

Teachers' Readiness in Teaching Flood Disaster Mitigation, Portrayed By The Teacher's Pedagogical Content Knowledge (PCK): A Case Study In Pelalawan District, Riau Province, Indonesia

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ABSTRACT

This is the first research on PCK (Pedagogical content knowledge) teachers about learning flood disaster mitigation. This article aims to identify and describe teachers' experiences in teaching flood disaster mitigation in elementary schools based on Professional and Pedagogical and Experience Repertoire (PaP-ERs). This article is written based on qualitative research conducted in Pelalawan district, Riau province, Indonesia. 12 teachers were involved in answering a list of questions about teaching readiness based on their experiences and conducted interviews. Based on the results of the study, it was found that in general, the teacher had appeared PCK in choosing the right method/strategy according to the conditions of student knowledge, using certain techniques to respond to student diversity, and guiding students to understand. Teachers begin to appear on knowledge about floods, identify and utilize students' initial knowledge, select and use media/learning resources, review students' new knowledge, and choose appropriate techniques for evaluating. On the other hand, teachers do not or have not appeared using prompting and probing questioning techniques, student focus and discipline, and follow-up learning. This condition shows that in general, the teachers do not have the readiness to teach disaster mitigation properly even though they have experience in dealing with flood situations..

Keywords

Teachers' Readiness, Pedagogical Content Knowledge (PCK), Disaster Mitigation.

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Introduction

Pedagogic Content Knowledge (PCK) is a combination of content knowledge and pedagogic knowledge according to the teacher's experience of teaching subject matter [1] [2] Content knowledge is the teacher's knowledge of the breadth and depth of the subject to be taught to students based on their experiences. Pedagogic knowledge is the knowledge of teachers about the selection of factors and support related to how to teach subject matter based on teacher experience [3]. PCK is important for a teacher because teachers will easily integrate the experiences, they have in choosing to present learning subject and how to teach it [4]. With the PCK, teachers can easily adapt to the learning being carried out, especially if the learning environment of students and teachers is supportive in teaching the subject matter.

Most of the areas in Pelalawan regency, Riau Province, Indonesia, are areas traversed by the Kampar river basin. Therefore, this area is prone to flooding. Especially if the river tides and the rainy season, the water points gather and overflow in most of the area. Besides, deforestation occurs along the Kampar river due to illegal logging or clearing of agricultural land. This condition caused flooding in the village along the Kampar River. Apart from the agricultural sector and the community economic sector, the education sector is also a victim of this flood disaster. The impact on education is not only felt by students at the secondary school level but also in elementary schools. One of the efforts to reduce victims from the disaster, it is important to provide adequate knowledge to students from middle school to elementary school levels

It is widely recognized that education plays an important role in reducing disasters and achieving human

security in the pursuit of sustainable development. Previous experience has shown the positive effects of education on disaster risk management. Children who have been taught about catastrophic phenomena and how to react to such situations have been shown to respond promptly and appropriately, thereby warning others and protecting themselves during times of emergency [5]. The importance of disaster education in schools is increasing for the following reasons: (i) children are one of the most vulnerable sections of society during disasters; (ii) they represent the future; (iii) the school serves as a community center location for group meetings and activities; and (iv) the effects of education can be transferred to parents and community [6]. Therefore, schools are considered to have an important role in increasing the awareness of students, teachers, and also parents in the surrounding environment. Therefore, school disaster preparedness is very important to ensure the preparedness of activities [5].

Even though it is not included in the curriculum, teachers must be able to integrate knowledge about floods into related subjects. There are several reasons why this should be done. First, equip students with good knowledge about disaster mitigation so that there are no bigger victims. Second, the contextualization of classroom learning. Third, efforts to improve environmental conditions through education. For this reason, schools need to have teachers who understand well disaster mitigation lessons [5].

Based on the facts in the field, teachers with their experience already understand natural disasters, especially floods, teachers have introduced flood disasters but have not presented structured subject, especially about flood disaster mitigation. Flood disaster mitigation is a series of preparedness in dealing with flood disasters which includes

actions before, during and after a flood disaster. Therefore, we conducted a study to find out the experiences and activities of teachers regarding the introduction of flood disasters and how to teach this subject to elementary school students.

The previous description of the problem encourages us to identify teachers' experiences in teaching disaster mitigation through in-depth study. Therefore, the title of this research is: Teachers' Readiness In Teaching Flood Disaster Mitigation, Portrayed By The Teacher's Pedagogical Content Knowledge (PCK): A Case Study In Pelalawan District, Riau Province, Indonesia

Method

The research was conducted in Pelalawan Regency at the end of 2019. The subjects in this study were 12 teachers in grades 1-6 Elementary School. This type of research is qualitative research. The research instrument used was a validated list of Pedagogical and Professional-experience Repertoires (PaP-eRs). This instrument is a list of entries and is supported by interviews aimed at the teacher. Sources of data in this study were obtained from teacher answers who filled out the Pedagogical and Professional-experience Repertoires (PaP-eRs) questionnaire and the results of interviews with teachers.

Table 1. The Pedagogical and Professional-experience Repertoires (PaP-eRs) indicators

Knowledge about floods
Identify and make use of students' previous knowledge
Determine the right conditions for students to start a new learning
Student Focus and discipline
Selecting and using learning media/resources
Choosing the right method/strategy according to the students' knowledge conditions
Using prompting (exploring and exploring student knowledge) and probing (directing and demanding) techniques
Using specific techniques to respond to student diversity
Guide students to understand
Review students' new knowledge
Technique for evaluating
Advanced learning

The data obtained were analyzed using the Pedagogical and Professional-experience Repertoires (PaP-eRs) assessment rubric, then analyzed using qualitative data analysis techniques which consisted of three stages, namely the data reduction stage, the data presentation stage, and the conclusion/verification stage.

Results

Based on the results of the responses to the PaP-eRS questionnaire filled out by the teacher, the researcher categorized the teacher's answers based on the categories, namely that they had appeared, started to appear, and did not

appear, then the percentage of the results was obtained as follows:

Table 2: Overview of Teacher's PaP-Ers Assessment

Indicator	Category		
	Appeared	Start appearing	Do not appear
Knowledge about floods	0%	100%	0%
Identify and make use of students' previous knowledge	17%	50%	33%
Determine the right conditions for students to start a new learning	17%	50%	33%
Student Focus and discipline	0%	17%	83%
Selecting and using learning media/resources	33%	50%	17%
Choosing the right method/strategy according to the students' knowledge conditions	50%	50%	0%
Using prompting (exploring and exploring student knowledge) and probing (directing and demanding) techniques	0%	17%	83%
Using specific techniques to respond to student diversity	50%	50%	0%
Guide students to understand	50%	50%	0%
Review students' new knowledge	0%	100%	0%
Choose the right technique for evaluating	0%	83%	17%
Advanced learning	17%	0%	83%

Based on table 2, it can be seen that the indicators identify and utilize students' initial knowledge, determine the right conditions for students to start new studies, select and use learning media/resources, choose the right method/strategy according to school conditions. student knowledge. , use specific techniques to respond to student diversity, and guide students to understand where the categories emerge and begin to emerge.

While the indicators of knowledge about flooding and the selection of appropriate techniques for evaluation are in the developing category, as well as indicators of concentration and attention, using prompting and probing techniques, and the categories of advanced learning are identified in the non-appearing categories.

Disaster education primarily aims to provide all stakeholders with an understanding of natural and cultural conditions and their interactions with human use systems that stimulate change and trigger disasters [7]. In indicator Teachers Knowledge About Floods the percentage of teachers is 100% in the emerging category with twelve teachers

indicating that indicators of knowledge about flooding are starting to emerge. Based on the results of categorizing teachers with emerging categories, it will affect students' understanding of the subject with a simple concept of flood disaster mitigation. Students will get subject about actions that students can take, including before, during, and after the flood.

The teacher's ability to identify and utilize students' prior knowledge. Previous literature has suggested that teachers who are confident in their ability to teach, assess, and manage classroom behavior may be more likely to engage in practices that lead to supportive and safe relationships with students[8]. On the indicator, the proportion of teachers, 17%, is in the already emerging category with two teachers indicating that the knowledge indicator about flooding has appeared. whereas in this indicator the proportion of teachers of 50% is in the emerging category, six teachers indicate that indicators are identified and make use of initial knowledge starting to emerge, and in this indicator, the proportion of teachers is 33% in the non-appearing category with two teachers indicating that the indicator Indicators of identifying and utilizing preliminary knowledge do not appear.

Based on the results of categorizing teachers with categories that have emerged, students will be interested in the subject because students are involved in problems that will be discussed and discussed student interests and attention to subject matter related to experiences seen in students' daily lives [7]. In fact, if the teacher with the category does not appear, then students will feel that the experience they have is not related to the subject to be studied and tends to ignore the subject that will appear by the teacher.

The teacher's ability to determine the right conditions for new students to start learning Asking questions that make students 'thinking visible is a central part of designing a formative assessment task that might encourage students to share their thoughts, as well as the process of sharing and discussing students' ideas in class [9]. This is also an effort that can be done to find out from which subject students start learning. In this indicator, the percentage of teachers of 17% is included in the new category with one teacher indicating that the indicators that determine the right conditions for students to start new learning have appeared, while in this indicator the percentage of teachers of 50% is in the new category with six teachers. shows that indicators that determine the right conditions for students to start new learning begin to appear, and in this indicator the percentage of teachers of 33% is in the non-appearing category with four teachers indicating that the determinants of the right conditions for students to start new learning do not appear.

Based on the results of grouping teachers with emerging categories, students will be ready to receive new subject and be motivated to study this subject because the importance of this subject is related to recurring events that students usually experience. Conversely, if the teacher with the category does not appear, then students are not motivated and are not ready to accept the new subject matter[9].

The teacher's ability to make focus on student attention and discipline. In this indicator, the percentage of teachers of 17% is in the emerging category with two teachers indicating that the indicator of student concentration and discipline begins to appear, while in this indicator the

percentage of teachers of 83% is in the non-appearing category with ten teachers indicating that the indicator of concentration attention and discipline of students do not appear.

Based on the results of categorizing teachers with the categories that have appeared, it will bring out students who focus on understanding new subject related to experiences experienced related to flood disasters. Conversely, if the categories with categories do not appear, it will lead to students who have difficulty understanding the new subject taught by the teacher.

The teacher has the ability to select and use learning resources/media, In this indicator the percentage of teachers of 33% is in the emerging category with four teachers indicating that the indicator of choosing and using learning media/resources has appeared, while in this indicator the percentage of teachers of 50% is in the emerging category with six teachers indicating that indicators of selecting and using learning media/sources began to appear, others in the category did not appear.

Based on the results of grouping teachers with emerging categories, students will be interested and motivated in learning because teachers can provide learning experiences through concrete media and direct learning sources. Because they can see the flood conditions firsthand and can also present something that is not possible to be held or held. Seeing the subject directly through pictures and videos can also provide accurate and up-to-date information. This will stimulate student activity in learning. Students will be interested in learning resources and media displayed by the teacher that are unique and attract students' attention, especially if they are presented in a concrete media. Audiovisual must also consider the level of thinking development of students who still think in concrete forms and exchange images and colors. Teachers who use a variety of learning resources and media will add broad information that can be known by students so that students do not only refer to one piece of information[10]. Conversely, the impact that arises if the category teacher does not appear in choosing and using learning sources/media, namely students tend to be bored with learning because there are no variations in learning that attract students' attention to deepen the subject conveyed by the teacher[11].

The teacher has the ability to use appropriate methods/strategies according to student conditions, In the indicator, the proportion of teachers of 50% is in the category that has appeared with six teachers indicating that the indicator of choosing the right method/strategy according to the conditions of student knowledge has appeared, while on the indicator the proportion of teachers of 50% is in the emerging category with six teachers indicating that the indicator of choosing the right method/strategy according to the condition of students' knowledge begins to emerge.

Based on the results of categorizing teachers with categories that have appeared, it has an impact on students who are actively involved in learning because of the various methods used by the teacher, so that students can take lessons in the appropriate way applied by the teacher. In fact, if the category teacher does not appear, then students tend to get bored because they only do one-way learning, that is, students will only get information by listening to the

information conveyed by the teacher.

The teacher's ability to use Probing and Prompting Techniques, in this indicator, the percentage of teachers of 17% is in the emerging category with only two teachers indicating that the indicators using probing and prompting techniques have appeared, while other teachers in the category do not appear.

Based on the results of categorizing teachers with categories that have appeared, students are helped in understanding the subject because the teacher uses questioning techniques to improve students' thinking skills, students also feel communication/interaction with the teacher so that students are motivated to understand the subject. Conversely, if the teacher with the category does not appear, communication between students and teachers will also not exist so that students do not dare to show that they understand or not.

The teacher's ability to use certain techniques to respond to student diversity, In this indicator, the percentage of teachers of 50% is in the category that has appeared with three teachers indicating that the indicator of using techniques to respond to student diversity has appeared, while in this indicator the percentage of teachers of 50% is in the category starting to appear with three teachers indicating that the indicator using techniques to respond to student diversity is emerging.

Based on the results of categorizing teachers with categories that have appeared, students with a less understanding level will get additional information from friends, messages through the media that the teacher uses so that students find it easier to accept the subject delivered by the teacher. Conversely, if the category teacher does not appear, then students will find it difficult to understand the subject because of the teacher's lack of response to the understanding of students who have not understood the subject.

The ability of the teacher to guide students to understand the subject matter. An indicator of the proportion of teachers of 50% is included in the advanced category with six teachers indicating that the indicator of student guidelines for understanding students has appeared. Meanwhile, other categories began to emerge.

Based on the results of grouping teachers with emerging categories, students can understand the subject through the variation guidance technique chosen by the teacher because it is by the student's learning style so that students can understand the subject. Even though if the teacher category does not appear, then students will have difficulty understanding the subject due to the lack of variation in guidance techniques from the teacher, so students must adjust their learning style to the guidance technique used by the teacher. understand the subject.

The teacher's ability to review students' new knowledge, In this indicator the percentage of teachers of 100% is in the emerging category with twelve teachers indicating that the review indicators on the development of student knowledge are starting to emerge.

Based on the results of categorizing the teacher with the categories that have appeared, students can find out the difficulties in what subject they do not understand and can try to improve and understand the subject taught by the teacher. Conversely, if the teacher with the category does not appear, then the students will not be able to show the

teacher the difficulties in what subject the students cannot understand[12]

The teacher's ability to choose the right technique for evaluation, in this indicator, 83% of teachers are in the emerging category with ten teachers indicating that the indicator of choosing the right technique for evaluating begins to appear, while the others are categorized as not appearing[13].

Based on the results of categorizing teachers with emerging categories, students can find out information about their level of understanding of the learning subject that has been studied and find out where their weaknesses are. Conversely, if the teacher with the category does not appear, then students do not know the level of understanding of the subject they have learned.

The teacher's ability to follow up learning, In this indicator, the percentage of teachers of 17% is in the already emerging category with two teachers indicating that the follow-up learning indicator has appeared, while the others in the category do not appear.

Based on the results of categorizing teachers with the categories that have appeared, students will find it easy to remember the subject because the follow-up activities chosen by the teacher are the simplification of the concept into the form of activities carried out by students. Conversely, if the teacher with the category does not appear, then students have difficulty remembering the subject because there are no activities as a form of follow-up for students to remember the subject that has been taught.

Conclusion

Based on the study of the teacher's flood mitigation PCK, it can be stated that the average PCK component has not yet appeared, only a few components such as the teacher's ability to choose the right method/strategy according to the conditions of student knowledge, the ability of teachers to use certain techniques to respond to student diversity and the ability of teachers to Guide students to understand what has emerged. the appearance of these three components of teacher ability is only 50%. This means that generally, teachers are not ready to teach flood mitigation in primary schools.

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