

Research Article

Culturally responsive education as a sustainable educational approach: Reflections from primary school teachers' life science course practices

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This paper aimed to determine primary school teachers' practices and classroom examples regarding culturally responsive education (CRE) in their life science courses. The study was conducted with the participation of 20 teachers, half of whom were employed in a primary school in Gaziantep province and the other half employed in the PIKTES [Promoting Integration of Syrian Kids into the Turkish Education System] project in the same province. The study adopts a qualitative research design that involves semi-structured interviews. The results revealed that the most common challenges experienced by primary school teachers were Syrian students' language and communication problems, as well as primary school teachers' lack of awareness about minority kids' culture and CRE. The most popular teacher techniques were those that aimed to increase student empathy. Based on the results, some suggestions were recommended for future studies.

Keywords: Culturally responsive education; Life science course; Primary school teachers

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1. Introduction

Every family has its own distinct culture ie a set of values, beliefs, habits, and interactions within the society (Polat & Akcan, 2017; Yuan, 2016). People's behavior is directed by culture, which is a system of conventions that regulates how individuals act in society. One feature of culture is that it is descriptive. In other words, the identity of a society is built on its culture. One may learn a lot about the lifestyle of society only by examining its culture.

Interactions between cultures have grown considerably easier and faster as a result of the facilitation and spread of communication and transportation. For a variety of reasons, migration has allowed civilizations to interact. Throughout history, wars, natural catastrophes, terrorism, and other events have shifted global population distributions. This condition has an impact on both immigrant-receiving and immigrant-sending countries (Pehlivan-Yılmaz, 2020; Ünal, 2014; Yılmaz, 2015). Since ancient times, Turkey has been a crossroads for several cultures. However, because of the increase in the number of refugees/immigrants it accommodates as a result of

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various immigration, its multicultural structure has become more diverse. Not only the number of refugee/immigrant students but also differences such as socioeconomic status, individual differences, ethnic identity, mother tongue, religious belief, gender, place of residence (rural/urban), number of siblings, school types (state/private school), and geographical regions all contribute to cultural differences within the Turkish education system. This cultural diversity is natural, given that every family, and even every individual, is a cultural carrier. While there are numerous benefits to cultural variety, it may also lead to a slew of issues. Loneliness, exclusion, introversion, dropping out of school, and other issues faced by kids from various cultures are examples of some of the issues they face (Kotluk & Kocakaya, 2018). Negative scenarios include a lack of communication between school and home, peer bullying, and discrimination against students of various ethnicities. This condition can have a direct impact on academic performance. One of the factors that contribute to academic failure is the neglect of students' cultural lives (Pehlivan-Yilmaz, 2019). Despite the diversity of cultures in the classrooms, the importance of culture in the learning-teaching process is sometimes overlooked in the curriculum. This condition creates a significant issue in terms of sustainable education. Education applied in schools often puts students – whose cultural identity is not compatible with dominant norms – at a disadvantage (Walker, 2019) because the student, who cannot live his own culture in the environment he is in, feels alienated. This feeling of alienation can make him lonely and cause a decrease in his readiness level. In order not to encounter these negative consequences, it is necessary to value cultural diversity. The way to improve disadvantaged students' conditions – due to their different cultural backgrounds – is through CRE.

Before delving into the definition of culturally responsive education, it's important to first discuss how the notion came to be. With the increasing cultural diversity around the end of the twentieth century, different phrases were offered to convey the cultural difference between home and school. Ladson-Billings (1995) described the chronological use of cultural diversity in her literature synthesis as culturally appropriate, culturally congruent, culturally responsive, culturally compatible, and cultural synchronization. After briefly addressing these definitions, Ladson-Billings (1995) proposed his own term: “culturally relevant pedagogy”. According to the author culturally relevant pedagogy can be defined as a contemporary model that allows all students to accept and affirm their cultural identity while developing a critical perspective that focuses not only on the academic achievement of the student, but also challenges the ongoing inequalities in schools. However, Ladson-Billings (1995), who made a significant contribution to the conceptualization of the subject in the literature, defined CRE as a teaching practice aiming to encourage students to be stronger and equipped intellectually, emotionally, politically, and socially, which must meet three criteria. These abilities include the ability to intellectually develop students, the desire to cultivate and support cultural competency, and the development of a sociopolitical or critical consciousness. CRE is defined as a method of using culture to better successfully teach ethnically diverse students about cultural characteristics, experiences, and perspectives (Gay, 2002a). CRE, according to Kotluk and Kocakaya (2018), is education that focuses on providing all students with high-level skills by incorporating students' cultures, emotional and social backgrounds, cognitive schemes, experiences, and various cultural values such as language and ethnicity into educational systems, learning, and teaching processes.

CRE has been a subject of study in the international literature for years, and it is widely regarded as one of the most successful approaches for meeting the learning demands of culturally diverse students (Ford, 2010; Gay, 2014; Wanless & Crawford, 2016). CRE, according to Gay (2014), are behavioral manifestations of knowledge, beliefs, and values that acknowledge the relevance of racial and cultural diversity in learning. In another definition, Ladson-Billings (2014) stated that CRE “empowers students intellectually, socially, emotionally, and politically by using cultural referents to impart knowledge, skills, and attitudes” (p.20). Furthermore, according to Hammond (2016), cultural responsiveness improves students' learning capacity by utilizing their cultural frameworks. CRE emphasizes cultural diversity in teaching (Ginsberg & Wlodkowski, 2009) and

promotes cultural interaction among students by emphasizing the student (Rajagopal, 2011 as cited in Pehlivan-Yılmaz, 2020). CRE is a type of education that encompasses all of a student's differences, and, contrary to popular thought, it is not limited to disadvantaged individuals. Its goal is to develop peaceful, culturally competent persons who accept and respect one other's differences (Kotluk & Kocakaya, 2018). Another goal of CRE is to promote the engagement and success of culturally diverse and minority students because each student's culture and experience is a valuable resource that helps them make sense of their surroundings (Milner, 2011; Walker, 2019).

CRE has a number of significant challenges. Negative teaching attitudes are one of the most significant obstacles (Gay, 2002b). Because schools and teachers must honestly believe that all students can succeed in order to provide an effective and sustainable education (Paris, 2012; Walker, 2019). Teachers who are culturally sensitive can incorporate student cultures, ethnicities, and social realities into their lessons (Keehne et al., 2018). Teachers should be aware of and combat stereotypes that may jeopardize the success of students from minority backgrounds, using inclusive pedagogical abilities such as CRE (Brown-Jeffy & Cooper, 2011; Walker 2019). Therefore, if it is desired to raise culturally sensitive and caring children, it should first start with teachers and primary education (Mensah, 2011). Teachers can't teach what they don't know. Educators who are unfamiliar with a culture should embark on a transformative learning-teaching process with their colleagues and students to determine where to begin (Baldwin, 2015; Gay, 2014). Teachers should be encouraged to study and practice CRE. To begin, pre-service teachers who grasp the principles of CRE in teacher education can begin to transform theory into practice and use these principles in the classroom (Mensah, 2011). The ability of teachers to conduct their classes in a culturally sensitive manner is strongly tied to their cultural sensitivity. As a result, primary school instructors, who serve as role models for primary school students, should be culturally aware.

1.1. Why Culturally Responsive Education?

Schools assist students to comprehend and analyze cultural characteristics from many locations around the world (Şahin, 2019). One of the most effective lessons for understanding and interpreting the cultural aspects present in society is the life science lesson, which is one of the most significant lessons provided in the first three years of primary school in Turkey. The goal of the life science curriculum is to raise people who are healthy and safe, care about the environment and nature, conduct research, and love their country (Ministry of National Education [MoNE], 2018). At the same time, it addresses topics such as getting to know the students' family, history, and cultural values. As a result, the life science lesson is the first lesson in which students learn about the society where they live. CRE aligns with the goal of the life science curriculum since it requires students to explore their surroundings' cultures and be aware of the richness of cultural diversity. "Communication in other languages" is one of the eight key competencies aspired for in the life science course. Communication competency in foreign languages necessitates communication, mediation, and intercultural understanding in foreign languages, all of which are related to this topic. Students should engage correctly in all kinds of social and cultural circumstances, according to the competency of "communication in mother tongue," which is another notion specified in the life science curriculum (MoNE, 2018). From this perspective, CRE stands out as one of the ways for students to connect within the context of culture and build intercultural understanding.

In summary, a life science lesson requires students to study the society in which they live by first knowing and understanding themselves, then understanding their environment and the events that occur around them, and then identifying methods to improve their lives. The life science course curriculum is updated in response to social changes and includes a structure that demonstrates ongoing improvement (Şahin, 2009). CRE may be incorporated into this structure, and the life science course, which is connected with life in primary school, maybe the most important in this context. Life science course, according to Sönmez (1997), is described as the

process of developing a connection with natural and social reality based on proof and the living knowledge gained at the end of the process. The knowledge that the children bring to class and learn at home contains remnants of the student's own culture. The life science course connects what children know at home with what they learn at school and what they will study in the future. Meanwhile, the life science course provides an atmosphere in which students can express their ideas and understand the events and phenomena that occur in their immediate surroundings. The life science lesson, on the other hand, is the ideal way for the teachers to incorporate cultural events and examples into the classroom. A life science lesson delivered without CRE will miss some foundations of learning in nations where diversity is high, such as Turkey. CRE encourages teachers to use strategies that allow students to be their true selves in the classroom and to form loving relationships with their peers and teachers. These personal connections result in improved learning, stronger intergroup relationships, and a decrease in bias (Byrd, 2016).

1.2. The Aim

The focus of this research is to understand teachers' CRE practices and examples during life science lessons. The following research questions were developed by the aim of the study:

RQ 1) What are the challenges teachers face in facilitating cultural interaction with students from other cultures in a life science course, according to teachers?

RQ 2) What strategies do teachers use when using a CRE method in a life science lesson?

RQ 3) What kinds of examples do teachers present in the classroom involving CRE in a life science lesson?

2. Method

2.1. Research Design

The study employed a case study, which is one of the qualitative research methods. This method allows researchers to gain a better understanding of a subject by using words rather than numbers. The goal of qualitative research is to learn about the thoughts and perceptions of the participants on the subject (Seggie & Bayyurt, 2021). Case studies, on the other hand, allow researchers to describe a scenario by examining it in-depth throughout time while also characterizing a complex issue in a broad sense (Subaşı & Okumuş, 2017). A case study is a method for examining one or more events, circumstances, phenomena, social groupings, or programs in-depth concerning the systems with which they are associated. Therefore, it is used to reveal the aspects that comprise a situation, to offer possible interpretations, and/or assess the issue as a whole (Yin, 2014). Because classroom procedures, examples, and practices utilized by primary school teachers in life science lessons are explored, the case study approach is regarded to be the most appropriate design for this study.

2.2. Participants

A total of 20 teachers, half of whom were employed in a primary school in Gaziantep province and the other half employed in the PIKTES [Promoting Integration of Syrian Kids into the Turkish Education System] project in the same province are composed the participants. In sampling selection, a purposeful sampling method was adopted. Participants are chosen using this strategy based on their knowledge of the characteristics of the subject and previous experiences. The purposeful sampling method was chosen because it is one of the most effective methods for analyzing scenarios that fit specific requirements, and the research is focused on courses with students from various cultures. The participants, on the other hand, volunteered to be a part of the study. The experience of the teachers participating in the research varies between 3 years and 23 years. For the sake of confidentiality, the primary school teachers who participated in the interview were labeled K1 (participant 1), K2 (participant 2), K3 (participant 3), and so on (Table 1).

Table 1

Primary school teachers' professional experiences, the number of children from various cultures, and their grade levels

<i>Participant</i>	<i>Year of experiences</i>	<i>The number of students from different cultures</i>	<i>Grade levels taught</i>
K1	22	14	3
K2	21	14	3
K3	20	14	3
K4	23	14	3
K5	17	16	2
K6	17	12	2
K7	20	12	2
K8	21	8	2
K9	3	13	1
K10	9	17	1

PIKTES project teachers are coded as P1 (PIKTES 1), P2 (PIKTES 2), and so on (see Table 2). The number of students from different cultures ranges from 15 to 20, while the number of teachers with professional experience ranges from 4 to 8.

Table 2

PIKTES teachers' professional experiences, the number of children from various cultures, and their grade levels

<i>Participant</i>	<i>Year of experiences</i>	<i>The number of students from different cultures</i>	<i>Grade levels taught</i>
P1	4	15	3
P2	4	19	3
P3	5	15	3
P4	5	19	3
P5	6	19	3
P6	6	20	3
P7	6	19	3
P8	7	20	3
P9	7	20	3
P10	8	20	3

2.3. Data Collection Process and Techniques

According to Patton (2002), interviewing is the best technique to acquire data about feelings, ideas, and intentions regarding an event that cannot be obtained by direct observation. Therefore, the researcher developed a semi-structured interview form as data collection tool. Two academicians who are specialists in their disciplines were consulted to examine if the prepared form is clear, intelligible, and capable of presenting the purpose of the research. As a result of the expert review, the form was revised and finalized. Face-to-face interviews and a semi-structured interview form were used to collect data. The researcher obtains information in a practical and systematic manner by employing the semi-structured interview form (Patton, 2002).

The participants were provided some background information about the CRE before the interview. It was stated to the participants that the interviews and private information of the teachers would be kept confidential. During the interview, the teachers were asked in the same order pre-prepared open-ended questions on the practices they did in the life science lesson that related to culturally responsive education. The answers were recorded via audio recording, and then transcribed. Participants who refused to be audio-recorded had their information written down at the time of the interview. The veracity of the material was then checked by having the voices or writings read aloud again. In addition, the views of a qualitative research professional academician were taken into account. The data was added to the findings without the researchers'

interpretation through direct quotations. Each teacher was interviewed for 20-30 minutes on average (the participants were 10 primary school teachers and 10 teachers working on the PIKTES project - Promoting Integration of Syrian Children into the Turkish Education System), and the total transcriptions of the interviews obtained in the study are 32 pages long. The interviews went on until no new ideas arose in response to the questions. In this method, the research's validity and reliability were attempted to be improved. The interview questions were written in a straightforward and explicit manner so that the participants could comprehend them.

During the interview, the teachers were asked the following questions:

1. What are the challenges you face in facilitating cultural interaction in life science lessons with students from various cultures?
2. What kinds of methods do you use in your life science lessons for students from various cultures?
3. Do you prefer to present examples in the classroom that focus on the culture of the students? Could you please give two examples?
4. What do you do in your classroom to engage students from various cultures?

2.4. Data Analysis

Case studies are intended to highlight the ambiguity that exists between an event and the context in which it occurs (Gay et al., 2009). According to Yin (2014), case studies are used to reach a conclusion by bolstering data with previous theoretical propositions, guiding data collection and analysis processes, and utilizing a variety of data collection sources based on various of relevant variables in order to comprehend unique situations. To put it another way, a case study necessitates a thorough examination of how people perceive themselves based on their experiences, their perceptions and feelings in relation to the setting, and the underlying reasons (Gillham, 2000). For this case study design, the content analysis method was chosen for data analysis. Similar concepts and their relationships are revealed, and the findings are evaluated, using this analysis method (Forman & Damschroder, 2007). The basic goal of content analysis is to emerge at conceptual linkages that can meaningfully explain the data collected during the research. Similar data sets are grouped under comparable concepts and themes, and structured in a way that readers can understand in this form of analysis (Yıldırım & Şimşek, 2006). Yin (2014) takes a four-step approach to content analysis. It is intended to compile the data obtained in a specific order in the first stage. The data is divided into small units in the second stage, and codes are assigned to these units. The codes are combined in the third phase to generate themes. The researcher interprets the ideas he has produced in the fourth step. These stages were followed in this investigation, as proposed by Yin (2014). Each teacher was assigned a code (K1, K2, P1, P2, etc.). The responses to the interview questions were either voice-recorded or written down. The data that were similar to each other were grouped and evaluated in relation to the study topics after the audio recordings were attentively listened to and transcribed. Furthermore, direct quotations corroborated the conclusions. The researcher continually assessed the relevance of the findings. The findings were also compared to those of earlier investigations, with parallels and discrepancies discussed.

3. Findings

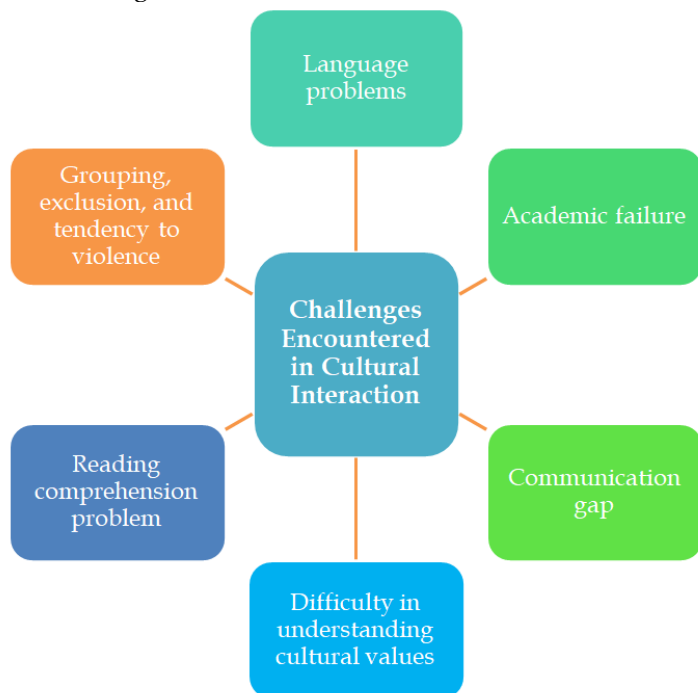
The findings were presented in this section in accordance with the data gathered from the interviews with participants in various groups, and the emergent themes were investigated under the categories of the sub-problems.

3.1. Problems Encountered in Cultural Interaction with Students from Different Cultures in the Life Sciences Lesson

Teachers compiled a list of challenges that students from many cultures regularly face in life science classes, as shown in Figure 1.

Figure 1

The Challenges Encountered in Cultural Interaction with Students from Different Cultures



The majority of teachers responded that the language barrier and, as a result, the communication gap is the most significant challenge they face when delivering cultural interaction with students from various cultures. They claim that this difficulty occurs more frequently in verbal classes, such as life sciences, and that this condition causes the student to fail, and that this issue happens less frequently in numerical classes, such as mathematics. This is how K3 described the situation:

The most serious issue is a linguistic barrier. Due to the language barrier, the material that I teach at regular pace in the life science class comes to the students quite rapidly. While considering the meaning of the terms, the learner is having problems understanding the major theme. This is the same issue that exists with evaluation. When a student asks a question vocally, for example, there is no problem; but, it makes it harder for them to answer questions they must answer by reading.

According to K8, if pupils enter school without knowing Turkish, they will be unable to form the necessary link between teacher and student:

The linguistic issue, in my opinion, is the most serious one. Because of this issue, the necessary link between the teacher and the student cannot be developed when the child begins school. In order to communicate with the student in the class, we enlist the support of people who speak the linked language, as well as interpreters. Mostly, we are unable to communicate with the children during the lesson.

P7, one of the PIKTES project's teachers, explained that because the students do not speak Turkish, they are unable to communicate with their peers and are thus excluded. P4 also stated the following in regards to the language problem:

Students must be accepted in their environment and must make an attempt to be accepted in order to promote cultural engagement. However, I believe they will require adequate equipment for this, therefore the major issue will be the communication problem once again.

The linguistic problem was expressed by K1 and P2 primary school teachers as "conflict of meaning," and P2 from PIKTES teachers as "cultural confusion." This is how K1 described the situation:

...they are in conflict of meaning. This is especially true in the life science course. For example, the student actually knows the meaning of "dowry chest", which is one of the cultural objects we teach in the lesson, but the student cannot understand what I mean because they have a different pronunciation in their language and the student does not use it much in his daily life.

P2 used the following statements in another example: "It's challenging to get students' attention when explaining national values because they're experiencing complete cultural confusion." P1 also noted that each student from a different culture reacted differently to a common incident in the culture transfer. Students struggled to understand traditional cultural values, according to P3. When asked about the challenges they were having, all of the participating teachers identified it as a reading comprehension issue. For instance, K4 asserted that: "When students from various cultures read the subject in a life science book, they find it difficult to comprehend it. They can grasp the issue if I teach them with emphatic motions, but they cannot understand it by reading." From a different perspective on the matter, P5, one of the PIKTES teachers, indicated that he did not have a problem with the following statements:

I teach in the integration class. My students come from a variety of cultural backgrounds. As a result of our occupation, we are accountable for communicating our own culture to people from various civilizations. We have no concerns at this moment; we are learning about our students' cultures while also transferring our own culture. It would be inaccurate to suggest that I am experiencing difficulties at this time because it is the responsibility of PIKTES teachers to address them.

Finally, four of the primary school teachers interviewed, as well as P7, a PIKTES teacher, claimed that the students' social difficulties, such as grouping, exclusion, and a proclivity for violence, were mirrored in the class as instructional failure. K7 has the following comments to say about the subject: "...their academic achievement is harmed by the language problem, which generates grouping and conflict among them. Students who are unable to express themselves, in my experience, tend to resort to violence."

3.2. Practices Made in the Context of CRE in the Life Sciences Lesson

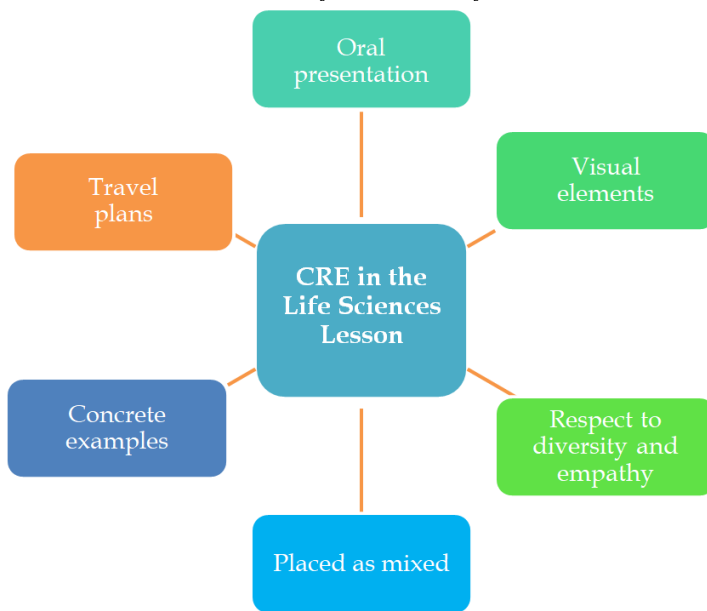
Teachers highlighted their in-class approaches for students from different cultures in life science lessons as in Figure 2.

Following the interviews with the classroom teacher, it was discovered that, despite the presence of students from diverse cultures in their class, they did not conduct cultural study. Three primary school teachers remarked that, despite being from different cultures, they share similarities with Turkish culture, which they attribute to the fact that the students were born and raised here. K4, a primary school teacher, asserted that: "Actually, I haven't looked at their cultural traits from a different source previously, however in life science classes, we see movies on their cultural qualities together."

The most typical practice in the context of culture, according to all primary school teachers, is to benefit from oral presentation. They indicated that they wanted the students to discuss about their past, their homes where they came from, their families' vocations there, and what they left behind by allowing them to share their own culture with their other classmates through verbal expression. They asserted that they emphasized respect for differences and, in particular, empathy in this manner. They also stated that they are attempting to find a common denominator in terms of school culture adaptation. P10, one of the PIKTES teachers, also noted that they connect with oral expression in addition to written language. He stated that "Because the students' written language skills are less developed than their spoken language skills, I value oral expression in our discussions on culture. I frequently request that they provide examples of their own culture."

Figure 2

Teachers' in-class Practices for Students from Various Cultures in Life Science Lessons



According to K1, one of the primary school teachers, he divided the students into two groups, one Syrian and one Turkish, to encourage interaction. He asserted that, "Students benefit from this type of seating because it helps them strengthen their linguistic skills. As an outcome, foreign students acquire Turkish more quickly outside of the classroom and do not see each other as second-class citizens." Furthermore, K1 mentioned that he attempted to encapsulate the principles in the life science course by displaying them on the smart board so that students from various cultures could better comprehend: "...I sometimes have trouble comprehending an object or vegetable they're describing, let alone the name of the food. We can more easily share culture when we look at the visuals on the smart board." P2 and P8 both indicated that visual cards helped them. P6 indicated that they provided concrete examples from everyday life, P7 stated that they brought examples from their own culture to the students and attempted cultural transfer by creating travel plans, and P9 stated that they attempted to interact with comparative examples. For example, P4 asserted that: "I want children to remember their culture's food, rituals, and games. I use examples and activities to get students to talk about what they admire about our culture." P5, one of the PIKTES teachers, noted that due to his grade level, he did not teach the life science lesson very well, but that he tried his best in the framework of CRE:

We have a course called life science in the integration classes, however the level of our classes is not appropriate for this course, and we are unable to gain the efficiency we desire from these classes. According to what I've seen in life science textbooks, there are many people from various cultures. I don't do any extra practice because all of my students are from various cultures. I make every effort to instill Turkish culture in my students.

Only K6, stated that he did not engage in any cultural behaviors other than those prescribed in the textbook, and that he did so based on the following justification:

In terms of culture, I don't do anything especially specific. Of course, I have students speak verbally about their prior experiences, but I believe that discussing culture too much in the classroom will lead to discrimination against you or me. That's why I don't think about it often.

3.3. The Examples Given in the Context of CRE in the Life Sciences Lesson in the Classroom and Activating the Students

Figure 3 summarizes the examples teachers provided in life science lessons, as well as their thoughts on how they engaged students in the lessons.

Figure 3

The Examples used by the Teachers in the Context of CRE in Life Sciences Lessons



The most typical activity example in a life science lesson in the classroom has been identified to be about food. The food event was the first example presented to this topic by all primary school teachers and PIKTES project teachers. According to primary school teachers, there is a great degree of cultural resemblance, with the food being the most significant distinction. One of the primary school teachers, K9, described his example as: "During domestic goods week, I requested both Syrian and Turkish students' parents to contribute meals that were unique to their cultures. As a result, we concentrated on the similarities and differences, as well as their names." P4, one of the teachers of the PIKTES project, explained the example he gave during the instruction as: "I ask the students about their favorite dishes, and then I explain my own, one of which is from Turkish cuisine and the other from Arabic food." Three primary school teachers and three PIKTES teachers claimed to have learnt Arabic words. For instance, K10 stated that:

In the life science class, while we're discussing cultural aspects and national holidays, I ask my students from various cultures to give instances of cultural elements. For example, I ask how the word "hospitable" is pronounced in Arabic and write it on the board by pronouncing it. I bring cultural components from their home to the classroom and allow them to share them with their classmates while teaching these subjects.

Similarly, P2 asserted that:

I'd like them to give examples from their own culture as well. When I teach a new term, I always ask what it means in Arabic. This method not only helps them feel wonderful, but it also draws the attention of the students.

K5, used the following phrases to illustrate the examples he gave:

Rap music is popular among today's students. When I teach life science concepts, I sometimes have them sing rap. I also have students from various ethnicities sing Arabic rap. Other friends initially thought it was unusual, but as I continued to underline how much I like it, other students began to see it as normal. As a result, students become more engaged in the class.

K1 claimed to have taught all of his children traditional children's activities that were played in the classroom by students of all countries. P4 from PIKTES teachers, for example, mentioned that he taught the children's songs, which students from many countries sung together while playing. Drama was performed in P1 and P4's lessons in a similar manner. Oral and written narration were used by K2 and P3, who had them create biographies in particular. For instance, K8 pointed out that:

In the life science course, I usually teach traditional games. Because some students find it difficult to express themselves verbally, I encourage students from other cultures to introduce themselves and write about the things they miss and love the most about their home countries. They can also use written expression to learn more about their own culture.

P2, a PIKTES teacher, noted that she used the following examples from her minority/immigrant students' culture: "When we talk about national and official holidays, for example, I inquire about their holiday celebrations and traditions. I use them to illustrate the concept of family, particularly the definition of extended family."

P3, one of the PIKTES teachers who took part in the study, said that when he included examples from both cultures, his students became more engaged in the class and their attention became more concentrated. P10 indicated that he carefully listened to his students as they spoke, P8 profited from songs, films, nursery rhymes, and activities, and P10 made students active participants in the session by assigning them frequent chores and building a close relationship with them. P7, pointed out that: "I am a role model to students, I give responsibility, I value them. I express my gratitude for the privilege of being human in the first place."

Students from all cultures were not very passive in the class, according to all primary school teachers. P1 from PIKTES teachers and K6 from primary school teachers both indicated that their students are always active in class and that they do not have a particular practice for it.

4. Discussion and Conclusion

The conclusion, discussion, and recommendations based on the research findings are presented in this part. The definition of CRE was developed and its necessity and relevance in the life science course were underlined in this study, which aimed to disclose the practices and examples supplied by the teachers in the life science course.

The issues experienced in facilitating cultural interaction with the students in the life science class were asked after a preliminary briefing was given to the teachers working on the PIKTES project. Language difficulties and communication barriers are the most typical issues. There have been numerous studies on language and culture that have yielded varying outcomes. Teachers build connections with their students' cultural origins and language as part of their everyday in-class practices, according to Ebersole et al. (2016). CRE in the twenty-first century requires awareness, knowledge, processes, and techniques to focus on the integration of language and culture in the classroom reality in the context of globalization (Porto, 2010). As a result, we should put an emphasis on diverse language in multicultural classrooms. Pehlivan-Yılmaz (2019) reported that students from various cultures were unable to communicate with teachers due to a lack of proficiency in Turkish. Similarly, according to a report published by Mersin University (2014), the most serious issue in this regard is a lack of linguistic proficiency. This study also revealed that linguistic problems create reading comprehension issues and ambiguity in student learning. Issues such as grouping, exclusion, and violence are occasionally identified, but they have a substantial impact on academic performance.

The lack of awareness of primary school teachers about CRE and their minority student cultures has become one of the outcomes. Soylu et al. (2020) found that primary school teachers shape the cultural codes of disadvantaged students in their classrooms solely through the profiles of the students in their courses. They underlined the importance of characterizing students' past lives and outside-of-school resources in order to better manage disadvantaged students' educational processes. Culturally diverse students, according to Kotluk (2018), have low expectations, low motivation, lack of adaptation, academic failure, low self-esteem, lack of self-confidence, and emotions of deprivation; yet, teachers are unsure of what solutions may be designed to address these issues. According to Erdem (2017) and Tarman and Gürel (2017), teachers faced cultural issues such as language, the development of appropriate teaching content, teaching tactics, teaching resources, and student evaluation systems. Prejudices, discrimination, and exclusion are also key issues that teachers face in the classroom (Göktuna-Yaylacı et al., 2017). Teachers,

according to the authors, believe they are insufficient in the face of these issues. Previous research has shown that primary school teachers have a lack of expertise in this area. Students are not receiving the education they deserve as a result of this circumstance. In relation to these issues, the findings of several studies coincide. Cultural awareness refers to the conceptual strands that should be weaved across teachers' classroom learning experiences in order for those experiences to collectively create the attributes of culturally responsive teachers (Villegas & Lucas, 2002). As a result, cultural understanding among teachers is critical for CRE.

When questioned about the CRE practices they use in the life science class, the most popular response of the teachers was respect for differences and, in particular, empathy. Mixed classroom arrangements, employing visuals while communicating, adjusting to school culture, upholding common values, and preventing exclusion and conflict in the classroom were among the practices discovered. Teachers' capacity to (re)act or respond to students in ways that yield evidence of CRE has been demonstrated to improve with empathy. One technique for teaching teachers to make professional judgments that provide evidence of CRE is the use of empathy operationalized through perspective taking. Engaging teacher candidates in perspective taking—as an act and process of knowing, adopting the social views of others—allows them to gain (and reason with) new knowledge about students and the sociocultural milieu in which they will teach (Warren, 2018). Pehlivan-Yilmaz (2019) also noted that empathy is the most commonly cited action example. Teachers considered empathy was a key aspect in working well with ethnically diverse students, according to McAllister and Irvine (2002). Empathy has been proposed as a valuable strategy in the CRE literature for addressing the aforementioned issue by bridging the perception gap between students from different cultures (Warren, 2013). With words like "an empathic temperament has been seen as a desirable trait for instructors in varied situations," Ullman and Hecsh (2011) allude to the concept of empathy. In this regard, the findings of the study are similar to those of earlier investigations.

When primary school teachers were asked for examples of activities from the practices they used in the CRE in the life science lesson, it was found that bringing various dishes from the two cultures into the classroom was the most prevalent activity. They generally presented instances of oral and written expression, biography, memoir writing, drama, case study, music teaching, and traditional children's games. Furthermore, the drama approach is the most commonly used in the classroom by the teachers of the PIKTES project. Furthermore, the PIKTES project's teachers provide more instances from the students' prior lives in the classroom. It's possible that teachers were expected to support cultural norms as a result of the fact that all of the pupils in PIKTES lessons were Syrian. Civil and Khan (2001) cooperated with a classroom teacher to bring together children' and families' knowledge and experiences by participating in a project centered on practices in an elementary classroom, using personal experience strategies. Despite cultural differences, research have shown that legitimizing students' culture and everyday life can lead to an interest in diversity, which can boost academic achievement and engagement (Civil & Khan, 2001; Ensign, 2003; Tate, 1995, as cited in Aronson & Laughter, 2016). This emphasizes the need of incorporating cultural practices into the classroom.

When primary school teachers were asked about the difficulties they faced in incorporating cultural interaction into life science lessons, the responses were extensive. Furthermore, when asked about classroom practices and activities in the context of CRE, students provided more limited responses. This could be due to primary school teachers' lack of awareness of CRE, as well as their contempt for CRE and low standards. The topic of teachers' low expectations of students from different cultures was explored in some studies. On the other hand, other studies suggest that teachers can engage with all students to eliminate social disparities, achieve academic success, and maintain cultural pride. (Cannella & Reiff, 1994; Ladson-Billings, 1992; 1994; 1995; Marie, 2006). In light of these results, it is suggested that primary school teachers be given academic support and offered trainings on how to employ CRE in the classroom with specific examples. Pre-service teacher applicants' qualifications can be improved in this way. Furthermore, putting a strong

emphasis on CRE in pre-service teacher education is thought to be critical for long-term success. The data in this study is based on teacher opinions and was conducted as a qualitative study with a group of 20 teachers. A quantitative research design can be used to determine the perceptions and attitudes of teachers on CRE in a broader sample for future research.

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