成果物・レポート集　Reports

WWL コンソーシアム構築支援事業
Support Project for Building World-Wide-Learning Consortium

2021 FALCon
高校生国際会議＠Mishima

2021 FALCon International High School Student Conference @ Mishima
(FALCon: ふじのくに　アドバンスト・ラーニング・コンソーシアム)
(FALCon: Fujinokuni Advanced Learning Consortium)

Crisis に負けない
持続可能な社会づくりを目指して

～SDGs の視点からの多面的なアプローチ～
A Multi-Dimensional Approach to SDGs: Crisis prevention and management

令和３年９月 17 日～19 日
September 17-19, 2021

管理機関：静岡県教育委員会

拠点校：静岡県立三島北高等学校

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～SDGsの視点からの多面的なアプローチ～

A Multi-Dimensional Approach to SDGs:
Crisis prevention and management

令和3年 9月17日㊎～20日㊊

海外参加国 オンラインで参加 　　**国内参加校**（事業連携校）

台湾、オーストラリア　　　（県外）長崎東高校　　　　（県内）静岡高校
アメリカ、シンガポール　　　　　　 仙台二華高校　　　　　　　 沼津東高校
　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　静岡市立高校

教育関係者　・基調講演・研究プレゼン・ディスカッション・大学教員ミニ講義
のみ公開　　 9月17日午後　　9月18日午前　　　 9月18日午前　　　　　 9月18日午後
　　　　　　　（ゆうゆうホール）

　　　　　　　・県内高校の課題探究ポスターセッション　9月18日午前
一般公開　　・全国 WWL 校研究ポスター掲示　　9月18日午前
　　　　　　　・中学生 SDGs 英語新聞展示　　9月18日午前
　　　　　　　・会議の成果発表　　9月19日午後（ゆうゆうホール）

管理機関：静岡県教育委員会
拠 点 校：静岡県立三島北高等学校
　　　　　☎ 055-986-0107 担当菊地（教頭）

見学・視察には事前登録が
必要です。
詳しくは国際会議特設サイトを
ご覧ください。

https://falcon2021.jp/ 　申込詳細はこちら↓

チラシ・告知ポスター

グランドテーマと設定の背景 The Conference theme and its background

Crisis に負けない持続可能な社会づくりを目指して
～SDGｓの視点からの多面的なアプローチ～

　人間、地球及び繁栄のための行動計画として、国連は 2015 年に「持続可能な開発目標 (Sustainable Development Goals: SDGs)を定めた。SDGs は 17 の目標から成り、2030 年までの達成を目指し、多くの国や企業が具体的な行動をとり始めている。その一方で、想定外の Crisis に対するグローバル社会の脆弱性は、2020 年から今なお続くコロナ禍に生きる私たちに突き付けられた大きな課題である。突発的あるいは持続的に作用する様々な Crisis により、SDGs 達成に向けた歩みが阻害されることは、世界規模で枚挙にいとまがなく、歴史が証明している。近い将来、グローバル社会を担う中心の世代となる世界各地の高校生が、自分たちの文脈で Crisis を捉え、教育、ビジネス、STEM をアプローチとして、Crisis の前、最中、その後にも SDGs 達成の歩みを力強く進めることを目指し、この会議を主体的な意見交換の場とする。

　　The Sustainable Development Goals (SDGs) were adopted by all United Nations Member States in 2015 as the blueprint to achieve a better and more sustainable future for all.　While the SDGs address the global challenges that we face and highlight their urgency, the Covid-19 pandemic has showed us that crises (including hazards, disasters and emergencies) could easily throw us off our path towards a sustainable future. As such, we have set "A Multi-Dimensional Approach to SDGs: Crisis prevention and management" as the conference theme. We call on schools and students to research how crises affect the continuity and sustainability of families, communities, institutions, or even countries. We ask students to contribute innovative ideas on how to integrate resilience in sustainable development before a crisis, how to maintain sustainable development during a crisis, and how to integrate mitigation into the recovery process after a crisis.

会議の目的　Aims

付けたい力 Skills	内容 Content
SDGs の視点からの多面的なアプローチを通じて、高校生の課題解決力を伸長する。 To develop student problem-solving skills through taking a multi-dimensional approach to SDGs.	持続可能な開発についての理解を深め、持続可能性について正しく理解する。 To deepen student understanding of sustainable development and appreciation of sustainability.
意思疎通 Communication	**協働　Partnership**
世界各国の諸問題を相互に理解し合い、グローバル課題について分析・解決をする能力を涵養する。 To foster student ability in analyzing and solving global issues with mutual understanding of different parts of the world.	若いイノベーティブなグローバル人材同士の将来的な協働につながる、国際的なネットワークを構築する。 To build a world-wide network for future cooperation and partnerships between young innovative global citizens.

参加校一覧 Participating Schools

海外 Overseas 15	ヒースフィールド高校（オーストラリア）　Heathfield High School (Australia)	
	ジュロン ウェスト高校（シンガポール）Jurong West Secondary School (Singapore)	
	マコウ高校（台湾）National Magong High School (Taiwan)	
	オワトナ高校（アメリカ）　Owatonna Senior High School（USA）	
	レイネライーストカレッジ高校（オーストラリア）　Reynella East College (Australia)	
国内 Japan 35	連携校 Partners	静岡県立沼津東高等学校 Shizuoka Prefectural Numazu Higashi Senior High School
		静岡県立静岡高等学校 Shizuoka Prefectural Shizuoka Senior High School
		静岡市立高等学校 Shizuoka Municipal High School
		長崎県立長崎東中学校・高等学校 Nagasaki Prefectural Nagasaki Higashi Junior and Senior High School
		宮城県仙台二華中学校・高等学校 Miyagi Prefectural Sendai Nika Junior and Senior High School
	拠点校 Center	静岡県立三島北高等学校 Shizuoka Prefectural Mishima Kita Senior High School

基調講演講師　Keynote Lecturer

常葉大学外国語学部　ピーター・ハーディケン准教授
Associate Professor. Peter Hourdequin
Faculty of Foreign Studies, Tokoha University

研究エリアとアプローチ　The research areas and approaches

　自然界や人間に由来する Crisis により、SDGs 達成に向けた人類の歩みに様々な影響が出ている。本会議では、Crisis の最中や後にどのような影響があるかによって区分された５つの研究エリアについて、教育、ビジネス、STEM のアプローチにより、SDGs 達成に向けた解決を目指す。

　While progress is being made in many places, crises could easily undo our efforts.　Given the increasing unpredictability of natural and man-made crises, the conference explores what and how to do better in crisis prevention and management to preserve the beliefs and values underpinning the SDGs.

エリア Areas of concern	関連 SDGs Related SDGs	ｱﾌﾟﾛｰﾁ Approach
A　悪化 　　Deprivation	No.1　貧困をなくそう No.2　飢餓をゼロに	教育 ビジネス STEM Education Business STEM
B　不足・欠乏 　　Scarcity	No.6　安全な水とトイレを世界中に No.7　エネルギーをみんなにそしてクリーンに	
C　阻害 　　Deterioration	No.13　気候変動に具体的な対策を No.14　海の豊かさを守ろう No.15　陸の豊かさも守ろう	
D　誤った運用や管理 　　Mis-management	No.8　働きがいも経済成長も No.9　産業と技術革新の基盤を作ろう	
E　優先順位の低下 　　De-prioritizing	No.5　ジェンダー平等を実現しよう No.10　人や国の不平等をなくそう	

エリア別参加校研究タイトル Research titles of participating schools

学校 School 研究タイトル Research title 参加生徒氏名 Name of the students	Area
三島北 Official 夘 dism, Mishima Kita Everyone can be a hero to help out Africa through FAIRTRADE 西村真香 佐藤琴葉 高橋愛花 Nishimura Mika, Sato Kotoha, Takahashi Manaka	A
仙台二華 Sendai Nika The Future Created by Education: Freed from Poverty, Reaching Towards Sustainability 宮本希 宇都宮佳奈 阿部想 矢野すみれ Miyamoto Nozomi, Utsunomiya Kana, Abe Kokoro, Yano Sumire	
ヒースフィールド Heathfield Empowering communities to help people prepare, respond and recover from various crises Gabrielle Burke, Zoe Beare, Ruby Davis	
オワトナ Owatonna The Deprioritization of Public Education in Africa Julia Christianson, Celina Mims, Elizabeth Granowski	B
三島北 ルンバ, Mishima Kita Spread the colorful sanitizer to Ethiopian children 新谷真優花 村松大雅 尾和ほのか Shintani Mayuka, Muramatsu Taiga, Owa Honoka	
長崎東 Nagasaki Higashi Can gum with Xylitol improve oral hygiene in developing countries? 伊東香乃 岩﨑史佳 木場春賀 溝口花恋 Ito Kano, Iwasaki Fumika, Koba Haruka, Mizoguchi Karen	
沼津東 Numazu Higashi PROTECT THE OCEAN BY REDUCING MICROPLASTICS 大羽綾香 勝又萌々香 那波侑奈 平野叶奈 Ooba Ayaka, Katsumata Momoka, Nawa Yuuna, Hirano Kana	C
三島北 モアナ, Mishima Kita Lotus saves the world?! 伊藤日向子 水口優笑 佐藤龍矢 Ito Hinako, Mizuguchi Yue, Sato Tatsuya	
マコウ Magong Improve Marine Biodiversity by Combining Coral Reef Restoration and Ecotourism - a case study from Penghu, Taiwan Gao Yong An, Wu Run Dong, Lu Yuan Ping	
レイネライースト Reynella East College Managing The Bushfire Crisis In Australia Shania Navazeni, Harpreet Kaur, Jordan Prest	D
静岡 Shizuoka Can our simulation game change Japanese work style? 池田萌香 久保田さくら 西原加純 三木千風 Ikeda Moeka, Kubota Sakura, Nishihara Kasumi, Miki Chikaze	
三島北 マスク, Mishima Kita Sandbags made of jute stop water 田中圭 土屋滉一郎 安田紗都 Tanaka Kei, Tsuchiya Koichiro, Yasuda Sato	
静岡市立 Shizuoka Municipal Bridge Project - The Importance of Expanding Our Horizons – 鈴木優莉 望月七菜 山田菜摘 岩ヶ谷実由 Suzuki Yuri, Mochizuki Nana, Yamada Natsumi, Iwagaya Miyu	E
ジュロンウェスト Jurong West Gender Equality in the 21st Century - What this means for the new world, post COVID-19 CHEVIL MUN SONG CI, VIJAYAKUMAR SHRINITHI, SUBHASHREE SRIDHARAN	
三島北 かぼちゃ, Mishima Kita Protecting children's opportunity to study during school closure 近藤咲里菜 杉山陽也 黄思怡 Kondo Sarina, Sugiyama Haruya, Ko Shii	

日程（日本時間） Schedule (Japan time)

	三島会場 （県内連携校、拠点校） Mishima (Partner schools in Shizuoka, Mishima Kita)	各校（海外校、県外連携校） Each school site (Overseas, Partner schools out of Shizuoka)
17 金	@ゆうゆうホール (Yuyu Hall) 14:30〜開会式（教育長・三島北校長挨拶、各校紹介と代表挨拶、開会宣言）Opening Ceremony (Opening Remarks, Introduction and greetings of schools, Opening Declaration) 15:45〜基調英語講演「Crisis に負けない持続可能な社会づくりを目指して〜SDGs の視点からの多面的なアプローチ」（常葉大学常葉大学外国語学部 Peter Hourdequin 准教授）Keynote Lecture by Associate Professor. Peter Hourdequin, Faculty of Foreign Studies, Tokoha University, "A Multi-Dimensional Approach to SDGs, Crisis Prevention and Management"	（時差が大きいアメリカ以外） 開会式からライブ参加 学校紹介 基調講演ライブ視聴（アメリカは録画を時間差で視聴） Online live viewing of the opening ceremony. (America views the recorded video due to the time gap.)
18 土	@三島北高校 (Mishima Kita) 8:30 集合 8:45-10:00 エリアごとプレゼン Research presentation 10:00-10:20 専門家フィードバック Feedback from university lecturers 10:30-12:30 混成分科会ディスカッション Breakout discussion session 昼食 Lunch 13:30-14:30 エリア専門家ミニ講義と質疑 Mini lectures by university lecturers	学校単位でプレゼン、個人単位で混成分科会に参加 Online live viewing, joining the presentation. Attending breakout session online. ミニ講義視聴 Online viewing of Mini-lectures. (America views the recorded lectures.)
19 日	@三島北高校【オフライン】Mishima 【Off-line】 8:30-11:30 エリアごと「Cross-border Proposal Movie （3 分）」作成、動画データ提出 @ゆうゆうホール Yuyu Hall 13:00-13:45 ムービー上映会 Movie viewing 13:45-14:15 閉会式（講評、参加証明書授与、記念撮影）Closing ceremony	【Off-line】 学校単位で「Cross-border Proposal Movie （3 分）」作成、動画データ提出 Online movie making. 上映会視聴 Online live movie viewing 閉会式参加 Online viewing of the closing ceremony. （アメリカは動画のみ提出、上映会は時間差で視聴）

緊急事態宣言が 8 月 20 日〜9 月 30 日に静岡県に適用されたことに伴う変更

Changes due to the declaration of emergency status applied to Shizuoka Prefecture (Aug 20 – Sep. 30)

	適用前 Original	摘要後 Change
参集 On site	国内連携校と拠点校 Domestic partner schools and Mishima Kita 静岡、沼津東、静岡市立、 長崎東、仙台二華、三島北	県内連携校と拠点校のみ Partner schools in Shizuoka and Mishima Kita 静岡、沼津東、静岡市立、三島北
オンライン On-line	海外校 Overseas アメリカ、台湾、シンガポール、オーストラリア2校	海外校と県外連携校 Overseas and partner schools out of Shizuoka アメリカ、台湾、シンガポール、オーストラリア2校、長崎東、仙台二華
並行プログラム Concurrent Program	9月18日（土）三島北高校会場で、全国 WWL 校、県内高校生、県内連携校、拠点校生徒のポスター発表及び中学生 SDGs 英語新聞の掲示 Poster sessions by high school students and SDGs English newspaper displays by junior high school students	国際会議特設サイト上で発表ポスターや動画等を2月末まで公開 On the web (until the end of February).
三島市内ウォーキングツアー Mishima walking tour	三島市ふるさとボランティアガイドによる案内で、楽寿園、白滝公園、三嶋大社等を巡る Guided by Mishima volunteer guides, exploring Rakuju Park, Shirataki Park, Mishima Shirine, etc.	中止　Cancelled
静岡県東部バススタディーツアー Bus study tour	狩野川放水路、狩野川資料館、世界遺産韮山反射炉、沼津港びゅうお　等を巡る Bus tour in Kanogawa River drainage canal, Kanogawa museum, Nirayama Reverberatory Furnaces (World Heritage Site), Numazu port water gate, etc.	中止　Cancelled

公開範囲の変更　Changes in programs open to visitors

	当初予定の公開範囲 Original		変更後 Change
	教育関係者 educators	一般 public	全プログラム非公開 All programs are not open to any visitors.
開会式 Opening ceremony 基調講演 Keynote lecture	○	✕	
プレゼン Presentation ディスカッション Discussion 専門家ミニ講義　Mini-lecture	○	✕	並行プログラムや成果物ビデオは国際会議特設サイトで２月末まで公開
並行プログラム Concurrent Program	○	○	Posters and movies are to be shared at the conference web site until late February.
成果物ビデオ作成 Movie making	✕	✕	
成果物ビデオ上映会 Viewing 閉会式 Closing ceremony	○	○	

指導大学教員 University Lecturers

プレゼンのフィードバックコメントとミニ講義を担当する指導大学教員

University lecturers who provide comments on research presentations and give mini-lectures on the concerned areas

Area	指導大学教員 University Lecturers
A	古川光明教授（静岡県立大学国際関係学部） Prof. Furukawa Mitsuaki (School of International Relations, University of Shizuoka)
B	山本隆三名誉教授 （常葉大学経営学部） Prof. Emer. Yamamoto Ryuzo (School of Business Administration, Tokoha University)
C	熊野善介名誉教授・特任教授 （静岡大学教育学部） Prof. Emer. and Specially-Appointed Professor Kumano Yoshisuke （Faculty of Education, Shizuoka University）
D	楠城一嘉 特任准教授（静岡県立大学グローバル地域センター） Project Associate Prof. Nanjo Kazuyoshi （Global Center for Asian and Regional Research, University of Shizuoka）
E	高畑幸教授（静岡県立大学国際関係学部） Prof. Takahata Sachi (School of International Relations, University of Shizuoka)

大学生アシスタント University student assistants

プレゼン、混成分科会でのディスカッション、ミニ講義をサポートする大学生アシスタント
University student assistants who support presentations, discussions in breakdown groups, and mini-lectures

グ ループ Group	大学生アシスタント University student assistants	出身高校 Alumni of
A-1	シェーファ淳 June Shaffer　(Osaka University) 大阪大学外国語学部英語専攻１年	静岡 Shizuoka
A-2	庄司遼太郎　Shoji Ryotaro　(Meiji University) 明治大学商学部商学科４年	三島北 Mishima Kita
B-1	鈴木純 Suzuki Jun　(The University of Tokyo) 東京大学 文学部人文学科４年生	静岡 Shizuoka
B-2	井草七海 Igusa Nanami　(Akita Int'l. University) 国際教養大学国際教養学部２年	三島北 Mishima Kita
C-1	帆足遥 Hoashi Haruka　(The University of Tokyo) 東京大学理科Ⅱ類２年	沼津東 Numazu Higashi
C-2	渡邊了英　Watanabe Ryoei　(Waseda University) 早稲田大学国際教養学部国際教養学科３年	三島北 Mishima Kita
D-1	永友みつき Nagatomo Mitsuki　(U. of Shizuoka) 静岡県立大学国際関係学部国際言語文化学科３年	静岡市立 Shizuoka Mncpl
D-2	宮崎蓮　Miyazaki Ren　(Chiba University) 千葉大学国際教養学部国際教養学科３年	三島北 Mishima Kita
E-1	三田莉加 Mita Rika (Chiba University) 千葉大学国際教養学部２年	沼津東 Numazu Higashi
E-2	勝又美咲 Katsumata Misaki　(Sophia University) 上智大学外国語学部英語学科４年	三島北 Mishima Kita

特設サイト Websites

2021FALCon 高校生国際会議@Mishima
専用 Web サイト
2021 FALCon International Student Conference
@ Mishima Special Website
URL: https://falcon2021.jp/

三島北高校 WWL 事業特設 Web サイト
Mishima Kita SHS WWL program Special Website
URL: https://www.mishimakita-h.ed.jp/

並行プログラム Concurrent Program

Society5.0 を担うイノベーティブなグローバル人材の育成を目指して令和元年度から展開してきた本事業の集大成としてこれまでの研究成果の周知・普及を図ることを目的とする。三島北高校での開催に代わり、国際会議特設サイトで２月末まで公開する。

The Concurrent Program is open to the public, so that the achievement of WWL program, Building Fujinokuni Advanced Learning Consortium, which started in 2019, could be widely shared on the Conference web site until the end of February.

ポスターセッション（県内高校および三島北高校 WWL 関連科目）

県内の高校でグローバル課題探究に取り組んだチームと、三島北高校の WWL 学校設定科目「海外研修」「STEM for SDGs」履修生徒のチームによるポスターセッション

Poster session by Mishima Kita WWL course participants and high schools from Shizuoka

19 teams from 7 schools: 静岡農業、田方農業、富岳館、下田高校南伊豆分校、静岡市立高校(2)、沼津東高校、三島北高校(11)

全国 WWL 拠点校・連携校のポスター掲示

文部科学省が進める WWL コンソーシアム構築支援事業は、令和元年度に 10 件、令和２年度に 12 件、令和３年度に６件が採択された。このうち、先進的な取り組みを進めている令和元年度と２年度の開発拠点校およびその連携校の一部より研究ポスターの提供を受けた。

WWL Consortium Building Program started in 2019.　Since then, 28 programs in total have been designated by the Ministry of Education, Culture, Sports, Science and Technology.　Research posters by some of those center schools and their partner schools were kindly offered.

6 teams from 4 schools: 神戸市立葺合、東京都立南多摩、岡山県立岡山操山(2)、三島北過年度(2)

中学生 SDGs 英語新聞掲示

三島北高校は、イノベーティブなグローバル人材を育てる高校での学びに興味がある近隣の中学生を対象として、SDGs 英語新聞の作品を募集した。夏休みの自由課題として取り組んだ意欲的な中学生の応募作品を、並行プログラムの一部として展示する。

Mishima Kita SHS collected SDGs English newsletters by junior high school students, who are interested in learning to be innovative global citizens.　Their works are displayed as a part of the parallel program of the conference.

15 works from 9 schools: 三島北、三島南、御殿場原里、御殿場富士岡、沼津片浜、裾野東、長泉、小山、函南

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会議成果物（１） Cross border proposal movies

Heathfield

Mixed group A
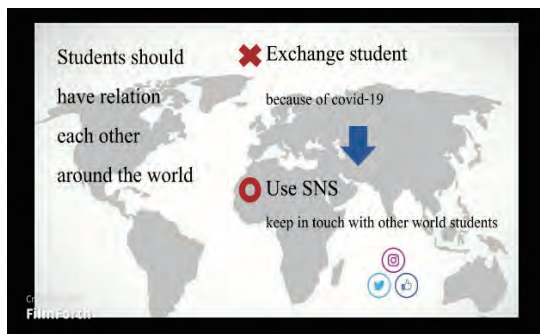
Nagasaki Higashi

Jurong West

Mixed Group B

Sendai Nika

Magong

Mixed Group C

Owatonna

Mixed Group D

Reynella East

Mixed Group E

How can we Help Empower Communities to Prepare, Respond and Rebuild to Crises?

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Abstract

Crises across the globe have greatly impacted the continuity and sustainability of families, communities, institutions and countries. Recent events have further added to the challenge of achieving the Sustainable Development Goals of No poverty and Zero Hunger.

We are investigating the impact of the bushfires of 2019/20 in the Adelaide Hills communities, followed by the challenges presented by a global pandemic. We will conduct interviews and surveys from bushfire survivors to determine more effective ways in which communities can better prepare, respond and recover from crises.

Introduction

The Australian bushfires of 2019/20 had a significant impact on families from all levels of social class. Those who were once relied on to help others in need found themselves in a position where they the ones needing the help of the community. The Sustainable Development Goals of No poverty and Zero hunger are usually positively impacted by donations from the middle class. But when communities are hit with devastation, many of those who once could have supported charities and community organisations no longer can. These fires were a significant set back in our ability to achieve Sustainable Development Goals. Soon after the devastating bushfires, Covid-19 hit. This added further strain on Australians' financial stability and greatly impacted contributions made to those who lead the way in achieving SDGs, such as charity groups and community organisations. This natural disaster- one of the most menacing in the Australian context- is just one example of how natural disaster can greatly impede our capacity to work towards achieving SDGs.

Natural disasters require significant efforts from governments, charities and community groups to help in the recovery process. While a country such as Australia is fortunate enough to find itself in a position to help people through the such a crisis as bushfires, it is a very long road to recovery. An article on rebuilding after disasters from *The Conversation* outlines some key points to take into consideration. The article states that after researching Typhoon Washi that hit Cagayan de Oro in 2011, they found that through the immense amount of support provided, there was a lot of restricted understanding of the affected people and the support they require. (Neeraj Dangol, Recio and Carrasco, 2020).

Australia goes through a range of prevention methods each summer in an attempt to combat such disasters. These are strategies such as contained burn-offs, educational programs and various apps to keep people updated on fires within the community. However, the focus of this research was to look at ways in which victims of crises, such as natural disasters, can get back on their feet quicker and help keep families and communities together. When it comes to response and recovery, there is often significant efforts from government, charities and community groups in terms of donations and volunteering. However, this can be a messy and stressful process for victims. The longer this process takes, the more strain it puts on families and communities.

Hypothesis

To improve the unorganised but enthusiastic number of donations and support from the community, we believe that a central organisation that would specialise in coordinating different charity groups to work together would greatly increase the efficiency of the response and recovery process and help keep families and communities together.

Method

As a way of testing our hypothesis, we reached out to members of the local community that dealt with the 2019/2020 bushfire crises first-hand. This included local charities such as The Red Cross, St. Vincent De Paul, The Hutt Community Centre, The Salvation Army, RSL and The Hutt St Centre. Additional data was also collected from those whose homes or property were lost during these fires. The goal of this data collection was to better understand what the community felt to be the best way for

businesses to assist in dealing with future crises. We collected this information via phone call, personalised online surveys, and face to face interviews.

Results and Analysis

Through the responses from multiple sources, the results support our hypothesis of requiring more organised and structured support. St Vincent de Paul's Society provided information and statistics that demonstrate the massive amount of donations that they received during the 2019/20 Bushfires in South Australia. They generated more than $2 Million dollars over 2020. The issue that we constantly see occurring though, is that the money generated is not going to those struggling as quickly or affectively as it should be.

Steve Hicks, who was directly affected by the black summer fires of 2019/2020, shared his tragic story with us via a very personal interview. Through the interview, Steve explained how he and his family, including three young kids, devastatingly lost their home in Lobethal, South Australia. This event impacted the family greatly, and he explained the traumatic circumstances that they went through. He communicated how he felt that there was a lot of help available, yet it was extremely difficult to receive. Affected community members were often lining up for hours on end just to find out what may be available to them. He articulated that the change was quite overwhelming for him and his wife, but especially his children. When Covid-19 hit, they were still struggling from the aftermath, and their support system dramatically decreased, as others had the current pandemic to focus on. Our proposed solution would have allowed them to get back on their feet sooner, therefore, bringing them to a more stable situation, both financially and emotionally. Steve mentioned multiple things that would have been extremely helpful to have during the recovery process. Some of these things included legal advice regarding insurance, counselling, and a place where all resources and information are available. These are the types of things that would need to be considered when thinking about reducing the impact of crises, specifically natural disasters.

Considerations

Due to time and resource restrictions, we were unable to explore whether our hypothesis could be applied to other contexts. All the data that we collected was qualitative. It would have been helpful to have data which shows how long it generally takes people to recover from crises.

From analysing other research, our qualitative data was similar in comparison. Although we were not able to extensively conduct research and tests, our data and results seemed to support our business proposal. Ideally, we would be able to drive out to impacted communities, talk to people first hand and hear their stories. While we were able to do this, we did not receive as much feedback from individuals, charities and community organisations as we would have liked. There was reluctance to speak to respond to our surveys or return phone calls. Alas, we only had a small sample size from which we could gather responses. We got an in-depth recount of the struggles and triumphs Steve Hicks and others went through, but other families may have had a vastly different experience during this crisis. To get a more extensive view on the various battles people fought, more time and resources. would be required.

Overall, our research has given us an understanding that our hypothesis would likely be welcomed by those recovering from a crisis, particularly natural disasters. This is evident through the research conducted, as we talked to firsthand victims of bushfires in our local communities, as well as charities and organisations that attempt to provide support to the communities affected. From the information we have gathered, we believe that this business proposal could have a positive impact. However, there are many things to consider. For example, how feasible would it be to run an organisation such as this? Where does the money come from to operate as required? What would this organisation do while there are no crises to help communities recover from?

For our group, what we most need to consider is how effective is it to focus on the response and recovery process? Is it better to focus on prevention and mitigation? And most importantly, do we need to consider a holistic approach to achieving SDGs? In our context, focusing on climate action might well be far more effective in achieving No Poverty and Zero Hunger.

Managing The Bushfire Crisis In Australia

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Reynella East College (Australia)

Abstract

Late 2019, the detrimental effects which the bushfires had on Australia caused infrastructural and economical devastation towards multiple properties, businesses, and sacred environments. Australia, as the driest continent on Earth, is continually affected by the harsh reality and dangers of bushfires every summer. Despite Australia being extremely well-prepared for bushfires, support was very limited, with global warming and severe drought being central issues. This report will highlight the aim of sustainable approaches with regard to preventing future crises with advanced STEM technologies applied to the SDGs of decent work and economic growth, as well as industry innovation and infrastructure.

Introduction

The most destructive bushfire season in Australia's history began in early November 2019 lasting until February 2020. The effects of the bushfires were everlasting and extended to land damage, affecting wildlife and livestock, having drastically influenced the Australian economy and society. Factory farming is one of the leading causes of bushfires for countless reasons, however, in order to consider and formulate solutions for the main issue, the bushfires, the smaller aspects of the mass production of livestock needs to be reconsidered as well as lifestyle habits.

Bushfire Statistics

More than 12 million hectares of Australian land including conservation and forest land was burnt due to the bushfires along with infrastructural damage, having caused commercial buildings and homes to be destroyed. Furthermore, it was estimated that there were approximately 42 casualties across Australia along with the bushfires having also had a fatal and endangering impact upon 1.5 billion wildlife lives, having placed flora and fauna at risk of potential extinction. Air pollution also reached the limits of the safety standards by the Australian Government by over 20 times. 50-80% of various mountains were completely burnt.

Factors Affecting Bushfires

The contributing factors leading to bushfires are global warming, deforestation, deliberate intent, lightning, electrical malfunction, cigarettes, and most importantly factory farming, which is one of the largest contributors to greenhouse emissions. The environmental factors of the prolonged dry conditions in conjunction with high temperatures, having been the hottest year in Australian history, exacerbated bushfires nationally. Although, factory farming does not directly cause bushfires, the factors within the process of factory farming contribute to the climate chaos, therefore negatively contributing to the bushfire crisis.

Factory Farming

Factory farming is the system of rearing livestock with the intention of sourcing meat and dairy by confining poultry, pigs, or cattle indoors under strictly controlled conditions while utilising highly intensive methods of farming. The beef and dairy industry produce 53% of methane and nitrous oxide emissions, which are 265 times more concentrated than carbon dioxide and 77% of the current global farmland is utilised for livestock and feed production. This leaves only 23% of global farmland for producing crops for human consumption with this being detrimental to a sustainable future with the growing world population resulting in higher demands for animal products. Deforestation also occurs in order to accommodate factory farming and agriculture to support the high demands of the industry, with this also contributing another 11% to global GHG emissions. As the demand for animal and dairy products grows and mass production is underway, more and more of the world's water, energy, land and crops are used unsustainably. Mass production within animal agriculture contributes negatively to global warming, increasing the world's amount of greenhouse gas emissions and also depleting its resources unsustainably, thus resulting in environmental devastation such as bushfires.

Solutions

Many parts of society have banded together as a means to prevent bushfires where it's needed. We have taken action to create charities and give government support where it is needed. An example of this is the "National Bushfire Recovery Agency", announced and established by Australia's prime minister Scott Morrison, and his cohorts. This agency is working on creating relationships with other governments and communities to help inform about and merge recovery activities, where they will guarantee that allied organisations have access to support and available resources. This will help in progressing the recovery processes of bushfire affected communities.

Innovation across sectors such as stem and business are required from the government to implement strategies for management and prevention of disastrous events as such in the future. Firstly, factory farming needs to be rejected, not only can people make this decision at the ballot box, but more importantly, people need to be educated on the matters and how it affects the world, inform people that their lifestyle and dietary habits have an influence and that their daily meat and dairy consumption should be reduced or eliminated completely. It generally takes 6kg of plant protein to produce only 1kg of animal protein, whereas if this would not have been the case, an additional 4 billion people could be fed. The production of plant-based foods uses less water, and generates less greenhouse gases but also saves animals from being farmed and slaughtered. This simple choice has the power of reducing pollution, saving resources, combating world hunger, improving one's health and creating a kinder world.

With regard to preparation for future incidents, commercial buildings and homes could be made more safely using modern technological designs, just like the more stable buildings created to successfully experience earthquakes with a reduced likelihood of destruction.

The issues are predominantly based on human lifestyles and actions, and in order to prevent such catastrophic events from occurring, wise words must be followed by wise actions. In the future, we need to focus on creating a global food system which works in conjunction with nature, and not against it because if you battle with nature, it battles back, for example bushfires. In conclusion, the world needs to work together to review their systems within various industries, and together with a unified gesture, hopefully, change can happen for a better and more sustainable future.

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Gender Equality in the 21ˢᵗ Century – What this means for the new world, post Covid-19

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Abstract
Since the writing of the Vindication of the Rights of Woman in 1792, there has been many improvements made in our society over the last few millennia towards gender quality.   However, crises have a regressive effect on gender quality and we are cognisant of the backsliding effect that this has especially on woman. In a McKinsey report, it is said that "women's jobs are 1.8 times more vulnerable to crisis than men's jobs."   In our research, we will attempt to highlight how COVID-19 has impacted gender quality, especially in a patriarchal society. We will also attempt to suggest how societies can close the gap through education.

Introduction
Gender inequality refers to the unequal treatment of males and females that may arise from distinctions regarding biology, psychology, or cultural norms prevalent in society.   In 1792, Mary Wollstonecraft wrote "A Vindication of the Rights of Woman" and it was considered one of the earliest works in promoting equal educational opportunities for women according to their position in society. Essentially, Wollstonecraft called for women to be given equal rights and respect as men.   Millennia after the publication of this literature, gender quality has improved and more women around the world are receiving the education and the respect which some men are receiving. We have seen powerful female CEOs such as Susan Wojciki of YouTube, Lisa Su of AMD to Mary Barra of GM building their empires in their respective fields (The CEO Magazine). In the US, feminist movements have had a major influence on challenging the assumptions about and social roles of men and women. The first women protest in 1830-1920 demanded equal civil rights and access to universities, the second women riot in 1960-1980 aimed at genuine equal treatment, and the third wave in the 2000s raised again the awareness of persisting gender inequality. In more recent years, the #metoo movement began in 2017 calling for more equal treatment of women. Women all around the world began sharing experiences of gender inequality, sexual harassment and violence in all levels of society.

However, in other parts of the world, the quality of education that their women receive pales in comparison to males. In South Asia for example, it was reported by UNICEF that 5.9 million girls are out of school compared to 5.5 million boys. Further, it was also reported by UNICEF that, "in particular, in Afghanistan and Pakistan, girls face incredible hurdles to pursue their education, and across the region, they lack opportunities for finding meaningful employment".   In India, discrimination against women and girls has pervaded Indian society at every level for a long time. Even in the past decade, when Indian GDP has grown by around 6%, there has been a large decline in female labor force participation from 34% to 27% and the male-female wage gap has stayed the same at 50%, with some white-collar jobs showing a 27% wage gap). Crimes against women have increased, in particular brutal crimes such as rapes, dowry deaths, and honor killings. Gender inequality is already present in times of peace, but crises in different forms magnify the problem. Crises affect gender equality regardless how developed the country is, the period when the crisis occurs, or nature of the crisis. In a report by McKinsey, "women's jobs are 1.8 times more vulnerable to crisis than men's jobs". The impact of this, according to McKinsey is that if this gender-regressive scenario is allowed to continue, the world GDP growth would see $1 trillion less in 2030.

Method
By researching on various literary works on gender inequality as well as regressive impact crises have on gender equality, we set out to do a qualitative analysis of these works and to highlight the negative impact crises have on women's job, the reason for such an impact and to propose a viable solution to overturn the regressive effects of crises on gender equality.

Results and Analysis
Through our research, we found that gender inequality is impacted <u>regardless of how developed the country is or when it happens</u>.   For example, for developed economies, such as Hong Kong, the labor force participation rate is 54% female and 68.1% male as compared to developing economies such as Niger with 67.5% female and 90.7% male. Similarly, in a press release by the UN Security Council on 29 Oct 2003, "Women and girls suffered disproportionately during and after war, as existing inequalities were magnified, and social networks broke down, making them more vulnerable to sexual violence and exploitation" It was also revealed that gender quality is also impacted in <u>different types of crises</u>. In the financial crisis of 2008, women make up 60-80% of the export manufacturing workers in low- and middle-income countries. During this period, the increase in layoffs means that more women took up informal jobs to make up for the lost income. In this scenario, women are restricted to low-paying jobs (UNAIDS, 2012). More recently, the COVID-

19 crisis has caused many jobs that mainly consist of women to be on a standstill. Many women work in tourism related jobs and the closure of schools and day-cares led to more mothers leaving their work (UNCTAD, 2021). Dejected from the loss of jobs and the crisis, many women give up on searching for another job (BBC, 2020).

Government Support   Despite such grim results, we have found that more governments are showing support for women through policies and recognition. For example, China on 7 Mar 2021, recognised the selflessness and critical role the female medical workers play in the midst of the coronavirus outbreak. Further, in Argentina, there are a high number of women in key ministerial positions which led to the implementation of a high number of gender-sensitive measures. In Singapore, Work-Life Balance made more possible for women to participate in the labor force. The women's labor-force-participation rate doubled from 28% in 1970 to 58% in 2016, reflecting a range of policies helping women to achieve work-life balance, including paid maternity leave, paid and unpaid childcare leave, increased tax relief, tax rebates, and childcare subsidies. (McKinsey, 2019)

Evaluation of Government Support   How effective are these in closing the gender gap? What about countries where gender equality is not actively protected? Despite the efforts of various governments, gender gaps remain in areas including physical violence and deprivations to unequal opportunities in work or political life. The WHO estimates over 1 in 3 women worldwide will experience violence in their lifetime.   Sadly, the risk of being subjected to violence increases in times of distress, such as the outbreak of COVID-19. The UN Special Rapporteur on violence against women, Dubravka Simonovic, warned it was "very likely that rates of widespread domestic violence will increase, as already suggested by initial police and hotline reports." Gender disparities also take shape in unequal opportunities to participate fully in economic life. UN Women found women are less likely than men to participate in the labor market and more likely to be unemployed. (World Bank, 2020) These opportunity gaps suggest women could be disproportionately affected by the Covid-19 crisis. Women make up a larger share of health and social care workers around the world: 70% in 104 countries.

The Way Forward – A Proposal   Though government regulations certainly help the situation, the real method to reduce gender discrimination is through education and changing the ways that people think about gender roles.   *Strategy #1: Compulsory Education Policy and Financial Aid* – Governments around the world must seriously consider implementing compulsory education policies for both males and females. This can be achieved by providing necessary financial support to students. These funds could be given by both private and government agencies and can be allocated for long and short-term purposes. Some examples of such funds include scholarship, sponsorships, education loans, aids and grants.   *Strategy #2: Provision of Infrastructure* –The government can build proper classrooms and facilities for all to use. The government can also provide textbooks, school supplies and other tools needed to excel for students and provide teaching materials for teachers. The government can train teachers to teach professionally to give quality education to all children.   When there is proper education, the government can invest in the future of the country, where an educated workforce will bring economic growth to the country.   *Strategy #3: Leveraging social media* – Videos on persisting inequalities in education and its impacts on both boys and girls can be made to raise awareness among the public. Conferences and campaigns can be organised to create awareness and discussions on gender inequality in society especially on social media platforms. In this way, there is more understanding and others who may unknowingly perpetuate such gender stereotypes are made aware. Parents could also be educated via these platforms.

Considerations

In proposing the solution through education, we are aware of some limitations. Firstly, the lack of funding from the government for education. According to Global Partnership for Education, only 20% of aid for education goes to low-income countries. Further, the lack of qualified teachers results in many children not receiving a proper, quality education. 130 million children worldwide are in school, but they are not learning basic skills like reading, writing and math. Lack of facilities like classroom also inhibits a child's ability to learn. Without the right environment, many children in sub-Saharan Africa are often squeezed into overcrowded classrooms that are falling apart, or are learning outside.

The Deprioritization of Public Education in Africa
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Abstract

Developing countries around the world have an increasingly hard time accessing adequate education. Looking into these regions, such as Sub-Saharan Africa, shows the deprioritization of public education for children. This research provides information on the education difficulties this region faces. This paper focuses on the small number of k-12 children that receive public education, lack of funding, and government corruption in Sub-Saharan Africa. The result of this paper shows the lack of educational resources this region has to provide to the people living in the area. Fewer resources and poor education decisions lead to these countries being unable to provide quality education.

Introduction

The Covid-19 pandemic is an example of a crisis that could affect Sustainable Development Goal (SDG) Four: Quality Education. There are extremely negative impacts caused by this pandemic that has limited the amount of education available to children in Sub-Saharan Africa. Students cannot access at-home computers or technology to learn remotely. Organizations such as UNESCO (United Nations Educational, Scientific and Cultural Organization) and USAID (United States Agency for International Development) have focused on working towards reliable remote education in these countries since the pandemic started. With the help of these resources, Sub-Saharan Africa can slowly get back on track with education.

Method

A search was conducted for credible articles and research papers online. Meta studies from UNESCO, USAID, and articles on the education exclusion problem in Sub-Saharan Africa were used. Data and statistics were found through surveys and several statistics from international databases. An interview with Dr. El Nagdi, a professor of the University of Minnesota, Egypt, was conducted as another source of information.

Results and Analysis

Sub-Saharan Africa's education exclusion problem is caused by several factors including government corruption, a lack of funding, and discrimination. Research states that government corruption and regional violence cause unsafe environments and create a barrier to children's education (UNESCO, 2019). The governments of these countries often don't see their education sector as a priority. Ultimately, this causes a lack of funding for education—school supplies, classrooms, and well-educated teachers. In every one out of three countries, less than three-fourths of the teachers are trained to national standards (Rueckert, 2019). Research also shows the dynamic between the education level of low-income countries and middle or high-income countries.

Figure 1: Graph representing late primary school students scoring above a minimum proficiency level on a learning assessment (on mathematics and reading) by income group and region (World Development Report 2018 Team).

The right of Figure 1 shows the high-income countries will place at the 90-100% proficiency rate on mathematics and reading proficiency assessments. Whereas, low-income countries will place below 20% on the proficiency level of these tests. On the left-hand side is the comparison of the different regions, showing Sub-Saharan Africa as the lowest proficiency out of all the regions in the world.

Figure 2: UIS (UNESCO Institute for Statistics) representing the students enrolled in school from six to seventeen years of age in Sub-Saharan African countries.

Figure 2 represents the increasing dropout rate as students get older. Nearly twice as many students ages 15-17 don't participate in school compared to children ages 6-11 in Sub-Saharan Africa. Cultural and socioeconomic problems are also issues causing education to be deprioritized. Discrimination against women and people with disabilities causes children to be excluded from learning in schools. The Covid-19 pandemic has adversely impacted girls going to school. Girls in Africa have been shown to be twice as likely to get pregnant while out of school (UN 2020a). Previous research on the Ebola epidemic also shows that 15% of girls participated in home studies vs. 40% of boys (Plan International 2020). After the Ebola crisis, the enrollment rate for girls dropped from 50% to 34% (UN 2020b). Also during the

Ebola crisis, it was shown that girls were 11% more likely to get pregnant in highly affected areas (Malala Fund, 2020). Adolescent pregnancy increased by up to 65% (Naylor & Gorgen, 2020). Around the globe, 93-150 million children are being denied access to school because of a lack of accessible schools and discrimination (Ruekert, 2019). Organizations such as UNESCO and USAID are working towards more resilient, inclusive, and reliable education systems in Sub-Saharan Africa. Due to the poor funding management and economy in the region, technological developments and remote learning implemented in developed countries are unavailable and unaffordable. Possible solutions and modifications to the education issue in Sub-Saharan Africa as well as other developing countries are difficult to execute because of the poor funding and state of the economy. Facing this issue, the best option for community members is to volunteer and help organizations raise money or make donations to the cause as well as publicizing this issue in the media.

Considerations

This topic was chosen because of the previous knowledge our group had on the serious issue with the lack of education in this region. By diving into meta-studies and online research we further proved that this is a remaining problem. What remains unresolved is finding funding to support our cause. Few solutions are present that can quickly solve the issue of scarce resources and funding. The education exclusion issue can be improved by considering some of Africa's bigger issues, such as government corruption and lack of funding, before solving the education issue will cause a domino effect that will positively affect the region as a whole.

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Improve Marine Biodiversity by Combining Coral Reef restoration and ecotourism- a case study from Penghu, Taiwan

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Abstract

We are aware that the corals in Penghu are facing serious deterioration under the pressure of global environmental changes, fisheries, and marine tourism. As the SDGs Goal 14 says, healthy oceans and seas are essential to our existence. Corals provide high value to nature and human society.
Taking Hangwan area in Penghu as the site, the study is to explore the interaction between coral restoration and local marine recreation business. A sustainability partnership is to develop for the coral ecosystem in Penghu waters in the future.

Introduction

Because coral reefs are an indispensable ecosystem that has important value in many aspects.
Recently, coral reefs have met with the tremendous impact of global warming, overfishing, and marine recreation traveling. Many places around the world are devoted to coral restoration, and the Hangwan area in Penghu is doing the restoration work, too. We developed the hypothesis to reassure our ideas," Combing coral reef restoration and ecotourism is a win-win situation. " The project is fitting with goal 14. of SDGs "Life Below Water". With the idea, we can raise the awareness of protection and good use of ocean resources by visitors and local recreation businesses. To achieve the sustainability of harmonious coexistence between humans and nature.

Method

We interviewed the Agriculture and Fisheries bureau, Penghu County Government to gain more understanding of the corals restoration plan's motivation, challenges, and method. We also receive more ideas regarding how to modify this project to make it better from this interview. Based on this understanding, we designed two questionnaires. One is for merchants, and the other one is for tourists. We posted the questionnaires on marine tourism related Facebook pages. We also went to the study site interviewing tourists. We received 54 responses from tourists and 13 samples from merchants. Regarding their personal information, experience, satisfaction with corals restoration project in Hangwan.

Result and analysis

a. Tourist investigation
   First, tourists' gender is equal to half and the age from twenty-six to thirty-five mostly. Besides, most people is not the first time went to Hangwan. It means people love going to Hangwan. The main reason of tourists visit Hangwan is coral reefs watching. Among them, more than half people knew about this restoration project. However, up to eighty percent of people did not take part in this plan. Meanwhile, we find out there are about half of the diving instructors did not mention this plan to their clients. As for the view from tourists about the benefit to the tourism industry, Most tourists agree with the undersea landscape and ecological conservation are the main reason to increase the benefit of the tourism industry in Hangwan.
   Most people are willing to go back to Hangwan again for the biological indicators (sea turtle, urchin, butterfly fish...etc.). Among the negative responses, bad weather caused they don't want to go back to Hangwan again.
   To sum up, most people agree the schedule that snorkeling in Hangwan is a kind of ecotourism.

b. Recreation company investigation
   There are 13 recreation companies replay our questionnaire. Snorkeling and SUP are the major services (70%) and over sixty percent of those companies have run this business for 6 to 10 years.

The instructors have worked here for 2 to 9 years. From shops traders and instructors 'point of view, the coverage of coral has increased slightly and the situation of coral bleaching has increased slightly as well.

All the instructors know this coral reef restoration plan and most of the them participant this plan as well. Over half of instructors have mentioned this plan to their customers. Recreation companies provide ecotourism regarding this restoration plan. Sixty-two percent of companies extremely agree with the restoration plan can be helpful to their business and the ecosystem as well. Fifteen percent of companies had conflict with local residents. Only seven-point-seven percent of companies declare that they will not invest the restoration plan. Ninety percent of companies' income increased since 2016, the year corals restoration plan started, but there are nine percent of companies considers the restoration plan has nothing to do with the increase of income.

Consideration

There is no long-term ecological monitoring plan in Hangwan. But according to the results of the questionnaires, the coverage rate of coral reefs is slightly increasing. On the other hand, the bleaching is slightly increasing as well. It could be drove by global warming at summer.

For the ecosystem management in Hanwang area, a comprehensive ecological monitoring is needed for making proper strategy in the future.

The number of fish species has slightly improved after coral restoration. The number of giant clam and sea turtle is increasing too. We agree the coral reef restoration plan has positive effect on the Hangwan marine ecosystem, but corresponding laws and fishing management should be conducted as well.

Recreation companies agree with the coral reef restoration plan attract tourists and bring a slightly increase for their income. Most of the companies are willing to assist this restoration plan in the future. We suggest our government continuously promotes the reef restoration plan at other proper places in Penghu and a low carbon emission sustainable marine recreations plan. Furthermore, to set up the marine reserve area where fishing or hunting should be prohibited is highly recommended. A long-term ecological monitoring plan, for instance the Reef-Check, should be conducted continuously as well.

The Future Created by Education

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Abstract

The three types of poverty - lack of capital, lack of human capital, and lack of social capital - were investigated in the field in Cambodia and Japan, and solutions were devised. For each of these problems, we believe that providing vocational training in schools, creating eco-friendly containers in schools, and conducting Japanese language classes both online and in-person would be effective.

Introduction

To begin with, what is poverty, and what are the causes? According to the "relative deprivation theory of poverty" invented by Townsend to define and measure poverty on an international scientific basis, a country falls into poverty when there is a lack of capital(income and property), human capital(health and education), and social capital(bond and network). We provided our 2 studies as examples to explain the educational solutions toward these three deficiencies.

Study 1: Siem Reap in Cambodia

After the occasion of Cambodian Genocide in 1975 where many of the teachers were massacred by Pol Pot as knowledge was his threat, negative influence was brought to the society as Cambodia was isolated from the world economically(**lack of capital**) and many educational institutions were destroyed(**lack of human capital**). As the quality of education decreased, it also influenced the future of Cambodians as they only had a limited amount of low-paid job options.

Study 2: Shiogama city in Japan

We researched technical intern trainees taking Shiogama City as the field of study. Technical Intern Training Program allows people from countries that have concluded partnerships with Japan to work in Japan for up to five years. In fact, this program works to fill the Japanese labor shortage.Technical trainees can earn higher salaries in Japan than in their home countries, but they are often put into vulnerable positions in Japan, lacking reliable social connections with Japanese they can depend on(**lack of social capital**).

Method
1. Lack of capital

We carried out interviews by Skype with Mrs.Yoko Koide, who is one of the leaders of JST, a NGO in Cambodia.Through the interview we asked about the following matters.
    1 What are the causes of   high dropping out rates?
    2 The case of 5th year students.

2. Lack of human capital

In Cambodia, cheap, tractable plastic containers are used in many food stands which are trashed indiscriminately and causing environmental issues. To resolve the problems of teacher shortage and littering, we concluded that making eco-friendly bagasse containers and selling them to local food stands would be an effective solution. Here is the brief description of the procedure:
1. Press the sugar cane, divide, soften, and squeeze the material.
2. Put on a blender, crush into pieces, and make two pieces of paper for a container.

3. Lack of social capital

We also interviewed the organizer and Japanese Language Classes teacher, Mr. Yasukawa Hajime and   Shiogama City Hall staff who are engaged in the support for trainees. Through the interview we asked about the following matters.
    1 What kind of technical internships are you conducting?
    2 How did you start your activities?
    3 What are the problems with the environment surrounding technical intern trainees?

Results and Analysis
1. Lack of capital

Many children quit school in order to support their family financially. We think it is effective to introduce vocational training to improve this situation.Through interviews,　we heard the instance of 5th graduates of Bayon school that 10 of them learnt electronic wiring repairing skills and after that they could get higher pay than their parents. From this example, vocational training at Bayon school seems to make it easier for students to get high-paid jobs after graduating so that they can get out of the state of lack of capital.

2. Lack of human capital

Eco-friendly containers can be created through the procedure presented above. However, some flaws could be seen during the experiment as bagasse were less in amount, having rough and thick fiber, and the adhesive to make the paper durable was not preferable to both the environment and this region. By improving the quality of them through the substitution of banana and fermentation, we believe those containers will produce enough profits to hire more teachers so that human capital shortage conditions will be alleviated.

3. Lack of social capital

Through the interview, we found Japanese language classes which are held in Shiogama city help trainees get opportunities to interact with Japanese people who are eager to support them. However, not a few trainees cannot attend because of the insufficient means of transportations. Therefore, introduction of online language classes can provide more trainees chances of attending classes. In this way, providing classes both in-person and online enables more trainees to gain social capital in Japan.

Considerations
1. Lack of Capital
- problems unsolved: to introduce vocational training to Bayon Junior High School, we need another teacher who can guide students. We have to think about how to secure resources before the introduction. However, in Cambodia teachers tend to work in the city for a high salary and bringing new teachers to farm villages is not an easy thing.

2. Lack of Human Capital
- Problem unsolved: the difficulty of providing the opportunities to create the container to students due to the outbreak of COVID-19 which closed school and made students getting more involved in farming at home (hinders them from studying) as the economy remains stagnant and self-sufficiency is encouraged. This also means that the containers would be less demanded by the people as they spend less money by the food stands. One efficient solution for this is to improve the quality and productivity of the container as mentioned in "Results and Analysis" above. Because food stands play a crucial role as grocery stores in this village and some consumers are remaining even during this pandemic(based on interviews), making a profit with less creation cost and time would eventually solve the problem and would make the cycle more sustainable even after this pandemic.

3. Lack of Social Capital
- Some companies that accept technical intern trainees do not like the idea of their own technical interns participating in Japanese language classes for some reasons. It is necessary to consider how to approach the technical intern trainees of such companies.

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Can gum with Xylitol improve oral hygiene in developing countries?

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Summary

We tried to improve oral hygiene in developing counties with xylitol gum. Poor oral hygiene causes too many problems to our health. Xylitol prevent your teeth from decaying. The ingredients are bread flour, water, and xylitol. We found that brushing was the best way to clear teeth of plaque. Both store-bought-gum and handmade gum have the same effect. We made gum two times. In the 2nd experiment, we added salt. Then, the amount of water used to wash the gum decreased. There're some improvement. Mainly, we have to decrease the amount of water used to make gum.

What is the problem?

Good oral hygiene is important for the overall health of the whole body. Bad oral hygiene can lead to other diseases, for example,,pneumonia, heart diseases, osteoporosis, premature birth, diabetes, and rheumatoid arthritis. These diseases can cause death. So keeping good oral hygiene is important to stay healthy.

But, oral care costs a lot. When we brush our teeth once, we use about 6L of water. So, it is difficult for people in developing countries to maintain good oral hygiene. Moreover, for people in areas where there is water shortage, it is a problem that they can't brush their teeth with clear water. Then, their health is in danger of developing other diseases.

How to solve this problem?

How can we maintain good oral hygiene without water? We knew that gum works well. It will increase the amount of saliva. Saliva is good for protecting teeth. The bad effects on teeth from food is removed by saliva. Also gum can remove plaque. Plaque causes bad teeth. So, it is good for us that gum removes plaque. However we thought that maybe people in developing countries aren't used to gum. There is a danger that they will swallow it, especially children. Then we want to make gum which canbe swallowed. We researched how we can make gum which can be swallowed by using bread flour.

(How to make gum)

First, mix bread flour and water. Second, let it rest in a plastic bag for an hour. Third, Wash it until the water becomes transparent. Finally, add in the xylitol.

How to examine the gum's work

We use a plaque checker so we can see whether plaque is removed from teeth. We compared before chewing and after chewing. Also, we compared the effectness of brushing, store-bought gum, and our handmade chewing gum.

Result

Brushing is the best. And gum can remove plaque. Also, we found it that the works of store-bought gum and handmade gum are the same.

Discussion

We found it possible to make gum. But it needs a lot of water. When we chew gum, we don't need water. However, when we make gum, we need a lot of water. And the result is only from the appearance. So, it is subjective. And, since we only used a plaque checker, we are not sure how much plaque disappeared. And our gum's shape and color weren't so good. In our 2nd experiment, we added salt to the gum. It is said that salt can make the elasticity of the gum increase. And the amount of water used to wash the gum was 16L in the 1st experiment and 9L in the 2nd experiment.

Discussion & Future Tasks

To make our results more clear and perform objective experiments, we have to examine the change in the amount of saliva. Also, our result is only from pictures of front teeth. But, when we chew gum, we use our back teeth. So, we have to examine our back teeth. And we have to improve the shape and the color of the gum. One of the biggest problems of our investigation is the amount of water. So, we must think about how to make gum without using too much water. In our 2nd experiment, we found it effective to add salt. Yet, we don't know whether salt is the best. There is a probability that there are much better things for reducing the amount of water used to make gum. Lastly, we want to consult specialists or companies. We are planning to request cooperation with Nagasaki University.

Can our simulation game change the Japanese workstyle?

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Abstract
We believe that mismanagement is one of the causes of the increasing unemployment rate in Japan. There is mismanagement at home, in companies, and in the Japanese government. So, we made a game called "Life・ru・SUGOROKU" and held a survey using a questionnaire to solve the problem. The results showed that the effect of our game on respondents was small but significant. We also received their opinions on how we could improve the game. Using this information, we made a revised version of the game. In conclusion, we believe that small educational opportunities, like the ones presented by our game, can change people's thinking and help resolve mismanagement in Japan.

Introduction
The crisis that we chose to focus on is the COVID-19 pandemic. It is impossible to see the virus, so we must take steps to prevent infection and limit the damage caused by the virus. Families, companies, and the government are under pressure, and the unemployment rate is increasing rapidly. In particular, the statistics for part-time jobs show that the rate of unemployment is twice as high for women as it is for men. We believe that mismanagement is one of the causes of this problem. There is mismanagement at home, in companies, and in the Japanese government. At home, one of the problems is how to share housework. In Japanese families, most mothers do all of the housework. Because of this, some women lose the chance to work outside of the home, even if they want to do so. Second, some families' incomes have decreased because of the COVID-19 pandemic, so families are not spending nor saving much money. This directly affects the economy. In companies, the number of part-timers has been increasing. In particular, a lot of women work as part-timers, in addition to doing housework. As a result, their salaries are lower than regular employees. Despite this, all parents have to pay expensive school fees, so many people are hurting for money. In terms of mismanagement at the government level, the government declared a state of emergency. However, the number of infected people hasn't decreased a lot, and the government's support has been slow. The government was too slow in giving financial support to restaurants and other businesses. As a result, many companies went bankrupt, and many people had to close their businesses.

These factors have made it difficult for the economy and have led to deflation. Out of the above problems, we focused on mismanagement at home. We discussed what we could do to solve these problems.Our hypothesis was that a game like sugoroku could provide small educational opportunities and help resolve mismanagement.

Method
We did a study by making a game called "Life・ru・SUGOROKU" and asking respondents to play it and answer a questionnaire. We then asked for their opinions about our game. We wanted data on how much respondents were affected by small educational opportunities. The purpose of our game is to allow people to have awareness of other people's viewpoints through a simulated experience. Sugoroku is a Japanese board game. The object is to navigate a game piece from the start to the finish by rolling a die. There are two reasons we choose sugoroku as a means of education. First, it's easy to understand how to play it, so everyone can enjoy it. Second, moving each space, players can experience someone else's life. The ingenuity of our sugoroku is that it has events related to the economy and gender problems. For example, there are childcare leave problems, housework sharing problems, and so on. In addition, it presents opportunities to discuss issues. For example, there are spaces where players talk about a time that they felt discriminated against.

22 elementary and junior high school students, 17 high school students, and 35 adults from Shizuoka High School, Shizuoka University, Shizuoka Bank, and Nishina Children's Hall participated in our survey. In the questionnaire, we asked adults and high school students, "Has your opinion about gender equality changed through sugoroku?" And we asked elementary and junior high school students, "Did you think from a woman's viewpoint?"

Results and Analysis
The percentage of respondents who answered "Yes" for the question was 51.5% for adults, 42.9% for high school students, and 37.5% for elementary and junior high school students. As you can see, the effect of our game on respondents is small but significant. We also asked respondents to write their opinions about Life・ru・SUGOROKU. One respondent said, "I was able to think from the standpoint of women." And another respondent said, "We discussed gender stereotypes."

In this way, we were able to give them opportunities to think and discuss, and we helped make people aware of stereotypes through our sugoroku game. Our data shows that small educational opportunities can break our stereotypes, and if we give larger opportunities to people, they will be affected even more.

Considerations
To think about larger educational opportunities, we interviewed Shizuoka University and Shizuoka Bank, both of whom joined the 'declaration for a gender-equal society in Fujinokuni (Shizuoka Prefecture)'. First, Shizuoka University holds symposiums and lecture meetings about gender and provides temporary childcare services to its employees. As a result, the rate of female faculty members has increased from 29.8% to 39.5%. Second, Shizuoka Bank holds career training and takes affirmative action for women. Because of this, the rate of female managers has increased from 8.5% to 16.9%.

In the questionnaire for our game, we also asked respondents for their opinions on how our sugoroku game could be improved. Some examples of the responses were, "That's too extreme.", "It's biased towards women.", and "It's difficult for children." So, we made a revised version of the game. In the first version of the game, players had to get married to a man. We decided to allow for diversity in our game. In the new version, rolling a die decides if players get married or not and if they have romantic feelings for men or for women. Moreover, there was feedback that some children were not interested in our sugoroku game. So, we added illustrations. Finally, one player said, "It was difficult to imagine the situations because the events had extreme examples." So, we made our sugoroku game more realistic.

In conclusion, we believe that small educational opportunities can change people's thinking, correct mismanagement, and allow women to more easily work in various workplaces. We believe that if we can improve management, the economy will also improve. We did this activity hoping that we could improve the economy through improving the employment of women. As a result of playing our sugoroku game, people changed their minds. We hope that our game will help people expand their perspectives.

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Protect the ocean by reducing microplastics

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Abstract

We researched the current state of the sea and noticed that plastic waste floating in the sea is a global issue.   Thus, we made three different type of unique trash boxes to prevent littering and reduce plastic waste in the ocean, based on the Nudge theory of behavioral psychology. We collected plastic bottles using those boxes, then found that three elements—outstanding mark, clear box, result reflection—are necessary to make people throw their trash in the boxes. Based on these results, we suggested a new unique trash box.

Introduction

These days, the marine pollution   because of microplastics becomes a common problem to solve in the world. This problem affects not only fish's life but also our lives. This is related to 14th item of SDGs "protect the wealth of the sea" and we must stop the crisis. One of the causes that plastics flow out of is littering, so we developed the trash box which everyone wants to throw away there to prevent littering. After the experiment, the trash boxes we made based on behavioral psychology, we invented the best trash box.

Method

We made three interesting shaped trash boxes to prevent littering, based on Nudge theory of behavioral psychology. Nudge theory is the idea that works on people's psychology and change their action by devising the way to show. The boxes ware the shapes of a basketball-hoop, a voting box, and a Torii with Osaisen box. Torii is a gate of shrine and Osaisen box is a box in which we put money when making a request to God at a shrine. Then, we set these boxes next to our school gym, and started the experiment on July 23rd and finished on September 2nd.

Results and Analysis

We collected 175 bottles. The percentage of plastic bottles in each type of trash boxes is 36% for voting, 30% for basketball-hoop, 28% for simple, and 6% for Torii. In other words, the funny-shaped trash boxes encouraged people to put trash in them. We thought that Torii-shaped ones and basketball-hoop ones are popular because they are familiar to us and have a prominent appearance before we started collection, but the results were different. We interpreted that we can act on our own initiative whether it's in the trash box or in the basketball-hoop, so many people found it interesting and want to throw their trash there. Compare with these boxes, the Torii type was physically and psychology difficult to put bottles in. Physically, the mouth of the trash box was too narrow because we put bars on the top of the box so that it would like Osaisen box which we put money when making a request to God at a shrine. And psychology, the power of God worked and that made people hesitate to throw trash there. However, actually, lots of people found the Torii first and approached it.   Therefore, we can say that features of the Torii gate which is big, flashy, and draws people's attention attracted people. By the way, the percentage of people who chose the normal trash box was also high against our prediction. That is because the trash bow has a large opening and its contents can be seen through. After all, the results told us that not only making boxes attractive, but also making boxes easy to put in and which have functional structure that shows the result of putting garbage is very essential to stir up the feeling that people want to use the trash boxes.

Considerations

We have also found that familiar objects, such as lotus and interesting shaped trash boxes, can be used to prevent the progression of marine pollution and protect marine life. Protecting marine life also protects

our lives, because we eat the fish that live in the sea. If we can prevent marine pollution even if we are familiar with it, we can act individually. However, in reality, it is often the case that everyone thinks only for a while and does not act after that. In order to prevent marine pollution and protect marine life, it is important to continue monitoring not only for one time but for the future. It is necessary for all people around the world to think about and act on marine pollution. If we can do so, it will lead to legislation and fishery management. If marine pollution is improved in the future, not only will marine life be protected, but the clean sea will be utilized for tourism, making our lives more enjoyable and prosperous.

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Bridge Project -The Importance of Making Connaction-

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Abstract

One of the various minorities in our society is cancer patients. In this project, with the aim of making cancer and cancer patients known to many people, based on the knowledge and experience gained through connections with cancer patients, their supporters, a doctor and a community coordinator, we created a place for interaction. The project's name "Bridge," symbolizes a "connection" between us, the people involved in the project, and cancer patients.

Introduction

According to the latest cancer statistics, 65.5% of men and 50.2% of women in Japan may develop cancer. This means cancer is no longer a rare disease for us. Nevertheless, it seems that most of us don't feel familiar with cancer. This view is supported by the results of our survey of 264 high school students. Just 23% of them answered "yes" to the question "Are you familiar with cancer?"

Our project aims to reduce inequality and leave no one behind in society. To that end, it is essential for this project to provide research on cancer and its patients and create a safe place for them.

Method #1

There is a plethora of information about cancer in the world, but it may not be reliable. To get reliable cancer information, we referred to a website, ganjoho.jp, which is provided by the National Cancer Center Japan. Additionally, to learn about and understand the feelings of cancer patients, we referred to the YouTube channel of the non-profit organization called Gan-Note, which was founded by Toru Kishida.

Next, we first interviewed cancer patients and supporters. The first interviewee was Akihiko Tsukura, a man in his 60s who has pharyngeal cancer. The second one was Setsuko Hirata, a woman in her 50s who has breast cancer. The third one was Makoto Kayashima, the owner of Blue Sofa, a café for cancer patients.

In addition, we attended a lecture about cancer, cancer screenings and treatments by Dr. Yoshida Masayuki from Seirei Hamamatsu Hospital on October 20th. We also did field research at Peer Corporation Limited, a private beauty salon for people with hair problems such as cancer patients, and conducted an interview with Makoto Sato, the CEO of the company.

Results and Analysis #1

Our research resulted in four main points. First, accurate information about cancer is important. Second, each patient has different needs, so every patient should be accommodated. Third, the recognition of cancer medical treatment cooperation base hospital and their cancer salon is low. Lastly, patients think that the cancer salon in the hospital doesn't have a relaxing atmosphere.

To address these ideas, we started a project called "Bridge Project." According to the *Longman Dictionary of Contemporary English*, a bridge is "something that provides a connection between two things." The goal of this project is to provide a connection between cancer patients and others.

So, how can we provide a connection between cancer patients and others? After some discussion, we thought of holding a one-day café salon. We would have three main activities in a café salon. First is a hat-making workshop. Second is a time to chat. And third is the wig and nail exhibition. We brought our proposal to *Cherry Beans Café*, which allowed us to hold one-day café salon there.

We asked for advice from Michiko Inoue, founder of the nonprofit organization called *Shizuoka Kyoiku Net*. Ms. Inoue told us key factors for a social event, such as ensuring no one is left behind, setting up a relaxed and quiet place such as a personal space, making an operational manual and applying for event insurance and pursuing on our project's goal.

But unfortunately, COVID-19 has spreading around the world, including Japan. Cancer patients have a weakened immune system, so the *Centers for Disease Control and Prevention* continues to recommend avoiding large events and gatherings when possible, and a social event like a café salon brings together many people from multiple households in a private or public space. Concerning these facts, we had no choice but to make a decision to cancel the one-day café salon.

Method #2

We were determined not to let COVID-19 stop our project, so we changed our event style from one-day café salon to online events.

First of all, we made a flyer about our event and held the first online event on December 26. Four students from another school participated in this event. In this online event, our activities were reported and a workshop where we made caps or hats from just one towel for cancer patients was held. Feedback from the participants included "Today's event is a big inspiration for us to make cancer patients happy."

Next, like the first event, we made a flyer about the second event and held the second online event on January 11th. Five students from another school, two teachers and two university students participated in the second online event. The online event included reports of our activities, a guest speaker, and group discussions about cancer. We asked a teacher of our school who had had cancer to tell us about her own experience. We received comments from the participants, who said, "I found out the feelings of patients who I didn't usually know," and we realized that they could partly understand the true feelings of cancer patients, which we wanted to convey.

Results and Analysis #2

We held these two online events, but we realized the difficulty of attracting attendees to such an event. Therefore, we found we should prepare more carefully. For further planning, we decided a clear event concept should be developed, an eye-catching and clear poster should be made and we should have face-to-face meetings to promote our event and attract attendees.

So we discussed the concept of our events and finally we hit on "What we see is not always true." Then, based on this concept, we made the eye-catching and clear poster. Then, we had face-to-face meetings at other schools to promote our event.

In this way, we held the third online event on January 31st. We invited Mr. Kayashima and Ms. Hirata, who we interviewed in Method #1, and asked them to share their experiences with participants. At the end of the event, we asked all the participants to make a declaration on something they would try starting the following day.

On the questionnaire conducted after the event, about 90% of the respondents said their image of cancer had changed, and 80% said they felt closer to cancer.

Considerations

Although all the people we've met in our project are of cheerful and have a positive disposition, of course, not everyone is like this. It's important to understand that everyone is unique. We should never jump to a conclusion and say things like "because of cancer," or, "in spite of cancer." What we see is not always true. Through this project, we learned the importance of expanding our horizons.

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Everyone can be a hero
to help out Africa through FAIR-TRADE

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Mishima Kita (Japan)

Abstract

The awareness of fair-trade products in Japan is low compared to other countries.   However, actions of Japanese customers can make a difference to the poverty situation in sub-Saharan Africa, and so we devised a mechanism that makes it easy for consumers here to pick up fair-trade products at stores. We also examined how product sales would change by getting consumers to express their support for fair-trade when purchasing products.   We would like to prove that everyone's consumption activities in Japan can improve poverty in Africa.

Introduction

Our research is related to SDGs Goal 1 - No Poverty and SDGs Goal 2 - Zero Hunger.   We studied how an infection epidemic would prevent SDGs Goal 1 and 2 from being achieved. There are two main changes that could occur regarding those goals. The first is that the output of crops will be reduced due to labor shortages.   Secondly, children will not be able to study because they are forced to work in agriculture, and they will not be able to find a job with a stable income.   It is a negative spiral.
In sub-Saharan Africa, about 41% of the population lives below the poverty line. Furthermore, among the children who cannot go to elementary school in the world, 3.27million are from sub-Saharan Africa.   This means that one out of five school age children doesn't go to elementary school there.

We got some advice from a specialist on hunger issues.   He said that it is difficult for us to take action in Africa as it is so far away.   Also, we need the cooperation of many people to help out Africa.   Instead of reaching out to Africa, we should turn our attention to "fair trade". There are a variety of fair-trade products sold in Japan, such as tea, coffee, chocolate, and cotton.   However, according to a market research in 2019, the awareness of fair-trade in Japan is only 32.8% and its annual sales are 1.6 billion yen.   Compared to the UK's 78% awareness and 147 billion yen in sales, the figures are quite small. Therefore, we thought that if we could promote the purchase of fair-trade products, we could do our part to prevent poverty and hunger from worsening in Africa even if the health crisis continues.

Method

We have created a poster and a sunflower sticker board to encourage people to buy fair trade products. The poster is designed to raise awareness of fair-trade among consumers and encourage them to buy such products. We used pictures from Africa to show them the current situation. We provided a short summary of the information we had researched about fair-trade. In deciding the design of the poster, we examined posters from various companies.   When the first poster was completed, many people said that the colors used in the poster were too dark and the pictures were too scary, so we tried to use brighter colors that appeal to Japanese people in our second version. We also improved the photos to have a brighter atmosphere.   The sunflower sticker board was meant to give consumers the feeling that they were actively helping the fair-trade movement.   Consumers would put a sticker on the board for every fair-trade product they buy. The sticker board and stickers were displayed for about a week near the fair-trade chocolates at Max Value Numakita, a local supermarket. We compared the sales of the four types of fair-trade chocolate before and after the sticker board was displayed.   The sales data was shared with us by the supermarket.

Results and Analysis

After posting the poster, the sales of fair-trade products increased.   The average weekly sales before displaying the poster were 17.5, but the weekly sales more than doubled to 39 after.   We assume that the poster we produced was effective to raise the sales of fair-trade products. However, the effect of the sticker board could not be established as not many people took part in it. The shop staff seemed to be satisfied with the sales.

Considerations

We had taken action to popularize fair-trade products.   The chocolates we targeted this time are products certified by the Recognition NPO juridical person, Fair Trade Label Japan.   Although there is no clear statement in the products that they were made in Sub-Saharan Africa, the countries in Sub-Saharan Africa are also certified by the Fair Trade Label Japan.

The poster, with the colors that Japanese people like and an attractive catchphrase, successfully made an impact on the shoppers.   In addition, the sticker board was able to catch the eye of more people by visualizing the number of products customers bought. However, there were two problems. One of those was that foreigners could not understand because the posters were only written in Japanese. Another problem was that it was difficult to put stickers in a situation when COVID-19 is spreading.

By promoting fair trade products, the problem of low wages in the target area could be solved.   But the problems of child labor in the process of production will not be resolved soon.   Some of the activities to spread fair-trade so far have been done by SNS.   But we took the action of posting it in the store, and we helped people not only to know about fair trade, but also actually buy the products.

At the 2021 FALCon international student conference, there were feedback on how high prices could be resolved, and concerns about other fair-trade products such as coffee, and similar action could be taken for the long term.   We also learned that it is important to cooperate with people from other countries in the conference.   Therefore, from now on, we would like to take action on other dates as well and make English posters in order to cooperate with foreign people.

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Spread the Colorful Sanitizer to Ethiopian Children

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Abstract

Today, washing our hands is an essential part of hygiene, but Ethiopia lacks clean water and people do not have enough water to wash their hands. Therefore, we thought of promoting the use of hand sanitizers in Ethiopia. However, it is very difficult to promote the use of hand-sanitizers to the people of Ethiopia. That's why we aimed to popularize color sanitizers after taking into consideration the cultural background of Ethiopia, where people like colorful things. We created multiple prototype containers of sanitizer using "tarebin" and examined how we could make them easy to use.

Introduction

Our research will help to promote SDG 3 (good health) and SDG 6 (clean water and sanitation). In view of the current pandemic, it is even more important that people wash their hands. However, at the same time, water shortages have become even more serious in water-scarce areas due to climate change. And people are not able to wash their hands adequately, which in turn allows the infectious disease to spread further. The percentage of Ethiopian people who can get clean water is only 39%. It is difficult for them to get clean water, so they are unable to keep their bodies and living environment clean. As many as 4.5% of Ethiopian children die by the age of five living in such an environment. Therefore, we thought the use of hand sanitizers could help to improve their hygiene. In this way, they can use the limited water for other essential things. We also thought that by making a sanitizer that is bottled in small quantiy and that takes into consideration the local culture, it could make dissemination and popularization easier in Ethiopia.

Method

We made prototypes of different-colored sanitizers colored by food coloring. We made red, yellow, and green ones in small soft plastic bottles, *terebin*. We wanted to find out if this sanitizer is easy to use. Therefore, we asked 41 students from our old homeroom to use this sanitizer and took a questionnaire.

We asked two questions. The first question was: Is this sanitizer easy to use? 22% of them answered that it was fairly difficult to use, and 5% of them answered that it was rather difficult to use. Overall, about 30% of them found it negative. The second question was: What are the good points and bad points about this sanitizer? On the positive side, it was easy to carry, colorful and cute. On the negative side, it was easy to spill and it was difficult to open and close the lid of the case. So, we learned that convenience was something to look into and we must improve the how to bottle the sanitizer.

We thought that it would be possible to solve the two problems by putting a hole in the lid. But we didn't know how big a hole we should make in the lid to make it easier to use and not to spill. So, we experimented with different conditions.

We had to consider the price of the sanitizer as well. We put 30ml of sanitizer in *Tarebin*. The sanitizer costs $1.09 per one portion. One *Tarebin* container costs $0.09. The food coloring is impossible to measure, so it is excluded from the price calculation. As a result, the price per one is $1.18.

Results and Analysis

At first, we experimented with the lid by making a hole with a needle. This hole was very tiny. We turned the *Tarebin* upside down. The water inside didn't spill. Even when pressed, the inside water didn't come out, either. Having one hole did not work. Then, we experimented with the lid by making a slightly larger hole with a needle punch. We turned the container upside down, then the water didn't spill. It was easy to adjust the amount of the water coming out by pressing the case. Finally, we experimented with the lid by making two holes by a needle punch. We turned it upside down, water spilled. But it was also easy to adjust the amount of water. We concluded that the second type was the most appropriate as a container of portable sanitizer.

Originally, we had to open the lid of the container with our hands to use the sanitizer.   But after making a hole in the middle of the lid, we can save time and effort because we don't have to open the lid.   It also enables the user to adjust the amount of sanitizer coming out of the container per use.   Like this, we solved the two problems about the lid.

Considerations

Our sanitizer is in small soft plastic bottles so we can take it anywhere easily. Ethiopian people like colorful things so our colorful sanitizer could be popular among Ethiopians.   It was pointed out at the international conference that this sanitizer could color our hands after use. But by making sure the amount of food color is so small, this is not a worry.   We experimented it and it didn't turn our hands red or yellow.

However, there are still some problems. For example, it is still expensive for Ethiopian people. Ethiopian people live at ＄2.00 per a day but our sanitizer costs ＄1.18, so Ethiopian people can't afford it. Furthermore, we should have considered what to do with the empty container after use. It will be important to think about how to lower the price in order for this idea to become practical.   Also, we need to contact sanitizer manufacturing companies to better understand the manufacturing process.

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Lotus saves the world

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Abstract

Recently, it has come to international attention that a lot of garbage is drifting in the sea.   They have a great negative impact on marine life. The marine ecosystems may collapse in the near future.   Most of the marine garbage is plastics.   Plastic bottles account for a large portion of plastics in the ocean.   But it is not easy to get people to throw away fewer plastic bottles.   So, we decided to find a substitute for plastic bottles.   We proposed using natural products instead of plastics by applying the lotus effect. This is a kind of technology that repels liquid.   And we examined how long the effect could last in the condition of seawater.   With this, the marine environment should improve.

Introduction

It is expected marine garbage will destroy the ecosystem of marine life.   Fish eat the garbage.   These fish cannot eat proper food because plastic will remain in their stomachs.   Even though people have made some efforts to reduce the amount of plastic waste by charging plastic bags or collecting garbage on the seashore, marine garbage drifts further during typhoons and tsunamis, worsening marine pollution even more.   Furthermore, marine garbage is still being produced and it will soon be out of control.   The problem would inevitably extend to humans. Our habit of eating fish will inevitably have to change.   The whole process will hinder the SDG 14.

Today, 150 million tons of marine garbage are flowing out in the world.   And the weight of the marine garbage is expected to exceed that of the fish in the ocean in 2050.   65.8% of the marine garbage is plastic.   In particular, plastic bottles make up about 50% of the plastic garbage in the ocean.   Now, 8 million tons of plastic is flowing out every year.   In 2040, 29 million tons of the plastic will flow out. First, people buy drinks in plastic bottles.   After the bottles are emptied, some of them will not be collected and will be thrown away on the road.   Most of those plastic bottles can flow into the sea after typhoons or tsunamis and can drift in the sea without disintegrating completely.   Moreover, the recycling rate of plastic is only 9% because it costs a lot and the quality of recycled plastics is low.   This means more and more plastics are being made.   Unless we take proper measures, we cannot prevent plastics from flowing out.

It is impossible for us to remove all the garbage in the ocean.   Therefore, we think that we may be able to reduce the amount of plastic garbage produced by using materials which have the lotus effect on the inside of beverage containers. The lotus effect is known as a kind of biomimetics.   If the lotus effect is applied to a surface, water is repelled.   Lotus leaves in nature have so many small protrusions.   When the angle between the protrusion and water is greater than 150°, water becomes a sphere and it is repelled.

Method

We conducted an experiment to test how long the lotus effect can last in salt water.   We examined the lids of several yogurt products from different companies.   They have the lotus effect on them.   We soaked them in salt water.   The reason why we used salt water is that the situation is the same as when they float in the sea.

Results and Analysis

We found out some yogurt lids continued to have the lotus effect, but others didn't right from the beginning.   The longer they soaked, the weaker the effect got.   We thought of a substitute for plastic bottles.   First, we'll prepare a substitute container for plastic bottles.   For example, paper can be used as an outer material for drink containers. The material should be something that can be easily broken down in seawater. However, the beverage in the container may dissolve the paper material from inside the container.   So, we apply another material with the lotus effect inside of the container. Thus, the inside will not be dissolved by the beverage easily.   If this type of container become used widespread,

even if the container flows out into the sea, it can be expected that the outside of the container and then the inside of the container will be decomposed in the sea.

Considerations

The important point about our research is that we do not intend to educate people not to throw away garbage.   It has already been done.   We aim to make beverage bottles which aren't made from plastic. However, it is difficult for us to realize the technology.   We still have to explore if the bottles are broken down completely, what other influence there might be, and how much it costs to make such bottles.   So, more experimentation will be needed to examine how effective the lotus effect is and how we can make the bottles with assistance of manufacturers.

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Sandbags Made of Jute Stop Water

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Abstract
In recent years, due to global warming, heavy rain damage has been increasing all over the world. Especially in China, the economic loss due to heavy rain is larger than in other countries, and it is expected that the damage will continue to increase in the future. Sandbags are effective in reducing the damage caused by such floods. We proposed using jute as the material for sandbags and examined its advantages over other materials.

Introduction
Sandbags have been used to reinforce levees for rivers that break due to flooding and to prevent water from entering houses, but the increasing number of extreme weather events has led to an increase in their use and they could become a burden to the environment and affect the achievement of the goal of creating a city where people can continue to live (SDGs 12).

China is one of the countries with a large amount of rainfall in the world. Damages caused by heavy rain and the great impact on people's daily lives in China are often reported. Even though we experience heavy rain seasons as well in Japan, the number of rivers in China is larger than that in Japan. Therefore, flood damages in China are greater than those in Japan. In China, there is a large river called the Yangtze River. People living in the Yangtze River basin suffer from floods every year. The largest flood on record occurred only recently in late June and July in 2016. At that time, the water level in Wuhan in the basin of the Yangtze River reached as high as 28 meters. 295,200 hectares of farmland were submerged, and the damage to harvest was devastating. The direct economic loss alone was expected to amount to about 574 million yen.

In this way, the impact of future river flooding on China's GDP is greater than that of any other country in the world. So, we intend to help the people suffering from the floods in China. Sandbags made of jute and filled with soil should be more widely used there because of their higher durability and smaller environmental impact.

Method
We examined the durability of jute. We put some wet soil and jute strings in a cup and we observed how it changed. We used soil that contains a lot of microorganisms from the school garden. We also watered the soil so that it would not dry out. It usually takes about 10 days for flooded water to drain after a flood. The experiment was conducted for 20 days, twice as long as 10 days.

Results and Analysis
After 20 days, jute did not rot or give off an offensive odor. The condition of the string remained stiff without swelling. From this, it was found that the durability does not easily decrease even if it is used underwater or buried in mud for about 3 weeks.

Considerations
The main value of this study is to find an environmentally friendly and sustainable material that would help prevent flooding of houses due to intermediate flooding, which has become a yearly occurrence. Our experiment proved that no abnormalities were found in the jute buried in the wet soil, so sandbags made of jute are strong enough, even in actual flooding cases. According to the literature, jute will be completely broken down in the soil within three years. Even if there's another flood in three years, the sandbags that were left unattended will become semi-artificial levees and reduce flood damage. Feedback from other schools and experts at the international student conference were that we would have to show where we should place the sandbags more concretely and that we should improve the way to transport the bags for use. We are going to find a better way to carry sandbags and examine where to place them.

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Protecting Children's Opportunity to Study during School Closure

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Abstract

Due to a sudden long-term school closure to curb the spread of the COVID-19, we almost lost our right to a quality education. When studying school assignments and lesson contents by ourselves during the school closure period, we strongly felt the difficulty of learning alone, and understood the importance of learning with others. While the long-term school closure has ended, many students continue to lose education opportunities due to partial school closures and quarantine requirements. Therefore, we focused on the effects of group learning. We propose a learning app to introduce group learning to junior high school students who suffer from more damage than senior high school students.

Introduction

Our targets are SDG 4 and 10. The crisis we considered was the possibility of another long-term school closure period due to the spread of the COVID-19 infection. Due to COVID-19, schools were closed all at once, and we were provided with various learning activities from our school through an educational app – Classi. However, there were various problems - some students were sometimes unable to get access to Classi service due to technical matters, and many had difficulty learning without usual guidance by teachers.

We did fieldwork at two places to explore more about the issue. One was at the Numazu City Hall. Numazu is a city next to Mishima. There, we asked if we could have an open school program to provide an equal learning environment for those who couldn't concentrate on their study at home. However, it was more difficult than we had thought. The staff from Numazu City pointed out the need to disinfect the classrooms and desks every time the school was open. There were not enough sanitizer sprays as well. There was also a need to consider the lack of teachers, and personnel in charge of lock and key management. There seemed to be many challenges.

We did another field study at Mishima Kita Junior High School to examine the educators' perspectives about school closure. According to a teacher there, because of differences in motivation and conditions among families, it resulted in differences in academic achievement among students. It also led to lower motivations. The long-term school closure was unexpected for teachers, just like for their students. Everyone was at a loss.

We set out to research on promoting group learning to maintain the quality and time of junior high school students' learning during the school closure period. In junior high schools, students are not used to self-directed learning compared to senior high students. This is why we targeted junior high school students and their group learning.

Method

We examined how effective group learning can be to high school students to get insights on how to propose new features to existing educational apps so that group learning can be effectively carried out without face-to-face interaction.

In our old homeroom last year, we examined the effect of group learning. First, we asked our classmates to form groups of 4-6 with their close friends. Students recorded their time spent studying at home daily and reported to the group leader twice a week. Through Classi, everyone in the same class can see a report of study time for each group. In this way, everyone can see how much other students are studying. Also, as a group, if they have any questions or want to learn, they can share it with other group members. In this way, they encouraged each other through group learning. We used the LINE app as the online communication tool. After the examination, we conducted a questionnaire to know more about the effect.

Results and Analysis

We expected group learning to increase the study time of each student at home. However, study times were shorter among individuals who took part in group learning than those who did not.   This is probably because the validation process was not perfect, for the recording requirement for their learning time got gradually more detailed.   We should have kept the recording requirement standardized.

On the other hand, the comments in the questionnaire showed many positive comments about group learning.   Some said that they were able to encourage each other in the same group and get motivated to study, and others said that knowing the learning time and progress of their peers created a competitive spirit in them and allowed them to do their best.   Also, having someone who they could ask questions immediately seemed to have given them a sense of reliability.   However, some students said that group learning was not suitable for them.   For these students,   having someone to talk to was distracting and make them lazy.   Still, the majority of the class said they would like to work on group learning if they had another opportunity.

Considerations

From our experiment, we conclude that group learning can raise competitiveness and motivation among students as a whole.   Encouraging and supporting each other made learning progress better.   Many appreciated that they didn't feel lonely.   However, we thought it was not enough.   So, we propose a new original app with functions that would be useful in promoting group learning at home.   For example, in addition to recording your own study time, you can reflect it with a graph.   You can know the study time of someone you are following, get a positive reaction to your study record from your followers through the "Like" function, and communicate with others in your group using functions like "Chats".

Users can give a "Like" to those students who are good at teaching to other students.   By collecting "Likes" from others, students can exchange the points into useful information and stamps as gifts. These new functions will make the app very useful for junior high school students, even when they cannot have face to face lessons.

Our proposal for the app is worthwhile in that the app is designed to help out   junior high school students, who cannot attend school classes and are not ready to manage their own study.   At the international student conference, we got an opinion from a new perspective on what to do for people with disabilities who are blind or who dislike studying.   If we do this research again, we would like to take the different conditions of various types of people into consideration.   We would like to explore how attractive we could make the study time itself.

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連携校、海外校指導教員 Teachers in charge in participating schools

学校	担当教員	
ヒースフィールド高校（オーストラリア） Heathfield High School (Australia)	Steve Hicks Senior Leader of International Programs	
ジュロン ウェスト高校（シンガポール） Jurong West Secondary School (Singapore)	Rayner Goh Head of Department (Student Development)	
マコウ高校（台湾） National Magong High School (Taiwan)	Chang Tsu Te History teacher	
オワトナ高校（アメリカ） Owatonna Senior High School（USA）	Thomas Meagher District STEM Education Coordinator	
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静岡県立静岡高等学校 Shizuoka Prefectural Shizuoka Senior High School		京田真弓 Kyoden Mayumi
静岡市立高等学校 Shizuoka Municipal High School		小林大介 Kobayashi Daisuke
長崎県立長崎東中学校・高等学校 Nagasaki Prefectural Nagasaki Higashi Junior and Senior High School		横山徹 Yokoyama Toru
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三島北高校生徒実行委員会 Student Committee members from Mishima Kita

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塚原 虹	土屋 滉一郎	山岡 美貴	山形 香詠	

記念制作物 Door gifts

デザイン原画：
　　　沼津西高校 3 年田代和花、2 年井上和奏

45

メインプログラム参加生徒の満足度　n=38

項目	大変満足	まあ満足	やや不満	大変不満
開会式	24	14	0	
基調講演	21	12	5	
自チーム研究プレゼン	24	14	0	
他チーム研究プレゼン	27	11	0	
ディスカッション	17	15	5	
ミニ講義	20	12	6	
混成グループムービー制作	22	9	2	
自校ムービー制作	22	12	0	
上映会	20	10	8	
閉会式	23	14	1	
記念Tシャツ	27	11	0	
記念クリアファイル	26	11	1	
会議特設サイト	23	14	1	

大変満足　まあ満足　やや不満　大変不満
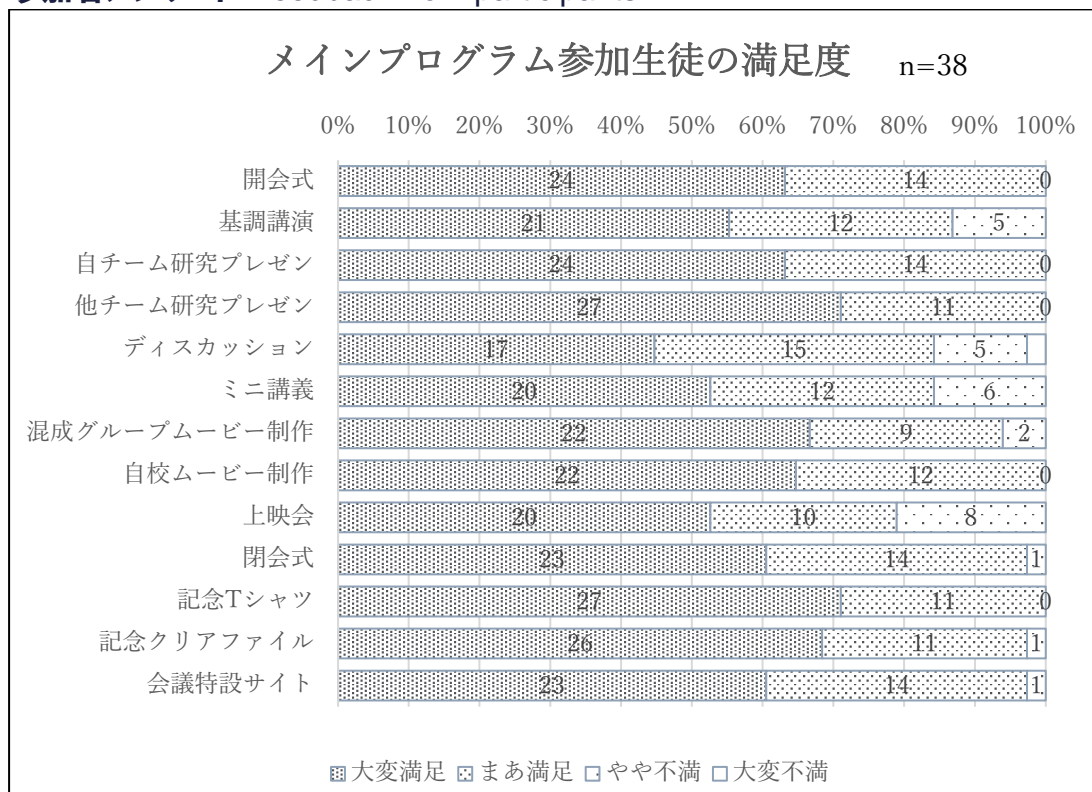
学んだこと

今まで校内だけで研究を深めたり、直したりしていましたが、今回県外や他の国の学校と意見交換する中で何も頭になかったことも見つかり、また他のエリアの人と交わることで新しい見方も出来ました。今後の学校での課題探究の場面でも役に立つと思います。/ 実際に海外の生徒から話を聞くことで世界にはたくさんの社会問題があることが改めてわかったので自分たちができることは積極的にやることが大切だと学んだ。/ 各国で起こっている問題の違いや、そのための解決策など、違った環境にいるからこそ思いつくような考え方があるということを学びました。また、それらを合わせれば今ある問題はより解決に近づくのではないかなと思いました。/ 相手とコミュニケーションをとりたいと強く思う気持ちが、行動や関係につながること。/ 英語で話せるようになれば、世界中の人と繋がれるし、協力し合える！　世界をより良くしたい気持ちは、みんな同じ。/ SDGs について深く考えることが出来た。また、自分たちが探究したものでは無いテーマの人たちの話や、講義が聞けてとても勉強になった。それとともに、もっと知りたいという気持ちが芽生えた。/ 今の世界で起こっている現状をまずより多くの人が知ることで次のステップに進んでいけるのだと感じました。/ 他国の人とのディスカッションで国境の壁をあまり感じなくなった。パートナーシップについてよく考え理解できた。/ SDGs について今まで授業で話し合う機会は何度かありましたが、海外の人と話し合うのは初めてで、課題だと感じている内容も住んでいる国ごとに違うことが分かり面白かったです。/ 英語を通して行う生のコミュニケーションができたことで、言語の正確性よりも伝えようとすることが大切だと分かった。また、SDGs 達成するには様々な面からアプローチでき、それらが複雑に絡んでいるのだと学んだ。貴重な時間を過ごせたと思う。/ I learnt how to be confident and I also learnt about some world issues and how we can solve those issues. / Get to know more about SGDs and learn more different views of an event./ I learned a lots from this activity about the SDGs, my group thank for this activity./ I learned a lot about other countries and their SDG's. /I learnt that, a lot can be accomplished with partnerships and teamwork. / I learned that each school thinks about the good solutions which even high school students can do to make better society. So it is important to think what we can do now and discuss it to get better ideas. /

参加校指導教員の満足度　n=6

項目	大変満足	まあ満足	やや不満	大変不満
開会式	5			
基調講演	5			
自チーム研究プレゼン	3	3		
他チーム研究プレゼン	5	1		
ディスカッション	5	1		
ミニ講義	3	3		
混成グループムービー制作	5			
自校ムービー制作	5			
上映会	3	2		
閉会式	6			
記念Tシャツ	5	1		
記念クリアファイル	6			
会議特設サイト	6			

凡例：⊞ 大変満足　⊠ まあ満足　□ やや不満　■ 大変不満
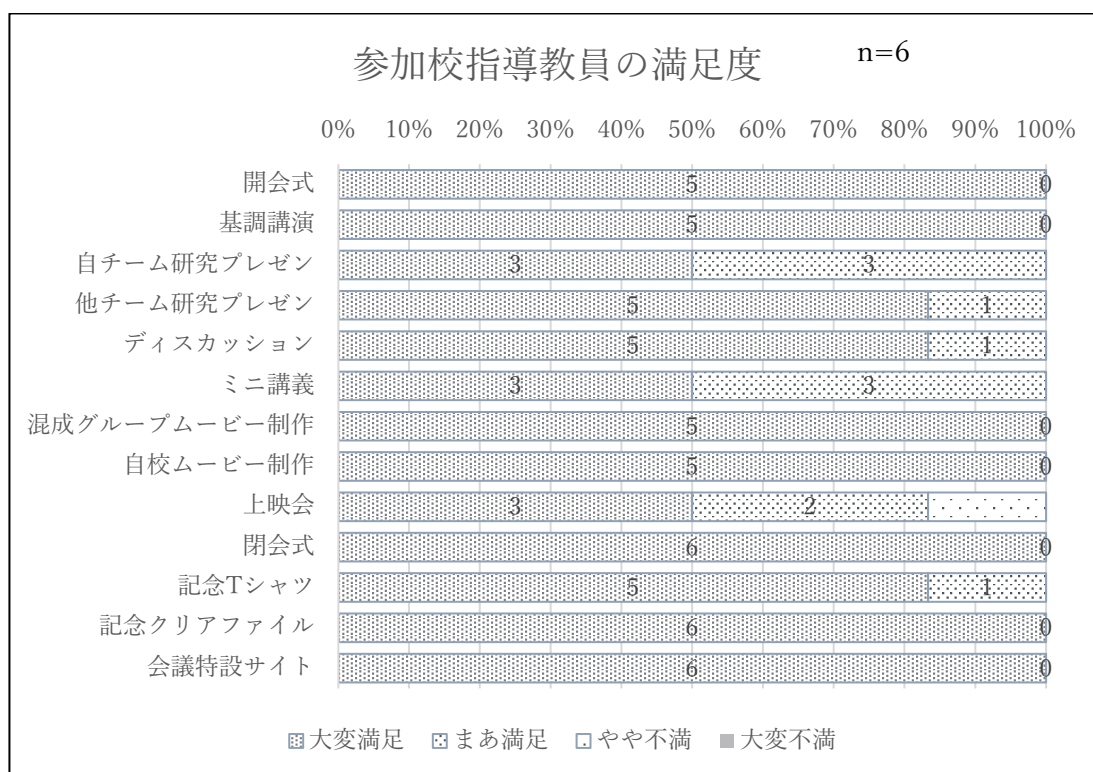
参加校指導教員のコメント

Thank you very much for organising a great conference! I think our students are very impacted by the new friends they have made, new knowledge they have gleaned, and opportunities they have to interact with students from other schools! Thank you to Khai also for being so prompt in answering our many queries. I noticed that the student presentations at the start were rather varied in terms of scale and focus which I personally found more interesting, but was this intentional or did some presentations miss the expectation? If so, perhaps the instructions could be a little more specific in order to avoid confusion. If possible, perhaps more time could be given too for the students to interact socially with one another too? Perhaps playing some ice-breakers where they learn about each others' countries and government/education/social policies. All in all, a great conference and a great experience for both teacher and students! Thank you for all your accommodation with the Zoom settings too, especially with our students having to log in separately. The organisers bridged the online conference excellently! Thank you very much! / This conference is very successful and both of students and teachers learn so much. Thank you! / 3 日間ありがとうございました。/ コロナというクライシスに見舞われながらの準備・運営は事務局の皆さまにとって並々ならぬご苦労の連続であったと思います。随所に工夫が凝らされた形で無事開催でき、本当に良かったです。登録メンバーに関して色々とご要望をさせて頂き心苦しかったですが、臨機応変にご対応頂き、生徒も納得した形で参加させて頂くことができました。国際会議の運営にご尽力された関係者の皆様に心より感謝申し上げます。/ ありがとうございました。今の状況下ででき、最高の形態だったと思います思います。実行委員会の生徒たちがとても感じがよく、よく仕事をしてくれていました。 / 三島北高校の生徒が主体的に高レベルな国際会議を運営している姿が印象的でした。

写真 photos

9 月 17 日（Day 1）

開会式会場に続々集合

開会式司会

教育長挨拶

拠点校校長挨拶

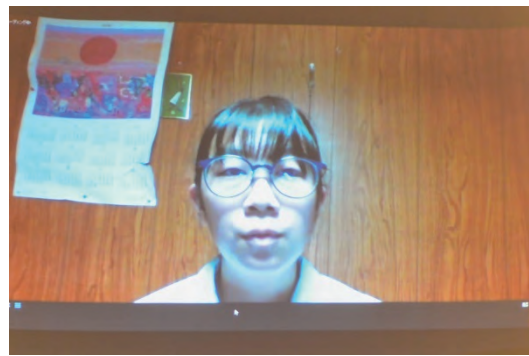学校紹介 1

学校紹介 2

学校紹介 3

学校紹介 4

学校紹介 5

学校紹介 6

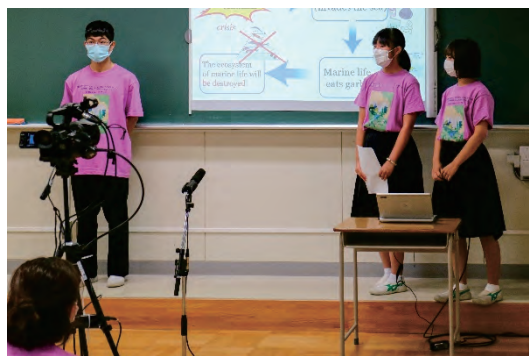学校紹介 7

学校紹介 8

学校紹介 9

学校紹介 10

開会宣言

基調講演 1

基調講演 2

基調講演 3

9 月 18 日（Day 2）

プレゼンテーション 1

プレゼンテーション 2

プレゼンテーション 3

プレゼンテーション 4

プレゼンテーション 5

混成分科会 1

混成分科会 2

ミニ講義 1

ミニ講義 2

ミニ講義 3

ミニ講義 4

ミニ講義 5

9 月 19 日（Day 3）

成果物ムービー制作 1

成果物ムービー制作 2

閉会式司会

修了証授与

集合写真

閉会式後のひととき 1

閉会式後のひととき 2

2021FALCon 高校生国際会議@Mishima
専用 Web サイト
2021 FALCon International Student Conference
@ Mishima Special Website
URL: https://falcon2021.jp/

三島北高校 WWL 事業特設 Web サイト
Mishima Kita SHS WWL program Special Website
URL: https://www.mishimakita-h.ed.jp/