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**International Society
for Educational Planning**

EDUCATIONAL PLANNING

A JOURNAL DEDICATED TO PLANNING, CHANGE, REFORM, AND
THE IMPROVEMENT OF EDUCATION

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FROM THE EDITORS

This issue of Educational Planning is focused on planning issues of practical applications at K-12, state, and higher education levels. These issues cover a variety of planning interests. The first article highlights the initial efforts of the Caribbean educators in facing the COVID-19 challenges. The second article firmly defines the roles of the state government in diversifying the teacher workforce. The third article is a report on studying how school building quality could impact student behavior. The fourth article analyzes the different block scheduling models that could be effectively used in schools.

The research by Thompson and his colleagues captures the insights from three webinars sponsored by the Caribbean Centre for Educational Planning, which focused on the COVID-19 challenges faced by educational institutions at the primary, secondary and tertiary levels of the education system. The findings of the study reveal that most stakeholders of education were unprepared for the challenges occasioned by COVID-19.

Moss's article relates to state-level leaders' role in creating policy to build a diverse educator pipeline. The author stresses that state-level leaders will need to examine their current policies and practices to make sweeping, innovative policy changes that are critical to build a diverse pipeline of teachers. This article provides recommendations for state education agencies to diversify the teacher pipeline.

The study by El-Nemr and Cash examines the relationship between school building conditions and overall student behavior as well as the relationship between school building conditions and the behaviors of student subgroups that include Caucasian, African American, Hispanic, and Students with Disabilities (SWD). The study controlled for over-crowdedness, socioeconomic status, and attendance. The study identifies that lower numbers of Hispanic student and SWD disciplinary incidences were associated with improved school cosmetic facility conditions and lower numbers of SWD disciplinary incidences were associated with improved overall school facility conditions.

In his article about block scheduling, Morris identifies from his review of literature five different models of block scheduling that are currently used in schools. He describes the functions of each of these five models and highlights the unique advantages of each model as it applies to suit the best environment in achieving the highest effectiveness to improve teaching and learning.

The articles in this issue have aimed at a common theme to plan to improve a better quality education to serve the students. Educators at all levels and different fields could play significant roles to help planning by considering the recommendations offered by the authors in this issue.

Editor: Tak Cheung Chan

Associate Editors: Walt Polka and Holly Catalfamo

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May 2022

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THE INITIAL ENGAGEMENT AND EXPERIENCES OF CARIBBEAN EDUCATORS WITH THE REALITY OF COVID-19: EXPLORING THE EDUCATIONAL PLANNING IMPLICATIONS

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ABSTRACT

COVID-19 caught the world off-guard, bringing disruption and chaos to all sectors, including education. Within Caribbean Small Island Developing States (SIDS), the experiences were varied, as were the responses of educational stakeholders at all levels to the crisis of the pandemic. Stakeholders' experiences and responses should inform educational planning and policy, and it is against that backdrop that this research was conducted. This research captures the insights from three webinars sponsored by the Caribbean Centre for Educational Planning, which focused on challenges faced by educational institutions at the primary, secondary and tertiary levels of the education system. The transcripts from those webinars were used to construct this paper using a generic qualitative research design. The webinars pulled on the expertise of panellists from across the Caribbean and North America. The findings reveal that most stakeholders were unprepared for the challenges occasioned by COVID-19, which translated into further difficulties adapting to online/blended teaching/learning, psycho-social stresses, heightened economic challenges, and disruptions to examinations. In response to these challenges, among the stakeholders, training was implemented, open communication increased, technical and infrastructural resources were upgraded, health and safety protocols were enforced/reinforced, and domestic and international groups collaborated to bolster access for all students. Lessons learned included the need for collaboration, equity, access, and opportunities, and exercising the courage to radically rethink the region's 'educational futures' by incorporating the shared perspectives of key stakeholders in educational planning and policy making.

INTRODUCTION AND BACKGROUND

The COVID-19 pandemic presented the world with a major catastrophe resulting in school disruption for some 1.5 billion students worldwide, according to World Bank estimates (Saavedra & Kopp, 2020). An October 2020 report sponsored by the Organization for Economic Co-

operation and Development (OECD) notes that with the unprecedented disruptions in schooling caused by the COVID-19 pandemic, policymakers, educators, researchers and the general public have demonstrated increased interest in knowing how education stakeholders have responded and how students' learning experiences have changed. These are important subjects of study to guide policy-making and the operations of schools in the future (Bertling et al., 2020). In the Caribbean, the estimates are that some 7 million students and 90,000 teachers across 23 countries have been affected by school closures due to the pandemic (Asevedo et al., 2020). The scope and scale of this unprecedented problem have been the subject of study by countless organizations.

The Caribbean is a region with a history of colonialism and is characterized by a deep-seated legacy of asymmetries of power, exploitation, and inequality in the broader society and within the education system (Brissett, 2018). This has resulted in disparities in the quality of resources made available to schools and, thus, inequalities in student outcomes. Student population is estimated to be approximately 89,000 primary aged children in the Eastern Caribbean (Menefee & Bray, 2015) and over 200,000 in Jamaica.

While most Caribbean countries operate centralized education systems, the diverse realities within which schools operate require that school leaders take steps locally to address disparities and challenges that they face. The responsibility for responding to the peculiar impacts of externally driven realities does not mean that schools are left on their own. Rather, it suggests that the responses made to external challenges reflect a combination of local and central leadership, with the latter being driven by broad policy and allocation of already scarce resources. However, the most disadvantaged schools tend to be located in marginalized communities in rural areas (CARICOM, n.d.). In a 2017 report, Jamaica's Chief Inspector of the National Education Inspectorate highlights the initiatives grasped by many of the principals, but concludes that in terms of human and material resources to provide support for student learning, only 14% of the institutions inspected were classified as either exceptional or good, while 86% were ranked satisfactory or below (MOEYI, 2017).

STATEMENT OF THE PROBLEM

Unlike other regions of the world such as Europe, North America, and South-East Asia, the Caribbean, as a post-colonial society, is challenged by lack of adequate investment in education (Jules, 2008; Thompson, 2020). A United Nations International Children's Emergency Fund (UNICEF) study in Jamaica, for example, found that 45% of households were experiencing food shortages because of COVID-19 (CAPRI, 2021).

The combination of these factors means that conditions such as pandemics which result in school closures and lost learning time, will further erode the already precarious state in which vulnerable families find themselves. Azevedo et al. (2020) estimate that learning losses due to the pandemic could cost the global economy up to ten trillion dollars. This study seeks to explore various stakeholders' experiences with the pandemic, in the period after schools re-opened, subsequent to the immediate closure in mid-March to April 2020. The focus of this investigation is to uncover lessons which may guide planning and future policy making.

PURPOSE OF THE STUDY AND RESEARCH QUESTIONS

The purpose of this study is to outline how education policy makers, education practitioners, students, parents, and internet service providers in the Caribbean (generally referred to as stakeholders), responded to the challenges posed by the COVID-19 pandemic for pre-primary, primary, secondary and tertiary level education. The study is built around the following questions:

- a) What were Caribbean nations' educational experiences during the COVID-19 pandemic?
- b) How were the challenges experienced addressed by educational stakeholders at different levels?
- c) What are the lessons learned and how can these be used to create a resilient education system?

LITERATURE REVIEW

The COVID-19 pandemic has highlighted many inadequacies and inequities in education systems, such as issues of access to broadband and computers needed for online education, the supportive environments needed to focus on learning, and the misalignment between resources and needs (Schleicher, 2020). There continues to be concerns about learning loss and disengagement as the pandemic forced schools across the globe to close their doors to limit further outbreaks. To ensure continuity, a variety of resources and technologies were applied to sustain online learning (Reimers, 2021). This is congruent across the literature with Pokhrel and Chhetri (2021), sharing that the global pandemic resulted in a paradigm shift from face-to-face to remote teaching and learning. It is therefore imperative to understand the actualities of education globally during the COVID-19 pandemic and how it has continued.

Global Educational Experiences of the Covid-19 Pandemic

According to Schleicher (2020), crises usually affect government budgets. The COVID-19 pandemic has resulted in a predicted down-turn. This prediction, in some instances, has caused cuts to educational budgets as funding is directed to health care and welfare needs. Despite the financial constraints, many countries have implemented financial measures to support education. Australia, Canada, Italy, New Zealand, England, and the United States of America have provided financial support that spans tuition financing, procurement of digital platforms and tools, payment of utilities, and meeting sanitation and other operational costs (Schleicher, 2020).

China was the first to close schools, with other countries following shortly thereafter. Sweden and Iceland remained open although with limitations. Countries such as Australia and Chile moved to reorganize their school year to minimize learning loss (Schleicher, 2020). Several online instructional resources were utilized, including radio and television education, instructional packages sent home to students, and online platforms. Other measures included a support system for students and parents such as the one implemented by the government in Luxembourg to facilitate home schooling (Reimers, 2021; Schleicher, 2020). Despite a variety of learning tools being available for education continuity, not much has been done to measure the effectiveness and reach of online modalities. Estimates indicate that coverage is less than 50% in low-income countries and is likely due to lack of access to electricity, inadequate technological devices, and low digital literacy among key partners (United Nations, 2020). In India, access to devices is low and therefore, the educational impact

recognizes that the poorest children are most hurt by the pandemic due to school closures (Kundu, 2020; Vegas, Lee, & Shrestha, 2021). Across the globe there are higher levels of non-participation in education, particularly where there is low human development. Further to that, fragile education systems have negatively impacted students' learning remotely. Their home environment provides limited opportunities for continuity, and this results in increased disparities.

Teachers were largely unprepared for the shift in teaching and learning and did not have basic information communication technology (ICT) skills. For teachers who were still required to engage students in face-to-face sessions, their health was at risk. Salaries and renewal of contracts were also an issue due to financial constraints experienced by institutions and will likely affect attrition rates and decrease the quality of education in the present and post COVID-19 pandemic (United Nations, 2020). According to EdTech Hub (2020), in Sub-Saharan Africa, teachers lack appropriate training to design and manage distance learning programs. This presents a significant impediment to virtual teaching and learning which is compounded by a lack of infrastructure: electricity, connectivity, devices and a lack of appropriate learning materials, books, television and Internet-enabled devices. However, many educators across the globe had to participate in online and in-person training with a few indicating the need for advanced level training (Schleicher, 2020).

Higher education institutions have been able to move some programs online while others continue to be delivered face-to-face. A decrease in international student mobility has affected learning continuity, safety, and the legal status of international students. The absence of international students on campuses has adversely impacted international students' exposure, their input in the foreign job market and their ability to benefit from networking. Having fewer international students has also affected the funding model of some institutions. International students are a significant source of income due to their payment of higher tuition fees compared to domestic students (Schleicher, 2020).

The Technical and Vocational Education and Training (TVET) sector continues to grapple with the lack of apprenticeship and the required work-based learning modes. There is also a lack of inclusivity for students with disabilities. Quality assessment in keeping with academic standards is also a cause for concern. In many cases assessments were cancelled, postponed or alternative modes were implemented (Pokhrel & Chhetri, 2021; Reimers, 2021; United Nations, 2020).

All members of the education community, inclusive of students, parents and teachers, have encountered challenges with their psychological, social and emotional well-being (ECLAC/ UNESCO, 2020). Cielo et al. (2021), Lizana et al., (2021) and Ozamiz-Etxebarria et al. (2021) have found that the pandemic has continued to affect young people globally with psychological impacts including anxiety, mental distress, depression, psychological well-being, and sleep habits.

Global Response

The global response to COVID-19 started out as a 'automatic' reaction, but eventually morphed into definitive strategy and well-developed protocols, even amidst continued uncertainty. International watchdogs with responsibility for health, education, finance, as well as other key areas, created strategies for the management of the rapidly unfolding crisis.

According to Li and Lalani (2020), research indicates that online learning has been linked to an increase in the retention of information. Despite the challenges associated with online teaching and learning, this positive characteristic may lead to a shift in education provision. The authors question

whether this sudden and sustained move to online learning could serve as the catalyst to create a new, more effective method of educating students. Global patterns indicate that there is likely to be an emergence of a 'hybrid' kind of education system after the waning of the COVID-19 pandemic. The authors observe that significant world events often lead to rapid innovation. Improvements in online technology for teaching and learning may help to cement varied methods of education delivery in a remote context.

The gravity of the global crisis caused by COVID-19 will require sustainable long-term collaborative efforts from a multiplicity of stakeholders across the world to devise solutions, and it is within this context that the task of this paper is to be understood.

RESEARCH METHODOLOGY

Research Design

In exploring stakeholders' experiences with the pandemic, a generic qualitative research design was employed. Generic qualitative research designs employ elements from different designs that "blend established methodological approaches in order to create something new, or that claim no formal methodological framework at all" (Caelli et al. 2003, as cited in Kahlke, 2014, p. 39). The philosophical underpinning of generic qualitative research is based in social constructivism which focuses on how people interpret their experiences, construct their world and the meanings that they give to their experiences (Merriam, 2009). Uncovering the experiences of the different stakeholders, how they construct or make meaning from their experiences and knowledge, provides more depth and understanding of the different contexts, and the impact of the Coronavirus on educators, industries (public and private sectors) and on existing policies.

Webinars

Three webinars were held in the early moments of the pandemic, in June 2020, December 2020 and March 2021. These seminars were organized by the Caribbean Centre for Educational Planning (CCEP) located at a regional university in the Caribbean. The objectives of each webinar, which drove the key issues examined, are detailed in Appendix 1. The webinars were structured around two or three panel presentations facilitated by a moderator. The panellists would present opening comments ranging from 3 to 5 minutes in response to issues related to the objectives, relative to the work of the organizations they represent or their personal experience. A list of the expert panellists is presented in Appendix 2. These panellists are, at times, generally referred to as stakeholders.

The first webinar was titled: Learning from the COVID-19 Pandemic: Imperatives and Opportunities for Building Resilient Education Systems in the Caribbean. This webinar sought to explore how the education sector in the Caribbean was coping with the onset of the challenges posed by the pandemic. The second webinar, designed to explore the experiences of leaders in the education sector, at the policy and practitioner levels, in their efforts to rethink the design of their respective country education systems, was held under the theme: Reimagining Education: Present and Post COVID-19 Considerations.

The final webinar was entitled: The Last Mile with Infrastructure Support and Creativity in Delivery: Ensuring Every Child has Access to Quality Education. It sought to articulate some concrete actions countries needed to take to address the pre-pandemic and pandemic-driven challenges in the structure and delivery of education in the Caribbean.

Twenty-seven (27) panellists participated in the webinars from various Caribbean and North American nations, including, Barbados, St. Lucia, Trinidad and Tobago, Jamaica, Guyana, Turks and Caicos, Dominica, and America.

These experts were recruited to provide insights into the different circumstances that exist throughout the Caribbean. Thus, these experts were identified based on their extensive educational and/or occupational knowledge in their relevant spheres, and their ability to represent different stakeholder groups. They included heads of educational institutions at all levels, educational practitioners (e.g. teachers, university lecturers), educational policy-makers, students, parents, organisations involved in funding education, and the telecommunications industry.

Moderators for the panels and the Question and Answer segments were drawn from the CCEP Operations Team, specifically lecturers from different specialization areas in education at the regional university. These individuals summed up key points emanating from discussions and posed questions from the audience to the panellists.

Data Collection

Data were collected via the three webinars, each of which lasted approximately two hours. Also, stakeholders who attended the webinars were able to post their questions in ZOOM chat and one of the moderators would feed questions to the panellists for answers. The contents of the Question and Answer segments of the webinars were recorded and later transcribed for analysis. The chat sessions were not included in this verbatim transcription.

Data Analysis

Rich and thick descriptions are the hallmark of qualitative research as researchers seek to collect, analyze, and interpret the data. The team analyzing the data ensured that they familiarized themselves with the data by reading and re-reading. Then, coding was done with information that had similar meaning being placed into categories. From the categories, thematic analysis was done, utilizing assertions according to the research questions. The codes and themes generated were reported in assertions that were presented with supporting data from the transcripts.

Ethical Considerations

The experts who participated in the webinars gave consent to their presentations and answers to questions posed to be used and published. Anonymity was maintained by the use of pseudonyms to represent each expert, and that there was minimal risk involved in publishing their viewpoints that would provide readers the opportunity to understand what has been happening in different countries, sectors of society and how the education system is navigating the impact of COVID-19.

FINDINGS

The key findings of the study, guided by the research questions (RQ) are outlined below. These findings will highlight a few key elements common to all educational levels (pre-primary, primary, secondary, tertiary), including, the struggle of regional educational systems to transition to online mechanisms of teaching and learning during the first months of the pandemic; the psychosocial stresses associated with the transition to this new modality for teachers, students and parents as key stakeholders in the process; and the exacerbation of educational disparities and gaps.

RQ1: What were Caribbean nations' educational experiences during the COVID-19 pandemic?

Assertion 1: Many stakeholders were unprepared to deal with the challenges brought on by COVID-19 and that led to difficulties making the transition to the virtual education space.

The COVID-19 pandemic presented immediate challenges for education systems across the region. The abrupt closure of schools meant that school leaders and administrators were forced into the rapid implementation of online and remote teaching and learning modalities, which proved a difficult transition.

When the Prime Minister announced the suspension of schools to mitigate the spread of the disease, this led to another round of adjustments as we sought to address continuing education for students recognizing that some amount of educational opportunities would need to be provided while our students are out of school... We realize that they needed to be familiarized with the use of online methods which we did not have the time for actual preparation. [Senior Ministry of Education official - Jamaica]

Moving classes online with just a few days to prepare was very difficult and stressful for teachers. Partly because the vast majority had not previously taught online and there was little time to get trained in online teaching. [Teachers' Representative, St. Lucia]

Students were not able to come and study in the library, so we had to find resources for them to access through a digital library database, subscription to online academic support software. [Management Official Tertiary Institution - Jamaica]

This assertion was echoed at all school levels. With very limited time for adequate preparation, schools used the initial closure to put urgent measures in place to prepare for the transition to online learning. This included a predominant focus on training for teachers, with some training made available as well to parents and students. Some digital devices were also sourced and distributed.

As soon as we were given advice that every educational institution in Turks & Caicos would have been closed on March 20, 2020, the Ministry of Education (MOE) ramped up capacity building for teachers, and overtime we built it out to include students and parents to some extent as well... At the time of closing schools, we started delivering laptops, the MOE purchased laptops for a number of our public schools, and we delivered those. [Education Official – Turks and Caicos]

Assertion 2: COVID-19 caused an exacerbation in the gaps that already existed in the education system.

It was noted that the pandemic worsened existing gaps in the education system; most specifically, gaps in access to education, and gaps in terms of student learning. The gaps in access to education resulted directly from the lack of digital devices and/or Internet connectivity by some teachers and students at all educational levels.

Another challenge that confronted us was access to technology for students and teachers to a lesser extent. This was one of the glaring realities with which we were faced. We recognized that there were several students who did not own technological devices and while there were parents who used their mobile devices online occasionally, we also recognized that these were not ideal for the online teaching. As the country began to reopen in the past weeks, some parents returned to work so several students no longer had access. [Principals' Representative - Barbados]

Only 60% of teachers and instructors were estimated to have the digital tools necessary for distance and online teaching. [Education Specialist - Regional Organisation]

We are not even sure how many students we are reaching and how we are reaching them. We are not even sure if they are on screen and watching and going through online platforms, answering questions, are they learning and retaining that information. [University Lecturer - Jamaica]

In the issue of connectivity, parents just could not access Internet; they did not have any device, and those who did have connectivity had problems because they were not tech savvy or computer literate. [Primary School Principal - Dominica]

Assertion 3: Students, parents, teachers, and school leaders all experienced grave psycho-social stresses as a result of COVID-19.

Another key experience highlighted by participants related to observations of symptoms of psychosocial stress among school leaders, teachers, parents, and students. The stress for school leaders was related specifically to the planning and management of the overall emergency response in education as schools struggled to determine how access to education could be alternatively provided for students. As described earlier, this included determining what platforms should be used for facilitating learning, providing basic training for teachers (and other stakeholders as needed or available), sourcing devices, and dealing with a myriad of challenges presented by the pandemic.

Parents and teachers have experienced great stress because of the pandemic. These stresses were generally associated with difficulties in assisting their students or children with online or remote learning.

Parents at that time began expressing their confusion, their anger and their hopelessness and helplessness in helping their children with the material they received from their teachers online... At that moment what should be an educational activity became a thing of resentment for both parties – parent and child ... Teachers become frustrated, and they feel that they come to school to teach and they ought not to be dealing with all these issues, and parents should address these issues at home... [Primary School Principal - Dominica]

Assertion 4: COVID-19 heightened the economic challenges faced by teachers, parents, schools, and governments.

There were also reported financial challenges created by the pandemic which impacted equity. Lack of financial resources not only prevented the purchase of digital devices and access to internet connectivity, but also led to the closure of schools. Some Early Childhood centres, and government school feeding programs were also affected. It has had negative impact on some children from lower socio-economic home/background.

We are seeing that in terms of the teachers, the educational practitioners have been digging deep into their pockets to subsidize or even to maintain the whole virtual teaching and learning process. [Principals' Representative -Barbados]

To access education on the coast they do so at great sacrifice... Some persons, because of their income and finance, did not have the resources to acquire data. [Tertiary Level Educator - Guyana]

Assertion 5: COVID-19 caused disruptions in the normal monitoring and execution of examinations.

The pandemic also presented significant challenges for children sitting national and regional standardized examinations, and necessitated deferral policies to allow children an additional year to sufficiently prepare. For instance, the principals' representative from Barbados highlighted how the abrupt closure meant the transition to online teaching had affected the thorough preparation needed for the Barbados secondary school entrance examination. The Ministry of Education official from Jamaica shared those examinations entities such as CXC allowed students to defer their exams without penalty to the students in the following year.

RQ2: How were the challenges experienced addressed by educational stakeholders at different levels?

The challenges experienced in the immediacy of the pandemic were addressed in various ways by the different educational stakeholders at the different levels. Based on the regional and local experiences shared by these individuals and entities (above), the following could be surmised.

Assertion 1: Training was conducted for students, parents and staff to manage some challenges that arose as a result of the pandemic.

In the immediate and more sustained response to the pandemic, the various stakeholders had to design, organize, and deliver various training initiatives for staff, students and parents to facilitate the transition from face-to-face to online learning. Entities with an education mandate in the region spoke to offering new training courses that would help the education systems build resilience in the face of this, and subsequent similar crises. Other participants spoke of primary school principals arranging internal training for staff, while, at the tertiary level, such as at The University of the West Indies, wide-scale training was arranged for faculty, students and parents. A Senior Education representative from the Turks and Caicos Islands shared that the Ministry of Education in that territory "ramped up capacity building for teachers and over time we built it out to include students and parents to some extent as well." Another individual from a community college in Jamaica shared the following:

For our Faculty members we looked at learning to use the LMS (learning management system) to create activities and how to engage the students when they are online. We looked at using various tools such as social media that students access more readily for assignments or sharing information. We created a certificate course for lecturers to get certified in LMS to really get them versed in what they are doing, teaching them to use ZOOM tools, Google Docs etc. Similarly, we have been doing sensitization sessions for our students.

Assertion 2: The stakeholders at all levels of the education system engaged in more frequent and proactive communication.

To help navigate the pandemic, communication was critical to ensure readiness and fluidity given the changing circumstances. A teachers' representative in St. Lucia shared that communication had to be increased during the pandemic and, further, that new channels for communication had to be devised. The representative also stated that "The Union ensured regular and timely information was given to members and this was aimed at minimizing uncertainty, stress and anxiety. Due to the crisis and challenges faced, the Union increased dialogue with other actors in the educational system." A tertiary level educator from Guyana spoke to the need to ensure that this communication was constant and ongoing, sharing, "I think the hallmark of what is happening now is we must keep talking. We must keep communicating. We must find ways of continuing to support our student population and to supporting our colleagues in the education sector."

Assertion 3: Domestic and international groups collaborated to bolster access for all students.

As with education in general, collaboration amongst various stakeholders is critical to ensure student success. This was likewise the case for the pandemic, as domestic and international collaboration were critical to ensure access and success for all students. Partnerships included a wide range of entities such as regional organizations, the private sector, telecommunications providers, churches, universities, and others. As an example, the Ministry of Education official from the Bahamas shared:

We also with our corporate partners launched a donor program and so within a few months we were able to provide some 40,000 students with devices and solar power. And I must say that our corporate sponsors came on board very quickly and they provided us the backup plan to make sure these students had devices.
(Ministry of Education official - the Bahamas)

RQ3: What are the lessons learned and how can these be used to create a resilient education system?

From the regional experiences shared during the webinar series, various lessons learned were garnered and shared. Drawing upon these are critical with respect to ensuring regional (and global) education systems that are prepared and resilient for any further emergencies or crises that may emerge in the future. Below are some of the main insights shared.

Assertion 1: Collaboration among all stakeholders will be vital to ensure that the education system is strengthened and repaired, where necessary.

There is a clear consensus amongst the perspectives shared that collaboration at the international, regional and national levels will be critical to engender a resilient education system in the region. Additionally, this collaboration must be cross-cutting and multi-faceted involving various entities at all levels, including government, civil society and the private sector, as shared by a tertiary-level

educator in the United States. Further, this collaboration must start within the education system itself. As the teachers' representative from St. Lucia stated, "As a first step, there is a need to encourage our teachers and schools to share best practices, and there should be a system-wide documentation and sharing of these ideas." Thus, those most impacted by the pandemic to the extent that they have generated internal-based mechanisms and solutions, are those at the forefront and ideally positioned to share their best practices with others.

The need for international collaboration was voiced by the tertiary level educator from Guyana: "We will definitely have to aggressively seek international collaboration where possible to support our children and even in terms of higher education we will definitely need more financing."

Assertion 2: The inequalities and disparities will need to be addressed to ensure that all students have equal opportunities to a quality education.

One of the issues that the pandemic highlighted and amplified was the already existing inequalities within regional education systems. To ensure resilience in the event of future emergency and crisis situations, these inequalities and disparities need to be addressed. A speaker from a Caribbean regional office of a United Nations entity posited: "Emergencies and school closures have longer term consequences, especially for the most vulnerable and marginalized, magnifying existing disparities within education systems." To address these, he further explained that:

First, we need to tackle the digital divide...Education planners need to consider issues related to access, teacher preparedness and school-family communication. Secondly, we also need to plan for inclusive learning solutions. Education authorities must take special care in planning for the diverse needs of all learners during the school closures. This is paramount for students with learning disabilities who may struggle to work autonomously and at a distance.

Thus, addressing disparities with respect to the urban/rural divide, digital divide, and access for students with disabilities, is paramount.

Assertion 3: There needs to be a radical rethinking in the way education is conceptualized.

For decades, those promulgating the need for Education for Sustainable Development have called for a different type of education that can truly facilitate a sustainable way of life for all on the planet. Similarly, the COVID-19 pandemic has forced the global and regional communities to consider what education is and what it can be to ensure that no child is left behind in times of normalcy or emergency. An education specialist from a regional organization pointed out that strategies are needed to help students who may need to 'catch up' with their peers, for instance, special tutoring or accelerated learning programs. The specialist also spoke to the need for more individualized student placements that moved beyond simply matching ages to particular grade levels. A university lecturer from Jamaica highlighted that the pandemic "provides an opportunity for teachers to transform pedagogical approaches and for schools to capitalize on creative and unique ways of delivering education."

Assertion 4: Parents need to be empowered to assist in the different facets of their children's educational journey.

Parental involvement has always been seen to be pivotal to the success of students' academic journeys. This was proven even more during the pandemic. The teachers' representative from St.

Lucia stated that it would be important to “develop a program that will assist parents in supporting students’ learning, generally, but particularly in times of crisis; and also, to create a system of community support for education to provide for support in times of crises.” For those who are the youngest and at critical stages of development, a university lecturer from Jamaica advised,

We have to look at how prepared are the parents to be able to teach them, to support them, to work with them, to support their socio development (or psychosocial development) at this point in time:

And sharing from a psychological perspective, a psychologist stated,

Also partnering with parents, I think we will have to strengthen our resolve to reach even those parents who seem unreachable and harness the power of technology and the media to do so. I think many students will be returning with issues that we might not be able to fathom yet. To address them we are going to need the input of caregivers, knowing exactly what they need to do at home, and also international integration, teaching teachers how to integrate.

Assertion 5: Governments and other stakeholders need to be proactive in planning for education.

A resilient education system must be one that is proactive and not merely reactive; one that has policies, plans and mechanisms in place to address any major or minor disruptions that might occur in ‘normal’ schooling due to crises and emergencies. This was underscored by a tertiary level student services representative from Jamaica who said, “Another important thing is effective planning needs to be done and policies developed that will support the purpose of education for administrators, teachers and facilitators that provide learning inside and outside the classroom.” The principals’ representative from Barbados similarly stated, “The policy-makers at the level of the MOE, as well as school administrators, must always be proactive, must observe the trends in education in global community as well as in our local communities so that we can prepare for any eventuality, and we can learn from experiences of individuals who have passed through this so far and have reopened.”

DISCUSSION

The findings clearly indicate that education systems across the region struggled to establish alternative education access through a variety of means (most predominantly online mechanisms) in the immediate months following the onset of the COVID-19 pandemic. This move to establish alternative means of accessing education is not unlike the experience of many countries across the world as emerging research reflects similar actions globally (Pokhrel & Chhetri, 2021; Reimers, 2021). As the findings indicate, school leaders, teachers, students and parents experienced significant stress as they struggled to make adjustments to facilitate alternative means of accessing quality education. The struggle and stress for education leaders was generally centred on putting necessary structures in place to allow for a transition to online or remote teaching and learning. Within a very short time, they were expected to determine the alternative means by which their schools could continue to provide education for their students, and source digital devices for teachers (and students where available). They were engaged in planning and providing immediate training for teachers who needed support to be prepared for teaching students online. They also need to deal with a myriad of issues related to facilitating alternative education delivery during the pandemic.

For teachers and parents, the struggles and stresses were generally related to difficulties in supporting student learning online or remotely. Although some basic training in use of technology for online teaching and learning was provided for teachers, generally, these were considered insufficient as many Caribbean teachers had little or no previous experience with delivering instruction effectively within an online space. According to Schleicher (2020), while many other global educators offered some extent of training in the period of school closure at the onset of the pandemic, few indicated the need for advanced level training.

Many parents who were able to provide devices and Internet to access online instruction found that their children still had difficulties using these to engage within the online learning space created by schools and/or teachers. The findings also indicated that part of parents' frustration stemmed from the difficulties they experienced while trying to help their children understand the materials received from their teachers. Interestingly, an equal source of stress for teachers was having to deal with student issues in the online space that they felt should be handled by parents at home. Thus, rather than providing an appropriate opportunity for the strengthening of the parent-teacher collaboration to provide a supportive environment for student learning (Schleicher, 2020), we see evidence of further unravelling of the school-home partnership.

The findings in relation to students' experiences especially indicated that younger children, children from rural areas, and children from low socioeconomic status family backgrounds (or possessing a combination of all three factors) were most at risk to not access education altogether, and to being most impacted by learning loss. An additional concern facing students from low-income family backgrounds was the cessation of the school meals program across many countries due to the physical closure of schools. The absence of this program presented an increased risk to some children's health and nutritional needs. The indication that these children sub-groups are at greater risk of experiencing inequities suggests a need for instituting additional support measures for children, both during and post pandemic. Emerging research findings from developing countries such as India, Haiti, Nepal, Jordan, and Pakistan also support these initial findings (CAPRI, 2021; Kundu, 2020; Vegas, Lee & Shrestha, 2021; United Nations, 2020).

The stressful nature of the initial experiences of Caribbean educational stakeholders has implications for their psychological, social, and emotional wellbeing (Cielo et al., 2021; ECLAC & UNESCO, 2020; Lizana et al., 2021). Additionally, indications suggest that teachers at the Early Childhood level faced an additional concern, that of threats of job loss. The findings reveal that job losses have occurred among teachers within this education sector, specifically due to the closure of early childhood centres and preschools, as this education level had the most difficulty transitioning to effective online instruction. The research of Ozamir-Etxebarria et al. (2021) supports these findings and indicates that some categories of staff in the education system have suffered from job ambiguity more so than other groups.

These initial experiences are valuable for two main reasons. First, as researchers such as Brissett (2018) and Jules (2008) have noted, the Caribbean region has historically been plagued by systemic inequalities in the broader society which have resulted in disparities within the education system. The findings suggest that the pandemic has indeed aggravated inadequacies and inequities in the education systems within the region and has the potential to significantly threaten or undermine regional progress in relation to educational access and the provision of quality education for all

children. Such findings provide important insights into key areas of immediate focus for educators, education leaders and education policymakers in their attempts to mitigate potential learning loss, as well as designing current initiatives to address some of the challenges being faced within the education system.

Second, while these initial experiences noted from the findings in this paper are insufficient to fully understand the magnitude of the impact of these various concerns within education, they do support the need and provide some directions for future research into the impact of the COVID-19 pandemic on teaching and learning across the schools in the region. This was a need supported by Bertling et al. (2020) and OECD (2020).

As was the case with the education sector globally, the education system in the Caribbean was beset with various challenges because of the pandemic. These challenges, however, were addressed in various ways. Similar to other countries worldwide (Reimers, 2021), several e-learning platforms, technologies and resources were utilized to ensure access and agility in the sectorial response to the pandemic. Additionally, to support capacity and versatility with respect to the use of the various technologies and resources, the Caribbean, like counterparts across the world, sought to address impediments and losses which could be caused by lack of training and ensure that educators participated in various training efforts that were mounted (EdTech Hub, 2020; Schleicher, 2020). Other substantive measures included increasing communication and collaboration amongst various stakeholders, ensuring the institution of guidelines, monitoring of educational quality, and ensuring that the needs of students with disabilities are met.

Based on lessons learned from experience to date, ensuring resilience in the sector is an urgent need. First and foremost, perhaps, is that current inequalities which were highlighted and augmented by the pandemic must be addressed. Additionally, empowering parents to ensure continuity of learning and adequate parental support of the process is also a given. Across the globe, the pandemic resulted in psychological impacts on young people, including anxiety, depression and mental stress (Cielo et al. 2021) and negative impacts on teachers' mental and physical health as well (Lizana et al. 2021). Consequently, ensuring that psychological support and coping mechanisms are in place for school staff, students and parents will be critical with respect to building a resilient education system. Other measures, such as collaborative efforts among all stakeholders and incorporating technology into education, must be instituted. Additionally, in alignment with Li and Lalani's (2020) research which suggests that the transition to online learning could be the catalyst for newer, relevant, more effective ways of schooling and education, the pandemic has forced educators in the region to consider the current modes and emphasis of schooling and to ponder the possibilities for a paradigmatic shift in education, a point raised by several webinar panellists.

CONCLUSIONS AND RECOMMENDATIONS

This study has highlighted that, like in most regions of the world, the education systems of the Caribbean were, and continue to be, severely challenged by the impact of the COVID-19 pandemic. This study has found that most countries were unprepared for the challenges of the pandemic which deepened pre-existing inequities in the education systems, and placed parents, students, and teachers under great psychological stress. These challenges created wide-scale disruptions in schooling, with some students having not had face-to-face schooling for over eighteen months or more, a reality

which will worsen the prospects of socio-economic well-being and increase the financial challenges of families and economies well into the future.

The responses of Caribbean countries to the pandemic include training of staff, strengthening of communication modalities, development of ICT systems and increased collaboration among various arms of the State. While these efforts are being made, educational stakeholders in the countries of the Caribbean recognize that far more needs to be done both in terms of strengthening existing efforts and exploring other strategies.

The study has also affirmed that educational leaders and policymakers have identified five key lessons that the pandemic has taught. These are:

- 1) The importance of preparation and pre-crisis/contingency planning;
- 2) The centrality of collaboration as a strategy;
- 3) The urgent need to address inequities in society and in educational systems;
- 4) The obligation to re-think how the education systems operate and re-fashion these systems for greater responsiveness and agility;
- 5) The valuable roles parents play in the education process and recognizing the challenges many face in the execution of those roles, the need to empower and enable them to be more effective in their roles.

The findings and conclusions of this study suggest four urgent actions which must be taken by Caribbean governments to achieve and maintain resilience of their countries' education systems. These are:

- 1) The establishment of national education sector crisis management mechanisms similar in scope and powers to offices of Disaster and Risk Management;
- 2) The revamping of the education systems to make them capable of operating in 'hybrid' modes (face-to-face and online) on an ongoing basis, with in-built capability for adaptation to either use synchronous or asynchronous modality, fully, or a combination of both, simultaneously;
- 3) Public investments in telecommunications infrastructure to ensure accessibility for learners, especially in rural areas when online modes of delivery are being used; and
- 4) Continuing educational/lifelong learning opportunities for parents which will provide exposure to the curricula being used in schools and the training of proxy parents (drawn from the education sector) who would serve as local/district school resource officers (or Community Education Aides).

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APPENDIX 1: OBJECTIVES OF WEBINARS

First Webinar

- (1) To provide a platform for educational stakeholders to share their experiences in responding to the challenges posed by COVID-19 and its impact on the education sectors of the Caribbean region
- (2) To facilitate an assessment of how educational institutions have progressed relative to their core mandate since the crisis of COVID-19
- (3) To identify emerging lessons for assisting in strengthening regional, national, and institutional responses of all stakeholders
- (4) To uncover initial insights which must inform the redesign of the education systems of the Caribbean region in order to create more resilient and inclusive societies and economies

Second Webinar

- (1) To examine some of the key factors which shape the deficits in the educational landscape of developing countries pre and post COVID-19
- (2) To explore approaches being used by a sample of countries to overcome the challenges they have faced in delivering quality education pre and post COVID
- (3) To discuss lessons and insights that Caribbean educational policy makers, practitioners, strategists, and other stakeholders may learn, and implement to strengthen the response of Caribbean countries in dealing with the pre-existing challenges facing the education sector as well as those created and exacerbated by the COVID-19 pandemic.

Third Webinar

- (1) To examine the state of access to teaching and learning via online
- (2) To evaluate the teaching and learning experiences of teachers and students since the onset of COVID-19 and remote teaching and learning
- (3) To discuss plans developed or being developed by relevant ministries of government and telecoms providers to improve connectivity, reliability, and access
- (4) To explore various strategies for effective and sustained delivery of learning using non-face-to-face modalities as well as safer uses of face-to-face modalities
- (5) To agree principles, reflecting the diverse expectations and needs of stakeholders, to guide the build out and development plans for achieving last mile connectivity and creative learning options

APPENDIX 2: PANELISTS

Panelists included representatives from:

- Ministries of Education
- Regional Examination organizations
- Teachers and Teachers' unions
- School Principals' Associations
- University student guilds
- University lecturers
- Tertiary-level institutions managerial staff
- Telecommunications entities
- Parents
- International and regional entities such as the United Nations Educational, Scientific and Cultural Organization and the Inter-American Development Bank

STATE-LEVEL EDUCATION LEADERS' ROLE IN DIVERSIFYING THE TEACHER PIPELINE

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ABSTRACT

Far too often, conversations about diversifying the teacher pipeline are left to district and school leaders. Conversely, too little conversation is grounded in the kinds of policy changes at the state level that are foundational to giving local and district leaders the tools to attract, recruit, and retain a diverse teacher workforce. This article aims to fill gaps in the literature concerning state-level leaders' role in creating policy to build a diverse educator pipeline. If school and district leaders are going to diversify the teacher pipeline, state-level leaders will need to examine their current policies and practices to make sweeping, innovative policy changes that are critical to build a diverse pipeline of teachers. Recognizing the critical role state education agencies play in shaping policy to inform school and district leaders' behavior, this paper provides recommendations for state education agencies to diversify the teacher pipeline. First, this paper highlights the literature around barriers to diversify the teacher pipeline. Second, this paper examines the role state education agency leaders play in diversifying the teacher pipeline. Finally, this paper provides five recommendations for state-level leaders to advance policies to grow the pipeline of diverse teachers.

INTRODUCTION

State education agency leaders serve as the policymakers for schools within their respective states. As such, state education agency leaders are postured to make dramatic changes to schools within their states. One such opportunity is diversifying the teacher workforce. A growing body of literature has pointed to the long-running impact of same-race teachers on several student outcomes. More specifically, Gershenson et al. (2018) found when Black students are randomly assigned to classrooms and have a Black teacher, the students are significantly more likely to complete high school and aspire to enroll in college. Since the 1954 *Brown vs. Board of Education* decision, Black students have seen fewer Black teachers in the classroom. Moreover, when schools are staffed with teachers of color, they are more likely to have the highest turnover rates (Evans & Leonard, 2018). Though many states have made increases in their share of teachers of color, the percentage is disproportionately low in comparison to the percentage of students of color (Schaeffer, 2021). As we consider practices and policy changes to increase access to strong and diverse teachers, state education agencies are positioned to strengthen the diversity of the educator workforce.

A North Carolina study concluded that Black students who were assigned to a Black teacher at least once between 3rd and 5th grade were least likely to drop out of school and more likely to attend college. A similar study in Tennessee found that Black elementary students with a Black teacher experienced greater than a 3 to 6 percentile increase in performance as compared to Black students without a Black teacher (Gershenson et al., 2018).

If we want to support the dignity and success of students from all demographics, then we must ensure students of color have access to more teachers of color. Far too often, school district and school leaders cite a lack of access to diverse educators to explain why few school faculty match the diversity of the students they serve (Schaeffer, 2021). More recently, school district and school leaders have launched calls for policymakers to enact new policies and practices to create more on

and off-ramps for individuals to become teachers. These efforts are aimed at increasing the diversity of the educator workforce. To that end, state-level advocates and policymakers have a unique opportunity to create conditions to increase access to strong and diverse educators exponentially.

To improve outcomes for students of color and their White counterparts, state education agency leaders could implement policies and innovative approaches to diversify the teacher workforce. Given the growing literature around the impact of same race teachers on students, the true opportunity rests in transforming state systems (including preparation and licensure) to increase access to strong and diverse educators to ensure students have mirrors, not windows. The greatest equity lever for transforming schools and systems is developing policies and practices that yield a racially diverse teacher workforce. Policies and practices must not only go beyond simply recruiting teachers of color, but also they must work to build a system to support the retention of teachers of color. Now, more than ever, as states are grappling with the effects of unfinished teaching and learning, teachers exiting classrooms every day, and a leaky pipeline, states must provide leadership to curb what appears to be a never-ending crisis---many students of color with no teachers of color. This paper builds on the work of Goings et. al. (2018) who explored district level leaders' role in diversifying the teacher pipeline. As such, this paper will begin by highlighting opportunities from the literature for state education agency leaders to diversify the teacher pipeline. Then, this paper will look at the role and factors influencing the role of state education agency leaders. Finally, this paper will provide high-leverage recommendations for state education agency leaders to begin making both the structural and policy changes necessary to diversity the teacher pipeline.

TEACHERS OF COLOR CHOICES IN TEACHER PREPARATION PROGRAMS

One of the three pillars critical to the diversification of education is teacher preparation programs (TPPs). TPPs are the beginning of the pipeline for individuals, followed by the actual job market process and workplace retention (Leggett, 2020). First, one must understand which TPPs are producing high numbers of educators from different racial, ethnic, and cultural backgrounds. Overall, traditional TPPs are 74% White, 11% Hispanic, 9% Black, 3% Asian or Pacific Islander, 2% multiracial, and 1% Indigenous (U.S. Department of Education, 2016, p. 18). While there is limited literature descriptively studying top TPP producers for other racial and gender groups, some research highlights one of the smallest intersections: Black men. The top five institutions that produced Black male education majors as of 2018 are: Alabama State University, South Carolina State University, Grand Canyon University, Western Governors University, and Jackson State University (Goings & Lewis, 2020). Of the top ten institutions, nine of them were “a historically Black college or university (HBCU), for-profit institution, or an institution with a strong online education presence” (Goings & Lewis, 2020).

There are several approaches to recruitment by teacher preparation programs including alternative pathway programs for certification, identity-based affinity programs, and early intervention recruitment through partnerships with K-12 districts. First, alternative pathway programs contribute the most racial and ethnic diversity compared to traditional TPPs. According to a Department of Education report on racial diversity in the educational workforce, traditional TPPs had on average 11% Hispanic and 9% Black enrollment compared to 18% enrollment of Black and Hispanic teacher candidates in alternative teacher education programs outside of universities (U.S. Department of Education, 2016).

Some examples of programs chosen by teachers of color include Teach Tomorrow in Oakland (U.S. Department of Education, 2016) and EDUCamp in Southwest Florida (Carothers, Aydin, & Houdyshell, 2019). Teach Tomorrow in Oakland recruits community members, paraprofessionals, career changers, alumni, and high school students in the Oakland area to pursue teaching careers within the Oakland Unified School District and includes support for a six-week pre-service training, alternative certification classes during an internship year, and financial support (U.S. Department of Education, 2016).

EDUCamp in Southwest Florida is a summer camp initiative between five local school districts and one university partner. This camp enrolled 27 K-12 students in 2017 and 36 students in 2018, and it produced strong outcomes qualitatively. By the end of the program, students reported a 41% increase in feeling prepared or very prepared or feeling that they could teach others how to enroll in college from the start to the end of program. Their responses represented a 56% increase in those who felt prepared or very prepared, or they felt they could teach others how to teach a lesson from start to end. Moreover, their response represented a 9% increase in the likelihood that they would enroll at university to become a teacher (likely, very likely, university #1 choice to study to be a teacher) (Carothers, Aydin, Houdyshell, 2019). Even scaled-down efforts such as collaborations with high school organizations like Future Business Leaders of America) could be a successful strategy for districts attempting to implement low-cost or soft-rollouts of “grow your own” programs (Wallace & Gagen, 2020). One important caveat of these types of programs is that they do need earlier interventions even as early as elementary school. Research has shown that waiting until high school to begin initiatives like this may be too late to introduce or change the minds of students particularly young Black girls (Farinde-Wu et al., 2020).

LACK OF FUNDING SUPPORT FOR HBCU TEACHER PREPARATION PROGRAMS

Research focusing on the challenges of growing teacher education programs at HBCUs revealed a myriad of fiduciary constraints including: a decline in state and federal funding allocations for operating budgets, cuts to financial aid, economic downturn at state levels, state merges of HBCUs, decreased financial support from the public and alumni, and a lack of financial investment in HBCUs from state boards of higher education (Toldson & Lewis, 2017). Despite such challenges, HBCUs disproportionately produce higher numbers of teachers of color though HBCUs only have access to a fraction of the state, federal, and private grant money. For example, while PWIs like Columbia can hire PhD or graduate-level students to be graduate assistants to assist with time-consuming and complicated performance-based assessment processes like edTPA, many HBCUs do not have the equivalent resources at their disposal (Petchauer et al., 2018). Furthermore, HBCUs often lack financial resources to hire full-time staff to plan and implement training, provide resource materials, or other give students supportive measures that are necessary and correlated with success on certification benchmarks like edTPA (Petchauer et al., 2018). While support for edTPA preparation at many North Carolina HBCUs starts and ends with links to some generic handbooks created by SCALE (the body that created edTPA), the larger state schools have extensive edTPA resources including lesson plan templates, extensive literature, half-credit courses, and web resources (Petchauer et al., 2018). Additionally, the larger PWIs in the state have the resources to be able to send faculty to conferences and train them more in-depth on the edTPA requirements and process (Petchauer et al., 2018).

ASSESSMENTS SERVE AS BARRIERS FOR CANDIDATES OF COLOR

The introduction of assessments for teacher certification also has introduced barriers for diversifying education. Traditional assessment models such as the Praxis exam administered by Educational Testing Services (ETS) and portfolio models such as edTPA negatively impact teachers of color. Not only are these tests prohibitive and in some cases racist, but they also show little quality in terms of their ability to predict success as a teacher. First, there is substantial evidence of bias on traditional exams for educators. Teacher preparation exams have been studied and found to exhibit labeling, selection system, and cultural bias (Bennett et al., 2006; Jencks & Phillips, 1998; Nicklos & Brown, 1989). At a 2006 HBCU-ETS meeting, the assessment director of ETS at the time confirmed the regular practice of removing test questions on which White males scored poorly but other racial and ethnic subgroups excelled and retaining questions on which White males scored well and other racial and ethnic subgroups scored poorly (Graham, 2013). There is also the challenge of students receiving strategic test preparation opportunities like what is offered in enrichment programs or test preparation courses (Ginsberg et al., 2020; Graham, 2013).

HBCUs such as Jackson State University are trying to head off the preparation and anxiety barrier for Black teachers by providing a Praxis lab which offers ongoing workshops on reading, writing, mathematics, and extra test taking practice. The institution is designating and assigning targeted mentors and academic coaches to help students plan and study for the exam, and it is building a transparent culture around the Praxis test (Ginsberg et al., 2020). Many students have spoken positively about the specific help they have been able to receive from these interventions, including being able to comprehend passages better and receiving specific test taking strategies like limiting time on questions to two minutes per question and eliminating unnecessary information (Ginsberg et al., 2020). Furthermore, professors in the program make space for former students to share their experiences with preparing for and taking the Praxis exam and speak with current students to share successful strategies and help them process their anxiety centered around the exam (Ginsberg et al., 2020). Strategies like this are recommended explicitly as interventions to support historically minoritized teacher candidates mentally and academically to overcome these structural barriers in assessments (Petchauer, 2014).

Portfolio assessments like edTPA have been understudied for their racial bias and impacts on candidates of color. The edTPA assessment is now being used in 19 states as of 2020 (The Council of State Governments, 2020). The edTPA program has shown bias against both Black and Latinx teaching candidates (Petchauer et al., 2018). Using the 2014 and 2015 scores, edTPA results showed a “statistically significant difference between edTPA score means for Black and White candidates each year” (Petchauer et al., 2018, p. 329). When studying one of the five pilot states, Washington, there were statistically significant differences between the performance of Latinx candidates and White candidates. Latinx candidates were “3-times as likely to fail the exam compared to White candidates” (Petchauer et al., 2018, p. 330). The organization that created the edTPA assessment process, the Stanford Center for Assessment, Learning, and Equity (SCALE), has not engaged in comprehensive testing to ensure that there is “measurement equivalency for different racial groups” (Petchauer et al., 2018, p. 330). Given the growing popularity of assessments like edTPA and the potential for wider adoption, testing and mitigation of racial bias in these assessments must be implemented. Moreover, the cost of performance-based assessments may be a significant barrier. For example, the cost of the edTPA test is \$300 per assessment. There are some full or partial vouchers available by purchase from TPPs, but the vouchers are unable to be applied retroactively (Pearson Education, Inc, 2021). This is a prohibitive cost considering the cost of college education.

Additionally, paraprofessionals and emergency certified and/or substitute teachers may be attempting to gain full certification through processes like edTPA. However, the cost is generally one of the most prohibitive factors for candidates of color. Individuals in one of those employment positions may only be earning \$1,200 per month before taxes in a state like Mississippi, which means that the edTPA exam is equivalent to almost a week of pay (Van Cleve, 2020).

Ultimately, assessments required for teacher accreditation are edging teachers of color from the profession with little to no benefit to student outcomes. In a study of middle school math, high school algebra and geometry, and high school biology student outcomes, basic skill assessments were only “modestly predictive” of student outcomes and only had significant student achievement correlated with the subject-specific licensure exam for biology (Goldhaber et al., 2017). While under qualification of teachers can be an issue in some cases, the larger issue is that teachers are forced into subject and/or grade assignments that match neither their education nor training (Ingersoll, 2007). The combination of teacher shortages and internal school administrative management issues exacerbate this issue (Ingersoll, 2007).

LACK OF SUPPORT FOR TEACHERS OF COLOR THROUGHOUT THE PIPELINE Teacher Compensations Structures Decrease Attractiveness

An incentive factor that significantly contributes to a decrease in attractiveness for teachers, especially teachers of color, of joining the profession is compensation. It is estimated that teachers enter the profession having anywhere from \$20,000-\$50,000 of debt from schooling (Fiddiman et al., 2019). This large amount of debt has resulted in many teachers feeling apprehensive from entering the field of education. In programs like Texas’s UTeach Program, both students who intended to go into teaching as well as students who did not intend to go into teaching felt that financial incentives were critical to being able to both enter and complete the UTeach certification (Cade et al., 2019). In addition to the cost of education, teacher candidates also face substantial costs associated with certification and testing. For example, the Praxis exam is \$130 per test administration, and teachers, depending on their area of certification, may need to take between 2-6 of these exams. Jackson State University has addressed this issue by providing scholarship money to cover Praxis test costs. When interviewing students at Jackson State University, “The participants collectively noted that \$130 could be the difference between graduating with an education degree or the need to change majors” (Ginsberg et al., 2020).

Working Environment

Finally, recruitment means very little if it is not matched by retention efforts. While recruitment of educators from diverse ethnic, cultural, and racial backgrounds has been largely successful over the past four decades, the same teachers are being driven from the classroom due to a failure to develop and manage teaching adequately upon hiring (Ingersoll et al., 2019). For example, if teachers are not placed in the subject areas in which they are qualified and prepared to teach, this has negative outcomes for the teacher and students (Ingersoll, 2007). Furthermore, the working conditions of schools has been a significant driver in the turnover of Black, indigenous, Latinx, Asian, Native Hawaiian, Pacific Islander, and multiracial teachers (Ingersoll et al., 2019). The combination of personal reasons (ex: pregnancy, medical reasons, relocation), dissatisfaction with teaching, and a desire to improve career opportunities account for the vast majority of historically marginalized teachers exiting the profession (Ingersoll et al., 2020). During the COVID-19 pandemic, teachers who left the profession were twice as likely to indicate stress as their reason for departure over

pay (Diliberti et al., 2021). Teachers who returned after leaving during the pandemic reported that flexibility in their new job was the core reason they returned to a classroom (Diliberti et al., 2021).

Mentoring and Induction

The retention of teachers from diverse ethnic, cultural, and racial groups also provides students with more opportunities for consistent, stable, and culturally responsive learning opportunities (Lee, 2018). Initiatives like the Chicago Teacher Education Pipeline (CTEP) have been able to bridge the learning that teaching candidates experience in their TPP at Illinois State University. Within their first two years of teaching service, students are provided with ongoing mentoring support within their schools based on their grade level and content area. (Lee, 2018). The outcomes of this program have been impressive. Teachers who participated in this program have a 95% retention rate after three years and an 83% retention rate after five years. This represents a 53% improvement over Chicago Public Schools average five-year retention rate (Lee, 2018).

Some researchers also present evidence that more time in the classroom during TPPs can have a positive outcome on teacher retention. Ladson-Billings discusses the need for field experiences as another essential component of preparing educators to educate Black students properly (Ladson-Billings, 2000). One such example of this type of field experience in action is found at Jackson State University's "Call Me Mister" program, which gives teaching candidates extensive opportunities to experience classrooms in predominantly Black schools (Ginsberg et al., 2020). The researchers found in interviews with faculty and students in the program that this experience component reduces "practice shock" (p.11). The classroom experience with students of color was "particularly poignant for teachers of color who are not prepared for the systemic racism they are about to encounter." (Kohli 2018, pp.118)

ROLE STATE LEVEL EDUCATION AGENCIES PLAY IN DIVERSIFYING THE EDUCATOR PIPELINE

State level agencies play three principal functions: coordination, financing, and benchmarking/accountability. First, state agencies can help coordinate collaboration between K-12 and higher education entities. While these partnerships can emerge organically, state agencies can provide a strong foundation and help facilitate aligned partnerships. One of the most successful types of collaboration that state agencies can facilitate is related to Grow Your Own (GYO) initiatives. Recently, the teacher shortage crisis nationwide has led many states to convene task forces to investigate and make recommendations regarding teacher shortages and diversify statewide teacher pipelines. These task forces are often formed by state governors or state legislatures and include multiple state agencies including, but not limited to the K-12 regulating agency and higher education regulation agency. One such example of this is in Nevada. The multilevel coordination between the Nevada Department of Education (NDOE) and the Nevada System of Higher Education (NSHE) will occur through the NSHE Teacher Pipeline Task Force and will research, scale-up, and build new teacher pipeline initiatives through replicating successful initiatives at TPPs in the state and aligning those initiatives with the needs and progress of the 17 districts throughout the state (State of Nevada Department of Education, 2021). State agency coordination increases the efficiency of identifying challenges and implementing solutions across the entire state instead of relying on school districts and TPPs to figure out solutions organically.

Second, many school districts and TPPs lack the independent funding to bankroll teacher pipeline programs and substantive diversity initiatives. State agencies can provide both technical and financial assistance to secure funds for these types of initiatives. For example, in the state of Mississippi, the Mississippi Department of Education was able to use its staff capacity to secure a \$4.1 million grant in 2019 from the W.K. Kellogg Foundation to fund a diversity pipeline program entitled, the Mississippi Teacher Residency (Mississippi Department of Education, 2019). This program is run through the Mississippi Department of Education (MDE) and works with Mississippi TPPs as well as Mississippi K-12 school districts to recruit and train diverse educators through a coursework and on-the-job training approach (Mississippi Department of Education, 2021). The MDE plays an important role with this program by managing the application process for teachers in residency, selecting partners, ensuring that partner districts and universities are aligned to the outcomes of the program, and continually securing funds to ensure the continuation of the program. After the Kellogg funds were exhausted, the MDE was able to apply for and receive funds through the American Rescue Plan Elementary and Secondary School Emergency Relief (ESSER) which has helped sustain the program (Mississippi Department of Education, 2021). States are also able to use Title II, Part A funds through the Every Student Succeeds Act (ESSA) that they receive to support initiatives for diversification of teacher pipelines. A 2018 report by the Center for American Progress highlights at least 15 state teacher pipeline and diversity initiatives that are funded through Title II, Part A ESSA plans (Johnson, 2018).

Finally, state agencies provide an important role in holding districts and schools accountable for diversifying their teaching staff. Unfortunately, those who work in diversity, equity, and justice spaces know that organizations and individuals often make large claims about diversity initiatives, yet they fail to deliver results. State agencies force districts to prioritize diversification as a priority through mandates. One state that has implemented this is Tennessee. As of the 2021-2022 school year, districts are required to submit annual goals, plans, and progress towards increasing the number of teachers of color in their district to the Tennessee State Board of Education (Aldrich, 2021). Tennessee is one of the first states to implement a mandate of this nature, and it may yield promising results for the state, which has one of the Whitest teaching forces in the nation (Aldrich, 2021). The Tennessee Department of Education also will be doing vital work by publishing human capital data reports (Johnson, 2018). Many districts, especially in high-need and underserved districts, lack the technical capacity and staffing to hire data experts who can maintain, analyze, and publish data on issues like this. Therefore, state agencies providing this type of technical support in tracking data and measuring progress serve an important infrastructure role that may assist districts and schools in diversifying their teaching force. The District of Columbia (D.C.) Office of the State Superintendent (OSSE) has also been leveraging funds to partner with third-party data consultants, and 90% of the schools in the D.C. district collect and monitor data, which allows the district to tailor solutions more closely to match data related to teacher outcomes and school needs (Johnson, 2018).

STATE LEVEL LICENSURE GUIDELINES SERVE AS GATEKEEPERS OF QUALITY

One area state education agency that leaders control which may hinder progress in the diversification of the teacher pipeline is state licensure guidelines. At best, many licensure requirements lack alignment to meaningful teacher and student outcomes; at worst, licensure programs can be excessively vague, unclear, and rigid. While some states have a state policy that dictates the license requirements for teachers, other states have more autonomy to set licensure criteria and processes

within state agencies themselves. There are two areas in which state agencies can impact diversity in the teaching profession: certification pathways with a higher barrier of entry to the profession and a lack of consistency in policy practices.

First, state education agency leaders have a litany of requirements for teaching candidates to enable them to earn licenses. These include a combination of the following areas: content knowledge exams, performance assessments, state specific coursework, and measures of protection such as “good moral character” (The Council of State Governments, 2020). State agencies are the core source of communication to teacher candidates about these requirements and the process needed to complete them. When this information is vague or unclear, it becomes a deterrent for candidates who are considering the career pathway of teaching. In particular, this lack of clarity discourages teachers of color from considering these careers. Furthermore, state licensing agencies can reject applications that they think violate “good moral character” provisions (The Council of State Governments, 2020). While some states only consider criminal activity that could have a direct harm on children, other states define these criteria more broadly and can include things like defaulting on a loan, having any arrest (even if not convicted), or failing to pay taxes. This means that teachers who may be activists or have financial hardship may be barred from teaching in some states. Further, a lack of regard for these inequities can exacerbate the retention problem further by limiting opportunities for those who are unfairly targeted.

Additionally, while some states are working to add additional pathways to licensure for teachers who did not complete TPPs, other states like Minnesota have considered restricting these license pathways. In 2021, Minnesota’s legislature heard a bill, Governor’s Policy Bill (SF788), that would eliminate their Tier 3 (permanent) license option without going through a TPP or doing a performance assessment (Eischens, 2021). It would have also eliminated a Tier 2 (renewable up to three times) pathway that would have allowed teachers to be eligible for that license tier with “two of the following: upper division credits in the subject area, method training, two years of teaching, and certain exams or a teacher preparation program” (Eischens, 2021).

State education agency leaders also can act as gatekeepers to diversity in K-12 education by failing to apply policies consistently in their practice of granting teacher licensure. For example, states may have vague policies when it comes to coursework that is accepted for meeting licensure requirements. As a result, the types of courses allowed and approved by licensure boards may change as staff members and board members rotate out of their positions. In these cases, one candidate may have a course count in one year, and that same course may be rejected by the licensing board just a few years later. Similarly, criteria like “cut-scores” (minimal scores necessary to pass licensing exams) can change annually, which literally shifts the goalposts for teacher candidates who are working to obtain teaching certification.

FACTORS IMPACTING STATE LEVEL AGENCIES AND POLICY CHANGES TO DIVERSITY THE EDUCATOR PIPELINE OVERTIME

There are several contemporary simultaneous events occurring that may accelerate or impede the ability of states to change their policies to improve diversity in the educator pipeline. These catalyst conditions include: the structure of ESSA, public saliency of diversity in education and industries, and COVID-19 era policy changes (Diliberti et al., 2021; Johnson, 2018).

The ESSA has provided states with both the incentives and the funds necessary to concentrate efforts on diversifying their educational workforce. In terms of incentives, ESSA and the Department of Education have created space in state plans to prompt state agencies to discuss innovative plans to recruit and retain diverse teachers in their state. Additionally, under Title II, Part A, states can receive and disburse funds to focus on these efforts. This encourages states to consider diversity in their calculus for federal accountability. For states which rank low in overall academic performance but are working to improve growth metrics rapidly, pursuing a more diverse workforce may improve the overall quality of education for students in the state while helping the state perform better in ESSA accountability. In short, the federal government has reframed diversification to be an exciting benefit for states to consider and pursue instead of view as a potential liability. Moreover, the federal government has named the diversification of the teacher pipeline as a priority.

Finally, COVID-19 has presented substantial challenges to recruiting and retaining educators, and it has provided opportunities financially for diversifying the pipeline. Many states have been able to obtain as well as grant waivers for several policies including student assessments and teacher certification requirements. Furthermore, the availability of federal recovery funds through the American Rescue Plan Elementary and Secondary School Emergency Relief (ESSER) has allowed states to divert funds to new, innovative programs and policies to support the diversification of teacher workforces. At the time of this article, the U.S. is experiencing a wave of the omicron COVID-19 variant, which is creating similar policy and operational circumstances to the initial March 2020 wave of the pandemic. The COVID-19 pandemic has changed almost every aspect of teaching and may push states to continue revising their policies and provide financial investment for the recruitment and retention of teachers as many schools and districts face down massive waves of resignations and challenges.

SUGGESTIONS FOR STATE LEVEL EDUCATION LEADERS ON PLANNING TO DIVERSIFY THE EDUCATOR PIPELINE

Here are six high-leverage opportunities developed from evidence-based practices in the recruitment and retention of teachers of color and experience and connected to state-level efforts to diversify the educator pipeline. State leaders now have an opportunity to support district and school leaders to increase students' access to highly qualified and diverse teachers through strong policy and practice.

1. Make diversifying the educator pipeline explicit in the state's strategic plan and goals.

First is to track and publicly report progress around the established goals. The strategic plan of an organization drives what gets done day-to-day in an organization. Additionally, resources are made available to drive the desired results of the strategic plan. State education agency leaders must ensure the work of diversifying the educator pipeline is a priority in what gets done through licensure policies, educator preparation program review and approval, and professional learning opportunities. To remain accountable to the work of diversifying the educator pipeline, state education agency leaders could monitor and publicly track progress around state level actions to diversify the educator pipeline. Given that the state's strategic plan drives what happens, state's education agency leaders must leverage such systems to ensure the work of diversifying the educator workforce is a priority of all work streams. For example, Mississippi has embedded in its state's strategic plan their desire to have "diverse learner- ready teachers"

2. Prioritize departmental budgets and staffing to ensure state education agency leaders have the human capital and resources needed to diversify the pipeline.

State level education agencies overwhelmingly assign the work of diversifying the educator pipeline to existing teams that already are strapped for staff and resources. If states are serious about diversifying the educator pipeline, they must devote money and human capital strictly to work on diversifying the educator pipeline. State chiefs and boards of education must ask their state legislatures in their budget requests to provide specific funding for diversifying the educator pipeline. Critical to the work of diversifying the educator pipeline is having funding to not only support the recruitment of new teachers but also to support the retention of current teachers. Subsequently, funding is critically important to efforts to diversify the educator pipeline. For example, in Maryland, state education agency staff members are assigned solely to work on addressing issues relative to diversifying the educator pipeline.

3. Retool state-level licensure guidelines, policies, and practices.

Prospective teachers of color often struggle with passing high-stakes licensure exams. Studies have concluded Black and Latinx teachers disproportionately fail standardized assessments. States should implement competency-based and student outcomes-based approaches for licensing teacher candidates. For example, Mississippi most recently launched a performance-based licensure pilot with 70 teachers of color. Each participant has at least three years of teaching experience, has produced exceptional results with students, and has struggled with passing required licensure exams. The state awarded the teachers a three-year, special non-renewable license to alleviate any anxiety teachers may face in meeting licensure requirements. Rather, the state asked educators to focus on the performance of students as a metric for determining the issuance of a license. The state looks to make a recommendation in the next three years including the option in the state's licensure guidelines as a permanent option for teacher licensure.

4. Invest in early intervention programs to prepare teachers.

Early intervention programs or “grow your own” programs have data alluding to their success (Rogers-Ard et al., 2019). These programs work on recruiting students early in their K-12 education trajectory into the field of education. These programs often use university-district partnerships to build and maintain recruitment pipelines (Carothers et al., 2019). This partnership has been emphasized by many researchers as a critical strategy for recruiting more teaching candidates from historically marginalized and excluded backgrounds into the classroom, including Black women and men (Farinde-Wu et al., 2020; Wallace & Gagen, 2020; U.S. Department of Education, 2016). With teachers of color exiting schools at higher rates than their counterparts, states should consider strategies in the preparation of teachers of color including strong mentoring and induction (Ingersoll et al., 2020). Teacher residences, much like medical residences, provide a strong model for supporting teachers of color in a cohort. Often, residences are alternative route programs and provide extensive, context-relevant professional learning for the teachers they train. Nationally, about 49% of individuals trained in teacher residency programs are teachers of color. In many cases, residency programs are born out of the idea of training diverse teachers. The Boston Teacher Residency, much like other residency programs, has

committed to ensuring that each cohort has at least 50% of the participants be educators of color. Since its launch, the Boston Teacher Residency has exceeded its goal. Even more striking, a 2014 study concluded that graduates of the program were twice as likely to be rated “Exemplary” than other Massachusetts teachers (Massachusetts Department of Elementary and Secondary Education, 2016).

5. Invest in funding for scholarships at historically Black colleges and universities.

While there are some federal grant sources available to HBCUs to help support these programmatic efforts, only about 10% of the funds like the NSF Noyce Program, which works to recruit 100,000 new STEM teachers to middle schools and high schools, go to Minority Serving Institutions (MSIs) like HBCUs or Hispanic Serving Institutions (HSIs) (Toldson & Lewis, 2017). There is some evidence to suggest that when there are targeted support measures such as workshops and other technical assistance programs for MSIs, there is high payoff. For example, 59% of MSIs that received Noyce grants as of 2016 participated in one of the workshops or technical assistance programs through the Quality Education for Minorities network (Toldson & Lewis, 2017). In addition to these types of grants, community partnerships and alumni bases should be mobilized to establish and maintain endowments to recruit diverse educators (Wallace & Gagen, 2020).

6. Use district or state-based loan forgiveness programs, compensation structures, and scholarships as a recruitment tool, particularly in recruiting candidates from historically Black colleges and universities (HBCUs).

The Center for American Progress recently wrote that Black and Latinx students who prepared to be teacher were more likely to borrow federal student loans compared to their White peers: 91% of Black students, 82% of Latinx students compared with 76% of White students. (Fiddiman et al., 2019) The same study concluded that for teachers who borrowed the most federal student loan money in their cohort, figures show that Black and Latinx teachers borrowed significantly more money compared to White teachers (Fiddiman et al., 2019). Additionally, 50% of the current Black teacher workforce attended an HBCU. There is no question that looking to HBCU’s to prepare more teachers of color is the way forward. Other studies have predicted the probability that students who take out large amounts of loans will not take on public service roles like teaching, particularly because of the low salary they can expect to make. States should invest and strengthen state-level loan forgiveness programs and make more sense of how much debt prospective and current teachers of color are facing in their effort to become teachers. Aside from the cost of education in relation to loan forgiveness programs, several states are pursuing more aggressive pay-additive measures to recruit and retain teachers. In the state of California, recent legislation allows for districts to provide housing subsidies and grants to teachers (Lambert & Willis, 2019). Although there is no research to show if this initiative will be effective in retaining teachers, 40,000 teachers left the state over the four year period between 2013-2017 as housing costs continued to skyrocket (Lambert & Willis, 2019). Other states like Maine are also pursuing longevity bonuses, which would provide additional compensation for teachers who live in high-need districts such as those that are in rural areas or serve predominantly minoritized and/or low-income students (Johnson, 2018). Additionally, the Indiana Department of Education is advising districts how to

adjust compensation for teachers who take on additional leadership roles or duties outside their normal contracts (Johnson, 2018).

State education agency leaders must prioritize the building of a strong teacher pipeline to diversify the educator workforce. For all children to benefit from a diverse educator workforce, states must enact multiple, cross cutting solutions that address leaks in the pipeline. Given that state education agency leaders serve as the policymakers for schools within their respective states, state education agency leaders are best positioned to enact bold solutions to support principals in closing the opportunity gap by focusing on the diversification of the educator workforce. These recommendation for systems change are only the beginning.

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SCHOOL BUILDING CONDITIONS' INFLUENCE ON STUDENT BEHAVIOR IN A MEDIUM-SIZED DIVISION IN VIRGINIA

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ABSTRACT

The study examined the relationship between building conditions and overall student behavior as well as the relationship between building conditions and the behaviors of student subgroups that include Caucasian, African American, Hispanic, and Students with Disabilities (SWD). The study controlled for over-crowdedness, socioeconomic status, and attendance. The study included 10 school facilities in a medium-sized school division in Virginia. Building conditions were determined through facility engineering and educational condition. Facility Condition Indexes (FCIs) described facility engineering conditions. The Revised Commonwealth Assessment of Physical Environment (CAPE) instrument initially developed by Cash (1993) and revised by Cash and Earthman (2019) assessed facility educational conditions. The CAPE instrument provided overall, structural, and cosmetic facility condition scores and was administered by principals.

Student behavior was determined by student overall behavior indexes as well as subgroup-based behavior indexes representing the ratio of discipline incidents divided by student population. School-specific over-crowdedness indexes were utilized. Free and reduced-price lunch percentages were used as a measure of socioeconomic status. For attendance, the study used attendance indexes described by the percentage of students who were absent at least 10% of the academic year.

To establish the potential relationships between building conditions and student behavior in each student subgroup, the study used quantitative analysis utilizing hierarchical multiple-variable regression and analysis of variance (ANOVA) through the Statistical Package for Social Sciences (SPSS). The researchers conducted individual single-predictor and multiple-variable hierarchical regression models. ANOVA was utilized to explain the total variance in the regression model, and the variance due to each predictor.

The study identified that higher numbers of disciplinary incidences were related to higher absenteeism rates within all student groups. Lower numbers of Hispanic student disciplinary incidences were associated with poorer student populations. In terms of facility conditions, lower numbers of Hispanic student and SWD disciplinary incidences were associated with improved cosmetic facility conditions and lower numbers of SWD disciplinary incidences were associated with improved overall facility conditions. There were no statistically significant relationships between facility conditions and overall student behavior as well as Caucasian and African American student behavior.

OVERVIEW

The average age of public-school buildings in the United States exceeded 50 years and many of these school facilities are nearing the end of their functional life span (Magzamen et al., 2017). In

a 2019 study, the US General Accounting Office identified an estimated 54% of schools nationally requiring updates or replacement of multiple school systems (US General Accounting Office, 2020) (type: "report"}, "uris": [{"http://www.mendeley.com/documents/?uuiid=ed1aeb4c-bd89-49e1-aac0-5a9cea29ae97"}], "mendeley": {"formattedCitation": "(US General Accounting Office, 2020). The US General Accounting Office (2020) estimated that heating, ventilation, and air conditioning systems needed to be updated or replaced in at least half the school buildings in 41% of school districts representing 36,000 schools nationally. The US General Accounting Office (2020) estimated percentages of school districts with at least half of schools needing update, repair, or replacement of key building systems or features that included interior lighting fixtures (28%), roofing (28%), safety and security features (27%), structural features (13%), and environmental conditions (10%).

The National Center for Educational Statistics [NCES] (2014) identified that 53% of all public schools nationally need to spend an estimated at \$197 billion on repairs, and renovations of school buildings, with an estimated average of \$4.5 million per identified school. NCES (2014) reported that 28% of schools were built prior to 1950 and 45% of schools were built between 1950 and 1969 with minor to no renovations impacting the adequacy and safety of the educational environment. Additionally, NCES (2014) established that the average building age was 44 years, renovations occurred on average 12 years ago among schools that renovated their main building, and building additions or replacement occurred on average 16 years ago. Ornstein (1994) reported that 61% of school buildings were built in the 1950s and 1960s with 20% of schools exceeding 50 years of age. Additionally, Ornstein (1994) established that school building ages between 20 to 30 years old required frequent replacement of equipment, schools between 30 and 40 years old required replacement of many original features that include roofs and electrical equipment, and school significantly deteriorated after 40 years and most were abandoned after 60 years.

HISTORICAL PERSPECTIVE

Earthman et al. (1996) determined that school facility conditions influenced the perceptions of preparedness in schools, staff, students, and parents' perceptions of safety, and student achievement as well as student behavior. Facility conditions and quality affected student performance, contributed to either low or high student achievement, and had an impact on behavior (Cash, 1993). The learning environment, student academic performance, and student behavior were impacted by the building design, its appearance, and its maintenance (O'Neill & Oates, 2000). Maxwell (2016) determined that there existed a link between physical school building conditions and academic achievement, student behavior, students' perceptions of themselves, and the school's social environment. Even though family background, socioeconomic status, and school attendance could be confounding factors that affect academic performance and behavior, facility conditions could have a stronger effect on student performance (Lyons, 2001). Researchers found a positive relationship between facility conditions and grades, standardized tests, and attendance (Magzamen et al., 2017).

Building conditions influenced the perceptions of parents and staff regarding the effectiveness of the learning environment (Cash et al., 1997). Student achievement was higher in schools with better physical conditions. According to Okcu et al. (2011), academic achievement was significantly higher in math, reading, listening, and language in newer schools than in older schools, and attendance was observed to be higher in new schools. Newer buildings had reduced health problems and disciplinary actions. Educators agreed that well-maintained school buildings were essential for providing the proper learning environment; however, researchers were not able to prove a direct relationship

between building quality and its impact on student learning and behavior (Cash et al., 1997). The challenges existed in the methodology and in isolating the effects of confounding variables that commonly influence student achievement (Earthman et al., 1996; Odden & Picus, 2008).

Limited research was available to establish a relationship between building conditions and the impact on school discipline and available research was conducted more than 10 years ago. O'Neill and Oates (2000) determined that there was no significant relationship between building conditions and student behavior. Bowers and Burkett (1988), Cash (1993), and Earthman et al. (1996) identified that there was a relationship between building conditions and behavior; however, the studies presented contradicting results. Bowers and Burkett (1988) indicated that there existed a negative relationship between building conditions and behavior; that is, newer school buildings had fewer behavior issues. Earthman et al. (1996) contradicted Cash's (1993) finding that there existed a reverse negative relation between overall building conditions and behavior. That is, newer school facilities experienced higher discipline issues. However, Earthman et al. (1996) found a reverse negative relationship between structural building condition and behavior as well as a negative relationship between cosmetic building conditions and behavior. Thus, the study aimed to address the problem that poor school facility conditions appeared to negatively influence student behavior.

REVIEW OF LITERATURE

Bowers and Burkett (1988) examined the relation between student learning and discipline rates and building conditions in elementary schools in rural Tennessee. The researchers conducted a study evaluating the progress of 280 fourth- and sixth graders attending two different school facilities during the 1986-1987 school year. The newer school was an elementary school housing 758 kindergarteners through eighth graders occupied in 1983-1984. The school was located on 10 acres, with fluorescent lighting, electric heat and air conditioning, acoustics controls, and a maintained color scheme with adequate furniture. The older school was another elementary school in the same school system built in 1939 with additions completed in 1950. The school housed 584 students and utilized fluorescent lighting, coal-fired furnace, several air conditioning units, and there were no evident effort to control acoustics, coordinate colors, or replace outdated furniture.

Bowers and Burkett (1988) concluded that students in the newer building had higher reading, listening, language, and arithmetic scores than students in the older building. Similarly, students in the newer building had lower discipline rates than students in the older building. Further, Bowers and Burkett (1988) determined that students attending the newer building had higher attendance rates than those attending the older building. Additionally, the study compared the illness records between both schools. The researchers determined that students experienced better attendance, better health, fewer discipline infractions, and better learning environment in schools with better physical environments.

Cash (1993) investigated the relationship between school building conditions and the influence on student academic achievement and student behavior. The study utilized an analysis of covariance, correlation, and regression to establish a relationship between school building conditions as the independent variable and student achievement and student behavior as the dependent variables. The study included the entire populations of 47 schools over 36 school divisions identified as small rural high schools in Virginia each with a senior class population less than 100 students. The researcher developed a building evaluation system that relied on school personnel to classify their building's

physical conditions. The instrument, Commonwealth Assessment of Physical Environment (CAPE), included air conditioning, heating, temperature control, lighting, equipment and furniture conditions, roof adequacy, physical features, ground conditions, and utilities and categorized them into three categories: overall, cosmetic, and structural. Building evaluators classified the physical building facility as above standard, standard, and substandard following the CAPE instrument.

Cash (1993) utilized all sub-tests of the Test of Academic Proficiency (TAP) administered to all 11th-graders in Virginia to measure student academic achievement. The researcher utilized discipline data from the Virginia Department of Education that included discipline incidents reported, and number of suspensions and expulsions. To control for confounding variables, Cash (1993) used the Virginia Composite Index to control for local wealth, and student free and reduced-price lunch data to control for socioeconomic status effects. The study conducted a mean data analysis for all building conditions ratings with free and reduced-price lunch data as a covariate.

Cash (1993) found that students in substandard school buildings performed poorly in comparison to students in standard or above standard school facilities as measured on the TAP assessment. Thus, there was a positive relationship between facilities conditions and students' academic performance. This relation held accurate in all subtests of the TAP assessment. Amongst all building rating categories, the difference in academic achievement was as much as five percentiles in all three categories with overall building ratings having the highest impacts on level of achievement compared to the cosmetic and structural categories. The study determined a reverse negative relationship between building conditions and student behavior. That is, above standard school facilities had higher discipline ratios compared to substandard school facilities. Cash (1993) explained that this relationship could be the result of stricter staff discipline practices in above standard schools than substandard schools causing higher discipline infractions reported.

Earthman et al. (1996) examined the relationship between building conditions and student academic achievement and behavior in high schools in North Dakota. Earthman et al. (1996) extended Cash's (1993) study utilizing the same methodology. The study used evaluative instruments to determine building conditions, a comprehensive test of basic skills to measure students' achievement, and recorded discipline data to classify student behavior. For a sample, the researchers examined all North Dakota high schools including 199 high schools with populations ranging from 65 to 1,200 students. The study measured student achievement using the Comprehensive Test of Basic Skills (CTBS) administered to all 11th-graders. The study received 120 responses from principals who completed evaluation instruments describing their building conditions and identified the presence or absence of select building conditions. These conditions included air conditioning, lighting, acoustics, presence of windows, cleanliness, and presence of graffiti. Similar to Cash's (1993) study, the results of the evaluation instruments ranked schools as above standard, standard, or substandard and categorized building conditions into cosmetic and structural categories.

Earthman et al. (1996) found that scores in above standard schools were higher than substandard schools in 11 out of 13 components of the CTBS assessment. When considering building cosmetics conditions, the researchers found that above standard schools outperformed substandard schools in 12 out of 13 components. Similarly, above standard schools outperformed substandard schools in 8 out of 13 components when compared to structural building conditions. The study concluded that, in 18 out of 23 categories of the evaluation instrument, overall scores of students in above standard school buildings were higher than substandard buildings.

Additionally, Earthman et al. (1996) analyzed discipline data compared to overall, structural, and cosmetic building conditions and determined that a reverse negative relationship existed between structural building conditions and behavior. However, their study determined a negative relationship between overall and cosmetic building conditions and behavior. That is, when looking at structural conditions in standard and above standard schools, students had higher disciplinary incidences compared to below standard schools, whereas overall and cosmetic building conditions in standard and above standard schools were associated with fewer discipline incidents than substandard schools.

O'Neill and Oates (2000) examined the impact of school facilities on student achievement, attendance, behavior, and teacher turnover rates in Texas middle schools. The study analyzed survey data administered to 70 middle school principals in 48 school districts in Central Texas. O'Neill and Oates (2000) concluded that school facilities had a significant impact on student achievement with school achievement being higher in newer buildings and in buildings with higher quality ratings. However, school facilities did not have a significant impact on attendance, behavior, or turnover rates. The study found that building age had the most impact on academic achievement as measured by percent pass rates on reading, mathematics, and writing assessments measured by the Texas Assessment of Academic Skills test. Furthermore, the comparison between attendance, behavior, teacher turnover, and building condition did not yield strong correlations. However, the study concluded that there was a strong cross relation between academic achievement and student attendance, behavior, and teacher turnover.

Bowers and Burkett (1988) as well as Cash (1993), Earthman et al. (1996), and O'Neill and Oates (2000) presented inconsistent and contradictory findings when describing the relationship that existed between school facility condition and behavior. Bowers and Burkett (1988) established that a negative relationship existed between building conditions and behavior. However, Cash (1993) determined that a reverse negative relationship existed between overall building conditions and behavior. Earthman et al. (1996) determined a similar relationship between structural building conditions and behavior, but contradicted that relationship when they related overall and cosmetic conditions to behavior. Even though the study findings differed, neither study identified a direct causal relationship between building conditions and student behavior.

PURPOSE OF THE STUDY AND RESEARCH QUESTIONS

The purpose of the study was to examine the relationship between building conditions and overall student behavior as well as the relationship between building conditions and the behaviors of student subgroups that include Caucasian, African American, Hispanic, and Students with Disabilities (SWD). The primary research question of the study was *What is the relationship between building conditions and student behavior?* The study examined the main research question and four supporting research questions addressing behavioral impacts on student subgroups while controlling for overcrowdedness, socioeconomic status (SES), and attendance. These supporting research questions were:

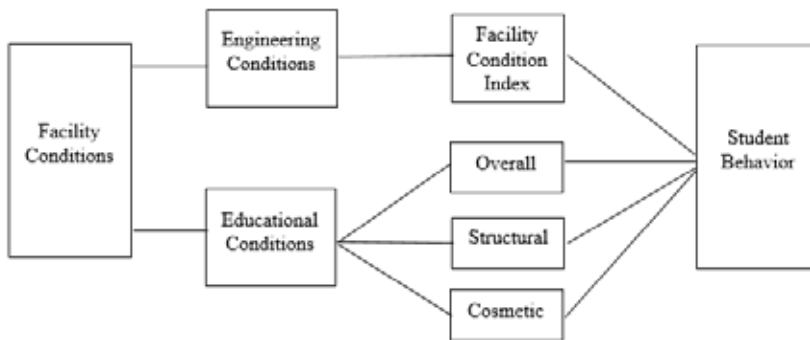
- (1) What is the relationship between building conditions and behavior of African American students?
- (2) What is the relationship between building conditions and behavior of Hispanic students?
- (3) What is the relationship between building conditions and behavior of students with disabilities?

CONCEPTUAL FRAMEWORK

The conceptual framework (Figure 1) highlighted that potential relationship between building conditions and overall student behavior as well as the relationship between building conditions and the behaviors of Caucasian, African American, Hispanic, and SWD. Facility conditions had a potential impact on the perceptions of health, absenteeism, school culture and climate, safety, behavior, and academic performance; however, the conceptual model focused on student behavior while accounting for over-crowdedness, socioeconomic status, and attendance as mediating factors.

Figure 1

Conceptual Framework



The conceptual model suggested that facility conditions, whether engineering conditions or educational conditions, directly influenced student behavior. The direct impact of facility conditions on student achievement could come from facility engineering and maintenance conditions, overall facility conditions, structural conditions, or cosmetic conditions. While many factors could mediate the relationship between facility conditions and student behavior, controlling for over-crowdedness, socioeconomic status, and student attendance could establish a significant relationship between facility conditions and student behavior. The study examined the potential relationship between the impacts of each facility condition on student behavior and determined the possible influence of all facility conditions collectively on student behavior. The study extended the same analysis to Caucasian, African American, Hispanic, and SWD subgroups.

METHODOLOGY

The study included data from 10 school facilities in a medium-sized school division in Virginia serving 8,515 students for the 2019-2020 academic year. These facilities included six elementary schools, two middle schools, and two high schools. The school division included 12 school facilities; however, two facilities, an alternative education facility and a career and technical center, were excluded. The alternative education school was excluded because student enrollment and discipline data were reported within the enrollment and behavior data of the students' home-schools. The career and technical center was a new facility that opened for the academic year 2021-2022 and did not have any discipline data. The 2019-2020 student population for each of the elementary schools were 688, 510, 615, 589, 786, and 711 students. Student populations of each middle school were 896, and 1,138 students and student populations of each high school were 1,170, and 1,412 students.

The study utilized two measures of building conditions: facility engineering and educational conditions. Facility engineering conditions included school elements that need to be replaced or repaired to ensure proper maintenance of the schools (Cash & Earthman, 2019). To measure facility engineering conditions, the study utilized Facility Condition Indexes (FCIs). The FCI scores provided a whole-school building indicator of school facility conditions and a suitable variable to establish relationships (Brooks & Weiler, 2018). FCI scores were defined as the ratio of the cost of repairing or replacing parts of the facility that were identified as deficient divided by the cost of replacing the entire facility (US Accountability Office, 2009). The FCI scores for each school building were obtained through the targeted school district facility condition assessment conducted for fiscal year 2019-2020 and presented to the school district in October of 2020.

To measure the facility educational conditions, the study utilized the Revised Commonwealth Assessment of Physical Environment (CAPE) developed by Cash (1993) and revised by Cash and Earthman (2019). The revised CAPE instrument addressed educational building conditions visible to students that might influence their performance academically and behaviorally (Cash, 1993; Cash & Earthman, 2019). The CAPE instrument described the overall, structural, and cosmetic conditions and provided a facility score for each. Along with the FCI scores, overall, structural, and cosmetic conditions were the predictor variables in the study representing facility conditions. Cash (1993) and Cash and Earthman (2019) completed the validation process while creating the CAPE instrument in 1993 and revising the CAPE instrument in 2019. Cash (1993) solicited the help of three facility assessment experts to review the assessment. After the initial instrument was revised, Cash (1993) field-tested the instrument with the help of eight Virginia Beach administrators in facilities with varying conditions resulting in expected facility scores. Cash and Earthman (2019) revised the CAPE instrument to measure updated facility educational conditions that were reflective of current educational needs and might impact student achievement and behavior.

The Revised CAPE instrument incorporated 23 items that included 14 structural conditions and nine (9) cosmetic conditions. The structural conditions assessed facility age, indoor air quality, windows, flooring, roof leaks, heating, air conditioning, lighting, noise conditions, presence of electrical outlets, Wi-Fi capability, and computer access. The cosmetic facility conditions assessed interior and exterior wall paint, frequency of painting, wall color, cleanliness of floors, presence of graffiti, graffiti removal, and visible ceiling material. Overall facility conditions were represented by merging structural and cosmetic facility conditions. Each CAPE item had three responses and allowed participants to select one response. The CAPE instrument assigned each item a numerical value of either 1, 2, or 3. The researchers calculated overall school facility scores by combining the scores for all 23 items. Overall facility condition scores ranged between a minimum of 23 and a maximum of 69. Similarly, structural conditions scores and cosmetic conditions scores were calculated by combining their respective item scores. Structural conditions scores ranged between a minimum of 14 and a maximum of 42. Cosmetic conditions scores ranged between a minimum of nine (9) and a maximum of 27.

The Revised CAPE instrument was administered by 10 school principals and yielded a 100% participation and completion rates. After the administration period, the researchers calculated overall, structural, and cosmetic facility scores for each school facility based on the principals' responses to the CAPE survey. Based on facility overall, structural, and cosmetic conditions, the researchers classified each facility as substandard, standard, and above standard. The researchers conducted a quartile analysis for each condition score and classified each facility into one of these

categories (Cash, 1993). Facilities with overall score falling in the lower quartile were designated substandard facilities. Facilities with overall condition scores falling within the second and third quartile ranges were classified as standard facilities. Facilities falling in the upper quartile were classified as above standard facilities. Similarly, facilities were classified as substandard, standard, and above standard based on structural conditions as well as cosmetic conditions.

Student behavior data consisted of overall discipline incidents and subgroup discipline incidents for all students attending each school facility and represented the dependent variables. Student attendance data were represented by the percent of students who were absent for at least 10% of the school year. The Virginia Department of Education (VDOE) considered students who missed at least 10% of the academic year as chronically absent (VDOE, 2021). Bowers and Burkett (1988) associated good school attendance with less discipline infractions. Since the study utilized facility FCI scores representative of the 2019-2020 facility conditions, the researchers used student behavior and attendance data for the 2019-2020 academic year for each facility identified with an FCI score. Behavior data for student subgroups that include Caucasian, African America, Hispanics, and SWD were utilized for further regression analysis. In all instances of the regression analysis, the regression model controlled for school building over-crowdedness, SES, and attendance.

Facility area, current student population, and facility capacity determined building over-crowdedness. Facility area was acquired from the targeted school division's facility assessment reports conducted in 2019-2020. Student enrollment data were collected from the Virginia Department of Education 2019-2020 School Quality Profiles. Facility capacity data were obtained through the district's capacity and utilization study conducted in the fall of 2018. Free and reduced-price lunch percentages for the 2019-2020 academic year for each school facility represented the socioeconomic status measures utilized for this study.

DATA ANALYSIS

The study utilized regression and hierarchical multiple-variable regression analysis to establish possible relationships between building conditions and student behavior while controlling for over-crowdedness, socioeconomic status, and attendance. The study utilized several regression analyses to establish possible relationships between building FCI scores, overall building conditions scores, structural conditions scores, cosmetic conditions scores, and student behavior to include overall school behavior, and behaviors of students in four subgroups: Caucasian, African American, Hispanic, and SWD.

The over-crowdedness index was calculated using student 2019-2020 enrollment and school capacity. The researchers calculated behavior indexes for each school facility and each student subgroup. The behavior index reflected an incident per student ratio represented by number of discipline incidents divided by total student population. For student subgroups, the behavior index reflected total incidents for students in the student subgroup divided by total number of students in the corresponding subgroup. Similarly, the researchers utilized an overall attendance index and an attendance index for each subgroup. The overall attendance index represented the percent of students who were absent at least 10% of the school year. For each subgroup, the attendance index represented the percent of that subgroup who were absent at least 10% of the school year.

For each regression model conducted, the researchers used the perspective data associated with the model. That is, to assess the possible relationships between building conditions and student

behavior, the researchers used FCI scores, overall facility scores, structural facility scores, and cosmetic facility scores from each building, and overall behavior indexes while controlling for facility over-crowdedness, socioeconomic status, and overall attendance index. For each subgroup, the researchers utilized FCI scores, overall facility scores, structural facility scores, and cosmetic facility scores from each building since the whole building impacted all students and the behavior index for the perspective subgroup. For controls in each subgroup regression model, the researchers used the facility over-crowdedness index since over-crowdedness impacted all students and the attendance index for the perspective subgroup; however, the facility free and reduced-price lunch percentages were used with each model since free and reduced-price lunch data per subgroups were not available.

The researchers conducted individual hierarchical single-predictor regression models for each facility condition measure to establish the relationship between each building condition measure and overall student behavior while controlling for over-crowdedness, SES, and attendance. Similarly, the researchers conducted additional models to determine the impact of each building condition measure on the behavior of students in each subgroup. Additionally, the researchers conducted a hierarchical multiple-variable regression model to establish the possible influence of all facility condition measures on overall student behavior. ANOVA was utilized to explain the total variance in the regression model, and the variance due to each facility condition measure. The researchers extended the same hierarchical multiple-regression analysis to include the behaviors of student in each subgroups selected.

After conducting the ANOVA and regression analysis, the researchers identified the statistical significance of all regression models through an ANOVA analysis at a 90% and 95% confidence levels. The researchers identified the regression relationship, its statistical significance, and interpreted the statistical results to reach a conclusion for each research question. Potential relationships between building conditions and overall student behavior as well as behaviors of students in subgroups were highlighted.

FINDINGS

Facility Conditions and Overall Student Behavior

The researchers determined that the variation in overall student behavior was attributed to overall student attendance rather than facility conditions. When examining overall student behavior against overall student attendance, the model indicated that overall student attendance explained 60.0% of the variation in overall student behavior. The model yielded a p -value of $0.008 < 0.05$ and was statistically significant at a 95% confidence level.

When examining overall student behavior against all control variables, the model determined that overall student attendance explained the most variation in overall student behavior followed by over-crowdedness and socioeconomic status, respectively. Overall attendance indexes uniquely explained 42.4% of the contribution in the variation within overall student behavior and were statistically significant at a 95% confidence level with a p -value of $0.044 < 0.05$.

When examining overall student behavior against FCI, overall, structural, and cosmetic CAPE scores independently with statistical controls, overall attendance indexes explained the majority of the contribution in the variation within overall student behavior and were statistically significant at either a 90% or 95% confidence level. Overall attendance indexes explained 32.9%-46.2% of

the variation in overall student behavior. The contribution due to FCI scores was negligible. The contributions due to overall, structural, and cosmetic CAPE scores were not statistically significant.

All models reflected a positive statistically significant relationship between overall student attendance and student behavior. Thus, as overall attendance indexes increased representing higher levels of chronic absenteeism, overall student disciplinary incidences increased.

In summary, the researchers determined that building conditions as measured by FCI, overall, structural, and cosmetic CAPE scores did not have a statistically significant impact on overall student behavior. However, the study highlighted a statistically significant positive relationship between overall attendance and overall behavior. That is, higher numbers of overall student disciplinary incidences were related to higher absenteeism rates.

Facility Conditions and Caucasian Student Behavior

The researchers determined that the variation in Caucasian student behavior was attributed to Caucasian student attendance rather than facility conditions. When examining Caucasian student behavior against Caucasian student attendance, the model indicated that Caucasian student attendance explained 49.7% of the variation in Caucasian student behavior. The model yielded a p -value of $0.023 < 0.05$ and was statistically significant at a 95% confidence level.

When examining Caucasian student behavior against all control variables, the model determined that Caucasian student attendance explained the most variation in Caucasian student behavior. Caucasian student attendance indexes uniquely explained 52.0% of the contribution in the variation within Caucasian student behavior with a p -value of $0.033 < 0.05$ and was statistically significant at a 95% confidence level.

When examining Caucasian student behavior against FCI, overall, structural, and cosmetic CAPE scores independently with statistical controls, Caucasian student attendance indexes explained the majority of the contribution in the variation within Caucasian student behavior and were statistically significant at either a 90% or 95% confidence level. Caucasian student attendance indexes explained 37.0%-55.5% of the variation in Caucasian student behavior. The contributions due to FCI, overall, structural, and cosmetic CAPE scores were not statistically significant.

All models reflected a strong positive statistically significant relationship between Caucasian student attendance and Caucasian student behavior. Thus, as Caucasian attendance indexes increased representing higher levels of chronic absenteeism, Caucasian student disciplinary incidences increased.

In summary, the researchers determined that building conditions did not have a statistically significant impact on Caucasian student behavior. However, the study highlighted a statistically significant positive relationship between Caucasian student attendance and behavior. That is, higher numbers of Caucasian student disciplinary incidences were related to higher absenteeism rates.

Facility Conditions and African American Student Behavior

The researchers determined that the variation in African American student behavior was attributed to African American student attendance rather than facility conditions. When examining African American student behavior against African American student attendance, the model indicated that

African American student attendance explained 49.6% of the variation in African American student behavior. The model yielded a p -value of $0.023 < 0.05$ and was statistically significant at a 95% confidence level.

When examining African American student behavior against all control variables, the model indicated that all control variables explained 62.3% of the variation in African American student behavior. The model yielded a p -value of $0.099 < 0.10$ and was statistically significant at a 90% confidence level. Additionally, the model determined that African American student attendance explained the most variation in African American student behavior followed by socioeconomic status and over-crowdedness, respectively. African American student attendance indexes uniquely explained 57.6% of the contribution in the variation within African American student behavior and were statistically significant at a 95% confidence level with a p -value of 0.023.

When examining African American student behavior against FCI, overall, structural, and cosmetic CAPE scores independently with statistical controls, African American student attendance indexes explained the majority of the contribution in the variation within African American student behavior and were statistically significant at either a 90% or 95% confidence level. African American student attendance indexes explained 48.0%-60.2% of the variation in African American student behavior. The contributions due to FCI, overall, structural, and cosmetic CAPE scores were not statistically significant.

All models reflected a strong positive statistically significant relationship between African American student attendance and African American student behavior. Thus, as the African American attendance indexes increased representing higher levels of chronic absenteeism, African American student disciplinary incidences increased.

In summary, the researchers determined that building conditions did not have a statistically significant impact on African American student behavior. However, the study highlighted a statistically significant positive relationship between African American student attendance and behavior. That is, higher numbers of African American student disciplinary incidences were related to higher absenteeism rates.

Facility Conditions and Hispanic Student Behavior

The researchers determined that the variation in Hispanic student behavior was attributed to Hispanic student attendance indexes, socioeconomic status, and cosmetic CAPE scores. When examining Hispanic student behavior against Hispanic student attendance, the model indicated that Hispanic student attendance explained 35.4% of the variation in Hispanic student behavior. The model was statistically significant at a 90% confidence level with a p -value of $0.07 < 0.10$. Additionally, the model reflected a strong positive statistically significant relationship between Hispanic student attendance and Hispanic student behavior. That is, higher numbers of Hispanic student disciplinary incidences were related to higher absenteeism rates.

When examining Hispanic student behavior against socioeconomic status, the model indicated that student socioeconomic status explained 36.3% of the variation in Hispanic student behavior. The model was statistically significant at a 90% confidence level with a p -value of $0.065 < 0.10$. Additionally, the model reflected a slight negative statistically significant relationship between socioeconomic status and student behavior. Thus, as the socioeconomic status measure increased

representing poorer student populations, Hispanic student disciplinary incidences decreased. That is, lower numbers of Hispanic student disciplinary incidences were associated with poorer student populations.

When examining Hispanic student behavior against cosmetic CAPE scores with statistical controls, the overall model explained 77.8% of the variation in Hispanic student behavior. The overall model yielded a p -value of $0.069 < 0.10$ and was statistically significant at a 90% confidence level. Further, the model determined that cosmetic CAPE scores explained the most variation in Hispanic student behavior followed by SES, Hispanic student attendance, and over-crowdedness, respectively. Cosmetic CAPE scores uniquely explained 30.6% of the contribution in the variation within Hispanic student behavior at a 95% confidence level. Socioeconomic status uniquely explained 28.7% of the variation in student behavior at a 90% significance level followed by 9.6% of the contribution explained by Hispanic student attendance. The contribution due to over-crowdedness was negligible. Further, the model reflected a slight negative relationship between cosmetic CAPE scores and Hispanic student behavior that was statistically significant at a 95% confidence level and a slight negative relationship between socioeconomic status and Hispanic student behavior that was statistically significant at a 90% confidence level. Therefore, lower numbers of Hispanic student disciplinary incidences were associated with improved cosmetic facility conditions and lower numbers of Hispanic student disciplinary incidences were associated with poorer student populations.

In summary, the researchers determined that building conditions as measured by cosmetic CAPE scores had a statistically significant impact on Hispanic student behavior. That is, lower numbers of Hispanic student disciplinary incidences were associated with improved cosmetic facility conditions. There was no statistically significant relationship due to FCI, overall, or structural CAPE scores. Further, the study reflected a strong positive statistically significant relationship between Hispanic student attendance and Hispanic student behavior. That is, higher numbers of Hispanic student disciplinary incidences were related to higher absenteeism rates. Additionally, the model supported that lower numbers of Hispanic student disciplinary incidences were associated with poorer student populations.

Facility Conditions and Behavior of Students with Disabilities

The researchers determined that the variation in SWD behavior was attributed to SWD attendance indexes, overall CAPE scores, and cosmetic CAPE scores. When examining SWD behavior against SWD attendance, the model indicated that SWD attendance explained 40.9% of the variation in SWD behavior. The model yielded a p -value of $0.046 < 0.05$ and was statistically significant at a 95% confidence level. Additionally, the model reflected a strong positive statistically significant relationship between SWD attendance and SWD behavior. Thus, as the attendance indexes increased representing higher levels of chronic absenteeism, SWD disciplinary incidences increased. Therefore, higher numbers of SWD disciplinary incidences were related to higher absenteeism rates.

When examining SWD behavior against overall CAPE scores, the model indicated that overall CAPE scores explained 33.2% of the variation in SWD behavior. The model yielded a p -value of $0.081 < 0.10$ and was significant at a 90% confidence level. Additionally, the model reflected a slight negative statistically significant relationship between overall CAPE scores and student behavior. Thus, as the facility overall CAPE scores increased representing improved facility conditions, SWD

disciplinary incidences decreased. Therefore, lower numbers of SWD disciplinary incidences were associated with improved overall facility conditions.

When examining SWD behavior against control variables, the model determined that SWD attendance indexes explained the most variation in SWD behavior. SWD attendance uniquely explained 36.1% of the contribution in the variation within SWD behavior at a 90% confidence level with a p -value of 0.096. Additionally, the model reflected a strong positive statistically significant relationship between SWD attendance indexes and SWD behavior.

When examining SWD behavior against all facility conditions, the model determined that cosmetic CAPE scores explained the most variation in SWD behavior followed by structural CAPE scores, and FCI scores respectively. Cosmetic CAPE scores uniquely explained 35.5% of the contribution in the variation within SWD behavior at a 90% confidence level with a p -value of 0.083. Structural CAPE scores explained 19.9% of the variation within SWD behavior and FCI scores explained 16.6% of the contribution attributed to SWD behavior and did not yield statistical significance. Further, the model reflected a slight negative statistically significant relationship between cosmetic CAPE scores and SWD behavior. Therefore, lower numbers of SWD disciplinary incidences were associated with improved cosmetic facility conditions.

When examining SWD behavior against overall CAPE scores with statistical controls, the model explained 79.7% of the variation in SWD behavior. The model yielded a 90% confidence level with a p -value of $0.056 < 0.10$. Additionally, the model determined that overall CAPE scores explained the most variation in SWD behavior followed by SWD attendance, SES, and over-crowdedness respectively. Overall CAPE scores uniquely explained 35.6% of the contribution in the variation within SWD behavior. Overall CAPE scores yielded a 95% significance level with a p -value of $0.032 < 0.05$. The remaining variables did not yield statistical significance. Further, the model reflected a slight negative relationship between overall CAPE scores and SWD behavior that was statistically significant at a 95% confidence level. Therefore, lower numbers of disciplinary incidences were associated with improved overall facility conditions.

When examining SWD behavior against cosmetic CAPE scores with statistical controls, the model explained 87.5% of the variation in SWD behavior. The model yielded a p -value of $0.018 < 0.05$ and was statistically significant at a 95% confidence level. Additionally, the model determined that cosmetic CAPE scores explained the most variation in SWD behavior followed by SWD attendance, SES, and over-crowdedness respectively. Cosmetic CAPE scores uniquely explained 43.4% of the contribution in the variation within SWD behavior at a 95% confidence level. SWD attendance uniquely explained 39.9% of the variation in behavior at a 95% confidence level. Further, the model reflected a slight negative relationship between cosmetic CAPE scores and SWD behavior that was statistically significant at a 95% confidence level as well as the strong positive relationship between SWD attendance indexes and SWD behavior. Thus, lower numbers of SWD disciplinary incidences were associated with improved cosmetic facility conditions and higher numbers of SWD disciplinary incidences were related to higher absenteeism rates.

When examining SWD behavior against all facility conditions with statistical controls, the model explained 93.3% of the variation in SWD behavior. The model yielded a p -value of $0.070 < 0.10$ and was statistically significant at a 90% confidence level. Additionally, the model determined that cosmetic CAPE scores explained the most variation in SWD behavior followed by SWD attendance,

SES, structural CAPE scores, over-crowdedness, and FCI scores respectively. Cosmetic CAPE scores uniquely explained 47.6% of the contribution in the variation within SWD behavior at a 95% confidence level. SWD attendance uniquely explained 21.9% of the variation in student behavior at a 90% confidence level. Further, the model reflected a slight negative relationship between cosmetic CAPE scores and SWD behavior that was statistically significant at a 95% confidence level and the strong positive relationship between SWD attendance and SWD behavior that was statistically significant at a 90% confidence level. Therefore, lower numbers of SWD disciplinary incidences were associated with improved cosmetic facility conditions and higher numbers of SWD disciplinary incidences were related to higher absenteeism rates.

In summary, the researchers determined that building conditions as measured by overall and cosmetic CAPE scores had a statistically significant impact on SWD behavior. That is, lower numbers of SWD disciplinary incidences were associated with improved overall and cosmetic facility conditions. However, there was no statistically significant relationship due to FCI scores, or structural CAPE scores. Further, the study reflected a strong positive statistically significant relationship between SWD attendance and behavior. That is, higher numbers of SWD disciplinary incidences were related to higher absenteeism rates.

IMPLICATIONS

School and district leaders should include an annual cosmetic improvement plan within their facility improvement and maintenance plan to improve facility cosmetic conditions.

The study indicated that lower numbers of Hispanic student and SWD disciplinary incidences were associated with improved cosmetic facility conditions. School and district leaders investing in improving and maintaining cosmetic facility condition could reduce Hispanic student and SWD disciplinary incidences as well as enhancing school culture and appearance for all students.

School and district leaders should delegate cosmetic facility responsibilities to each school facilities' custodial staff.

School and district leaders should consider providing professional development and training opportunities to custodial staff allowing them the opportunities to earn certifications in select maintenance domains; thus, they could appropriately address basic maintenance and facility cosmetic improvement needs. School districts should consider incorporating custodial training as an annual expense within the school district's fiscal budget. School and district leaders delegating cosmetic facility responsibilities to custodial staff and providing appropriate training could enhance facility cosmetic conditions; thus, decreasing student disciplinary incidences.

School and district leaders should develop a comprehensive school-based maintenance plan that includes adequate annual funding for capital improvements and preventative maintenance needs.

The study indicated that lower numbers of Hispanic student and SWD disciplinary incidences were associated with improved cosmetic facility conditions, and lower numbers of SWD disciplinary incidences were associated with improved overall facility conditions. School and district leaders should conduct quarterly facility conditions audits to ensure appropriate facility maintenance, check mechanical systems operations, and assess facility safety. Additionally, school and district leaders should conduct an annual audit to evaluate facility maintenance plans and determine adequacy of maintenance and improvements completed to date. School and district leaders' oversight of school

maintenance plans could enhance school facility overall and cosmetic conditions and thus decreasing Hispanic student and SWD disciplinary incidences.

School and district leadership should ensure that students with disabilities have appropriate equal access to school facilities and educational programs.

The study identified that lower numbers of SWD disciplinary incidences were associated with improved overall facility conditions. School and district leaders investing in upgrading and enhancing facility access could provide students with disabilities further access to educational programs and intervention to reduce SWD disciplinary incidences.

School and district leaders should remodel self-contained classrooms and individualized program spaces to accommodate cosmetic improvements.

The study identified that lower numbers of SWD disciplinary incidences were associated with improved cosmetic facility conditions. School and district leaders should incorporate calming wall colors, use of acoustic tiles or noise reducing panels, utilize open space design and flexible learning spaces, and increase natural light to enhance classroom cosmetic conditions. School and district leaders' implementation of these improvements could reduce SWD disciplinary incidences.

RECOMMENDATIONS FOR FUTURE RESEARCH

This study was limited to one medium-sized school division in Region IV in Virginia and utilized 10 school facilities. Further, the study utilized educational facility conditions described by overall, structural, and cosmetic CAPE facility scores as well as engineering facility conditions described by FCI scores.

Due to the small sample size and weak impact of FCI scores observed in this study, future studies should consider utilizing facility educational conditions rather than facility engineering conditions to examine the relationship between educational facility conditions and student behavior. Future studies should utilize the revised CAPE instrument and include all schools in Region IV in Virginia. The expansion of the sample population will include more variation within the study data as the sample will include more diverse school districts. Further, future studies should consider analyzing the impact of school facilities on elementary school behavior, middle school behavior, and high school behavior independently as the reporting and seriousness of infractions vary within school levels. Therefore, future study findings may be generalizable across school divisions in the region.

Future studies should consider focusing on specific student subgroups. Due to the high dependence of students with disabilities on school facilities, future studies should examine the impact of educational facility conditions on the behavior of students with disabilities at the elementary, middle, and high school levels. Future studies could expand their analysis to include select at-risk student populations that include economically disadvantaged students, African American, and Hispanic students independently.

Due to the varying school disciplinary practices amongst schools and school districts, future studies should consider utilizing an instrument that assesses how behavior incidences were reported as well as assessing the school's adopted disciplinary practices and policies. This instrument could utilize a qualitative Likert scale survey as well as short response questions with the potential of holding focus groups. Thus, future studies can assess the strictness of disciplinary practices, and the types of behavior incidences documented. Further, future studies could utilize focus groups to determine

the impact of facility conditions on student behavior from a student, parent, and teacher perspective. Future studies should consider utilizing school working conditions surveys administered to staff or school climate surveys administered to students and parents to provide an overview of school climate, present behavior, safety, and bullying as well as the effectiveness and enforcement of school discipline and interventions. Therefore, future studies could mediate the impact of school climate on student behavior.

LIMITATIONS

Even though the study described the research design, sample selection, methodology, and statistical analysis, the study had several limitations that should be recognized. These limitations included:

- The school district was composed of 12 school facilities; however, the researchers included data from 10 school facilities based on available FCI scores and behavior data. The study utilized FCI scores from the Facility Condition Assessment conducted in 2019-2020 and behavior data from the 2019-2020 academic year.
- The school facilities included in the study consisted of six elementary schools, two middle schools, and two high schools. Due to the small number of facilities at each school level, school level was not included as a factor in this study.
- The CAPE instrument required facility principals to complete the survey tool and assess the conditions of their facility. Self-surveying posed an objectivity risk and led to response bias. Participants could represent themselves in a favorable way and their responses could be biased toward what they expect to be socially desirable (Brenner & DeLamater, 2016). Self-surveying could prompt participants to select responses that were actual, ideal, or the responses that ought to be (Brenner & DeLamater, 2016).
- Since the researchers examined the relationship between building conditions and student behavior, over-crowdedness, socioeconomic status, and attendance might influence the possible relationships obtained through a hierarchical multiple-variable regression analysis.
- As a measure of student absenteeism, the researchers utilized an attendance index that reflected the percent of students absent for at least 10% of the academic year. Out-of-school suspensions were included within the reported attendance indexes. Even though the attendance indexes were used as control variables, these indexes could result in an overemphasis on student behavior incidences.
- Even though the study accounted for confounding variables, other extraneous variables might result in larger error variances and might decrease the significant correlation in the variables of interest.
- Since the study took place only in one medium-sized school division in Virginia, the study findings might not be generalizable across all medium-sized school divisions in the region or to other school districts independent of size.
- During the 2019-2020 academic year, school divisions experienced the COVID-19 pandemic and schools were closed in March 2020. Discipline and attendance data

reflected student data collected as of school closure dates. Using a cutoff date might skew the expected data for the entire 2019-2020 academic year; however, that limitation would impact all schools included in the study in the same manner.

CONCLUSIONS

The data analysis determined that attendance was a mediating factor influencing the behavior of the overall student population as well as Caucasian, African American, Hispanic, and Students with Disabilities subgroups. Additionally, socioeconomic status was a mediating factor influencing Hispanic student behavior. In terms of facility conditions impact, overall and cosmetic facility conditions influenced student behavior. Overall CAPE scores influenced SWD behavior with statistical significance. Cosmetic CAPE scores influenced Hispanic and SWD behavior with statistical significance. However, the data analysis determined that there was no statistically significant relationship between FCI, overall, structural, and cosmetic CAPE scores and overall student behavior as well as Caucasian and African American student behavior.

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BLOCK SCHEDULING AND ITS GIFT OF TIME: A COMPREHENSIVE REVIEW

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ABSTRACT

This article gives an historical perspective of block scheduling as well as looking squarely at the advantages and disadvantages of it. It focuses on how block scheduling affects such things as school climate, staff morale, and most importantly student achievement. Results from surveys given to administrators and students utilizing block scheduling form the basis for discussing a number of the issues and problems generated by utilizing block scheduling. These issues include such things as the scheduling of students in classes to adjusting individual teaching styles to better meet the needs of learners in extended class periods.

OVERVIEW

The concept of “school reform” has been used for an assortment of theories and practices that focus on how schools are funded, administered, and organized. One particular group of reformers have declared that “time” is the enemy of today’s schools and have centered their reform efforts on school management. Since the publication of *Prisoners of Time*, by the U.S. Department of Education in 1994, this group of reformers has advocated a number of school scheduling innovations. However only one scheduling form has had an ever-increasing impact on today’s schools. It is the scheduling practice we have come to know and refer to as block scheduling.

Although restructuring and block scheduling are concepts that have enjoyed wide acceptance nationally by States from California to Pennsylvania, neither concept is that recent, as Queen pointed out over twenty years ago (Queen, 2000). The idea of restructuring often refers to drastic changes to improve overall student performance (including such things as standardized testing), where efficiency and effective use of school time is clearly a restructuring activity (Merritt, 2017). As well, if one looks back on the concepts of what comprises block scheduling, they will find that the idea of an alternative schedule has a long history to it, beginning as early as 1959, when J. Lloyd Trump felt that the traditional schedule was not the most effective use of time, and he proposed eliminating it altogether. “The Trump Plan,” as his new schooling schedule was called, proposed a “40-minute lecture, a 100-minute lab, and a 20-minute help session each week” depending on the needs of the individual student. Other classes would be shortened to 20- or 30-minute sessions. In the 1960s Joseph Carroll proposed longer teaching periods after reviewing data from students that attended summer school; he attributed the success of the students work to the extended period of time and the modified teaching styles of summer school teachers (Thomas, 2001). Neither plan gained wide acceptance, but both contributed to the discussion and essentially laid the groundwork regarding the impact of time segments in educational settings.

The notion of an alternative schedule was again on the rise in the 1980s after the National Commission on Excellence in Education published *A Nation at Risk*. The document reported American children were not excelling academically when compared to other industrialized nations, therefore concluding that the educational system in the U.S. was inferior, and time management needed to be reevaluated (Poppink et al., 2019). The use of school time came under particular scrutiny in the 1990’s after the

National Education Commission on Time and Learning stated, "...learning in America is a prison of time. The degrees to which today's American school is controlled by the dynamics of clock and calendar is surprising even to people who understand school operations." (Lawrence & McPherson, 2000). The Time and Learning Report (1994) also noted that only about 60% of the time students are actually in school is spent in actual classroom direct instruction of content teaching and learning. This of course was sobering at the time, to realize that a significant amount of time that students were spending at school had little to do with learning content material. The study pointed out that between transition time, lunch, some electives, and homeroom, as well as/or advisement there appeared to be a lot more actual minutes that could be put into appropriate classroom use.

The reality of block scheduling to this day continues to appear in a variety of different forms. A number of schools have experimented with language arts and economics/civics classes in which two single periods were simply combined into one 110-minute class. The combining of classes as an interdisciplinary approach was not new, as vocational schools throughout the United States had used double periods and extensions of time for decades. But as the more academic courses began adopting varied forms of block scheduling, new perspectives of teaching and learning were also evolving (Gregory & Herndon, 2010).

Evaluations of schools that adopted block schedules in the 1980s and 1990s reported both positive and negative findings. In a report prepared by the Center for Applied, Research and Educational Improvement at the University of Minnesota, high schools using block schedules show improvements in such areas as student behavior and discipline, student attitudes toward school, teachers' collaboration, and levels of teachers' stress. These were the overall developmental insights and concerns about block scheduling leading up to 2000, but what about the actual make-up and delivery methods for actually using block scheduling? Let us now look at the five most utilized types of block scheduling.

DIFFERENT TYPES OF BLOCK SCHEDULING

There are basically five categories of block scheduling, 4 x 4; The Alternate Day Schedule; Copernican Plan; Hybrid Plans, and the Parallel Block Scheduling. These are the five basic plans and all of them have been and are continued to be modified slightly from school to school. That said it is easy to see that there are an infinite variety of these plans being used throughout the United States in today's schools.

A. The 4 x 4 Semester Plan

David Hottenstein and Robert Lynn Canady are credited with designing the 4 x 4 Plan. In this plan all standard yearlong courses from the traditional daily schedule are converted into semester courses of 90-minute classes. All former half-year long courses are converted to period courses of 90-minutes in length (Ellerbrock et al., 2018). A student takes a total of four courses per day, two in the morning and two in the afternoon. Teachers teach three classes per day, with either a 90-minute planning period or a 45-minute planning period and a duty. All teachers and students would receive a new schedule for the second semester that was planned at least a semester in advance.

B. The Alternative-Day Schedule

The Alternative-Day Schedule (Kamran et al., 2019) sets classes every other day in extended time blocks that range from 80 to 120 minutes. This plan is similar to the 4 x 4 plan except that every other day a student has four different classes. The student carries eight classes for the entire year.

However, they meet only every other day. Teachers generally dislike this method because they often must teach between 150-200 students in one day. Also, the variety of preparations can make planning a nightmare.

C. The Copernican Plan

The Copernican Plan (Carroll, 1990) was designed by Joseph M. Carroll. In this plan a student has just two classes per day, each 180-minutes. These courses are accelerated and completed in just 30 school days. This method enables students to concentrate on just two classes at a time. Every 30 days the schedule for every teacher and student changes. Again, this type of scheduling causes teachers to have to plan many different types of instruction such as lecture, cooperative groups, and simulations for each class period. It also can be a scheduling nightmare.

D. Hybrid Plans

Hybrid Plans (Boarman & Kirkpatrick, 1995) are schedules that use a combination of 90-minute blocks of time along with traditional shorter periods of time. These types of schedules are usually used to allow the “core” curriculum, such as English and Mathematics, to operate under a block system, while allowing courses that require yearlong student participation to meet the entire year. This type of block scheduling works well with Advanced Placement Courses and Special Education.

E. Parallel Block Scheduling

A parallel block schedule is the format most commonly used in elementary schools. The general definition holds true for the parallel block as well. Snell, Lowman, and Canady describe parallel block scheduling (PBS) as:

A flexible method of scheduling that addresses student grouping, time for teacher planning, and scheduling of subjects, support services and staff. PBS allows both small instructional groups to be scheduled for subjects like directed reading and math and larger groups for other subjects. Support services, which may have been pull-out remedial or enrichment programs, are scheduled primarily during Extension Center time, thereby reducing class interruptions and the stigma associated with leaving the class for special services. Students with disabilities are supported in classrooms alongside their nondisabled peers. The special education teacher serves as a consultant to the base teacher, a co-teacher, an Extension Center teacher, and a member of collaborative teams. (Snell, Lowman & Canady, 1996, p. 265)

This description of PBS also sounds like an advertisement but well worth the effort.

WHY CONSIDER BLOCK SCHEDULING

There is a philosophy or intent behind these types of schedules or trends. Many have come to believe it is a method for dealing with massive curriculums, time constraints, and varied student abilities. Rettig and Canady wrote in their 1997 article that they had identified four factors that are leading schools all over the United States to adopt some form of block or alternative scheduling. The factors they identified were:

1. When students attend as many as eight relatively short classes in different subjects every day, instruction can become fragmented; longer class periods give students more time to think and engage in active learning.

2. A schedule with one relatively short period after another can create a hectic, assembly-line environment.
3. A schedule that releases hundreds or thousands of adolescents into hallways six, seven, or eight times each school day for four or five minutes or noise and chaotic movement can exacerbate discipline problems.
4. Teachers benefit from more useable instructional time each day because less time is lost with beginning and ending classes (Rettig and Canady, 1997).

Even though more and more schools are changing over to block scheduling in some format, there is still considerable criticism from educators and parents. One of the greatest concerns is what will students do for ninety minutes? Proponents of block scheduling cite active learning as the key to keeping students engaged and learning during longer periods. But what if the teaching style is a lecture/paperwork format?

Several other reasons are given for the move toward block scheduling. One reason is that teachers are unable to complete an objective in the traditional 55-minute class. The lecture format is often the only teaching strategy used so little active learning occurs. Teachers in disciplines such as chemistry, biology, and business are not able to instruct, complete a lab assignment, and wrap up a lesson in this short amount of time (Ellerbrock et. al., 2018).

Santos and Rettig (1999) identified another interesting reason for moving to block scheduling at the high school level. With the increase in graduation requirements, students need more opportunities to take classes. Students are not able currently to enroll in vocational education, music, or art classes. The current graduation requirements leave little room for electives that are of interest to students. To address this problem, high schools blindly added an additional class period without lengthening the school day. This of course leads to even shorter class periods where teachers are not able to spend individual time with students that are in need of additional help.

A third reason that encourages changing the traditional schedule, is the fact that teachers are teaching as many as 125 to 180 students a day. This often creates an impersonal environment where teachers are not allowed to get to know their students the block schedule would change this (Stepp, 2007).

Discipline problems are also an issue mentioned by Kaya and Aksu (2016) that has led to the need for alternative scheduling. With students changing classes seven times a day in small hallways, chaos is created. The block schedule is a way to address the amount of time spent each day in the hallway. With fewer classes, students are not spending as much time changing classes.

There seems to be many reasons for administrators to choose a block schedule over a standard school day. Lopez noted that administrators whose schools adopted the four-block model stated that it offered a potential solution to the following concerns:

- Classes too large
- Too many classes per student and teacher
- Insufficient time for lab classes
- Too many failures
- Too many dropouts

- Too many preparations for teachers
- Too little time for individualized instruction
- Inadequate time for a variety of instructional methods
- A high level of stress due to time constraints for both students and teachers
- Few team-teaching opportunities
- Too many students-student and students-teacher conflicts
- Too many trancies, absences, and tardiness
- Class, lunch, and passing periods too short
- Too much vandalism and inappropriate behavior (Lopez, 1996)

BENEFITS AND ADVANTAGES

Recently when educators look at possible reasons for lack of achievement and take into account the differing abilities of their students they start to search for change through scheduling. These scheduling changes are also linked to the decreased reliance on the standard lecture-discussion-seatwork patterns of instruction and the increase of successes that individualization and creative teaching strategies have shown (Biesinger, 2008). Obviously block scheduling has become a visible possibility. Bethal High School, Virginia, has confirmed these benefits from using block scheduling in the mid-1990's:

1. Encourages organization, time management and the development of study skills.
2. Provides opportunities for in-depth learning
3. Promotes active rather than passive learning
4. Provides more time for teachers to identify student needs, respond individually to student performance, and offer students appropriate accelerated and remedial assistance
5. Provides increased opportunities for student learning and success because of the longer duration of each class period. Less time will be spent starting and closing the activity
6. Stimulates student thinking by providing time for a variety of learning activities within a class period
7. Provides more time for the development of meaningful rapport between students and teachers
8. Increases instructional planning time for teachers
9. Provides the structure for interdisciplinary coordinatio
10. Teachers will have in-common planning time, which will provide opportunities for parent conferences, and continual and relevant staff development and training (Williams, 1997, p. 4).

These are benefits that one high school found while implementing the block. Other schools have found similar benefits as well as differing benefits. Some measurable outcomes or differing benefits

of the block are in a 2020 report by Lai et al., (2020). They noted less discipline problems and higher achievement are recorded in their study. Wilson and Stokes report also that there are many studies that identify general achievement staying the same for a period of two to three years but then increasing dramatically on or around the fourth and fifth year. Discipline problems, they also identified as decreasing markedly causing administrators to be happier. Just the improvement of behavior alone seemed to be an assumed cause for other positives, like school climate. Grades were also cited as another indicator of success in the block.

Proponents of block scheduling make several other assertions as to its positive impact on student learning and student achievement. Researchers assert that the increased amount of time offered by block scheduling can result in an increased percentage of students achieving honor roll status and that larger blocks of time might lead to more projects and individualized instruction (Forman, 2009). Arnold (2002) found that schools in the first two years of being on the block schedule outperformed schools on a traditional seven period day, as measured by mathematics test scores. There is also evidence that grade point averages increased and the number of students on the A-B honor roll increased. Also, failure rates declined for those schools on the 4 x 4 block plan and student tardiness was reduced. There is also evidence that discipline referrals may be reduced by up to 35% and that in-school suspension rates drop (Rettig & Canady, 2001). As for teacher reaction to block scheduling, earlier research by Queen and Allen (2000) suggests that after block scheduling was implemented teacher satisfaction with scheduling rose from 52% to 87%. Teachers reported that they felt the longer classes were “better” than shorter classes. Fewer preparations and a feeling of greater flexibility also contributed to the overall feeling of teacher satisfaction. According to the Queen and Allen study, 81% of teachers felt that block scheduling had “positively affected student achievement,” and that block scheduling had helped students to retain key concepts of the curriculum (Queen & Allen, 2001).

According to a recent on-line article about “Different Types of Flexible Schedules for Schools” (2020) block scheduling allows teachers to use a variety of instructional strategies and flexibility to tailor lessons to the learner, and that this qualifies the block schedule as one element of educational restructuring that creates the opportunity for teachers to make significant improvements in instruction. The assumption being that an improvement in instruction has a direct correlation to improved student learning.

Moving from a traditional model of instruction, 45-60 minutes per class, to a block model, 90 minutes per class, requires a modification of teaching methods. The traditional review, lecture, test method used by many teachers in a shorter class period will not work well in a 90-minute period. A 2001 article by Jenkins, Queen, and Algozzine in the National Association of Secondary School Principals journal noted that teachers feel the need for sustained in-service preparation as their school moves to block scheduling. Rettig and Canady also stated that even-though schools may change or adapt a type of block scheduling, recent research affirms the staying power of block scheduling has to do with teacher adjustment and commitment. Finally, Rettig and Canady also reported in 2001 that over the previous eight years only 1.3% of schools in Virginia that adopted a block schedule format have returned to a traditional format. And in the same time period 75.7% of Virginia high schools that adopted some form of the block have remained on it.

DISADVANTAGES

Researchers have also pointed out that there are some growing concerns associated with block scheduling. Substitute teachers for instance present one problem for instruction in a block format. According to focus groups conducted with teachers, parents, and students, both teachers and students voiced concerns about the effectiveness of substitutes. Teachers stated that it was often difficult to provide substitutes with enough meaningful activity to fill extended periods. Students also voiced these same concerns, often work assigned by substitutes was tedious, and not engaging, leading to boredom and frustration, which can also increase discipline problems (Rettig & Canady, 2001).

Another concern with the block is the fragmenting of subjects and skill or information retention. Subjects such as mathematics and music require continuity. Some researchers have found that students may experience difficulty in retaining information from courses when they skip material for a semester. This has also been cited as a problem with foreign language classes (Rettig & Canady, 2001). Students that transfer from a school on a traditional schedule to a school on block schedule may also find it difficult. Furthermore, retention from one grade level to another has also been cited as a problem (Queen, 2000).

Several researchers have also argued that data collected do not always support student achievement related to block scheduling. Lare, Jablonski, and Salvaterra, note in their 2002 research study that though many schools report an increase in students on the honor roll after changing to a block schedule and that students receiving lower grades decreased slightly, but that measures on college entrance exams did not change significantly. Arnold cited in his research (NASSP Bulletin, 2002) that though the goal of block scheduling is to improve students' academic performance, the results of a comparison study of a seven period A/B block to a traditional seven period schedule from 1991-1996 found that "no meaningful or practical differences" between the two schedules could be identified. Arnold also noted that in the first two years of adopting the block, schools on the block outperformed those on traditional schedules. However, over a three-year period, schools on a traditional schedule outperformed schools on a block schedule. In both cases Arnold noted that in none of the cases reviewed was the level of achievement "significant or meaningful based on mean scale scores" (Arnold, 2002).

Though there are arguments as to the effectiveness of block scheduling some researchers contend that it is not the format itself that fails to produce desired outcomes but the lack of teacher training on teaching in the block and the lack of variety of teaching styles, as earlier noted, that results in mediocre student achievement.

It is extremely difficult to separate the effects of block scheduling into categories such as school climate, teacher morale, and student achievement because each of these independent areas affects the other area. In fact, these areas function like the Rubber Band Triangle discussed by Gross (1998); when one area (school climate, teacher morale, or student achievement) is affected by block scheduling, the other area is also affected, making it difficult to determine which element is causing the effect and which element is being affected. What is important to note is that block scheduling can work and be effective in the classroom.

EFFECTS ON SCHOOL CLIMATE

The area of school climate has been of particular interest to those researching the effects of block scheduling. Studies have shown that teachers and administrators feel strongly that the change to block scheduling creates “a more relaxed environment for teachers and student” and that there are fewer discipline problems on the block, which contributes to a more positive school climate (Shortt & Thayer, 1999, p. 77). Furthermore, the results of block scheduling often foster collaboration among faculty and staff, which further promotes a positive school climate. According to Queen and Gaskey (1997), there are eight elements to block scheduling that can enhance school climate:

1. Curriculum alignment, which expands course offerings, apprenticeship opportunities, post-secondary classes, and more opportunities for electives.
2. Developing pacing guides for time management that allow for quality coverage of curriculum not quantity coverage.
3. Instructional strategies and lesson designs that encourage teachers to move away from the lecture format and vary their presentation of materials which allow students to concentrate for the longer blocks of time.
4. Classroom management and improved discipline due to the emphasis placed on being in class and less time in between classes to cause disruptions.
5. Advanced placement and honors classes that have the possibility to extend over the course of the whole school year.
6. Special student populations who can repeat necessary classes without failing a grade or students who can more readily participate in inclusion due to the different structure of class activities.
7. Assessment and evaluation that can take place in the form of portfolios, doing group and individual projects, completing surveys, and giving oral presentations due to extended time in class.
8. Knowing that the next semester and a new schedule come after only ninety days in class.

Another observation of school climate was completed by Bruckner (1998) who observed teachers during their first year of implementation of block scheduling to analyze the working environment. Bruckner found that “teachers who chose to work in collaborative teams as part of their evaluation cycle would participate in peer-partnering processes or seek student feedback about their teaching methods” under block scheduling on a volunteer basis (1997, p. 42). These meetings evolved to include informal classroom observations, instructional goals, and sharing sessions, which continued throughout the school year. Bruckner, therefore, concluded that the camaraderie among faculty while implementing block scheduling affected not only teachers’ attitudes but also the entire school climate (1997).

TEACHER MORALE

An element of school climate, teacher morale, has also been an important area of discussion during the new era of block scheduling. Teacher morale has increased under block scheduling, according to several studies (Ellerbrock et al., 2018; Loeser, 2017; Shortt & Thayer, 1999). However, studies also show that this increased morale is not simply due to the effects of block scheduling. In fact, what seems to have contributed most significantly to staff morale, where clock scheduling is concerned, is

the appropriate staff development for implementing the new schedule (Hoover, 1999). Teachers who completed lengthy professional development before and during block scheduling implementation tended to view the new schedule as a positive change. In fact, the in-service and professional development for the implementation of the block where teachers “communicate and collaborate led to a positive attitude toward change” (Hoover, 1999, p. 3). Bruckner’s studies (1997) confirm that the teacher sharing sessions that took place as a result of block scheduling increased teacher morale due to the fact that teachers felt they had a choice to participate and take part in the sharing sessions. Teachers were able to lead discussions and participate in sharing sessions with focused discussion. These sharing sessions encouraged cross-disciplinary discussion and integration of curriculums. Leaders from these sharing sessions shared notes of their sessions and communicated with administrators’ perspectives and views of their respective groups.

When teachers support a significant change in the school because they feel that it will benefit students, teacher morale is going to increase. As a result of this increased morale, teachers will be more willing to choose appropriate curriculum while individualizing instruction for students which will in turn increase student achievement, the ultimate goal of any change in a school environment.

GENERAL CONCEPTS FOR IMPROVING STUDENT ACHIEVEMENT

Certainly, the question of student achievement under block scheduling permeates the questions being asked by those who have or will implement block scheduling. In a study about students’ perceptions of block scheduling conducted by Casey Hurley, students reported that “they liked the new schedule because they were getting better grades, they had more time for in-depth study, they received more individual attention from teachers, their lives were less hectic, and they had a fresh start after the semester” (1997, p. 64). Another advantage students mentioned in this survey concerned participating in extra curricular activities during the school day. Under block scheduling, some schools developed a separate schedule to accommodate these activities, which students enjoyed (Hurley, 1997).

In contrast to students’ positive opinions concerning block scheduling, a major criticism of block scheduling has been that some of the curriculum content is lost, especially at the high school level (Hoover, 1999). However, studies show that even though some actual quantity of time is lost, this loss is more than compensated for by the quality and in-depthness of the curriculum (Marshak, 1998). For example, a study conducted in Georgia shows that after two years of block scheduling, ITBS scores in reading rose from 36 in 1995 to 53 in 1997, and in math they rose from 48 in 1995 to 71 in 1997 (Delany, Toburen, Hooton, & Dozier, 1998).

Students can also benefit from the differing teaching techniques that are a result of the extended time available on block scheduling. These teaching techniques can be centered around learning and experiencing, not imply watch and memorizing, which should continue to improve student achievement. Canady and Rettig (1996) offer several components of block scheduling that can further increase student learning and achievement:

1. Simulations that actively involve students in reality-based learning by allowing them to role-play scenarios in order to problem-solve.
2. Learning centers that allow teachers to work with small groups or individuals while other students are able to remain engaged in active learning.

3. Integrated technology that allows students the necessary time to explore and actively participate in the learning process.
4. Content area literacy instruction that assists students in the critical areas of reading and writing.

While these strategies are sometimes implemented using a traditional schedule, what seems to be the primary difference under block scheduling is that they are more effective due to the ability to engage the learner for longer periods of time thus allowing him a more in-depth study of the subject matter.

Certainly, quantitative research involving grades, standardized test scores, AP scores, and grade point averages needs to be conducted to further ensure that these positive changes in the classroom are concretely affecting student achievement. The bottom line is that no matter how much a school climate or classroom environment improves or the height of staff morale, the community will always demand concrete results to prove effectiveness. The same will be true of block scheduling.

RESEARCH FINDINGS TO DATE

Many school systems feel as if the ultimate sign of a successfully restructured school is marked by an increased in standardized test scores. Arnold (2002) states that there is no significant difference in standardized test scores of students on traditional schedules and students on block schedules. His argument is based on results of the Tests of Achievement and Proficiency (TAP). The TAP measures a student's reading comprehension, basic mathematic ability, written expression, social studies (including geography) and knowledge of science concepts and techniques (Arnold, 2002).

Prior to Arnold's study, Lawrence, and McPherson (2000) conducted a similar one that analyzed the data from an End-of-Course Assessment in a southeastern school district of North Carolina. The End-of-Course exam measures a student's knowledge in algebra, English, social studies, and biology. Their data involved the results from tests over a three-and-a-half-year period; the results are from 2,706 students on a traditional schedule and 2,053 on a block schedule (Lawrence & McPherson, 2000). The results of their data collection likewise showed that there was not a discernable difference in achievement between the traditional schedule and block schedule (traditional schedule scores were slightly higher in all areas).

In addition to the lack of improvement in standardized test scores, other issues have been found that cautions schools systems from accepting block schedules. First, offering and taking foreign language courses consecutively becomes imperative to avoid issues with achievement (Queen, 2000). For example, if a student completes a year of Spanish I during fall semester under the 4 x 4 block, but Spanish II is not offered until the following fall semester. The student possibly would not retain the information necessary to be successful in the second year class. Performing arts classes are also a concern because students may only take the class for a semester to fulfill an elective requirement; or, there may be issues with scheduling fall and spring semesters like the foreign language courses (Queen, 2000). Also, Queen (2000) recognized that students taking Advanced Placement (AP) classes during the fall semester may not be prepared for the exit exams that are only offered at the end of spring semester because of the lapse in time (retention of information).

Some states, such as the previously mentioned California and Pennsylvania, have experienced great success. California reported a 66% reduction in failure rates, while Pennsylvania found a greater distribution of passing grades, lower dropout rate, and high AP exam scores were the benefits of block

scheduling (Queen, 2000). Why did this occur? According to Shortt and Thayer (2000) one of the benefits of block scheduling is a decline in discipline issues. This can be attributed to the reduction in travel time. With the reduced number of class changes, students do not have as many opportunities to create disruptive/counterproductive situations because of the total amount of time spent indirect supervision (Shortt & Thayer, 2000). Furthermore, discipline problems are reduced because students have a greater opportunity for academic success (Shortt & Thayer, 2000). Furthermore, students report that they enjoy block scheduling because it allows them greater opportunity to concentrate on fewer subjects and have time for remediation in difficult subjects (Queen, 2000). Additionally, according to Thomas (2001), some courses, by their very nature, demand more time (i.e., science, consumer sciences, and performing arts).

SUGGESTIONS FOR MAKING BLOCK SCHEDULING WORK

Before entering a block schedule, teachers should first have a significant amount of staff development (Queen, 2000). Staff development should identify the functions of block scheduling, alternative assessments, collaborative learning strategies, etc. Furthermore, staff development should not stop once block scheduling is implemented. Principals should continue to offer support because according to Shortt and Thayer (2000), the next two to three years are equally as important as the first year in becoming acclimated to the new system. Failure to properly train and continue to support teachers is one of the main area of concerns for teachers in (or entering) block schedules (Jenkins, Queen, & Algozzine, 2002). Often teachers return to their traditional schedule practices (i.e., lecturing) in the classroom because of lack of training and because it is familiar; therefore, it is comfortable to them. So, teachers need to be open and receptive to methodologies introduced in staff development and apply them in the classroom. Queen (2000) suggests that teachers change activities in a block-schedule classroom every ten to fifteen minutes. This will break up the monotony of an extended lecture. For example: (1) a sponge activity that may review a passed concept or introduce a new one; (2) a lecture introducing the lesson; (3) a collaborative exercise; and (4) review. Most of the time will be spent on the collaborative exercise. Examples of collaborative exercises could be a case method, Socratic seminar, project, or role-playing (Queen, 2000).

Also, principals should try to avoid scheduling problems, such as with foreign language courses and electives. This requires planning ahead. Shortt and Thayer (2000) suggest that principals consider frequency and sequence when creating a master schedule. They suggest creating a master schedule that is planned four years in advance so that freshmen will be able to take the courses required for graduation without problems (Shortt & Thayer, 2000). Well-constructed planning periods will allow opportunities for collaboration on team activities and tests, and give teachers an opportunity to observe their peers during the time of transitioning from traditional to block (Shortt & Thayer, 2000). Finally, principals should make data driven decisions by evaluating attendance, dropout rates, classroom results, etc. (Shortt & Thayer, 2000). If something is not working, it needs to be reevaluated.

So why are not more schools using block schedule? Fear and comfort. Block scheduling is a vehicle. It does not solve all issues of achievement, but it is an alternate means of transportation when the current method is not working. Yet, many school systems, school administrators, teachers, parents, and students are comfortable with their old vehicle. You must do research before getting a new vehicle, test drive, and ultimately spend money. The old vehicle may not be the most reliable but it is familiar; therefore, many are not willing to try another.

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