

Why Science Teachers Can't Teach in Informal Learning Environments?



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ABSTRACT: Teaching science in informal learning environments (ILE) are of great importance for the science course. In this learning process, students behave like scientists and develop their high-level thinking skills. To establish a connection between daily life and natural sciences is another way to add ILE into formal education. In the literature, many studies declared a few teachers teach science in ILE. The purpose of this study, to determine the difficulties or problems faced by science teachers in the process of science teaching using ILE and what kind of solutions teachers offer about these problems or difficulties. The research was carried out by using descriptive research. The study group consists of 144 science teachers, selecting by easily accessible sampling method, one of the purposeful sampling methods. Ten open-ended questions were asked to the participants. The content analysis method was used to analyze the data. As a result, teachers had problems/difficulties in managerial-based, student-based, parent-based, ILE-based, school location-based, economy-based, curriculum-based and teacher skill and knowledge-based.

KEYWORDS: informal learning environments, science education, teachers' views

I. INTRODUCTION

Science in primary and secondary education constitute an important place for our students to develop their scientific identity and plan their career for the future, but it has been observed that students' interest in science has decreased in recent years (Sasson, 2014; Yıldırım & Şensoy, 2016). One of the reasons of problem is the lack of informal planning offered other than formal education resources (Gerber et al., 2001; Hannu, 1993; as cited in Bozdoğan & Yalçın, 2006). Studies on science teaching in ILE are aimed at increasing students' academic success in science (Türkmen et al., 2016; Türkmen et al., 2018), improving self-efficacy beliefs (Gürsoy, 2018), strengthening learning (Ertaş et al., 2011), developing interest in science, acquiring scientific interpretation skills (Lin & Schunn, 2016), attitude, interest, ability, and acquiring scientific thinking skills (Bonnette et al., 2019; Salmi et al., 2017). That reveals the necessity of teaching science lessons in ILE. As a result, the traditional boundaries and role of science educators are changing. Researchers suggests that teachers should have more interest in the field of informal science education. (Pinthong & Faikhamta, 2018). In the study of Köseoğlu & Türkmen (2020), science teachers were asked to integrate ILE into their lessons. They concluded that there are number of teachers who are willing to use ILE but teachers applying these environments in their science lessons are very rare. If the reasons why the low number teachers use ILE are investigated, solutions can be produced by identifying the problems and instructional needs that cause this situation. The aim of the study was to determine the difficulties faced by science teachers in the process of teaching science using ILE and what kind of solutions they offered to these difficulties. For the purpose of the research, answers to the following research questions were sought:

- What are the views of science teachers about the problems/difficulties they encounter when applying ILE in their science lessons?
- What are the suggestions of science teachers to solve the problems/difficulties they encounter when applying ILE in their science lessons?

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II. METHODOLOGY

In the research, one of the qualitative research methods, descriptive research, was used. This research approach aims to describe a situation that has existed from the past to the present. This research method presents an action or view as it is (Özdemir & Dođruöz, 2020).

A. Study Group

The study group of the research consists of 144 science teachers selected by using the "Easily Accessible Sampling" method which is one of the "Purposeful Sampling" methods. In an easily accessible sample, the researcher chooses a situation that is close to him and easy to access. It is the most commonly used research sampling method (Baltacı, 2018). The demographic information of the study group has given in Table 1.

Table 1. The demographic information of the study group

Categories	Gender		Age				Service Years				Service Place			Getting A Course About ISE*	
	Male	Female	21-30	31-40	41-50	51 and Above	1-5	6-10	11-15	16 and Above	Province	District	Village	Yes	No
f	55	89	50	60	16	18	41	30	29	44	55	67	26	62	82
%	38,2	61,8	34,7	41,6	11,1	12,5	28,5	20,8	20,1	30,6	38,2	46,5	18,1	43,1	56,9

*Informal Science Education

B. Data Collection

A questionnaire consisting of 9 open-ended questions applied to the participants. The data collection tool presented to five expert opinions. In the light of their feedback, the data collection tool was revised and finalized to be applied for the study. In this process, the content validity of the data collection tool was ensured.

C. Procedure

The questionnaire, was first published online environment by using the "Google Forms" application. Then, it was delivered to teachers who are teaching science. In order to deliver the data collection tool to science teachers, social media applications and pages/groups in these environments used. To answer the questionnaire takes approximately 10-15 minutes for each participant. When the data of 150 science teachers who answered the questionnaire examined, it was determined that one data was re-recorded three times, four data twice, by the participants due to systemic error. For this reason, 6 data were extracted from the study and 144 data were analyzed.

D. Data Analysis

In this study, the data were evaluated by using "Content Analysis Method". To make comment the data were tabulated and calculated frequency distribution (f) and percentage (%) values. The essential process in content analysis method is to collect similar data within the framework of certain concepts and themes and to organize and interpret these concepts and themes in a way that the reader can understand (Yıldırım & Şimşek, 2006; as cited in Selçuk & Palancı, 2014).

III. FINDINGS

In this section, the research findings are analyzed for each questions. The first question posed to the participants was "What is the importance of teaching science in ILE for you? Why is that?" Seven teachers' answers were not related to the question but among the rest of them answers, the importance of teaching in ILE was mostly determined by "Hands-on Learning" (28.89%) and "Effective Teaching / Learning" (25.95%) (Table-2).

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Table 2. Participants' answers regarding the importance of science teaching in ILE

Codes	f	%
Hands-on Learning	57	28,89
Effective Teaching / Learning	55	25,95
Associating in Daily Life	29	13,68
Interesting / Fun / Social	19	8,96
Addressing to Sense Organs	7	3,3
Being Different Places/ Experiences	7	3,3
Positive Attitude / Skill Building	7	3,3
Active Learning	6	2,83
Embodying Abstract Concepts	6	2,83
Observing	5	2,36
Achieving to Learning Goals	4	1,89
Motivator	4	1,89
Blocking The Misconceptions	2	0,94
Provides Research and Examination Opportunity.	2	0,94
Supporting Formal Education	1	0,47
Science Literacy	1	0,47
TOTAL	212	100

One example of the answers given by the participants to the first question are as follows:

T19: "... I see informal science teaching very important. Because our students are outside of the monotonous and stereotyped school and classroom environment; I believe that they can learn more permanently in the natural environment ..."

The second question was "Do you encounter "Managerial-Based" difficulties in your process of teaching science in ILE? If so, what are the difficulties? What are your suggestions for solving these difficulties?" In the question, 73 teachers (50.69%) stated that they encountered difficulties, 64 teachers (44.44%) stated that they did not, while 7 teachers (4.86%) stated answers that were not related to the question. The answers given for encountering difficulties and generating solutions are explained with 11 different codes. The most managerial difficulties were "Legal Permission Procedures" (42.5%), and the least cited opinions were "Making Extra Assignments" and "Referrals to Out-of-School Hours" (1.25%) (Table 3).

Table 3. Participants' responses regarding the "Managerial" difficulties

Codes	f	%
Permission Procedures	34	42,5
Administration' Failure to Meet the Needs	15	18,75
Administration's/ NED's* not Assuming Responsibility	8	10
"Risky" View (Security Concern)	6	7,5
Considering Activities as Unnecessary/Time Loss	6	7,5
Too Much Bureaucracy	3	3,75
Conditions of Regulations	3	3,75
Exam-Oriented Instruction Expectation	3	3,75
Making Extra Assignments	1	1,25
Referrals to Out-of-School Hours	1	1,25
TOTAL	80	100

*National Education Directorate

The most opinion of the participants towards a solution is "Communication and/or Cooperation" (27.27%), while the least mentioned solutions are "Changing the Exam System" and "High population in class" (4.54%) (Table 4).

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Table 4. Participants' answers on the solutions of "Managerial" difficulties

Codes	f	%
Communication and /or Cooperation	6	27,27
Inclusion of Teaching Activities in ILE to Curriculum	4	18,18
Administration/Ministry of Education Should Take Responsibility / Be Supportive	4	18,18
Permission Procedures Should Be Reduced / Expedited	3	13,63
Bureaucracy Should Be Reduced	3	13,63
Exam System Should Be Changed	1	4,54
High population in class	1	4,54
TOTAL	22	100

One example of the answers given by the participants to the second question are as follows:

T39: "... I have been asked to get a signed permit from my parents. It was said that we need permission from the district national education. Of course, all this takes 1 week. This process should only be rapid with the approval of the school administration..."

When we ask to the study group "Do you encounter "Student-Based" difficulties in your process of teaching science in ILE? If so, what are the difficulties? What are your suggestions to solve these difficulties?" as the third question. Sixty-one teachers (42.36%) encountered difficulties and 62 teachers (43.06%) did not, while 21 teachers' (14.58%) answers were not related to the question. The most encountered difficulties in the analysis of the difficulties explained by the participants were "Absenteeism/Low Participation" (38.98%) and the least expressed difficulties were "Mark-Focused Students" and "Communication Problems Between Students" (1.69%) (Table-5).

Table 5. Participants' responses regarding the "Student-Based" difficulties they encountered

Codes	f	%
Absenteeism/ Low Participation	23	38,98
Discipline Problems	11	18,64
Readiness/ Understanding/ Achievement Levels Differences	4	6,78
Adaptation/ Focusing Problems	4	6,78
Lack of Motivation	3	5,08
Do Not Taking Lessons Seriously/ Not Caring	3	5,08
The Difference of Interest Levels About The Lesson	3	5,08
Health Problems	2	3,39
Worker-Child Students	2	3,39
Psychological Problems	2	3,39
Mark-Focused Students	1	1,69
Communication Problems Between Students	1	1,69
TOTAL	59	100

While the most solutions of student-based difficulties were "Cooperation with Parents, Teachers, Administration and School Guidance Service" (28.57%) and the least solutions of that difficulties were "Establishing a Science Club", "Informing About the Trip Plan", "Planning Extra Activities After the Trip" and "Increasing Disciplinary Control" (2.38%) (Table-6).

Table 6. Participants' answers on the solutions of "Student-Based" difficulties

Codes	f	%
Cooperation with Teachers, Parents, School Guidance Service and Administration	12	28,57
Teaching in ILE Should Be Added to the Curriculum	5	11,9
Short Term Focus Change / Place Organization	4	9,52
Interview	3	7,14

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Codes	f	%
Encouraging ILE / Explaining Its Importance	3	7,14
Seminars / Courses Should Be Organized	3	7,14
Must be The Repeated Classes Exist	2	4,76
Volunteering is Essential, Do Not Coercion	2	4,76
Trip Repetition Should Be Made For Students Who Couldn't Join	2	4,76
Activities That Increase A Sense of Responsibility	2	4,76
Establishing a Science Club	1	2,38
Informing About The Trip Plan	1	2,38
Planning Extra Activities After the Trip (Ex.: Mall Trip)	1	2,38
Increasing Disciplinary Control	1	2,38
TOTAL	42	100

One example of the answers given by the participants to the third question are as follows:

T13: "... Absenteeism, invalidity of grading and evaluation (as if the students gained the idea of "somehow I won't repeat this grade") ..."

The next question was, "Do you encounter "Economical-Based" difficulties in your process of teaching science in ILE? If so, what are the difficulties? What are your suggestions for solving these difficulties?" Sixty-one teachers (42.36%) had difficulties and 62 teachers (43.06%) did not, while 21 teachers' (14.58%) answers were not related to the question. Among the mentioned difficulties, the high ratio difficulties were "Low-Income Families" (35.44%) and low ratio difficulties was "Nobody Helps to The Low-Income Families" (1.27%) (Table-7).

Table 7. Participants' responses regarding the "Economical-Based" difficulties

Codes	f	%
Low-Income Families	28	35,44
High Cost Trip From All Directions	15	18,99
Transportation Highly Expensive	12	15,19
School Budget Limited / Insufficient	6	7,59
Village Schools Have Limited Financial Opportunities	4	5,06
Participation Decreases As Costs Increase	4	5,06
High Entrance Fee to ILE.	4	5,06
The Need for Food-Beverage During the Trip	3	3,8
NED Does Not Provide Financial Support	2	2,53
Nobody Helps to The Low-Income Families	1	1,27
TOTAL	79	100

When the solution about the difficulties were examined, 9 different codes were made. Among the solutions given by 88 teachers, the most were "Administration, Parent-Teacher Association, Teacher and Parent Cooperation" (28.41%) and "Budget Support" (27.27%), while the least solutions were "Food-Beverages Should Be Brought from Home", "Schools Should Have Their Own Transportation Vehicles" and "Special Discounts for Students" (1.14%) (Table-8).

Table 8. Participants' answers on the solutions of "Economical-Based" difficulties

Codes	f	%
Administration, Parent-Teacher Association, Teacher and Parent Cooperation	25	28,41
Budget Support (Municipalities, Ministries, Institutions, Benefactors etc.)	24	27,27
Budget Should Be Allocated (MNE*, School Administrates)	16	18,18
Costless/ Low Cost Lesson Planning Should be Done	12	13,63
Government Should Make Free of Charge to ILE Activities	6	6,82

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Codes	f	%
Teaching in ILE Should Be Disseminated	2	2,27
Schools Should Have Their Own Transportation Vehicles	1	1,14
Special Discounts for Students	1	1,14
Food-Beverages Should Be Brought from Home	1	1,14
TOTAL	88	100

* Ministry of National Education

One example of the answers given by the participants to the fourth question are as follows:

T18: "... Not every student's family can afford to pay this money. Generally, if the money is involved, the plans are cancelled. Nevertheless, as a solution, Ministry of Education may allocate a budget for such training."

Fifth question was "Do you encounter Parent-Based difficulties in your process of teaching science in ILE? If so, what are the difficulties? What are your suggestions for solving these difficulties?" While the number of participants who encountered difficulties was 83 (57.64%), 59 participants did not encounter difficulties. Unfortunately, 68 responses came from 83 teachers faced parent-based difficulties, which showed us that some teachers had difficulties but did not need to explain this. The expressions related to the described difficulty are collected under 10 different codes. While the codes with the highest frequency is "Unknowledgeable Parents" (23.53%), and the lowest frequency is "Students Living in Dormitories" (1.47%) (Table 9).

Table 9. Participants' responses regarding the "Parent-Based" difficulties

Codes	f	%
Unknowledgeable Parents	16	23,53
Anxiety of Safety	14	20,59
Unwilling Parents	13	19,12
Low-Income Families	12	17,65
Misinforming Students	8	11,76
Sending Or Not Signing a Travel Permit Form Late	4	5,88
Test-Oriented Teaching Expectation for LGS*	3	4,41
Parents Who Don't Want to Send Their Girls	2	2,94
Parents with Low Education Level	2	2,94
Students Living in Dormitories	1	1,47
TOTAL	68	100

*LGS: Exam of Transition to High School

The science teachers who made suggestions for the difficulties encountered were mostly "Incentive to Support Teaching in ILE (Awareness)" (26.42%) and the lowest solutions frequency was "Experienced Teachers Should Organize a Trip" and "Needs Based Lesson Planning" solutions are at least specified (1.89%) (Table-10).

Table 10. Participants' answers on the solutions of "Economical-Based" difficulties

Codes	f	%
Encouragement to Support Teaching in ILE (Raising Awareness)	14	26,42
School Guidance Service (Teacher-Parents Interviews)	12	22,64
The Benefits of ILE Should Be Promoted (Ex: Public Service Ad)	6	11,32
Including Parents in the Travel Process	5	9,43
Reservations Should Be Minimized	4	7,55
Parent Education (Seminars)	4	7,55
Parent Meeting Before the Trip (Information about the Process)	3	5,66
Correct and Effective Communication	3	5,66
Experienced Teachers Should Organize The Trips	1	1,89
A Lesson Based on Needs Should Be Planned	1	1,89
TOTAL	53	100

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One example of the answers given by the participants to the fifth question are as follows:

T30: "... They didn't want to send their girls to a different environment in the east ..."

As the sixth question, "Do you encounter Curriculum-Based difficulties in your process of teaching science in ILE? If so, what are the difficulties? What are your suggestions for solving these difficulties?" was directed to the study group. The 59 participants answered "Yes, I encounter difficulties" (40.97%), 62 answered "No, I do not encounter difficulties" (43.06%) and 23 answered unrelated to the question (15.97%). Each teacher who stated that they encountered difficulties made an additional explanation and collected 59 statements in total under 5 code titles. The highest frequency of difficulties was the "Insufficient Class Time" (83.05%) and the lowest frequency of difficulties was "People Don't Give Importance to Science" (1.69%) (Table 11).

Table 11. Participants' responses regarding the "Curriculum-Based" difficulties

Codes	f	%
Insufficient Class Time	49	83,05
The Content of the Curriculum is Very Intensive	5	8,47
Students' / Teachers' Concern about Raising Topics	2	3,39
Due to LGS, We Can't Organize Activities	2	3,69
People Don't Give Importance to Science	1	1,69
TOTAL	59	100

Sixty-two responses given as a solution to curriculum-based difficulties were gathered under 11 codes. The "Cooperation Between Teachers" (24.19%) was the highest frequency ratio, but "Support and Training Courses Should Be Opened for Lesson Planning in ILE", "Students' Should Be Separated as Numeric or Verbally" and interestingly "The Frequency of Teaching in ILE Should Be Reduced" (1.61%) were the lowest frequency ratio (Table-12).

Table 12. Participants' responses regarding the "Curriculum-Based" difficulties

Codes	f	%
Cooperation Between Teachers	15	24,19
Increasing The Class Time	12	19,35
A Lesson Based on Needs Should Be Planned	7	11,29
Make-up Classes	7	11,29
Teaching in ILE Should Be Added to the Curriculum	6	9,68
Organizing Trips Out of Class Times	6	9,68
Curriculum Should be Revised	4	6,45
Doing Group Works	2	3,23
Students' Should be Separated as Numeric or Verbally	1	1,61
The Frequency of Teaching in ILE Should be Reduced	1	1,61
Support and Training Courses Related to Lesson Planning in ILE Should Be Opened	1	1,61
TOTAL	62	100

One example of the answers given by the participants to the sixth question are as follows:

T67: "...The fundamental problem is; students and teachers may be worried about not being able to catch up with other classes..."

"Do you encounter difficulties in your process of teaching science in ILE due to "The Field of School/Physical Environment? If so, what are the difficulties? What are your suggestions for solving these difficulties?" was the seventh question. There were 45 teachers (31.25%) who answered "Yes, I have difficulties", 88 teachers (61.11%) who answered "No, I do not encounter" and 11 teachers' (7.64%) answer were not related to the question. In the seventh question, 40 explanations from 45 teachers were gathered under 2 themes and 7 codes. In the first theme, "ILE & School-related Issues", the highest difficulty was "Number of ILE Around School is Low / No" (40%) and the lowest difficulty was "School's Environment Is Not Safe" (2.5%). In the other theme, "School-related Issues", the highest difficulty was "The Lack of Afforestation at The School" (12.5%), the lowest difficulty was "Crowded Population in Classes" and "The Presence of Bussed Students" (5%) (Table-13).

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Table 13. Participants' responses regarding the "The Field of School / Physical Environment" difficulties

Themes	Codes	f	%
ILE & School-related Issues	Number of ILE Around School is Low / No	16	40
	There is No ILE Other Than Nature / Far in Village	10	25
	School's Environment Is Not Safe	1	2,5
School-related Issues	The Lack of Afforestation	5	12,5
	The Absence of Laboratories	4	10
	Crowded Population in Classes	2	5
	Bussed Students	2	5
TOTAL		40	100

While not all of the teachers who had difficulties were able to offer solutions, only 9 solutions were recorded as data. The highest frequency of solutions was "Government Should Reserve Budget/Provide Resources" (24%) and the lowest frequency of solutions was "Lesson Plans Prepared for Needs" (8%) (Table-14).

Table 14. Participants' answers on the solutions of "The Field of School / Physical Environment " difficulties

Codes	f	%
Government Should Reserve Budget / Provide Resources	6	24
ILE Should Be Reachable (Transport Museums etc.)	4	16
Teachers/ Administration Should Make Effort	4	16
Cooperation (School, Parent-Teacher Association etc.)	3	12
Excursions Outside the Province / District Should Be Organized	3	12
Virtual Environments / Technology Can Be Used (Ex: Virtual Aquarium)	3	12
Lesson Plans Prepared for Needs	2	8
TOTAL	25	100

One example of the answers given by the participants to the seventh question are as follows:

T18: "... There are no such opportunities in the villages and it is very far away, so school trips will only happen if someone arranges a service..."

The eight question was "Do you encounter ILE-Based difficulties in the ILE in which you plan to apply your science teaching process? If so, what are the difficulties? What are your suggestions for solving these difficulties?" While Fifty-one teachers (35.42%) who answered "Yes, I encounter difficulties", 77 teachers (53.47%) who answered "No, I don't encounter" and 16 teachers' answers were not related to the question (11.11%). It was seen that among the 51 science teachers' answers, the most common problem was "Far Away" (54.55%). "Not Safe", "Not Suitable for Weather Conditions" (3.03%) was the least experienced difficulties (Table-15). These expressions showed that ILE are only institutions, such as museums, zoo and botanical gardens, aquariums, etc., but nature, non-governmental organizations, industrial factories, etc. were out of their minds.

Table 15. Participants' responses regarding the "ILE-Based" difficulties

Codes	f	%
Far away	18	54,55
COVID-19 Pandemic	8	24,24
Entrance Fee Is Expensive	2	6,06
Difficult to Get an Appointment	2	6,06
Not Safe	2	6,06
Not Suitable for Weather Conditions	1	3,03
TOTAL	33	100

Among the 32 solutions stated by the participants regarding the ILE-based problems, there are only 3 suggestions related to the question, while the other suggestions are administrative, economic and teacher-based solutions. Suggestions for solving

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difficulties based on ILE were "The Number of ILE Should Be Increased/Improved" (9.38%) and "Natural Environments Can Be Chosen" (3.13%) (Table-16).

Table 16. Participants' answers on the solutions of "ILE-Based" difficulties

	Codes	f	%
Related	The Number of ILE Should Be Increased/ Improved	3	9,38
	Should be Visited Before Lesson Planning	2	6,25
	Natural Environments Can Be Chosen	1	3,13
Not Related	A Lesson Based on Needs Should Be Planned	13	40,63
	Transport Must Be Replicated/Public Transport Can Be Used	5	15,63
	Government Should Reserve Budget	3	9,38
	Effective Communication	2	6,25
	Annual Planning Should Be Made	2	6,25
	Cancelling The Trip	1	3,13
TOTAL		32	100

One example of the answers given by the participants to the eighth question are as follows:

T101: "...Being far away, financial and moral difficulties. Weather conditions are not very suitable for these regions..."

The final question was "Do you encounter any instructional/pedagogical based difficulties in your planning/ implementation/ evaluation process of science teaching activities in ILE? If so, what are the difficulties? What are your suggestions for solving these difficulties?" While 58.33% of the teachers had instructional / pedagogical based difficulties, 37.5% did not have experience and 4.17% did not answered. Sixty answers from teachers who had instructional / pedagogical based difficulties were categorized in 8 codes. The highest frequency of difficulties was "Managing / Planning the Teaching Process in ILE" (33.33%) and the lowest frequency of difficulties were "Disagreements with the School Administration" and "Motivating Students" (2.38%) (Table-17). This data showed that our teachers have deficiencies in lesson planning in ILE because of their lack of knowledge and experience.

Table 17. Participants' responses regarding the "Instructional / Pedagogical-Based" difficulties

Codes	f	%
Managing / Planning the Teaching Process in ILE	20	33,33
Student-Based Problem Solving Skill	15	25
Teachers' Negative Prejudices in Teaching ILE	10	16,67
Inadequate Material and Educational Technology	5	8,33
Classroom Management	5	8,33
Student Safety	3	5
Disagreements with the School Administration	1	1,67
Student Motivation	1	1,67
TOTAL	60	100

Among the 39 solutions made by the teachers regarding the difficulties experienced, the most solutions were "In-Service Trainings / Seminars for Teaching in ILE" (38.46%) and "the least solutions were "Planning with Students" (2.56 %) (Table-18).

Table 18. Participants' answers on the solutions of "Instructional / Pedagogical-Based" difficulties

Codes	f	%
In-Service Seminars for Teaching in ILE	15	38,46
School Guidance Service / Colleague / Parent	9	23,08
Planning Should be Made by Visiting The ILE Before The Trip	2	5,13
Expert Assistance	2	5,13
Preparing ILE Activities for Students	2	5,13
Follow-up of Books / Projects Subject to ILE	2	5,13

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Codes	f	%
Student Population Should Be Reduced	2	5,13
Raising Awareness of Students	2	5,13
Planning with Students	1	2,56
Teacher's Personal Professional Development Effort	1	2,56
TOTAL	39	100

One example of the answers given by the participants to the ninth question are as follows:

T100: "...Students may have incomplete learning or lack of motivation and motivation in the application part..."

V. CONCLUSION AND DISCUSSION

In the light of the findings, science teachers were not enough aware of the importance of science teaching in ILE, but science teachers having experience teaching science in ILE faced many difficulties and they could suggest some solutions about these difficulties. Considering these difficulties, it is very obvious to say that some science teachers not having experience in science teaching in ILE thought it is unnecessary to teach science in ILE. This result is very similar to study of Bostan and friends (2017). Clearly, they do not know how to make proper science lesson plan and how to solve student-based problems the lesson in ILE, because of their lack experience and knowledge level. In addition, teachers complain about the administrative permission for teaching science in ILE because school administration are not very helpful in this process. The permission procedures are very tiring, intense and long process. This is also parallel result with many studies, such as Ekinci et al. (2020), Köseoğlu & Türkmen (2020) studies. Another big complain stated by science teachers is that students were absent science lessons in ILE for various reasons. That is impossible to make up the lesson they missed so this problem causes to decrease the students' academic achievements. Moreover, the difficulties of disciplining students and classroom management in science lessons in ILE are obvious. The solution of such difficulties depends on the cooperation of the parent, teacher, school guidance service and school administration. Teachers also highlight the economic problems that are difficult for such organizations to take place with low budget of school and low socio-economic level of families. If we add transportation problems, uneducated and unwillingness of the families, and also security problems, it puts our enthusiastic teachers into difficulties. Teachers think that if the government increase the state contribution and we can find various sponsors, the economic problems could be solved. The distance between ILE and the location of the school is another reason why teachers cannot use ILE. Because teachers perceive only institutions such as museums, zoos and botanical gardens etc. as ILE, these type of ILE are not enough around to schools. At this point, the biggest expectation was to increase "School Administration Budget". A few participants pointed out to "Virtual Environments" as ILE. This result could be accepted as a sign that the technology will solve some of the difficulties. Our teachers, who have experienced a competitive education process in our country, encounter problems of implementation ILE into their science curriculum. Because, they feel obliged to do test-oriented studies due to anxiety of finishing the science subjects until the end of the semester and the LGS (Exam of Transition to High School) that senior students must take. Thus, they have got prejudices to implement ILE into their science curriculum. However, some science teachers handle this problem via to take day-off permission from the school administration or to switch their lessons with other teachers.

As a result, although teachers' lack of knowledge and experience, economic problems, administrative problems, insufficient school programs, uneducated and unwilling families, even teachers' prejudice, time problem and being in the pandemic process are some obstacles to integrate ILE to science lessons. These obstacles negatively affect the motivation of most teachers. On the other hand, there is always hope, a few teachers declared that "I know, there are some problems but these problems do not affect my motivation negatively, on the contrary, it makes me spend more effort because it is worth everything for students".

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