Check for updates

Received: 9 August 2020 | Revised: 6 December 2021 | Accepted: 6 December 2021

DOI: 10.1111/ropr.12465

RPR REVIEW OF POLICY RESEARCH

ORIGINAL ARTICLE

Collective learning and COVID-19 mitigation in Ghana

Alex Osei-Kojo[1] | **Paul Lawer Kenney**[2] | **Clement Mensah Damoah**[3] | **Albert Ahenkan**[4]

[1]Department of Political Science, University of Tennessee Knoxville, Knoxville, Tennessee, USA

[2]Institute for Democratic Governance (IDEG), Accra, Ghana

[3]School of Public Affairs, Arizona State University, Phoenix, Arizona, USA

[4]Department of Public Administration and Health Services Management, University of Ghana Business School, Legon, Ghana

Correspondence
Alex Osei-Kojo, Department of Political Science, University of Tennessee Knoxville, 1001 McClung Tower, 1115 Volunteer Boulevard, Knoxville, TN 37996, USA.
Email: aoseikoj@utk.edu

Abstract

COVID-19 has created significant uncertainty and disruption among governments and people across the globe. Policy studies present various theoretical frameworks that allow scholars and practitioners to make sense of these developments in a structured and systematic fashion. In this paper, we combined the collective learning framework with documentary data and process tracing analysis to describe, first, the features of the COVID-19 collective learning setting in Ghana. Next, we explored the linkages among learning processes, learning products, and COVID-19 mitigation. We found that diverse policy actors operated at distinct levels of government and performed different functions in managing the pandemic. Furthermore, we confirmed all three phases of learning (acquisition, translation, and dissemination) in Ghana's context. Lastly, policies, such as public gathering management, mandatory mask-wearing, partial lockdown, and fiscal and tax reliefs enabled the government to mitigate the pandemic's impact on people. We conclude by highlighting the implications of these findings for policy learning scholarship.

KEYWORDS

collective learning framework, COVID-19, Ghana, policy process, public policy

 © 2022 Policy Studies Organization

INTRODUCTION

> We know how to bring the economy back to life. What we do not know is how to bring people back to life. We will, therefore, protect people's lives, then their livelihoods- Nana Akufo-Addo, President of Ghana, March 2020.

This statement by Ghana's President quickly penetrated local and international media spaces, after he addressed the country about the government's response to the COVID-19 pandemic. The next day, the British Broadcasting Corporation (BBC) captured the President's statement in an online news article.[1] Similarly, the World Health Organization's (WHO) Director-General, Dr. Tedros Adhanom Ghebreyesus, commended Ghana's President in a tweet saying, "Thank you for sending such a powerful message to the world, my brother..." Despite the publicity and commendation that Ghana received about the pandemic's management, the virus's novelty meant the absence of a clear policy blueprint to emulate. Under these circumstances, Ghana's government, like all others, had to learn on-the-go and convert those lessons into policy measures to address the pandemic.

Policy scholars have documented the role of learning in addressing complex crises like COVID-19 (Dunlop & Radaelli, 2013; Freeman, 2006). They explain that policy learning can stimulate policymakers to generate fresh ideas to address a crisis (Crow et al., 2018; Moyson et al., 2017). At the same time, these scholars recognize that policy learning occurs in specific contexts where different variables influence learning processes and outputs. To build on these insights, we use process tracing to analyze Ghana's COVID-19 response via the collective learning framework (Heikkila & Gerlak's, 2013) which we will explain shortly. Such an effort brings systematicity and order to the way we think about the pandemic and serves as fodder for future analysis. We answer four research questions: (1) *What are the characteristics of the collective setting surrounding COVID-19 in Ghana*? (2) *What phases of learning can be identified in Ghana's COVID-19 experience?* (3) *What behavioral learning products emerged from Ghana's COVID-19 response?* (4) *How are behavioral learning products connected to COVID-19 mitigation in Ghana?*

Our motivation for using the collective learning framework stems from the observation that despite its growing prominence, few studies have applied it outside western contexts (Gerlak & Heikkila, 2019). Further, most applications using this framework focus more on environmental policy topics, such as forestry management (Ricco & Schultz, 2019), watershed management (Koebele, 2019), and climate change negotiations (Newig et al., 2009). Applying this framework to different geographical and topical contexts can provide insights that are missing from the current learning literature, thereby enriching knowledge. We elaborate on these contributions later in the paper.

The paper is structured as follows. The first section presents the collective learning framework by explaining its components. The second section briefly describes the study context. In the third section, we explain the methods and data. The fourth section discusses the findings guided by the elements of the framework. The fifth section concludes the paper and reflects on the potential implications of the findings for policy learning research.

THE COLLECTIVE LEARNING FRAMEWORK: A BRIEF OVERVIEW

Designed by Heikkila and Gerlak (2013), the collective learning framework emerged as part of efforts to address some conceptual and theoretical difficulties in studying learning. These

15411338, 2022, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12465 by University of Ghana - Accra, Wiley Online Library on [03/05/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

difficulties include the lack of a clear definition or understanding of learning in policy processes and contexts, the blurring of the lines between learning in collective contexts and individual learning, and inadequate focus on studying variables that could enhance or obstruct learning. We present a brief portrait of the framework followed by a short exposition on the key lessons from current applications. The framework's flow diagram is shown in Figure 1.

Following Figure 1, the collective learning framework comprises three main structural elements, namely: (1) characteristics of the collective setting and exogenous factors; (2) collective learning process; and (3) collective learning products. The attributes of the collective setting are internal and external factors that shape or influence the learning process in any given collective setting (Lipshitz et al., 2002). These factors include institutional structure (Ostrom, 2005), social dynamics (Williams, 2009), technological and functional domain (Brown & Brudney, 2003), as well as exogenous variables (Howlett & Ramesh, 2002). Institutional structure relates to the organization and coordination of actors and their functions, tasks, and responsibilities within a collective setting (Tolbert & Hall, 2008). Social dynamics pertain to the degree of interrelationship and mutual communication patterns among actors within a collective setting (Contu & Willmott, 2003). Technological and functional domain captures on how information on any given policy issue is stored, processed, and retrieved as well as services, products, and outputs produced in that collective setting (Frantz & Sato, 2005). Exogenous factors are political, economic, and social influences not directly created and managed by actors within the collective setting, but which can facilitate or frustrate the learning process (Heikkila & Gerlak, 2013).

The collective learning process embodies three sub-phases namely: (1) acquisition; (2) translation; and (3) dissemination of knowledge or experience (Lipshitz et al., 2002). Acquisition means

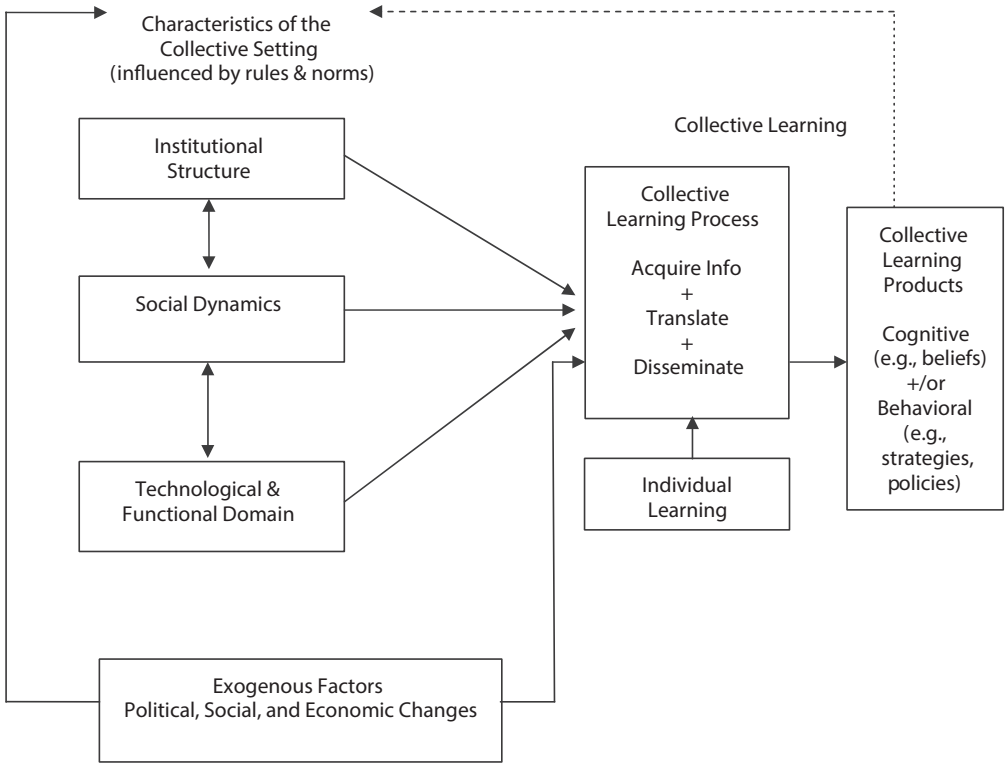


FIGURE 1 Collective learning framework. *Source*: Heikkila and Gerlak (2013)

15411338, 2022, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12465 by University of Ghana - Accra, Wiley Online Library on [03/05/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

the collection or receipt of information. Translation entails interpretation and/or application of information. Dissemination refers to the transfer of information across individuals and groups in collective learning. Together, these sub-phases describe how the learning process unfolds, as they are influenced by the characteristics of the collective setting. Collective learning products are the ideas, shared norms, policies, and strategies that emerge from the collective learning process. The collective learning framework identifies two types of collective learning products: cognitive and behavioral (Heikkila & Gerlak, 2013). Cognitive products involve identifiable changes in people's ideas, beliefs, and values. Behavioral products focus on policies that can emerge from learning.

Most empirical applications that use the collective learning framework focus on western political systems, such as those of the United States (Crow & Albright, 2019) and Europe (Dunlop & Radaelli, 2013). These empirical applications also largely focus on environmental management and governance (e.g., de Voogt & Patterson, 2019; Koebele, 2019; Rietig, 2019). While the lessons from these applications are useful, the opportunity to test the framework in different sociopolitical contexts can advance knowledge. This position rests on Gerring's (2016) assertion that scholars need to apply current frameworks in different spatial and topical contexts to understand the relevance and limitations of their theoretical lenses for refinement.

In applying the framework to a different policy and spatial context, our findings reinforce prior conclusions about the role of advice and consultations in fostering knowledge acquisition, which is one of the phases of learning. Another contribution is the rapid development of policies to address the pandemic. We suspect that constant modification of policies and implementation strategies might be a feature of policymaking during a crisis. We elaborate on these contributions in the paper's conclusion section.

STUDY CONTEXT

Located in West Africa, Ghana currently has a population of 30.8 million unevenly distributed across sixteen (16) administrative regions.[2] In addition to running a centralized, unitary system of administration, Ghana operates the hybrid model of government, merging attributes of the Westminster and Presidential typologies. Ghana has a relatively strong democracy underpinned by a vibrant media, freedom of expression, and rule of law.

The Ministry of Health (MoH) is the key institution responsible for providing policy guidance, regulation, and strategic direction to the health sector. It is also the principal institution mandated to oversee epidemics and other health-related challenges in the country. The health sector has seen consistent improvement over the past decades in the areas of doctor-patient ratio,[3] infrastructure,[4] maternal and mental care,[5] and implementation of a National Health Insurance Scheme. With current life expectancy averaging at 63.46 years,[6] the population growth rate is 2.2%,[7] while the average fertility rate is 3.93 births per woman.[8] Current data from the United Nations Development Program (UNDP) and United Nations International Children's Education Fund (UNICEF) suggest that these indicators are either high or low when compared to other African countries. For instance, in Nigeria, the average life expectancy is 54.7 years, population growth rate is 2.55%, and average fertility rate is 5.212 births per woman. The average life expectancy for a black South African is 48 years, with a population growth rate of 1.18%, and an average fertility rate of 2.38 children per woman. Similarly, in Kenya, the average life expectancy is 55 years, with a population growth rate of 2.28%, and an average fertility rate of 3.416 births per woman. If one focuses only on average life expectancy, then Ghana's figure of 63.46 years is the highest among that of Nigeria, South Africa, and Kenya.[9]

15411338, 2022, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12465 by University of Ghana - Accra, Wiley Online Library on [03/05/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Ghana recorded its first two COVID-19 cases on March 12, 2020, which were imported from Norway and Italy. As of July 25, 2020, the country had confirmed 33,624 cases with 29,801 recoveries, 24 severe cases with 8 in critical condition, 168 deaths and a total of 3655 active cases.[10] Several policy measures were adopted to address the pandemic. These measures include restrictions on movement and public gathering, closure of land, air, and sea borders, and economic support for vulnerable groups and small business enterprises.

Ghana's response to the pandemic attracted international attention. For instance, the country's contact tracing, routine surveillance, and pool-testing methodology were emulated by other countries in the region and intergovernmental organizations like the World Health Organization (WHO).[11] Given these observations about Ghana's pandemic response and the relevance of policy learning to addressing a pandemic of this scale, we set out to describe the kind of learning that might have occurred and how that learning enhanced Ghana's COVID-19 fight.

METHODS AND DATA

This paper relies on the case study design which fosters in-depth investigation into a phenomenon in its natural context (Yin, 2018). This means examining a phenomenon with the intent of gaining context-specific knowledge. This is possible because case studies are highly focused, thus providing detailed explanations. As Gerring (2016) explains, case studies allow researchers to intensively study a subject by dedicating considerable time and energy to explore evidence in support of their argument. This paper relies on the case study design to provide detailed insights into the collective learning structure, process, and products surrounding Ghana's COVID-19 response.

We collected data from two sources: news media and policy documents about COVID-19 in Ghana. The data were collected between March 2020 and May 2021. The news media data are online articles obtained from four media outlets namely, Daily Graphic, Ghanaian Times, Daily Guide, and Citi FM Online. Before selecting the news media data sources, we first searched the term "top newspapers in Ghana" in Google. The results produced media outlets that provided data for the analysis. We also identified a 2017 report by GeoPoll, an organization that conducts remote research using mobile-based methodologies in Africa, Asia, and Latin America.[12] The report ranks 15 major newspapers in Ghana, with Daily Graphic, Daily Guide, and Ghanaian Times in the top three. Based on the search and information from the survey, we selected the top three newspapers mentioned previously for our analysis. We followed a similar process in selecting Citi FM Online. In this case, after searching the term "top radio stations in Ghana" in Google, we relied on a 2018 GeoPoll survey of top English Radio Stations in Ghana with Citi FM being first on the list.[13] Altogether, we used random sampling to select the data sources used for analysis. While we acknowledge that other search terms and surveys could produce different outcomes, the processes we used to select the news media sources for our analysis are quite transparent and can be replicated. Also, of the four news media sources used in this paper, Daily Graphic and Ghanaian Times are state-owned while Daily Guide and Citi FM Online are private. We combined public and private news media sources to help reduce potential biases that can result from using data from a single source.

The documents comprise policy briefs, memos, and the President's COVID-19 updates. These documents were obtained from the official websites of the Office of the President of Ghana, Ghana Health Service (GHS), Ministry of Information (MoI), and Ministry of Health (MoH). These institutions were selected because of their leading roles in addressing the pandemic in

15411338, 2022, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12465 by University of Ghana - Accra, Wiley Online Library on [03/05/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Ghana. For example, the Office of the President provided key policy guidelines in addressing the pandemic, as expressed in the President's COVID-19 updates. Similarly, the MoI led stakeholder engagement (e.g., meetings with journalists) to disseminate information about the pandemic. The combination of news media and policy documents fostered data triangulation to strengthen the paper's findings. As Singleton and Straits (2018) explain, triangulation increases the confidence in research findings by complementing the weaknesses of a single data source.

The data were obtained using three search terms: *COVID-19*, *Coronavirus*, *and Sars-Cov2*. These search terms were selected after screening a random sample of news media articles and policy documents on the pandemic. We acknowledge the possibility of other search terms but the ones we selected provide adequate data to answer the research questions. Also, while traditional data sources such as interviews and surveys have their advantages, obtaining data through such sources in a pandemic poses significant challenges. Under these circumstances, we leveraged documentary data to address the research questions, given their advantages of availability and efficiency (Bowen, 2009). The distribution of news media articles and policy documents is presented in Table 1.

We collected and analyzed the data by following these steps. First, we selected a random sample of the data and explored them to obtain a general understanding of COVID-19-related issues (e.g., mask-wearing mandates; impacts of the pandemic on people). We also repeatedly discussed the collective learning framework to create a shared understanding to foster data collection. Second, following a series of discussions of the sample data and the collective learning framework, we developed a scheme to record the data. This was achieved by following the insights from step 1. The process for developing the scheme was both deductive and inductive (Finfgeld-Connett, 2014). It was deductive because we followed *a priori* definitions of the constructs in the framework to collect the data. It was also inductive because the indicators for measuring the constructs emerged from the data. To illustrate, while we maintained the original definition for *acquisition* in the framework, the indicators used to measure the concept, like *references to advice and consultations*, and *COVID-19 data and reports*, were extracted from the news media articles and policy documents.

The data collection scheme contains five variables: date, source, name, indicators, and summary. The *date* captures the day, month, and year of the document. The *source* identifies each document as either a news media article or a policy document. The *name* identifies a document

TABLE 1 Distribution of news media articles and policy documents

Source	Frequency	Percentage
News media articles		
Daily graphic	100	36.9
Ghanaian times	32	11.8
Daily guide	35	12.9
Citi FM online	54	19.9
Policy documents		
President's COVID-19 updates	25	9.2
MoH policy briefs	10	3.7
MoI Policy briefs	2	0.7
GHS policy briefs	13	4.8
Total	271	100%

15411338, 2022, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12465 by University of Ghana - Accra, Wiley Online Library on [03/05/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

as either located in a news media outlet or a policy document (e.g., Presidential address, MoH Policy Briefs, or GHS Policy Briefs). The *indicators* measure the concepts in the framework. These indicators were developed from both the framework and the data (news media articles and policy documents) using inductive and deductive processes as explained above. The list of indicators is presented in Table 2. The *summary* captures pertinent details from each document that reflects the indicators of interest. The data summaries were used to generate the study results.

In the last step, we divided up the documents (news media articles and policy documents) among all the authors to collect information for analysis, guided by the scheme. Each author collected information in a separate spreadsheet, which was later combined into a master document. We applied latent coding, relying on the interpretation of content-based shared understanding of the framework (Holsti, 1969; Hsieh & Shannon, 2005). Before analyzing the data, all the four authors discussed the content of the entire data to resolve aspects that were not clear. This step enhanced data reliability.

There are several concepts of theoretical relevance to this paper. These concepts were extracted from the structural elements of the collective learning framework and are embedded in the research questions guiding this study. For consistency, we used the same definitions of key concepts used by Heikkila and Gerlak (2013). The concepts are presented along with their definitions and indicators in Table 2.

We used two techniques to analyze the data: content analysis and process tracing. We used Bowen's (2009) insights on content analysis, who views it as a systematic ordering of information into categories related to main research questions. Following this definition, we organized the summarized notes and used the information to answer the research questions. For instance, to answer research question 1, *what are the characteristics of the collective setting surrounding COVID-19 in Ghana*, we organized information on three indicators: differentiated functions and tasks, presence of diverse policy actors, and meetings to coordinate pandemic management. As explained previously, these indicators were developed from both the news media articles and policy documents. We used content analysis to answer the first three research questions given its appropriateness for exploratory analysis. We, however, used process tracing to analyze research question four because we were interested in demonstrating, descriptively, the mechanisms between the government's policies and COVID-19 mitigation.

Process tracing is a qualitative technique for analyzing the relationship between causes and outcomes via mechanisms in a particular case (Beach & Pedersen, 2019; Collier, 2011; Mahoney, 2012). We situate this paper in the context of explaining-outcome process tracing, which is an iterative strategy that aims to offer a comprehensive explanation of an outcome (Beach & Petersen, 2019). We used explaining-outcome process tracing to unpack the causal connection between the policies and programs that were developed and the outcomes in terms of COVID-19 mitigation. Our motivation for using this analytical approach follows previous works in policy process research that use the technique to unpack "how" an outcome occurs (Kay & Baker, 2015; Ulibarri, 2015).

The steps for using process tracing are outlined below. First, we identified the primary causes that explain the desired outcome. In process tracing, a cause is analogous to an independent variable in quantitative analysis that explains the outcome variable (Mahoney, 2015). We identified what can be conceived as main causes (public health measures, health system response, socio-economic response, and border protection) and eleven sub-causes (e.g., public gathering management, health facility improvement, fiscal and tax relief directives, and closure of air, land, and sea borders). We then used arrows to connect the main and sub-causes to outcomes (COVID-19 mitigation) via mechanisms (e.g., social distancing, mandatory mask-wearing, and

15411338, 2022, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12465 by University of Ghana - Accra, Wiley Online Library on [03/05/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

TABLE 2 Concepts and indicators matrix

Research questions	Concepts	Definitions and constructs	Sample indicators
1: What are the characteristics of the collective setting surrounding COVID-19 in Ghana?	Institutional structure	Organization and coordination of the functions, tasks, and responsibilities in a group	• Differentiated functions and tasks • Presence of diverse policy actors • Meetings to coordinate pandemic management
	Social dynamics	Interrelationships and communication patterns among actors in a collective setting	• Information supply to people • Mistrust among policy actors
	Technological and Functional Domain	Technical and substantive activities (e.g., products or services) produced by a group	• Experts involved in COVID-19 response • Technological tools and resources
	Exogenous Factors (Political, Social, and Economic)	Factors indirectly created, managed, or controlled by actors in the collective setting	• Political pressure (e.g., criticisms from the main opposition political party and other groups) • Economic impacts
2: What phases of learning can be identified in Ghana's COVID-19 experience?	Acquisition	Collecting or receiving information from internal or external sources by individuals in a group	• References to advice and consultations • References to COVID-19 data and reports
	Translation	Interpreting the meaning of new information	• Conversion of COVID-19 information into local languages • Use of technical experts to explain COVID-19 response
	Dissemination	Transferring and embedding knowledge across a group	• A shared routine that everyone follows to perform a task
3: What behavioral learning products emerged from Ghana's COVID-19 response?	Behavioral learning products	Behavioral learning products are defined as policies and programs to address the pandemic	• Public health measures • Health system responses • Socio-economic measures • Border protection

15411338, 2022, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12465 by University of Ghana - Accra, Wiley Online Library on [03/05/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

TABLE 2 (Continued)

Research questions	Concepts	Definitions and constructs	Sample indicators
4: How are behavioral learning products connected to COVID-19 mitigation in Ghana?	COVID-19 mitigation	A set of measures to reduce COVID-19 spread and infection	• Social distancing • Freeze on mass gathering • Mask-wearing • Handwashing and sanitizing • Quarantine • Vaccination

Note: We focused on behavioral learning in this paper because of data limitations and the difficulties of measuring cognitive learning.

15411338, 2022, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12465 by University of Ghana - Accra, Wiley Online Library on [03/05/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

partial lockdown). This step was inspired by Waldner's (2014) guidelines to mechanistic explanations in process tracing that rests on a causal graph in this form: $X \Rightarrow M_1 \Rightarrow Y$, where X is cause, M_1 is mechanism, and Y is outcome variable. This logic in the causal graph underpins the process tracing analysis summarized in Figure 4.

RESULTS

This paper examines Ghana's COVID-19 policy response using the collective learning framework. In answering the research questions, we demonstrate how the collective learning setting might have influenced the policies (learning products), which in turn shaped policy measures to address the pandemic. The study results are presented along with the research questions below.

Research Question 1: *What are the characteristics of the collective setting surrounding COVID-19 in Ghana?* This question examines the context of collective learning, focusing on four constructs: institutional structure, social dynamics, technological and functional domain, and exogenous factors (political, social, and economic changes). We analyze the institutional structure by focusing on three indicators: the presence of policy actors (individuals), differentiated functions and tasks, and meetings to coordinate pandemic management. We found that diverse policy actors operated at different levels of government and performed various pandemic-related functions. We summarize the results in Table 3.

The national level is the apex of Ghana's COVID-19 institutional structure. The key policy actors at the national level include the President, Minister of Interior, a representative from key ministries like the MoI, development partners (e.g., WHO), Presidential Advisor on Health, and the Resident Coordinator of the United Nations (UN). These policy actors perform various functions. Policy documents obtained from the Office of the President indicate that the President was instrumental in providing political and policy direction (based on expert advice and consultations) in addressing the pandemic. Specifically, within the study's timeframe, the President provided twenty-five (25) COVID-19 updates (at the time of writing), outlining several policies to tackle the pandemic. These policies cover different areas such as lockdown, closure of borders (air, sea, and land), loans for small- and medium-scale firms, and equipment for health care workers. Policy actors at the regional level mainly comprise regional political heads and health directors, such as the Regional Minister, Regional Director of Health Service, and a representative from the Ghana Ambulance Service. The policy actors at this level are responsible for planning, prevention, and control interventions as well as resource distribution.

We also observed a variety of policy actors at the district and sub-district levels, including the District Chief Executive, District Director of Health Services, Representatives from Ghana Red Cross Society, the Military, and the Police. The main functions of policy actors at these levels include developing procedures for assessing funds, coordinating communication and education of health workers, and provision of daily situation reports.

Coordination among different policy actors reflects efforts at the operational and strategic levels to address the pandemic (Boin &'t Hart, 2010). The operational level encompasses frontline decisions and attitudes (e.g., health workers' education). The strategic level reflects the political-administrative leaders executing political responsibility, supporting coordination, and providing strategic information. Following Table 3, political actors at the national and regional levels function at the strategic level, while those at the district and sub-district levels occupy the operational level. This also includes the medical personnel, epidemiologists, and other professionals at the forefront of the COVID-19 response team. The characteristics of the institutional structure, such

15411338, 2022, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12465 by University of Ghana - Accra, Wiley Online Library on [03/05/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

TABLE 3 Institutional structure of Ghana's COVID-19 collective learning setting

Level of coordination	Key policy actors	Main function(s) by levels of coordination
National level	1. The President 2. Minister of Interior (Chairperson) a. The chairperson varies with each meeting day 3. Ministers or representatives of various ministries, including Interior, Finance, Health, Food and Agriculture, Transport and Communications, Information, Employment and Social Welfare, Local Government and Rural Development, Defense, Environment Science and Technology, and Water and Sanitation 4. Development partners and the Resident Coordinator of the UN 5. Presidential Advisor on Health	1. Provide political and policy direction 2. Ensure general coordination of the operations, epidemic prevention, and control activities 3. Mobilize and allocate resources 4. Ensure security during emergencies
Regional level	1. Regional Minister as chairperson 2. Ministry of Health 3. Ghana Health Service: Regional Director of Health Services, Regional Public Health Nurse, Regional Health Promotion Officer, Regional Disease Control Officer/ Surveillance Officer/Epidemiologist, Hospital Medical Director/Superintendent, Regional Biomedical Scientist 4. Representative from Regional/Teaching Hospitals 5. Representative from Food and Drugs Authority 6. Representative from Ghana Ambulance Service	1. Conduct risk mapping for Public Health emergency risk factors 2. Plan prevention and control interventions 3. Identify and quantify important resources and capacities needed for rapid response and update information on these resources at all levels 4. Medicines, vaccines, human resources, transport, and financial resources 5. Conduct partners' capacity mapping and resources that can be made available during preparedness and response
District level	1. District Chief Executive as chairperson 2. Ministry of Health 3. Ghana Health Service: District Director of Health Services, District Public Health Nurse, District Health promotion officer, District Disease Control Officer/ surveillance officer/epidemiologist, Hospital Medical Director/Superintendent and District Biomedical Scientist	1. Establish procedures for assessing funds 2. Identify and ensure that competent laboratory support is available to support case identification and confirmation 3. Coordinate communication and education of health workers and the general public 4. Supervise and coordinate implementation and achievement of prevention and control measures 5. Monitor and evaluate preparedness and response activities

(Continues)

15411338, 2022, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12465 by University of Ghana - Accra, Wiley Online Library on [03/05/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

TABLE 3 (Continued)

Level of coordination	Key policy actors	Main function(s) by levels of coordination
Sub-district level	1. Ministry of Food and Agriculture; District Veterinary Officers 2. District Wildlife Experts 3. Medical Services under the Forces; Military and Police 4. Ghana Red Cross Society 5. Ghana Fire Service 6. NGOs present in the area; Community Health Programs and Mission Hospitals, Faith- Based Organizations 7. Representative from Traditional Council 8. Academic and Research Institutions 9. Private Sector: Clinical or Nursing Officers from private hospitals, clinics or laboratories and Pharmacists or Chemists	1. Meet weekly during outbreaks, and quarterly when there is no outbreak 2. Produce daily situation reports and communicate to the next higher level during outbreak 3. Carries out any other duties as required

as the level of coordination and diverse policy actors, probably enhanced information sharing with multiple actors that might have improved efforts to address the pandemic (Bodin et al., 2006; Henry, 2009).

Social dynamics

Social dynamics emphasize how people interact and communicate within a collective setting. We explored the social dynamics surrounding Ghana's COVID-19 response using two indicators: (1) Information supply to people; and (2) mistrust among policy actors. Based on these indicators, we identified the following patterns. First, the President provided information to people through televised addresses to the country about COVID-19 management. These addresses contained an array of policies, such as support for small businesses, partial lockdown, and closure of borders (air, land, and sea), to address the pandemic. Overall, the President gave twenty-five (25) COVID-19 updates, providing information and policy directives to address the pandemic. In addition to the President's updates, the GHS developed a website to supply real-time information to people about COVID-19 case reports, management, recoveries, and deaths.[14]

Second, we observed patterns that suggest policy actors' mistrust. For example, the General Secretary of Ghana's main opposition political party, the National Democratic Congress (NDC), responded to the partial lockdown on March 19, 2020, saying:

> This whole announcement of emergency ban, emergency here, stopping this gathering, stopping that gathering, in my view, on the surface, it will appear to the world that the President is acting to deal with the COVID-19 and so on ... But the real intention is not to deal with COVID-19 at all. The real intention is to find space to put the pieces of the rigging equipment together so that by the time anybody could say jack, the election has been compromised.[15]

15411338, 2022, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12465 by University of Ghana - Accra, Wiley Online Library on [03/05/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

In the view of the party's General Secretary, the government's decision to lockdown parts of the country was only a pretext to connive with the Electoral Commission (EC) of Ghana to compromise the December 2020 general elections. Similarly, a pressure group called Occupy Ghana appears to have raised doubts about the number of COVID-19 related deaths reported by the government. The group said that,

> The case count is growing steadily by the day—about 200 to 300 new cases per day. At the last count, we had 7652 confirmed active cases even though that number could be higher (the total number of confirmed cases is 11,964) ... There is cause to suspect that the death numbers are being massaged. The reported 54 deaths so far cannot be right. For instance, even though 38 deaths have been reported from the Ashanti Region alone, less than 20 of those deaths are included in the national count! ... If the public suspects under-reporting etc., there will be a loss of trust in the reporting system and that will have consequences that will influence public behavioural responses.[16]

The observations about the social dynamics surrounding Ghana's COVID-19 policy response portray diverse interactions and communication patterns. As the findings suggest, government efforts to convey policy information to people run alongside suggestions of blame and accusations from other political actors. In one sense, these accusations cast the government in a negative light and appear to reflect the blame game that policy actors play in the policy process (Boin et al., 2009; Weaver, 1986).

Technological and functional domain

Technological and functional domain reflects indicators such as experts involved in COVID-19 response and technological tools and resources. The data show the involvement of diverse experts who played key roles in addressing the pandemic. We present the key individuals and their areas of expertise in Table 4.

According to Table 4, various experts were involved in efforts to address the pandemic. It is instructive to note that, in his addresses, the President repeatedly alluded to consultations with these experts. For instance, in his July 26, 2020 address, the President indicated that "Government continues to engage with the stakeholders in the education sector to determine the conditions for re-opening of schools ... I will keep you fully informed about the outcomes." We view the President's posture in this context as an attempt to assure people that his decisions involved wide consultations with individuals and organizations that have the technical competencies. In a sense, the President's actions reflect the observation that governments can rely on the expertise and knowledge of scientists to assure the public of their decisions (Orange, 2020).

Another area that is relevant under the technical and functional domain is the development of the COVID-19 website. Specifically, this website provides information to people on case counts and management, as well as tips on staying healthy from the virus. To bolster this effort, a COVID-19 mobile application was also developed. This mobile application provides a means for people to report to the nearest health center for an ambulance to transport them to a designated isolation center for treatment. Additionally, the mobile application enables the monitoring of contact persons and connects them to health professionals for urgent attention.

15411338, 2022, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12465 by University of Ghana - Accra, Wiley Online Library on [03/05/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

TABLE 4 Experts involved in Ghana's COVID-19 response

Name	Area of expertise	Portfolio	Function
Dr. Anarfi Asamoah-Baah	Communicable Disease	Coordinator, COVID-19 Response and Management Program	Coordinator, COVID-19 Response and Management Program
Dr. Anthony Nsiah Asare	Health Management	Presidential Advisor on Health	Presidential Advisor on Health
Dr. Patrick Kuma-Aboagye	Public Health	Director, Ghana Health Service	Ghana Health Service Representative, COVID-19 Management and Response Program
Prof. Kwabena Mante Bosompem	Medical Scientist	Director, Noguchi Research Institute	Supervised Testing and Confirmation of Cases from the Southern Belt (Greater Accra and Central Regions of Ghana)
Dr. Richard Odame	Infection and Immunology	Director, Kumasi Centre for Collaborative Research in Tropical Medicine (KCCR)	Supervised Testing and Confirmation of Cases from the Upper Belt (Ashanti, Northern, and Western Regions of Ghana)
Dr. Bernard Okoe-Boye	Surgery and Public Health	Deputy Minister for Health	Member, COVID-19 Public Health Education Team
Dr. Badu Sarkodie	Epidemiology	Director of Public Health, GHS	Member, National Guidelines for Laboratory Testing and Reporting on Respiratory Infectious Diseases in Health Facilities, Ghana
Dr. Yaw Bediako	Immunology	Immunologist, West African Institute for Cell Biology of Infectious Pathogens (WACCBIP)	Member, Testing and Validation Team
Kwabena Boadu Oku-Afari	Economics, Policy, and Finance	Ag. Chief Director, MoH	Economist and Financial Consultant, National Guidelines for Laboratory Testing and Reporting on Respiratory Infectious Diseases in Health Facilities, Ghana
Kwaku Agyeman-Manu	Management Consulting	Minister of Health	Chair, National Guidelines for Laboratory Testing and Reporting on Respiratory Infectious Diseases in Health Facilities, Ghana

Note: The list of experts was compiled by the authors, and is not exhaustive.

15411338, 2022, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12465 by University of Ghana - Accra, Wiley Online Library on [03/05/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Exogenous factors

Exogenous factors are variables that emerge from the external components of a collective setting. We explored this concept focusing on the indicators of political pressure, criticism, and economic impacts. We found instances of political pressure from the NDC in the early days of the pandemic in Ghana, concerning some Ghanaian international students who were stranded in China. Specifically, a newspaper article published on February 11, 2020, reported that an NDC Member of Parliament characterized the ordeal that confronted the students as a "dereliction of duty" and an "insensitive approach" toward the pandemic by the government.[17] The government on March 3, 2020, appeared to have reacted to the statement from the Member of Parliament by sending food items and monetary support through the Ghana-Beijing Mission instead of evacuating the students. Similarly, in an interview on April 27, 2020, the Minority Spokesperson on Health for the NDC party described the decision to lift the lockdown by the government as premature, unplanned, and unresponsive. He explained that,

> As at the time we were lifting the lockdown we had about 142 cases, right? Now we have more than 1400 cases about 50% increment after one week. What is the way forward? I believe that the President is not listening to wise counselling and is not ready to take everybody on board. The President is not considering public health but other factors.[18]

Additionally, we observed that the EC's decision to conduct voter registration toward the December elections attracted severe criticisms because people refused to practice social distancing and mask-wearing.[19] As a result, on July 6, 2020, a cross-section of medical professionals in the country appealed to the government to pause the registration exercise to prevent a surge in case counts.[20] The group called on the government "to pause the mass registration, figure out safer ways of carrying it out and prevent Ghana from suffering potentially thousands of deaths." Similarly, the Ghana Catholic Bishops Conference (GCBC), criticized the blatant disregard for the observance of COVID-19 preventive measures during the New Patriotic Party's (NPP) parliamentary primaries elections and the NDC's announcement of its running mate for the presidential candidate in the 2020 elections.[21]

We inferred the pandemic's economic impact from the effects of the partial lockdown in April 2020. For instance, the Minister of Finance explained that "our economy is over 90 percent informal, and the informal market is in lockdown. Growth in GDP, which was projected at 6.8 percent, could fall to 1.5 per cent, according to our projections. How long can we sustain this?"[22] The economic disruption reflects a part of the external influences that interacted with the collective learning setting to influence Ghana's response to the pandemic.

In summary, for research question one, we found that diverse policy actors performed different pandemic-related functions and operated at distinct levels of government to address the pandemic. Also, the social dynamics portray a level of mistrust among policy actors, while the technological and functional domain reflects assorted health experts at the forefront of managing the pandemic.

Research Question 2: *What phases of learning can be identified in Ghana's COVID-19 experience?* The collective learning framework suggests three phases that shape learning products. All three phases were identified in Ghana's response to the pandemic through acquisition, translation, and dissemination.

15411338, 2022, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12465 by University of Ghana - Accra, Wiley Online Library on [03/05/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Acquisition

Acquisition refers to the collection or receipt of information, which can be observed through several ways, such as policy actors seeking information. In this paper, we focused on how the government acquired information, using the following indicators: the government's references to advice and consultations, and COVID-19 data and reports. The results are presented in Figure 2.

We generated Figure 2 by coding the data sources (news articles and policy documents) and recording the government's references to seeking advice and consultations, and references COVID-19 data and reports. We found that the government (including the President and Ministers of State) made 57 references to seeking advice and consultations. These references were made in connection with different experts at different times and from various state agencies in addressing the pandemic. For instance, in his address on April 19, 2020, the President indicated that "in consultations with the Ghana Health Service and Ministry of Interior, government lifted restrictions on movement in the Greater Accra Metropolitan Area and Kasoa, as well as the Greater Kumasi Metropolitan Area and its contiguous districts." Similarly, the President indicated in his address on March 13, 2020, that "the government upon the advice of the Ministry of Education and Ghana Education Service closed down all public and private schools." Similarly, the government made 45 references to data and reports pertaining to COVID-19. For example, the President indicated in his briefing on March 17, 2020, that "the government has received a report from the Noguchi Memorial Institute for Medical Research that indicated one more positive case of COVID-19 in the Greater Accra Region." In short, these references to seeking advice and consultations, and COVID-19 data as well as reports reflect information acquisition by the government to inform the various policy steps that were developed to mitigate the pandemic.

Translation

The translation phase of collective learning embodies making sense of new information (Heikkila & Gerlak, 2013). We analyzed translation using two variables: conversion of COVID-19 updates into local languages, and the use of technical experts to explain COVID-19 responses. From these indicators, we observed that the President translated COVID-19 updates into two major local Ghanaian languages: Twi and Ga. By translating COVID-19 updates into these languages, the President broadened the reach of his audience to include people who do not understand English. Furthermore, based on Tables 4 and 5, diverse experts participated in the press briefings, using their insights to inform the COVID-19 policy measures. Examples of such experts include the Director of Public Health at the Ministry of Health, the World Health Organization Representative, the Presidential Advisor on Health, and the Coordinator, Coronavirus Response and Management Program.

Dissemination

Dissemination involves the transfer of information across a group to foster shared knowledge. We analyzed dissemination based on two indicators: shared routines for performing a task and press briefings. We identified shared routines via the five key priority objectives that guided policy action: (1) limit and stop the importation of the virus; (2) contain its spread; (3) provide

15411338, 2022, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12465 by University of Ghana - Accra, Wiley Online Library on [03/05/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

adequate care for the sick; (4) limit the impact of the virus on social and economic life; and (5) inspire the expansion of our domestic capability and deepen self-reliance. These shared routines appear to have guided actors at different levels of government to formulate policies to mitigate the pandemic's impacts. For instance, some of the President's actions, such as the closure of land, air and sea borders, mandatory quarantine for all international travelers, enforcement of social distancing, and mask-wearing can be linked to the objective of limiting and stopping the spread of the virus. Furthermore, policies, such as the Coronavirus Alleviation Program (CAP), and absorption of utility bills and loans for small- and medium-scale enterprises can be connected to limiting the impact of the pandemic on social and economic life. We present a sample of press briefings that facilitated dissemination in Table 5.

The press briefings facilitated shared communication as diverse stakeholders discussed and provided information to people. Following Table 5, the press briefings focused on different policy areas including food security and pricing, regulation of local markets, COVID-19 legislation, and executive instrument.

We derived several insights from how the features of the collective setting might have shaped the dissemination of information. First, in terms of institutional structure, the five key priority objectives might have fostered shared knowledge among organizational members and the public by guiding programmatic action. Second, the technical and functional domain provided the platform for experts to share their experience in mitigating pandemic's impacts. Along these lines, the COVID-19 mobile application and website probably facilitated the provision of real-time information to support decision-making.

To summarize our findings for research question two, we found that the government acquired information through advice and consultations, as well as COVID-19 data and reports. Furthermore, two local languages served as vehicles to translate information, while dissemination occurred through five key priority objectives developed to guide policy action. Also, the press briefings likely supported information dissemination to various stakeholder groups and the public.

Research Question 3: *What behavioral learning products emerged from Ghana's COVID-19 response?* The collective learning framework stipulates two types of learning products: cognitive and behavioral. This paper focused on behavioral learning products in assessing learning within Ghana's COVID-19 response. We did not focus on cognitive learning due to measuring difficulties and data limitations. In this paper, behavioral learning products refer to policies and programs that were developed in response to the pandemic. These policies were extracted from the President's updates on COVID-19 management. The policy categories and their sub-components are presented in Figure 3.

As Figure 3 suggests, public health measures constitute the largest share of behavioral learning products (62.8%) that were developed in response to the pandemic. Within this category, most policies focused on public gathering management (33.7%). These policies were aimed at fostering social distancing and discouraging mass gatherings that have the tendency to spread the virus. Key strategies in this category include an initial moratorium on church and mosque gatherings, sports activities, and funerals. Maintenance of COVID-19 protocols (10.5%) constitutes the second highest sub-component under public health measures. These policies were enforced to attain COVID-19 mitigation through measures like handwashing, sanitizing, and mask-wearing. As part of the strategies under this policy, the President mandated mask-wearing, particularly in public spaces, to limit the spread of the virus. People who flouted these regulations were liable to arrest under Executive Instrument (E.I.) 64, ratified in March 2020.[23,24] Contact tracing and testing reflect 7% of policies under public health measures. This policy facilitated the identification of potential carriers of the virus.

15411338, 2022, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12465 by University of Ghana - Accra, Wiley Online Library on [03/05/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

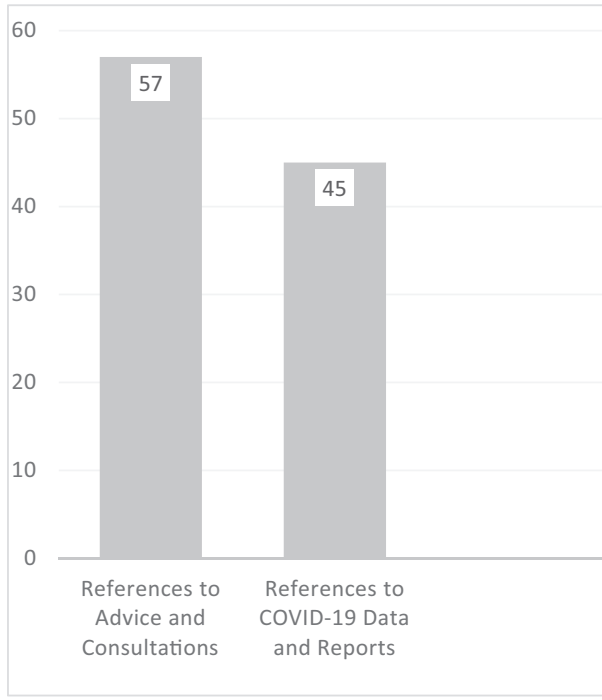


FIGURE 2 Distribution of government information acquisition

Mandatory quarantine and treatment, and vaccination both constitute 4.7% of sub-components policies under public health measures. The former is about managing the treatment of infected persons to reduce the spread of the virus. To execute this policy, beginning September 1, 2020, all international visitors to Ghana were required to show proof of a negative COVID-19 test or be tested at the airport if they did not have one. People who tested positive were isolated and monitored for two weeks before being released. Vaccination entails measures to procure and vaccinate people against the virus. Ghana's government demonstrated its commitment to mitigating the virus's impacts by being the first country in Africa to obtain COVID-19 vaccines. In a statement, the UNICEF and WHO Representatives in Ghana wrote "We are pleased that Ghana has become the first country to receive the COVID-19 vaccines from COVAX Facility. We congratulate the Government of Ghana...for its relentless efforts to protect the population."[25] The arrival of the vaccine facilitated vaccination, which further enabled the government to effectively manage the pandemic.

We also observed that socio-economic measures constitute the second-highest category (16.3%) of policies with respect to behavioral learning products. These policies refer to measures to mitigate the pandemic's social and economic impacts on people and the Ghanaian economy. One example is a loan scheme for Small and Medium-Scale Enterprises and Industries (4.7%). Specifically, the government provided GHS 600 million (~$102,852,600) to support businesses during the pandemic. Absorption of utility bills (4.7%) is another sub-component under socio-economic measures. Here, the government initially absorbed water bills for all Ghanaians from April to June 2020 in the middle of the pandemic. In addition, the government absorbed the electricity bills for the poor (people who consume 0 to 50 kilowatt hours) and 50% for all other consumers (residential and commercial) from April to June 2020. Later, as part of efforts to revive the economy and continue providing these services, the government imposed a 1% tax.[26]

15411338, 2022, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12465 by University of Ghana - Accra, Wiley Online Library on [03/05/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

TABLE 5 Sample press briefings on COVID-19 management in Ghana

Press briefings	Date	Stakeholders present	Policy issues discussed
No. 2	March 15, 2020	• Minister of Information • Chief Director, Ministry of Health • Presidential Advisor on Health, Office of the President • Director General, Ghana Health Service • World Health Organization Representative • Civil Society Organizations (Institute of Economic Affairs, Ghana; Center for Democratic Development)	• Government update on COVID-19 and travel advisory
No. 9	March 29, 2020	• Minister of Information • Minister of Health • Presidential Advisor on Health • Print and Electronic Organizations (e.g., GH One Television; United Television)	• Press briefing on COVID-19 update and the response of Ghanaians on the Strategies implemented by the COVID-19 management and response team
No. 12	April 3, 2020	• Minister of Information • Director for Public Health, Ministry of Health • Minister for Local Government and Rural Development	• Press briefing on COVID-19 update and clean-up exercises across the country
No. 14	April 8, 2020	• Senior Minister • Minister of Information • Minister of Health • Minister for Sanitation and Water Resources • Minister for Social Protection and Gender • Print and Electronic Media Organizations (e.g., Dispatch Newspaper; Joy Fm)	• President's COVID-19 update on April 5, 2020 • Update on COVID-19 response and management • Role of private organizations in mitigating the impact of COVID-19

Still, we deem the initial absorption of utility bills as an important buffer that likely mitigated the pandemic's impacts on people. Fiscal and tax directives (4.7%) and economic recovery programs (2.3%) were intended to manage taxation and monetary policy issues associated with the pandemic. In this instance, the government extended the tax filing date from April to June 2020 and implemented a 1.5% decrease in the policy rate and a 2% decrease in reserve requirement.

Health system response (15.1%) comprises measures to strengthen facilities to address the pandemic. The subcomponents are the distribution of protective kits (7%), health facility improvements (4.7%) and health personnel motivation (3.5%). For distribution of protective kits, the government supplied 600,000 face masks, 1700 buckets, 200,000 L of hand sanitizers, 3400 L of liquid soap and 900 thermometer guns to tertiary institutions to take precautionary measures against the spread of the virus. For health facility improvements, the government expanded COVID-19 testing facilities from 2 to 16 in September 2020. Additionally, through a public-private partnership, the government

15411338, 2022, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12465 by University of Ghana - Accra, Wiley Online Library on [03/05/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

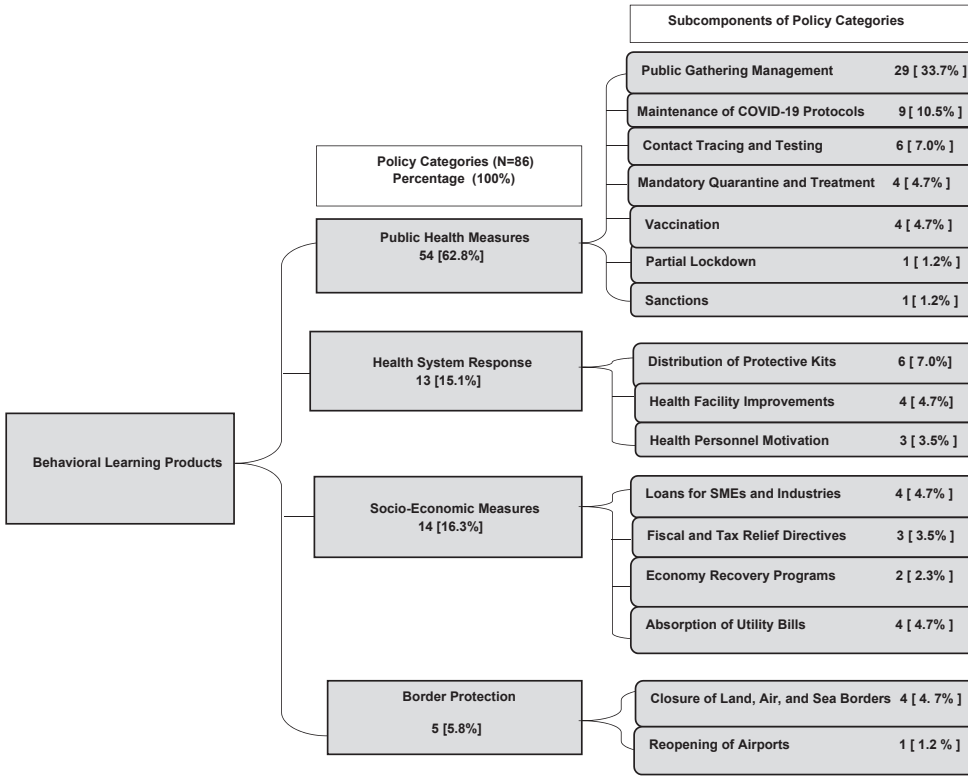


FIGURE 3 Behavioral learning products (policies and programs). *Source*: Authors' Construct

built a 100-bed Infectious Diseases Center. Additionally, the government announced the construction of 88 hospitals in districts without hospitals in April 2020. Health personnel, particularly, frontline workers, were motivated by several government incentives, such as an insurance package GHS 350,000 (~$60,240) for each person, a daily allowance of GHS 150 (~$25.8) for contact tracers, exclusion from tax payment, and an additional allowance of 50% salary per month.

Border protection (5.8%) refers to measures to regulate land, air, and sea borders. These measures focused on the closure and opening of the country's borders. For example, the government closed all borders initially for two weeks in March 2020 and maintained them till the end of the year except for air borders, which were opened on September 1, 2020.

In short, our findings for research question three indicate that four major policies with eleven sub-components constitute learning, which the government leveraged to manage the pandemic.

Research Question 4: *How are behavioral learning products connected to COVID-19 mitigation in Ghana?* This question explores the connections between behavioral learning products (e.g., policies and programs) and COVID-19 mitigation. To demonstrate these connections, we extracted policies and programs and classified them as main and sub-causes. The outputs of these policies and programs are conceived as mechanisms that facilitated COVID-19 mitigation. We used process tracing to descriptively portray the connections and present the results in Figure 4.

Following Figure 4, we identified various public health measures that likely enabled the government to manage the pandemic. To illustrate, most of the President's COVID-19 updates from March 2020 to February 2021 provided guidance on public gathering management that aligns with social distancing. For instance, there was a ban on churches, sports, and funerals at different times. As the pandemic situation improved, these restrictions were relaxed gradually. For example, in his

15411338, 2022, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12465 by University of Ghana - Accra, Wiley Online Library on [03/05/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

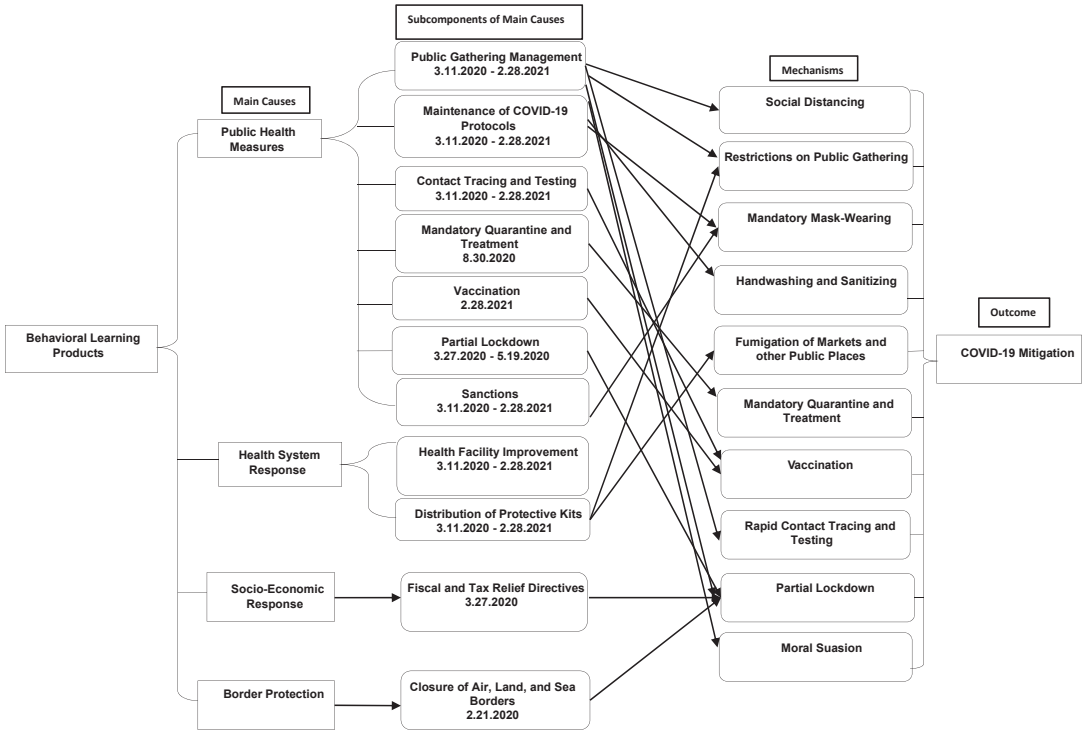


FIGURE 4 Linking behavioral learning products (policies and programs) to COVID-19 mitigation. *Source*: Authors' Construct

COVID-19 update on May 31, 2020, the President ordered abridged religious services with 25% of regular attendance, and seating arrangements within-one-meter rule of social distancing. We acknowledge that these orders were sometimes breached, leading to concerns from health experts. But in general terms, the measures reflect attempts by the government to address the pandemic.

Additionally, measures such as sanctions and lockdowns appear to have contributed to addressing the pandemic. For sanctions, the government issued an Executive Instrument that required people to wear face masks, especially in public places. People who breached these rules were liable to a fine between GHC 12,000 and 60,000 (~$2000 and $10,000) or a prison term between four and ten years. The partial lockdown in parts of the country (major cities like Accra) kept people indoors, which likely contributed to reducing contraction and spread.

Lastly, the closure of air, land, and sea borders, along with mandatory quarantine and treatment for all international travelers, can be linked to efforts to reduce transmission from other countries. The distribution of protective kits containing sanitizers and soap increased access to hand-hygiene, which reduced the likelihood of virus contraction and transmission.

In summary, the findings for research question four demonstrate that learning, as reflected through behavioral learning products, are linked to measures to mitigate the pandemic's impacts.

DISCUSSION AND CONCLUSION

Policy scholars have documented the role of learning in addressing crises like the COVID-19 pandemic. Against this backdrop, we use the collective learning framework to explore the role of

15411338, 2022, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12465 by University of Ghana - Accra, Wiley Online Library on [03/05/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

learning in managing Ghana's pandemic response. We did so by analyzing four research questions: (1) *What are the characteristics of the collective setting surrounding COVID-19 in Ghana?* (2) *What phases of learning can be identified in Ghana's COVID-19 experience?* (3) *What behavioral learning products emerged from Ghana's COVID-19 response?* and (4) *How are behavioral learning products connected to COVID-19 mitigation in Ghana?* We summarize the results in Table 6.

We made the following observations regarding the characteristics of Ghana's COVID-19 collective setting. First, we identified four levels of government that coordinated action to address the pandemic. These levels are the national, regional, district, and sub-district levels. Further, we found that diverse policy actors worked at different levels of government and performed distinct pandemic-related functions. The social dynamics reflect frequent information sharing with people, as well as elements of blame and accusation among policy actors. The use of technology and the role of experts fall under technological and functional domain. Finally, the economic consequences of the pandemic reflect some of the exogenous variables that likely influenced the collective learning setting.

Together, these findings are generally consistent with the policy learning literature, but there are deviations. To illustrate, the differentiated functions and coordination among different individuals reflect earlier conclusions from Tolbert and Hall (2008). They explain that within a collective learning setting, functions may vary and may be decentralized across diverse actors. While we did not explicitly assess the impact of decentralized functions, in terms of either enhancing or inhibiting information flow, the literature suggests that such arrangements tend to be more receptive to information from external sources (Heikkila & Gerlak, 2013). As a deviation, the literature suggests that both trust and suspicion tend to define social dynamics (Lipshitz et al., 2002; Vince & Saleem, 2004). But we found the presence of only the latter. This probably implies that one of the two elements can shape the interactions among policy actors within a collective setting.

For the second research question regarding the phases of collective learning, our findings reinforce some of the propositions of the collective learning framework (Heikkila & Gerlak, 2013). Here, we found the efforts to translate the President's COVID-19 updates into local languages as reflecting translation in the collective learning process. Focusing on behavioral learning products in the third research question, we identified several policies and strategies that were designed to address the pandemic. This finding can be connected to a substantial body of literature that emphasizes behavioral learning products (e.g., Berry & Berry, 2007; Birkland, 2006). In the last research question, we explored how learning (in the form of policies and programs) likely influenced COVID-19 mitigation. Insights from process tracing analysis suggest that learning can be linked to COVID-19 mitigation through various mechanisms (e.g., social distancing). We therefore posit that the policies played a role in mitigating the pandemic's impact on people (Vandenbosch & Higgins, 1996).

So, what new theoretical insights can be gleaned from using the collective learning framework to understand the pandemic in different geographical and topical contexts? We share the following thoughts about our potential contributions. First, we highlight the interactions between formal and informal policy actors in the African context. In this instance, the representative from the District Traditional Council (see Table 3) demonstrates the role of informal political institutions in the collective learning setting. This contribution calls on scholars to further explore the interactions between formal and informal policy actors, and how that might affect learning processes.

The second contribution is the observation that learning in the context of a pandemic might require significant improvisation and creativity. Such improvisation and creativity might be

15411338, 2022, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12465 by University of Ghana - Accra, Wiley Online Library on [03/05/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

TABLE 6 Summary of research findings

Research questions	Key findings	
1: What are the characteristics of the collective setting surrounding COVID-19 in Ghana?	Institutional structure	• Presence of diverse policy actors operating at different levels of government (national, regional, and local) and performing various functions
	Social dynamics	• Information supply to people through the President's COVID-19 updates • Patterns of mistrust and criticism by main opposition party and other political actors
	Technological and functional domain	• Involvement of diverse experts (e.g., Economist and Immunologist) • Development of COVID-19 website and mobile tracking app
	Exogenous factors (political, social and economic)	• Political pressure from main opposition party • Criticism of the EC for conducting voter registration • Economic disruption from partial lockdown
2: What phases of learning can be identified in Ghana's COVID-19 experience?	Acquisition	• Government acquired information through advice and consultations, and COVID-19 data and reports
	Translation	• Use of major local languages to translate information to people • Technical experts explained COVID-19 response
	Dissemination	• Development of shared routines around five key priorities to guide policy action • Press briefings organized to engage diverse stakeholders about COVID-19 policy action
3: What behavioral learning products emerged from Ghana's COVID-19 response?	Behavioral learning products	• Four major policies (e.g., public gathering management) and eleven sub-policies (e.g., social distancing) were developed to address COVID-19
4: How are behavioral learning products connected to COVID-19 mitigation in Ghana?	COVID-19 mitigation	• Policies and programs supported COVID-19 mitigation via mandatory mask-wearing, social distancing, handwashing, and sanitizing.

15411338, 2022, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12465 by University of Ghana - Accra, Wiley Online Library on [03/05/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

the fuel for rapid policymaking in the context of a pandemic. As we observed, the President's COVID-19 updates were packed with several policies in addressing the pandemic. This might have occurred because new demands emerged as the pandemic evolved. The rapidity of policymaking in the pandemic perhaps draws attention to the need for policy scholars to explore whether there are any distinctions in learning under normal or abnormal times.

Despite these contributions and potential improvement to the framework, this paper has some limitations. The use of news media and policy documents limits causal analysis between policy learning and COVID-19 mitigation. While we used process tracing to mitigate this limitation, the linkage between learning and COVID-19 mitigation is more descriptive. Another challenge is the evolving nature of the pandemic, which can potentially shift our findings. Furthermore, the use of a case study design limits the generalizability of our results. Nevertheless, the study presents a rich and detailed description of collective learning around the pandemic that can serve as a foundation for any future study in Ghana and other similar contexts in Africa. We defer to others to help advance collective learning research.

ACKNOWLEDGMENTS

We thank the reviewers for their thoughtful comments to improve the paper's quality. We are also grateful to Christopher M. Weible and Tanya Heikkila, both at the University of Colorado Denver, for reviewing an earlier draft of this paper.

ORCID

Alex Osei-Kojo https://orcid.org/0000-0001-5443-9148
Paul Lawer Kenney https://orcid.org/0000-0002-1123-7623
Clement Mensah Damoah https://orcid.org/0000-0002-5535-3255
Albert Ahenkan https://orcid.org/0000-0003-2672-0498

ENDNOTES

1 BBC article featuring Nana Akufo-Addo's statement: https://www.bbc.com/news/world-africa-52467495. Accessed July 5, 2020.

2 Preliminary Report of the 2021 Population and Housing Census in Ghana: https://census2021.statsghana.gov.gh/

3 See this report for full details: Ministry of Health: Holistic Assessment of the Health Sector Programme of Work 2013, Ghana.

4 Ministry of Health, Health Sector Medium Term Development Plan 2014–2017. 2014 Draft document.

5 National Health Insurance Act (Act 852), 2012.

6 https://www.indexmundi.com/facts/ghana/indicator/SP.DYN.LE00.IN. Accessed July 28, 2020.

7 https://knoema.com/atlas/Ghana/Population-growth-rate. Accessed July 28, 2020.

8 https://data.worldbank.org/indicator/SP.DYN.TFRT.IN?locations=GH. Accessed July 28, 2020.

9 Human Development Reports. hdr.undp.org. Accessed October 25, 2021.

10 https://www.ghanaweb.com/GhanaHomePage/NewsArchive/Two-cases-of-imported-coronavirus-confirmed-in-Ghana-893245. Accessed July28, 2020.

11 https://www.ghanahealthservice.org/COVID19/archive.php. Accessed July 28, 2020.

12 More information on the 2017 GeoPoll survey is available here: Ghana Media Measurement Report: Top TV, Radio, and Print Outlets in 2017—GeoPoll.

13 More information on the 2018 GeoPoll survey is available here: Citi FM tops Ghana's English Radio stations again (citinewsroom.com).

15411338, 2022, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12465 by University of Ghana - Accra, Wiley Online Library on [03/05/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

14 http://www.konkrumah.org/news/who-shortlists-ghana-among-6-countries-globally-with-effective-COVID-19-management/. Accessed July 5, 2020.

15 https://ghanahealthservice.org/COVID19. Accessed July 12, 2020.

16 https://dailyguidenetwork.com/ndc-2-faced-in-COVID-19-lockdown/. Accessed July 5, 2020.

17 http://www.occupygh.org/news-room/. Accessed July 12, 2020.

18 https://www.myjoyonline.com/news/national/minority-gives-government-three-day-ultimatum-to-evacuate-ghanaian-students-in-china/. Accessed July 12, 2020.

19 https://www.youtube.com/watch?v=mWlyjUypX6I. Accessed July 9, 2020.

20 https://www.youtube.com/watch?v=tZIOLaFPUUE. Accessed July 10, 2020.

21 https://www.bbc.com/pidgin/tori-53286764. Accessed July 10, 2020.

22 Daily Graphic Wednesday, July 8, 2020, p. 33.

23 https://www.mofep.gov.gh/news-and-events/2020-04-17/ken-ofori-atta-writes-what-does-an-african-finance-minister-do-now. Accessed July 12, 2020.

24 https://www.graphic.com.gh/news/general-news/punishment-for-not-wearing-nose-mask-in-ghana-harsh-legal-practitioner.html. Accessed July 12, 2020.

25 https://www.afro.who.int/news/ghana-becomes-recipient-historic-first-shipment-covax-vaccines. Accessed March 10, 2020.

26 Additional explanation to the 1% tax is available here: https://www.myjoyonline.com/ghanaians-to-pay-tax-for-COVID-19-free-water-enjoyed-to-fill-economic-gap-oppong-nkrumah/. Accessed December 5, 2021.

REFERENCES

Beach, D., & Pedersen, R. B. (2019). *Process-tracing methods: Foundations and guidelines*. University of Michigan Press.

Berry, F. S., & Berry, D. W. (2007). Innovation and diffusion models in policy research in theories of the policy process. In P. A. Sabatier (Ed.), *Theories of the policy process* (pp. 169–200). Westview Press.

Birkland, T. A. (2006). *Lessons of disaster: Policy change after catastrophic events*. Georgetown University Press.

Bodin, Ö., Crona, B., & Ernstson, H. (2006). Social networks in natural resource management: What is there to learn from a structural perspective? *Ecology and Society*, *11*(2). http://www.ecologyandsociety.org/vol11/iss2/resp2/

Boin, A., & 't Hart, P. (2010). Organising for effective emergency management: Lessons from research 1. *Australian Journal of Public Administration*, *69*(4), 357–371. https://doi.org/10.1111/j.1467-8500.2010.00694.x

Boin, A., 't Hart, P., & McConnell, A. (2009). Crisis exploitation: Political and policy impacts of framing contests. *Journal of European Public Policy*, *16*(1), 81–106. https://doi.org/10.1080/13501760802453221

Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal*, *9*(2), 27–40. https://doi.org/10.3316/QRJ0902027

Brown, M. M., & Brudney, J. L. (2003). Learning organizations in the public sector? A study of police agencies employing information and technology to advance knowledge. *Public Administration Review*, *63*(1), 30–43. https://doi.org/10.1111/1540-6210.00262

Collier, D. (2011). Understanding process tracing. *PS: Political Science & Politics*, *44*(4), 823–830. https://doi.org/10.1017/S1049096511001429

Contu, A., & Willmott, H. (2003). Re-embedding situatedness: The importance of power relations in learning theory. *Organization Science*, *14*(3), 283–296. https://doi.org/10.1287/orsc.14.3.283.15167

Crow, D. A., & Albright, E. A. (2019). Intergovernmental relationships after disaster: State and local government learning during flood recovery in Colorado. *Journal of Environmental Policy & Planning*, *21*(3), 257–274. https://doi.org/10.1080/1523908X.2019.1623660

Crow, D. A., Albright, E. A., Ely, T., Koebele, E., & Lawhon, L. (2018). Do disasters lead to learning? Financial policy change in local government. *Review of Policy Research*, *35*(4), 564–589. https://doi.org/10.1111/ropr.12297

15411338, 2022, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12465 by University of Ghana - Accra, Wiley Online Library on [03/05/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

de Voogt, D. L., & Patterson, J. J. (2019). Exogenous factors in collective policy learning: The case of municipal flood risk governance in the Netherlands. *Journal of Environmental Policy & Planning*, *21*(3), 302–319. https://doi.org/10.1080/1523908X.2019.1623662

Dunlop, C. A., & Radaelli, C. M. (2013). Systematising policy learning: From monolith to dimensions. *Political Studies*, *61*(3), 599–619. https://doi.org/10.1111/j.1467-9248.2012.00982.x

Finfgeld-Connett, D. (2014). Use of content analysis to conduct knowledge-building and theory-generating qualitative systematic reviews. *Qualitative Research*, *14*(3), 341–352. https://doi.org/10.1177/1468794113481790

Frantz, J. E., & Sato, H. (2005). The fertile soil for policy learning. *Policy Sciences*, *38*(2–3), 159–176. https://doi.org/10.1007/s11077-005-2563-3

Freeman, R. (2006). Learning in public policy. In M. Moran, R. E. Goodin, & M. Rein (Ed.), *The Oxford handbook of public policy* (pp. 367–388). Oxford University.

Gerlak, A. K., & Heikkila, T. (2019). Tackling key challenges around learning in environmental governance. *Journal of Environmental Policy & Planning*, *21*(3), 205–212. https://doi.org/10.1080/1523908X.2019.1633031

Gerring, J. (2016). *Case study research: Principles and practices*. Cambridge University Press.

Heikkila, T., & Gerlak, A. K. (2013). Building a conceptual approach to collective learning: Lessons for public policy scholars. *Policy Studies Journal*, *41*(3), 484–512. https://doi.org/10.1111/psj.12026

Henry, A. D. (2009). The challenge of learning for sustainability: A prolegomenon to theory. *Human Ecology Review*, *16*(2), 131–140.

Holsti, O. R. (1969). *Content analysis for the social sciences and humanities*. Addison-Wesley.

Howlett, M., & Ramesh, M. (2002). The policy effects of internationalization: A subsystem adjustment analysis of policy change. *Journal of Comparative Policy Analysis*, *4*, 31–50. https://doi.org/10.1023/A:1014971422239

Hsieh, H.-F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*, *15*(9), 1277–1288. https://doi.org/10.1177/1049732305276687

Kay, A., & Baker, P. (2015). What can causal process tracing offer to policy studies? A review of the literature. *Policy Studies Journal*, *43*(1), 1–21. https://doi.org/10.1111/psj.12092

Koebele, E. A. (2019). Policy learning in collaborative environmental governance processes. *Journal of Environmental Policy & Planning*, *21*(3), 242–256. https://doi.org/10.1080/1523908X.2019.1623661

Lipshitz, R., Popper, M., & Friedman, V. J. (2002). A multifacet model of organizational learning. *The Journal of Applied Behavioral Science*, *38*(1), 78–98. https://doi.org/10.1177/0021886302381005

Mahoney, J. (2012). The logic of process tracing tests in the social sciences. *Sociological Methods & Research*, *41*(4), 570–597. https://doi.org/10.1177/0049124112437709

Mahoney, J. (2015). Process tracing and historical explanation. *Security Studies*, *24*(2), 200–218. https://doi.org/10.1080/09636412.2015.1036610

Moyson, S., Scholten, P., & Weible, C. M. (2017). Policy learning and policy change: Theorizing their relations from different perspectives. *Policy and Society*, *36*(2), 161–177. https://doi.org/10.1080/14494035.2017.1331879

Newig, J., Günther, D., & Pahl-Wostl, C. (2009). Synapses in the network: Learning in governance networks in the context of environmental management. *Ecology and Society*, *15*(4), 24. http://www.ecologyandsociety.org/vol15/iss4/art24

Orange, R. (2020, March 28). *As the rest of Europe lives under lockdown, Sweden keeps calm and carries on*. https://www.theguardian.com/world/2020/mar/28/as-the-rest-of-europe-lives-under-lockdown-sweden-keeps-calm-and-carries-on

Ostrom, E. (2005). *Understanding institutional diversity*. Princeton University Press.

Ricco, G., & Schultz, C. A. (2019). Organizational learning during policy implementation: Lessons from U.S. forest planning. *Journal of Environmental Policy & Planning*, *21*(3), 275–287. https://doi.org/10.1080/1523908X.2019.1623659

Rietig, K. (2019). Leveraging the power of learning to overcome negotiation deadlocks in global climate governance and low carbon transitions. *Journal of Environmental Policy & Planning*, *21*(3), 228–241. https://doi.org/10.1080/1523908X.2019.1632698

Singleton, A. R., Jr., & Straits, B. C. (2018). *Approaches to social science research*. Oxford University Press.

15411338, 2022, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12465 by University of Ghana - Accra, Wiley Online Library on [03/05/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Tolbert, P., & Hall, R. (2008). *Organizations: Structures, processes and outcomes*. Prentice Hall.
Ulibarri, N. (2015). Tracing process to performance of collaborative governance: A comparative case study of federal hydropower licensing. *Policy Studies Journal*, *43*(2), 283–308. https://doi.org/10.1111/psj.12096
Vandenbosch, B., & Higgins, C. (1996). Information acquisition and mental models: An investigation into the relationship between behaviour and learning. *Information Systems Research*, *7*(2), 198–214. https://doi.org/10.1287/isre.7.2.198
Vince, R., & Saleem, T. (2004). The impact of caution and blame on organizational learning. *Management Learning*, *35*(2), 133–154. https://doi.org/10.1177/1350507604043022
Waldner, D. (2014). What makes process tracing good? Causal mechanisms, causal inference, and the completeness standard in comparative politics. In A. Bennett & J. Checkel (Eds.), *Process tracing: From metaphor to analytic tool* (pp. 126–152). Cambridge University Press.
Weaver, R. K. (1986). The politics of blame avoidance. *Journal of Public Policy*, *6*(4), 371–398. https://doi.org/10.1017/S0143814X00004219
Williams, R. A. (2009). Exogenous shocks in subsystem adjustment and policy change: The credit crunch and Canadian banking regulation. *Journal of Public Policy*, *29*(1), 29–53. https://doi.org/10.1017/S0143814X09001007
Yin, R. K. (2018). *Case study research and applications: Design and methods*. Sage.

AUTHOR BIOGRAPHIES

Alex Osei-Kojo is an Assistant Professor at the University of Tennessee Knoxville's Department of Political Science. He studies Policy Process, and Environmental and Energy Policy.

Paul Lawer Kenney is a Research and Programs Officer at the Institute for Democratic Governance (IDEG) in Accra, Ghana. His research focuses on Environmental and Energy Policy, Public Health, and Democracy and Migration.

Clement Mensah Damoah is a doctoral student at Arizona State University's School of Public Affairs. His research interests include Public-Private Partnership, Collaborative Governance, Participatory Governance, and Civic Engagement.

Albert Ahenkan is an Associate Professor at the Department of Public Administration and Health Services Management, University of Ghana Business School. His research interests include Climate Change, Environmental Management, and Sustainable Development.

How to cite this article: Osei-Kojo, A., Kenney, P. L., Damoah, C. M., & Ahenkan, A. (2022). Collective learning and COVID-19 mitigation in Ghana. *Review of Policy Research*, 39, 255–281. https://doi.org/10.1111/ropr.12465

15411338, 2022, 3, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12465 by University of Ghana - Accra, Wiley Online Library on [03/05/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License