The Perceptions Of Teachers On Using The Systems Thinking Approach In In-class Applications

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ABSTRACT

This study aims to investigate the perceptions of the teachers using the Systems Thinking Approach in in-class applications. Systems Thinking in Education training is organized by the Systems Thinking Association in Turkey. 480 teachers were trained between 2014-2019. The study group of the research constituted 31 teachers who replied to the questionnaire sent to 50 teachers who are known to be using this approach.

In the study, the critical incident technique which is one of the qualitative research methods was used. In the research, teachers' perceptions were studied by sub-problems such as what were the situations in which they thought that System Thinking practices were successful, concepts that were placed in the students' discourse about System Thinking and what habits they had acquired, and situations in which System Thinking applications fail.

Content analysis showed that "graphs" was the most frequently used term. The most referred to categories were graphs, stock-flow and loops. The perceptions about stock-flow, using the Systems Thinking approach in daily life, problem solving, making thinking visible, seeing the bigger picture, having different points of view were observed to be positive. The negative perceptions about loops and the teacher competency were more dominant than positive.

INTRODUCTION

Humankind has got a vertical posture, a well-developed brain, the talent of abstract thinking and speaking. These talents make humankind different from other species and help them make different tools and equipment. Some characteristics such as knowing oneself, rationality and intelligence are the characteristics that make humankind unique. (Wikizero Insan, 2019). Humankind has been developing oneself since the beginning of his existence. (Sonmez, 200, s.90)

The four stages of cognitive development formulated by Piaget (1936), one of the most influential researchers in the area of developmental psychology are; sensorimotor, pre-operational, concrete operational, formal operational stages.

In the formal operational stage, intelligence is demonstrated through an increase in logic, the ability to use deductive reasoning, and an understanding of abstract ideas. At this point, the ability to think more scientifically and solve a problem logically and methodically emerges contrary to the trial-and-error method used in previous stages.

Data from cross-sectional studies of children support that biological development drives the movement within the first three stages. However, data does not support that all individuals will automatically move to the formal operational stage. Data from adolescent populations indicates only 30 to 35% of high school seniors attained the cognitive development stage of formal operations. For formal operations, a special environment is required for most adolescents and adults to attain this stage (OECD, 2019).

The Programme for International Student Assessment (PISA) results confirm this assertion. Seven levels of proficiency, from "basic/everyday scientific knowledge" to "interrelated scientific ideas and concepts" are described in PISA. Proficiency in abstract content knowledge starts with Level 4. Starting from Level 4, more complex, abstract scientific ideas or concepts to explain unfamiliar phenomena are measured (OECD, 2019).

In PISA 2018, the percentage of students from European Union having results Level 4 and over is 25%. Attesting data from research about the percentage of adolescent populations in the formal operational stage, PISA results show that nearly three-quarters of students from the EU have difficulty in abstract thinking. The situation is even worse for some EU members or candidate members. Percentage of students that are above or equal Level 4, that are capable of abstract thinking, are; 11% for Greece, 15% for Turkey, 16% for Italy (OECD, 2019).

On the other hand, some countries (like Finland with %37, Singapore with %50) have much higher percent of abstract thinking students. As we know that thinking skills are equally distributed among countries, higher percentage abstract thinking countries constitute an apparent proof that these skills can be developed. An innovative approach starting from pre-school that creates a special environment for abstract, scientific thinking to improve the education system is highly needed (OECD, 2019).

Systems Thinking, a well known and established method for understanding structure and leverage points of complex problems has a great potential for developing questioning, critical thinking, communication, collaboration, decision making and problem solving skills, that is; abstract thinking skills of students. UN Economic Commission for Europe Steering Committee on Education for Sustainable Development lists systems thinking as the first competency among the competences for educators in education for sustainable development. Systems thinking is among the top educational priorities with ecoliteracy and moral education in the State of the World Report of Worldwatch Institute.

"Systems Thinking Society (Sistem Dusuncesi Dernegi), a non-profit organization, was established in 2016 in Turkey. Founders include academics, teachers and engineers. Society's missions are promoting systems thinking tools and habits to contribute to the development of comprehension and thinking skills in all segments of the society. Having its roots as a working

group on system dynamics in the Chamber of Mechanical Engineers for more than six years, Systems Thinking Society's main activity areas are strategic planning, group model building, system dynamics modeling and education.

The overall aim of the project run by the Systems Thinking Association in Turkey is to increase the capacity of who deliver to students academic and lifetime benefits through the effective application of systems thinking strategies.

This study aims to investigate the perceptions of the teachers using the Systems Thinking Approach in in-class applications. Systems Thinking in Education training are organized by the Systems Thinking Association in Turkey. 480 teachers were trained between 2014-2019. The study group of the research constitutes 31 teachers who replied to the questionnaire sended to 50 teachers who are known to be using this approach.

In the study, the critical incident technique which is one of the qualitative research methods was used. An interview form inquiring about critical incidents in using the Systems Thinking approach in classrooms was created and emailed to the teachers. In the research, teachers' perceptions were studied by sub-problems such as what are the situations in which they think that System Thinking practices are successful, concepts that are placed in the students' discourse about System Thinking and what habits they have acquired, and situations in which System Thinking applications fail.

METHODS

The research was qualitative research by its structure. Qualitative research is defined as research in which a qualitative process is executed with the intention of examining incidents in their natural environment realistically and in a holistic way. This research contains methods such as observation, interviewing, and document analysis (Yıldırım,1999). Qualitative research is a process which involves understanding people's stories, behaviors, social structure and alteration (Corbin and Strauss, 1990). It studies people's perspective on incidents and meanings they attribute to a situation (Dey, 1993). In a nutshell, a qualitative researcher expresses certain concepts and relations by looking at observation, interview, and documents. (Creswell, 2013). Within this scope, phenomenological research, which is a type of qualitative research, was used. The phenomenological design focuses on phenomenons that we are aware of but on which we have not in-depth and detailed understanding. Phenomenons can confront us in various forms such as incidents in the world we live, experiences, perceptions, tendencies, concepts, and situations. Phenomenology forms an appropriate basis for studies that intend to make research for the phenomenons which are not completely unfamiliar to us but at the same time the exact meaning of which we can not comprehend (Simsek and Yıldırım, 2005).

Universe And Sample

In this study, determining the perceptions of teachers on System Thinking who use the System thinking approach in their in-class implementations was aimed. With this intention, the

universe of this study was specified as 480 teachers from various fields who were known to have participated in systems thinking in education courses delivered by the System Thinking Association. Purposive sampling method, which is one of the non-random sampling methods, was used while the sampling was being done. The purposive sampling method is a type of sampling method which is not coincidental. The aim of this sampling method is to create a sample that will represent the whole universe. (Sage Research Methods, 2019).

Critical Incident Technique (Cit)

CIT has been put forward for the first time in a study that was done by Flanagan. According to Flanagan, CIT helps out with learning specifically all details about a specific incident and overcoming any problems that may occur in the future due to that incident. This technique is based on the idea of people telling stories about the experiences they have had in the past. The technique uses the content analysis of these stories told by the people themselves. CIT is a technique that can be effective in collecting a vast number and variety of data related to the dimensions of a certain subject and through a specific period. As the findings obtained by commenting on this vast number and variety of data are difficult to generalize, CIT takes place in the exploratory research methods that allow for more qualitative analysis (Hair, Bush & Ortinau, 2000; Kavak & Yılmaz, 2003; Özgen & Göker, 2013). To learn the teachers' perceptions of System Thinking, five questions were asked in the interview forms that were prepared by using CIT for this study. The questions that were directed to the teachers are as follows:

1. Think about the experiences you have had with your students regarding System Thinking. Are there any incidents, anecdotes, and stories about which you think that the system thinking practices were successful among these experiences? If yes, kindly write down some of these experiences in paragraphs one for each “by telling the incidents personally”.

2. What were the factors that made these experiences successful and positive ones?

3. Are there any concepts that are established in the students’ discourses and any habits observed that they start to catch about system thinking? If yes, kindly write it down.

4. Think about the experiences you have had with your students regarding System Thinking. Are there any incidents, anecdotes, and stories about which you think that the system thinking practices were unsuccessful among these experiences? If yes, kindly write down some of these experiences in paragraphs one for each “by telling the incidents personally”.

5. What were the factors that made these experiences the ones that were unsuccessful, hard and compelling for you?

Data Analysis And Interpretation

The content analysis method was used as the data analysis technique. The main intention of content analysis is reaching concepts and relations that can explain the obtained data. The data summarized and interpreted in the descriptive analysis are subjected to a deeper process in content analysis. Concepts and themes that are not noticeable with a descriptive approach can be discovered as a result of this analysis. The basic process executed in content analysis is to gather

data that are similar to each other within the framework of certain concepts and themes by organizing and interpreting them in a way that the reader can understand (Yıldırım & Şimşek, 2005). The data analysis of this study for determining the perceptions of the teachers, who use the System Thinking approach in their in-class practices related to System Thinking, started with their interview forms being examined. Featured phrases among the responses to the questions that were specified in the interview form was determined. These phrases were categorized after being examined. The reliability of categorization was ensured by expert judgement methods. Once the interviews were done, researchers and two independent judges from different disciplines categorized the articles separately. Disagreements in categories for any answers were resolved by discussing key terms and jointly reviewing the featured phrases until an agreement was reached. By this way, all categories were thoroughly elaborated and 100% agreement were reached (Gremler, D. D. , 2004) Findings obtained after categorizing were examined on the bar chart.

RESULTS

18 of the 31 teachers who participated in the research were classroom teachers, 8 of them were Kindergarten teachers, 2 of them were English language teachers, 1 of them was an elementary school Maths teacher, 1 of them was a Turkish language teacher and 1 of them was a Physical Education teacher.

Table 1. Demographic information of teachers.

Field of Study	Count
Classroom teacher	18
Elementary school maths teacher	1
English language teacher	2
Kindergarten teacher	8
Physical Education teacher	1
Turkish language teacher	1
Grand Total	**31**

Teaching Experience	Count
01 - 05	4
06 - 10	6
11 - 15	14
16 - 20	2
21 - 25	3
larger than 30	2
Grand Total	**31**

Systems Thinking Experience	Count
1	4
2	11
3	8
4	4
5	4
Grand Total	**31**

The interview forms applied to determine the perceptions of teachers who use the System Thinking approach in their in-class practices were examined and grouped under 29 categories. The result after the categorizing was graphed to a bar chart.

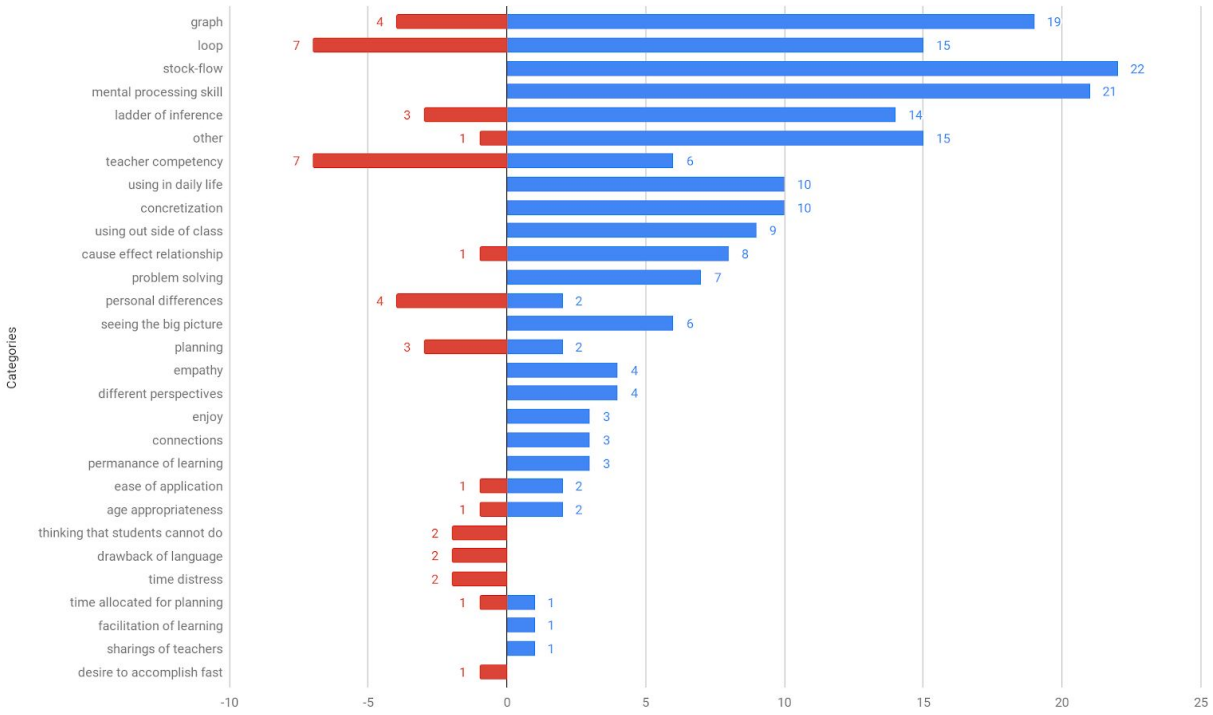

Figure 1. : The results were listed in the bar chart from the category that was mentioned most, to the category that was mentioned least. The bars on the right side of the 0 axis, shown in blue, represents the number of positive perceptions about the category, and the bars on the left of the 0 axis, shown in red, represents the number of negative perceptions.

When the chart was examined, it was found out that the category which was mentioned most by the teachers was the “the graphs”. It was seen that the graphs were mentioned 19 times positively and 4 times negatively. The top 3 categories mentioned were related to System Thinking tools. There was no negative opinion encountered in some categories. These categories were stock-flow, mental processing skill, concretization, extracurricular use, problem-solving, seeing the big picture, empathy, different perspectives, enjoyment, connections, the permanence of learning, facilitation of learning and teacher sharing. It was observed that the category which was mentioned positively most was “stock-flow”. Besides this, the 2 categories mentioned negatively most were “loop” and “teacher competency”.

The categories were grouped under 3 main categories: System Thinking tools, students and teachers, as shown Table 1 and summarized in Fig. 2..

Table 2. Three main categories

Main Category	*Category*	SUM of Positive	SUM of Negative	SUM of Total
ST Tool	graph	19	4	23
	ladder of inference	14	3	17
	loop	15	7	22
	stock-flow	22	0	22
ST Tool Total		70	14	84
Student	age appropriateness	2	1	3
	cause effect relationship	8	1	9
	concretization	10	0	10
	connections	3	0	3
	different perspectives	4	0	4
	drawback of language	0	2	2
	empathy	4	0	4
	enjoyment	3	0	3
	extracurricular use	9	0	9
	facilitation of learning	1	0	1
	mental processing skill	21	0	21
	permanence of learning	3	0	3
	personal differences	2	4	6
	problem solving	7	0	7
	seeing the big picture	6	0	6
	using in daily life	10	0	10
Student Total		93	8	101
Teacher	desire to accomplish fast	0	1	1
	ease of application	2	1	3
	planning	2	3	5
	teacher competency	6	7	13
	teacher sharing	1	0	1
	thinking that students cannot do	0	2	2
	time allocated for planning	1	1	2
	time distress	0	2	2
Teacher Total		12	17	29
Grand Total		**175**	**39**	**214**

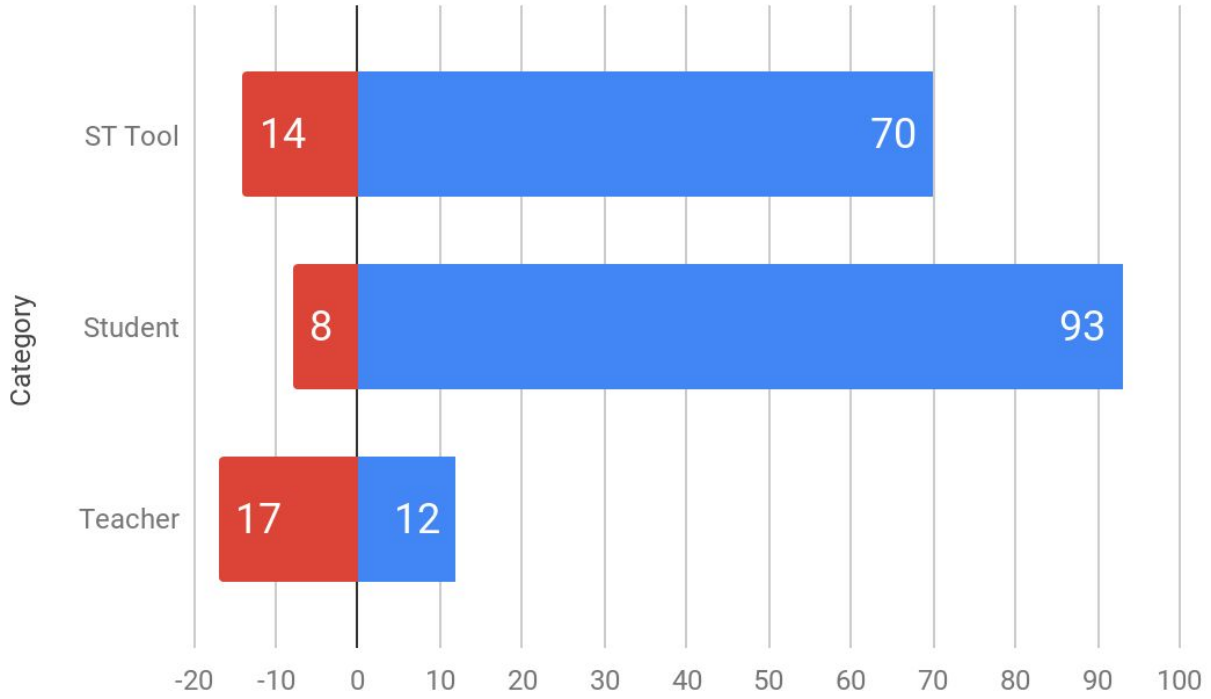

Figure 2. : 70 positive incidents about the tools were reported while 14 negative incidents were reported. 93 positive incidents about students were reported, while 8 negative incidents were reported. Besides, it was found that 17 incidents were negative and 12 positive incidents about the teachers. .

Findings Related To The Teachers' Positive Opinions On System Thinking Approach

The first question in the interview form (see Appendix I.), was asked to understand the experiences and stories of the teachers. 31 teachers who participated in the study shared various experiences in response to the question and were asked to review the experiences of teachers. Some of the experiences shared were as follows:

- "When I was doing my first practices in 2015, I was a third-grade teacher. The mother of a student of mine told me about an incident in a parent-teacher meeting. A student of mine who was pretty successful in the classroom academically and socially had a conversation with his mom at home. She started playing games in her room after dinner. When her mother asked whether she had any homework to do, she replied "no" with the nervousness of leaving the game unfinished even though she had homework to do. Her mother said nothing even if she knew that she had homework to do. That student went to her mother after 5 minutes and said "Mom, I just lied to you because I did not want to quit playing. And then, I thought it could be a loop. As I lie to you, your trust in me will diminish, as your trust in me diminishes, I will need to lie to you more. I realized this and came to tell you this." The parents were incredibly impressed by this incident. She described the fact that her 8 - 9-year-old daughter made such an inference and prediction

about what would happen in the medium term, the biggest gain of the year. Even she asked us to tell her about Systems Thinking. After that, approximately 5-6 families attended the 1st ST (System Thinking in Education) Experience Sharing Symposium. Also, the students made a poster presentation for the interested teachers." (The answer of the teacher number 3)

- "We applied the system idea in the book called Sadako and the Thousand Paper Cranes. Our students read the story, we corroborated their understanding of the book through activities, and then we started using system thinking tools. Our starting point was the happiness of our hero Sadako. First, we applied the Behavior-Over-Time Graph, then the Stock Flow Diagram and the Ladder of Inference. All of them were realized very successfully with the intense participation of students. We made the students think about the activity often with questions while doing the Stock Flow Diagram. They thought about Sadako's reasons for happiness or sadness in a comprehensive manner. Eventually: The answer to one of our students to the question that "What good does that activity do to us?" was brilliant. "My teacher, when I read this book, yes, I have understood some things but now I realized how much I realized." The answer of "Realizing how much he/she realized" impressed us a lot. (The answer of the teacher number 30)

- "We noticed in the text examinations we made with ST tools that our students' text understanding and interpreting skills have developed. We noticed that system tools had an impact on their reaching the main and side thoughts, and expressing them with their own sentences." (The answer of the teacher number 29)

- "We dealt with the noise happening in English lessons on a stock-flow diagram. We wrote down the reasons for the increase but we could make decisions and complete the stock-flow diagram after a week as we could not write the reasons for the decrease. Flow diagrams were effective for them to see the problem completely and find a solution. (The answer of the teacher number 22)

Findings Related To The Teachers' Positive Opinions' Reasons On System Thinking Approach

The second question was asked to the teachers (see Appendix I) and some answers are as follows:

- "Increased awareness levels on my students' own learning." (The answer of the teacher number 5)

- "It provided the kids with the ability to think, to interiorize and understand some of the social and science subjects easier." (The answer of the teacher number 11)

- "The kids embody the thought step by step, in accordance with their ages." (The answer of the teacher number 12)

- "The students' both perceptions and perspectives become different when you deal with all the tangible and intangible variables with system thinking tools. They see the entire picture. The ladder of inference provided us with to question our state of emotional and thought conditions." (The answer of the teacher number 22)

Findings Related To The Concepts That Establish To The Students' Discourse About System Thinking

The third question is as follows (see Appendix I) and some of the answers are;

- "Behavior graph, the ladder of inference, stock-flow diagram during the time" (The answer of the teacher number 6)
- "Stock-flow decreased, increased, what you saw? What did you feel? What changed? (The answer of the teacher number 9)
- "Cycle, diagram, graph, cause and relation effect, the big picture, short and long term." (The answer of the teacher number 12)
- "They are repeating the concept of "stock" often about something increasing and decreasing. They are giving examples like: our paper stock is decreasing, our paper recycle stock increases, our glass stock increased. (The answer of the teacher number 19)
- "Behavior, change, increase, decrease during the time" (The answer of the teacher number 26)

Findings Related To The Teachers' Negative Opinions On System Thinking Approach

The fourth question asked was related to negative or unsuccessful experiences of teachers about the System Thinking approach who use the System Thinking approach. The most mentioned two categories as negatively were loop and teacher competency. In the answers that were given to the questions about the loops, the hardships of understanding the loops were mentioned. Some of the answers are;

- "The students are having a hard time understanding the loops. Especially the first and second grades." (The answer of the teacher number 5)
- "We have really had a hard time doing the Causal Loop Diagram which is a system thinking tool. We gave up on doing it after a while." (The answer of the teacher number 30)
- "For me, the biggest problem was the language. I am doing English practice. It is hard for students whose English proficiency is low. So, not each one of the students in the classroom gets what she/he needs to get. (The answer of the teacher number 26)
- "In the first year of my teachings, we have made basic autogenous mistakes while making practices of the first ST tool which is behavior during the time. While designing the

graphic, the horizontal axis is always the time in principle. the time in principle. The vertical axis, on the other hand, shows the changes in the things that are observed during that period of time. In this way, a day, a month, a year, a story, etc. we may notice an accumulation that we observe throughout their time. Like our height, weight, bank account, the population of the city where we live. Each time, we must divide the vertical axis into equal parts with a single scale. Like from 0 to 100, less to more. Our main fault was to divide the vertical axis into multiple and unrelated sections: unhappy, angry, happy. (The answer of the teacher number 3)

Findings Related To The Teachers' Negative Opinions About System Thinking Approach

The teachers were asked what were the reasons that made their experiences negative. The fifth question was asked to understand the negative perceptions of teachers who apply the System Thinking approach. In general, teacher competency stood out. Some of the answers given are as follows;

- "I link up this failure not to the hardship of the tool but to that we do not understand this tool enough. I can understand simple cycles, but as the pros and cons increase, I find it difficult to connect." (The answer of the teacher number 30)
- "It was that I did not have a grasp of the topic." (The answer of the teacher number 27)
- "First of all, the worry about whether you are applying the information you are accustomed to is right is a bit tiring but it gets easier as we work and get used to it. Or I think of it as a story that you read or a point that forces you to think about which ST approach tool is where in a game you are playing. " (The answer of the teacher number 15)
- "It would not be right to say that it was unsuccessful or difficult. I just experienced the necessity of making a better observation and a better plan. " (The answer of the teacher number 18)

DISCUSSION

In this section, the conclusions reached and suggestions for those are expressed based on the findings obtained in the research. In this study, the perceptions of teachers who use the System Thinking approach in in-class applications are investigated. Interview forms prepared using the Critical Incident Technique were sent to 50 teachers purposely selected from 480 teachers who were trained by the System Thinking Association and known to implement Systems Thinking approach in their lessons. 31 people replied to the interview forms. The replies were examined, featured phrases were determined and these were categorized.

When the answers of the first question were examined, it was seen that the System Thinking approach helped students make learning permanent by embodying abstract concepts, noticing the loops in their lives and finding leverage points while solving problems. Feedbacks

from teachers were received related to that System Thinking approach improves students' mental skills, increases metacognitive skills such as interpreting and analyzing. Also, it was among the stated information that the students could transfer the data and use their learning not only in the classrooms but also in their everyday life.

Based on the feedback given to the second question, it seems that the System Thinking approach helps students develop different perspectives, and perform meaningful learning as intended. It was seen that the System Thinking habits that the students wanted to have, could be realized and that these goals could be achieved and helped to perceive the System Thinking approach as successful and positive. It was seen that the teachers' positive perceptions about System Thinking weighs heavier.

Regarding the answers given to the third question, it is seen that the tools used while applying the System Thinking approach in the classroom and the habits that the System Thinking approach wants to be found in the students are generally placed in the discourses of the students. The three most mentioned categories; graphs, loops, and stock-flow, suggests that the students adopted many discourses fundamental to the System Thinking approach and placed them in their language. It is seen that especially system thinking tools have been placed on students' discourses.

Also, when the answers of the fourth question are analyzed, it is seen that some categories such as the thought that students cannot do, language barrier, and timing difficulties were mentioned only negatively. Here it is seen that only the language barrier is related to the students and all the other negative thoughts were related to the teachers.

The fact that teachers think whether they were doing it correctly or started to practice without understanding enough often caused negative perception to occur. It is observed that the negative perception was not related to the student, but rather to the teacher and the feeling that the teacher felt sufficient. In general, all the answers given were categorized and shown on a bar chart as seen in Figure 1. Positive perception turned out to be more dominant than negative perception.

There are 29 categories that come to the fore at the end of this categorization process. It is seen that teachers' perceptions about graphs come to the fore. This shows that System Thinking tools are placed in the language of the teachers who practice. The teachers' perceptions on most of the categories such as stock-flow, mental processing skills, using in daily life, embodying, extracurricular use, problem-solving, seeing the big picture, empathy, different perspectives, enjoyment, connections, permanence of learning, learning facilitation and teacher sharing are always in a positive direction. Based on the graph about the Main Categories, it can be said that the perceptions regarding the tools and students are generally positive. The inability to understand the tools clearly and finding them difficult is reflected in the perception of both students and the tools. The two most mentioned categories in a negative sense are loops and teacher competency. It is understood that the negative perceptions of teachers about these two categories are more dominant than the other negative perceptions. It is thought that the difficulty in understanding and applying the loops pushes teachers to this idea in general. It might be

useful to spend more time on loops while System Thinking teacher training is being provided for the teachers. Teacher competency is another category with high negative perception. In order to increase teachers' competency, ESDx, an online workshop, was planned and implemented. The online platform was open to the teachers until the face-to-face workshop. They were able to go through the systems thinking tools and skills for almost 3-4 months. As a future goal, consultancy can be improved for the teachers by the System Thinking Association while implementations are being planned and done. A metaanalysis of papers about system thinking skills are done. Results are interpreted considering the experiences gained in Turkish schools. A systems thinking set of 7 skills are determined. This set of systems thinking skills constituted the basis for design of a textbook targeted to the faculties of education.

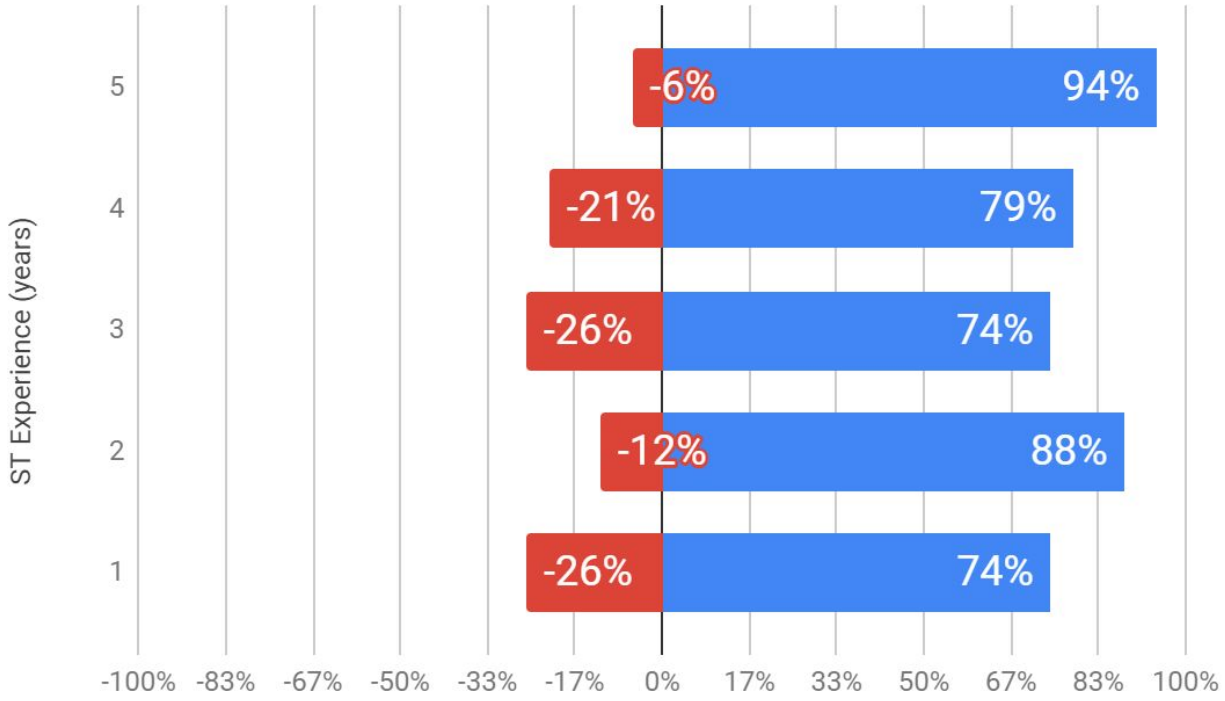

Figure 3: The years of experience on Systems Thinking are listed from 1 to 5 years. The bars on the right side of the 0 axis, shown in blue, represents the number of positive perceptions about the category, and the bars on the left of the 0 axis, shown in red, represents the number of negative perceptions.

As the experience years of teachers about Systems Thinking was examined, it can be seen that the more experienced on Systems thinking the teachers become, the less they have negative perception about it. The teachers' perception about Systems Thinking is getting more positive in years.

According to the obtained findings, it can be said that positive perception is much more in general. It is predicted that one of the reasons that results might be biased is that the sample was chosen from the teachers enrolled in the System Thinking Association and who were practicing. Apart from the sample selected from the teachers who are trained by the System Thinking Association and practice System Thinking approach, another study can be carried out with

another sample that has received System Thinking training but is not practicing the approach.. In 2017, Fisher researched on "System Thinking and System Dynamics Modeling in Pre-University Programs". "How effectively did you use System Thinking / System Dynamics to help your students learn?" was asked to the participants. 27.8% of the participants in the study answered very effectively, 41.7% answered pretty effectively, 26.4% answered averagely effectively, and 4.2% answered effectively to a certain level. Nobody thought that it was not effective. The findings of the research conducted by Fisher (2017) reinforce the positive perceptions of teachers obtained from this study who use the System Thinking approach in their classroom practices. The dominant perception of teachers participating in this study is that the System Thinking approach helps their classroom practices and contributes to students' meaningful learning.

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APPENDIX

Appendix I. Interview Form sent to teachers

Field of Study:
Teaching Experience (years):
Systems Thinking in Education Experience:
1. Think about the experiences you have had with your students regarding System Thinking. Are there any incidents, anecdotes, and stories about which you think that the system thinking practices were successful among these experiences? If yes, kindly write down some of these experiences in paragraphs one for each “by telling the incidents personally”.
2. What were the factors that made these experiences successful and positive ones?
3. Are there any concepts that are established in the students’ discourses and any habits observed that they start to catch about system thinking? If yes, kindly write it down.
4. Think about the experiences you have had with your students regarding System Thinking. Are there any incidents, anecdotes, and stories about which you think that the system thinking practices were unsuccessful among these experiences? If yes, kindly write down some of these experiences in paragraphs one for each “by telling the incidents personally”.
5. What were the factors that made these experiences the ones that were unsuccessful, hard and compelling for you?