evaluation of hearing impaired students in Special Education	3.51	8.341	.000
how to teach and train hearing impaired students	3.67	10.986	.000
the use of teaching and teaching aid equipment	3.63	10.918	.000
the use of ICT in classroom	3.38	5.761	.000
increasing the number of desirable behaviors of hearing impaired students	3.62	10.756	.000
the use of the necessary skills when a student doesn't communicate with others in the class	3.49	8.586	.000
decreasing the number of undesirable behaviors of the hearing impaired students	3.60	10.484	.000
adapting hearing impaired students with the school environment	3.59	10.201	.000
developing appropriate skills in hearing impaired students to express their thoughts and emotions	3.47	8.264	.000
developing assertiveness skills in hearing impaired students	3.42	7.166	.000
the students' appropriate social adaptation in the class and making necessary interventions when needed	3.42	7.279	.000

TABLE III
THE PAIRED T-TEST FOR COMPARING THE KNOWLEDGE AND PERFORMANCE DOMAINS

Needs Domain	Mean Score	T-Value	DF	Sig. Level	Mean Difference
Knowledge	3.2799	-4.558	274	.000	-.09815
Performance	3.3781				

TABLE IV
INDEPENDENT T-TEST FOR COMPARING KNOWLEDGE AND PERFORMANCE DOMAINS ACCORDING TO GENDER

Needs Domain	Gender	Frequency	Mean Score	T-Value	Df	Sig. Level	Mean Difference
Knowledge	male	82	3.3667	1.212	273	.227	.12373
	female	193	3.2430				
Performance	male	82	3.4190	.551	273	.582	.05827
	female	193	3.3607				
Total	male	82	3.3929	.898	273	.370	.09100
	female	193	3.3019				

TABLE V
THE CORRELATION COEFFICIENT BETWEEN THE TEACHING EXPERIENCE AND THE NUMBER OF EDUCATIONAL NEEDS

Needs Domain	Correlation Coefficient	Significance Level
Knowledge	.272**	.000
Performance	.354**	.000
Total	.322**	.000

TABLE VI
INDEPENDENT T-TEST FOR COMPARING TWO DOMAINS OF KNOWLEDGE AND PERFORMANCE ACCORDING TO TRAINING STATUS

Needs Domain	Education	Frequency	Mean Score	T-Value	Df	Sig. Level	Mean Difference
Knowledge	trained	74	2.9028	-4.497	104.98	.000	-.51599
	untrained	201	3.4188				
Performance	trained	74	2.9329	-5.174	104.00	.000	-.60910
	untrained	201	3.5420				
Total	trained	74	2.9178	-4.975	104.26	.000	-.56255
	untrained	201	3.4804				

So far a large number of studies have been done on the educational needs analysis. The former studies confirm the findings of this study. Some of the studies are [1], [6]-[19].

In the study done by Zolghadr, in contrast to the findings of this study, it has been shown that there is a significant difference at the level of $\alpha = 0.05$ between the educational needs of male and female teachers. To explain this discrepancy, we should consider the subjects and the time of the study [6].

From among the domestic studies confirming the results of this study, there is a study done by Valizadeh. Valizadeh stated that the teachers of hearing-impaired preschool children needed a large number of skills in knowledge and performance domains in order to educate the children more efficiently. Regarding the mean scores of the collected data, the teachers of hearing-impaired preschool children needed a lot of training in both knowledge and skill domains [6].

The results of a study done by Parhoon et al. indicate that the regular and the inclusive teachers of hearing-impaired students had insufficient knowledge and weak performance of $p < 50\%$. Also, there was not a significant difference between regular and itinerant teachers in knowledge and performance domains. In addition, in the knowledge domain needs, the knowledge about the cochlear implant was of the highest priority and in the performance domain needs, the skill needed to use cued speech was of the first priority. The results showed that regular teachers and itinerant teachers of hearing-impaired students needed to gain more knowledge and enhance the level of their performance in inclusive schools [7].

Majdodin et al. stated that teachers needed training in four areas: the best methods to present environmental education, design for experimental patterns to facilitate the environmental education, appropriate ways to create motivation and excitement in doing extracurricular activities and a variety of evaluation methods in environmental education. Also, they needed training in the fields considered as the subcategories of designing and implementing skills in environmental education [8].

The results of a study done by Owrangi et al. showed that the in-service training of methods and techniques in teaching, classroom management, and assessment and measurement had no influence on the professional performance of teachers, their classroom management, class evaluation, and students' academic achievement [9].

The findings of a study done by Saadatmand and Sinaeifar led to designing a basic and appropriate planning for in-service training classes for Persian Literature teachers in the city of Izeh [10].

Mirzabeik and Farahmandkhah reached a group of needs related to professional development in three domains of curriculum planning, teaching and educational evaluation. With regard to the common needs in all the educational groups under the study, they concluded that the instructors and professors of IRIB College needed training in the fields of familiarity with the taxonomy of goals (cognitive, affective and psychomotor), the use of field and drama trips in teaching, familiarity with the workshop on classroom management, and

evaluation of the academic achievement and testing techniques [2].

Bakhtiary and Ahmadi found that in-service training on information technology and communications technology in three areas of enhancing the learning of electronic government, enhancing the use of the Internet, and enhancing the familiarity with computer was more effective for male teachers compared with female teachers and for teachers with graduate degrees compared with teachers with undergraduate degrees [11].

Asefeh found that the female teachers' need for familiarity with the necessary techniques in classroom management and leadership were of the top priority while the needs for creating motivation to continue education, modern teaching methods, and developing creativity were the teachers' next priorities [12].

Chamardani concluded that the teachers' needs for general training in Bandar Abbas city from the teachers' and principals' point of view were as follows: familiarity with teaching methods and techniques, familiarity with correct way of using teaching and teaching aid devices, familiarity with the necessary techniques and skills in classroom management, increasing the level of their knowledge about the subjects at school, and familiarity with assessing and evaluating the students' learning [13].

Zolghadr stated that: (1) At the level of $\alpha = 0.05$, there is a significant difference between the training needs of male and female teachers; (2) At the level of $\alpha = 0.05$, there is a significant difference between the needs of teachers with different university degrees; (3) At the level of $\alpha = 0.05$, there is a significant difference between teachers with different teaching experience backgrounds [6].

Bashi concluded that the needs of the personnel of educational services in the field of technical and vocational information in order of priority are as follows: the need for gaining knowledge about mechanized methods of educational service affairs, the need for gaining knowledge about higher education systems in different countries, the need for gaining knowledge about in-service training, and the need for getting familiar with different ways of doing research and their importance in finding the personnel's problems. Also, this study indicated that there was no significant difference between the three subscales of knowledge, skill and attitude with an emphasis on gender and age, while regarding their work experience different needs were expressed [14].

The findings of a study done by Ghaazeezaadeh indicated that, according to the teachers, four domains of the need for progress, the need for gaining the necessary skill in doing their profession, cultural factors and economic factors had influence on their inclinations towards in-service training courses [15].

From among the studies with similar findings in other countries, Aysegul and Bilge concluded that the teachers who were invited to participate in in-service training courses first wanted to make sure that those courses were really effective and then both male and female teachers wanted to receive those training courses in their own province, city or school and finally they preferred to receive practical training courses with

the subject of teaching recommended by the teachers themselves [16].

Boyd stated that one of the best ways to develop and boost teachers' abilities to teach better was their participation in in-service training courses so that they, especially young teachers, will become familiar with the most recent methods and skills in teaching. He believed that there was no significant difference between the teachers' teaching skills and their teaching experience and their university degrees, so young teachers can enhance their teaching abilities by participating in in-service training courses [17].

Carol recommended effective fields and areas for continuous improvement of educating teachers in in-service training courses especially about modern teaching and evaluation methods [18].

Tillin in a report on education and training challenges stated that these challenges were; training needs and standards, teachers' social communications, the quality of teaching, their literacy level and their familiarity with English language, the problems related to female teachers and students and finally their management and leadership capabilities [cited in 10].

Colt stated that the continuous training of teachers should be done on the basis of their educational and training needs. This had not been considered before. He believed that the major goal of designing, developing and implementing training activities was to meet the needs of adult learners [cited in 2].

Liango reached the conclusion that systematic training was needed in the recommended evaluation of teachers and in-service training was the most effective way to enhance their professional development in this area; in addition, different studies indicate that the current curriculum plan does not clearly reflect the development of the recent evaluation system, and therefore, if we want to help teachers use the recommended evaluation in the class, there is a great need for completing the concept and content of the recommended evaluation in curriculum planning [cited in 2].

V. SUGGESTED RESEARCH

The suggestions offered here, based on the limitations and experiences of this study, provide a good opportunity for doing further research. The suggestions are as follows:

1. Although a large number of studies have been done on the training needs analysis, we should not forget that needs analysis is dynamic and should be done constantly. Therefore, researchers are recommended to do similar studies on training needs analysis.
2. If this relatively comprehensive study is done with other teachers, it can be a more precise basis for curriculum planning at different levels and domains.
3. If future studies work on more unknown domains of training needs, there will be better results and these results can be considered in curriculum planning.
4. Studies like the current one should be done on other teachers and the results should be compared with the results of this study.

5. Using more up-to-date and more exact tools to assess the necessary skills can lead to more exact results.
6. Teachers' training needs analysis should be used by using models and methods which can provide a deeper understanding of the required skills.
7. It seems appropriate to do studies on the training needs of the principals of hearing-impaired students' schools.
8. Similar studies should be done on high school teachers of hearing-impaired students.
9. Comparative studies should be done on the training needs and curriculum plans of Iranian teachers of hearing-impaired students and those of teachers of hearing-impaired students in other countries.

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