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Article

Social Studies Teacher Trainees' Knowledge and Training on Disaster Risk Reduction in the Selected Colleges of Education in Ghana

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Abstract: The objective of this study was to assess the knowledge and training on Disaster Risk Reduction among Social Studies teachers' trainees' in the Selected Colleges of Education in Ghana. Embedded mixed method and a cross-sectional design was used for the study. The population of the study comprised Social Studies teacher trainees in St. Monicas, Berekum, Tamale, and John Bosco Colleges of Education. Homogenous purposive sampling technique was used to the four (4) Colleges of Education, convenient sampling technique was used to sample three hundred and nineteen (319) for the quantitative data while homogenous purposive sampling technique ten participants for the qualitative data. The main instrument used for data collection were close-ended questionnaire and interview guide. Legitimation process was adopted to ensure validity and reliability of the data collection instrument. The findings of the study revealed that Social Studies teacher trainees possessed low level of disaster risk reduction kits in their schools. The study also indicated that there was low level of extracurricular activities through which DRR knowledge could be impacted, such logistics should be provided by the various college authorities to help them mitigate disasters. It is therefore recommended that clubs and Social Studies associations on disasters should be formed in the colleges by the college authorities. Discussions and programmes to be carried out in such associations will enable teacher trainees acquire the necessary knowledge and training needed for disaster risk reduction. It is also recommended that discussions should be tailored to reflect the types of risks and disasters which are not only common to all the colleges of education, but also peculiar to each of them.

Keywords: Social Studies, Knowledge, Training, Disaster Risk Reduction, Colleges of Education

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1. Introduction

Curriculum is a living, organic instrument which helps teachers and institutions find optimal ways to educate the youth. Where curricula are reformed, students are provided a richer academic experience since it broadens the context and applicability of information and skills that are learned [1].The major purposes of curriculum supervision include monitoring performance, sharing information and solving problems. This implies that, the procedure to be used by the supervisors should be discussed with, and agreed upon by the supervisees [2].Effective curriculum supervision thrives on both supervisors and supervisees keeping records of all formal, as well as informal supervision sessions and providing immediate feedback. Feedback is necessary in curriculum supervision it should

always be at the personal level so that individual teachers can attach maximum attention to them [3]. The educational process must incorporate different and practical techniques that reinforce disaster knowledge and lead to the development of a culture of safety and resilience amongst students [4]. Educational researchers have found out that an integrated curriculum can result in greater intellectual curiosity, enhanced problem solving skills, and higher achievement in their career. The integration of DRR into the curricula will enable teachers and students go beyond the strict disciplinary boundaries and respond to issues that may be more immediately relevant and motivating to young people [5].

Formal education through school curricula is most likely to be effective than non-formal disaster education in schools [6]. A critical success factor for the uptake of disaster resilience learning in schools, then, is the ability to embed learning activities in school programs that are linked to relevant curriculums. This helps to ensure that the school will accept the natural hazards program as a valid activity as part of its existing teaching program and not as a "one off". Moreover, as natural hazards can occur at any time, this approach will also mean that natural hazards will be taught each year [6]. Several researches show that effective results in disaster education can be derived in this field only with teaching and learning methods able to motivate the students and to support them in practicing skills. The approach most frequently found includes infusion or permeation whereby DRR themes and topics appear within the curriculum of specific school subjects [7].

Pedagogy refers to the art of effectively imparting knowledge and, as such, the infusion of disaster education in school curricula calls for appropriate teaching considerations [8]. Although school curricula are traditionally largely academic in nature, disaster education is not merely an academic experience but a knowledge transfer system that can make the difference between life and death, between economic progress and impoverishment and between sustainable development and environmental degradation. It is in line with this that teachers who are to be entrusted with imparting disaster information to children should themselves be adequately and appropriately trained, not only in relation to the content of such knowledge but also in relation to the methodologies of effective communication. Once this is attained in relation to school curricula, the multiplier effect will spread to the wider society with regard to increased levels of awareness and the outcome will be great [8].

In Iran, for example, materials have been incorporated within the school curriculum in three stages of elementary, secondary and high schools as part of theoretical education. The objective of the programme is to create and develop a safety culture as well as reducing the human casualties and damages associated with disasters such as earthquakes by increasing the awareness level. The designing of the materials took into consideration the age and students' physical and social capabilities. The programme is organised under the close supervision, cooperation and assessment of the Ministry of Education (MOE), and disaster education experts in related organizations [9].

A study revealed that the infusion of the values and abilities for disaster risk reduction and environmental stewardship within the school curricula is the single activity that helps to ensure the long-run emergence of a culture of safety, and enables people to understand that in the future major hydro-meteorological events need not lead to loss of life, limbs or livelihoods. Studies on children's knowledge, cognitions, and emotions concerning natural disasters, with a particular focus on earthquakes and tsunami and impact of flood disasters on child education and the awareness of disaster management among teachers of higher education in Iran, revealed that teacher guides are prepared to support teachers in the transfer of disaster risk reduction. Knowledge, and teacher training is organized through continuing education courses designed to reach head teachers [8, 9- 13). The best way to teach students on DRR in the colleges of education is to let them work on issues that require the skills to be demanded when confronted with disasters. Students in the Colleges of Education must be taught to do things, rather than

having them to be informed about what others have done. This practical knowledge will help teacher trainees in the colleges of education in Ghana to have the necessary skills on disasters. Social Studies curriculum seen as helping pupils acquire relevant knowledge, positive attitudes, skills and values which in effect will equip them to be competent, concerned, reflective and problem solvers by the Junior High School (JHS) curriculum [14]. This will help mentees to become familiar with the content of the syllabus, making it easy in their selection of valid content, setting of appropriate objectives in their teaching and even the mode of using appropriate assessment tools [14]. Background knowledge of teachers in using techniques and strategies assessing Social Studies concepts in Ghana has become necessary to build Ghanaian society better and faster growth in development [15]. Social Studies teachers hold it a duty to help students have better, more realistic ideas about the multiple realities of what constitutes Social Studies in the real world since they (teachers) influence what is taught [16]. Teacher-trainees' have sense of efficacy in implementing the Basic School Social Studies curriculum in Ghana has become indispensable since the subject introduced solely to right the wrong in society is taught mostly by graduates from the Colleges of Education (CoE) [17]. There is therefore the need to conduct a study into Social Studies teachers' trainees' knowledge and training on Disaster Risk Reduction in the Selected Colleges of Education in Ghana.

The study was guided by the following research questions

i. To what extent has disaster issues been captured in the curricular of colleges of education?
ii. What specific knowledge and training does teacher trainees need for disaster risk reduction?

1.1. Knowledge and Training for Disaster Risk Reduction

It is the prime desire of every stakeholder in education to ensure the safety and well-being of students while in school. Teachers are considered second parents. In case of an emergency in school, the teachers act as "loco parentis", providing care and protection for the students as their own children [18]. But to prevent and manage disasters, teachers themselves must have a basic knowledge about what to expect [19]. Education concerning the nature of particular hazards, and preparedness to cope in a significant event, is most effective when it begins at school, where prospective teachers are predisposed to such issues; that the provision of and access to appropriate information and knowledge is a critical ingredient in the risk reduction menu [20, 21]. The United Nations Educational Scientific and Cultural Organization (UNESCO) has identified training for natural disaster preparedness as a central issue to be addressed under the "Decade of Education for Sustainable Development" (DESD) in order to equip learners to protect themselves and to behave correctly during outburst of disasters [7]. Changing human behaviour through the wide spreading of knowledge and the attainment of the skills necessary for personal and collective safety, is the best way to avoid disaster risk. It is the most effective DRR tool. In order to achieve this objective, it is imperative: to disseminate DRR information at all levels, especially among people residing in the high risk areas; to adopt educational programs in DRR; and to come up with a safe behaviour model and skills among students. The capacity and duty of teachers in DRR is important and their awareness and comprehension of the various disasters is necessary to ensure the safety of the students and the community at large [23]. Besides, institutions and agencies involved in Disaster Management deem it necessary to employ professionals having specific skills and knowledge, who can play active role to the development of a more holistic understanding of the development, vulnerability and mitigation of disasters [5]. This postulate that the knowledge base of Social Studies teachers' in authentic assessment will be paramount to both teachers' and students if they are implemented effectively in a Social Studies classroom.

Education, measured at the individual, household, or village level, has a significant relationship with disaster preparedness [24]. They argue that disaster education is effective particularly in the context of people who have attained high educational level. When people are formally educated, their cognitive ability, information processing, learning skills and access to information are enhanced, hence individuals with higher education respond better in blasting times, such as when disasters strikes. Indeed, in the absence of past disaster experience, they found that households with highly educated members are better prepared for the disasters [24].In DRR education, school students are educated on different aspects of disasters including the causes and effects, prevention and preparedness practices as well as do's and don'ts of the disaster in the school through the school curricula, capacity building and training by the use of methods such as demonstrations, mock drills, seminars and pamphlets. These training and capacity building programmes enhance the ability of the students and school communities to take the right decision during any emergency [23].

In educating children and young people in disaster preparedness, both formal and informal means including special materials in the textbooks, stand-alone texts, writing and drawing competitions and exhibitions, and posters in educational environments, as well as using songs, games, puzzles, and other related educational tools are used to attain the objective. These activities enchant the interest of students, parents as well as teachers [9]. Besides the textbook materials which is accessible to all school children, other educational publications on understanding floods, drought, fire outbreaks, etc and preparedness issues can be published in the form of booklets, brochures, and education-aid materials. Educational films may be produced for various age groups relating to disasters and ways to encounter them [9].

A disaster education program necessitates the use of instructional methods which are more relevant with learners' needs and interests, and likely able to motivate them to learn more [7]. Also, since disasters can be mitigated with knowledge and planning; physical and environmental protection measures and response preparedness and these elements must be manifested in any DRR education materials [10]. The skills and educational provisions for disaster response are empowering and confer safety in everyday life. Disaster resiliency is built upon a foundation of analytical and problem-solving skills and draws from the development of personal and inter-personal intelligences [10]. Teachers can use different approaches of teaching and training students in DRR issues. In using these methods, it is important to deliver information fully and in a qualified manner, taking into account the specific age groups of students. Information provided must not scare the students. Students must be taught to evaluate danger before facing it, and stay calm and respond adequately if it actually happens [22]. As for the pedagogy, teaching of disaster risk reduction employs interactive methods. It contains discussions, brainstorming, interactive presentations, case studies, role-plays, and learning by doing [9].

1.1.1. Mini lectures

A mini-lecture is a brief lecture aimed to provide certain information to the audience. Lectures of this type provide students certain knowledge but do not develop their skills. In this training approach, teachers are more active while the students are relatively passive. The teacher must prepare in advance theoretical and visual material from different sources – diagrams, photos etc. about disaster management issues in order to make the lecture interesting for the students. The utilization of visual materials is especially important in cases where a student's visual memory is better developed. The teacher must organize the lecture material logically (from easy to more difficult) and be easily comprehensible for students. At the same time, a mini-lecture must not be overloaded with too much information; it is preferable to dedicate one lecture to a single

topic. Although it is true that a lecture is considered to be a relatively passive form of teaching, the teacher must encourage the students to be active and ask questions [22].

1.1.2. Discussions

Discussion, as a method of instruction, is where the purpose is to help engage students in a lesson, and learn academic content by encouraging verbal interactions [25]. For discussions to educate students, they should be serious interactions where students `support their ideas with evidence, where their opinions are subject to challenge by their peers as well as the teacher, and where the teacher's ideas are equally open to criticisms [26]. The purpose of probing questions and discrepant viewpoints is to encourage interactions and to encourage students to respond with the most powerful evidence available to them [26]. When a discussion about DRR is planned, the students should have the necessary knowledge about the topic. This is necessary in order for them to be able to express their opinions, substantiate them and have the ability to constructively criticize the views of other members within the group – otherwise the discussion will lose its meaning and become limited to the arguments of two differing opinions/positions. The teacher must regulate the process and implement the functions of a facilitator. The use of a blackboard is necessary to ensure that the parties can express their views in writing [22]. This posit that formative assessments promote learning outcomes through questioning in a form of dialogue [27].

1.1.3. Field Trip

A field trip, also known as an instructional trip, or school excursion is defined as a school or class trip with an educational intent, in which students interact with the setting, displays, and exhibits to gain an experiential connection to the ideas, concepts, and subject matter [28, 29]. The purpose of the trip is usually observation for education, non-experimental research or to provide students with experience outside their everyday activities. Field trips give them a chance to get out of the classroom and experience something new which is necessary for this level. They allow students to have a real world experiences [30]. Educational field trips are also helpful for the teachers to clarify, establish, co-relate and coordinate accurate concepts, interpretations and appreciations and enable him to make learning more concrete, effective, interesting, inspirational, meaningful and vivid. Students who directly participate during a field experience generate a more positive attitude about the subject [31, 32]. Field trips may be planned for five purposes: to provide firsthand experience, to stimulate interest and motivation in science, to add relevance to learning and interrelationships, to strengthen observation and perception skills, and to promote personal (social) development [33].

Educating students on DRR through excursions provide them with direct source of knowledge and acquaint them with first-hand information. It gives them an opportunity to develop their aesthetic sense and helps in the development of students' power of observations, judgment, drawing of inferences and problem solving ability. It motivates the students for self-study and self-activity and aids in the development of creative faculties of the students. Field trips in the teaching and learning of Social Studies has the potential to influence the understanding levels of students and teachers. Therefore, field trips have the potential to help students and teachers to gain new knowledge that may not have been obtained through theoretical learning in the classroom. This denotes that teachers need to be encouraged on use of field trips as a teaching strategy for effective evaluation of Social Studies lessons [29].

1.1.4. Brainstorming

Brainstorming can be defined as a group or an individual creativity method in which attempts are made to determine a definite conclusion for a particular problem by obtaining information in form of a list of ideas that are spontaneously contributed by the

members [34]. The idea was originally made popular by Alex Osborn in 1953. He claims that individuals working alone to come up with ideas are less efficient than when the ideas are generated through brainstorming. Brainstorming is simple and effective when used as a strategy for teaching social studies especially in the introduction of new concepts [35]. Students are able to come up with ideas regarding how to solve particular problems; and therefore, can come up with questions relating to how the problem comes about and the best way to tackle it. Moreover, the students are autonomous in developing ideas, no matter how obnoxious they may seem; therefore, they feel free. As such, students can increase the opportunity to learn from their mistakes and their peers while still reinforcing basic skills of brainstorming and social studies [36]. The brainstorming sessions surveys can be carried out in the colleges of education to provide a helpful insight into the students' knowledge, attitudes and practices regarding disaster risk reduction and make valuable contributions for designing education materials in the future. Overall the students will be able to display a good understanding on what to do before, during and after disasters.

1.1.5. Presentations

PowerPoint is a widely used presentation programme that originated in the world of business but has now become common in the world of educational technology. Appropriate use of PowerPoint can enhance the teaching and learning experience for both staff and students and provides encouragement and support to staff by facilitating the structuring of a presentation in a professional manner [37]. Self-efficacy of students is high and their attitudes are positive in classes taught with PowerPoint presentations. Attitudes of students towards PowerPoint presentations were positive, and that PowerPoint presentations have an impact on short-term memory when designed appropriately [38]. When experts and lead actors such as those with NADMO, share their views on the key drivers for an effective integrated approach to disaster risk reduction and education, from structural safety of education facilities to the integration of disaster risks within management mechanisms in the education sector through presentations in the various colleges, the chances of students' contribution to DRR will be enhanced. The presentations will help students acquire the skills and knowledge to make informed decisions on how to reduce their vulnerabilities and exposure to disaster risks.

1.1.6. Case Study

The case study teaching method is a highly adaptable style of teaching that involves problem-based learning and promotes the development of analytical skills [39]. By presenting content in the format of a narrative accompanied by questions and activities that promote group discussion and solving of complex problems, case studies facilitate development of the higher levels of Bloom's taxonomy of cognitive learning; moving beyond recall of knowledge to analysis, evaluation, and application [39, 40]. Similarly, case studies facilitate interdisciplinary learning and can be used to highlight connections between specific academic topics and real-world societal issues and applications [39, 41]. This has been reported to increase student motivation to participate in class activities, which promotes learning and increases performance on assessments [42, 43]. Case studies will help mitigate disaster by providing students with a variety of scenarios that force them to examine issues from multiple perspectives and then synthesize a solution, which is the same sequence in which they will later solve disaster as part of their everyday life. The method will help students work as part of a group and become collaborative problem-solvers. This is also valuable in preparing students for creative problem-solving and in developing their abilities to better structure arguments for their own beliefs.

1.1.7. Role Play

Role playing is an interesting example of an active learning and teaching strategy. It can incorporate drama, simulations, games, and demonstrations of real life cases related to any topic. Role play is about creating an educational setting with sessions that are learner centred (rather than teacher centred), with the goal is to implement authentic activities that can engage learners [4, 45]. The learning design process is very useful in providing teachers with an opportunity to create a constructive alignment between learning activities, assessments, and learning outcomes [46]. The learning design process is also useful because it encourages important two-way feedback between teachers and students through experiential learning and active dialogue where both parties can ask relevant questions to one another [47].

1.1.8. The Socratic Method

The Socratic Learning Method (SLM) is a constructivist learning approach consisting of four key steps: eliciting relevant preconceptions, clarifying preconceptions, testing one's own hypotheses or encountered propositions, and deciding whether to accept the hypotheses or propositions. The Socratic Learning Method is particularly useful when one has to evaluate a proposition contradictory to one originally held belief, or when one has to generate and evaluate one's own hypothesis in the face of new information. The Socratic Learning Method enhances students' learning as it reduces the impact of misconception, aids students in organizing knowledge, cultivates higher order thinking skills, and helps students to monitor their own learning [48]. Using the Socratic Method in the colleges of education in Ghana in teaching DRR will help student's process information and engage in deeper understanding of disaster topics. As students engage in dialogue and discussion that are collaborative and open-minded, they develop basic ideas about disasters which are essentially complex. Once the students get to know the basics, they may quickly grasp the details.

1.1.9. Learning while doing

In "Learning while doing" as a practical method for teaching DRR, students receive not just information, but the exact instructions necessary for the experiment or simulation. The goal of the method is for the students to carry out actions that will develop their knowledge or skills about responding to disasters. During the practice, the teacher must intensively use feedback in order to ensure its effectiveness so that the students really understand what they are doing and do not just imitate the actions mechanically. The students must be able to understand what is expected from them by the instructor and how success will be measured. Thus, the main principles of practice are: the teacher must provide students with practical instructions, incentives and feedback, so that they act consciously. Such instructions may include the development of the school evacuation plan [22].

2. Materials and Method

The embedded mixed method approach with a cross-sectional research design was adopted for the study. The population of the study comprised Social Studies teacher trainees in St. Monicas, Berekum, Tamale, and John Bosco Colleges of Education in the Colleges of Education in Ghana. Purposive sampling technique was used to the four (4) colleges of education. Due to the homogenous nature of the Colleges of Education in terms of the curricula used, issues raised by students with regard to the study represented the other colleges, convenient sampling technique was used to sample three hundred and nineteen (319) Social Studies teacher trainees were sampled for the quantitative data. Specifically, 99 students were sampled from St. Monicas, 67 from Berekum College of Education, 73 from Tamale College of Education and 80 from John Bosco College of Education. Also, through the use of homogeneous purposive sampling, 10 participants were selected for the qualitative data. This was to bring out the spatial variations in the

responses. The main instrument used for data collection was questionnaire. Close-ended questionnaire and an interview guide were the main data collection instruments. The motive is to give respondents the platform to adequately express their opinions in the open-ended questions since the close-ended questions may limit them in their quest to contribute viable information to the study. Through the use the legitimation process, all respondents successfully completed the questionnaire, and the insider-outsider legitimation was established by experts in the areas of disaster risk management at the University of Education, Winneba [38] Through the use of the Statistical Product for Service Solution (SPSS, version 22), the quantitative data were analysed using descriptive statistics such as percentages and frequencies. Thematic analysis was used to analyse the qualitative data.

3. Results and Discussion

3.1. Demographic characteristics of the Students

Respondents' demographic characteristics such as age, gender and education highly impacts on their capacity to exercise choice. Basically, age and gender are among the important determinants of empowerment [49]. Table 1 presents the findings of the gender, ages, level of students and courses of study of respondents.

Table 1. Demographic Characteristic of Respondents

Subcategory	Characteristics	Frequency (N)	Percent (%)
Sex of student	Male	148	46.5
	Female	171	53.5
Age	18-23	212	66.5
	24-29	100	97.8
	30+	7	100.0
Level of students	First year	153	47.6
	Second year	166	52.4
Course of student	Science	46	14.4
	Social Studies	59	18.5
	General Programme	201	63.0
	Pre-voc	13	4.1

Source: Field Survey, 2022.

Table 1 reveals that 148 (46.5%) of the respondents were males while 171 (53.6%) were females. This implies that there were 23(7.1%) females more than males. This was due to the fact that, St. Monica's College of Education was a female single sex school. It is believed that females are more vulnerable to disaster than males hence the addition of female school among the selected Colleges of Education. Also, 212(66.5%) of the respondents were between the ages of 18-23 years, 100(31.3%) respondents were between the ages of 24-29 years old. Judging from the youthful nature of the respondents, they may have relatively greater potential of sustaining the environment, lives, properties and as well propel them adopt appropriate strategies and means of handling disaster issues. Furthermore, 166 (52.4%) were in the second year. This might have influenced their level of understanding on the need for mainstreaming disaster risk reduction in the syllabus of Colleges of Education. In addition, 201(63.0%) of the respondents read General Programmes, 59(18.5%) studied Social Studies. These programme of study inherently presents information, knowledge and concepts of disaster risk reduction. influence their responses on mainstreaming disaster risk reduction. The rationale of determining the courses of students is to help know whether topics on disaster issues in students' learning

materials were adequate, moderate or scanty. The availability of curricula on DRR give learners rich experience and broaden their knowledge on what is learned [5]

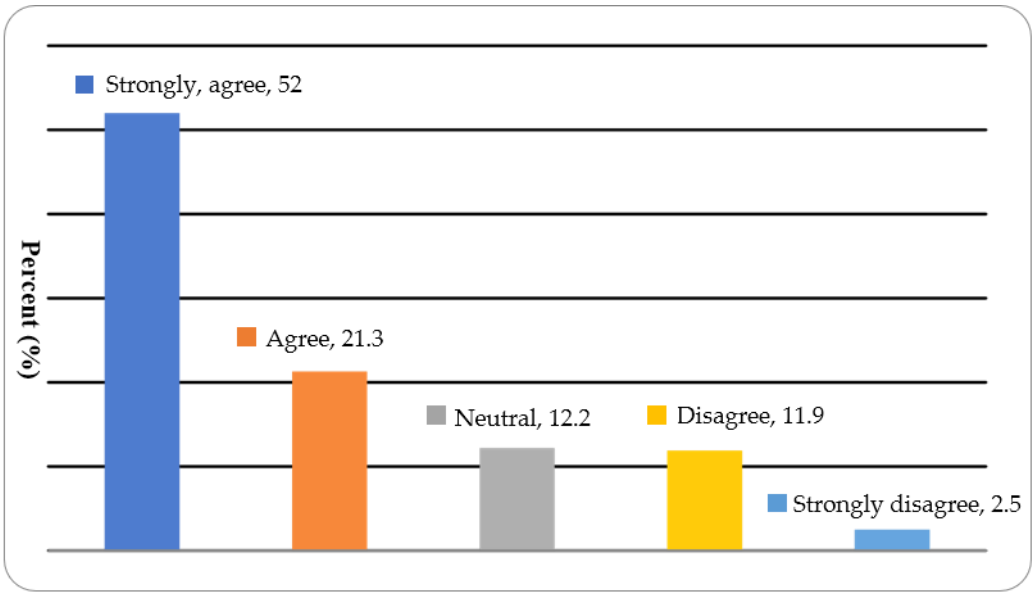
Research Question 1: To what extent has disaster issues been captured in the curricular of colleges of education?

In relation to the research question 1, results displayed in Table 2 shows that majority 210(65.8%) of the respondents had textbooks on disaster issues as compared to 109(34.2%) respondents had no textbook on disaster issues. Regarding which textbooks deal with disaster issues, Science textbooks ranked highest with a 129(40.4%) followed by Social Studies textbooks 119(37.3%). An important factor in DRR learning is to embed such learning activities on disaster in the school curricula [6]. With regard to whether the various course outlines capture issues on disasters, 57.1% responded in the affirmative while 42.9% responded otherwise. These responses reflected the percentages of students who thought the course outlines of their course did not reflect the importance of DRR. In all, 51.1% and 33.2% students strongly agreed and agreed respectively that their course outlines do not reflect the importance of DRR. Regarding whether textbooks were detailed on DRR, 19.7% and 13.8% students strongly agreed and agreed respectively. The high percentage of students who disagreed with the statement is an indication that even though the issue of DRR are captured in various textbooks of the Colleges of Education, they are not all encompassing as far the various dimensions of DRR are concerned. The results displayed in Table 2 show that 111(35.7%) and 46 (14.8%) students strongly disagreed and disagreed respectively that audio-visuals are used in the teaching and learning of DRR issues. The results show that students perceive the use of audio visual aids in the teaching of DRR in their schools to be at a low level. Previous research supports the current study that the use of aids such as laptops and projectors are important in educational presentations [22].

Table 2. The Coverage of Disaster Issues in the Curricula of the Colleges of Education.

Sub category	Characteristics	Frequency (N)	Percent (%)
Number of students who have textbooks on disaster	Yes	210	65.8
	No	109	34.2
Test Books on disaster	Science textbooks	129	40.4
	Social Studies textbooks	119	37.3
	Education and social textbooks	26	8.2
	Social Studies and Catering	45	14.1
Course outlines capture issues on disasters	Yes	182	57.1
	No	137	42.9
Course outline do not reflect the importance of DRR	Strongly agree	163	51.1
	Agree	106	33.2
	Neutral	39	12.2
	Disagree	11	3.4
Textbooks are detailed on DRR	Strongly agree	63	19.7
	Agree	44	13.8
	Neutral	43	13.5
	Disagree	31	9.7
	Strongly disagree	138	43.3
Audio-visuals are used in teaching and learning of topics on DRR	Strongly agree	37	11.9
	Agree	25	8.0
	Neutral	92	29.6
	Disagree	46	14.8
	Strongly disagree	111	35.7

Source: Field Survey, 2022.



Source: Field Survey, 2022.

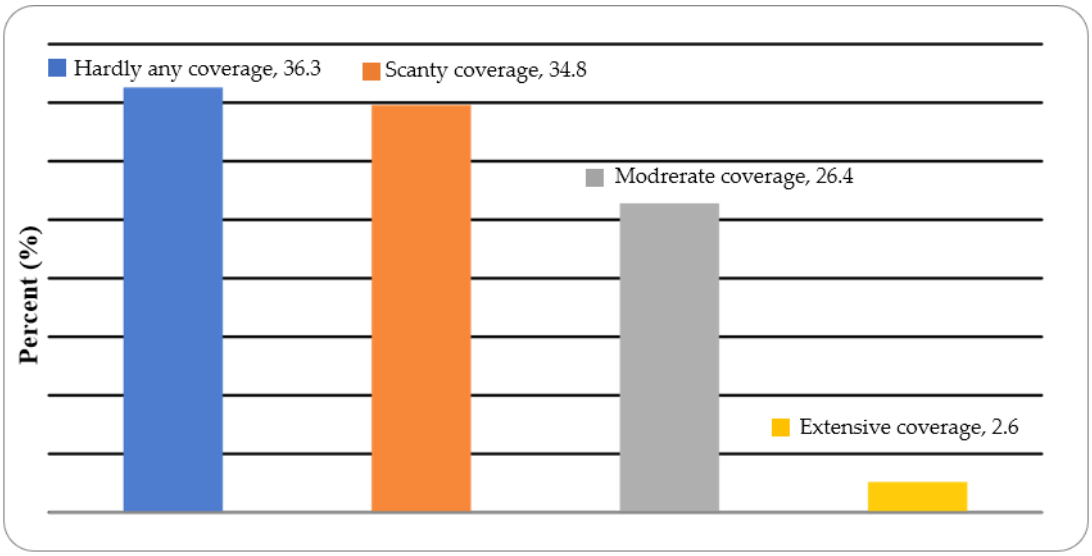
Figure 1. Whether DRR should be taught as A Full Subject in Schools.

The teaching of DRR in schools will not only prepare people to respond to disaster but will also promote risk reduction in schools [25]. The results displayed in Figure 1 indicate that 52% and 21.3% of the students strongly agreed and agreed respectively that DRR should be taught as a full subject in their schools. Figure 1 indicates that majority (52%) of the students strongly agree that DRR should be taught as a full subject in schools. This was followed by 21.3% of students who also agreed that DRR should be taught in schools. In all, only 2.5% perceived they strongly disagree that DRR should be taught as a full subject in schools. The responses are a reflection that students want DRR to be taught in schools as a full subject in the colleges.

3.2. The Extent of the Coverage of Disaster in the curricula of Students

As part of the exploration of the coverage of DRR in the curricula of the Colleges of Education, students were asked about their assessment of the extent to which DRR is taught in their schools. The summary of the results are presented in Figure 2. Figure 2 indicates that majority (36.3%) of the students perceived that there is hardly any coverage of disaster issues in the teaching activities of teachers. This was followed by 34.8% of students who argued the coverage of disaster issues in their learning activities was scanty. In all, only 2.6% perceived there was extensive coverage of disaster issues in their teaching and learning activities. The responses from the students is a reflection that the teaching of DRR in the Colleges of Education is inadequate. This confirm the proposition that DRR is not adequately captured in the curriculum of the colleges of education. It was realized that how well knowledge on disaster is thought in schools could either entice students or discourage them from embracing it. A student shared the view that:

> *"We need to be given more information and knowledge concerning preventive and relief measures on disaster which could help us to cope with disaster issues like flood and fire outbreak."(A 25-year old student from Tamale College of Education)*



Source: Field Survey, 2022.

Figure 2. Students Assessment of the Teaching of Disaster in their Schools

Earlier study on disaster risk reduction through learners' awareness and preparedness revealed that learners could go from Grade 1 to 6 without being taught about hazards and disasters prevalent in their areas or any dangers resulting for those risks [50]. There is, however, a need for learners to be aware of many more hazards, such as epidemics and other health hazards. In their study, they found that the curriculum implicitly includes hazard and disaster teaching in that it stipulates the teaching of some other concepts that can be used to teach about hazards and disasters. This realisation therefore leads to the argument that the national curriculum should explicitly stipulate what educators must teach learners. Information on DRR being delivered to students must be done fully and in a suitable manner [22].

3.3. Specific Knowledge and Training on Disaster Risk Reduction

Research question 2: What specific knowledge and training does teacher trainees need for disaster risk reduction?

In relation to the research question 2, The study found out that some respondents have had training on DRR issue. Table 3 presents a summary of the number of respondents who have had such training and knowledge.

Table 3. Whether Students Have Specific Training on DRR

Whether students have training	St Monica's College	Berekum College	Tamale College	St. John Bosco's College	Total	Percent
Yes	47	20	9	17	93	29.2
No	52	47	64	63	226	70.8
Themes						
Prevention and fighting of fire	32	16	9	12	69	21.6
Creating enough drainage systems	15	4	0	5	24	7.5

No training	52	47	64	63	226	70.8
Whether DRR education is important						
Yes	39	46	58	52	195	86.2
No	13	1	6	11	31	13.7
Reasons						
Mitigate disasters	25	16	28	32	101	51.7
Building students' capacity	14	30	30	20	94	48.2

Table 3 shows that majority of the students have not been trained on DRR issues. Of the students who reported to have been trained however, St. Monicas recorded the highest number with a percentage of 47% followed by John Bosco. The results indicate the low level of DRR education among the selected students. Table 3 shows that the two main themes that formed the basis of DRR education in the colleges were prevention and fighting of fire outbreaks and the importance of the creation of drainage systems to prevent flooding. These findings reaffirm the reports in the literature that the two main forms of disasters experienced in Ghana are those related to flooding and fire outbreaks. Results of the study displayed in Table 3 shows that 86.2% of the 226 students who reported to have not had any formal training on DRR stated it is important to have one, with Berekum College of Education recording the highest percentage of 97.9. They reported that acquiring such knowledge and training would help build their capacity on DRR issues so as to mitigate the effects of disasters. The low level of training on DRR in the colleges was explained in the following words:

> *"The authorities came to educate us on fire risk regarding causes, preventive and relief strategies but failed to bring along first aid kits and fire extinguishers for demonstration to prevent fire in case fire strikes us again." (A 20-year student of Tamale College)*

3.3.1. Mode of DRR education and their effects on student

The study discovered that a relatively low percentage of the students perceived that the training they have acquired on DRR has prepared them to deal with disasters.

A summary of the findings have been presented in Table 4.

Table 4. Mode of DRR Education and their Effects on Students

Whether Training has prepared students	St. Monicas College	Berekum College	Tamale College	John Bosco College	Total	Percent
Yes	80	3	7	12	102	32.0
No	19	64	66	68	217	68.0
Extracurricular activities						
None	99	63	73	76	311	97.5
Local community disaster relief club	0	3	0	4	7	2.2
Fire brigade	0	1	0	0	1	0.3
Techniques acquired						
Call fire service personnel	30	3	18	5	56	17.6
switching off electrical gadgets	22	3	0	0	25	7.8
Use of fire extinguishers	28	13	0	9	50	15.7

Making more drainage systems	0	2	13	2	17	5.3
None	19	46	42	64	171	53.6

Source: Field Survey, 2016

The results presented in Table 4 show that a greater percentage of the students from St. Monicas reported the training they had acquired on DRR issue had prepared them to deal with disasters. An interview with the NADMO officials in the district indicated that they give students in the college a routine education on DRR. The study also revealed that there were relatively low levels of extracurricular activities on DRR in the colleges of education. However, a few from Berekum and John Bosco Colleges of Education had joined local community disaster relief clubs. Students reported they had acquired skills and techniques in DRR, with the need to call fire service personnel (17.6%) and use fire extinguishers (15.7%) predominating. However, (53.6%) reported they had not acquired any such techniques. Regarding the consequences for not having DRR education, students reported more disasters would be caused under such circumstance while the affected students will not be prepared to deal with the disaster incidence, as shown in Figure 3.

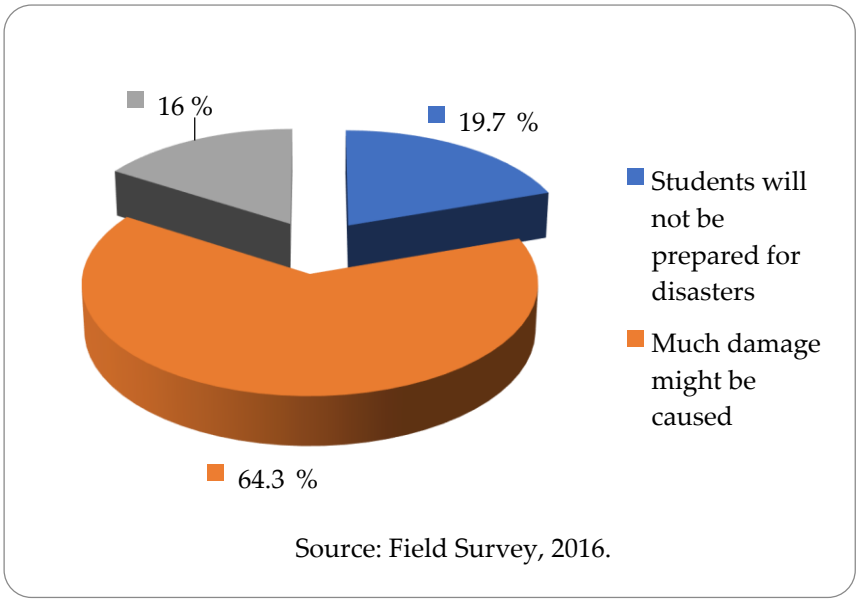


Figure 3. Effects of not having DRR Education

3.3.2. Training on disaster risk identification and mitigation

It is no doubt that the training of students to identify potential risks and mitigate them will form an integral aspect of DRR education in the colleges of. Table 5 presents data on students who reported they had had such knowledge and training.

Table 5. Training on Disaster Risk Identification and Mitigation

Training to identify risk	St Monica's College	Berekum College	Tamale College	John Bosco College	Total	Percent
Yes	24	3	6	9	42	13.2
No	75	64	67	71	277	86.8
Training to mitigate disasters						
Yes	14	3	6	18	41	12.9

No	85	64	67	62	278	87.2
Specific skills on preparedness						
Yes	0	0	9	0	9	2.8
No	99	67	73	80	310	97.2

Source: Field Survey, 2022.

The results displayed in Table 5 shows that majority of the students have not been trained on disaster risk identification and mitigation. Of the students who reported to have been trained however, St. Monicas recorded the highest number with a percentage of 24% followed by John Bosco. The results indicated the low level of risk identification and mitigation among the selected students. The study also revealed that the level of specific skills on disaster preparedness was low as expressed in the responses of the students.

4. Conclusions and Recommendations

The study revealed that Social Studies teacher trainees indicated they possess low level of DRR kits in their schools, such logistics should be provided by the various college authorities to help them mitigate disasters. The study also indicated that there was low level of extra-curricular activities through which DRR knowledge could be impacted. It is therefore recommended that Colleges of Education should form disaster risk management clubs and associations. The formation of the clubs will present opportunities for teacher trainees to acquire the requisite knowledge and skills on disaster risk management. Discussions and programmes to be carried out in Social Studies associations to enable teacher trainees acquire the necessary knowledge and training needed for disaster risk reduction at the dormitories, schools, home as well as place of work. It is also recommended that discussions should be tailored to reflect the types of risks and disasters which are not only common to all the colleges of education, but also peculiar to each of them. This will enable teacher trainees acquire general knowledge on the various types of disasters and how to mitigate them.

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