Community Schools as a Sustainable Comprehensive School Reform Strategy: A Transformative Mixed Methods Perspective

Kathleen T. Provinzano  
Toni A. Sondergeld  
Drexel University

Christine M. Knaggs  
Adrian College

There were two purposes for this transformative mixed method study with an advocacy lens: to examine (1) the implementation of community school programming in a racially and ethnically diverse, high-poverty urban school and (2) the impact of implementation on student achievement. In-depth interviews, along with achievement data from two cohorts of students were analyzed separately and integrated during interpretation. Findings indicate adjusting existing leadership structures disrupted fixed boundaries between school and community, broadened school-level decision-making, and enhanced students’ academic performance. A new community school development model that is both contextually responsive and localized is also proposed.

The majority of urban school reform initiatives over the past two decades have been unwilling and unable to adapt to the changing social and economic conditions of children, families, and communities; and resultantly have produced less than stellar results (Lawson & van Veen, 2016). Comprehensive school reforms (CSR) implemented during the era of No Child Left Behind (NCLB) provide myriad of examples. These initiatives were considered strategies schools could use to redesign themselves while subsequently increasing the academic achievement of their students. However, most schools implementing CSR initiatives did not perform significantly better in mathematics and reading achievement than comparable schools receiving non-CSR funding (Orland et al., 2008, Orland, 2011). It can be argued that some of these failures rest on evidence suggesting CSR programs did little to influence critical non-academic factors (Sondergeld et al., 2011), despite their intended purpose of impacting cognitive and non-cognitive aspects of students’ lives.

Most accountability reforms have done little to transform urban schools and their surrounding communities (Green & Gooden, 2014), largely because of their lack of focus on out-of-school challenges students and families living in poverty are forced to contend with (Milner, 2013). Research demonstrates that community participation, coupled with integrated services, are positively correlated with increased student achievement and attendance (Abrams & Gibbs, 2000). Fortunately, the landscape is shifting and the nation’s major education policy, Every Student Succeeds Act (ESSA) encompasses accountability systems that extend beyond test scores and permit schools to dually focus on academic and non-academic outcomes for students.

Prior to ESSA, strategies that position quality-teaching, wrap around supports, strong ties to families/local community, and a positive school climate were often overlooked in school-wide...
change processes (Frankl, 2016). Included in ESSA are provisions that empower stakeholders to situate reform strategies in co-occurring academic instruction and access to community-specific services to best meet student, family, and community needs. One place where this happens with regularity is a community school. Not a new phenomenon, community schools are resurfacing in urban spaces as a mechanism for addressing the multitude of challenges high poverty schools and communities face (Porvinzano et al., 2018). These schools leverage partnerships between local schools and communities, and positively alter relationships between schools, families, and the community, more generally (Fehrer & Leos-Urbel, 2016).

Community schools focus on similar CSR programming elements outlined by Slavin (2007), including coordination of resources, research-based strategies, comprehensive designs, professional development, measurable goals and benchmarks, support within the school, parental and community involvement, and external technical support and assistance. As such, community schools can be conceptualized as a promising approach to comprehensive school reform aimed at reducing risk and increasing opportunities for students living in poverty (Daniel & Snyder, 2015; Min, Anderson, & Chen, 2017; Warren, 2005). Where they differ from traditional CSR approaches is in the community-oriented approach to school reform (Warren, 2005). Community schools emphasize authentic connections between education and place or local context, and aim to improve academic outcomes while simultaneously strengthening communities (Green & Gooden, 2014).

The extent to which community schools are achieving their objectives is just starting to emerge (Daniel & Snyder, 2015; Heers, Van Klaveren, Groot, & Maassen van den Brink, 2016), and there is little research focused on challenges and opportunities associated with community school implementation and evaluation (Fehrer & Leos-Urbel, 2016; Min, Anderson, & Chen, 2017; Sanders, 2015). Specifically, a need exists for mixed methods research focused on community school implementation, evaluation, and accountability (Maier, Daniel, Oakes, & Lam, 2017; Min, Anderson, & Chen, 2017). Examining community school efforts through a transformative lens may facilitate the replication of successful community school strategies across varying educational landscapes while exploring power dynamics, diversity, and issues of oppression that are inherent in complex systems like P-12 schools. Therefore, using an advocacy-focused research design the researchers sought to answer:

1. How did an urban elementary school (PK-5) undergo the implementation of community school reform?
2. What challenges presented during implementation and how did stakeholders overcome them?
3. Were there significant increases in school-level academic outcomes as a result of community school reform efforts?

Relevant Literature

Comprehensive School Reform (CSR), NCLB, and ESSA

Depth and breadth of CSR initiatives soared in light of pressure placed on schools to demonstrate adequate yearly progress (AYP) in math and reading under No Child Left Behind (NCLB) Act of
If schools failed to meet AYP, they risked sanctions requiring up to 20 percent of their federal aid be diverted to uses that they had not previously accounted for, including transporting students to different schools and tutoring (Strauss, 2015). The increased pressure to demonstrate growth in math and reading negatively impacted minority, economically disadvantaged, and limited English-speaking students because penalties applied only to those schools receiving Title I funds, a federal program designed to provide extra dollars to high-poverty schools (Strauss, 2015). In an effort to support these students in making progress toward AYP, districts throughout the United States implemented CSR initiatives. To be sure, the federal Comprehensive School Reform Demonstration (CSRD) originated in 1998, but became part of NCLB in 2002. The accountability-driven focus of NCLB highlighted schools’ need for improvement and created a market for CSR reform efforts. According to Orland, Hoffman, and Vaughn (2010) “between 1998 and 2006, nearly 7,000 schools nationwide received three-year awards to implement CSR models” (p. xi).

With government funding tied to many CSRs, a substantive amount of research has been done to determine the level of influence reforms have on improving student reading and math achievement (Borman, Hewes, Overman, & Brown, 2002), yielding mixed results. An evaluation of CSR program implementation and outcomes prepared for the U.S. Department of Education concluded five years after receiving their CSR awards, schools did not demonstrate larger achievement growth than their matched comparison schools, and overall, the federal CSR program did not result in comprehensively reformed schools (Orland, Hoffman, & Vaughn, 2010). The authors also note, “schools receiving CSR awards made little progress in implementing more than just a few of the legislatively mandated components” (p. 50), but those that did improve did so because of “substantial overlap and interconnectedness among the many activities that schools undertake” (p. 56). The latter suggests scaled, system-wide reform that accounts for local needs and conditions, such as those in a community school, stand a better chance of success in chronically low-performing schools.

In what can be perceived as a response to the one-size-fits all approach of CSR efforts under NCLB, the passage of Every Student Succeeds Act (ESSA) in 2015 created space for the development of whole-school reform designs that balance the learning needs of students with developmental, community, and family outcomes (Lawson & van Veen, 2016; Lester, 2018). Under ESSA, schools and districts have the authority to devise reform plans that best fit their local context, so long as they include evidence-based interventions. This provision, along with the elimination of the federal School Improvement Grants program and its mandated reform models, have created a path for conceptualizing community schools as a comprehensive reform under ESSA.

Community Schools as a Sustainable CSR Strategy

Carefully designed educational programs with comprehensive school facilities are oftentimes absent in high poverty, school systems serving economically disadvantaged areas (Min, Anderson, & Chen, 2017). Deteriorating physical spaces, lack of relevant technology, and dated instructional resources are some of the challenges these schools face. Students attending under resourced schools are often considered educationally disadvantaged because they do not have access to the same opportunities to thrive academically and socially as their more advantaged
peers (Kretovics, Farber, & Armaline, 1991). In fact, students who attend schools situated in resource-rich communities have academic and social advantages that inextricably exclude their counterparts living in resource-constrained urban cities, thereby reinforcing the very nature of educational inequity (Green, Sanchez, & Germain, 2017). Reforming public schools and their surrounding communities continues to be a central strategy for mitigating the effects of poverty on students’ well-being and academic performance in school (Biag & Castrechini, 2016). Scholars and practitioners posit schools offering direct services to address the needs of the whole child have a far greater influence on students’ ability to perform well in school (Ladd, 2012) than singular reform initiatives situated in standards and standardization.

Effective community schools utilize some combination of integrated student supports, expanded learning time, family/community engagement, and collaborative leadership practices (Maier, Daniel, Oakes, & Lam, 2017; Jenkins & Duffy, 2016) to address complex challenges in schools and communities. Non-academic services are often coordinated by a community school director (CSD), and have preliminarily been shown to reduce risky behavior, lower the dropout rate, and increase the academic performance of students (Heers et al., 2016).

When ESSA rescinded many of the accountability requirements stipulated in NCLB, states gained more autonomy in designing accountability plans. In addition, funding streams under Title 1 became more flexible, opening the door for federal and state fiscal support of community schools. Specifically, the Full-Service Community School program under Title IV Community Support for School Success, which authorizes grants for full-service community schools and Promise Neighborhoods, as well as 21st Century Community Learning Centers programs (Federation for Community Schools, 2017). Federal funding is also permitted to support community school style strategies (Maier, Daniel, Oakes, & Lam, 2017), positioning community schools as a modern-day approach to traditional CSR endeavors.

**CSR Lifecycle: Adoption, Implementation, and Sustainability**

While formal evaluations of community schools are in their infancy (Heers et al., 2016; Min, Anderson, & Chen, 2017), the evidence base for integrated student supports, or the critical components comprising community school programming (e.g., integrated student supports, extended learning time, culturally relevant curricula, and authentic family and community engagement) is strong (see Maier, Daniel, Oakes, & Lam, 2017). This further justifies community schools as an effective strategy for comprehensive-style school reform (Daniel & Snyder, 2015). As such, we draw broadly from the greater CSR lifecycle literature to better conceptualize how community schools fit within this process. Years of research on CSR has provided us with information on what works well, and not so well, when adopting, implementing, and sustaining system-wide reforms. Using evidence-based best practices in CSR reform efforts allows for initiatives to better serve students, families, and communities.

Any CSR by design should be wide-ranging and include systemic, holistic reforms that alter how the entire school functions (Desimone, 2002; Slavin, 2007; Staresina, 2004). When adopting CSR schools tend to look for models that are relatively easy to implement, and addresses a number of different components that can potentially influence student achievement (ECS, 1999). Aladjem and Borman (2005) stated “an adoption process that is inclusive, substantive, and
legitimate is most likely to ensure that teachers have adequate understanding of the model (p. 5). Further, Aladjem et al. (2006) suggest an ideal process for CSR adoption is comprised of two distinct phases: the information-gathering phase and the decision-making phase. The former dictates an inclusive process in which stakeholders gather pertinent information related to various models, and the latter takes their opinions into account before a CSR model is chosen, generating teacher buy-in. Karam (2015) confirms that buy-in at this phase is essential, as many mandated, federally funded CSR initiatives under NCLB resulted in less than favorable attitudes towards the adopted reform. Context also matters in the adoption of a reform, as a one-size-fits-all approach to the complex problems CSR is intended to address is not sufficient (Staresina, 2004). Stakeholder groups must identify initiatives and programming that are flexible, supported by research, and place-based so localized needs of individual schools are met.

Aladjem and Borman (2005) contend CSR is a process that “begins with the decision to adopt a model; develops through successive layers of professional development (PD), dialogue, and experimentation with new strategies; and ultimately becomes embedded in the daily culture and practice of a school” (p. 4). It is a lengthy process and one that should substantively engage school-level stakeholders before reforms are implemented and throughout their duration. Efforts should be aligned with policies of the CSR initiative (i.e., state or district mandates), selected strategies to support implementation, and finally, a feedback loop, which allows for evaluation and refinement of the policies influencing implementation (Aladjem et al., 2006). Processes are somewhat dependent on school culture however, as they vary within and across schools (Desimone, 2002). For example, in schools where teacher turnover is high, implementation can be challenging because teacher buy-in is critical (Aladjem & Borman, 2005). Therefore, systems should be in place to assist incoming staff who can continue implementation efforts.

The multiple components of CSR add another layer of complexity for those implementing the reform. How well stakeholders understand the nuances associated with the multifaceted reform, how much those reforms align with school initiatives, and how committed the building principal is to making necessary organizational changes for reform efforts to occur influences overall strength of implementation (Aladjem et al., 2006). In most CSRs, the impetus for reform during both adoption and implementation is indicative of increased federal, state, and district involvement in the school reform movement (Datnow, 2005).

Taylor’s (2006) examination of the sustainability of comprehensive school reform efforts highlights the greatest challenge to CSR is sustaining the reform over a period of time long enough to produce lasting effects. Karam (2015) agrees, arguing that most CSR provides insufficient time for school personnel to implement, let alone evaluate, the strategies associated with the reform. Also, differentiating between a sustained reform relationship and the sustained implementation of a reform are important when examining the long-term impacts of CSR initiatives. To be sure, Taylor (2006) found the influence of CSR models can live beyond the formal discontinuation of the reform relationship, although ending a CSR model affiliation does decrease implementation fidelity of the reform.

Federally-funded CSR initiatives were intended to be comprehensive and sustainable, yet many fell victim to the school reform churn, which Doss and Akinniranye (2019) described as “new initiatives and programs [that] are adopted, only to be dropped when the next popular reform
emerges” (p.1). Aladjem and Borman (2005) state that although CSR developers did implicitly plan for reform sustainability, more is needed. Specifically, “school leaders and teachers need to understand between the underlying tenets of the reform and need some degree of flexibility to adapt their implementation to local circumstances” (p. 17). In essence, designing and implementing a CSR initiative with sustainability in mind is indicative of its success (Desimone, 2002), and reforms that will stand the test of time are those that allow stakeholders to see the bigger picture and alter components, as necessary during the lifecycle.

**Context of the Study**

The Pennsylvania Community School District (PCSD)\(^1\) is a large, urban school district, home to demographically diverse residents of different racial, ethnic, linguistic, and cultural groups. Over ninety-percent of students qualify as free or reduced lunch, and a majority of students (61%) identify as Hispanic (any race). According to the most recent Future Ready PA Index (n.d.) data, over 17% of students receive special education services, and the number of English Language Learners (ELLs) at PCSD (17%) greatly exceeds the state average (approximately 3%). Data from the U.S. Census Bureau (n.d.) indicates the median household income for the city is $40,805, significantly lower than state ($56,907) and national ($57,617) averages. Approximately 27% of all households fall below the federal poverty line, and less than 20% of residents have a bachelor’s degree or higher. Moreover, over 37% of residents speak a language other than English at home.

PCSD is home to nineteen schools, five of which function as full-service community schools. One community school in particular, Woodcreek Elementary, was examined for change in student outcomes (math and reading achievement on state standardized tests) because of its longstanding commitment to the community school approach and the degree to which services scaled throughout adoption and implementation phases (see Table 1). Woodcreek Elementary is a kindergarten through fifth grade elementary building at PCSD. It has been operating as a community school for over a decade. Initially, federal funding through the 21\(^{st}\) Century Community Learning Centers Grant supported a partnership between Woodcreek and local nonprofit organizations to offer afterschool enrichment activities coordinated by an extended day program director. Those efforts set the stage for community school adoption and implementation efforts beginning in 2005.

**Table 1.**

*Scaled Services at Woodcreek over duration of community school programming*

<table>
<thead>
<tr>
<th>Year of CS implementation</th>
<th>Services</th>
<th>Cohort &amp; Grade Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>After-School Coordinator</td>
<td>Cohort 1 (3(^{rd}) grade)</td>
</tr>
<tr>
<td></td>
<td>Extended Day Program (After-School Programming)</td>
<td>Cohort 2 (Kindergarten)</td>
</tr>
<tr>
<td></td>
<td>Saturday Adult-Child Programming</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>After-School Coordinator</td>
<td>Cohort 1 (4(^{th}) grade)</td>
</tr>
<tr>
<td></td>
<td>Extended Day Program (After-School Programming)</td>
<td>Cohort 2 (1(^{st}) Grade)</td>
</tr>
<tr>
<td></td>
<td>Saturday Adult-Child Programming</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Family Engagement Activities</td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) Pseudonym used for both district and school
A sequential transformative mixed method design with an advocacy lens (Hanson, Creswell, Plano Clark, Petska, & Creswell, 2005) was implemented to better understand how and why Woodcreek Elementary adopted and implemented a community school model, and what the impact of this decision was on the PCSD community and student academic outcomes. We chose this approach for several reasons. First, the PCSD community is comprised of diverse racial and ethnic groups, yet the majority of teachers and school staff are White, highlighting the persistent disparities between the racial composition of students and their teachers (Lindsay, Blom, & Tilsley, 2017). Second, understanding the social dynamics that resulted in community school programming was essential, as researchers working from the transformative paradigm are
“especially attentive to issues of power and make this attention to power relationships central to their investigation” (Biddle & Schafft, 2015, p. 328). Our goal in this study is to offer suggested improvements in community school programming by addressing power structures between the school and community, more generally.

The sequential nature of this study resulted in qualitative interviews being collected first, followed by student Pennsylvania System of School Assessment (PSSA) data collection in math and reading for two different cohorts of Woodcreek students (described in the Sample section). Data priority is unequal with qualitative having priority over the quantitative as a main focus of our study is to allow diverse perspectives a voice (Hanson et al., 2005) in relation to the implementation and impact of community school reform efforts. See Figure 1 for illustrative relationship between quantitative and qualitative data used in our research.

**Figure 1.** Sequential transformative mixed methods design. Illustration is adapted from Teddlie and Tashakkori (2008, p. 154). Methods in uppercase letters (QUAL) indicate higher methodological priority over methods in lowercase letters (quan).

**Sampling and Samples**

A multilevel mixed method sampling technique was implemented in this study since samples from different levels of the population were used (Onwueguzie & Collins, 2007). For the qualitative component participants were purposefully selected based on their experience with community school planning and implementation at Woodcreek Elementary. A census approach
to sampling was conducted for students in the quantitative sample as all students who completed PSSAs in the appropriate years from Woodcreek Elementary were included.

**Qualitative.** Qualitative interviewees (n=11) were purposively selected based on who provided historical planning and adoption insight, along with implementation knowledge. Participants included the district superintendent, the Chief Financial Officer and the district Director of Community Partnerships, the current principal, the current community school director, the founding community school director, two classroom teachers, and one representative from each of the three community service organizations providing services to Woodcreek Elementary.

**Quantitative.** Two cohorts of students were studied. Each cohort of students was followed from grades 3-5. Cohort 1 students began 3rd grade during the first year of the community school program at Woodcreek and were only exposed to community school programming between grades 3 and 5. While Cohort 2 students started 3rd grade in the fourth year of community school implementation at Woodcreek and had exposure to community school programming from grades K-5. General demographics between cohorts are similar (see Table 2) with the exception of exposure to community school programming (see Table 1).

**Table 2.**
*Student 3rd Grade Demographic by Woodcreek Cohort (N=211)*

<table>
<thead>
<tr>
<th>Demographic</th>
<th>PCS Cohort</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cohort 1 (n=101)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>54%</td>
</tr>
<tr>
<td>Male</td>
<td>46%</td>
</tr>
<tr>
<td>Low-SES</td>
<td>89%</td>
</tr>
<tr>
<td>ELL</td>
<td>37%</td>
</tr>
<tr>
<td>Total Years of CSP Exposure</td>
<td>3 years (3rd-5th)</td>
</tr>
</tbody>
</table>

*Note. SES=Socioeconomic Status. Race/Ethnicity demographic data were unavailable. However, both cohorts are primarily Hispanic with a very large population from the Dominican Republic.*

**Data Sources**

**Qualitative interviews.** The interview questions were open-ended and semi-structured. As such, specific questions related to community school planning and implementation efforts were asked, though they were flexible enough to allow participants to clarify or expand upon responses. The questions were focused on community school implementation, yet participants were given space to discuss other systems-level factors that may have directly or indirectly influenced reform efforts. For example, participants were asked to describe what they believed a community school to be, what planning steps were taken for one to be realized at Woodcreek, and how key elements were implemented over the years. Participants were also asked to discuss the role of external community providers offering services in the school, how those resources influenced students’ academic performance, who managed the increasing number of partnerships, and the scaling strategies used. Finally, perceptions of principal leadership in a community school were determined by asking participants to explain specific actions they believed supported or
diminished community school efforts at Woodcreek. Interviews with each participant lasted approximately 45-60 minutes.

**Quantitative measures.** Pennsylvania System of School Assessment (PSSA) tests in Reading and Math were used as the quantitative measures in this study. PSSAs in these content areas are annual, standards-based, criterion-referenced assessments given to every student in grades 3-8 PA public schools (PDE, 2018). These assessments were designed to provide “an understanding of student and school performance related to the attainment of proficiency of the academic standards” (PDE, 2018, para. 1). Both assessments consist of multiple-choice and open-ended items. Reading tests have 42-44 items (46-52pts) depending on the grade level and all math tests have 57 items (66pts). Raw scores are converted to scaled scores and then used to place students into achievement levels: Below Basic, Basic, Proficient, and Advanced. Data for our study were retrieved from Pennsylvania Department of Education’s website and are thus at the aggregate level (% students proficient) rather than student level (individual student scaled scores).

Although longitudinal databases of student data (i.e., enrollment, demographics, attendance, behavior, achievement on state standardized tests) have been created and made publicly available by nearly all state departments of education, it is most common for them to only provide aggregate data to the public (Data Quality Campaign, 2010). While aggregate data limits possible analytic techniques, aggregate data have been found to be useful if using the school or cohorts of students as the unit of analysis (Slavin, 2008) or describing general trends over time in comparison to other schools/cohorts of students (Sondergedt et al., 2012).

**Data Analysis**

**Qualitative**

Audio recordings from the interviews were immediately transcribed and made available to the research team. Using Braun and Clarke’s (2006) six-step guide to thematic analysis, data collection and thematic analysis of the interview transcripts occurred concurrently. Thematic analysis is an appropriate method for “systematically identifying, organizing, and offering insight into patterns of meaning across a data set” (Braun & Clarke, 2012, p. 57), allowing the researchers to find common experiences and identify those relevant to answering a particular research question. A deductive coding process was used to group data into categories that were directed by the existing concepts of community school planning (planning influences and historical references), implementation (academic and non-academic processes, barriers, leadership actions), and scaling (school-community partnerships, infrastructure, family and community engagement), followed by an initial generation and review of themes that emerged across the data set. Further refinement allowed for the identification of three main themes related to community school implementation (bridging organizational gaps, shared leadership and systems-level change, and integration of academic and non-academic factors) to assist in answering RQ 1 and RQ 2.

**Quantitative**

An overarching quantitative research question investigating if significant increases in student academic outcomes were found as a result of the community school efforts is broken into three
more specific components: a) Did Cohort 1 significantly increase in PSSA math and reading percent proficient over time (3rd – 5th grade)?; b) Did Cohort 2 significantly increase in PSSA math and reading percent proficient over time (3rd – 5th grade)?; and c) Is there a significant difference between PSSA math and reading percent proficient over time (3rd – 5th grade) by cohort? All variables were categorical: cohort (1 or 2) and percent proficient (% proficient or higher or % below proficient). As such, a series of one-tailed chi-square analyses were conducted to assess differences at various grade levels (3rd – 5th) using a p-value of .1 or less to indicate statistical significance. Since student achievement improvement is often difficult to find in any reform effort with long rooted negative outcomes, use of a .10 significance standard is justified over the more conventional .05 level.

Results

Qualitative and quantitative findings will initially be shared independently according to research question. As is common in sequential transformative mixed methods research, results will be integrated to form meta-inferences and provide a more complete picture of the findings combined in the discussion section (Hanson et al., 2005).

Qualitative Findings

Participants were asked how the community school was realized at Woodcreek, and in what ways non-academic services offered in the school were implemented. Understanding the context for how community schools exist provides insight into how non-academic services can be leveraged to enhance students’ academic performance. Each theme that emerged is thoroughly examined in the following sections. Though themes are discussed in turn, collectively they demonstrate school and community efforts to disrupt inequitable practices found in urban schools situated in high-poverty neighborhoods and are not mutually exclusive. Additionally, while three salient themes are discussed, the findings are representative of all participant perspectives shared.

Theme 1: Bridging organizational gaps. Overall, participants expressed a community school is most effective when situated as bottom-up reform strategy characterized by shared leadership that supports the organic scaling of community school services. The community school at Woodcreek did not emerge overnight. Instead, the concept materialized from an afterschool program led by a community partner and scaled over time to include comprehensive services coordinated by a community school director (CSD).

District and school leaders credited the development of the community school with the shared work of building leadership and community partners. The idea was not conceptualized at the district level, rather building-level and Woodcreek community-focused initiatives (i.e., afterschool enrichment programs, community health programming) created conditions for school and community stakeholders to come together and imagine what they wanted from their neighborhood school. These intersecting sets of adult relationships created a space for a holistic, community-focused neighborhood school. However, getting to this place was not easy.

Interactions between Woodcreek principal and external CSD. Increased efforts to offer students services that address factors impeding academic success required the principal and CSD to
interact more regularly and intentionally. It is not commonplace to have external forces influence day-to-day operations in a school, and this was the case at Woodcreek. As the principal and CSD navigated the terrain of their budding relationship, an existing, but rarely talked about, insider-outsider dichotomy surfaced. The principal, a district insider/community outsider, lived outside the boundaries of the neighborhood, school, and district. The CSD, a district outsider/community insider, lived within the community and interacted with residents in settings outside the school. Forging a relationship where both viewed the other as a thought partner looking to advance what was in the best interest of students was not without its challenges. One former CSD indicated:

I had to work really, really hard at building a relationship and being accountable to the principal so she could trust me. Building this [relationship] was very difficult...it was like walking on eggshells in the beginning because she didn’t really know me and I didn’t know her but what I did know was what I heard from families. I did hear from them and none of them had a very good relationship with the leadership or had a very good opinion of the staff. I told her let me tell you what the community is saying about you, let me tell you what they’re saying about your teachers...I’m just letting you know that you need to give me an opportunity to do what I think is best from a partnership standpoint.

This raw and authentic exchange served as the seed for what eventually blossomed into a mutually trusting and beneficial relationship between the principal and the CSD.

The CSD had a sharp sense of awareness regarding what was happening in the homes of students and their families, and viewed herself as the unofficial voice for these families. In addition to coordinating services, she provided school personnel with community insight that was oftentimes absent in relevant school discussions and decision-making. The principal, for her part, provided the CSD a platform to share pertinent information. She recognized the need to make the CSD a member of the building-level leadership team, began inviting her to monthly leadership meetings, and eventually created a schedule where the two met on a regular basis to discuss the merging of academic and non-academic outcomes for students.

When principals shift their thinking to include community perspective, they break down barriers and structural boundaries, and blur the lines between insider and outsider groups. As the principal noted:

...principals need to bring these people [community partners] in when making decisions that impact them, especially when they [principals] do not live in the community.

Once the principal and CSD fell in sync with one another, a collective push to create a stronger sense of community awareness surfaced. Getting staff to believe in and support this mission was the next step. The principal would purchase books or other relevant readings and place them in teachers’ mailboxes, offered professional learning opportunities centered on school-community relations, and encouraged staff participation in community events.

**Interactions between Woodcreek staff, parents, and external community members.** Community school implementation at Woodcreek was occurring in a place where the majority of teachers and administrative staff lived outside the boundaries of the neighborhood, the majority were
White, and their interactions with parents and community residents typically occurred within the confines of the school. Participants lacked the localized, contextual knowledge of the broader community. They did not fully understand issues related to race, socio-economic background, and politics within the context of the Woodcreek community or school. This is why partnerships with community-based organizations facilitated by the CSD was and continues to be vital. A CSD summed it best when she said:

...we need people who are not afraid to go out into the community and find out what’s happening and how it impacts the school and the students, in whatever capacity.

Woodcreek’s principal articulated how intentional interactions with the CSD encouraged staff to break from traditional boundaries between school and community. She shared:

Our approach now is to be visible in the community. It took time to get here. All of our kindergarten and new students get a home visit over the summer. We do not bus our kids so everyone is pretty much a walker so I, along with the CSD and teachers are outside in the morning talking to parents while they are dropping off or picking up. We also encourage our teachers to bring their kids and families to our monthly events so we can get on a more personal level with our families.

With time and consistent leadership, it became well known in the Woodcreek community that shared leadership, accountability, and a collective effort to determine the evolving needs of students, families, and community members was of top priority. Collaborative action plans for how resources could be leveraged to most effectively meet these needs also served as the foundation for the community school. Breaking from traditional norms, CSDs and school personnel were no longer viewed as outsiders in each other’s spaces. Working from a partnership framework each brokered relationships with their constituents and earned the trust of and from school personnel, parents, and community members.

Theme 2: Shared leadership and systems–level change. Once it became evident that leadership was not confined to one centralized authority at Woodcreek, and leadership tasks were to be dispersed to those equipped to take leader-like actions, creating structures and systems of support became the next natural step. The presence of community partners on the Woodcreek school-based leadership team suggested a shared recognition that leaders from schools and community organizations need one another and must collaborate in imaginative ways to maximize their full potential. The principal at Woodcreek played an important role in building partnerships when she relinquished some of her control and included the CSD as a member of the leadership team to help make decisions that were in the best interest of students and families. This inclusion signifies a drastic shift in existing power structures and decision-making at Woodcreek. The CSD, a proxy for the community, plays an instrumental role in decisions connected to hiring, budgetary expenditures, teacher assignments, out of school time events, and other significant happenings within the school. One district official described this shared leadership:
From a district perspective, the CSD is like the equivalent of a principal, the principal has responsibility over curriculum and instruction and the CSD has responsibility over community engagement and partnerships. Then they work together to merge those two.

This newfound shared governance allowed for mutual views and values to emerge and thrive. It also permitted leadership actions to become contextually responsive to the localized needs of students and families.

**Theme 3: Integration of Academic and Non-Academic Factors.** Participants in this study recognized that students who live in poverty typically attend under-resourced schools that exasperate achievement and opportunity gaps for historically marginalized students. In an effort to combat these structural inequities, partnership efforts between the school and community organizations were designed to create supportive environments where students and families felt they belonged. Creating a trusting and ongoing dialogue with parents and members of the community was paramount to the work.

The relationship between the school and Woodcreek community was somewhat strained in the beginning, thus intentional focus was placed on providing students and families with non-academic services they envisioned would result in increased academic performance. When discussing community school strategies, a former school administrator indicated: *...this holistic view of addressing the needs of the child has to be paramount, has to be priority here.*

Throughout community school implementation efforts, non-academic outcomes took precedence because it was place-based work that further facilitated relationships and partnerships across all stakeholder groups. In essence, the community school at Woodcreek became synonymous with a whole-child approach to schooling.

Teachers quickly learned that approaching education through a whole-child lens translated into increased motivation for learning and achievement. One teacher told the story of a student who was routinely referred to the office for acting out in class:

> I had this third-grade student, I will call her Jane, and she was like all but swinging at teachers on a regular basis and she started complaining about her teeth in class one day. At this point our dental clinic was up and running so I referred her. It turns out she had three broken molars. So, they contacted her mom and she agreed to services. She had to go offsite because the work was too much for our clinic, but we sent her and she received them. She came back and she was a different child. Like her behaviors and her ability to learn again were being met. So here we were dealing with a discipline issue that was really a health issue that was impeding her learning.

Prior to this student expressing dental discomfort, the teacher met with her parents, tried positive behavior reinforcement techniques, and finally assigned punitive consequences for misbehaviors. Much of these actions removed the student from class for extended periods of time. Instances such as this solidified teachers’ commitment to making the community school work. Parents and community members began to see the school as a place where students were seamlessly connected to the services that helped them overcome the detrimental effects of poverty. Woodcreek was offering dental, medical, social/emotional, food security, housing security, and
adult learning services to students and families. Much of these efforts were a direct result of the CSD and principal working together to determine the needs of the community and how resources could be leveraged to meet those needs. Further, as services increased over the years, teachers described a greater sense of presence from students and families and saw anecdotal improvements in their overall preparedness:

*When I got here, the kids couldn’t do what they can do now. I can say my 5th graders can read and write better than the fifth graders that I had over ten years ago. It may not always show on paper, but what we are doing here is working.*

Because services are provided in the school, transportation and work-related issues for parents are far less common, further connecting them to the school. School staff make attempts to schedule students’ access to services at times when they will not miss academic subjects. However, if students miss class time, it is typically minimal because the turnaround time for services is very quick. The fact that students are in school matters, as one teacher said: *As long as they are in school, we could work out anything else.*

Quantitative Findings

Quantitative results for research question 3 are organized by sub-component.

**Cohort 1: PSSA score improvement over time.** For Cohort 1, significantly more students performed in the proficient or higher PSSA category for Math from grade 3 to grade 5 (*p*<.001) with a 27% point increase between these years. The largest jump in consecutive year increase for PSSA Math performance was found between grades 3 and 4 (23% point increase, *p*<.001). While student proficiency increased from grades 4 to 5, this growth was not statistically significant (4% point increase, *p*>.10). Effect sizes were small for these chi-square tests.

In terms of Reading PSSA scores over time, a similar pattern was found to Math results for Cohort 1. From grades 3 to 5 there was a significant increase in student Reading proficiency (16% point increase, *p*<.01). Although student proficiency was greater between all consecutive years of Reading testing, significant increases were only found between grades 3 and 4 (13% point increase, *p*<.05), and not grades 4 to 5 (3% point increase, *p*>.10). Again, all effect sizes were small for these chi-square tests. See all chi-square test results and effect sizes in Table 3.

<p>| Table 3. | Descriptive and Chi-Square Statistics for Cohort 1 PSSA Math and Reading % Proficient in Grade 3-5 (RQ3a) |</p>
<table>
<thead>
<tr>
<th>PSSA Content</th>
<th>Lower Grade Level (% Proficient)</th>
<th>Higher Grade Level (% Proficient)</th>
<th>Group Comparison (χ² statistic)</th>
<th>Effect Size (φ statistic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math</td>
<td>3rd – 4th</td>
<td>37%</td>
<td>60%</td>
<td>10.59****</td>
</tr>
<tr>
<td></td>
<td>4th – 5th</td>
<td>60%</td>
<td>64%</td>
<td>0.34</td>
</tr>
<tr>
<td></td>
<td>3rd – 5th</td>
<td>37%</td>
<td>64%</td>
<td>14.58****</td>
</tr>
<tr>
<td>Reading</td>
<td>3rd – 4th</td>
<td>23%</td>
<td>36%</td>
<td>4.06**</td>
</tr>
<tr>
<td></td>
<td>4th – 5th</td>
<td>36%</td>
<td>39%</td>
<td>0.19</td>
</tr>
</tbody>
</table>
Cohort 2: PSSA score improvement over time. For Cohort 2, significantly more students scored proficient or higher on PSSA tests from grades 3 to 5 in Math (15% point increase, \(p<.01\)) and Reading (9% point increase, \(p<.10\)). While student PSSA percent proficiency increased in each consecutive year from grades 3 to 5 in Math and Reading, significant consecutive year improvement was only found in Math (grades 3-4: 8% point increase, \(p<.01\); grades 4-5: 7% point increase, \(p<.01\)) and not Reading (grades 3-4: 7% point increase, \(p>.01\); grades 4-5: 2% point increase, \(p>.01\)). Effect sizes were small for these chi-square tests (see Table 4).

### Table 4.
Descriptive and Chi-Square Statistics for Cohort 2 PSSA Math and Reading % Proficient in Grades 3-5 (RQ3b)

<table>
<thead>
<tr>
<th>PSSA Content</th>
<th>Lower Grade Level (% Proficient)</th>
<th>Higher Grade Level (% Proficient)</th>
<th>Group Comparison (\chi^2) statistic</th>
<th>Effect Size (\phi) statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math</td>
<td>3rd - 4th</td>
<td>58%</td>
<td>66%</td>
<td>1.36*</td>
</tr>
<tr>
<td></td>
<td>4th - 5th</td>
<td>66%</td>
<td>73%</td>
<td>1.16*</td>
</tr>
<tr>
<td></td>
<td>3rd - 5th</td>
<td>58%</td>
<td>73%</td>
<td>4.98***</td>
</tr>
<tr>
<td>Reading</td>
<td>3rd - 4th</td>
<td>46%</td>
<td>53%</td>
<td>0.98</td>
</tr>
<tr>
<td></td>
<td>4th - 5th</td>
<td>53%</td>
<td>55%</td>
<td>0.78</td>
</tr>
<tr>
<td></td>
<td>3rd - 5th</td>
<td>46%</td>
<td>55%</td>
<td>1.62*</td>
</tr>
</tbody>
</table>

*Note. *\(p<.1\), **\(p<.05\), ***\(p<.01\), ****\(p<.001\)*

Cohort 1 and Cohort 2 PSSA score differences over time. Regardless of PSSA content area (Math or Reading) or grade level (3rd, 4th, 5th), Cohort 2 had more students fall in the proficient or higher category than Cohort 1 (see Figures 2 and 3). In all instances except one (4th grade Math), these differences were statistically significant \((p<.05 – p<.001)\). The largest differences in percent proficient between Cohorts 1 and 2 were found in 3rd grade for both PSSA Math (21% point difference) and Reading (23% point difference). In both 4th and 5th grades, the differences in PSSA percent proficiency between groups were larger in Reading (4th grade: 17% point difference; 5th grade: 16% point difference) than Math (4th grade: 6% point difference; 5th grade: 9% point difference). See Table 5 for complete descriptive and chi-square statistics along with effect sizes (all small).
Figure 2. Cohort 1 and Cohort 2 percent proficient comparison for Math PSSAs over grades 3 through 5.

Figure 3. Cohort 1 and Cohort 2 percent proficient comparison for Reading PSSAs over grades 3 through 5.

Table 5. Descriptive and Chi-Square Statistics for Cohort 1 vs. Cohort 2 PSSA Math and Reading % Proficient in Grades 3-5 (RQ3c)

<table>
<thead>
<tr>
<th>PSSA Content</th>
<th>Cohort 1</th>
<th>Cohort 2</th>
<th>Group Comparison</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Proficient in Math</td>
<td>37%</td>
<td>60%</td>
<td>64%</td>
<td>58%</td>
</tr>
<tr>
<td>Grade Level</td>
<td>3rd Grade</td>
<td>3rd Grade</td>
<td>4th Grade</td>
<td>4th Grade</td>
</tr>
<tr>
<td>% Proficient Reading</td>
<td>0%</td>
<td>10%</td>
<td>20%</td>
<td>30%</td>
</tr>
<tr>
<td>3rd Grade</td>
<td>23%</td>
<td>36%</td>
<td>39%</td>
<td>46%</td>
</tr>
<tr>
<td>4th Grade</td>
<td>36%</td>
<td>53%</td>
<td>39%</td>
<td>23%</td>
</tr>
<tr>
<td>5th Grade</td>
<td>39%</td>
<td>55%</td>
<td>39%</td>
<td>23%</td>
</tr>
</tbody>
</table>
## Discussion: Meta-Inferences

The community school operating at Woodcreek takes on what Lechasseur (2017) described as a service effort, one in which schools invite community-based organizations into the school to provide wraparound services to students and their families. Critics argue this approach could lead to less than authentic relationships with communities because the inherent structure of schools remains the same as those found in non-community schools (Schutz, 2006; Smrekar & Mawhinney, 1999). Findings from this study indicate this is not the case at Woodcreek. Adjusting existing leadership structures to include community participation via the community school director disrupted fixed boundaries between the school and community, broadened school-level decision-making, and, ultimately, enhanced academic performance of students. The discussion of meta-inferences that follows underscores these points through an advocacy lens and is drawn from integrating understandings of quantitative and qualitative findings in our study (Tashakkori & Teddlie, 2008).

### The Blurred Lines of School Reform

Lifecycle research used to guide this study are grounded in those CSR initiatives that adhered to linear-like processes utilizing a top-down approach to comprehensive, school-wide reform. To summarize, the degree to which the adoption process adheres to key features (informative, inclusive, and legitimate) influences how well implementation efforts occur. A specific reform is selected, teachers are prompted to buy-in, and an expectation emerges for teachers to implement the reform. Implementation is influenced by state and district mandates and relies largely on the alignment of strategies and academic-focused improvement policies (Datnow, 2005). Once implementation occurs, the program is modified to reflect changes in state of district policies. Sustainability of the reform is largely dependent on how both of these phases happened.

Qualitative findings from our study indicate that community schools as a CSR strategy differ from traditional CSR efforts in that programming for most CSRs were selected from external providers (Frankl, 2016; Milner, 2013) as opposed to programming that is built from local, place-initiated needs. Additionally, changes to traditional CSR programming typically occurred as a result of hierarchical policy changes from state or district authorities (Sondergeld et al., 2011; Strauss, 2015) not the formative and interactive processes described by participants. Quantitative findings from our study can be placed within a new feature we have identified as “outcomes” (see Figure 4). The reality of implementation in a long-standing community school is that efforts are gradual and scaled processes that occur over an unspecified amount of time, without distinct lines drawn between different phases. In practice, our data show that adoption
and implementation phases are continuously occurring as new programs are introduced to the community school based on the changing needs of that school, as well as the ability of the staff to manage more programmatic opportunities for the school community. Table 1 summarizes the recurrent nature of community school programs over time at Woodcreek. Thus, the community school programmatic implementation process is actually more iterative and messier than top-down CSR conceptual frameworks allow.

With this in mind, we propose a more complex model of program lifecycle when it comes to community schools that not only takes into account the iterative nature of adoption and implementation, as well as the need to measure outcomes following each iteration, but also the changing contextual nature of the community school’s internal and external environment. As community schools adopt, implement, and measure outcomes of programs over time, it is important to note that these efforts must match the needs of the community in which the school is positioned, and such needs are dynamic (Provinzano et al., 2018; Milner, 2013). Similarly, internal needs of the community school itself can change depending upon staffing, pressures from educational policy makers, and accountability measures. Figure 4 depicts our proposed community school development model which is flexible and cyclical in nature. Additionally, this model is poised to adapt over time to meet a multitude of changing diverse internal and external needs or pressures while using outcome measures as formative information, and ultimately result in sustainability.

**Figure 4.** Community school reform model proposed by authors. Internal school and external community needs initially feed into the adoption stage of the community school programming cycle. Programs are adopted, implemented, and then outcomes are measured. Measured outcomes are used formatively along with new or changed internal and external needs to provide feedback for new programs to be adopted, implemented, and measured. This iterative process leads to community school sustainability.
Time and Exposure Create Change. The level and quality of school reform implementation influences outcomes (Aladjem et al., 2006), and we argue high-quality implementation rests heavily in the construct of time. As our iterative model of community school development demonstrates, time must be allocated to (1) determine changing internal and external needs of stakeholders, (2) engage in the cyclical nature of the work, (3) try new initiatives, fail, and try again, and (4) evaluate the effectiveness of the work using multiple quantitative metrics and qualitative information. In essence, stakeholders engaged in community school development have to give strategies the time they need to take root, modify them, and determine if they are working and addressing localized needs before they are discarded. Most CSR efforts abandoned initiatives too early, before sustainable results could be adequately measured (Taylor, 2006).

Community schools are intended to support school-wide changes that influence all aspects of school operations, including academic and non-academic outcomes ( Abrams & Gibbs, 2000). These efforts, though valiant in nature, can be doomed from the start because of the fluxing nature of federal and state policy, coupled with short-lived district implementation efforts. Our qualitative findings assert that not giving stakeholders sustained exposure to initiatives over an extended period of time limits the impact of the reform. This is reflected through the amount of time required to bridge organizational gaps and develop partnerships, as well as to decentralize leadership such that it can be shared by all stakeholders. Additionally, our study participants commented that services started small, and built off of or changed existing structures within the school and community. With time and coordinated efforts, implementation of services scaled and evolved over the course of a decade. Quantitative findings from our study also support the importance of time in that the longer students are exposed to scaling services that specifically target non-academic outcomes, the better they do academically.

Measuring Community School Reform Improvement: While our model of community school development, with necessary changing programming, aligns with what others have documented (Taylor, 2006), the evolutionary process certainly makes it difficult to assess programming impact as multiple programs are likely to be added or modified over time (Sondergeld et al., 2011). Interventions that are not held stable across years are not able to be accurately evaluated with rigorous experimental designs as the federal government and many funding agencies would like in order to demonstrate program efficacy and direct effects on student outcomes (Borman et al., 2002; Crowley & Hauser, 2007; Slavin, 2002). As such, it is imperative to take into account programmatic modifications over time by collecting both quantitative and qualitative information. This allows for a more comprehensive understanding of school reform impact magnitude (what is occurring) coupled with explanatory reasoning (why it is occurring; Sondergeld et al., 2011; Teddlie & Tashakkori, 2008), and also aligns well with the community school approach which is holistic in nature (Ladd, 2012).

Another consideration regarding measurement of community school reform improvement that our study has illuminated centers on magnitude of student outcome change. Specifically, our findings led us to question how much academic improvement is enough? Interviewees in this study clearly expressed their positive perceptions about how Woodcreek’s community school non-academic programming positively impacted students in a variety of non-academic ways. Although teachers seemed to believe community school efforts were lending to improved student academic achievement as well, they were more tentative about this as shown through one
teacher’s statement about her students: “my fifth graders can read and write better than the fifth graders that I had over ten years ago [but] it may not show on paper…” Quantitative findings from our study do in fact support that students with more exposure to the community school efforts (Cohort 2) were performing significantly better than those with less exposure (Cohort 1) in terms of state math and reading proficiency. However, quantitative findings also revealed that even among students with the most exposure to community school services (6 years), by fifth grade 73% were proficient in math and only 55% were proficient in reading.

Though federal policy has changed under ESSA, the law still mandates students to meet the same testing requirements under NCLB, though there are some flexibility provisions to improve testing policies (U.S. Department of Education, 2015). Additionally, though the rigid AYP accountability system is no longer in place, states are mandated to address proficiency standards for all student groups; therefore, our question of how much academic improvement is enough? should seemingly be central to the greater community school reform movement. Our study adds to the literature that supports longer run school reform initiatives and greater student exposure to them does improve student academic outcomes (e.g., Sondergeld et al., 2001; Borman et al., 2002; Herlihy & Kemple, 2004; Zhang et al., 2006). However, student academic improvements made in this study do not even come close to demonstrating academic proficiency of all students in this community school.

Literature indicates that realizing academic outcome improvement for educationally disadvantaged students takes time (Kretovics et al., 1991; Datnow & Stringfield, 2000; Taylor, 2006). However, results like ours where showing significant improvement that still does not meet the federal standard after many years of reform efforts can be discouraging to schools even though teachers, administrators, and community members know their work is making an important difference in their students’ lives. Currently, our research does not allow us to propose a solution to this student achievement and externally imposed proficiency standard discrepancy. Instead, we suggest that greater study into realistic goals and policies surrounding such issues need to be investigated and discussed with multiple levels of educational stakeholders to allow for meaningful reform efforts to emerge and have time to demonstrate lasting academic impact.

Concluding Thoughts

Thousands of schools engaged in some form of CSR since the era of NCLB, many with lackluster results (Vernez, Karam, Mariano, & DeMartini, 2006), and some with modest academic gains (i.e., Success for All). Although a host of factors contributed to the less than stellar impact of traditional CSR, implementation fidelity and the ability to sustain reform initiatives due to policies constraints were likely their greatest detriment (Datnow & Stringfield, 2000). The enactment of ESSA has ushered in an era of reform that allows states and districts to conceptualize and carry out strategies for school improvement that align with their local context. Community schools serve as one of these strategies.

At Woodcreek, we observed evidence of a collaborative, community-driven culture dedicated to improving academic and non-academic outcomes for students. Participants believe the community school effectively removed barriers to student learning, quantitative and qualitative data both support this notion (meta-inference). Woodcreek offers researchers the opportunity to
situate reform dialogue in a way that advances genuine community partnerships and supports a shared sense of responsibility for student success, thus distrusting power more evenly amongst all stakeholders. Stakeholders at Woodcreek firmly believe community schools are the principal strategy for overcoming the devastating and oppressive effects of poverty, forming partnerships that breakdown power inequalities inherent within P-12 schools, and bringing together resources of the school, family, and community so all can thrive. This study’s mixed methods design with a transformative framework captures voices of stakeholders to influence policies that ultimately define how community schools are qualitatively and quantitatively evaluated on their sustainability efforts.

Author Notes

Kathleen Provinzano, PhD is an Assistant Professor of educational leadership and administration in Drexel University’s School of Education. Her research focuses on place-based school reform, full-service community school approaches, and principal leadership in community schools.

Toni A. Sondergeld, PhD is an Associate Professor of assessment, research, and statistics in Drexel University’s School of Education. Her research focuses on evaluation and assessment of school reform efforts and STEM programs.

Christine M. Knaggs, Ph.D. is the Dean of Graduate Studies and Institutional Effectiveness and an Associate Professor of education at Adrian College. Her research focuses on the persistence of at-risk student populations, and science self-efficacy of pre-service teachers.

Correspondence concerning this article should be addressed to Kathleen Provinzano at ktp37@drexel.edu.
References


