

高校生の防災リテラシーを高める外国語教育と防災教育の融合

Integrating Foreign Language and Disaster Prevention Education to Enhance High School Students' Disaster Literacy

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1. はじめに

近年、日本では自然災害が多発し、防災教育の重要性が年々高まっている。義務教育課程では、学習指導要領に準拠した教科横断的な防災教育の実践が求められている。一方、高等教育課程では総合的な探究の時間の探究課題として防災を取り上げる事例はあるものの、文部科学省の全国調査によると、教科学習の中で防災教育の実践は非常に少ないことが示されている。本研究では、外国語（英語）を活用した防災教育が高校生の防災リテラシーの向上に与える影響を検証することを目的とし、防災教育と外国語教育を統合した防災学習カリキュラムを提案する。

2. 防災学習カリキュラムの開発と実践

本研究では、先行研究で開発された地震防災教育プログラムを参考にし、外国語教育と防災教育を統合した防災学習カリキュラムを開発・実践した。具体的には、訪日外国人が緊急地震速報を理解し適切な行動を取るためのシナリオを英語で作成し、高校生が防災知識と英語による情報伝達能力を同時に習得できるようカリキュラムを設計した。本カリキュラムは、以下の3ステップで構成し、防災教育の学習目標と外国語教育の学習内容を設定した（表1）。

1)情報収集：地域の災害特性や緊急地震速報の仕組みについて英語の情報を収集して学ぶ。生徒は気象庁や日本政府観光局（JNTO）が提供する英語資料を活用し、緊急地震速報の機能と役割を英語で理解する。

2)グループワーク：訪日外国人が緊急地震速報を聞いた際に適切な行動を取れるよう、英語で説明するシナリオを作成する。生徒は外国人視点で災害時の行動を考え、英語による情報伝達スキルを実践的に学ぶ。

3)グループ発表・相互評価：作成したシナリオを発表し、各グループが作成した情報の効果を評価する。生徒は自身の学習を振り返り、他者の発表を通じてさらなる理解を深める。

本カリキュラムは、新潟県立高等学校の1年生360名を対象に、2024年6月～7月の「コミュニケーション英語Ⅰ」の授業（50分×3コマ）で実施し、日本人教師（JTE）と外国語指導助手（ALT）によるチームティーチング形式で英語による学習を進めた。

3. カリキュラムの評価

3.1. 防災教育の分析

英語学習を取り入れた防災教育の学習目標の達成度を検証するため、カリキュラムの実施前後に10項目の質問に対して「そう思わない（0点）～そう思う（3点）」の4件法を用いて生徒に自己評価してもらった。有効回答(n=127)のデータを用いて対応のあるt検定で分析した結果、全項目において1%水準で統計的に有意な向上を確認した（表2）。これにより、先行実施されている防災教育と同等の学習効果が得られることが示された。

3.2. 外国語教育の分析

外国語教育と防災教育の相互関係を検証するため、2)グループワークの成果をALTが評価ルーブリック（表

3) を用いて評価した。評価項目は、外国人視点で災害時の行動を考え、英語による情報伝達スキルを実践的に学ぶことができたか、「情報の正確さ」「想定が多様さ」「表現」の3観点とし、「優れている・基準を満たしている・改善を要する」(3-1点)で採点した。さらに、外国語教育の効果を検証するため、質問9,10の点数を基準に、点数が低い群(0,1点)と高い群(2,3点)に区分し、ALT評価との関係をクロス集計した(表4)。その結果、高得点群の生徒の方が「想定が多様さ」の評価が高い傾向が見られた。また、シナリオを作成し発表する活動を通じて、防災リテラシーに関わる実践的な言語使用場面を設定することが、英語学習と連動してイメージ想起を強化する効果を持つことが示唆された。

4. まとめ

本研究では、外国語教育と防災教育を統合した防災学習カリキュラムを開発し、その実践を通じて高校生の防災リテラシーと外国語能力との関連を検証した。英語学習を取り入れることで、地震発生時の適切な対応行動への理解が深まり、外国人視点での状況想定力が向上するなど、防災教育としての学習効果が確認された。また、英語を用いたシナリオ評価活動が、情報伝達能力の向上とともに防災リテラシーの強化に寄与することが示された。今後の課題として、実際の外国人との交流をカリキュラムに組み込み、より実践的な学習環境の中で学習効果を検証し、防災教育における外国語活用の有効性をさらに明確にしたい。

キーワード：防災教育、外国語教育、防災リテラシー、緊急地震速報

Keywords: Disaster Prevention Education, Foreign Language Education, Disaster Literacy, Earthquake Early Warning

Table 1: English Learning Curriculum Structure			
Unit Structure	Learning Activities	Learning Objectives (Disaster Prevention Education)	Learning Content (Foreign Language Education) [Assessment]
Step 1 [3 sessions] "Understanding Correct Actions when Hearing an Earthquake Early Warning for Foreigners"	(1st session) Information Gathering	Investigate local disaster characteristics through interviews with family members, websites, etc. Research and understand the mechanism of the Earthquake Early Warning.	Collect necessary information and understand it in English with minimal teacher support. [Knowledge acquisition, reading skills utilization, proactiveness]
	(2nd session) Group Work	Consider assumptions and scenarios for understanding appropriate actions when foreign visitors to Japan hear or see an Earthquake Early Warning.	Create a 5 minute presentation video in English based on the assumptions and scenarios. [Thinking skills, judgment, expression]
	(3rd session) Group Presentation / Peer Evaluation	Check the level of understanding of the Earthquake Early Warning and organize issues and problems with assumptions and scenarios.	Conduct mutual evaluations of each group's presentation based on the evaluation rubric. [Use of speaking and listening skills]

Table 2: Pre- and Post-Survey Results on Disaster Awareness ($n=127$)							
Item	Content	Mean		SD		z-score	
		Pre	Post	Pre	Post		
1	I know what happens when an earthquake occurs.	2.724	2.898	0.483	0.329	**	-3.449
2	I know how to take appropriate action when an earthquake occurs.	2.433	2.772	0.625	0.421	**	-4.813
3	I know what happens when an Earthquake Early Warning is issued.	2.764	2.945	0.495	0.229	**	-3.484
4	I know the correct actions to take when an Earthquake Early Warning is issued.	2.583	2.929	0.570	0.258	**	-5.356
5	I know that places where objects move or fall during an earthquake are dangerous.	2.472	2.772	0.688	0.440	**	-4.086
6	When an Earthquake Early Warning is issued, I crouch, cover my head, and stay still.	2.630	2.819	0.588	0.426	**	-2.906
7	When an Earthquake Early Warning is issued, I go to a safe place and protect myself.	2.559	2.803	0.600	0.437	**	-3.779
8	When an earthquake occurs or an Earthquake Early Warning is issued, I think for myself an	2.457	2.787	0.664	0.448	**	-4.588
9	I can accurately convey information about Earthquake Early Warnings to foreigners in Engl	1.346	2.260	0.920	0.715	**	-7.074
10	I can envision the various situations that foreigners may face during an Earthquake Early W	1.583	2.323	0.840	0.576	**	-6.518

** $p < .01$

Table 3: Assessment Rubric			
Criteria	Excellent (3 points)	Acceptable (2 points)	Needs Improvement (1 point)
Accuracy of Information	Provides reliable and accurate information	Refers to related information	Does not provide related information
Diversity of Assumptions	Considers diverse situations for foreigners	Considers some situations	Considers few situations
Expression	Uses various strategies to ensure clarity	Ensures basic clarity	Lacks attention to clarity

Table 4: Cross-Tabulation of Evaluation Scores										
	Group	n	Pre- Item 9		Pre- Item 10		Post- Item 9		Post- Item 10	
			Low	High	Low	High	Low	High	Low	High
		127	78	49	60	67	17	110	7	120
Accuracy	Mean	2.724	2.705	2.755	2.733	2.716	2.765	2.718	2.714	2.725
	SD	0.573	0.561	0.596	0.516	0.623	0.562	0.577	0.756	0.565
Diversity	Mean	2.276	2.282	2.265	2.100	2.433	2.471	2.245	3.000	2.233
	SD	0.906	0.910	0.908	0.969	0.821	0.800	0.921	0.000	0.914
Expression	Mean	2.457	2.474	2.429	2.433	2.478	2.412	2.464	2.429	2.458
	SD	0.500	0.503	0.500	0.500	0.503	0.507	0.501	0.535	0.500

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1. Introduction

In recent years, Japan has experienced frequent natural disasters, increasing the importance of disaster prevention education. In compulsory education, cross-curricular disaster prevention education aligned with the national curriculum guidelines is encouraged. However, in higher education, although some cases incorporate disaster prevention as a research topic in the period of integrated studies, a nationwide survey by the Ministry of Education, Culture, Sports, Science, and Technology (MEXT) indicates that disaster prevention education within subject-based learning remains limited. This study aims to examine the impact of disaster prevention education utilizing a foreign language (English) on high school students' disaster literacy and proposes an integrated curriculum that combines disaster prevention and foreign language education.

2. Curriculum Development and Implementation

An integrated curriculum was developed, building upon a previous earthquake disaster prevention program. Students created English scenarios to guide foreign visitors during earthquake early warning, simultaneously acquiring disaster knowledge and English communication skills. The curriculum comprised three phases:

Information Gathering: Students explored local disaster characteristics and the earthquake early warning system using English resources from the Japan Meteorological Agency (JMA) and the Japan National Tourism Organization (JNTO).

Group Work: Students collaborated to create English scenarios explaining appropriate earthquake responses for foreign visitors, considering their unique perspectives and needs.

Group Presentation & Peer Evaluation: Students presented their scenarios and provided feedback, deepening their understanding through reflection and peer learning.

The curriculum was implemented with 360 first-year students at Niigata Prefectural High School during their "Communication English I" course (three 50-minute sessions) in June-July 2024. Japanese Teachers of English (JTEs) and Assistant Language Teacher (ALT) team-taught the lessons.

3. Curriculum Evaluation

3.1 Disaster Prevention Education Analysis

Students completed pre- and post-curriculum self-assessment surveys (ten items, four-point Likert scale).

A paired t-test on 127 valid responses showed statistically significant improvement ($p < .01$) across all items, indicating comparable learning outcomes to disaster prevention education.

3.2 Foreign Language Education Analysis

ALTs evaluated the group work (Phase 2) using a rubric, assessing "accuracy of information," "diversity of scenarios," and "clarity of expression" (three-point scale). Students were also divided into "low-score" (0-1 points) and "high-score" (2-3 points) groups based on survey items related to their English confidence in a disaster context. Cross-tabulation analysis revealed that the high-score group tended to receive higher ratings for "diversity of scenarios," suggesting that scenario creation and presentation enhanced both disaster literacy and English learning through practical language use.

4. Conclusion

This study developed and implemented a disaster prevention learning curriculum integrating foreign language and disaster prevention education, examining its impact on high school students' disaster literacy and language skills. The inclusion of English learning deepened students' understanding of appropriate earthquake response actions and improved their ability to anticipate situations from a foreign visitor's perspective, demonstrating the educational effectiveness of disaster prevention education. Furthermore, scenario-based evaluation activities in English contributed to both communication skills and disaster literacy enhancement. For future research, incorporating direct interaction with foreign visitors into the curriculum would provide a more practical learning environment, further clarifying the effectiveness of foreign language use in disaster prevention education.

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