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Examining primary school teachers' views on critical thinking: a case study[1]

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Abstract. This research, which aimed to examine the views of primary school teachers towards critical thinking, was carried out in an embedded single case pattern of the case study based on qualitative data. In the study, "criterion sampling" technique, one of the purposeful sampling techniques in qualitative research, was used. In the study, fifteen primary school class teachers were included in the research on a voluntary basis. In the study, a semi-structured interview form was used as a data collection tool. In the analysis of the data of the study, theme, descriptive analysis and analytical generalization were used. Across the research, participants defined critical thinking as thinking in multiple directions, reasoning, and mental process. They stated that teaching critical thinking was important in terms of thinking differently, cognitive learning, and practice. They categorized critical thinking individuals as those with cognitive characteristics, mental skills, and those who can practice. Participants often use critical thinking as thinking skills and animation in the classroom. They stated that there were obstructive elements of critical thinking in terms of students, external factors and the program, that critical thinking did not currently exist in the program, and that philosophy and its paradigm should be determined and included in the program as an interdisciplinary course.

Keywords: Critical thinking, teacher, elementary school, program

Introduction

Many researches have been done and thoughts produced about the structure of 21st century skills. In those researches carried out worldwide in which 60 institutes and 250 researchers took part, 21st century skills were gathered under four categories (Çalışkan & Sulak, 2016). Within those categories, critical thinking is one of the ways of thinking. According to Conley (1997), employers today need not only individuals who are experts in their field and know their job well, but also individuals who can express themselves in writing and verbally, speak fluently and clearly, follow instructions appropriately, perform basic mathematical skills flawlessly regardless of their field, think creatively and critically, solve problems and take responsibility for learning (Yuksel, 2010). Matthew Lipman refers to critical thinking as a skillful and responsible way of thinking that leads to good judgment. Because it is sensitive to the context it is in, it is based on criteria and has a self-correcting structure (Aybek, 2018). Haladyna defined the goals of education; Critical thinking: It consists of the sub-dimensions of evaluation, procedure, induction/deduction. Keywords are classifies as analyze, analyze, classify, compare, critical meat, distinguish, decide, evaluate, estimate, relate, hypothesize, etc. (Yıldırım & Kartal, 2021).

The combination of critical thinking skills and a tendency to think critically focuses on and guides inductive, deductive and abductive inference with the aim of solving problems. This is an approach of quetionning. Critical thinking involves questioning, which encourages broader thinking about problems, and a variety of ways to solve or answer those problems as well. Some questions include both individual and aggregated levels (Oral & Yazar, 2017). Critical thinking is a pattern of thinking (Çalışkan & Sulak, 2016). In addition, Wen (1999), who evaluates the definitions of critical thinking, states that some

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researchers express critical thinking as the ability to make sense and others as the ability to solve problems. Wen (1999) defined critical thinking as the mental skills of a free individual who contributes to a rational life by mechanically cascading it, such as mental inquiry activity, detailed analysis and reorganization (Güzel, 2022).

What do critical thinkers do? Central process (SBDS).They identify a question or problem (S).They think about it using components of logic (B).When appropriate, they consider all aspects of the subject through the lens of the discipline (D).In doing so, they check their logic using critical thinking standards (S).

This is the central process of critical thinking, in other words, its heart (Aybek, 2018). When the critical thinking characteristics are analyzed, it is seen that critical thinking features such as "active and productive", "independent but can be shaped according to the subject", "open to different thoughts and can be triggered by them", "being emotional and biased while considering the evidence and reasons", "should organize thoughts and focus on the organization process rather than the result" (Güzel, 2022).

According to Kökdemir (2012), individuals who can think critically can comprehend the differences between proven facts and claims, evaluate whether the sources from which the existing information is accessed are reliable, distinguish between the data that are evidence for the formation of information and those that are not, recognize biases and cognitive errors and inconsistent statements, and have effective questioning features. These individuals should also be able to use the cognitive beyond cognition effectively as well as being competent in oral and written language, that is, they should be aware of the functioning of their own thoughts (Kurtuluş, 2021). Although critical thinking and creative thinking may seem different, they complement each other and work together. Critical thinking involves the evaluation of quality, and creative thinking involves the production of innovations. In the educational process, individuals should use these thinking tendencies for a thorough understanding of the content (Çetin, 2008).

In the globalizing world, the expectations from education have become more complex and the type of people to be raised has become different. The aim of education is to educate the creative teacher type who can use technology, who can easily access information, who processes information, who produces information, who spreads, who can solve the problems he encounters, who learns how to learn, who learns how to think, who has a versatile and critical thinking, instead of the type of teacher who load students with information by memorizing everything. For this reason, the constructivist learning approach, which is one of the new understandings that give weight to learning rather than teaching, has started to be applied in our education system (Sarpkaya, 2019). The changes and developments in the world today are also reflected in the training programs. Changing programs have also included high-level skills in the targeted achievements. High-level skills are tried to be applied in activities in different disciplines. (Güzel, 2022). The process of developing critical thinking, which is an obligatory condition for a good life, a good society and a correct communication, was discussed within the scope of the research and the critical thinking skills of the students were tried to be developed by preparing a curriculum to develop this skill In the entire curriculum applied in our country, there are common skills that are desired to be gained in different disciplines in all courses. These high-level skills are at the core of the achievements. It is important not only to give the information directly, but also to use this learned information through activities or Practices. Teachers guide the program to develop skills.

Teaching is a dynamic profession. It is unthinkable to be satisfied with the achievements of the institutions that train teachers throughout their professional life. A teacher who values the profession needs to remember from time to time the knowledge of the profession that he or she has. In addition, it is important to follow new developments on the same subject (Gürsel, 2004).

Many challenges can be encountered in teaching critical thinking. For this, attention should be paid to issues such as providing a democratic classroom environment, giving sufficient time, visualizing information, and giving importance to cooperation among students. (Özensoy, 2019). The current literature supports the inclusion of critical thinking in curricula, but it assigns the most important role to

teachers in providing students with critical thinking skills (İpek & Erişen, 2010). It is necessary to underline the responsibility of teachers here. It is important that teachers design their lessons in a way that puts students at the center of learning and in accordance with the content that will develop critical thinking and problem-solving skills (Özdemir, Turan & Çoban, 2020). Innovations made in an education system can only be implemented with a teacher. It is very important that the teachers who will be the implementers of primary education programs have gained the common basic skills specified in terms of raising students with the same characteristics (Karademir, 2013). Since the day the new primary education program started to be implemented, there have been problems in the implementation of the program due to various reasons. Determining the situation in the implementation process, revealing the problems and taking measures to eliminate these problems are important for the training effort. It is necessary to make continuous evaluation in the process in order not to encounter undesirable situations in the educational activity (Rençber, 2009).

Method

Model of the Research

This research, which aimed to examine the views of primary school teachers towards critical thinking, was carried out in an embedded single case study design of case study based on qualitative data. Although the case study offers the opportunity to make in-depth analyses, it is a preferred method when the questions "How?" and "Why?" are sought, the control of the researcher is limited and the focus of the study is a real-life phenomenon. Therefore, case study research requires the investigation of a situation within the real-life, current context or environment (Yin, 2016). Thus, qualitative research designs provide a flexible approach to the researcher and contribute to the consistency of the various stages of the research within a specific focus. This research was carried out on the axis of the interpretive paradigm (Gunbayi & Sorm, 2020).

Sampling

Purposeful sampling methods are useful in many cases in discovering and explaining facts and phenomena (Palys, 2008). In the study, "criterion sampling" technique, one of the purposeful sampling tecniques used in qualitative research, was used. This sampling technique is the inclusion of individuals who meet certain criteria in accordance with the purpose of the research (Given, 2008; Varlik, 2023). In the study, fifteen primary school class teachers were included in the research on a voluntary basis.

Ethical Procedures

For the research, the permission of the ethics committee was obtained with the decision of Çukurova University, Scientific Research and Publication Ethics in the Field of Social Sciences and Humanities dated 30.01.2023 and numbered 6. In addition, due to ethical concerns in the study, the participants were coded with the letters A, B, C, D, E, F, G, H, I, J, K, L, M, N and O.

Data Collection Tool

In the study, semi-structured interview form was used from qualitative data collection tools. The interview technique can also be called the traditional questionnaire, which is created by asking questions in turn, recording or marking the answers (Merriam, 2009). With the interview technique, it is possible to carry out research in accordance with different rapidly changing conditions. Interviewing illiterate people in these ways is also the strongest aspect of qualitative research (Karasar, 2000). The semi-structured interview form questions used in the research are given below.

1. How would you define critical thinking? Why?

2. In what ways is it important to teach critical thinking to elementary school students? Why?

3. What are the characteristics of the critical thinking individual? Can you explain?

4. Do you use critical thinking in your classes in class? If so, can you give an example of how you use it?

5. Are there any factors that prevent you from using critical thinking? If so, can you explain what they are?

6. Are critical thinking skills present in your curriculum? If so, can you explain what they are? Or should it be put in, How?

7. If there is anything else you would like to mention about critical thinking, please do so.

Data Analysis and Interpretation

In the study, NVIVO 10 package program was used for the analysis of the data. In qualitative research, unlike quantitative research in the analysis of data, measurement, proof and generalization to the population are not essential, the main thing is to understand the context, interpret the content and analytical generalization. Data analysis in qualitative research means diversity, creativity and flexibility. (Kelle, 1995). Gunbayi (2019) divided qualitative data analysis into four groups as "theme analysis, descriptive analysis, content analysis and analytical generalization". In this research, after theme and descriptive analyzes, deeper and more comprehensive analysis was made with content analysis.

Validity and reliability of the research

In terms of validity, a detailed review of the data was carried out by examining and analyzing the observation notes taken during the collection of the data. In order to ensure the validity of the analysis process, the audit of the themes and subcategories identified in the analyses was carried out with the support of field experts. In this context, the validity of the research process and analysis was ensured by detailed sample statements from interview records related to the identified themes and subcategories, as well as an in-depth examination of the research findings in the context of sample statements (Lincoln & Guba, 1985). Kappa analysis was performed to calculate the reliability of coding processes of qualitative data. Inter-encoder reliability coefficient was found [κ=.745, t=6.456, p=.001]. This coefficient shows that the reliability between encoders is significantly very high (Landis & Koach, 1977).

Findings

In this section, the findings of the analysis of the data collected by the semi-structured interview form are presented.

Findings on how primary school teachers defined critical thinking are presented under this heading. The themes and sub-themes of critical thinking are given in Table 1.

Table 1.

Themes and sub-themes of critical thinking

Themes	Sub-Themes	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Lateral thinking	Seeing from a Different Points of View		✓							✓					✓	
	Evaluating Possibilities	✓					✓									
Reasoning	Ability to Reason by Questioning			✓	✓				✓		✓					
	Reasoning			✓												✓
	Critical Interpretation of Information												✓			
Mental Process	Analysis, Synthesis, Evaluation				✓	✓										

	Carrying out Research and Study					✓			✓						
	Making Inferences						✓				✓				

When the findings of the themes and sub-themes related to critical thinking were examined in Table 1, the theme of "Lateral thinking " was reached from the sub-themes of "seeing from a different points of view, evaluating the possibilities", from the sub-themes of "Reasoning by questioning, reasoning, Critical Interpretation of Information " to the theme of "Reasoning", and from the sub-themes of "analysis, synthesis, evaluation, Carrying out Research and Study, making inferences" to the theme of "Mental Process".

When the themes of Lateral thinking, Reasoning and Mental Process were examined, the evaluations of primary school teachers were mainly in the form of seeing from different perspectives, evaluating possibilities, reasoning by questioning, reasoning, critical interpretation of information, analysis, synthesis, evaluation, researching and studying, and making inferences. The statements of primary school teachers on the subject are as follows:

> *... Critical thinking is the ability to see at a topic or event from different points, to think in multiple ways and to evaluate possibilities (A-Female)*
> *... I consider critical thinking to be mental processes such as analysis, synthesis, evaluation (D-Female)*
> *... I define critical thinking as being able to reach conclusions by reasoning and making inferences on a problem or a situation (I-Female)*
> *... critical thinking is to be able to reason, so it will be easier to reason about things (O-Man)*

Findings and interpretations on the importance of teaching critical thinking to primary school students are presented under this heading. The themes and sub-themes of critical thinking are given in Table 2.

Table 2.

Themes and sub-themes of which angle is important to teach critical thinking to primary school students

Themes	**Sub- Themes**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**
Thinking Differently	Empathetic Thinking	✓											✓			
	Problem Solving	✓	✓		✓											✓
Cognitive Learning	Recognizing the Concept						✓	✓			✓					
	Ability to Use the Concept								✓	✓	✓					
Practice	Achieving Success		✓	✓	✓									✓		
	Ability to Question Events					✓					✓				✓	

When the findings of the themes and sub-themes related to the importance of teaching critical thinking to primary school students were examined in Table 2, the theme of "Thinking Differently" was reached from the sub-themes of "Empathetic Thinking, Problem Solving", from the sub-themes of "recognizing the concept, Ability to Use the Concept " to the theme of "Cognitive Learning", from the sub-themes of "achieving success, Ability to Question Events " to the theme of "Practice".

When the themes of thinking differently, cognitive learning and Practice were examined, the evaluations of primary school teachers were mainly as thinking with empathy, solving problems, recognizing the concept, using the concept, achieving success and questioning events. The statements of primary school teachers on the subject are as follows:

> *... Teaching elementary school students to think critically is to teach children to see things from a different perspective and to empathize, and also to teach children problem-solving behaviors through critical thinking (A-Female)*
> *... Teaching critical thinking allows students to use it later in life (H-Male).*
> *... Teaching critical thinking is important to improve our students' questioning and questioning*

skills (K-Male)

Findings and interpretations of the characteristics of critical thinking individuals are presented under this heading. The themes and sub-themes of critical thinking are given in Table 3.

Table 3.

Themes and sub-themes related to the characteristics of critical thinking individuals

Theme	Child Theme	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Cognitive characteristics	Empathetic	✓													✓	
	Able to Think Positively						✓		✓							
	Respecting Human Rights			✓												
Mental Skill	Creative Minded	✓												✓		
	Forward-thinking					✓										✓
	Analytical Thinking		✓					✓		✓	✓					
Practice	Having a Different Perspective		✓				✓					✓				
	Able to Take Responsibility					✓							✓			
	Researcher				✓				✓			✓				
	Problem Solving	✓	✓	✓				✓		✓		✓				✓

When the findings of the themes and sub-themes created for the characteristics of critical thinking individuals were examined in Table 3, the theme of "Cognitive characteristics " was reached from the sub-themes of "empathetic, able to think positively, respecting human rights", the theme of "Mental Skill" from the sub-themes of "creative minded, forward-thinking, analytical thinking", and the theme of "Practice" from the sub-themes of "having a different perspective, able to take responsibility, researcher, problem solving".

When the themes of cognitive characteristics, mental skills and Practice were examined, the evaluations of primary school teachers were mainly as empathetic, positive thinking, respecting human rights, creative minded, forward-thinking, analytical thinking, having a different point of Perspective, taking responsibility, researcher, problem solving. The statements of primary school teachers on the subject are as follows:

> *... the critically thinking individual uses evidence skillfully and independently, is skilled at expressing himself, can think reasonably and rationally (G-Female)*
> *... Critical thinking individuals have characteristics such as investigative, inquisitive, striving to reach information, seeing from different points of view to solve problems (K-Male)*
> *... The critically thinking individual can take responsibility for the difficulties he experiences in his life, so we can call these individuals the critically thinking individual (L-Male)*
> *... The critically thinking individual has creative qualities, he manages to cope with the difficulties he experiences in life by using his critical characteristic, thanks to creativity (M-Female)*

Findings and comments on how primary school teachers used critical thinking in courses are presented under this heading. The themes and sub-themes of critical thinking are given in Table 4.

Table 4.

Themes and sub-themes of how primary school teachers use critical thinking in courses

Theme	Child Theme	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Thinking Skills	Expressing own ideas	✓		✓					✓		✓					
	Discussing		✓							✓		✓				
	Guessing				✓									✓		

Animation	Performing drama					✓					✓		✓		
	Spontaneous Use			✓	✓										✓

When the findings of the themes and sub-themes created about how primary school teachers use critical thinking in the courses were examined in Table 4, the theme of "Thinking Skills" was reached from the sub-themes of "expressing own ideas, discussing, guessing", and the theme of "Animation" was reached from the sub-themes of "performing drama, spontaneous use".

When the themes of thinking skills and animation were examined, the evaluations of primary school teachers were mainly in the form of expressing own ideas, discussing, guessing, performing drama and spontaneous use. The statements of primary school teachers on the subject are as follows:

> *... Critical thinking can be used in every lesson, in problem solving in mathematics, in Turkish and Life Science lessons, in telling one's opinion, in learning the thoughts of friends, in producing the most accurate solution, activates mental activities in the best way. She also teaches to respect the opinions of others, she learns through criticism that not everyone thinks like herself, but through criticism in the realization that each individual is different, so she also learns to respect and love people (A-Female)*
> *... I use critical thinking quite often in my classes. I try to put it into practice using the discussion method. I organize and have activities that enable students with different ideas about a topic to express each other (B-Female)*
> *... I use critical thinking in our classes whenever I can. To increase creativity, I allow children to discern the concept of right and wrong when they go to solutions. For example, I'm looking for answers to questions like what would you do if you were an event that happened to the character in the book (C-Male)*
> *... I use critical thinking in my classes. I have students do activities to develop their critical skills. I give scenarios to children and enable them to produce solutions to the problems given in these scenarios (G-Female)*

Findings and comments on the factors that prevented the use of critical thinking are presented under this heading. The themes and sub-themes of critical thinking are given in Table 5.

Table 5.

Themes and sub-themes related to the factors that prevent the use of critical thinking

Theme	**Child Theme**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**
For Students	Age-related factors	✓											✓			
	Prejudice		✓			✓									✓	
	Listening and Attention	✓			✓											
Exogenous Factors	Cultural Factors and Belief		✓								✓	✓				
	CourseAttendance				✓	✓										
In terms of the program	Time	✓							✓							
	Lack of achievements			✓			✓							✓		✓
	Curriculum								✓	✓					✓	
	Teacher						✓	✓							✓	

When the findings of the themes and sub-themes related to the factors preventing the use of critical thinking were examined in Table 5, the theme of "From the Perspective of Students" was reached from the sub-themes of "age-related factors, prejudice, listening and attention", from the sub-themes of "cultural factors and belief, course attendance" to the theme of "External Factors", and from the sub-themes of "time, lack of achievements, curriculum, teacher" to the theme of "In terms of Program".

When the themes of the students in terms of external factors and program were examined, the evaluations of primary school teachers were mainly in the form of age-related factors, prejudice, listening and

attention, cultural factors and belief, course attendance, time, lack of achievements, curriculum and teacher. The statements of primary school teachers on the subject are as follows:

> *... I find it difficult to use critical thinking in lessons due to the crowded classrooms and the fact that every child wants to talk (D-Female)*
> *... we have an education system that is not conducive to critical thinking, we are in a monotonous vicious circle that does not encompass different types of abilities and intelligences (I-Female)*
> *... I am unable to use critical thinking in my classes due to the intensity of the topics and the inhibition of the curriculum (H-Male)*

Findings and comments on the presence of critical thinking skills in curricula are presented under this heading. The themes and sub-themes of critical thinking are given in Table 6.

Table 6.

Themes and sub-themes related to the availability of critical thinking skills in curricula

Theme	Child Theme	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Program Availability	Not Available		✓							✓	✓	✓	✓	✓	✓	✓
	Insufficient	✓		✓	✓	✓	✓	✓	✓							
What to be done	Interdisciplinary Use	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Critical Thinking as a Course		✓							✓				✓		✓
	As Philosophy and Paradigm			✓									✓			✓

When the findings of the themes and sub-themes related to the presence of critical thinking skills in the curriculum were examined in Table 6, the theme of "Program Availability" was reached from the sub-themes of "not available, insufficient" and the theme of "What to be done" was reached from the sub-themes of "Interdisciplinary use, critical thinking as a course, philosophy and paradigm".

When the themes of program availability and what to have are examined, the evaluations of primary school teachers are not available, insufficient, they should be in the form of interdisciplinary use, critical thinking as a course, philosophy and paradigm. The statements of primary school teachers on the subject are as follows:

> *... critical thinking skills are not present in the program, they should definitely be used, for this, first of all, the curriculum should be changed, with lean environmental conditions, a program conducive to multifaceted thinking should be introduced (I-Female)*
> *... Critical thinking is unfortunately not present in our curricula. This is extremely negative for our education system. Therefore, it should be put as a lesson, at least critical thinking activities should be included in every lesson (N-Male)*
> *... Critical thinking is not in our program. Its absence is a major shortcoming in terms of our teaching programs. First of all, it should be given to teachers as an educational philosophy and paradigm, and then it should be put into the program as an interdisciplinary course (O-Female)*

Conclusion and Recommendations

As a result of the theme analysis related to critical thinking, the themes of latent thinking, reasoning and mental process were reached. Participants defined critical thinking as seeing from a different points of view, evaluating possibilities, ability to reason by questioning, critical interpretation of information, analysis, synthesis, evaluation, carrying out research and study and making inferences. In the theme analysis of the importance of teaching critical thinking to primary school students, different themes of thinking differently, cognitive learning and practice were reached. Participants emphasized that it was important to teach critical thinking in terms of empathetic thinking, problem solving, recognizing the concept, ability to use the concept, achieving success and ability to question events. As a result of the

theme analysis of the characteristics of critical thinking individuals, the themes of cognitive characteristics, mental skills and Practice were reached. Participants defined individuals who can think critically as empathetic, positive thinking, respecting human rights, creative minded, forward-thinking, analytical thinking, having a different point of Perspective, taking responsibility, researcher, problem solving.

In the theme analysis of how primary school teachers use critical thinking in courses, thinking skills and animation themes were reached. Participants stated that they used methods such as expressing own ideas, discussing, guessing, performing drama and spontaneous use. In the theme analysis of the factors that prevent the use of critical thinking, the themes of extrinsic factors for students and the program were reached. Participants considered age-related factors, prejudice, listening and attention, cultural factors and belief, course attendance, time, lack of achievements, curriculum and teacher as factors that prevented critical thinking. In the theme analysis of the presence of critical thinking skills in the curriculum, the theme of program availability, what to be done were reached. Participants said that critical thinking skills were not present in the program or were insufficient in the program and that they should be included in the program in the way of interdisciplinary use, critical thinking as a course, philosophy and paradigm. They avoided answering the question, "If there is anything else you would like to indicate about critical thinking, please indicate it." Recommendations can be made based on these results.

In the study, teachers who think that it is important to provide critical thinking skills to primary school students think that time and class crowdedness are the most important obstacles in this process.

For this, steps should be taken to solve these problems or appropriate methods should be chosen to gain these skills despite these problems. Steps should be taken to improve the critical thinking skills of the implementing teachers of the program, and in-service training should be provided to enable them to gain skills in practice.

In the teaching process, teachers should be given more space to support their ability to generate ideas, question and make decisions in their activities.

In order to develop Practices that will gain critical thinking skills and to enable teachers to see the Practice process, experimental studies should be included and it should be ensured that they can reach teachers.

In order for primary school students to gain critical thinking skills, studies examining appropriate methods and techniques should be carried out and developing practices should be determined.

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Ethical approval

In the writing process of the study titled "**Examining primary school teachers' views on critical thinking: a case study**", the rules of scientific, ethical and citation were followed; it was undertaken by the authors of this study that no falsification was made on the collected data, "Journal Action Qualitative & Mixed Methods Research [JAQMER] and Editor" had no responsibility for all ethical violations to be faced, and all responsibility belongs to the authors and that the study was not submitted for evaluation to any other academic publishing environment.

Ethics committee approval

Ethics Committee Approval of this research was obtained from Çukurova University Social and Humanities Sciences Ethics Committee numbered E.599008 and 06 decision numbered on January 30th, 2023.