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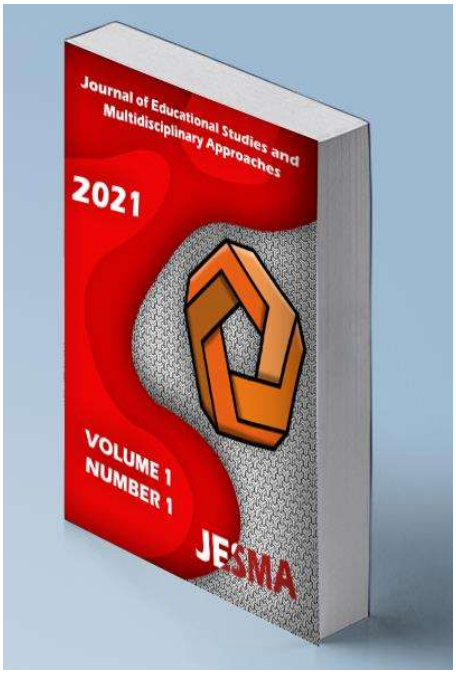

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Perception and knowledge of critical thinking: A qualitative research study with Professors of Higher Education in Oman

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Perception and knowledge of critical thinking: A qualitative research study with Professors of Higher Education in Oman

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ABSTRACT

Critical thinking is a key feature of the organizational cultures of higher education institutions, given its multiple impacts on graduates' academic, professional and personal levels. Thus, most of these higher education institutions in the Arab Gulf region state in their strategic plans, implicitly and explicitly, objectives related to enhancing students' critical thinking skills. Despite the apparent prevalence of such objectives, the concept of critical thinking (CT) is hardly taught in higher education institutions in the Arab Gulf region for different reasons. One of these reasons is that the perception of the concept is still in its infancy in the region, even among professors. This study aims to investigate how the perceptions and knowledge of critical thinking of English as a Second Language professors in the General Foundation Program at the College, a higher education institution in Muscat, foster critical thinking teaching. This is a qualitative and exploratory study with 10 professors and the data were collected through semi-structured interviews. The thematic analysis identified 4 themes: 1. First encounter with CT; 2. Connotations and denotations of CT; 3. Attainability of CT; 4. Scarce teaching of CT. The participants revealed their belief in the attainability of critical thinking. However, they expressed difficulties in implementing critical thinking teaching in their classrooms. The General Foundation Program's professors referred openly to the disparity between their espoused beliefs and enacted practices.

Keywords: Critical thinking, higher education, general foundation program, case study, qualitative research

Introduction

Definition of critical thinking

Despite the domination of critical thinking (CT) in literature, there is no agreement on a precise definition of the concept in the field of education. For example, Moore (2013) refers to the fluidity of the concept, adding that this definitional impasse as the critical thinking movement seems to have found itself in is related to the tendency to detach the concept from its actual uses, and then to attach to it either notions that are thought to be somehow intrinsic to it or else notions that one desires it to have. A concept treated in this way will inevitably yield many different meanings. Given such disagreement on the definition of CT, Lai (2011) referred to many researchers such as Ennis (1962), Facione (1998) and Halpern (2003) who are from different schools of thought like philosophy and education to address this state of puzzlement.

Furthermore, Lai (2011, p.9) stated that despite the abovementioned scholars' areas of disagreement on a definition of CT, such scholars "agree on the specific abilities encompassed by the definition". Hence, CT is an umbrella term that is applied to different forms of learning styles and includes different approaches to thought processes. The abovementioned scholars agreed on the processes that occur when individuals apply CT such as identifying assumptions, predicting and seeing both sides of an issue. Moreover, Lai (2011) affirmed the role of higher-order of thinking skills such as analysing, evaluating, interpreting, synthesizing information and applying creative thoughts to form arguments, solve problems, or reach conclusions. Lai (2011) also referred to Bloom's taxonomy as means of information processing skills and stressed the role of this taxonomy when it comes to teaching and assessing higher-order thinking skills.

Importance of teaching critical thinking

Globally, critical thinking (CT) is an integral concept in the philosophies of most pedagogies and social fields. CT is a fundamental feature of higher education (HE) institutions. Since the beginning of the 20th century, CT has started to have a substantial presence in educational contexts, especially in HE. The concept is one of the most important 21st-century skills that need to be taught for its multiple impacts on students' academic, social and political realms. For example, different scholars such as Ghazivakili, Nia, Panahi, Karimi, Gholsorkhi and Ahmadi (2014) stated that the learning styles and CT teaching are closely associated with the student's academic performance. Likewise, Nasrabadi's and Mousavi's (2012) study affirmed that the role of CT approaches and cognitive learning styles in the students' academic achievement is inevitable. Also, the importance of CT teaching is its transformative effects on individuals' personal, political, and social perceptions. Due to that fact, CT has been a dominant concept in philosophy and science for its apparent impacts on individuals and, thus, society. Consequently, scholars such as Faour (2011), expressed their concerns about the absence of CT from the Arab region's schools' curricula with apprehension. Faour (2011) acknowledged explicitly the necessity of teaching CT to achieve better education and a profound understanding of the concept of the citizenry.

Because of the vitality of CT impacts on individuals, the structured teaching of such concept should be of priority to educators. The teaching of such a demanding concept could be achieved through the implementation of Bloom's taxonomy. Such taxonomy consists of six learning categories that reflect several skills which are essential to the process of CT teaching. The taxonomy's six learning categories are divided into lower-order and higher-order thinking skills. Such categories range from the simple recall or recognition of facts, at the lowest levels, to more complex and abstract mental ones, at the

highest levels (Forehand, 2010). Krathwohl (2002) referred to some categories such as knowledge, comprehension and application to reflect lower orders of thinking skills. However, categories such as analysis, synthesis and evaluation reflect higher order of thinking skills (Krathwohl, 2002). In this context, Athanassiou, McNett, and Harvey (2003) perceived Bloom's taxonomy to reinforce teaching aspects that reflect higher-order thinking skills. Moreover, the abovementioned scholars added that integrating such taxonomy in teaching helps classrooms to be more student-centred.

Consequently, the integration of Bloom's taxonomy can enhance CT teaching, as the categories of this taxonomy contribute to the achievement of such concept. To build CT skills it is important to have a vast domain of knowledge and to be exposed to different fields (Zwaagstra, 2016), as knowledge is one of the first categories in Bloom's taxonomy. Adams (2015) referred to this category as a foundational cognitive skill that involves the retention of information like facts and definitions. In the same context, Forehand (2010) described the hierarchical taxonomy as a stairway that encourages the students to approach higher levels of thought. By the same token, Lai (2011) placed Bloom's taxonomy with 'comprehension' at the bottom and 'evaluation' at the top and its three highest levels: analysis, synthesis, and evaluation as gradual processes to CT.

Teaching critical thinking in higher education in Oman

Oman has become part of the global economy, after signing the General Agreement on Trade in Services in 2002. Hence, Oman has taken serious steps to modernize HE, in terms of quality and quantity. HE is the avenue to develop human resources for the workforce. Being part of the global economy has been an incentive for Oman to give more attention to HE in order to cope with the economic changes in the global market (Donn & Issan, 2007). With the region's political instability and oil prices declining, the Omani government has launched reforms and strategic initiatives in HE (Al Abri, 2015). Thus, the policies of the HE system in Oman are adjusted to meet the national, regional and global demands. However, several studies criticised HE in Oman for failing to meet the needs of the private and public sectors. This is due to its inability to equip HE students with the knowledge and soft skills, such as CT skills and problem-solving strategies. In their study, Baporikar and Shah (2012) pointed to the outmoded pedagogical practice and the students' unprepared mindset for HE as factors behind the students' low performance and lack of CT skills.

Educators, in the region, blamed the education system for the drawbacks students and graduates face in their academic and professional performances. Al-Harthi (2002) criticized the education system for producing a power relationship in classrooms, where teachers have the sole authority. The scholar blamed such system of 'banking education' and the rigid hierarchy in classrooms for discouraging CT teaching. Under such circumstances, it is unlikely to create the right environment that fosters CT teaching. To enhance CT teaching, a democratic classroom environment is required.

The contextual background of the study

To understand the nature of this study, it is important to have a solid idea of this study's contextual background. The College, a pseudonym for the context of this study, is a HE institution in Muscat, Oman, it accommodates around 12,000 students studying in different programs. It has more than 975 staff and an annual intake of around 2000 students in its four levels' General Foundation Program (GFP). GFPs, designed for the new students' intakes, are integral programs in HE institutions in the Arab Gulf region. For example, colleges such as Bahrain Polytechnic (Bahrain Polytechnic, n.d.), Algonquin College in Kuwait (Algonquin College, n.d.) and the College in Muscat offer GFPs. In addition to teaching the English language, the GFPs teach information technology and mathematics to

ensure that HE students are well equipped with the language skills, computer skills and mathematical skills that they need in their Post Foundation Program (PFP) specializations.

Many scholars criticized the hefty budgets and hard infrastructure reforms in the affluent Arab Gulf region for not meeting such reforms' expectations, regionally and internationally alike. For example, Cheema (2014) referred to Qatar and highlighted the discrepancy between the high budget's education reforms and the students' low performance in international standardized, such as the Programme for International Student Assessment (PISA) and Trends in International Mathematics and Science Study (TIMSS) tests that require a higher order of thinking skills. Al-Mahrooqi (2012) criticized the Omani experience in education reforms and the disappointing results of students in HE institutions' entry tests.

Given this, the rationale for this study is to consider education reforms from a different perspective. In other words, this study accents the role of simple practical measures in fostering CT teaching. Instead of focusing on hard infrastructure as a means of reform, the study underlines the importance of enhancing soft skills such as CT. Thus, this study focuses on the impacts of CT teaching in fostering students' academic, personal and soft skills as means of reform. Subsequently, the rationale for this study stresses the impacts that CT teaching may have on the College's students' academic performance, in terms of enhancing their higher orders thinking skills. This study draws the attention of reformists and education policymakers in the Arab Gulf region to the importance, and the multiple impacts of CT teaching, focusing on its academic impact. Alazzi's (2008) study indicated that social studies teachers have little familiarity with the definition and, also with the teaching strategies related to CT. That being the case, different scholars highlighted the professors' role where they should have less authority and share knowledge with students to enhance teaching the concept. So, for CT to be practised, Choy and Cheah (2009) stated that it is important to consider the influence of professors' perceptions of themselves and their students about CT. Professors' perceptions influence their behaviours in classrooms. Hence, this study investigates the ten English as a Second Language (ESL) professors' perceptions and knowledge of CT. Also, it focuses on these professors' practical implementation of the concept in classrooms reflected in the way they perceive themselves as disseminators of information or mediators of learning.

Method

In this study, we decided to use a constructivist paradigm for three different reasons. First, O'Connor (2015) commended such a paradigm for understanding data differently and highlighting the participants' perceptions. Second, Guba and Lincoln (1994) acclaimed the constructivist paradigm for its practical impacts on the nature and accumulation of knowledge of a single concept within a context. Third, such a paradigm defines our role as passionate practitioners and advocates in the workplace (Guba and Lincoln, 1994). Accordingly, we implemented this paradigm to reach the aim of this study by establishing a comprehensive understanding of CT teaching in the GFP, relying on the individuals' constructions.

Research aims and research questions

The way professors perceive CT, and the possibility of teaching the concept, direct the learning-teaching process in their classrooms (Choy & Cheah, 2009). In this context, it is important to understand the GFP professors' perceptions and their knowledge base of CT. Larrivee (2000) affirmed that such perceptions and knowledge reflect the professors' beliefs in their teaching philosophies. Accordingly,

in this study, we aim to investigate CT teaching in the GFP for restructuring and renewing the practice of this vital concept. For this reason, we articulated a bounded research question that unfolds the research. How do the EFP professors' perceptions and knowledge of CT foster the learning-teaching process in the General Foundation Program?

In view of the above research question, we designed three sets of questions that we implemented in the semi-structured interviews with the EFP professors. In the first set of questions, we referred to CT explicitly where we elicited the professors' familiarity with the concept. We centred some of the questions on their definitions and perception of CT. We used the other sets of questions to examine the professors' knowledge regarding the impact of CT outside the classroom contexts and the importance of CT as an educational component. Such responses helped us to reconstruct the EFP professors' knowledge and perceptions of CT.

A qualitative case study: The methodology and the rationale

A qualitative methodology is implemented in this case study because the research question is the main point of reference. Its exploratory and explanatory character implies a qualitative approach. Such methodology allows us to examine phenomena, which are the EFP professors' perceptions of CT. Such phenomena are difficult to investigate when applying other research methods (Strauss & Corbin, 1998). Thus, a qualitative approach helped us "to understand the way people think about their world and how their definitions are formed" (Bogdan & Biklen, 1998, p.32).

Another significant advantage of a qualitative methodology is its characteristics that scaffold this intrinsic case study. Graebner, Martin and Roundy (2012) defined such characteristics as being flexible, exploratory and able to get the interpretations and experiences of the organizations' members. Also, using such methodology results in new emerging data, adding in-depth perspectives to the collected data and different angles of interpretation. Strauss and Corbin (1998) elaborated on the popularity of the methodology among researchers over the years. Likewise, we have adopted a qualitative methodology expecting that this work will have relevance to academic and non-academic audiences bringing vision to reality in the hope of change. Likewise, Simons (2009) praised the methodology for its capability of studying the singular and the unique phenomena. Hence, the case study intends to have a better understanding of a single case within its bounded context (Baxter & Jack, 2008).

We relied on an intrinsic case study to address the research question because Grandy (2010) acclaimed such a case study as the study of a case, where there is an interest in exploring and in knowing more about it. Baxter and Jack (2008) recommended an intrinsic case study, when there is an interest in the particularity and ordinariness of the case itself, with no further intention to understand a generic phenomenon or to build a theory. In relation to this case, having a profound understanding of CT and its application, within its institutional context, can enhance the teaching of the concept in the EFP learning-teaching process.

Participants

To address the research question, in this study, ten ESL professors from the General Foundation Program (GFP) with different demographic backgrounds were interviewed in English. Cohen, Manion and Morrison (2011, p.157) described purposive samplings as access to "knowledgeable people". This technique was used when selecting the GFP professors to give in-depth information, representativeness and divergence. The common criterion among the participants is having the ESL teaching experience for the GFP four levels. More to add, the ten professors were selected from the 131 professors who teach in the GFP. The cohort of the GFP teaching staff represents 13 nationalities.

These professors' teaching experience ranged from five years to thirty years. We based the professors' sampling on the variation of their demographic details. When selecting the professors, we made sure that there is diversity in the years of experience, and geographical and educational backgrounds. Furthermore, when we selected such professors, we made sure that they reflected different cultural backgrounds. Hence, some of them had eastern backgrounds, others had western backgrounds, and some had eastern backgrounds, but they have had western education as part of their postgraduate studies. This variation was reflected in the professors' responses as their cultural backgrounds influenced their familiarity with CT. Hereunder, Table 1 illustrates the GFP professors' countries of origin and their years of teaching experience.

Table 1 - The ten GFP professors' sample

Professors	*Country of origin*	*Years of teaching experience*
P1	Jordan	8 years
P2	United States of America	10 years
P3	India	15 years
P4	Egypt	20 years
P5	Egypt	30 years
P6	Oman	5 years
P7	Oman	20 years
P8	Iraq	20 years
P9	India	25 years
P10	United States of America	10 years

Semi-structured interviews with the GFP professors

Longhurst (2003, p.143) defined semi-structured interviews as "informal, conversational or soft interviews". DiCicco-Bloom and Crabtree (2006) described semi-structured interviews as a technique that can delve into social and personal matters. Such a technique helps to elicit data related to the respondents' perceptions of CT and its extended impacts.

In the interviews, the respondents addressed many of the issues, which is one of the advantages of the method as has been affirmed by Longhurst (2003). This gave us a closer feel of the respondents' insights, as they based their responses on their personal views and teaching experience in the GFP. Therefore, we developed a wider perspective in approaching the emerging data, which resulted in redesigning and rearranging some of the questions. Although there were other means of communication, we preferred conducting the interviews face to face with the respondents to take advantage of the social cues.

Data collection procedure

Detailed e-mails explaining the topic, study design and the purpose of the research were sent to the professors. In these e-mails, we referred to the administration's approval and the confidentiality of the study. Afterwards, the professors signed their written consent and individual appointments for the interviews on the College's premises were scheduled. Each interview lasted for approximately thirty minutes and all the interviews were recorded on a smartphone, after having the respondents' approval. Throughout the process of interviewing, there was note-taking to write key points and to investigate further themes in the transcribing stage. The transcriptions of each interview started immediately on the same day to avoid memory lapses.

Qualitative thematic analysis

The initial step in the stage of data analysis was to cut down on the bulks of data texts. We relied on the concept of condensation of data, rather than the concepts of reduction and distillation. Condensing the data texts means a process that shortens the texts without changing their core (Graneheim & Lundman, 2004). Before conducting the data analysis procedure, we decided to refrain from using computer software to perform the coding process. Alternatively, we worked manually, reading the data line by line and moving back and forth systematically, relying on the manual coding, because it facilitated the familiarization phase with the data as has been suggested by Braun and Clarke (2006).

Like the transcribing procedure, the coding process of the text data was extremely time-consuming. In this process, we selected the codes to define the exploratory scope of the research questions. This study has a constructivist framework, which leads us to focus on some of its aspects such as the socio-cultural context, structural conditions and implicit themes, as has been outlined by Braun and Clarke (2006). In addition to that, Resnik's (2015) and O'Leary's (2004) ethical implications were used as guidelines. All the ethical norms for promoting knowledge, truth and avoidance of error were fulfilled throughout this study.

Findings

In this study, we broke the chunk of data from the GFP professors' transcribed interviews analysis into small meaningful segments. In such segments, we looked for codes, about the respondents' perceptions of CT. Hence, we relied on the often-repeated codes in such interviews as these codes are the most important ones in the respondents' minds. Then, we gathered such codes under related themes to reflect on the research question.

We used a mind map to rearrange the long list's different codes under the related themes, applying this thematic map to visualize the connections between the codes and the related themes as Braun and Clarke (2006) recommended. The thematic map was reshaped a few times until we settled on naming themes that fell into a convincing narrative, through which we highlighted important issues about CT teaching. Consequently, naming each theme not only to reflect its content but also to use such a theme to be part of the narrative.

The GFP professors' sampling intentionally presented a variation in the professors' geographical and educational backgrounds, as well as in the years of their teaching experience. We expected that there would be a wide range of variations reflected in the professors' responses. On the contrary, such responses reflected similarities more than differences. However, such differences were evident in the GFP professors' responses regarding their first encounters and familiarity with CT. The following section reports on the findings related to the themes constructed to address the research question related to the GFP professors' knowledge and perceptions of CT.

Theme 1 - First encounter with CT

We advertently asked the GFP professors to flashback and recall the first time they came across the concept of CT. More than half of the respondents spent some time recalling their first encounters with CT. Such difficulties were expressed in hesitant responses. Hereunder are some examples,

P4: “ah ah (Pause)! Honestly, I cannot remember when the first time was. I was introduced to CT, maybe a few years ago”.

Suddenly, after the second question, the interviewee recalled her first encounter with the CT.

P4: “now I remember I was attending a conference at the American University in Cairo, and there was a presentation about critical thinking and how important it is to English language learners”.

Moreover, P4 elaborated on her further encounters with CT in presentations and informal conversations,

P4: “On several occasions, I read about critical thinking and listened to some colleagues’ conversations and some other presentations at different conferences, the presentation was interesting, but I was not allowed in my classes to prepare materials to use critical thinking, I had to use materials prepared by the school where I was working”.

Another example of the complete unfamiliarity with the CT is P5, who is a senior professor and has teaching experience of over 30 years, in Egypt, Saudi Arabia and Oman,

P5: “right now! I heard about it, to be honest, from you. So practically, I do not apply the concept in my teaching process here or even before coming to Oman. I do not come across it frequently. It is limited to my interpretations”.

In the same context, P9, who is a senior professor and has teaching experience of 25 years, expressed her recent encounter with CT,

P9: “(Pause), for me the concept of critical thinking was like….. (mmmm) I mean not long because it depends upon the type of students you are gaining and with the change of curriculum and change of time, so we have started to work on this type of concept as the students need to have this idea of critical thinking because of the change of curriculum and the syllabus. So, to be precise from a year ago or two and mainly because of the new system and the new textbooks”.

On the other hand, P10 and P2, who are from western backgrounds and had work experience in different places besides the Arab Gulf states, easily recalled their first encounters with CT,

P10: “I like…. remember still hearing about that in 1995 when I was studying for my master’s degree in the US. However, I am saying about the notion (laughs) it does not mean I did not apply critical thinking in my own life or my teaching before. The only thing perhaps I was not thinking about that as defining it. Without knowing that I was using critical thinking. Of course, yes”.

P2: “Oh, probably in my master’s or even in my undergraduate. The words critical thinking probably. But, honestly the concept, at least in an American school, from when you’re young, it’s always fostered. Like, you’ve got to think on your own, think outside the box”.

Although P6 is an EFP professor from an eastern background, still she showed a different stance when compared to the other Arab and Asian EFP professors,

P6: “It was after high school. My professor started to teach us how to think critically. At that time, it was a little bit difficult because I needed some practice and time. In the beginning yes, it was purely academic, and I was trying hard to think critically but later on, after a while, I tried to apply this method in my real life, honestly, I got benefits when I read or write critically so I decided to do it even in my real life”.

There are variations among the professors' responses about their first encounters with CT. Such variations are because of the differences in the GFP professors' cultural and educational backgrounds. Despite the diversities in the GFP professors' encounters with CT, such professors managed to construct their interpretations of the concept.

Theme 2 - Connotations and denotations of CT

The denotations and connotations of CT are one of the themes where the EFP professors' responses were not influenced by their educational or cultural backgrounds. In terms of denotations or the literal meanings of CT, the ten GFP professors, even the ones who had earlier encounters with the concept, did not have any formal definitions of CT.

P5, whose first encounter with CT was only at the time of the interview, constructed his meaning of the concept.

P5: "ok (Pause) CT, it is brainstorming, could be some sort of activities that can go under CT. As far as I know. I guess it implies some sort of activating students' minds, so they come up with their thoughts and ideas, stuff like that".

Even though P10 and P6 resumed their post-graduate studies in western universities, still both professors constructed their definitions of CT,

P6: "to think out of the box".

P10: "digging deep".

Like P6 and P10, the other professors had similar informal definitions of CT, yet their definitions lacked generalizability, as such professors limited the definitions of the concept to the academic context only.

For example, P1 and P9 had their definitions of the concept,

P1: "going beyond the text".

P9: "Your thinking, like what you know about a topic or about something in life, (Pause) what is your opinion, your idea or your experience about something. That is my idea, I feel it is the ideas that you get".

Given the above discussion, the GFP professors managed to construct their denotations of CT based on the literal meaning of the concept. However, such professors could not respond to the questions related to the connotations of CT and what kind of ideas or feelings the concept invokes. Professors who had earlier encountered the concept in their workplaces or conferences restricted the denotation of the concept to academia, and slightly touched on it as a life skill. P4 revealed her response, about the denotation of CT and its impacts in the coming responses.

P4: "It is about acquiring new skills in your job, learning new skills for your life, so if you think critically, you can attain any skill you need for your future".

However, the majority of the GFP professors are unlike P10, who had encountered CT in his HE. Even so, P10 could not clearly articulate what CT invokes in him. P10's response is reflected in the following verbatim.

P10: "I do think so, well as I said umm again as I said a while ago I accepted that notion in my life, again it does not always make it easy, but ….. I do not know (laughs) I have fun with that, (laughs) questioning, being sceptical about things sometimes I go overboard with that in my own career life".

The majority of the GFP professors linked CT more to the academic realms. Hereunder, are some responses that reveal how the majority of the GFP professors limit CT to thinking inside the classrooms.

P3: "it is out of the box thinking".

P9: "I think of student's issues, like how to generate ideas from them".

P4: "Critical thinking is beyond a simple understanding of words, you need to think of connotations or words and evaluate information to have a kind of judgment, something like that".

Despite the GFP professors' differences in their geographical backgrounds, the majority of these professors related CT to thinking inside the classrooms. Moreover, such professors believe in their responsibilities as educators to enhance CT teaching in the EFP learning-teaching process.

Theme 3 - Attainability of CT

CT attainability has been an ongoing argument in literature (Lee, Lee, Makara, Fishman and Hong, 2015). For example, Atkinson (1997) disagreed with the possibility of attaining the concept in other cultures apart from Western ones. In fact, in their responses, the GFP professors affirmed the role of cultures in attaining CT. The GFP professors believe that one culture can provide the right learning environment for CT teaching compared to the other ones. I quoted different professors from eastern and western backgrounds to assert their points of view. Despite the GFP professors' different years of teaching experience, and educational and geographical backgrounds, they agreed on the attainability of CT regardless of the learners' cultural backgrounds.

P4: "I can say some cultures provide the right environment for critical thinking better than other cultures. It is not about genes or people, it is about the environment or educational system, so it is attainable".

P2: "I think everybody is born with what can I say, a clean slate, tabula rasa, I don't mean to get philosophical but you know, people (um) are not complete, but partially products of their environment, so critical thinking, like I said, get cultivated in school or from your parents (um), from older people I would say or from another source and forces someone to grow those ideas, skills and analysis, ability to produce or to give their opinions, ability to (um), I don't know. I'm trying to think of another word except for produce… ability to express".

Despite the evident dichotomy in the literature regarding CT attainability, the GFP professors affirmed that CT could be acquired through the right learning environment,

P6: "The methods that the teachers use will definitely help the students to think critically or not".

P4: "Yes, it is possible if the materials we teach adopt the same approach or the teachers were interested in this or believe in the importance of critical thinking to students and if we have students who have simple thinking skills so then we can build on that". On recapping on her responses, the interviewee added "and the right amount of teaching time".

The GFP professors affirmed that the teacher's role is essential in any learning-teaching environment to enhance CT teaching. In their responses, the GFP professors stressed the importance of the teacher's role, individuality and methodology in the classrooms in helping students to attain CT,

P10: "maybe obliged is a strong word, but I do think it is our responsibility to do this as part of being a good teacher".

P2: "So some teachers just want to hear back what they got and other teachers want the students' ideas or words from their projects or whatever. So, it totally depends on the teacher. I think we talked about it at the very beginning of the interview. That's where critical thinking comes into play. Some conditions have to be set up, and I think that some teachers are great at setting up those conditions and some just aren't. Some don't care".

P7: "I do not believe that this should be the responsibility of teachers only, so the writing materials, writing exams, teaching and the books we choose to use, everything should provide students with the right environment".

The coming section explores CT teaching in the GFP classrooms and the GFP professors' role in enhancing the teaching of such an important concept.

Theme 4 - Scarce teaching of CT

In the previous section, the GFP professors referred to CT attainability and their responsibilities, as facilitators, to help students attain such a challenging concept. However, such professors honestly expressed the difficulties of implementing CT teaching in their classrooms. This misalignment between the GFP professors' espoused practices and enacted practices, in terms of CT teaching, is not unfamiliar. Polly and Hannafin (2011) stated that studies confirmed such discrepancies when learner-centred approaches are implemented. For example, P1 and P8 voiced their justifications for not teaching CT in their classes.

P1: "The level of the students is a major constraint as they feel they cannot express themselves. I try to enforce it in the class, but students' cooperation is too weak. Their reasoning skills, learning skills and thinking out of the box are not yet mature enough to say that they are thinking critically. It depends on the student, if he fails to cover the simplest thing how can we go deeper? I like teaching the concept still the students' abilities determine that".

P8: "To a certain extent, not much. Now changing the curriculum, I think there is a lot of CT that must be done by the students to which I don't think they are prepared and also the language which they need to know is not up to the standard. There are a handful of students who can do that not most of them and it will take some time".

Only P10 had a different standpoint when compared to the other EFP professors,

P10: "I think I do it all the time, I think I do it pretty much all the time because I never let them get away with just the answer, so I always kind of try to make them think so why, why do you do that? They might hate me for that".

The other GFP professors, except P10, had the same justifications such as P1 and P8 for not teaching CT in their classes. Such professors referred to students' resistance as one of the most hindering barriers for them to teaching CT. P6 and P3 referred to the GFP students' low language proficiency, and not having CT as part of the assessments, as their main justifications for not teaching the concept,

P6: "For me, the language itself is a vital constraint as students did not acquire the right expressions to think critically, especially at level 1. I try hard to apply this concept, but few students could answer. Another thing is the assessment system in our college. It does not encourage us to think out of the box".

P3: "Critical thinking is not a big part of the class. It is usually a part of the lessons' end, where the students looked at the lesson from a different angle. I focus more on Lessons A in the textbooks to cover the factual level of the unit. Because critical thinking is not part of the assessment, I assign Lessons B as homework".

The majority of the GFP professors shared similar CT perceptions in terms of the concept's definitions, applications in the classrooms and attainability. However, such professors honestly expressed their reluctance to teach CT in their classes for different reasons that will be elaborated on in the discussion section. Table 2 shows the thematic analysis result of the GFP professors' perceptions of CT.

Table 2 – Themes and sub-themes of the EFP professors' perceptions of critical thinking

Themes	Sub-themes
1. First encounter with CT	1a. Eastern background: workplace; conferences; no encounters. 1b. Western background: schools; higher education; postgraduate studies.
2. Connotations and denotations of CT	2a. Connotations: nonentity; academic performance. 2b. Denotations: Brainstorming; Thinking out of the box; Going beyond the text.
3. Attainability of CT	3a. Educational environment. 3b. Professors' role. 3c. Cultural values.
4. Scarce teaching of CT	4a. Out of assessment criteria. 4b. Teaching time constraints. 4c. Students' resistance (weak language proficiency; immature reasoning skills).

Discussion

In the following section, we discuss the GFP professors' perceptions of CT relying on aspects related to their educational backgrounds, their CT conceptualizations and their beliefs in the attainability of the concept. In this view, Choy and Cheah (2009) stated that the way the professors perceive themselves affects their teaching practices. Hereunder, we discuss the GFP professors' responses to construct their perceptions of CT. Such responses reflect the GFP professors' first encounters with CT, their definitions of the concept, their beliefs in the attainability of CT and their roles in facilitating the teaching of the concept.

Regarding the GFP professors' first encounter with CT, professors' responses reflected that their cultural backgrounds influenced their familiarity with CT. Only P2 and P10, who are from western backgrounds, encountered the concept earlier in their education. The seven professors from eastern backgrounds, except for P6, encountered CT either at their workplaces or by chance in conferences. The seven professors did not encounter CT in their education or educational training programs. Aliakbari and Allahmoradi (2012) confirmed the impact of the absence of CT from teachers' training

courses on their teaching. Both scholars affirmed that, for professors to be able to teach CT, they need to have a breadth of knowledge of the concept.

Scholars such as Ryan and Louie (2007) refuted this dichotomy of CT between eastern and western cultures. They affirmed that there are other aspects related to CT that are "often under-theorised or lack agreed meanings" (Ryan & Louie, 2007, p.404). Both scholars urged educationalists to initially realize the differences and complexities within cultures before making any judgements. Mason (2008) referred to this dichotomy, whether CT is a universal, or a culture-laden concept, as crucial to CT teaching.

Concerning the GFP Professors' definitions of CT, there is no agreement in education literature on a single definition. In the literature on CT in HE, the concept is not commonly understood (Lloyd & Bahr, 2010). Likewise, each of the GFP professors has a different definition of CT. Such professors constructed their definitions of CT, where they depended on the wordings and their understanding of the concept. They are not the only faculty to construct their definitions of CT. Paul, Elder and Bartell (1997) found in their study that only 19% of the faculty could define CT.

Burbach, Matkin and Fritz (2004) previously confirmed that educators' agreement on the value of CT is enough for the concept to be featured in courses. Turner (2006. p.3) described the definitions of CT as "unclear and emerge from cultural knowledge and traditions rather than universal measures of higher learning". This is clear in the GFP professors' responses, except for P2 and P10, whose responses were concise. P2's and P10's responses reflect informality and generality in terms of defining CT. The GFP professors, who are from eastern backgrounds, had different approaches to defining CT. They limited the definitions of the concept to the students' academic performance. Such professors perceive CT through their cultural knowledge as Turner (2006) had stated. The GFP professors do not perceive CT out of the educational context. They confined the concept by connecting it only to the academic disciplines (Brookfield, 1997).

The GFP professors' responses to the definitions of CT relate the concept to students' performance in classrooms. They referred to the impact of CT outside classrooms as helping students to be problem-solvers or lifetime learners. They overlooked other pragmatic characteristics of CT. For example, Faour (2011) referred to the importance of teaching CT to ensure the impact of the concept on better education, citizenry and peace. Such concept of the citizenry is inevitable in the Arab region now.

Alazzi's (2008) study, in a Jordanian high school, proved that Arab teachers have little familiarity with CT. One of the reasons for that is the lack of research in the Arab world, in general, as Abu-Orabi (2013) reported. Besides, the focus on educational research in the region is marginalized (Abdelqader, 2016). Furthermore, the dominance of 'banking education' (Freire, 1970), the exam-driven systems in HE institutions in the region and institutional regulations, discourage teachers from exploring CT.

Regarding the GFP professors' role in CT teaching in the GFP learning-teaching process, the GFP professors agreed on the attainability of CT and hold themselves responsible for teaching it. Yet, nine out of the ten professors stated openly that they do not teach CT in their classrooms. Ironically, only P10 implements CT in his classroom. However, such misalignment between the GFP professors' espoused practices and enacted practices is not uncommon in teaching practices. Polly and Hannafin (2011) referred to prior professional development studies to reflect on the discrepancies between what teachers report and what they demonstrate in their teaching. Furthermore, Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur and Sendurur (2012) stated that such misalignment is because of some barriers such as lack of administration support, and inadequate teachers' training and the focus on assessments.

In the same context, the GFP professors referred to the barriers they face as justifications for the mismatch between their espoused beliefs and espoused enactment, in terms of CT teaching. For example, the GFP professors stated that their students' low English language proficiency is the main barrier to not teaching CT. Choy and Cheah (2009) found that several professors, in HE institutions, did not teach CT, because students lacked the language mastery and the confidence to demonstrate the concept.

Like Polly and Hannafin (2011), the GFP professors referred to the decline in students' motivation as another factor for this misalignment between their espoused practices and enacted practices in teaching CT. For instance, P1 referred to the students' lack of motivation and weak cooperation as the main barriers to not teaching CT. The authors stated that one of the reasons for impeding CT teaching is the students' focus on good grades, rather than on the process of thinking. Likewise, Brookfield (2013) confirmed that attaining CT could not be viewed as a by-product of the learning process. The scholar asserted the important role of explicit instructions in teaching CT. In the same context, Choy's and Cheah's (2009) study highlighted some factors that foster CT teaching, such as the professors' in-depth knowledge and their willingness to incorporate the concept in their teaching.

Given the above discussion, the GFP professors' perceptions influence their enactment in classrooms. The GFP professors believe that CT is an attainable concept, and they define themselves as facilitators who are responsible to teach CT. Despite that, none of the GFP professors, except for P10, teaches CT in their GFP classes. Hence, the GFP professors adhere theoretically to one of the College's objectives by defining themselves as facilitators. Llyod and Bahr (2010) and Aliakbari and Sadeghdaghighi (2013) referred in their studies to the students' and professors' pragmatic focus on exams and grades as constraints for CT teaching. Another reason for not teaching CT is that the concept is too challenging to teach. In his study at a higher education institution, Ali (2012) found that professors focus on core disciplines, as disciplines that are less demanding to teach. This concurs with some of the GFP professors' approaches regarding CT teaching. P2 commented on the GFP professors' attitudes, as far as CT teaching is concerned, stating that such attitudes vary from one professor to another. P2 explained that some professors focus on enhancing the students' CT skills, whereas some are indifferent to teaching the concept.

Ngoc Du (2015) reported other factors that hinder CT teaching, such as the limited school democracy, low professors' autonomy and traditional pedagogy. Some of the GFP professors experience such factors at the College. For instance, P7 referred to the importance of professors' autonomy, reflected in the choice of the teaching materials, to enhance CT teaching. Likewise, P4 pointed out the institutions' democracy as another factor in enhancing CT. P4 noted the importance of the professors' beliefs and interest in the concept. Furthermore, P4 referred to the impacts of institutional regulations on CT teaching such as the type of materials and the time given to the professors.

Given this, Choy and Cheah (2009) affirmed the importance of professors' high expectations of their students to enhance their abilities and ensure CT teaching. The GFP professors had no expectations of their students to perform any kind of CT skills. Such professors assumed that the GFP students' low language proficiency would hinder CT teaching. Therefore, GFP professors' main focus is to teach English language skills to improve the students' language proficiency. As a result, teaching CT skills is not a priority for such professors in this setting.

Conclusion

The findings related to this research question have practical contributions to CT teaching in the EFP learning-teaching process. It was important to investigate the EFP professors' perceptions of CT, as such professors' core beliefs influence their teaching in classes (Choy & Cheah, 2009). Such findings can contribute to CT teaching in other HE institutions, as there is a lack of research in exploring professors' perceptions of CT, despite its significance (Saginak, Scofield, Saginak, & Foege, n.d.). In other words, the pedagogical implications of this study can bridge the gap between research and practice in the College's GFP and other HE institutions' GFPs. Thus, such implications would help in developing new ideas and improving CT teaching in higher education institutions. Given this, the study's implications for this institution are to highlight the importance, and the multiple impacts, of CT teaching. Accordingly, the professional development programs can utilize the study's literature reviewed and findings, about the definition and the impacts of CT teaching and hold presentations and workshops for the GFP professors to develop their knowledge of the concept and its practical applications to the GFP classes. Consequently, these kinds of professional development programs would improve the GFP professors' conceptualizations of CT and, hence, their teaching and applications of the concept. Furthermore, one of this research's findings is the necessity of introducing CT explicit instructions to enhance teaching the concept, as has been affirmed by different scholars such as Brookfield (2013) and Van Gelder (2001). It is crucial to enhance CT teaching as an implication for practice in the GFP classes. Pica (2000) affirmed that for students to be proficient in a foreign language, they should learn to think creatively and critically when using the target language.

References

Adams, N. E. (2015). Bloom's taxonomy of cognitive learning objectives. *Journal of the Medical Library Association: JMLA, 103*(3), 152.

Al Abri, K. M. K. (2015). *Higher education policy architecture and policy-making in the Sultanate of Oman: Towards a critical understanding*. (PhD thesis, The University of Queensland, Australia). https://doi.org/10.14264/uql.2016.38

Alazzi, K. F. (2008). Teachers' perceptions of critical thinking: A study of Jordanian secondary school social studies teachers. *The Social Studies*, *99*(6), 243-248. https://doi.org/10.3200/TSSS.99.6.243-248

Ali, H. H. (2012). Assuring quality in promoting generic skills in the Higher College of Technology (HCT), Muscat: Challenges & realities. *English Language Teaching, 5*(11), 45-50. https://doi.org/10.5539/elt.v5n11p45

Aliakbari, M., & Allahmoradi, N. (2012). On Iranian school teachers' perceptions of the principles of critical pedagogy. *International Journal of Critical Pedagogy, 4*(1), 154-171.

Aliakbari, M., & Sadeghdaghighi, A. (2013). Teachers' perception of the barriers to critical thinking. *Procedia-Social and Behavioural Sciences*, *70(2013)*, 1-5. https://doi.org/10.1016/j.sbspro.2013.01.031

Athanassiou, N., McNett, J. M., & Harvey, C. (2003). Critical Thinking in the Management Classroom: Bloom's Taxonomy as a Learning Tool. *JOURNAL OF MANAGEMENT EDUCATION, (5)*, 533. https://liverpool.idm.oclc.org/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=edsbl&AN=RN139375954&site=eds-live&scope=site

Al-Mahrooqi, R. (2012). A student perspective on low English proficiency in Oman. *International Education Studies, 5*(6), 263-271. https://doi.org/10.5539/ies.v5n6p263

Baporikar, N., & Shah, I. A. (2012). Quality of higher education in 21st century–A case of Oman. *Journal of Educational and Instructional Studies in the World, 2*(2), 9-18. http://www.wjeis.org/FileUpload/ds217232/File/02.baporikar.pdf

Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. *The qualitative report*, *13*(4), 544-559. https://nsuworks.nova.edu/tqr/vol13/iss4/2/

Bogdan, R. C., & Biklen, S. K. (1998). *Qualitative research for education: An introduction to theory and methods* (3rd ed.). Boston: Allyn & Bacon.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77-101. https://doi.org/10.1191/1478088706qp063oa

Brookfield, S. D. (2013). *Powerful techniques for teaching adults*. San Fransisco: Jossey-Bass.

Brookfield, S.D. (1997). Assessing critical thinking. *New Directions for Adult and Continuing Education, 75*, 17-29.

Burbach, M., Matkin, G., & Fritz, S. (2004). Teaching critical thinking in an introductory leadership course utilizing active learning strategies: A confirmatory study. *College Student Journal, 38*(3), 482-493.

Cheema, J. R. (2014). The migrant effect: An evaluation of native academic performance in Qatar. *Research in Education, 91*(1), 65-77. https://doi.org/10.7227/RIE.91.1.6

Choy, S. C., & Cheah, P. K. (2009). Teacher perceptions of critical thinking among students and its influence on higher education. *International Journal of Teaching and Learning in Higher Education*, *20*(2), 198-206. https://files.eric.ed.gov/fulltext/EJ864337.pdf

Cohen, L. M., Manion, L. L. & Morrison, K. (2011). *Research methods in education*. UK: Routledge.

DiCicco-Bloom, B., & Crabtree, B. F. (2006). The qualitative research interview. *Medical Education, 40*(4), 314-321. https://doi.org/10.1111/j.1365-2929.2006.02418.x

Donn, G. A. R. I., & Issan, S. (2007). Higher education in transition: Gender and change in the Sultanate of Oman. *Scottish Educational Review, 39*(2), 173-185.

Ennis, R. H. (1962). A concept of critical thinking. *Harvard Educational Review*, 32(1), 81-111.

Ertmer, P. A., Ottenbreit-Leftwich, A. T., Sadik, O., Sendurur, E., & Sendurur, P. (2012). Teacher beliefs and technology integration practices: A critical relationship. *Computers & Education*, *59*(2), 423-435.

Facione, P. A. (1998*). Critical thinking: What it is and why it counts*. https://www.nyack.edu/files/CT_What_Why_2013.pdf

Faour, M. (2011). *The importance of education in the Arab world*. http://carnegie-mec.org/2011/12/01/importance-of-education-in-arab-world-pub-46067

Forehand, M. (2010). *Bloom's Taxonomy: Original and Revised*. In M. Orey (Ed.), Emerging Perspectives on Learning, Teaching, and Technology (E-Book) (pp. 41-48) https://textbookequity.org/Textbooks/Orey_Emergin_Perspectives_Learning.pdf

Ghazivakili , Z., Nia, R. N., Panahi, F., Karimi, M., Gholsorkhi, H., & Ahmadi, Z. (2014). The role of critical thinking skills and learning styles of university students in their academic performance. *Journal of advances in medical education & professionalism*, *2*(3), 95-102.

Graebner, M. E., Martin, J. A., & Roundy, P. T. (2012). Qualitative data: Cooking without a recipe. *Strategic Organization*, *10*(3), 276-284. https://doi.org/10.1177/1476127012452821

Grandy, G. (2010). Intrinsic case study. In Mills, A. J., Durepos, G., & Wiebe, E. (Eds.). *Encyclopedia of case study research*: L - Z; Index, Volume 1 (pp. 473–475). Sage Publications, Inc. http://dx.doi.org/10.4135/9781412957397.n183

Graneheim, U. H., & Lundman, B. (2004). Qualitative content analysis in nursing research: Concepts, procedures and measures to achieve trustworthiness. *Nurse Education Today*, *24*(2), 105-112. https://doi.org/10.1016/j.nedt.2003.10.001

Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 105-117). Thousand Oaks: Sage Publications.

Halpern, D. F. (2003). *Thought and knowledge: An introduction to critical thinking* (4th ed.). London: Lawrence Erlbaum.

Krathwohl, D. R. (2002). A revision of Bloom's taxonomy: An overview. *Theory into practice, 41*(4), 212-218. https://doi.org/10.1207/s15430421tip4104_2

Lai, E. R. (2011). Critical thinking: A literature review. *Pearson's Research Reports* (*6*), 40-41. https://images.pearsonassessments.com/images/tmrs/CriticalThinkingReviewFINAL.pdf

Larrivee, B. (2000). Transforming teaching practice: Becoming the critically reflective teacher. *Reflective Practice*, *1*(3), 293-307. https://doi.org/10.1080/713693162

Lloyd, M., & Bahr, N. (2010). Thinking critically about critical thinking in higher education. *International Journal for the Scholarship of Teaching and Learning*, *4*(2). https://doi.org/10.20429/ijsotl.2010.040209

Longhurst, R. (2003). Semi-structured interviews and focus groups. In N. Clifford, M. Cope, T. Gillespie, & S. French (Eds.), *Key methods in geography* (3rd ed.) (pp. 143-156). London: Sage Publications.

Moore, T. (2013). Critical thinking: Seven definitions in search of a concept. *Studies in Higher Education, 38*(4), 506-522. https://doi.org/10.1080/03075079.2011.58699

Nasrabadi, H. A., & Mousavi, S. (2012). The contribution of critical thinking attitude and cognitive learning styles in predicting academic achievement of medical university's students. *Iranian Journal of Medical Education*, *12*(4), 285-296. http://ijme.mui.ac.ir/browse.php?a_id=1817&sid=1&slc_lang=en

Ngoc Du, N. (2015). *Factors influencing teaching for critical thinking in Vietnamese lower secondary schools: A mixed method study focussed on history* (EdD thesis, Newcastle University, UK). https://theses.ncl.ac.uk/dspace/handle/10443/2866

Paul, R. W., Elder, L., & Bartell, T. (1997). California teacher preparation for instruction in critical thinking: research findings and policy recommendations from a study of 38 public universities and 28 private universities to determine faculty emphasis on critical thinking in instruction. Sacramento, CA: California. *Commission for Teacher Credentialing* (ERIC Document Nº ED437379).

O'Connor, M. K. (2015). *Social work constructivist research*. Routledge.

O'leary, Z. (2004). *The essential guide to doing research*. London: Sage Publications.

Pica, T. (2000). Tradition and transition in English language teaching methodology. *System*, *28*(1), 1-18.

Polly, D., & Hannafin, M. J. (2011). Examining How Learner-Centered Professional Development Influences Teachers' Espoused and Enacted Practices. *Journal Of Educational Research*, *104*(2), 120-130. https://doi.org/10.1080/00220671003636737

Resnik, D. B. (2015). *What is ethics in research & why is it important*. https://www.niehs.nih.gov/research/resources/bioethics/whatis/index.cfm

Ryan, J., & Louie, K. (2007). False dichotomy? 'Western' and 'Confucian' concepts of scholarship and learning. *Educational Philosophy and Theory*, *39*(4), 404-417. https://doi.org/10.1111/j.14695812.2007.00347.x

Saginak, K., Scofield, T., Saginak, A., Reljic, R., & Foege, A. (n.d.). Perceptions of Critical Thinking: Seeking Instructional Strategies in the Development of Critical Thinking Skills. https://www.shsu.edu/~piic/documents/PerceptionsofCriticalThinking

Simons, H. (2009). Who are they? studying others. In Simons, H. *Case study research in practice* (pp. 68-80). London: SAGE Publications Ltd. https://doi.org/10.4135/9781446268322.n4

Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (2nd ed.). Thousand Oaks, CA, US: Sage Publications, Inc.

Turner, Y. (2006). Chinese students and critical thinking in postgraduate business and management degrees: Teasing out tensions of culture, style and substance. *International Journal of Management Education, 5*(1) 3-12. https://doi.org/10.3794/ijme.51.131

Van Gelder, T. (2001). How to improve critical thinking using educational technology. In G. Kennedy (Ed.), *Meeting at the crossroads: Proceedings of the 18th annual conference of the Australasian society for computers in learning in tertiary education (ASCILITE)* (pp. 539-548). Melbourne: Biomedical Multimedia Unit, The University of Melbourne.

Zwaagsrta, M. (2016). There is no critical thinking without a base of knowledge. https://www.theafronews.com/theres-no-critical-thinking-without-a-base-of-knowledge/

In this study, all rules stated to be followed within the scope of "Higher Education Institutions Scientific Research and Publication Ethics Directive" were followed. None of the actions stated under the title "Actions Against Scientific Research and Publication Ethics", which is the second part of the directive, have not been carried out. The research was approved by the decision of the EdD Virtual Programme Research Ethics Committee (VPREC)/University of Liverpool on 18th December 2015.

During the process of the study titled "Perceptions and knowledge of critical thinking: A qualitative research study with professors of Higher Education in Oman", scientific, ethical and citation rules were followed, no falsification was made on the data collected, the Editorial Board of JESMA has no responsibility for all ethical violations, all responsibility belongs to the Responsible Authors and this study we undertake that it has not been sent to an academic publishing environment for evaluation.

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Unethical Behaviors: An Evaluation According to the Opinions of Teachers and Administrators*

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Unethical Behaviors: An Evaluation According to the Opinions of Teachers and Administrators

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ABSTRACT
It was aimed to determine the unethical behaviors of teachers and administrators from each other's perspectives in this research. The case study method, which is one of the qualitative research methods, was applied in the research. The research group of the study consisted of 20 educators, including 10 teachers and 10 administrators, working in public schools during the 2021-2022 academic year. The research data were collected through semi-structured interviews and analyzed using inductive content analysis by the researchers. According to the most important results of the research, unethical behaviors from the administrators' perspective were determined that teachers entered and left the classes whenever they wanted, ignored professional development, avoided applying different methods and techniques in the lessons, treated students unfairly, saw grades as a punishment tool, and became negative role models for the students. On the other hand, distributing resources to people who are in personal relation to them, making tailor-made lesson plans, acting according to the teachers' unions, being careless to the children of poor families, and being negative role models for the students were among the unethical behaviors of administrators from teachers' perspective. As a result of the research, suggestions were developed to change the unethical behaviors of teachers and administrators.

Keywords: Administrator, teacher, ethics, unethical behavior, school, student

Introduction

The teaching profession is one of the professions that ensure the transmission of culture to future generations. It is considered sacred and can shape the future. Because a healthy social order can be achieved through education (Ministry of National Education [MoNE], 2017). Education has the responsibility of raising individuals who are needed by the society and who adapt to the society. The realization of this mission and the provision of a quality education depends on the administrators and teachers working in schools and their ethical behaviors (Bhardwaj, 2016).

The topic of ethics is among those that attract attention in the literature, and research (Bora, 2017; Hodgkinson, 1991; Marsh, 2013) has been conducted on this topic for many years. In cases where employees have difficulty in making decisions and find themselves in a dilemma, ethics helps them make decisions by guiding them (Marsh, 2013). Ethics helps employees fight unethical requests by acting as a shield when needed (Sherpa, 2018). This increases the power of employees to resist and fight unethical requests. At the same time, ethics describe what the organization expects from employees by being used as a set of rules. In case of non-compliance with these rules, it is used as a cudgel and makes it mandatory for employees to comply with the provisions contained in the ethical codes (Aydın, 2016).

Ethical and unethical behaviors have generally been viewed from a single perspective in research (Barrett, Casey, Visser, & Headley, 2012; Bottery, 1992; Campbell, 2000; Koç, 2010; Ordu, 2019). There is no research that speaks to a two-way perspective and ethical questioning. In this research, teachers and administrators are expected to question the behaviors they engage in while performing their duties from an ethical perspective. Because while individuals can easily evaluate the behaviors of others, they have difficulty in evaluating their own behaviors. In this sense, there is a gap in the literature on the ethical consideration of teachers' behaviors from the perspective of administrators and administrators' behaviors from the perspective of teachers. In this study, it was thought that looking at professional ethics from two different perspectives by taking the opinions of teachers and administrators would contribute to the field. The professional qualities of administrators and teachers and the behaviors they exhibit during their work play an important role in determining the quality of education. In this context, this study, which aims to determine the unethical behaviors of teachers from the perspective of administrators and the unethical behaviors of administrators from the perspective of teachers, sought the answers to the following sub-problems:

(1) What are the unethical behaviors of administrators towards teachers?

(2) What are the unethical behaviors of teachers towards the organization?

(3) What are the unethical behaviors of administrators and teachers towards students?

(4) What are the unethical behaviors of administrators and teachers towards society/state?

Literature Review

Ethics and morality are related terms and are often used as synonyms (Bartneck & Luetge, 2021). Ethics is a branch of philosophy that deals with interpersonal relationships, which are one of the prerequisites for a decent life (Kuçuradi, 2015). It is also a concept that includes the rules that determine the behaviors of individuals and is considered the cornerstone of the professions (Freitas, 1999). Morality includes a set of rules of behavior that people must follow and that are required by society, which may differ depending on the community in which the individual lives. While morality contains criteria that can change, ethics is more universal than morality. No matter how different individuals' life preferences are in a world where there are different values, beliefs, and perceptions, their ability to act according to certain principles in their behaviors towards others depends on ethical behavior (Walker & Lovat, 2017). Since resources in the public sector are limited, personal interests are put aside in the distribution

of these limited resources and thus the interests of society become prominent through ethics (Gamarra & Girotto, 2022).

According to Haynes (2002), the issue of ethics is one of the fundamental components of education, since educators are responsible for educating the generation that follows them. Teaching is one of the professions that should be treated professionally. For this professionalism to be realized, ethical principles are necessary (Bhardwaj, 2016). Educators who engage in unethical behaviors not only undermine the reputation of teachers in society but also diminish society's trust in teachers (Campbell, 2000). It is very important for teachers to consider any behavior towards students carefully, taking ethical principles into account since teaching is a profession that shapes the future (Freitas, 1999).

Professional ethics are standards, values and norms that will guide employees in their professional life and enable them to act professionally. In the globalizing world, teachers' abilities and pedagogical knowledge are not sufficient to fulfill their professions properly, and ethical principles are needed in this regard (Hodgkinson, 1991). Teachers are expected to value students and all stakeholders as human beings, to create a positive classroom environment, to develop students' creative thinking and reasoning skills, to help students to know themselves, to discover their talents, and to have the skills required by the teaching profession while performing their duties (MoNE, 2017). Because it is a necessity of the teaching profession to ensure students' development and discover their potential, these expected professional behaviors are among the ethical responsibilities of teachers (Sherpa, 2018).

The MoNE is responsible for education in Turkey, and the structure of the ministry takes the form of a centralized organization. According to this structure, the MoNE consists of three parts. These are central organization, provincial organization, and foreign organizations (MoNE, 2022). Compulsory education in Turkey is 12 years. Of these, four years are at the primary level, four years are at the secondary level, and the remaining four years are at the senior level, with these levels falling within the scope of free and compulsory education.

Full-time and paid teachers work in the schools, teachers who have three years of professional experience and more than those who want to work as administrators apply for a written exam, and those whose score exceeds 60 out of 100 points can apply for an oral exam. Educators who successfully pass the written and oral examinations are eligible to become administrators if they obtain an education management certificate and can apply for schools with vacancies according to their scores and are appointed according to the ranking of their scores (MoNE Executive Selection and Appointment Regulation, 2021). Administrators are selected from among teachers and appointed for four-year terms. They are responsible for educational and supervisory activities in schools and general supervision of teachers.

Ethics-related courses are included in the curriculum of some of the teacher-training departments of universities in Turkey. In this context, some universities offer ethics as an elective course, while some universities do not have any courses related to ethics. There is no unity in practice in this regard at universities, and some of the teachers start their duties without receiving any training on ethics during their university education (Coşkun & Çelikten, 2020). On the other hand, the MoNE published the circular "Professional Ethical Principles for Those Who Provide Education and Training Services" in 2015 for teachers currently working in schools. This circular has been sent to all schools in an official letter. In the circular, it was emphasized that teachers should be informed about ethical principles, and it was stated that school administrators and supervisors were responsible for the implementation of ethical principles. However, since more than one million teachers work within the scope of formal education in the Ministry of National Education and the number of supervisors responsible for the supervision of educators is less than a thousand (MoNE, 2020), it was not possible to supervise more than one million educators with a limited number of supervisors, and this duty was largely left to school administrators. In Turkey, the adequacy of school administrators' supervision is a matter of debate, and supervision of administrators cannot be achieved due to the insufficient number of supervisors. In addition, while teachers can receive training on ethics within the scope of in-service training, some

scholars in universities cooperate with schools to train teachers on ethics and try to increase their awareness on this issue.

With the "Professional Ethical Principles for Those Who Provide Education and Training Services" circular published in 2015, the ethical principles mentioned in teacher-student relations include building a relationship based on affection and respect, being a role model for students, being tolerant to students, treating students decently and equally, observing their development, and emphasizing the avoidance of mistreatment of students. When the ethical principles of the education profession are examined, it is emphasized to provide a healthy and safe school environment for students, to act in accordance with working hours, not to receive gifts with material value, to stay away from personal benefit, to avoid giving private lessons, not to ask for donations and help, and to have the professional competence required by the teaching profession (MoNE, 2015). One of the ethical responsibilities of teachers is to provide students with a quality education. Teachers can ensure this by making sure that they have received a good education (Stewart, 2010). According to Aydın (2018), one of the most basic professional responsibilities of educators is to provide students with a better education through professional development. Since students do not have the opportunity to choose their teachers, it is important that every teacher has the qualifications to provide quality education. It is the duty and responsibility of the administrators to identify the teachers who do not have these qualifications and to ensure that they receive the necessary support.

Administrators are responsible for maintaining order in schools and ensuring that students receive a quality education in a safe environment (Begley & Johansson, 2008). According to Galloway (1985), administrators should be attentive to their employees and not try to control their movements by putting pressure on them. This is because it has been shown that when employees are provided with a democratic environment and given a voice, their commitment to their organization increases. In addition, Freitas (1999) stated that administrators should not compromise on honesty. He also emphasized that administrators should avoid using the power they derive from their position and authority to exercise dominion over employees. Begley and Johansson (2008), on the other hand, stated that when employees feel valued and a suitable working environment is provided, they will try harder to achieve the goals of the organization. There are studies that indicate that employees are more committed to their organizations when they feel that the work, they do in the organization is important and valuable and a democratic environment is provided (Doğan, 2020; Rhoades & Eisenberger, 2006). Research shows that in addition to supporting teachers, administrators also have a responsibility to act ethically and be an ethical leader (Carr, 2005; Castro, 2019; Freitas, 1999; Michelic, Lipicnik, & Tekavcic, 2010).

For certain standards to be established in organizations, it is necessary to establish professional ethical principles. Each profession needs profession-specific ethical principles (Walker & Donlevy, 2008). The ethical principles that educators should adhere to include the statements of justice, equality, professionalism, decency, responsibility, providing a safe environment for students, and the rule of law (Aydın, 2016). In addition, continuous development and commitment to the profession, trust, impartiality, respect, and effective use of resources are also among the ethical principles that educators should follow. Ethical principles help ensure that the power given by one's professional position is used properly (Bottery, 1992). When ethical principles are followed, it means that the employee's promise to perform his or her duties within professional boundaries and in a manner that serves the goals of the organization is kept (Smith, 1998). Ethics allow employees to use the legal power given by their position to achieve the goals of the organization (Begley & Johansson, 2008). Ethics is an important issue for teachers and administrators working in schools to perform their duties effectively.

Methods and Materials

Research Pattern

The purpose of this study is to determine the unethical behaviors of teachers from the perspective of administrators and the unethical behaviors of administrators from the perspective of teachers. The study was conducted using qualitative research method. In the research, a case study was conducted according to the pattern of qualitative research. Case studies, in which a limited group is studied, are used to examine the identified situation in depth (Cresswell, 2007; Merriam, 2013). Yin (2003) classified case studies according to their characteristics as descriptive, exploratory, and explanatory. Descriptive case studies are used to describe a phenomenon or situation in the context of life. A descriptive case study was used in this research. Yin (2003) classified the case study designs into four groups: single-case (holistic) design, single-case (embedded) design, multiple-case (holistic) design, and multiple-case (embedded) design. In this study, the single-case (embedded) design was used because there is more than one sub-unit in a single case.

Data Collection Tool

The data were collected by the researchers through semi-structured interviews. In preparing for the interview, a literature review was conducted, and the interview questions were prepared based on the theoretical framework. With these questions, a preliminary implementation was conducted with four educators, who are two teachers and two administrators, and the necessary changes were made to the statements according to the opinions and suggestions received on the clarity and appropriateness of the questions. Then, the interview form was presented to the opinion of five experts in the field. In accordance with the opinions and suggestions of the experts, the necessary changes were made to the questions (the number of questions was reduced, and open-ended questions were added) and the final version of the interview form was prepared.

Data Collection

Because the data collection process coincided with the pandemic, data were collected from the participants by scheduling appointments via phone and zoom application. Data collection process lasted six months, beginning in October 2021 and ending in March 2022. While collecting data from the educators participating in the research, the data collection phase was carried out by providing them to fill in an e-mail consent form based on voluntary participation.

Data Analysis

The data obtained during the study were subjected to inductive content analysis. The interviews conducted with the help of semi-structured interview forms were deciphered and converted into written text, then the method of content analysis was applied. In this regard, the data were reviewed according to the purpose of the study, the participants' opinions were coded, and categories and themes were created (Yıldırım & Şimşek, 2011). In other words, the data were coded, the codings were grouped into categories, analyzed according to the purpose of the study, and interpreted descriptively (Patton, 2014). Administrators working in public schools were coded as A1-A10, and teachers were coded as T1-T10. Some participants had more than one opinion in the same category.

Reliability and Validity

To ensure the reliability of the research, semi-structured interview forms, which are data collection tools, were created separately for administrators and teachers, and the questions were prepared in this context. In addition, when the data collection instruments were prepared, a preliminary implementation was conducted, because of which some statements in the interview questions were changed.

Accordingly, expert opinions were used in the preparation of the semi-structured interview questions, and in-depth interviews were conducted with the participants (Patton, 2014). To ensure the reliability in research, participants were identified using the maximum diversity method and detailed information about the participants was provided (Merriam, 2013). In case studies, triangulation technique should be used to reduce the possibility of misinterpretation by analyzing more than one perception, in other words, to control the reliability of interpretations (Christensen & Johnson, 2008). To perform the triangulation technique, which is also expressed as crystallization by postmodern researchers (Merriam, 2013), the data were coded separately by the researchers and the rate of agreement between the codings was checked by using the formula of Miles and Huberman (2014), and consequently, this rate was determined to be 85%. All three researchers took part in the data analysis process and the data were analyzed independently from each other and the findings obtained at the last stage were compared. In this context, the results of the research were accepted as reliable since it was sufficient to have a consensus above 70% according to Miles and Huberman (1994).

To ensure validity, some of the participants' opinions were included as direct quotes. To ensure the internal and external validity of the study, the process of data analysis and how the results obtained were detailed (Cresswell, 2007). In addition, member control, which is a widely used method in qualitative research (Merriam, 2013), was carried out to ensure internal validity and reliability. By using this method, which is also referred to as participant verification, the findings were shared with the participants and feedback was requested from them. Thus, the possibility of misunderstanding and interpretation has been eliminated. Throughout the study, the process of data analysis was controlled by all researchers.

Study Group

An exact number was not determined for the number of participants to be interviewed in the research, and it was planned to interview approximately 10-15 administrators and 10-15 teachers. However, since it was concluded that a saturation point was reached during the data collection phase, in other words, similar statements were heard, interviews were held with 20 participants, including 10 administrators and 10 teachers. The interviews lasted for an average duration of 40 minutes, with 30 minutes shortest and 55 minutes longest. Interviews were recorded with the participants who gave permission during the interviews. In this context, the research group consists of 20 educators, 10 of whom are teachers and 10 of whom are administrators, working in public schools (pre-school, primary school, secondary school, and high school) in 5 provinces in different regions of Turkey during the 2021-2022 school year. The educators participating in the study were selected using the easily accessible sampling method and the maximum diversity method from the non-probability sampling methods.

40% of the administrators are women and 60% are men. 20% of the administrators work in pre-school, 30% in primary school, 30% in secondary school, and 20% in high school. 20% of administrators have professional seniority of 6-10 years, 40% have 11-15 years, 20% have 16-20 years, 20% have 21 years or more. 50% of administrators have a bachelor's degree, 40% have a master's degree, and 10% have a doctorate degree. 90% of administrators are graduates of the Faculty of Education and 10% of the Faculty of Arts and Sciences. 80% of administrators have ethical training, while 20% have no ethical training. 80% of teachers are female and 20% are male. 20% of teachers work in pre-school, 30% in primary school, 30% in secondary school, and 20% in high school. 20% of teachers have seniority of 6-10 years, 50% have 11-15 years, 30% have 16-20 years. 70% of teachers have a bachelor's degree, 20% have a master's degree, and 10% have a doctorate degree. 90% of teachers are graduates of the Faculty of Education and 10% of the Faculty of Arts and Sciences. While 20% of teachers have ethical training, 80% have no ethical training.

Ethical Considerations

In this study, all rules stated to be followed within the scope of "Higher Education Institutions Scientific Research and Publication Ethics Directive" were followed. None of the actions stated under the title "Actions Against Scientific Research and Publication Ethics", which is the second part of the directive, have not been carried out. This study was approved by the Ordu University.

Ethical review board name: Ordu University Social and Human Sciences Research Ethics Committee
Date of ethics review decision: 28 April 2022.
Ethics assessment document issue number: 06/2022-82.

Findings

The findings of the study on teachers' unethical behaviors from the administrators' perspective are presented in Table 1:

Table 1. Ethical violations committed by teachers from the perspective of administrators

Categories	Statements /Opinions
Ethical violations against the organization	**They come to class and leave whenever they want.**
	They do not make the necessary preparations before class.
	They ignore professional development.
	They take arbitrary absences.
	They use class time inefficiently.
	They refrain from using a variety methods and techniques.
Ethical violations against students	They discriminate.
	They are disrespectful.
	They are unfair.
	They are intolerant.
	They are authoritarian/strict.
	They view grades as a means of punishment.
Ethical violations against society	**They are negative role models.**
	They accept expensive gifts.
	They ignore the children they need to win over.
	They are insufficient for students to learn their rights and responsibilities.

Table 1 shows that the most highlighted points in the administrators' statements are that teachers enter and leave classes at any time, ignore professional development, avoid using different methods and techniques, act unfairly, consider grades as a means of punishment, and are negative role models. The following statements can be cited as examples of teachers' opinions on this topic:

> *They aren't anxious to get to class on time. I've had the same problem since I started working in administration, and I can't find a solution. There are teachers who've made it a habit to be late for class (A3).*
> *We'd teachers who wouldn't even know how to turn on the computer if it wasn't for the pandemic. But with distance learning coming up with the pandemic, teachers at least had to become familiar with the technology (A4).*
> *Female teachers don't come to class prepared, they even make photocopies during the lesson, they want to finish as soon as possible and go home. When preparing their curriculum, some say they can't get up early and don't want the first lessons; others don't want the last lessons because they've to cook and don't want to go home late. Since it's difficult to please everyone, we do what we can and say no to some of them (A8).*
> *I know of one teacher who got a referral to go out for breakfast with a friend, or another who got a doctor's note because she was too tired at the vigil the day before, although that's not generally the case. They're also very sloppy with their clothing. From the outside, you can't tell they're teachers (A8).*

Unfortunately, there's a group of teachers who only teach on the basis of experience. Teachers believe that they can improve themselves by reading novels or popular pedagogical books, they teach in a traditional way and take the easy way out. To ensure teachers' professional development in this regard and motivate them, I state that I'll issue a certificate of achievement to teachers who've attended at least five in-service trainings, which I give to those who meet the criteria. This has increased teacher interest in in-service training. This doesn't create an environment that's detrimental to organizational equity (A9).

We don't have a problem with absenteeism because my fellow executives and I try to accommodate their schedules as much as possible and create days off. When it is like this, they can easily do their work on their days off and don't have to take time off (A9).

I attend classes from time to time under the pretext of making an announcement. In one of them, I was shocked to see a teacher eating a cookie her student had brought and calling the student's mother to ask for the recipe. And I can't forget another moment when I saw the teacher filing her nails in class (A8).

The classroom is a closed box. We don't know what they do in class or how they do it, we don't have time for course exams because we're busy with paperwork, so we think there's no problem because we don't get any complaints. We also don't give anyone a certificate of achievement because we don't want anyone to be offended if they don't receive one (A7).

I've been an assistant principal for many years. But I've yet to meet a principal who's done a course audit. In my 20 years as a teacher, I've never been audited by supervisors, and if this continues, I may retire without even being audited at all (A6).

Considering the opinions of the administrators, they seem to be quite uncomfortable with the fact that the teachers are late for class, they see it as a problem, but do not find a solution. It is also stated that teachers do not have a good command of technology. It can be said that administrators cannot conduct course exams under the pretext of their intensity and therefore do not have enough idea about the nature of the courses. Studies show that ethical leaders strive to address problems objectively and come up with solutions (Castro, 2019; Deshpande, 1997), in this sense, administrators should act as ethical leaders. According to administrators, the following statements can be cited as examples of teachers' ethical violations towards their students:

Students are not treated fairly. It is common to exclude unsuccessful students and not allow them to speak. Successful students are promoted while unsuccessful students are marginalized, so the gap between students is widening and becoming a cliff (A10).

We have teachers who use the grade as a means of threat and punishment. I noticed that one student's grade point average at our school, although his written grades were good, went down with his oral grade, and I talked to his teacher and warned him (A3).

While we are walking through the hallways during class, we hear the shouting voices of teachers in some classrooms. They try to silence the class by telling the children to shut up, using swear words and mean expressions. If they knew enough about classroom management, they would not have to act this way, but instead of recognizing their shortcomings in this regard, they try to restore order by insulting and scaring the students (A1).

When administrators' opinions are considered, it can be said that the teachers expect respect from the students, but they behave disrespectfully towards students, they try to solve problems by intimidation and authoritarian behavior instead of solving them with calmness and tolerance. According to the administrators, this is due to the teachers' lack of classroom management skills. According to Sherpa (2018), a teacher whose classroom management skills are inadequate cannot provide qualified instruction. The following statements can be cited as examples of teachers' ethical violations against society according to administrators:

On the teacher's day there are very interesting gifts. Some teachers accept expensive gifts such as kitchen machines, coffee makers, wrist watches, ties, suits, necklaces and go home with an armful of gifts, while other teachers declare up front that they will not accept gifts and go home empty handed (A4).
We administrators always walk around in suits, but the teachers are very relaxed about it. Teachers who wear fabric trousers come to school wearing very strange clothes everyday besides when there are celebrations or ceremonies(A3).
The teachers should impress the students with their knowledge and manners as well as their dress and earn respect, but again the teachers are very sloppy. We can not really say anything, after all they are all adults (A8).

According to administrator opinions, it can be said that there are teachers who behave ethically when accepting gifts, as well as teachers who do not. Studies show that if the material value of the gift is high and the person giving the gift has a personal interest in the person receiving it, this gift can be perceived as a bribe (Graycar & Jansics, 2017) and it is emphasized that gifts prevent the teacher's impartiality (Aydın et al., 2021). In this sense, teachers should avoid gifts with high material value related to professional ethics.

Ethical violations related to administrators are noticed by teachers, and ethical violations by teachers are noticed by administrators, which affects administrators' view of teachers and teachers' view of the organization. As mentioned in the Johari Window, people cannot see the problems they have, and an outsider can see things they are not aware of better (Özdemir, 2018). Administrators' views of unethical behavior in educational organizations are noteworthy, as are teachers' views of the same issues in relation to administrators. In this sense, the unethical behaviors of adminsitrators from the perspective of teachers can be seen in Table 2:

Table 2. Ethical violations committed by administrators against teachers

Categories	Statements/Opinions
Ethical violations related to honesty	Words and deeds are not consistent.
	Facts are reflected differently.
	Personal interests are the primary motivation for many actions.
Ethical violations in the conduct of justice	**Resources are distributed to those who are close to them.**
	Workload is distributed to specific individuals.
	Employees are treated with varying degrees of detachment.
	Lesson plans are personalized.
Ethical violations regarding respectful behavior	They break the rules themselves.
	They ignore people.
Ethical violations regarding acting impartially	**They act in the interests of unions.**
	They discriminate based on gender.
	They discriminate based on branch.
Ethical violations regarding paying for labor	They are ineffective at rewards.
	Rewards are given to those who do not deserve them.
Ethical violations regarding privacy	Personal information is shared.
	The general attitude is careless.

As shown in Table 2, among the ethical violations committed by administrators against teachers, the following are the most prominent: resources are distributed by administrators to people close to them, lesson plans are personalized, and they act in the interests of unions. The following statements can be cited as examples of teachers' opinions on this category:

The curriculum of some of my colleagues, unlike mine, was exactly what they wanted. The lesson programs of teachers close to the administration are smoother and they get what they want (T3).

A teacher who works hard is not exactly appreciated, on the contrary, those who only seem to work and are close to the administration are rewarded even if they do not deserve it (T4).
They do not comply with their working hours, they come to school when they want and use the excuse of "meeting" to leave when they want, the administrator should come to school before the teachers and leave last (T8).
The administrator's relationship with the members of his own union is very different, they drink tea with them in their rooms, talk, and most of them are already in the same union, so they discriminate against minorities (T9).
Although I represented my school with success in our district and made a name for the school with projects, I did not get the certificate of success. I get sad and my motivation decreases when I see people who do not have projects and do not work get certificates just because they are close to the administrator (T5).
Administrators do not want to give anyone a certificate of achievement because they are afraid of teachers' reactions. They never do such things because if they give someone a certificate, those who do not get it will be offended (T9).
Most administrators make distinctions, they do not act fairly, but what can we really do as teachers, we can file complaints but nothing ever comes of it, and as a result I would just get tired. That's why we also turn a blind eye to injustice (T10).

Looking at the opinions of teachers, we find that there is a distinction between teachers, and administrators make this distinction mainly in terms of treating those who are in the same union with privileges and creating personalized curricula. Table 3 shows the ethical violations of administrators toward students:

Table 3. Ethical violations committed by administrators against students

Categories	Statements /Opinions
Ethical violations in Ethical behavior	Students have no say when it comes to matters related to school.
	Students are ruled by punishment and fear.
Ethical violations in the conduct of justice	Children of teachers are given privileges.
	Children of related parents are treated differently.
	Donors can choose the teacher they want.
	Children from poor families are treated neglectfully.
Ethical violations in providing a qualified educational environment	**The physical conditions of classes differ from each other.**
	Children from educated and wealthy families gather in selected classes.
	In education, more attention is paid to image than to content.
	Instructional leadership is not performed.
	They are negative role models.
Ethical violations in treating their rights with respect	Students are insulted.
	Students are abused.

As can be seen from Table 3, among the ethical violations committed by the administrators towards the students, the most highlighted ones are that the children from poor families are treated negligently, the physical conditions of the classes differ from each other, the attention is focused more on the image than on the content, and they are negative role models in education. The following statements can be cited as examples of teachers' opinions on this category:

Last year the school was whitewashed and painted. The color of the paint could be determined by asking the students, but that wasn't done, instead the school was painted the color the principal wanted (T8).
We'd a student who was often late for school because her house was far away. She'd to take the bus there and back because she couldn't afford the service. Administrators gave penalties even though they knew the student was only late to school when the bus was late, but they ignored it when the same thing happened to a child of a known parent (T8).

Sometimes I don't even understand why they yell at the kids. They get angry at the simplest things. Insults, name-calling, even hitting happen from time to time. Especially children or refugee children or those whose parents are uninvolved are treated badly. I don't think they can do that in central schools (T3).
They're very distant towards the students. They spend their energy on improving the physical facilities of the school and doing the paperwork. We don't see the administrators in the hallways, among the students, patting their heads and showing them affection. They say they're either in their rooms or in meetings. They don't care about the efficiency of the teachers or the in-service training they need. Even now, the courses aren't controlled. There's also the problem of elderly administrators who leave their work to the assistant principals and don't stop by the school and don't even know anything about the work (T8).
We, the pre-school teachers, are asked to prepare many boards for the parents to see. Although it's clear that a pre-school child cannot cut, paint or glue so uniformly that the teachers perform these activities, our administrators ignore the problem and present the boards, bragging to the parents that the activities are performed by the students (T7).
Although smoking is prohibited for students, administrators can smoke where students can see it and then get angry and berate the smoking students who smoke. Administrators should be role models for students (T8).

When the views of the teachers are examined, it is seen that the students are discriminated according to their economic status, and poor students are treated very carelessly. It can be said that not much time is spent with students, they are not treated democratically, their opinions are not asked, students are sometimes exposed to undesirable behaviors such as insults and violence, and administrators violate the Convention on the Rights of Children. It is observed that administrators place more emphasis on image than on the quality of education and they do not have realistic expectations of teachers. According to Hoy and Miskel (2015), the concept of accountability plays an effective role in preventing unethical behavior in schools. The ethical violations of administrators against the state are shown in Table 4:

Table 4. The Ethical violations committed by administrators against the state/society

Categories	Statements / Opinions
Ethical violations in obtaining material resources	**Collection of fees from students.**
	Receiving registration money.
	Using school gardens as parking lots.
Ethical violations in using resources efficiently	Unnecessary and incorrect photocopies are being made.
	Resources are spent on the external appearance of the school.
	School equipments is used recklessly.
	Instead of repairing and using old equipment, new ones are purchased.
Ethical violations in compliance with the law	They give informal leave to the teachers they choose.
	There's bullying.
Ethical violations in using duties and authorities	There is nepotism in the recruitment of staff at the school.
	Personal expenses such as food money are covered by the PTA.
	They favor certain students in enrollment.

As shown in Table 4, among the ethical violations committed by administrators against the state, the most highlighted ones are the collection of fees from students, the receipts of registration fees, and the expenditures of funds for the school's external appearance. The following statements can be cited as examples of teachers' opinions on this category:

Some teachers are tolerated when they have a job without a report or permission. When we have a job for an hour or two, we can get it done and come back. They don't bother us for this. This is actually being used to our advantage. However, this is not allowed when it is the work of a teacher with whom the administration has a disagreement (T10).

They see providing a qualified educational environment as improving physical conditions. For this reason, they are constantly dealing with works such as the construction of heaters and the paint of the school. They do not care enough about teachers' classroom management, efficiency and success (T9).
Resources aren't used efficiently. For example, the assistant principal keeps an electric stove burning in his room from morning to night. They're also very sloppy in handling paper. They can press the wrong button and make hundreds of wrong copies. Faucets that leak water aren't repaired. They should avoid waste first. The school yard is used as a parking lot, and that's how money is made. Although these courtyards are there for students during school hours. Sometimes they go to eat with the teachers, and the cost of the meal is covered by the budget of school parent association. Everyone should pay for the food they eat (T8).

It can be noted that teachers think that resources are wasted, that they are uncomfortable with this situation, that it is necessary to prevent the waste as a priority, and that they do not see any effort regarding the nature of education. In addition, it is noted that some administrators try to obtain resources in an illegal way, such as using the school yard as a parking lot, and teachers are uncomfortable with this situation. According to Pijanowski (2017) and Monk (1997), money is unethically obtained and transferred to the budget in some schools. Teachers also talk about fees and the issue of selected classrooms, emphasizing and expressing their discomfort in this regard. The following statements can be cited as examples of teachers' opinions on this issue:

The children of those who donate the desired amount for the school and the children of the teachers are gathered in a classroom, a special selected class is set up for them. The facilities that the children have in these classes or the physical conditions of the classes are very different from the other classes, they are privileged (T2).
New computers and projection devices came to our school. These were put in the classrooms of the teachers, with whom the administrator got along well and was satisfied with the collection of dues. We continue to use the old ones (T10).
Even though we have said that collecting fees is not legal, there is some pressure about it. Teachers who collect a lot of school fees have better facilities than other classes (T2).
In some schools, selected classes are held with the children of the parents who receive money during registration under the name of donation. Although this demand is also expressed by our parents, we definitely take a clear stance and do not allow it, we tell the insistent parents to enroll their children in another school (T7).

Teachers note that administrators receive the money for enrollment, that fees are collected, that certain students are grouped together in a class, and that the physical, social, and economic conditions of these classes are privileged. It is possible to say that the administrators create classes of different qualities even in the same school and the teachers are uncomfortable with this, this situation is against the principle of equal opportunity in education and negatively affects the motivation of the teachers. According to Anderson (2007), education is seen as an opportunity for poor students, and when equal opportunities are provided, these disadvantaged children strive to achieve success. Providing this opportunity is one of the most basic responsibilities of the government. It can be said that the administrators of the schools, which created selective classes based on these, took away the students' right to equal opportunities and acted against the law.

Discussion

Ethics is among the topics that have attracted attention in recent years, it is part of professional life as well as everyday life, and the number of research on ethics conducted in schools is increasing (Aydın et al. 2021; Feng, 2011). Among the findings on teachers' unethical behaviors towards the organization obtained in the study, it was found that teachers entered and left the classroom at any time, ignored professional development, and avoided using various methods and techniques in the classroom.

Regarding the unethical behaviors of teachers towards students, it was revealed that they treated students unfairly and saw grades as a punishment tool. In the study, it was stated that teachers were seen as negative role models in society for their unethical behaviors towards society. This result means that some of the teachers are not even aware of the professional ethical principles and do not improve their behaviors.

Considering the unethical behavior of administrators towards teachers in the research, it was found that resources were distributed to those who were close to them, lesson plans were individualized, and teachers were treated according to their unions. Considering the unethical behaviors of administrators towards students, it was reached that children from poor families were treated negligently and that physical conditions of classes differed from each other. The findings on the unethical behavior of administrator towards the state/society were that they were a negative role model for students, they placed more emphasis on image than on the content of education, they collected fees from parents, and they spent resources on the external appearance of the school. A summary of unethical behaviors is shown in Figure 1:

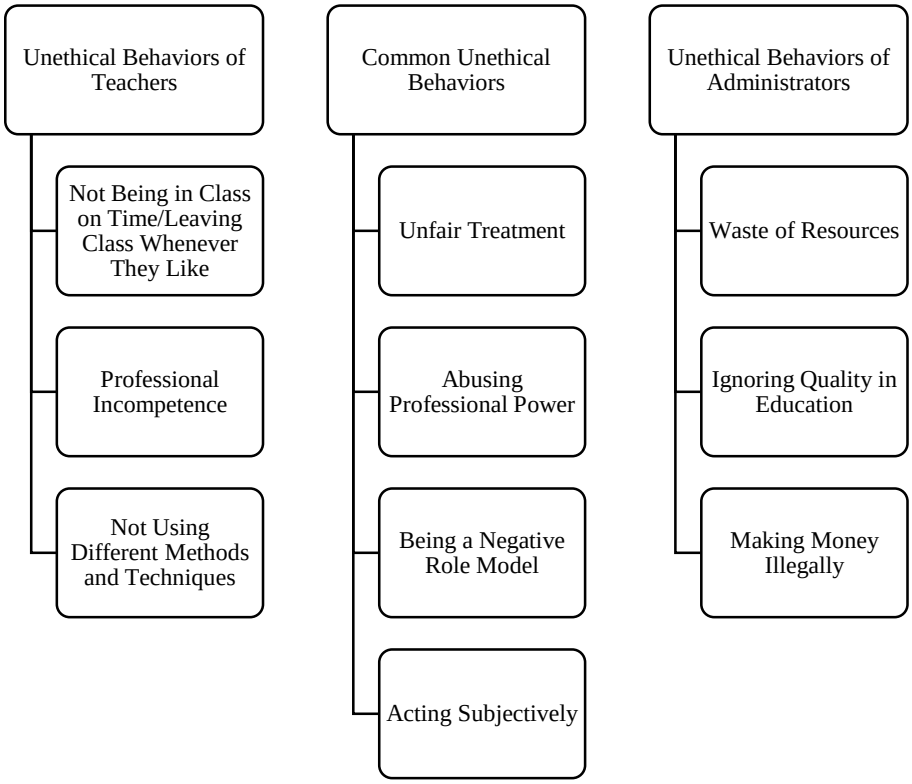

Figure 1. Unethical behaviors of administrators and teachers

As you can see from Figure 1, there are unethical behaviors that both teachers and administrators engage in while performing their duties. Some of the unethical behaviors are common behaviors. Among these behaviors, it is possible to state that teachers treat students unfairly and administrators treat both teachers and students unfairly. It can be stated that teachers abuse their professional power in grading and administrators abuse their professional, i.e., legal power towards teachers, that there are negative role models for students in both groups of educators, and that they act subjectively in their behaviors related to their duties. While teachers affirm that administrators behave unfairly towards students, administrators also express that teachers behave unfairly towards students, the parties criticize each other in this regard, but in both cases, students become victims.

Research reveals that unethical behaviors decrease when a positive ethical climate is created in organizations (Cullen, Victor, & Bronson, 1993; Das & Grover, 2022). The studies present that being late to class is seen as a problem by administrators (Aslanargun & Bozkurt, 2012), but teachers also

criticize administrators for coming and going to school at any time and using meetings as an excuse to be absent from school. It is the teachers' responsibility to show up to school on time, and it is the administrators' responsibility to show up to their duty on time, and the teachers want to see the administrators in school. In this sense, it can be said that administrators are not paying attention to the issue for which they are criticizing teachers for. Studies suggest that undesirable teacher behaviors, such as being late to class and not fulfilling the requirements of their duties, have negative effects on students (Banfield, Richmond, & Mccroskey, 2006) and create distrust (Thweatt & McCroskey, 1998).

Administrators declare that teachers neglect children from poor families, do not care about unsuccessful students, ignore them, and continue their lessons with successful students, and this is reflected in the exams as well. Studies demonstrate that there is a significant relationship between socioeconomic status and school success (Hauser, 1994). Unsuccessful students tend to be children from families with low socioeconomic status, and their economic status also affects children's nutrition, home environment, access to technology, their parents' occupations, and family income (McKinney, 2014). These families are unable to help their children in their lessons and are unable to send them to courses and are unable to support their children's success in school (Mowat, 2018). Therefore, the role of teachers in school is becoming more and more important. In this sense, it can be asserted that school administrators should monitor academic achievement in classes and take action to close the gap in classes where there is an academic gap between students.

Teachers indicate that administrators place more emphasis on image than on the content of instruction, while administrators note that teachers avoid using various methods and techniques in the classroom and ignore professional development. Research demonstrates that teachers' professional inadequacies are perceived as a problem by administrators (Aslanargun & Bozkurt, 2012). However, the course supervision is not considered necessary by administrators, so the teaching environment is presented as a closed box. On the other hand, some administrators try to supervise by entering the classrooms at unexpected times under the pretext of announcements, not realizing that supervision is a planned and systematic action. It can be said that the situation is clearer to see when administrators conduct supervisions on a regular basis rather than forming opinions based on examples they face randomly. However, research displays that administrators do not trust themselves in supervision (Çınkır, 2010; Hall, 2017; Kurebwa, Wadesango, & Wadesango, 2015). It is possible that this situation is due to their lack of knowledge about education management and supervision.

Administrators claim that teachers do not care enough about their job and give more importance to housework, but teachers claim that resources in schools are distributed to those close to administrators, lesson plans are personalized, there are selective classes, those who collect fees and union members are treated with privileges, they are ineffective in terms of rewards, in other words, administrators treat teachers unfairly so they become alienated from the profession as a result. There are studies disclosing that one of the problems of school administrators is that teachers put their profession in the background and put their personal work in the foreground (Aslanargun & Bozkurt, 2012). However, it can also be said that this situation reflects the administrators' inability to provide organizational justice. The negligent treatment of children from poor families and the different physical conditions in classrooms are indicators of the lack of equity towards students. Studies indicate that administrators try hardest to be ethically fair (Feng, 2011), but they generally fail to establish organizational justice (Hoy & Tarter, 2004). It can be claimed that administrators who pay more attention to the issue of equity and set certain criteria, rather than making the reward system ineffective, and declare that those who meet these criteria will receive a certificate of achievement, so they have a policy based on transparency in this regard, increase teachers' motivation by rewarding those who deserve it.

Teachers emphasize that they are uncomfortable with the registration fee, the collection of fees and the existence of selected classes, and these selected classes are confirmed by some administrators. As this problem is an example of the violation of opportunities and equality in education, the National Education Basic Law No. 1739 is violated. Studies have shown that schools are left alone financially, that a lot of work is expected with a small budget (Aslanargun & Bozkurt, 2012; Çınkır, 2010), that school administrators look for unofficial resources such as donations and registration fees due to the insufficient funds allocated to the school, and that they receive most of the funds from these (Kayıkçı

& Akan, 2014; Korkmaz, 2005) and they explain that this search for resources discredits administrators in the eyes of parents (Toker Gökçe & Uslu, 2018). It can be said that the state should provide schools with sufficient resources to meet their needs, considering the socioeconomic environment in which the school is located and the number of students. When these conditions are met, administrators seeking unofficial resources should be identified and penalized.

Personalized lesson plans are criticized by teachers. It appears that administrators are making discrimination about this issue, especially in the treatment of those who are in the same union and are privileged in the creation of lesson plans. This unfair behavior by administrators has a negative impact on teachers and leads to undesirable consequences such as alienation from the profession and lack of motivation for work. There are studies that state that fairness in schools affects teachers' organizational commitment (Castro, 2019; Laing, Smith, & Todd, 2019). In the study conducted by Yalçın (2017), it was stated that administrators have unethical behaviors such as being biased and making decisions on their own, and these behaviors have a negative effect on teachers' motivation. In Öztürk's (2022) research, it was revealed that administrators behaved unfairly and exhibited nepotistic behaviors towards some teachers and that these unethical behaviors, were usually shown against teachers who were in the same union, which negatively affected the motivation of teachers and reduced their performance. Current research findings support these research findings. Ethical leaders differ from other leaders in that they behave fairly towards their employees, consider long-term consequences when making decisions, and are reliable and respectful role models (Michelic et al., 2010). While it is unethical behavior to not come to school for breakfast, to be absent even when there is nothing urgent at stake, and to abuse students' right to education, it is also unethical to prepare unsuitable lesson plans for teachers even though they have the opportunity. In this sense, it can be said that both teachers and administrators should be mindful of their own behavior when criticizing ethics, and that administrators should be able to lead ethically.

There are studies emphasizing that teachers do not come to class on time and prepared, do not pay attention to their behaviors towards students, do not provide professional development (Aslanargun & Bozkurt, 2012; Koç, 2010; Kurtulan, 2007), they are insufficient in complying with ethical principles, and unethical behaviors are carried out in organizations (Barrett et al. 2012; Galloway, 1985; Tezcan & Güvenç, 2020). In this sense, some of the results of this study are like other studies in the literature. However, there is no other study in the literature on comparing and discussing the unethical behaviors of administrators and teachers together. In this context, this study contributes to the literature in terms of obtaining different findings from other studies.

Studies have acknowledged that there is a relationship between ethical and unethical behaviors in organizations and both performance and organizational commitment (Begley & Johansson, 2008; Çetinkaya, 2017; Kepenek, 2008) and organizational commitment and job satisfaction (Aydın Akçakaya, 2021; Katıtaş, Karadaş, & Coşkun, 2022; Solmaz, 2019; Sönmez, 2019; Turan, 2019; Uranbey, 2018; Walker & Lovat, 2017). At the same time, there are studies claiming that the perception of organizational justice has a mediating role on the effect of ethical leadership behavior on organizational identification (Mıhcı, 2019) and that ethical leadership is an effective tool in the management of organizations (Michelic et al., 2010). In this sense, it is necessary to pay attention to the issue of ethics for the employees to be connected to their organizations, to make more effort to contribute, in other words, to show organizational citizenship behavior. It is possible to say that this research is important in filling the gap in the literature within the scope of raising awareness about the unethical behaviors of administrators and teachers in schools and taking the necessary precautions in case these are not realized, ensuring that administrators have knowledge about ethical leadership and increasing organizational effectiveness.

Conclusion

This study highlighted the unethical behaviors of teachers from the administrators' perspective and the unethical behaviors of administrators from the teachers' perspective. It was found in the research that some administrators and teachers are careful to fulfill their professional responsibilities and act

ethically, but some of them sometimes act against professional ethical principles, against each other, against students, against the organization, and against the state/society during their work.

Both administrators and teachers are people who take their positions in the service of the state. They are responsible for complying with Civil Servants Law No. 657 (CSL) and the ethical agreement, thus serving the state and society. Every employee who works in a public organization serves in the organization for a certain period. When his or her term ends, these individuals are replaced by other employees, thus sustainability is insured. In this sense, administrators and teachers who work in organizations should be aware of the responsibility of these tasks, be aware of holding this position only temporarily, avoid acting personally, put the interests of the organization in the foreground, comply with ethical principles and act in accordance with laws and regulations. It is obvious that it is necessary to establish control mechanisms so that organizations can achieve their goals, complete the shortcomings, and correct the deficiencies. In addition to this, it can be expressed that these issues should be considered in addition to proficiency in the interviews conducted in the selection of both teachers and administrators.

In short, in schools where students from different age groups participate, teachers and administrators are the people that students observe best as role models. Therefore, teachers and administrators need to pay attention to their behaviors. These unethical behaviors of teachers and administrators have a negative effect on students and the quality of education, so there should be more awareness to change it. It is necessary to conduct a supervision and identify and sanction those who perpetuate unethical behaviors, and that administrators and teachers who can be role models for students and can provide ethical leadership should work in schools.

Limitations

The research used the views of 20 educators, 10 of whom were administrators and 10 of whom were teachers. This situation can be considered as a limitation of case studies. Since there is no concern of generalization in case studies, the findings of this study cannot be generalized to Turkey. Despite this limitation, the research contributes to the literature by providing a different perspective on unethical behavior.

Disclosure Statement

No potential conflict of interest was reported by the authors.

References

Aydın Akçakaya, S. (2021). *Bir üniversite hastanesindeki hemşirelerin etik duyarlılıklarının örgütsel bağlılıkla ilişkisi [The relationship between ethical sensitivities and organizational commitment of nurses in a university hospital]* (Unpublished master's thesis). Celal Bayar University, Turkey.

Anderson, E. (2007). Fair oppurtinity in education: A democratic equality perspective. *Ethics, 117*(4), 595-622. https://doi.org/10.1086/518806

Ashby, W. (1950). Teleology and deontology in ethics. *The Journal of Philosophy, 47*(26), 765-773. https://doi.org/10.2307/2020659

Aslanargun, E., & Bozkurt, S. (2012). Okul müdürlerinin okul yönetiminde karşılaştığı sorunlar [Problems that principals face in school administration]. *Gaziantep Üniversitesi Sosyal Bilimler Dergisi [Gaziantep University Journal of Social Sciences], 11*(2), 349-368. Retrieved from https://dergipark.org.tr

Aydın, İ. (2016). *Yönetsel, mesleki ve örgütsel etik [Administrative, professional, and organizational ethics]*. Pegem Akademi Publishing.

Aydın, İ. (2018). *Okullarda denetim için 9 neden [9 reasons for supervision in schools]*. Retrieved from http://www.hurriyet.com.tr/egitim/okullarda-denetim-icin-9-neden-40826979

Aydın, İ., Demir, T. G., Toptaş, B., & Erdemli, Ö. (2021). Teachers' struggle with gifts: gift culture at schools and associated ethical problems. *Ethics & Behavior*, *31*(5), 335-349. https://doi.org/10.1080/10508422.2020.1765170

Banfield, S. R., Richmond, V. P., & McCroskey, J. C. (2006). The effect of teacher misbehaviors on teacher credibility and effect for the teacher. *Communication Education, 55*(1), 63-72. http://dx.doi.org/10.1080/03634520500343400

Barrett, D. E., Casey, J. E., Visser, R. D., & Headley, K. N. (2012). How do teachers make judgments about ethical and unethical behaviors? Toward the development of a code of conduct for teachers. *Teaching and Teacher Education*, *28*(6), 890-898. Retrieved from https://www.learntechlib.org/p/202384/

Begley, P., & Johansson, O. (2008). The values of school administration: Preferences, ethics, and conflicts. *Journal of School Leadership, 18*(4), 421-444. https://doi.org/10.1177%2F105268460801800405

Bhardwaj, A. (2016). Importance of education in human life: A holistic approach. *International Journal of Science and Consciousness, 2*(2), 23- 28. Retrieved from https://www.ijsc.net

Bora, Z. (2017). *Okul müdürlerinin öğretmenlere yönelik etik dışı davranışları ve nedenleri [School principals' unethical behaviors towards teachers and the causes of unethical behaviors]* (Unpublished master's thesis). Düzce University, Turkey.

Bottery, M. (1992). *The ethics of educational management.* Cassell.

Campbell, E. (2000). Professional ethics in teaching: Towards the development of a code of practice. *Cambridge Journal of Education, 30*(2), 203–221. https://doi.org/10.1080/03057640050075198.

Carr, D. (2005). *Professionalism and ethics in teaching.* Routledge.

Castro, L. (2019). Leaders in ethics education. *International Journal of Ethics Education*, *2*, 99-104. https://doi.org/10.1007/s40889-019-00079-7

Coşkun, B., & Çelikten, M. (2020). Öğretmenlik meslek etiği üzerine bir inceleme [A review on professional ethics in teaching]. *OPUS-Uluslararası Toplum Araştırmaları Dergisi [International Journal of Society Researches]*, *15*(21), 686-710. https://doi.org/10.26466/opus.666967

Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five traditions*. Sage.

Cullen, J. B., Victor, B., & Bronson, J. W. (1993). The ethical climate questionnaire: An assesment of its development and validity. *Psychological Reports, 73*, 667-674. https://psycnet.apa.org/doi/10.2466/pr0.1993.73.2.667

Çetinkaya, B. D. (2017). *Bireysel etik değerlerin örgütsel bağlılık kapsamında whistle bloowing davranışı üzerindeki etkisi [The effect of individual ethical values on whistleblowing behavior within the scope of organizational commitment]* (Unpublished master's thesis). Anadolu University, Turkey.

Çınkır, S. (2010). İlköğretim okulu müdürlerinin sorunları: Sorun kaynakları ve destek stratejileri [Problems of primary school headteachers: Problem sources and support strategies]. *İlköğretim Online*, *9*(3), 1027-1036. Retrieved from https://dergipark.org.tr

Das, A., & Grover, D. (2022). Ethical climates in South Asian organizations: Empirical findings from India. *SN Business & Economics*, *2*, 55. https://doi.org/10.1007/s43546-022-00226-1

Deshpande, S. P. (1997). Managers' perception of proper ethical conduct: The effect of sex, age, and level of education. *Journal of Business Ethics, 16*, 79–85. https://doi.org/10.1023/A:1017917420433

Doğan, S. (2020). İlkokullarda görev yapan öğretmenlerin örgütsel destek algısı [Perception of primary school teachers on organizational support]. *Gazi Eğitim Bilimleri Dergisi [Gazi Journal of Educational Science], 6(*3), 361-379. https://dx.doi.org/110.30855/gjes.2020.06.03.006

Feng, F. (2011). A Study on school leaders' ethical orientations in Taiwan. *Ethics & Behavior, 21*(4), 317-331. https://doi.org/10.1080/10508422.2011.585599

Freitas, D. J. (1999). A professional code of ethics for teacher educators: A proposal to stimulate discussion and debate. *Action in Teacher Education, 20*(4), 96-99, https://doi.org/10.1080/01626620.1999.10462939

Galloway, D. (1985). *Schools and persistent absentees*. Pergamon.

Gamarra, M. P., & Girotto, M. (2022). Ethical behaviour in leadership: A bibliometric review of the last three decades. *Ethics & Behavior, 32*(2), 124-146. https://doi.org/10.1080/10508422.2020.1863799

Graycar, A., & Jancsics, D. (2017). Gift giving and corruption. *International Journal of Public Administration, 40*(12), 1013–1023. https://doi.org/10.1080/01900692.2016.1177833.

Toker Gökçe, A., & Uslu, Ö. F. (2018). İlkokullarda okul müdürlerinin mali kaynak gerektiren ihtiyaçları karşılama yolları [The ways school principals meet the needs that require financial resources in primary schools]. *İnönü Üniversitesi Eğitim Fakültesi Dergisi [İnönü University Journal of the Faculty of Education], 19*(1), 315-334. https://doi.org/10.17679/inuefd.311995

Hall, J. B. (2017). Examining school inspectors and education directors within the organisation of school inspection policy: Perceptions and views. *Scandinavian Journal of Educational Research, 61*(1), 112-126. https://doi.org/10.1080/00313831.2015.1120234

Hauser, R. M. (1994). Measuring socioeconomic status in studies of child development. *Child Development, 65*(6), 1541-1545. https://www.jstor.org/stable/1131279

Haynes, F. (2002). *Eğitimde etik [Ethics in education]*. (S. K. Akbaş, Trans.). Ayrıntı Publishing.

Hoy, W., & Miskel, C. (2015). *Eğitim yönetimi: Teori, araştırma ve uygulama [Educational administration: Theory, research, and practice]*. (S. Turan, Trans.). Nobel Publishing.

Hoy, W., & Tarter, C. J. (2004). Organizational justice in schools: No justice without trust. *International Journal of Educational Management, 18*(4), 250-259. https://doi.org/10.1108/09513540410538831

Johnson, R. B., & Christensen, L. B. (2008). *Educational research: Quantitative, qualitative, and mixed approaches.* Sage.

Hodgkinson, C. (1991). *Educational leadership: The moral art.* Suny Press.

Katıtaş, S., Karadaş, H., & Coşkun, B. (2022). Okul yöneticilerinin etik liderlik davranışlarının öğretmenlerin öznel iyi oluş ve iş doyumları üzerindeki etkisi [The effect of ethical leadership behaviors of school administrators on teachers' subjective well-being and job satisfaction]. *Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi [Mehmet Akif Ersoy University Journal of Education Faculty],* (62), 182-207. https://doi.org/10.21764/maeuefd.949243

Kayıkçı, G., & Akan, D. (2014). İlköğretim kurumlarının mali kaynak sorunları ve okul müdürlerinin çözüm uygulamaları [Financial resource problems of primary education institutions and solution practices of school principals]. *Akademik Sosyal Araştırmalar Dergisi [The Journal of Academic Social Science], 2*(1), 237-255. Retrieved from https://asosjournal.com

Kepenek, Ö. (2008). *Öğretmenlerin meslek etik ilkelerinin örgütsel vatandaşlık davranışına etkisi (Kocaeli İli Örneği) [Ethic principles of teaching profession and it's effects on organizational citizenship behavior (The case of Kocaeli province)]* (Unpublished master's thesis). Sakarya University, Turkey.

Koç, K. (2010). Etik boyutlarıyla öğretmenlik [The ethical dimensions of teaching]. *Çağdaş Eğitim Dergisi [Contemporary Education Journal], 35*(373), 13–20. Retrieved from https://avesis.medeniyet.edu.tr

Korkmaz, İ. (2005). İlköğretim okullarının karşılaştıkları finansman sorunları [Financial problems faced by primary schools]. *Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi [Selçuk University Social Sciences Institute Journal]*, (14), 429-434. Retrieved from https://dergipark.org.tr/tr/pub/susbed/issue/61791/924088

Kuçuradi, I. (2015). *Etik [Ethic]* (6th ed.). Türkiye Felsefe Kurumu [Turkish Philosophy Institution].

Kurebwa, M., Wadesango N., & Wadesango V. O. (2015). Challenges faced by deputy heads in supervising teachers in primary schools. *International Journal of Educational Sciences*, *9*(2), 187-197. https://doi.org/10.1080/09751122.2015.11890309

Laing, K., Smith, L., & Todd, L. (2019). Using the concept of relational justice to apply fairness in schools. *The International Educational Journal*, *18*(1), 128-142. Retrieved from https://openjournals.library.sydney.edu.au/index.php/IEJ/article/view/13361/12077

Marsh, C. (2013). Business executives perceptions of ethical leadership and its development. *Journal of Business Ethics*, *114*, 565–582. https://doi.org/10.1007/s10551-012-1366-7

McKinney, S. (2014). The relationship of child poverty to school education. *Improving Schools, 17*(3), 203-216. https://doi.org/10.1177%2F1365480214553742

Merriam, S. B. (2013). *Nitel araştırma desen ve uygulama için bir rehber [A guide to qualitative research design and practice]* (S. Turan, Trans.). Nobel Publishing.

Mıhcı, H. (2019). *Okullarda etik liderlik ile örgütsel adalet ve örgütsel özdeşleşme arasındaki ilişkilerin incelenmesi (Giresun ili örneği) [An investigation into the relationship between the ethical leadership, organizational justice and organizational identification in the schools (Sample of Giresun)]* (Unpublished master's thesis). Recep Tayyip Erdoğan University, Turkey.

Michelic, K. K., Lipicnik, B., & Tekavcic, M. (2010). Ethical leadership. *International Journal of Managament, 14*(5), 31-41. https://doi.org/10.19030/ijmis.v14i5.11

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis*. Sage.

Ministry of National Education. (2015). *Professional ethical principles for educators.* Ministry of National Education. Retrieved from http://banaz.meb.gov.tr

Ministry of National Education. (2017*). General competencies of the teaching profession.* Retrieved from https://oygm.meb.gov.tr

Ministry of National Education. (2022). *Organization and duties of the Ministry of National Education*. Retrieved from https://www.mevzuat.gov.tr

Monk, D. H. (1997). Challenges surrounding the collection and use of data for the study of finance and productivity. *Journal of Education Finance, 22*(3), 303-316. https://www.jstor.org/stable/40704001

Ordu, A. (2019). *Öğretmenlik mesleği için etik ilkeler ve etik ilkelere ilişkin öğretmen görüşleri [Codes of ethics for the teaching profession and teachers' opinions on ethical codes]* (Unpublished master's thesis). Ankara University, Turkey.

Öztürk, M. (2022). *Okul müdürlerinin sergiledikleri kayırmacı davranışlara ilişkin öğretmen görüşleri [Teachers' opinions on the nepotism behaviors exhibited by school principals]* (Non-thesis master's project). Pamukkale University, Turkey.

Patton, M. Q. (2014). *Nitel araştırma ve değerlendirme yöntemleri [Qualitative research and evaluation methods]* (M. Bütün and S. B. Demir, Trans.). Pegem Akademi Publishing.

Pijanowski, J. C. (2017). School finance as a moral dilemma. *E-journal of Educational Policy*, 1-7. Retrieved from http://nau.edu/COE/eJournal/

Rhoades L., & Eisenberger, R. (2006). When supervisors feel supported: Relationships with subordinates perceived supervisor support, perceived organizational support and performance. *Journal of Applied Psycholog, 91*(3), 689-695. https://doi.org/10.1037/0021-9010.91.3.689

Sherpa, K. (2018). Importance of professional ethics for teachers. *Education, 4*(3), 16-18. Retrieved from http://kerd.ku.ac.ke/123456789/836

Solmaz, B. (2019). *Etik liderlik davranışı, örgütsel bağlılık, iş tatmini ve işten ayrılma niyeti ilişkisi: Savunma ve güvenlik sektöründe bir araştırma [The relationship between ethical leadership behavior, organizational commitment, job satisfaction and intention to leave: A research in the defense and security sector]* (Unpublished master's thesis). Milli Savunma University, Turkey.

Sönmez, S. (2019). *Etik liderliğin örgütsel bağlılık üzerindeki etkisi: Mehmet Akif Ersoy Üniversitesi çalışanları üzerinde bir araştırma [The effect of ethical leadership on organizational commitment: A research on employees of Mehmet Akif Ersoy University]* (Unpublished master's thesis). Selçuk University, Turkey.

Stewart, V. (2010). Singapore leads the way in changing teacher education. *Phi Delta Kappan*, *92*(2), 92-93. https://doi.org/10.1177%2F003172171009200226

Strike, K. A., Haller, E. J., & Saltis, J. F. (1988). *The ethics of school administration.* New York and London, Teachers College.

Tezcan, G., & Güvenç, H. (2020). Ortaokul öğretmenlerinin mesleki etik ikilemleri [Middle school teachers' professional ethical dilemma]. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi [PAU Journal of Education], 49,* 439-460. https://doi.org/10.9779/pauefd.588753

Thweatt, K. S., & McCroskey, J. C. (1998). The impact of teacher immediacy and misbehaviors on teacher credibility. *Communication Education*, *47*(4), 348-358. https://doi.org/10.1080/03634529809379141

Turan, E. (2019). *Etik liderlik, örgütsel bağlılık ve üretkenlik karşıtı iş davranışı ilişkisi [The relationships between ethical leadership, organizational commitment, and counterproductive behaviors: A field survey]* (Unpublished master's thesis). Gazi University, Turkey.

Uranbey, E. (2018). *Etik liderliğin örgütsel bağlılık ve işten ayrılma niyetine etkisi [The impact of ethical leadership on organizational commitment and intent to leave work]* (Unpublished master's thesis). Başkent University, Turkey.

Walker, K., & Donlevy, K. (2008). Beyond relativism to ethical decision making. *Journal of School Leadership*, *18*(4), 445-468. https://doi.org/10.1177%2F105268460801800406

Walker P., & Lovat, T. (2017). Should we be talking about ethics or about morals? *Ethics & Behavior*, 27(5), 436-444. https://doi.org/10.1080/10508422.2016.1275968

Yalçın, S. (2017). Öğretmenlerin algılarına göre istenmeyen okul yöneticisi davranışları [Unwanted school administrator behaviors according to teachers' perceptions]. *EKEV Akademi Dergisi [EKEV Akademi Journal], 69,* 105-116. Retrieved from https://dergipark.org.tr

Yıldırım, A., & Şimşek, H. (2011). *Sosyal bilimlerde nitel araştırma yöntemleri [Qualitative research methods in the social sciences]* (8th ed.). Seçkin Publishing.

Yin, R. K. (2003). *Case study research: Design and methods*. Sage.

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An Analytical Overview of the Studies on the Life Studies Lesson: Bibliometric Analysis Based on Web of Science Database

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An Analytical Overview of the Studies on the Life Studies Lesson: Bibliometric Analysis Based on Web of Science Database

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ABSTRACT
The primary school period is a very important period to prepare the individual for the next level of education, adapting to his/her environment and social life, and academic success. One of the most important lessons in primary school in Turkiye is life studies lessons. Through life studies lesson, students complete and organize the information they learn from their families or learn the social information they could not learn from the family at school. Therefore, the qualitative and quantitative features of scientific studies carried out in the field of life studies are very important. In the literature, no study has been determined, which analytical examination of life studies has been carried out. The purpose of this research is to examine the life studies lesson and research in the Web of Science (WoS) database from an analytical point of view. Depending on the purpose, in this research, case study design, one of the qualitative research methods, was used. In order to cover the last half-century period in the data collection phase of this research, the life studies lessons' studies in the Wos database between 1971-2022 were examined. The data collected in this research was used “WOS viewer” software (version 1.6.18.0). After searching in the WoS database, 1798 studies were identified. Among these identified studies, it was limited to 94 studies within the scope of "education/educational research". One of results of this research, is that more studies were carried out in the field of Life studies in the US and Turkiye.

Keywords: Life studies lesson, Bibliometrics studies, Web of Science.

Introduction

Societies today are changing at an incredible rate. In some fields, changes are seen almost from year to year, even from month to month. It is unthinkable for individuals to be stagnant in a society where such rapid development and change takes place. It is a vital necessity for the individual, who is a social being, to keep up with the social changes. This necessity brought by the modern age requires competence in many areas such as knowledge, skills, attitudes, perceptions, thoughts and values. The best way to acquire these competences is through education. Because education is a systematic process and its purpose is to prepare the individual for the society in which he/she lives in the best way possible. Of course, education starts in the family with birth, but this education is more coincidental and unplanned. This education, which the individual receives in the family, cannot be considered sufficient on its own as it is not standardized and evaluated from various perspectives (Ocak and Beydoğan, 2005). Therefore, a more planned training is needed. Planned and systematic education begins with the primary school life of the individual. The primary school period is a very important period to preparing the individual for the next level of education, adapting to his/her environment and social life, and academic success (Ocak and Beydoğan, 2005). Primary school uses lessons as an intermediary while fulfilling this important role.

One of the most important lessons in primary school in Turkey is life studies lessons. Life studies lesson has been included in all primary school programs since the first years of the Republic. However, this lesson was developed in primary school programs in 1924, 1926, 1936, 1948, 1968, 1998, 2005, 2009, 2015 and finally 2018, depending on the needs (Ekmen, 2019). With the effect of historical changes and developments in Life Studies lesson programs, it is aimed to create a basic framework and to be intertwined with life and to combine the school environment with life. The main purpose of this lesson is to apply the skills learned in the daily life of the student in the school environment (Aykaç, 2011).

Through life studies lesson, students complete and organize the information they learned from their families or learn the social information they could not learn from the family at school. It is possible for students who begin to primary school to establish connections between their daily lives and their learning, and to acquire skills as a result of experiencing what they have learned through life studies lessons. At the same time, this lesson helps students become good citizens, helps them internalize social norms and plays a major role in acquiring adaptive skills (Çanak, 2019; Yılmaz and Göçen, 2019). Tay (2017) gave a comprehensive definition of the life studies lesson. To summarize, according to the author, the life studies lesson is a course that gives students the characteristics of a good person and a good citizen in the globalizing world, and tries to provide students with the knowledge of life. However, due to the scope and content of life studies lesson, there are many different definitions in the literature. According to Baysal (2006), the life studies lesson is a course that prepares students for life, gives them a sense of responsibility as individuals and teaches their duties to the individual. On the other hand Kabapınar (2014) defines it as a lesson that includes subjects that will help the student to know himself, takes its subjects from the environment and family, and is based on the individual's prior experiences. According to Gültekin (2015), life studies lesson based on collective teaching approach is a versatile basic life lesson that provides individuals with basic knowledge, skills and habits according to their developmental characteristics, and enables children to get to know themselves and their environment. Based on these definitions, it is seen that the life studies lesson definitions focuses on some basic notions. From this point of view, if a short and concise definition is to be made, the life studies lesson can be expressed as a course in which the skills to adapt to the environment and basic knowledge of life are given in a systematic way.

In terms of the content of the life studies lessons, it is stated that it is very effective in preparing the students for life and in gaining many competencies such as knowledge, skills, attitudes, behaviors and values required in this preparation stage (Tay and Ünlü, 2014). The main objectives of the life studies lesson were finally stated in the 2018 curriculum with 8 basic skills. These skills can be summarized as (Ütkür-Güllühan and Bekiroğlu, 2022):

1. Basic life skills
2. Self-knowledge
3. Leading a healthy and safe life

4. Absorbing the values of the society in which one lives
5. Being sensitive to nature and the environment
6. Doing research
7. Production
8. Patriotism

Additional, the main purpose of the life studies lesson is to enable students to acquire basic life skills and to enable them to develop positive individual characteristics (Şimşek, 2014). At the same time, it is stated that this lesson aims to prepare the student for life by focusing on the events and phenomena in life. The life studies lesson uses the learner's close environment and other disciplines to achieve these goals (Çelik, 2020).

Based on all this information, it is aimed that individuals get to know and use social values, get to know the natural environment, lead a healthy life and gain knowledge, skills, behaviors and thoughts on similar subjects with life studies lessons (Güven and Püsküllü, 2017). Life studies lesson is a course that supports the holistic development of the student as the individual starts his/her school life. Because of this nature, it is directly or indirectly related to some other disciplines. When the literature related to this lesson is examined, it can be said that the scope of this course is human, nature and society (Çelik, 2020). From this point of view, it is seen that the scope of this lesson is quite wide. However, despite the importance of this comprehensive lesson, it is difficult to say that it has been studied thoroughly and in depth. In this context, how the status of quality and quantity of the studies on the life studies lessons emerges as an important research question. Therefore, in this research, besides the quantitative situation in the Web of Science (WoS) database, where qualified studies are published, the status of life studies lessons' studies in many other aspects has been examined. With this aspect, it is thought that this study can make a contribution to the field.

Purpose of the Research

The purpose of this research is to examine the life studies lesson and research in the *Web of Science (WoS)* database from an analytical point of view. For this purpose, answers to the following questions were sought: In WoS;

- What is the numerical distribution of academic studies published in the field of life studies lesson by years?
- What is the numerical distribution of academic studies published in the field of life studies lesson according to the languages in which they are published?
- What is the numerical distribution of academic studies published in the field of life studies lesson according to document types?
- What is the numerical distribution of the academic studies published in the field of life studies lesson according to the institutions of the authors?
- What is the numerical distribution of academic studies published in the field of life studies lesson by countries?
- What is the numerical distribution of academic studies published in the field of life studies lesson according to co-authored collaboration studies?
- What is the number of citations of academic studies published in the field of life studies lesson by years?
- What are the most frequently used keywords in academic studies published in the field of life studies lesson?

Limitations of the Study

This study is limited to the studies in the WoS database between 1971-2022 and scanned using the keywords "life studies" or "life science". On 26/05/2022, the keywords "life studies" or "life science" were searched in the WoS database and 1798 studies were identified. Among these identified studies, it was limited to 94 studies within the scope of "education/educational research".

Methods and Materials

Model of the Research

In this study, case study design, one of the qualitative research methods, was used. Case studies are distinguished from other methods by their limitations, importance, availability of resources, observability, in-depth data acquisition and analysis possibilities. However, the most important feature is to investigate one or more situations in depth (Duff, 2008; Woodside, 2010; Yıldırım and Şimşek, 2021). In addition to these features, the case study design can be used to make decisions in very complex situations or to explain cause-effect relationships (Yin, 2003). In this study, the case study design was preferred as it was aimed to reveal the current situation by examining the academic articles made within the scope of life studies lesson in terms of some variables.

Data Collection Tools

In order to cover the last half-century period in the data collection phase of this research, the life studies lessons' studies in the Wos database between 1971-2022 were examined. WoS is an initiative of the Thomson Reuters Institute for Scientific Information (ISI) (Chadegani, Salehi, Yunus, Farhadi, Fooladi, Farhadi and Ebrahim, 2013). It is stated that there are over 37,000 scientific journals and more than 171 million articles indexed in WoS (Yeşiltaş and Yılmazer, 2021). Using the keywords "life studies" or "life science" in this database, articles suitable for various criteria were obtained from the academic articles found.

Analysis of Data

The data collected in this research was used WOSviewer software (version 1.6.18.0). The data obtained in the research were analyzed by descriptive analysis method. Descriptive analysis is a type of qualitative data analysis that include summarizing and interpreting the collected data in accordance with predetermined categories (Özen and Hendekçi, 2016). According to Yıldırım and Şimşek (2016), descriptive analysis is carried out in 4 basic stages: This stages are creating a framework, processing the data, defining the findings, and finally interpreting the findings. In this study, academic studies accessed from the Wos database were processed via computer software in accordance with the purpose of the research and the data obtained were classified. Tables and figures were used in the classification process. In the last stage, these classified findings were obtain and interpreted.

Ethical Considerations

In this study, documents were examined. For this reason, the research is exempt from the ethical board and was carried out in accordance with research and publication ethics.

In this study, all rules stated to be followed within the scope of "Higher Education Institutions Scientific Research and Publication Ethics Directive" were followed. None of the actions stated under the title "Actions Against Scientific Research and Publication Ethics", which is the second part of the directive, were not taken.

Findings

The distribution of 94 scientific studies related to the Life studies lesson in the WoS database searched within the scope of the research by years is given in Figure 1.

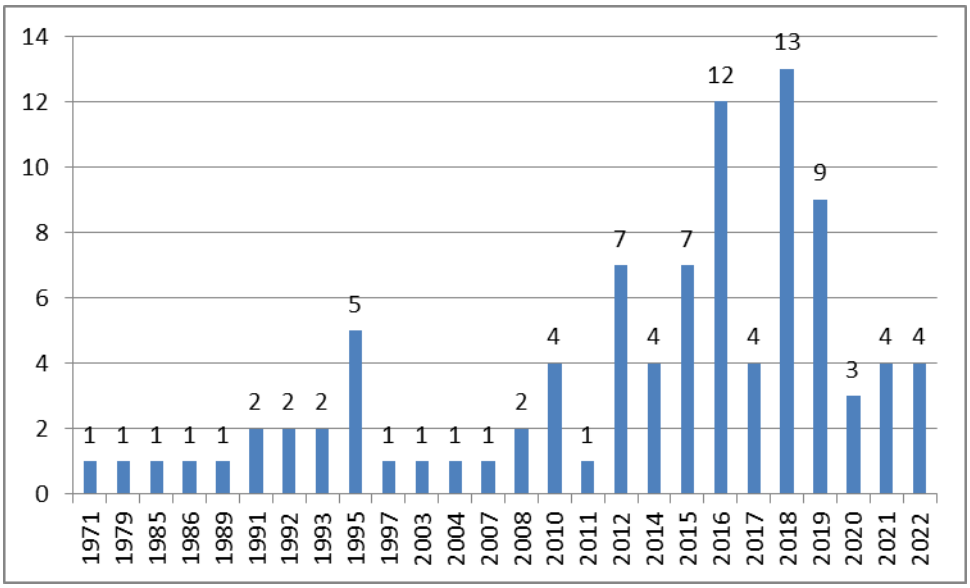

Figure 1: *Distribution of studies on Life studies lesson by years (WoS, 26/05/2022).*

As seen in Figure 1, 94 scientific researches searched in the WoS database related to the Life Science lesson were examined. According to the data in the figure examined, it is seen that a small number of scientific studies were carried out from 1971 until the 2010s, but the number of studies increased in the last 20 years. At the same time, the years in which the most studies were conducted were 2018 (f=13), 2016 (f=12) and 2019 (f=9).

The distribution of 94 scientific studies related to the Life studies lesson in the WoS database searched within the scope of the research, according to the languages in which they were published, is given in Figure 2.

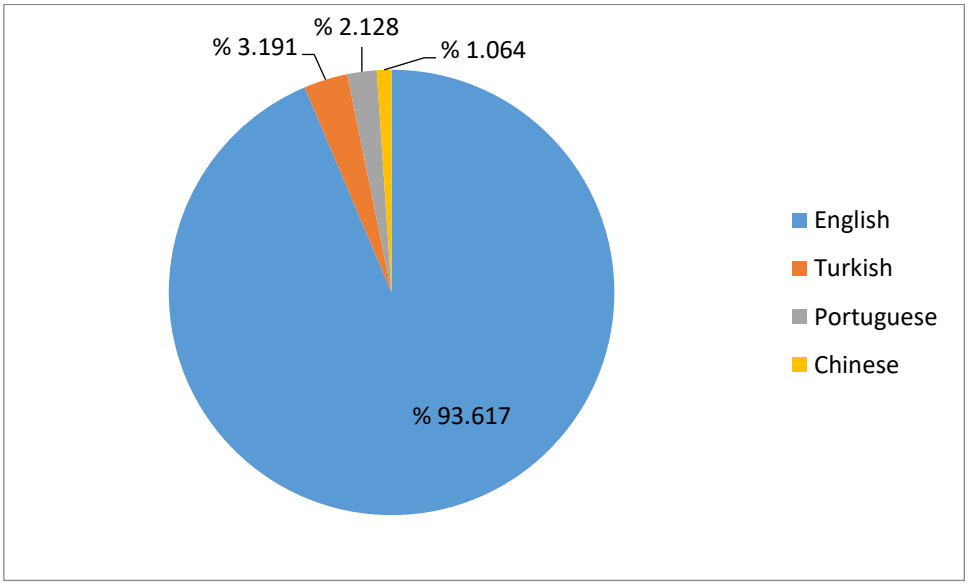

Figure 2: *Distribution of the studies on the Life Studies lesson according to the language of works (WoS, 26/05/2022).*

When Figure 2 is examined, it has been determined that scientific studies related to the life studies lesson are published in 4 different languages in the WoS database. Of the 94 studies reviewed, 93.61% were published in English. In second place is Turkish (3.19%); Portuguese (2.12%) ranks third and Chinese (1.06%) last.

The distribution of 94 scientific studies related to the Life Science lesson in the WoS database searched within the scope of the research by document types is given in Figure 3.

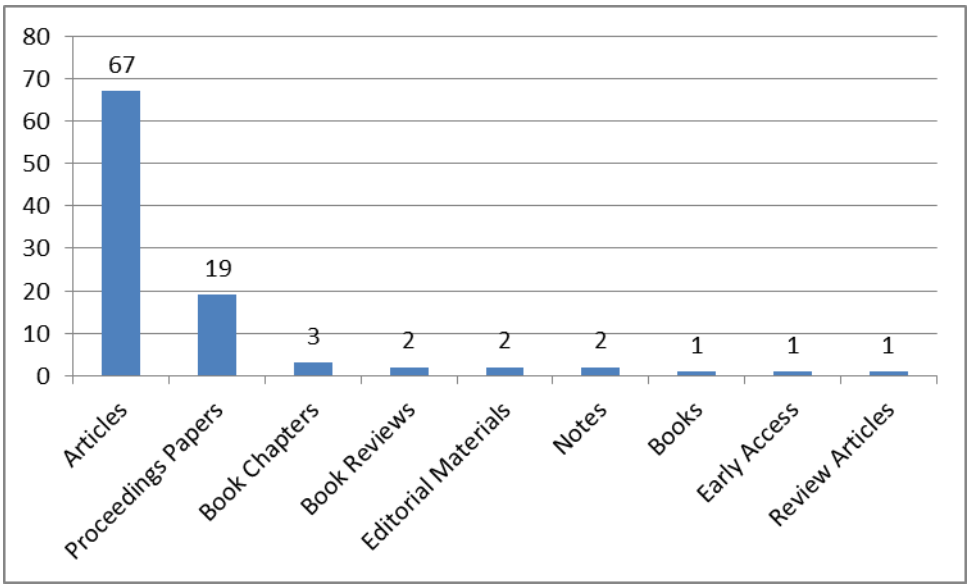

***Figure 3**: Distribution of the researches about the Life Studies lesson according to the document type (WoS, 26/05/2022).*

When Graph 3 is examined, it has been determined that there are 9 different types of publications: articles, papers, book chapters, book reviews, editorial texts, notes, books, early access, review articles. When the works in the figure are examined, it has been determined that the most number of articles (f=67) and papers (f=19).

The distribution of the authors who published on the Life studies lesson field in the WoS database searched within the scope of the research, according to the institutions they are affiliated with is given in Table 1.

Table 1. Distribution of authors according to the institutions they are affiliated with in the studies on the Life Studies lesson (WoS, 26/05/2022).

Affiliations	**(f)**	**%**
Purdue University	6	6.38
Purdue University System	6	6.38
Purdue University West Lafayette Campus	6	6.38
Universitat Politecnica de Valencia	5	5.31
University of Georgia	4	4.25
University of North Carolina	4	4.25
University System of Georgia	4	4.25
League of European Research Universities Leru	3	3.19
University of Helsinki	3	3.19
University of Minnesota System	3	3.19

When the institutions to which the authors publishing in the field of life studies lesson are examined, a total of 136 institutions have been identified. Purdue University and its components (f=18) are at the forefront of these institutions. Universitat Politecnica de Valencia is in second place and University of Georgia is in third place (Table 1). The top 10 of the 14 Turkey-based institutions listed in this category and the ranking of these institutions among 136 institutions are given in Table 2 below.

Table 2. Distribution of Turkey-based authors conducting research on life studies lesson according to the top 10 institutions they are affiliated with and the ranking of these institutions among 136 institutions (n) (WoS, 26/05/2022).

n	**Affiliations**	**(f)**	**(%)**
13	Gazi University	2	2.12
14	Ordu University	2	2.12
23	Usak University	2	2.12
24	Adnan Menderes University	1	1.06
40	Dicle University	1	1.06
43	Firat University	1	1.06
47	Hacettepe University	1	1.06
48	Harran University	1	1.06
53	Istanbul University Cerrahpasa	1	1.06
70	Recep Tayyip Erdogan University	1	1.06

According to Table 2, it is seen that the institutions the authors are affiliated with are distributed in a balanced way in the studies carried out on the Life Studies lesson in universities in Turkey. Among 136 institutions working on life studies lesson, 14 institutions based in Turkey were identified. In this table, which is based on the first 10 institutions out of these 14 institutions, the universities that publish the most are; they are listed as Gazi University (4), Ordu University (4) and Usak University (4).

The distribution of the Life Studies lesson in the WoS database searched within the scope of the research according to the countries that publish is given in Table 3.

Table 3. Distribution of the Life Studies lessons' studies by countries (WoS, 26/05/2022).

Countries/Regions	**f**	**%**
USA	37	39.362
Turkey	12	12.766
Spain	6	6.383
Finland	4	4.255
Peoples R. China	4	4.255
South Africa	4	4.255
Germany	3	3.191
Japan	3	3.191
Australia	2	2.128
Austria	2	2.128

A total of 24 countries were identified when the countries that carried out life studies lessons' studies were examined within the scope of the research, and the first 10 of these countries are given in the table. When the data in Table 3 are examined, USA (f=37) is the leading country in the field of life studies, Turkey (f=12) is the second and Spain (f=6) is the third. Based on these data, it is seen that approximately half of the studies on life studies lesson are made from USA and Turkey. Figure 4 of the collaboration of these countries working in the field of life studies lesson is given below.

The distribution of the Life Studies lesson in the WoS database searched within the scope of the research according to the countries working in the co-authorship collaboration is given in Figure 4.

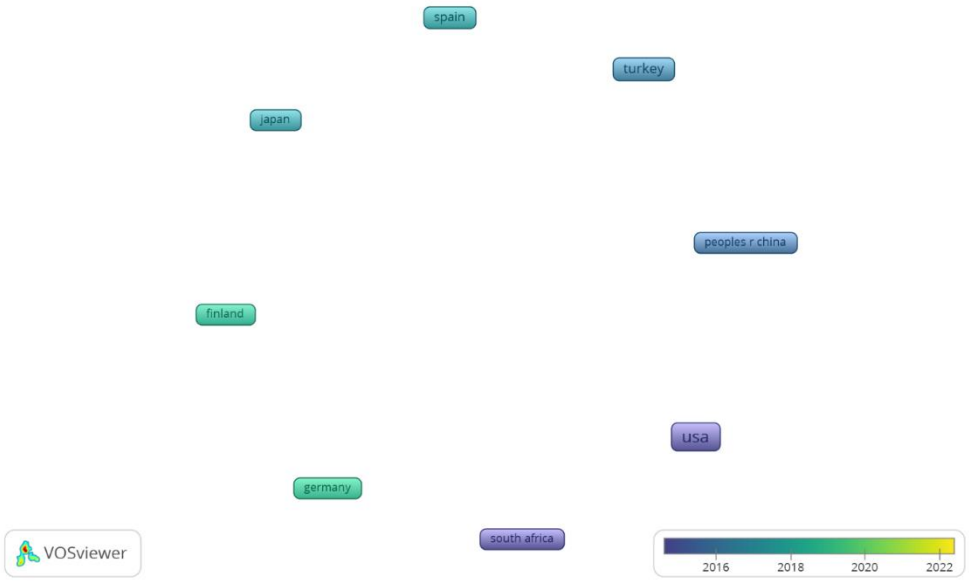

***Figure 4**: Countries working in collaboration in the field of life studies lesson*

In the co-authorship analysis of published academic studies on life studies lesson, cross-country collaboration is shown in figure 4. When the number of publications from among this 24 countries was selected as the minimum value, 8 of the studies were met the threshold value. As a result of the analysis, as can be seen from the figure, cross-countries collaboration related to the life studies lesson could not be determined.

The distribution of the Life Science lesson in the WoS database searched within the scope of the research according to the number of citations by years is given in Table 3.

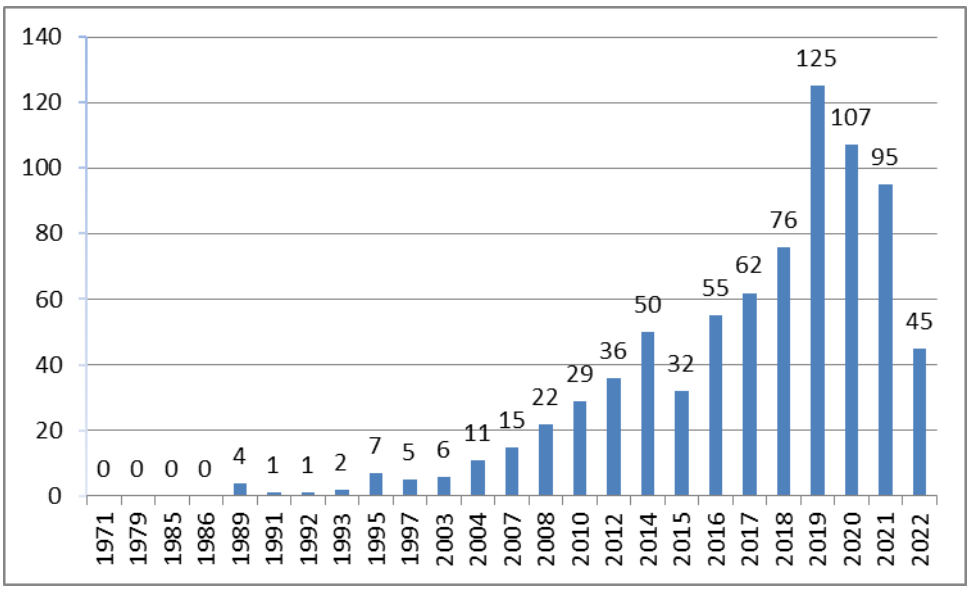

***Figure 5:** Number of Citations by Years*

The number of citations by years of academic works on life studies lesson in the category of educational research in WoS is shown in figure 5. According to these data, no recorded citation information was found from 1971 to 1989. For the years including the period from 1989 to 2003, the citations were

below 10. There has been a quantitative increase in the years following this year. In 2019, it reached its peak with 125 citations.

The distribution according to the keywords related to the Life studies lesson in the WoS database searched within the scope of the research is given in Figure 6.

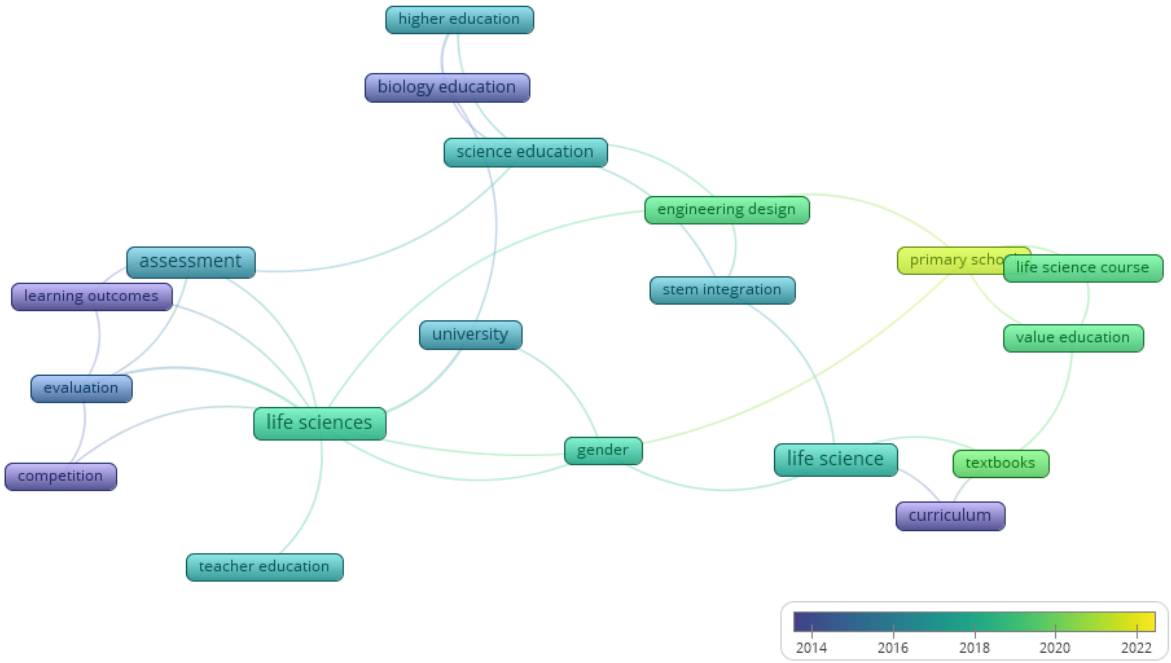

***Figure 6**: Keywords*

When the keywords in Figure 6 are examined, it is seen that the word "life science" is in the foreground among the most used words in studies on life studies lessons. When Figure 6 is examined, it has been determined that academic studies related to life studies lessons are gathered under 5 clusters according to the cluster analysis in the keyword network figure. The most frequently used keywords in these clusters are listed as "life science(s) (f=16)", "science education (f=3), "primary school (f=2)", textbook (f=2). All of these keywords except "primary school" were used intensively before 2020, while the keyword "primary school" started to be used up to date after 2020. In addition, it is listed as “life science(s) (tls=15), evaluation (tls=5), Science education (tls=5), assessment (tls=4) with the highest total link strength (tls).

The data indicating the frequency of the keywords used in academic publications related to the Life Science lessons are presented in the word cloud image below.

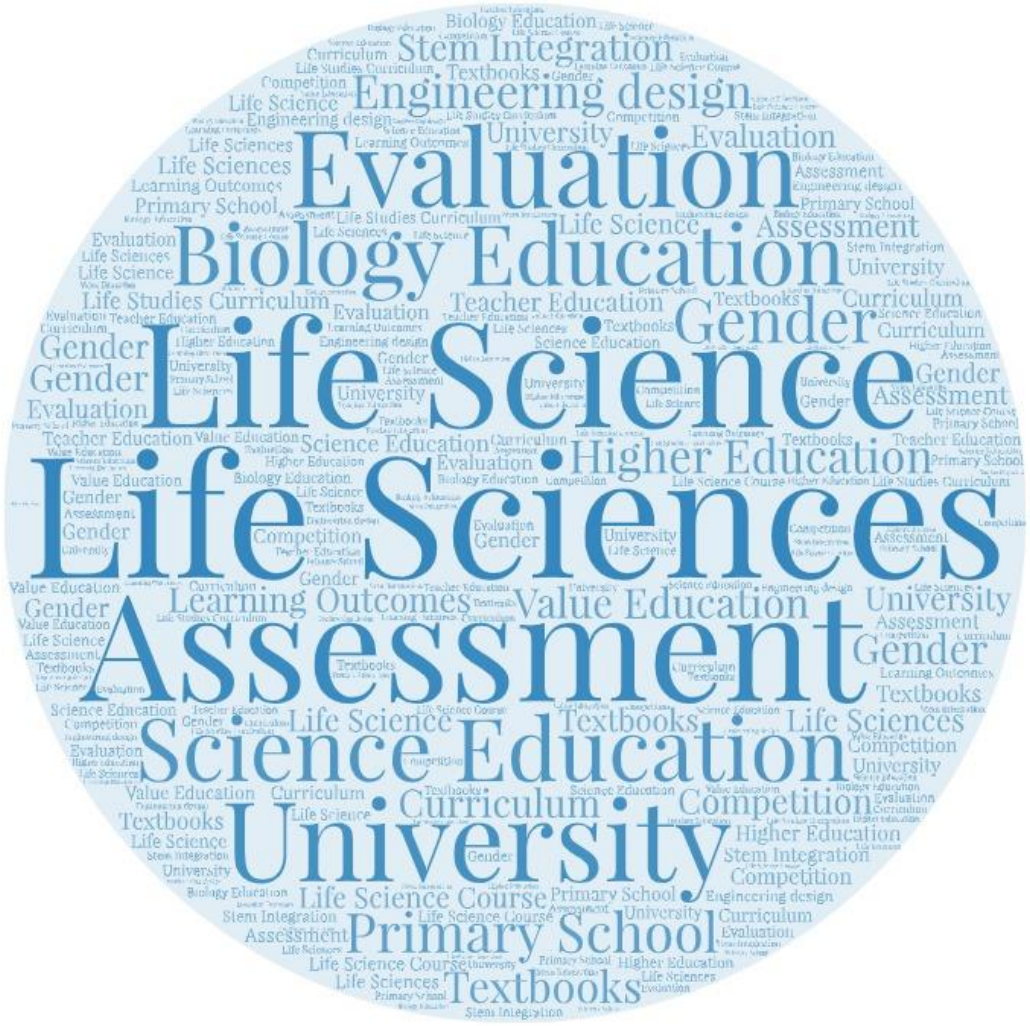

Image 1: *Word cloud*

When the keywords in Image 1 are examined, it is seen that concepts such as life science(s), evaluation, primary school, science education, textbook, assessment are mostly used in academic studies related to life studies lesson.

Conclusion, Discussion and Recommendations

Primary school is considered to be the most important step in education in many respects. The student is prepared for the next school level through the basic lessons given in primary school. An increasing number of studies have been found in the literature on life studies, which is one of these basic lessons, especially in recent years (Akcan and Türkmenoğlu, 2022; Örs and Şimşek, 2022; Ütkür-Güllühan and Bekiroğlu, 2022; Kabapınar, Akaydın, Çetin, Keleş and Çelikten, 2022). However, when the literature is examined, it has been determined that there is no analytical study about the life studies lessons. In this study, findings that will give researchers a different perspective and guide new studies are presented.

Within the scope of the research, academic studies published in the field of life studies lesson in the last half-century period were examined with an analytical perspective. As a result of this search, 1798 studies were found. The "education/educational research" options were used to limit these studies, and ultimately 94 studies were included in the research.

According to the results of this research, when the distribution of educational research in the field of life studies lesson is examined by years, the most published years are 2016 and 2018. When Figure 1 is examined, it is seen that the distribution of studies according to years is unstable. The reason for this may be that some subjects have become popular in some years and have become the focus of researchers. For example, one of the topics that researchers frequently work on in 2018 is value education (Karasu-Avcı and Ketenoğlu-Kayabaşı, 2018; Öztürk and Özkan, 2018; Yaşaroğlu, 2018; Komalasari and Saripudin, 2018; Johansson, Emilson and Puroila, 2018). Parallel to the distribution of the studies according to the years in which they were published, the distribution of the number of citations is seen similarly. Accordingly, in the years when the publications increased, the number of citations also increased (Figure 5). This is the nature of scientific research, because as the number of publications increases, the number of studies that are read, examined and cited also increases.

When we look at the distribution of the published studies according to languages, it is seen that the majority of them are in English. This may be due to the fact that English is accepted as the language of science and international indexes are published in English. There are advantages as well as disadvantages of this finding. The studies of cross-cultural publications using a single language can be positively in terms of reaching many researchers from different cultures. However, this situation can be considered as a suppressive factor on the visibility of other languages.

Among the research findings, the highest rate in terms of the type of published studies is articles, and the second is proceedings papers. These two types of publications are the types of publications that researchers frequently use. One reason for this can be thought of as scientific journals and congress/symposiums supporting these types of publications. When the literature is examined, it is seen that there are many studies (Fernândez, Lozano and Cuenca, 2020; Jiménez, Prieto and García, 2019; Samul, 2020; Sönmez and Bozdoğan, 2020; Yeşiltaş and Yılmazer, 2021) that reach similar results.

When the institutions to which the authors are affiliated are examined, it is seen that Purdue University and the components affiliated to this institution are in the first place. Based on this finding, it can be said that Purdue University supports more authors in this field than other institutions (Table 1). It is seen that a more balanced situation has emerged in terms of the number of publications in Turkey (Table 2). Gazi University, Ordu University and Uşak University are in the top ranks in Turkey. It may be the main reason for the emergence of a more balanced situation in Turkey, as the life studies lesson and other lessons are applied as standard throughout the country. In parallel with these findings, when we look at the countries that publish in the field of life studies, USA comes first and Turkey comes second. There are studies that reached similar results in the literature (Samul, 2020; Julia, Supriatna, Isrokatun, Aisyah, Hakim and Odebode, 2020; Bozdoğan, 2020; Yeşiltaş and Yılmazer, 2021). These findings support each other. Despite these findings, there has been no collaboration between countries (Figure 4). This situation reveals that researchers have almost no linked networks with researchers from different countries. When the results of this research are analysed as a whole, there has not been enough research on the life studies lesson, which is very important lesson in primary school. Accordingly, the number of citations is also low. In addition, it is seen that there is no collaboration between USA and Turkiye, the two countries that publish the most studies in the field of life studies. Based on these results, it can be recommended to carry out more studies in international collaboration. This research was carried out by examining the WoS database. Therefore, it may be suggested to conduct research using different databases such as ERIC, H.W. Wilson Database, Scopus, TR Dizin etc.

References

Akcan, E., & Türkmenoğlu, Ö. A. (2022). An analysis of life studies textbooks in terms of diversities. *Gazi University Journal of Gazi Educational Faculty, 42*(1), 423-459. https://doi.org/10.17152/gefad.951327

Aykaç, N. (2011). Evaluation of the methods and techniques used in knowledge of life course teaching pro (Sinop case study) gram according to teacher opinions. *Kastamonu Education Journal, 19*(1), 113-126. Retrieved from 817550 (dergipark.org.tr)

Baysal, N. Z. (2006). Hayat Bilgisi: Toplumsal ve doğal yaşama bütüncül bir bakış [Life Studies: A holistic view of social and natural life]. In C. Öztürk (Ed.), *Hayat bilgisi ve sosyal bilgiler öğretimi [Life studies and social studies teaching]. (pp. 1-19).* Pegem pub.

Bozdoğan, K. (2020). A bibliometric analysis of educational studies about "Museum education". *Participatory Educational Research*, 7(3), 162-179. https://doi.org/10.17275/per.20.40.7.3

Chadegani, A. A., Salehi, H., Yunus, M. M., Farhadi, H., Fooladi, M., Farhadi, M., & Ebrahim, N. A. (2013). A comparison between two main academic literature collections: Web of Science and Scopus Databases. *Asian Social Science, 9*(5), 18-26. http://dx.doi.org/10.5539/ass.v9n5p18

Çanak, S. (2019). *The opinions of classroom teachers on having students gain democratic values in life sciences course.* (Unpublished master dissertation). Tokat Gaziosmanpaşa University, Institute of Educational Sciences, Tokat.

Çelik, Ö. (2020). Hayat bilgisi dersinin amacı, kapsamı ve içeriği [Purpose, scope and content of the life studies lesson]. In V. Aktepe & M. Gündüz (Ed.), *Kuramdan uygulamaya hayat bilgisi öğretimi [Life studies teaching from theory to practice]* (pp. 2-19). Pegem Pub.

Duff, P. A. (2008). *Case Study rsearch in applied linguistics*. Lawrence Erlbaum As.

Ekmen, M. (2019). *The examination of "life science teaching programs' gains" according to the teachers' views.* (Unpublished master dissertation). Çanakkale Onsekiz Mart University, Institute of Educational Sciences. Çanakkale.

Fernández, J. S., Lozano, A., & Cuenca, C. (2020). Digital citizenship and education: State of the art and bibliometric analysis. *8th International Conference on Information and Education Technology.* Okayama, Japan: Association for Computing Machinery. https://doi.org/10.1145/3395245.3396430

Gültekin, M. (2015). Çocuğun yaşamından dünyaya açılan pencere: Hayat bilgisi öğretim programı [The window from the child's life to the world: Life studies curriculum]. In M. Gültekin (Ed.), *Hayat bilgisi öğretimi [Life studies teaching*], (pp.15-42). Nobel pub.

Güven, S., & Püsküllü, M. A. (2017). The content analysis of the studies about life science textbooks. *The Journal of International Lingual Social and Educational Sciences, 3*(2), 75-86. Retrieved from 383959 (dergipark.org.tr)

Jiménez, C. R., Prieto, M. S., & García, S. A. (2019). Technology and higher education: A bibliometric analysis. *Education Sciences, 9*(3), 1-9. https://doi.org/10.3390/educsci9030169

Johansson, E., Emilson, A., & Puroila, A. M. (2018). Mapping the Field: What Are Values and Values Education About? In, Johansson, E., Emilson, A., Puroila, A. M. (Ed) *Values Education in Early Childhood Settings: International Perspectives on Early Childhood Education and Development,* (pp. 13-32). Springer pub. https://doi.org/10.1007/978-3-319-75559-5_2

Julia, J., Supriatna, E., Isrokatun, I., Aisyah, I., Hakim, A., & Odebode, A. A. (2020). Moral education (2010-2019): A bibliometric study. *Universal Journal of Educational Research, 8(*7), 2954-2968. https://doi.org/10.13189/ujer.2020.080639

Kabapınar, Y. (2014). *Kuramdan uygulamaya sosyal bilgiler öğretimi: Hayat bilgisi öğretiminden tarih öğretimine [Social studies teaching from theory to practice: From life studies teaching to history teaching].* Pegem pub.

Kabapınar, Y., Akaydın, B. B., Çetin, H., Keleş, C., & Çelikten, L. (2022). Questioning the life studies textbooks of 2005 with experienced primary school teachers: A critical study on the constructivism experience. *International Primary Education Research Journal, 6*(1), 81-104. Retrieved from 2249791 (dergipark.org.tr)

Karasu-Avcı, E., & Ketenoğlu-Kayabaşı, Z. E. (2018). Content analysis of the values in the purposes of life science education curricula (1936- 2018). *Journal of Value Education, 16*(35), 27-56. Retrieved from https://dergipark.org.tr/en/pub/ded/issue/37646/448756

Komalasari, K., & Saripudin, D. (2018). The influence of living values education-based civic education textbook on student's character formation. *International Journal of Instruction, 11*(1), 395-410. https://doi.org/10.12973/iji.2018.11127a

Ocak, G., & Beydoğan, H. Ö. (2005). The proficiency level of goals of consistency and to appropriatenes to the level of pupils for humanities course in 3rd year of primary schools (Standart definition- Erzurum City sample). *Gazi University Journal of Kırşehir Education Faculty, 6*(1), 109- 132. Retrieved from Microsoft Word - 109-132.doc.doc (dergipark.org.tr)

Örs, E., & Şimşek, A. (2022). The development of human rights and responsibilities in the republic period primary school life science textbooks. *Selçuk University Journal of Faculty of Letters, (47),* 1-28. https://doi.org/10.21497/sefad.1128255

Özen, F., & Hendekçi, E. (2016). The Descriptive Analysis of Academic Studies Published in Turkey about Education Supervision between the Years of 2005-2015. *OPUS International Journal of Society Research, 6*(11), 619-650. https://doi.org/10.26466/opus.255105

Öztürk, T., & Özkan, Z. S. (2018). Investigation of texts and ımages in life science textbooks in terms of values. *Journal of Qualitative Research in Education, 6*(1), 172-204. https://doi.org/10.14689/issn.2148-2624.1.6c1s8m

Samul, J. (2020). The research topics of leadership: Bibliometric analysis from 1923 to 2019. *International Journal of Educational Leadership and Management, 8*(2), 116-143. https://doi.org/10.17583/ijelm.2020.5036

Sönmez, Ö. F., & Bozdoğan, K. (2020). Bibliometric analysis of values education research based on web of science database. *International Journal of Education Technology and Scientific Research, 5*(13), 1543-1577. Retrieved from 705925243_10. 1543-1577 ömer faruk sönmez.pdf (ijetsar.com)

Şimşek, S. (2014). Geçmişten günümüze hayat bilgisi [Life Studies lesson from past to present]. In S. Şimşek (Ed.). *Sınıf öğretmeni ve adayları için hayat bilgisi öğretimi [Life studies teaching for primary school teachers and candidates]*. (pp. 3-26). Anı Pub.

Tay, B., & Ünlü, İ. (2014). İlkokul yurt bilgisi, toplum ve ülke incelemeleri ve sosyal bilgiler dersleri öğretim programlarında değer ve değerler eğitimi [Value and values education in primary school civics, society and country studies and social studies curriculum]. In R. Turan & K. Ulusoy (Ed.). *Farklı yönleriyle değerler eğitimi [Values education with different aspects]* (pp.287-322). Pegem pub.

Tay, B. (2017). Hayat bilgisi: Hayatın bilgisi [Life Studies: Knowledge of life]. In B. Tay, (Ed.), *Etkinlik örnekleriyle hayat bilgisi öğretimi [Life studies teaching with practices examples]*, (pp.1-37). Pegem pub.

Ütkür-Güllühan, N., & Bekiroğlu, D. (2022). Investigation of the 2018 life studies curriculum in terms of cognitive, affective and psychomotor domains. *International Primary Education Research Journal, 6*(1), 24-36. https://doi.org/10.38089/iperj.2022.89

Woodside, A. G. (2010). *Case study research: Theory, methods, practice.* Emerald Pub.

Yaşaroğlu, C. (2018). Values in curricula: A case of life science course. *Journal of Social Sciences of Mus Alparslan University, 6*(5), 725-733. https://doi.org/10.18506/anemon.394551

Yeşiltaş, E., & Yılmazer, A. (2021). A bibliometric analysis of studies on media literacy in education. *OPUS International Journal of Society Research, (Educational Sciences Special Issue)* 4903-4929. https://doi.org/10.26466/opus.935547

Yıldırım, A., & Şimşek, H. (2016). *Sosyal bilimlerde nitel araştırma yöntemleri [Qualitative research methods in the social sciences]*. Seçkin pub.

Yılmaz, F., & Göçen, S. (2019). An investigation on research of life science teaching. *Civilization Journal of Educational Research, 3*(2), 76-86. Retrieved from 2125299 (dergipark.org.tr)

Yin, R. K. (2003). *Case study research: Design and methods*. Sage Pub.

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Examination of the Relation between Science High School Students' Geometry Success and Van Hiele Geometric Thinking Levels[1]

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Examination of the Relation between Science High School Students' Geometry Success and Van Hiele Geometric Thinking Levels

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ABSTRACT
The aim of this study is to detect the relation between Science High School students' success in geometry lessons and Van Hiele geometric thinking levels. The survey model, which is one of the quantitative research methods, was used in the study. The study group of the research consists of 244 students studying at three Science High Schools in the city center of Diyarbakır in the 2020-2021 academic year, selected by purposive sampling. The data were obtained by using the VHGTLT consisting of 25 questions suitable for the grade level of the students, and the GST consisting of 25 questions prepared by the researchers. The data were analyzed by calculating descriptive statistics, and the relation between the VHGTLT and the GST scores were analyzed with Pearson correlation. Moreover, according to both tests, one-factor analysis of variance technique was applied to detect whether there was a meaningful difference between Science High Schools. The results of the study are as follows: It was observed that most of the students (63.6%) who participated in the study were at or above Level 3 (Informal Inference) Van Hiele geometric thinking level. A middle correlation was found between the students' points obtained from both test results. In addition, as a result of the point obtained from both tests, a meaningful difference was found between the Science High School, which received the highest point in the province according to the high school entrance exam point, and the other two Science High Schools.

Keywords: Van Hiele level, Geometric thinking, Geometry success, Science high school students.

Introduction

Mathematics, which has its own systematic logic, is one of the indispensable elements of our daily life and is an important tool in learning other branches of science (Laurens, Batlolona, Batlolona, &Leasa, 2018). Mathematics and science are the basis of countries' development. For this reason, a large amount of time is allocated to mathematics education, which is the cornerstone of all sciences, in all stages of education, starting from the pre-school period (Alshatri, Wakil &Bakhtyar, 2019). Mathematics teaching has an important place in gaining knowledge and skills, understanding the social environment and developing creative thinking (Algani, 2019). One of the important sub-learning areas of mathematics education used in science, art and daily life is geometry(National Council of Mathematics Teachers [NCTM], 2000).

Geometry is a sub-learning field that deals with points, lines, planar and spatial geometric shapes, which are the figural part of mathematics, and the relation between these shapes, and the properties of these geometric shapes such as length, angle, and area (NCTM, 2000). By providing students with the opportunity to get to know their environment, geometry functions as a tool in their studies on science and other sciences related to mathematics (İlhan&Tutak, 2021). Thanks to geometry, students can analyze and solve problems, relate mathematics to real life and understand abstract concepts more easily (Dobbins, Gagnon, & Ulrich, 2014; Duatepe, 2000). Thus, in the studies conducted by the NCTM in the USA, the importance of geometry in mathematical proof and reasoning was emphasized (NCTM, 2000). These explanations show how important geometry teaching is for mathematics and daily life (van de Walle, 2013).

Geometry teaching creates the fun part of mathematics for students in the formation of mathematical concepts and information in the mind, starting with playful activities (Çiftçi& Tatar, 2014; Yi, Flores, & Wang; 2020). However, geometry teaching, which has a process from easy to difficult due to its structure, is seen as a lesson that is not liked and seen as difficult by most of the students despite its positive features (Çelebi-Akkaya, 2006). Similarly, Mistretta (2000) revealed in his study that students could not make strong conceptual meanings in geometry, which is a sub-learning area of mathematics. In an effective geometry teaching, it is important to plan students' thinking levels in geometry (Chang, Sung, & Lin, 2007; Regina, 2000).

It was suggested by Pierre Van Hiele that the development of geometry, whose beginning was built on the axiomatic system, in children's minds is in a hierarchical five-level structure, and he stated that children cannot reach the next level without assimilating one level (Wai, 2005). The development of these levels is given below.

1. Level 1 (Visual Period): In this period, students cannot comprehend shapes by adhering to geometric definitions. By observing their environment, they compare and name them by making use of examples from daily life (Pesen, 2008). At this level, shapes are recognized as a whole. Students say, "This is a rectangle because it looks like a door and a window." (Clements & Battista, 1990: 356; Battista & Clements, 1995). They can comment on geometric shapes by looking at their appearance. In this period, students perceive objects as they see them, but cannot notice the properties of objects (Hoffer, 1981).

2. Level 2 (Analysis Level): At this level, the class is considered, not the shape itself. Students don't think about just one rectangle; they think about all rectangles. They think that the opposite sides of the rectangle class are parallel and of equal length, have four sides, have four right angles, have equal diagonal lengths, and so on. They make groupings according to the characteristics of the shapes. They leave the shape and size of the figures in the background. If a shape is in the form of a cube, it must have all the features of the cube, that is, it must have six square surfaces equal to each other (Van de Walle, 2013). At this level, while describing shapes, students know all the features of that shape, but they do not know that the shapes are subclasses of each other, for example, that all squares are rectangles and all rectangles are parallelograms (Şahin,2008). The products of this level consist of knowing the properties of shapes (Van de Walle, 2013).

3. Level 3 (Informal Inference): This level is the level where students can see the relationships between geometric shapes. In this period, students can now make connections between geometric shapes and make sense of them. Although the logical implications are not yet understood, the definitions and axioms have become meaningful to students. For example, they can associate the properties of geometric shapes with each other, such as "Every square is a rectangle". On the other hand, students can observe the proof of the relationship, but they cannot (Hoffer, 1981). Although this level depends on the past education of the students, it generally corresponds to the students at the secondary school level (Olkun&Toluk, 2007: 225).

4. Level 4 (Formal Deduction/Inference): The important indicator that distinguishes this level from another level is that students can make geometrical proofs. They do these proofs with the help of theorems they have learned before (Olkun&Toluk, 2007). Students can be successful in the reasoning process by using the inductive method (Pesen, 2008). They can make inferences about geometrical properties related to abstract propositions. For example, they can prove from inferential propositions that the diagonals of the rectangle average each other. The products of this level are axiomatic systems based on inferences from geometry. The most important difference that distinguishes level 4 from level 3 is that the way of thinking is informal or formal (Van De Walle, 2013, p.404). At this level, students can think about the properties of shapes independently from the whole. This level corresponds to the high school years (Altun, 2008).

5. Level 5 (Most advanced period/Seeing the Relationships/Rigor): The individual who reaches this level can see the differences between different axiomatic systems and detect the relation between them. Can explain and apply the definitions, axioms and theorems of Euclidean geometry within non-Euclidean geometries (Hoffer, 1981). At this level students, can consider geometry like a discipline and conduct studies(Altun, 2008). This level corresponds to the undergraduate and graduate years (Pesen, 2008, p. 274).

These levels were expressed as 0-4 by Van Hiele Geldof (cited in Usiskin, 1982). Later, studies were conducted in which these levels were expressed as 1-5 (Hoffer, 1981; Senk, 1983; Aksu, 2005). The use of geometric thinking levels in the form of 1-5 allows the use of "0" level for individuals who cannot reach the visual level, which is the first step of the levels (Senk, 1983: 310).

The transition between levels is not dependent on age. The transition between levels depends on the quality of the education given (Duatepe-Paksu, 2016). Students at different educational levels may be at the same geometric thinking level. For this reason, it is necessary to plan and implement geometry teaching in accordance with the learning and development of students in order to ensure that geometry teaching achieves the desired goals. Pierre Van Hiele and Diana Van Hiele-Geldof saw that students had difficulties in learning geometry and developed a model suitable for students' learning and development levels, taking into account the places they had difficulties in geometry (Terzi, 2010).

In the literature review, it was observed that the geometric thinking levels were found to be low in general in the studies conducted to determine the geometric thinking levels of Van Hiele (Chang, Sung, & Lin, 2007; Hurma, 2011; Kutluca, 2013; Yi, Flores, & Wang, 2020). It has been observed that there is no study to determine the relation between the general success of high school geometry lessons and Van Hiele geometric thinking levels. Moreover, there is no study in the literature on geometric thinking levels for Science High School students, especially students with the highest point in the high school entrance examination. It is important to investigate whether there is a similar situation for Science High School students, who are the students with the highest point in the high school entrance examination, due to the characteristics of these high schools. Therefore, it is thought that there is a need for a study on the geometric thinking levels of Science High School students.

Based on these statements, the aim of this study is to detect the relation between Science High School students' success in geometry lesson and Van Hiele geometry thinking levels according to the results of geometry success test and Van Hiele geometry thinking test. For this purpose, the question, *"How is the relation between Science High School students' geometry lesson success and Van Hiele geometric thinking levels?"*, constitutes the main problem of the research. In this context, the sub-problems of the research are:

1. According to the results of the Van Hiele geometric thinking test, what is the distribution of the Van Hiele geometric thinking levels of the Science High School students?

2. Is there a meaningful relation between the point of Science High School students from the Van Hiele geometric thinking test and the GST?

3. Is there a meaningful difference among the science high schools point of results of the Van Hiele geometric thinking test (VHGTLT)?

4. Is there a meaningful difference among science high schools point of GST results?

5. Does the Van Hiele geometric thinking level of Science High School students show a meaningful difference compared to the GST?

Method

Model of the Research

This study, which aims to determine the relation between science high school students' geometry success and Van Hiele geometric thinking levels, was carried out with the survey model, which is one of the quantitative research designs. The approach that aims to describe a past or present situation as it is, without outside interference and influence, is called the survey model (Karasar, 2009, p. 77).

Participants

The schools to be studied in this study were selected by the purposeful sampling method. The reason for the purposeful selection of the schools is that the schools to be studied are in the city center of Diyarbakir in Turkey, consisting of students from the state science high school, which has the highest entrance point to high schools in the province. The entry base scores of these high schools in 2020 are as follows: X Science High School (480,189), Y Science High School (463,019) and Z Science High School (462,980).

The study group of the research consists of 60 students studying atX Science High School in Yenişehir district of Diyarbakır in Turkey, 101 students studying at Y Science High School in Bağlar district of Diyarbakır in Turkey and 83 students studying at Z Science High School in Sur district of Diyarbakır in Turkey. All of the students are in the 12th grade, a total of 244 students participated in the study.

Data Collection Tools

In the study, data were collected using the Van Hiele geometric thinking level test (VHGTLT) and geometry success test (GST).

Van Hiele Geometric Thinking Level Test

The VHGTLT is a level determination test developed by Usiskin (1982) to quantitatively determine the students' understanding of Van Hiele geometry. The Turkish translation and validity-reliability studies of this test were previously tested by Duatepe (2000).TheVHGTLT consists of 5 multiple-choice questions corresponding to each level and includes 25 questions in total. In addition, in the study of Usiskin (1982), the reliability coefficient at each level of the test varies between 0.65 and 0.79, and in the study of Duatepe (2000) it varies between 0.59 and 0.79. The distribution of the questions of the test according to the levels is given in Table 1.

Table 1. Distribution of Van Hiele Geometric Thinking Test Questions by Levels

Questions	Level of questions
1-5	Level -1
6-10	Level -2
11-15	Level -3
16-20	Level -4
21-25	Level -5

Each level of the VHGTLT has its own characteristics, and the transition between levels has a hierarchical structure. In this study, in order to ensure a hierarchical transition between levels, the correct answer of at least three questions out of five questions at each level was accepted as an indication that the student reached that level. In other words, the student who answers at least 3 of the first 5 questions correctly is at level 1 (visual term), if the student who reaches level 1 correctly answers at least 3 of the second 5 questions, he/she is at level 2 level (analysis). Even if the questions at the higher level are answered correctly enough without reaching any lower level, the higher level cannot be reached.

In the study, 25 questions of the VHGTLT were applied to detect the relation between Science High School students' success in geometry lessons and Van Hiele geometric thinking levels. The level of students who could not reach any level was accepted as zero.

Geometry Success Test

A 25-question multiple-choice test was prepared by the researcher in order to measure the geometry achievement of the students. While preparing the test, the achievements in the geometry learning field of the Ministry of National Education (MoNE) mathematics curriculum, which was put into practice in 2018, were taken into account. 8 Mathematics education experts opinions and 5 high school teachers' opinions were taken for the test. The questions in the test consist of geometry acquisitions belonging to the 9th, 10th and 11th grades. The questions were selected from the University Entrance Exam questions of the Student Selection and Placement Center (ÖSYM) from 2014 to 2019, the Achievement Comprehension Tests of the MoNE and the material questions of the Educational Information Network (EBA) of the MoNE for secondary education. In order to better determine the relation between Van Hiele geometric thinking levels and geometry success, trigonometry achievements and analytical geometry achievements, which are among the geometry achievements in the mathematics curriculum, were not included in the geometry success test. Experts and teachers gave a positive opinion that the questions in the test consisted of questions that could measure the geometry success of the 9th, 10th, and 11th grades in the 2018 Secondary School Mathematics Curriculum.
The GST developed by the researcher was applied as a pilot application to 67 students in the Anatolian High School of the Competition Authority, which received the highest score after the Science High Schools, which is the subject of the research. In order to make the item analysis of the GST, a ranking was made from the highest score to the lowest score of the test. The item difficulty level and item discrimination analysis levels of the questions belonging to the GST are given in Table 2 by taking the 27% upper quartile and 27% lower quartile scores in the score ranking.

Table 2. Item Analysis of the Questions in the Geometry Success Test

Item Number	Item Difficulty	Item Discrimination
Question 1	0.78	0.27
Question2	0.42	0.23
Question3	0.81	0.49
Question4	0.39	0.20
Question5	0.69	0.36
Question6	0.51	0.36
Question7	0.79	0.38
Question8	0.72	0.38
Question9	0.37	0.33
Question10	0.85	0.62
Question11	0.61	0.32
Question12	0.24	0.23
Question13	0.60	0.46
Question14	0.15	0.30
Question15	0.36	0.28
Question16	0.69	0.42

Question17	0.52	0.30
Question18	0.45	0.35
Question19	0.58	0.31
Question20	0.16	0.24
Question21	0.07	0.29
Question22	0.57	0.31
Question23	0.07	0.33
Question24	0.12	0.35
Question25	0.16	0.30
Average of the test	0.46	0.33

Item discrimination is the ability to distinguish items that are suitable or unsuitable for measuring the intended feature of the subject. Items with an item discrimination power of 0.40 and above have a very good discrimination ability, which indicates that the item is a quality item. Items with item discrimination power between 0.30 and 0.39 are quite good items, however, these items can be improved. Items with item discrimination power between 0.20 and 0.29 are medium-level items and these items should be developed and corrected. Items with item discrimination power between 0.10 and 0.19 are weak items and these items do not contribute to the test. If removing weak items from the test reduces the content validity of the test, weak items should be developed and corrected. Otherwise, these items should be discarded from the test. Items with negative item discrimination power are very bad items and should be removed from the test if they cannot be developed and corrected (Tekin, 2000). The item discrimination levels of the 1., 2., 4., 12., 15. and 20. questions in the geometry success test were between 0.20 and 0.29, and it was decided not to remove these items from the test after taking expert opinion. In addition, there is no item with an item discrimination level below 0.19 in the GST.

The reliability of the test was calculated according to the Cronbach Alpha coefficient and the reliability coefficient of the test was found to be 0.802. In the main application, the reliability coefficient of the test was found to be 0.778. The GST with 25 questions, of which validity and reliability analyzes were made, was applied to 244 students. Sample questions of GST are given in the appendix.

Data Analysis

The scoring system developed by Usiskin (1982) was used to determine the students' Van Hiele geometric thinking levels as points. In this scoring system, the weighted score to be obtained from each Van Hiele level is as follows (Usiskin, 1982).

0 points for students who do not answer 3 or more questions from any level 0 questions correctly.

1 point for students who correctly answer at least 3 of 5 questions

2 points for students who correctly answer at least 3 of the 5 questions for the answers to the questions between 6 and 10 of the 2nd level

4 points for students who correctly answer at least 3 of the 5 questions for the answers to the questions 11-15 of the 3rd level

8 points for students who correctly answer at least 3 of the 5 questions for the answers to the questions between 16 and 20 of the 4th level

For the answers to the questions between 21 and 25 belonging to the 5th level, 16 points were given to the students who answered at least 3 of the 5 questions correctly.

As a result, in this scoring system, students who do not answer 3 or more questions from any level correctly are assigned 0 points and assigned to 0 Level. Level 0 was also later termed the “semi-envisioning/pre-recognition period” by Clements & Battista (1990).A student who reaches 1 point is assigned to Level 1. A student who reaches 1+2=3 points is assigned to Level 2. A student who reaches 1+2+4=7 points is assigned to Level 3.A student who reaches 1+2+4+8=15 points is assigned to Level 4. A student who reaches 1+2+4+8+16=31 points is assigned to Level 5 (Usiskin, 1982).

The data collected from the VHGTLT and the GST were analyzed with the Statistical Package for social Sciences (SPSS). After performing the normality test for the research data, it was determined between which values the skewness and kurtosis coefficients changed to determine normality. When the skewness and kurtosis coefficients are in the range of +1 to -1, it can be interpreted that the data values do not deviate significantly from the normal distribution (Büyüköztürk, 2019). Since the skewness and kurtosis coefficients of the data values in the study ranged from +1 to -1, it was accepted that the data showed a normal distribution. Descriptive statistics were used to determine the level of Van Hiele geometric thinking level of Science High School students and how their geometry success was. Pearson correlation analysis was applied to examine the relation between students' Van Hiele geometric thinking levels and their geometry success. Moreover, one-factor analysis of variance (One-Way ANOVA) technique of the SPSS program was used to detect whether there was a meaningful difference between schools according to the results of VHGTLT and the GST.

Findings

The findings of the study are given below, respectively, according to the problem statements.

Findings Related to Van Hiele Geometric Thinking Levels of Science High School Students

The first sub-problem was "According to the results of the VHGTLT, what is the distribution of the Van Hiele geometric thinking levels of the Science High School students?" The findings of the question are presented in Table 3.

Table 3. Van Hiele Geometric Thinking Levels of the Study Group

Van Hiele Levels of Geometric Thinking	Frequency (f)	Percent (%)
Level 0 (No level)	7	2.9
Level 1 (Visualization)	72	29.5
Level 2 (Analysis)	10	4.1
Level 3 (Informal Inference)	119	48.8
Level 4 (Inference)	16	6.6
Level 5 (systematic Thinking)	20	8.2
Total	244	100

When Table 3 is examined, 7 students (2.9%) of the study group are Level 0 (not belonging to any level), 72 students (29.5%) are Level 1 (Visualization), 10 students (4.1%) are Level 2 (Analysis). 119 students (48.8%) were at Level 3 (Informal Inference), 16 students (6.6%) were at Level 4 (Inference), 20 students (8.2%) were at Level 5 (systematic Thinking) Van Hiele geometric thinking level is seen. It is seen that the study group students are mostly at Level 3 (Informal Inference) Van Hiele geometric thinking level. From these results, it can be said that the majority of the students in the Study group (48.8% + 6.6% + 8.2% = 63.6%) 155 students were at Level 3 (Informal Inference) Van Hiele geometric thinking level and above.

Findings Related to the Relation Between the Science High School Students' Van Hiele Geometric Thinking Level and the Geometry Success

The second sub-problem, "Is there a meaningful relationship between the Science High School students from the VHGTLT and the GST? Findings for the question" were found by calculating the Pearson correlation coefficient. The obtained results are presented in Table 4.

Table 4. The Relationbetween the Geometry Success and the Van Hiele Geometric Thinking Level

Van Hiele Geometric Thinking Levels		Geometry Success	Van Hiele Geometric Thinking Level
Geometry Success Test	r	1	0.415
	p		0.000
	N	244	244
Van Hiele Geometric Thinking Level Test	r	0.415	1
	p	0.000	
	N	244	244

When the values in Table 4 are examined, it is seen that the Pearson correlation coefficient between the GST and the VHGTLT is r = 0.415 and the level of significance is p = 0.000. In this context, it is seen that there is a positive, significant and moderate relation between Science High School students' GST and VHGTLT. The moderate relation between these two tests can be interpreted as the higher the GST, the higher the VHGTLT.

Findings Related to Van Hiele Geometric Thinking Level Test Results Among Science High Schools

The third sub-problem, "Is there a meaningful difference among the Science High Schools according to the results of the VHGTLT?" In order to find the answer to the question, first of all, the descriptive findings of the VHGTLT of the students of the three schools where the research was conducted are presented in Table 5.

Table 5. Descriptive Findings of Schools' Van Hiele Geometric Thinking Level Test

	N	Average	Standard Deflection	Standard Error	min. True Number	Max. True Number
X Science High School	60	16.68	2.75	0.35	9	21
Z Science High School	83	14	3.91	0.43	4	23
Y Science High School	101	13.78	3.80	0.37	4	21
Total	244	14.56	3.80	0.24	4	23

When the values in Table 5 are examined, it is seen that the VHGTLT averages of the students are 16.68 in X Science High School, 14 in Z Science High School and 13.78 in Y Science High School. In total, the lowest number of correct answers given to the VHGTLT is 4, and the highest number of answers is 23, and it belongs to the Z Science High School.

Findings of Levene's test applied to detect whether the variances between schools are homogeneously distributed are presented in Table 6.

Table 6. Schools' Van Hiele Geometric Thinking Level Test Levene's Test Findings

	Levene Statistics	df1	df2	Sig.(p)
Van Hiele Geometric Thinking Test Total Points	4,261	2nd	241	,015

When Table 6 is examined, the variances do not have a homogeneous distribution since p = 0.015 < 0.05 according to the findings of the Schools' VHGTLT and Levene's test.

One-Way Analysis of Variance (ANOVA) test was used to detect whether there was a difference among schools according to the results of the VHGTLT. The numerical values of the test are presented in Table 7 below.

Table 7. Interschool Van Hiele Geometric Thinking Level Test ANOVA Test Findings

Anova					
	squares total	**Df**	**squares average**	**F**	**Sig.(P)**
Between groups	357,624	2	178,812	13,662	,000
In-group	3154,191	241	13,088		
Total	3511,816	243			

When Table 7 is examined, it is seen that there is a meaningful difference among schools according to the results of the VHGTLT. ($p = 0.00 < 0.05$). Tamhane's T2 test, one of the post-hoc tests, was used to detect this difference. The numerical values of the test are presented in Table 8 below.

Table 8. Interschool Van Hiele Geometric Thinking Level Test Tamhane's T2 Test Findings

School (I)	**School (I)**	**Average Difference (IJ)**	**Standard Error**	**Sig.(p)**
X Science High School	Z Science High School	2,68333*	,558	,000
	Y Science High School	2,90116*	,519	,000
Z Science High School	X Science High School	-2.68333*	,558	,000
	Y Science High School	,21782	,572	,974
Y Science High School	X Science High School	-2,90116*	,519	,000
	Z Science High School	-,21782	,572	,974

When Table 8 is examined, it is seen that there is no meaningful difference between Z Science High School and Y Science High School according to the VHGTLT results. ($p = 0.974 > 0.05$) The average difference of 0.572 between these two schools is due to random reasons. A significant difference was found between X Science High School and Z Science High School in favor of X Science High School. ($p = 0.000 < 0.05$) Similarly, it is seen that there is a meaningful difference between X Science High School and Y Science High School in favor of X Science High School. ($p = 0.00 < 0.05$).

Findings Related to Geometry Success Test Results Among Science High Schools

The fourth sub-problem, "Is there a meaningful difference among science high schools according to the GST results? "In order to find the answer to the question, the GST descriptive findings of the students of the three schools where the research was conducted are presented in Table 9.

Table 9. Descriptive Findings of Schools' Geometry SuccessTest

	min.	**Max.**

		N	Average	Standard Deflection	Standard Error	True Number	True Number
X Science School	High	60	15.45	3.67	0.47	7	21
Z Science School	High	83	12.18	4.43	0.48	3	21
Y Science School	High	101	11.38	4.43	0.44	2	21
Total		244	12.65	4.54	0.29	2	21

When the values in Table 9 are examined, it is seen that the GST averages of the students are 15.45 in X Science High School, 12.18 in Z Science High School, and 11.38 in Y Science High School. In total, the lowest number of true answers given to the GST is 2, and the highest number of answers is 21.

Findings of Levene's test applied to detect whether the variances between schools are homogeneously distributed are presented in Table 10.

Table 10. Schools' Geometry Success Test Levene's Test Findings

	Levene Statistics	df1	df2	Sig.(p)
Geometry Achievement test Total Points	2,270	2	241	,105

When Table 10 is examined, the variances have a homogeneous distribution since p = 0.105 > 0.05 according to the findings of the schools' GST Levene's test.

One-Way Analysis of Variance (ANOVA) test was used to determine whether there was a difference among schools according to GST results. The numerical values of the test are given in Table 11 below.

Table 11. Findings of Inter-School Geometry Success Test ANOVA Test

Anova					
	squares total	**Df**	**squares average**	**F**	**Sig.(P)**
between groups	650,002	2	325,001	17,886	,000
In-group	4379,080	241	18,170		
Total	5029,082	243			

When Table 11 is examined, it is seen that there is a meaningful difference according to the GST results among schools. (p = 0.00 < 0.05). Scheffe test, one of the post-hoc tests, was used to detect this difference. The numerical values of the test are presented in Table 12 below.

Table 12. Inter-School Geometry Success Test Scheffe Test Findings

School (I)	**School (I)**	**Average Difference (IJ)**	**Standard Error**	**Sig.(p)**

X Science High School	Z Science School	High	3.26938*	,722	,000
	Y Science School	High	4,06386	,694	,000
Z Science High School	X Science School	High	-3,26938*	,722	,000
	Y Science School	High	,79458	,631	,454
Y Science High School	X Science School	High	-4,06386*	,694	,000
	Z Science School	High	-,79458	,631	,454

When Table 12 is examined, it is seen that there is no meaningful difference between Z Science High School and Y Science High School according to the GST results. (p = 0.454 > 0.05) The mean difference of 0.631 between these two schools is due to random reasons. A meaningful difference was found between X Science High School and Z Science High School in favor of X Science High School. (p = 0.000 < 0.05) Similarly, it is seen that there is a meaningful difference between X Science High School and Y Science High School in favor of X Science High School (p = 0.000 < 0.05).

Findings Related to Van Hiele Geometric Thinking Levels of Science High School Students According to Geometry Success Test

The fifth sub-problem, "Does Van Hiele geometric thinking levels of science high school students show a meaningful difference compared to the GST? One-Way Analysis of Variance (ANOVA) was used to detect the answer to the question. The numerical values of the test are presented in Table 13 below.

Table 13. One-Way Analysis of Variance (ANOVA) Results of Van Hiele Levels of Geometric Thinking According to the Geometry Success Test

Anova						
	Squares total	**Df**	**Squares average**	**F**	**Sig.(P)**	**Significant Difference**
Between groups	7871,593	5	1574,319	5,267	,000*	1-5 Level 3-5 Level
In-group	71141,653	238	298,915			
Total	79013,246	243				

When Table 13 is examined, there is a statistically meaningful difference between Van Hiele geometric thinking levels of Science High School students according to the GST (p = 0.000 < 0.05). In order to detect the reason for this meaningful difference observed between schools, pair wise comparisons between schools were made with the Scheffe test. When the pair wise comparisons between schools were examined, it was seen that the difference observed between Van Hiele geometric thinking levels according to the GST of Science High School students was statistically meaningful between students at the 1-5 and 3-5 levels. There was no statistically meaningful difference between other geometric thinking levels. Based on these results, it can be interpreted that there is a relationship between Van Hiele geometric thinking levels of Science High School students and GST.

Discussion, Conclusion and Recommendations

This research was carried out to determine the relation between Science High School students' success in geometry lesson and Van Hiele geometric thinking levels according to the results of GST and VHGTLT. In order to this aim, VHGTLT and GST were applied to 12th grade students consisting of a total of 244 students in 3 public schools in the city center of Diyarbakır, and the students' geometry

thinking levels and general geometry achievement levels were examined. After the data collection process, statistical analyzes of the data were made according to the 0.05 significance level, and the results for the research problems are given below:

According to VHGTLT Results of Science High School Students, 7 (2.9%) of the students participating in the research were Level 0 (No Level), 72 (29.5%) were Level 1 (Visualization), 10 (4.1%) Level 2 (Analysis), 119 (48.8%) Level 3 (Informal Inference), 16 (6.6%) Level 4 (Inference), 20 (8.2%) Level 5 (Systematic Thinking) level. The Van Hiele geometric thinking level with the highest number of students is level 3 (visualization). According to NCTM (2000), high school students' Van Hiele geometric thinking level is expected to be Level 4 (Inference) (Knight, 2006). Similarly, Baki (2014) stated that high school students should be at the level of thinking to make inferences. From these statements, it is expected that high school students will have at least the level of Van Hiele geometric thinking at Level 3 (Informal Inference). It was determined that since the Van Hiele geometric thinking level of 155 students (63.6%) participating in the research was Level 3 and above, the Science High School students (63.6%) reached the required Van Hiele geometric level. On the other hand, the Van Hiele geometric thinking level of the students (36.4%) was lower than the required Van Hiele geometric thinking level. For this reason, it is important for the success of these students to consider the Van Hiele geometric thinking levels of these students when planning geometry lessons.

When the relevant studies in the literature are examined, Hurma's (2011) study with high school 9th grade students, Altun's (2018) study with 11th grade high school students and Usiskin's (1982) study with high school students in the USA. The students' Van Hiele geometric thinking levels in these studies were lower than the level they thought they should reach. The findings obtained in this study are that the Van Hiele geometric thinking levels of Science High School students are better than the findings obtained in the mentioned studies.
The correlation coefficient between the GST prepared by the researcher according to the in the high school curriculum and the VHGTLT was $r = 0.415$ and the level of significance was $p = 0.00$. The fact that $p < 0.05$ and the correlation coefficient is considerably higher than 0 indicates that there is a positive and significant relationship between the GST and the VHGTLT. In this context, it was concluded that the relation between the two tests was moderate and as the VHGTLT score increased, the GST scores would also increase.

When the schools were examined in detail, the VHGTLT averages were found to be 16.68 in X Science High School, 13.78 in Y Science High School, and 14 in Z Science High School. When the findings of the ANOVA test in terms of the VHGTLT were examined among the schools, it was seen that there was no significant difference between Z Science High School and Y Science High School, and that there was significant difference between X Science High School, which received the highest score in the high school entrance exam in the province, and Z Science High School and Y Science High School. It is seen that there is a significant difference in favor of X Science High School.

When the schools were examined in detail, the GST averages were found to be 15.45 in X Science High School, 11.38 in Y Science High School, and 12.18 in Z Science High School. When the ANOVA test findings are examined in terms of GST between schools, it is seen that there is no meaningful difference between Z Science High School and Y Science High School, and that there was significant difference between X Science High School, which received the highest score in the high school entrance exam in the province, and Z Science High School and Y Science High School. It is seen that there is a significant difference in favor of X Science High School.

It is seen that there is a statistically meaningful difference between the Van Hiele geometric thinking levels of the Science High School students according to the GST. When the pair wise comparisons between schools were examined, it was found that the difference observed between Van Hiele geometric thinking levels according to the GST of Science High School students was statistically significant between student levels at 1-5 and 3-5.

In our study, we found that the Science High School students had different levels of Van Hiele geometric thinking and the relationship between the Van Hiele geometric thinking levels test and the GST was moderate. We see that there is a meaningful difference in favor of the Science High School,

which receives students with the highest score in the high school entrance examination, and the difference between Van Hiele geometric thinking levels is statistically meaningful between the student levels at the 1-5 and 3-5 levels.

Based on all these results, the necessity of determining the Van Hiele geometric thinking levels of the students before teaching geometry, the necessity of progressing along the order of geometric thinking levels while teaching geometry (Usiskin, 1982: 3) and the necessity of processing geometry teaching according to the students' Van Hiele geometric thinking levels have emerged.

Suggestions for some future work are given below.

This study is about all geometry subjects in high school curriculum. In the high school and middle school geometry curriculum, different studies can be done on different subjects, more specific.

Since different variables (algebraic thinking, hypothetical thinking, etc.) can be effective on students' Van Hiele geometric thinking levels, studies can be conducted with variables other than geometry success.

Qualitative studies can be conducted to deeply examine the relation between Van Hiele geometric thinking levels and geometry success or different learning models.

Significant differences were found between schools according to Van Hiele geometric thinking level and GST in the schools where the research was conducted. The reason for these differences can be investigated.

Acknowledgement

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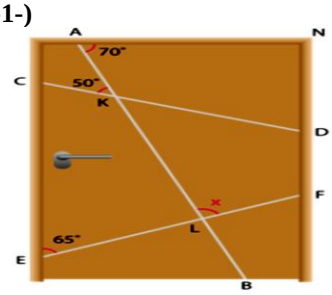
Appendix

SampleQuestions of GST

S-1-)

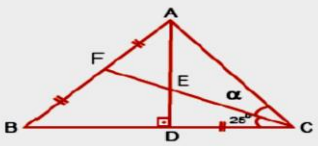


Bir mobilyacı, siparişini aldığı kapı ile ilgili ölçüleri yukarıdaki gibi olan tasarımı yapmıştır.
Şekilde $m(\widehat{AKC}) = 50°$, $m(\widehat{CEF}) = 65°$, $m(\widehat{NAK}) = 70°$ ve $m(\widehat{ALF}) = x$ olarak verilmiştir

Buna göre x kaç derecedir?

A) 75
B) 80
C) 85
D) 90
E) 95

S—2-)

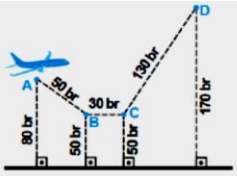


ABC bir üçgen, $[AD] \perp [BC]$, $|AF| = |FB| = |DC|$
$|AC| = |FC|$, $m(\widehat{BCF}) = 25°$ olduğuna göre,
$m(\widehat{ACF}) = \alpha$ **kaç derecedir?**

A) 20
B) 30
C) 35
D) 40
E) 45

S-3-)

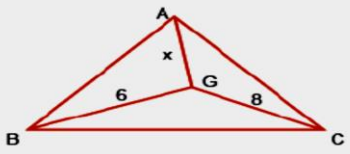
S-4-)



Yerden 80 br yükseklikte A noktasındaki bir uçak, şekildeki gibi B ve C rotalarını takip ederek D noktasına varıyor.

A ile D noktaları arasındaki <u>en kısa</u> uzaklık kaç br' dir?

A) 130
B) 150
C) 180
D) 200
E) 240



ABC bir üçgen G ağırlık merkezi $|BG| = 6$ cm, $|GC| = 8$ cm ise $|AG| = x$ 'in alabileceği tam sayı değerleri toplamı kaçtır?

A) 72
B) 80
C) 88
D) 92
E) 96

References

Algani, Y.M.A. (2019). Innovative ways to teach mathematics: are they employed in schools?.*Journal of Computer and Education Research*, *7* (14), 496-514. https://doi.org/10.18009/jcer.612199

Alshatri, S.H.H., Wakil, K., & Bakhtyar, R. (2019). The difficulties of theoretical and applied learning for mathematics subject in primary schools. *International e-Journal of Educational Studies (IEJES), 3* (6), 141-149. https://doi.org/10.31458/iejes.591997

Altun, H. (2018). Lise öğrencilerinin geometri ders başarılarının Van Hiele geometrik düşünme düzeylerine göre incelenmesi[Examining the Senior High School Students' Success in Geometric in Relation to Van Heile Geometrical Thinking Levels].*Turkish Studies Educational Sciences*, 13(11), 157-168. http://dx.doi.org/10.7827/TurkishStudies.13759

Altun, M. (2008).*İlköğretim ikinci kademede matematik öğretimi[Mathematics teaching at the second level of primary education]*(4th Edition). Alfa Basım Publishing.

Baki, A. (2014). *Kuramdan uygulamaya matematik eğitimi[Mathematics education from theory to practice]*. Harf Publishing.

Clements, D. H. & Battista, M. T. (1990). The effects of logo on childrens' conceptuazilations of angle and polyongs. *Journal for Research in Mathematics Education***,** 21(5), 356-371. https://doi.org/10.5951/jresematheduc.21.5.0356

Chang, K.E., Sung, Y.T. & Lin, S. Y. (2007). Developing geometry thinking through multimedia learning activities. *Computers in Human Behavior 23* (2007), 2212–2229. https://doi.org/10.1016/j.chb.2006.03.007

Çelebi-Akkaya, S. (2006). *Van Hiele düzeylerine göre hazırlanan etkinliklerin ilköğretim 6.sınıf öğrencilerinin geometri başarısına ve tutumuna etkisi[The Effects of the activities designed with respect to the Van Hiele model on students' achievement and attitudes]*. (Unpublished Master Thesis). Abant İzzet Baysal Üniversitesi, Turkey.

Çiftçi, O. & Tatar, E. (2014). Pergel-cetvel ve dinamik bir yazılım kullanımının başarıya etkilerinin karşılaştırılması[The Comparison of the Effectiveness of the Using Compass-Straightedge and aDynamic Software on Achievement]. *Journal of Computer and Education Research, 2* (4), 111-133. Retrieved from https://dergipark.org.tr/en/pub/jcer/issue/18616/196513

Dobbins, A., Gagnon, J.C., & Ulrich, T. (2014). Teaching geometry to students with math difficulties using graduated and peer-mediated instruction in a response-to-intervention model. *Preventing School Failure*, *5*8(1),17-25. https://doi.org/10.1080/1045988X.2012.743454

Duatepe, A. (2000, Eylül). Van Hiele geometrik düşünme seviyeleri üzerine niteliksel bir araştırma. *IV. Fen Bilimleri Eğitimi Kongresi*, 6-8 Eylül(s.562-568). Hacettepe Üniversitesi

Duatepe-Paksu, A. (2016). Van Hiele geometrik düşünme düzeyleri. E.Bingölbali, S.Arslan ve İ.Ö. Zembat (Ed*.). Matematik eğitiminde teoriler* (ss. 265-274). Pegem Akademi Publishing.

Hoffer, A. (1981). Geometry is more than proof. *Mathematics Teacher*, 74,11-18. https://doi.org/10.5951/MT.74.1.0011

Hurma, A. (2011). *9. sınıf geometri dersi çokgenler açı ünitesinde Van Hiele modeline dayalı öğretimin öğrencinin problem çözme başarısına ve öğrenmenin kalıcılığına etkisi[The effect of the instruction based on Van Hiele Model on students? problem solving performance and retention in the unit of polygon?s angle in 9th grade geometry]*. (Unpublished Master Thesis). Atatürk Üniversity, Turkey.

İlhan, A.,& Tutak, T. (2021). A research about mathematical visualization perceptions of mathematics teacher candidates in terms of some variables. *Journal of Computer and Education Research, 9* (18), 497-512. https://doi.org/10.18009/jcer.821211

Karasar, N. (2009). *Bilimsel araştırma yöntemi [Scientific research method] (19th Edition).* Nobel Publishing.

Knight, K.C. (2006). *An investigation into the change in the van Hiele levels of understanding geometry of preservice elementary and secondary mathematics teachers.*(Unpublished Master Thesis). The University of Maine, Orono, ABD.

Kutluca, T. (2013). The effect of geometry instruction with dynamic geometry software; Geo Gebra on Van Hiele geometry understanding levels of students. *Educational Research and Reviews, 8*(17), 1509-1518. DOI: 10.5897/ERR2013.1554

Laurens, T., Batlolona, F.A., Batlolona, J.R. & Leasa, M. (2018). How does realistic mathematics education (RME) improve students' mathematics cognitive achievement? *EURASIA Journal of Mathematics, Science and Technology Education,* 14(2), 569-578. https://doi.org/10.12973/ejmste/76959

Mistretta, R. M. (2000). Enhancing geometric reasoning. *Adolescence*, 35(138), 365-379.

National Council of Teachers of Mathematics [NCTM], (2000). *Principles and standards for school mathematics.* Reston, VA: Author.

Olkun, S.,& Toluk, Z. (2007). *İlköğretimde etkinlik temelli matematik öğretimi[Activity-based mathematics teaching in primary education]*. Maya Akademi Publishing.

Pesen, C. (2008). *Eğitim fakülteleri ve sınıf öğretmenleri için yapılandırmacı öğrenme yaklaşımına göre matematik eğitimi (4.Edition)[Mathematics education according to the constructivist learning approach for education faculties and classroom teachers]*.Pegem Akademi Publishing.

Regina, M. M. (2000). Enhancing geometric reasoning. *Adolescence*, *35*(138), 365.

Senk, S. L. (1983). *Proof-writing achievement and Van Hiele levels among secondary school geometry students.* The University of Chicago Publishing.

Şahin, O. (2008). *Sınıf öğretmenlerinin ve sınıf öğretmeni adaylarının Van Hiele geometrik düşünme düzeyleri[In- & pre - service elementary school teachers? Van Hiele reasoning stages]*. (Unpublished Master Thesis). Afyon Kocatepe Üniversitesi, Turkey.

Tekin, H. (2000). *Eğitimde ölçme ve değerlendirme. [Measurement and evaluation in education]*. Yargı Publishing.

Terzi, M. (2010). *Van Hiele geometrik düşünme düzeylerine göre tasarlanan öğretim durumlarının öğrencilerin geometrik başarı ve geometrik düşünme becerilerine etkisi*.*[The effect of instructional situations designed according to Van Hiele geometric thinking levels on students' geometric achievement and geometric thinking skills]*.(Unpublished doctoral dissertation). Gazi Üniversity,Turkey.

Usiskin, Z. (1982). *Van Hiele levels and achievement in secondary school geometry*, University of Chicago, ERIC Document Reproduction Service.

Van de Walle, J. A., Karp, K. S., & Bay-Williams, J. M. (2013). *Elementary and middle school mathematics: Teaching developmentally* (8th ed.). Upper Saddle River, NJ: Pearson.

Wai, L.K. , (2005). *The effectiveness of van Hiele-based instruction*, Dissertation presented a part fulfillment of the requirements of the derece of Master of Education, the University of Hong Kong. DOI:10.5353/TH_B3567672

Yi, M., Flores, R., & Wang, J. (2020). Examining the influence of van Hiele theory-based instructional activities on elementary preservice teachers' geometry knowledge for teaching 2-D shapes. *Teaching and Teacher Education, 91* (2020), 103038. https://doi.org/10.1016/j.tate.2020.103038

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