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## Enhancing educational outcomes through community collaboration: the impact of the education stoplight in Paraguay

Resaltando resultados académicos a través de la colaboración comunitaria: el impacto del semáforo educativo en Paraguay

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### Abstract

Education in Paraguay remains marginalized, ranking among the lowest in international indices of access and quality. Challenges such as low academic performance, limited parental involvement, inadequate technology, and insufficient infrastructure hinder progress. Experts recommend strategies that promote cooperation between the different actors in the educational community to address these challenges. Responding to this, Fundación Paraguaya introduced the Education Stoplight in 2020, which encourages the participation of the school community in the educational process, with an emphasis on community collaboration. The Education Stoplight is a self-assessment tool that allows students, parents, teachers, and principals to reflect on their role, set personalized goals, and design solutions to contribute to educational success. This mixed-methods study used interviews, focus groups and an analysis of self-assessment responses from 1,694 participants (including students, parents, teachers, and principals) in 30 schools from different regions of Paraguay to answer the questions: What changes do educational actors perceive after implementing the Educational Stoplight, and what challenges persist? Findings reveal that the tool allowed participants to reflect on educational challenges, facilitating the identification of goals and improvements in a personal and

collective way. Students noted difficulties in learning practices, parents highlighted gaps in engagement and communication, teachers identified weaknesses in instructional strategies and principals emphasized the need for improved organizational management.

*Keywords:* self-efficacy, education stoplight, education, participatory methods, collaborative approaches, self-evaluation, educational community

## Resumen

La educación en Paraguay sigue marginada, ubicándose entre las más bajas en los índices internacionales de acceso y calidad. Problemas como el bajo rendimiento académico, la limitada participación de los padres, la insuficiencia tecnológica y la infraestructura deficiente obstaculizan el progreso. Para abordar estos retos, Fundación Paraguaya implementó en 2020 el Semáforo Educativo, una herramienta de autoevaluación que promueve la colaboración comunitaria al involucrar a estudiantes, padres, docentes y directores en la reflexión sobre su rol, el establecimiento de metas personalizadas y el diseño de soluciones para contribuir al éxito educativo. Este estudio, basado en un enfoque mixto, utilizó entrevistas, grupos focales y el análisis de autoevaluaciones de 1,694 participantes en 30 escuelas de distintas regiones de Paraguay para responder a las preguntas: ¿Qué cambios perciben los actores educativos tras implementar el Semáforo Educativo y qué desafíos persisten? Los resultados muestran que la herramienta facilitó la reflexión sobre los retos educativos, promoviendo la identificación de metas y mejoras tanto individuales como colectivas. Los estudiantes reportaron dificultades en las prácticas de aprendizaje, los padres señalaron carencias en la comunicación y el compromiso, los docentes identificaron debilidades en sus estrategias de enseñanza y los directores enfatizaron la necesidad de mejorar la gestión organizacional.

*Palabras clave:* autoeficacia, semáforo educativo, educación, métodos participativos, enfoques colaborativos, autoevaluación, comunidad educativa

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## **INTRODUCTION**

### **Education in Latin America**

Education in Latin America has historically been marked by poor educational outcomes across the region (Observatorio Educativo Ciudadano, 2020). Despite increased access to education over recent decades, Latin America continues to struggle with challenges like high dropout rates, low academic achievement, and disparities between urban and rural areas (Economic Commission for Latin America and the Caribbean [ECLAC], 2022; Ferreira et al., 2013), perpetuating educational disadvantage and hindering socio-economic development (OECD, 2018; World Bank, 2020). Paraguay, in particular, faces several critical issues in its education sector. Despite achieving near universal primary education enrollment, the country grapples with low educational quality, minimal parental involvement, insufficient technological resources, high dropout rates (especially at the secondary level) and poor infrastructure (Ministry of Education and Sciences [MEC], 2019; OECD, 2018). The country's performance in PISA underscores the severity of these issues, as Paraguayan students consistently perform below the OECD average in reading, mathematics, and science (OECD, 2022). A substantial number of students in core subjects like mathematics and Spanish fail to reach minimum proficiency levels. Distressingly, only 2% to 9% of students perform at the highest levels (Ministry of Education and Sciences [MEC], 2020). These disparities are even more pronounced in rural areas, where students contend with additional barriers such as limited access to educational resources, inadequate infrastructure, and higher rates of teacher absenteeism (Ministry of Education and Sciences [MEC], 2020). In response to these challenges, various initiatives and reforms have been implemented across the region. The Paraguayan government, for example, has introduced programs aimed at improving teacher training, increasing investment in educational infrastructure, and promoting digital literacy (Ministry of Education and Sciences [MEC], 2019). However, the impact of these initiatives has been uneven, and significant gaps remain to ensure equitable access to quality education for all students.

### **Community Involvement in Education**

Participatory approaches, emphasizing active stakeholder involvement in decision-making, have been recognized as effective in addressing educational challenges by enabling communities to identify and prioritize their needs, thereby fostering a sense of ownership and accountability (Freire, 1970). This is crucial in education, where community involvement is a key factor in enhancing educational outcomes, especially in developing regions like Latin America (Epstein, 2001; Henderson & Mapp, 2002). However, the effectiveness of these participatory methods can vary significantly depending on the socio-economic context, the resources available, and the level of community engagement. Participatory tools, such as self-assessments and collaborative planning, are particularly effective in marginalized communities where traditional top-down policies have often failed (Cornwall & Jewkes, 1995).

The literature consistently demonstrates the positive impact of school community involvement on educational outcomes. Studies have shown that schools with comprehensive community involvement programs report higher student achievement and improved school climate (Sheldon & Epstein, 2005). Similarly, parental engagement, especially when facilitated by supportive school policies, significantly enhances students' academic performance and behavioral outcomes (Hoover-Dempsey et al., 2005). Community participation in education has been linked to better educational outcomes, positively influencing student success by altering learning behaviors and fostering a collaborative educational environment (Inter-American Development Bank, 2021). This involvement not only enhances academic results but also encourages societal changes, promoting a culture of shared responsibility between schools and communities. Theoretical frameworks, such as the Epstein model (Epstein, 2001) of school, family, and community partnerships, suggest that collaboration among these stakeholders creates a supportive environment that enhances student motivation and academic achievement. This

model underscores the importance of integrating the efforts of families and communities into the formal education system to optimize educational success (Fan & Chen, 2001).

Empirical studies have provided further evidence of the benefits of community involvement in education. It has been found that community involvement enhances ownership and responsibility among community members, leading to improved security, infrastructure, and decision-making within schools (Arugu & Anam, 2014; Kozuka, Sawada, & Todo, 2016; Uzoh, Anam, & Ironbar, 2023; Sheldon & Epstein, 2005). These outcomes suggest that empowering communities and building social capital can improve educational outcomes. However, the evidence on the effectiveness of community participation is not universally positive (Banerjee et al., 2010; Pradhan, Daniel, & Kholiq, 2014). These findings highlight the importance of context and the need for tailored approaches to community involvement in education. Further, although community participation in education has been promoted as a strategy to improve educational quality and equity in Latin America, gaps remain in understanding the most effective ways to engage communities, particularly in rural and marginalized areas (Cox, 2010).

### **The “Education Stoplight” Tool**

The “Education Stoplight” (ES) was initially developed by Fundación Paraguaya to address multi-dimensional poverty by empowering individuals and communities to self-diagnose their living conditions and create actionable plans for improvement (called the “Poverty Stoplight”) (Burt, 2013). This “Poverty Stoplight” tool has been successfully implemented worldwide and utilizes a visual survey composed of 50 indicators, categorized by traffic light colors—red for extreme poverty, yellow for moderate poverty, and green for no poverty. These indicators help families assess their poverty status across different dimensions and prioritize areas for improvement. Studies conducted have demonstrated the tool's efficacy in fostering self-awareness and proactive problem-solving among participants, leading to tangible improvements in quality of life and socio-economic outcomes (Burt, 2013).

The ES, implemented since 2020 by Fundación Paraguaya has specifically fostered active participation and collaboration within school communities. The ES encourages students, parents, teachers, and principals to reflect on their roles, set personalized goals, and devise solutions to enhance educational practices, thereby unlocking the potential for holistic educational success. Each stakeholder has different indicators and dimensions, depending on their role within the educational community. The indicators have been validated in the field, through focus groups with members of the educational community and are in a constant process of continuous improvement. For all surveys, the indicators are separated into three colors, red, yellow, and green; the green level represents an ideal situation, yellow represents one in progress, and red represents one with severe improvement opportunities.

Through the ES, students are empowered to critically assess their learning, identify gaps in their progress, devise strategies to achieve their goals, cultivate independent learning, and apply critical thinking to their daily lives. Furthermore, parents self-assess the socio-emotional situations and conditions that affect their children's education in order to identify concrete actions to improve their support. Through the ES methodology, they are able to decipher and develop tactics to reach the objectives focused on the participation and care of their children's academic life. The teachers' self-assessment, on the other hand, evaluates their teaching-learning processes to achieve annual educational objectives, further impacting students' educational progress. Additionally, the ES helps principals evaluate administrative and pedagogical strategies in order to meet the goals and objectives established by the entity in charge of education at the national level, promoting and encouraging participation of the educational community. Through the ES, all actors in the educational community can visualize their strengths and areas of improvement to develop an optimal educational context for students. All in all, the ES promotes self-reflection, community ownership, and collaboration, aligning

with its broader objective of improving educational outcomes, particularly in marginalized and under-resourced communities.

## METHODOLOGY

This study employs a mixed-methods approach with a descriptive focus, integrating both quantitative and qualitative data to analyze the impact of the ES initiative on school communities in Paraguay. A comprehensive methodological design was used to capture the multifaceted changes brought by this tool, including shifts in student performance, community engagement, and institutional dynamics.

### Participants & Sample

The study included 1,694 participants from 30 educational institutions in four regions of Paraguay (Asunción, Central, Canindeyú and Presidente Hayes), comprising 1,050 students, 350 parents or guardians, 200 teachers and 94 principals.

Participants for the interviews and focus groups were selected based on the following criteria:

Being a principal, teacher, or student at an institution implementing the Education Stoplight program.

Having completed the Education Stoplight self-assessment in 2023.

**Table 1**

*Stakeholder by Participation in Study Sources*

Actors	ES self-assessment tool	Questionnaire	Interviews	Focus Groups
Students	1,050	18	-	18
Parents	350	-	-	-
Teachers	200	12	-	12
Principals	94	6	6	-
<b>Total</b>	<b>1,694</b>	<b>36</b>	<b>6</b>	<b>30</b>

The participants that took part of the questionnaire, interviews, and focus groups were selected using a convenience sample. To capture diverse educational contexts, six schools were selected, ensuring representation from both urban and peri-urban areas. Three schools were located in the capital city and three in a peri-urban setting. All the selected institutions had already implemented the ES self-assessment tool.

### Data Collection

The data for this study were gathered from four sources: i) the “Education Stoplight” (ES) self-assessment tool, ii) a questionnaire, iii) interviews, and iv) focus groups. The collection process followed a multi-phase approach to ensure a thorough examination of both quantitative and qualitative aspects.

The ES self-assessment tool was administered to students, parents, teachers, and principals over the course of 2023. To complement the data gathered through the ES, a follow-up questionnaire was administered six to 12 months after the implementation of the ES. This questionnaire was designed to measure participants’ perceptions regarding self-reflection, the identification of educational challenges, and collaboration within the school community. It included a 5-point Likert scale and a multiple-choice question to capture quantitative responses, while open-ended questions in the

interviews provided deeper qualitative insights into the participants' experiences and perspectives on the implementation of the ES tool.

Data collection was carefully planned to minimize disruption to academic activities. Trained facilitators administered the questionnaires, interviews, and focus groups adhering to strict ethical guidelines, including obtaining informed consent from all participants. The questionnaires were distributed in physical format, while interviews were conducted face-to-face. All collected data were systematically organized and prepared for both quantitative and qualitative analysis, ensuring the robustness and validity of the findings.

### **Data Analysis**

A mixed methods approach was employed for data analysis, combining both quantitative and qualitative techniques to provide a comprehensive understanding of the study's findings. The quantitative data underwent descriptive analysis to identify general trends and correlations between participants' perceptions and key sociodemographic variables. Data from each participant group—students, parents, teachers, and principals—were analyzed independently to ensure detailed insights into their respective perspectives. Microsoft Excel was utilized for the management and analysis of the quantitative data. For the qualitative data, thematic coding was applied to the responses from open-ended questionnaire questions and interviews, allowing for the identification of recurring patterns and key themes. To ensure the robustness of the analysis, triangulation between the qualitative and quantitative findings was conducted. The qualitative analysis was facilitated by Taguette, an open-source tool for qualitative data tagging and analysis, ensuring consistency in coding and interpretation across the data set.}

## **RESULTS**

The findings of this study demonstrate that the "Education Stoplight" (ES) has engaged participants to effectively engage in self-reflection and identify educational challenges, leading to a more proactive approach in setting personal and collective goals within the educational community. The results are structured into four key areas: identification of educational challenges (Section 3.1), participant self-reflection (Section 3.2), collaboration among stakeholders (Section 3.3), and observed changes and improvements within the school communities (Section 3.4). Each of these areas is discussed in detail below, illustrating the transformative impact of the ES on the educational environments involved.

### **Identification**

The findings from the ES implementation offer valuable insights into the key challenges faced by students, parents, teachers, and principals across various dimensions of the educational experience. Among students, the most prominent areas of concern were "Learning Practices" (40%), "Educational Tools" (37%), and "Infrastructure and Environment" (29%). These results indicate the significant challenges that students face in both the physical and educational environments. At the aggregate level, this highlights an urgent need to address core elements of academic development to enhance student performance.

Among parents, the areas of greatest concern in terms of dimensions with the highest number of "reds" and "yellows" were Engagement and Communication (32%), followed by "Conditions for Learning" (25%) and "Health and Wellness" (22%). These results highlight the importance of fostering greater engagement between family and school, as well as addressing the socioemotional conditions that affect students' learning environments. "Discipline and affection" (24%) also emerged as a key area, suggesting that parents are concerned with balancing emotional support with academics.

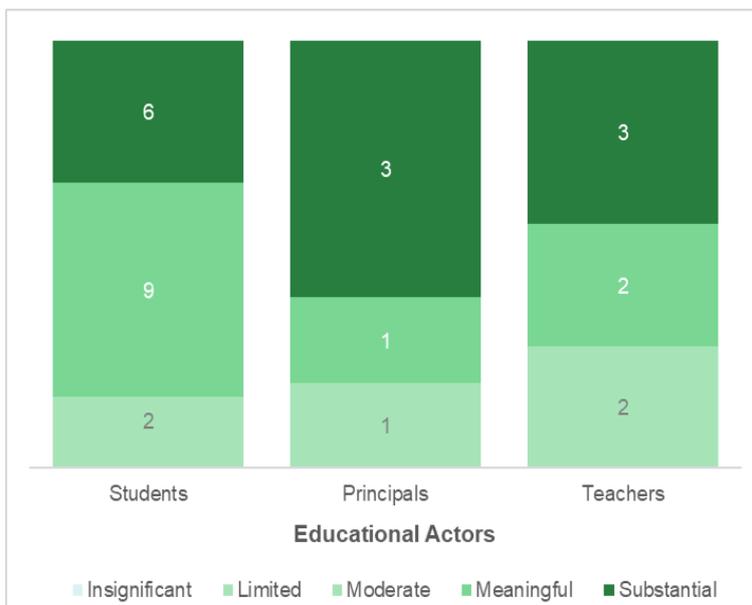
Both teachers and principals provided consistent positive feedback on the role of the ES in facilitating self-reflection, particularly in the areas of “Health and Wellbeing” and “Teaching Practices,” helping them identify areas that required further improvement. Teachers expressed their greatest concerns in the areas of “Pedagogical Practices” (24%), “Ethics and Continuing Education” (19%), and “Resources and Environment” (23%). This indicates that while teachers are committed to improving their instructional strategies, they also recognize the importance of adequate resources and their own professional development to enhance the quality of education. Similarly, principals identified “Organizational Management” (32%), “Pedagogical Strategies” (31%), and “Communication and Social Skills” (29%) as their primary challenges. In addition, “Administrative Resource Management” (34%) was highlighted as a critical area, emphasizing the need for more effective resource allocation and management at the institutional level.

Principals further underscored the tool’s utility not only in identifying internal issues but also in fostering broader communication with the educational community, including the Ministry of Education. While the ES has demonstrated its value in helping schools track and manage progress, the lack of parental engagement remains a significant barrier, as noted by both teachers and principals. This issue is reflected in the parents’ own concerns regarding “Engagement and Communication,” underscoring the importance of addressing this gap to fully realize the program’s potential impact on the school community.

Building on these findings, the feedback from stakeholders further supports the efficacy of the ES in identifying these challenges, as shown by fig. 1. In the questionnaire, students overwhelmingly reported that the ES had a “meaningful” or “substantial” impact, with the majority of students noting the ES helped in identifying specific educational challenges.

**Graphic 1**

*How much do you believe the “Education Stoplight” has helped in identifying specific educational challenges?*

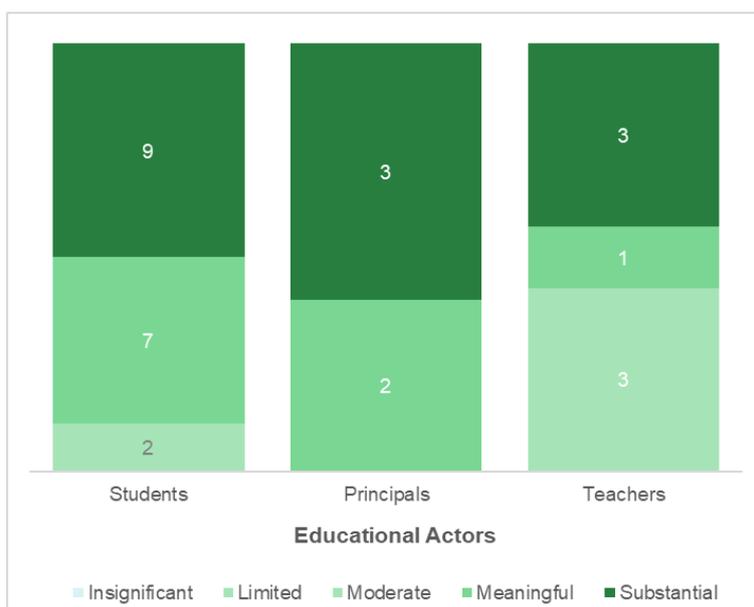


## Self-reflection

In regards to whether the ES tool promoted self-reflection, participants had varying responses. Among students, 16 out of 18 indicated that the ES had a “Substantial” or “Meaningful” effect on their ability to reflect on their role within the school community, while 2 of them felt this self-reflection occurred at a “Moderate” level. These quantitative results are reinforced by qualitative feedback, where students reported that the ES helped them reconsider behaviors and attitudes that had previously gone unnoticed. For example, one student explained, “The tool helped me ask myself questions about how I could improve.” Another student noted that the ES tool motivated them to engage more actively in daily school activities, a shift from previous disengagement. However, some students voiced concerns about a lack of follow-up after the initial self-assessment, expressing a desire for additional resources and guidance to continue their development.

### Graphic 2

*How much do you believe the “Education Stoplight” has facilitated self-reflection on your role within the educational community?*



For teachers, the ES also played a significant role in fostering self-reflection, with 3 out of 5 teachers describing the effect as “Substantial” and 1 teacher as “Meaningful.” Teachers appreciated the opportunity to assess their teaching practices and personal well-being through the tool, as well as identify areas for professional growth. The qualitative responses support these findings, with many teachers highlighting how the ES allowed them to recognize weaknesses and areas requiring improvement. As one teacher reflected, “It allows us to visualize where we are and what strategies we can use to strengthen the points that need further development.” Despite this generally positive feedback, some teachers, like the students, expressed concerns about the lack of sustained support following the initial assessment, which they felt could limit the tool’s long-term impact.

Principals also reported strong positive feedback regarding the ES’s influence on their self-reflection. Three out of 5 principals rated the tool’s impact as “Substantial” and 2 as “Meaningful.” In their qualitative responses, principals emphasized the ES’s value in promoting self-reflection on leadership, organizational management, and pedagogical strategies. Several principals noted that the tool not only facilitated introspection but also helped align the school’s efforts with broader educational goals and

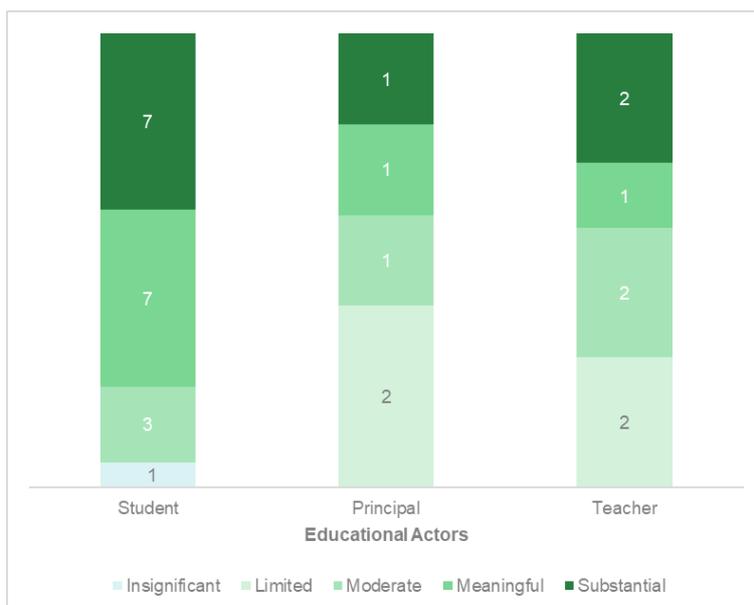
allowed for more structured communication with the Ministry of Education and the educational community at large. However, like the other stakeholder groups, some principals indicated that the full potential of the ES could be hindered by insufficient parental engagement and follow-up actions after the initial assessments.

### Collaboration

In terms of the ES tool’s influence in promoting collaboration, students showed mixed responses. From the 18 interviewed students 7 reported that the ES promoted “Substantial” collaboration, another 7 students felt its effect was “Meaningful.” 3 rated the impact as “Moderate,” and 1 viewed it as “Insignificant.” Despite these varied perceptions, qualitative feedback suggests that students valued the collaborative efforts fostered by the ES. Many students expressed enthusiasm for working together with peers, teachers, and even their parents. One student shared, “It helped my parents understand the role they have in the community, just like it did for me, the students, and the principals, so we can all benefit together.” This demonstrates that while some students may not have recognized collaboration as fully developed, those who engaged in the process viewed it as transformative, particularly in building a sense of unity and shared responsibility.

### Graphic 3

*To what extent has the “Education Stoplight” (ES) promoted collaboration among different actors within the school community?*



For teachers, the questionnaire results were less favorable, with 2 out of 7 describing the ES’s impact on collaboration as “Moderate” and also 2 as “Limited.” However, qualitative data revealed a more optimistic view, as many teachers recognized that the ES helped foster collaboration where it had previously been lacking. One teacher reflected, “Before, we didn’t want to work together, but now we are united, and we do things together with the teachers and parents who support us.” This shift in attitude highlights the positive changes the ES has introduced, even if the initial questionnaire response data appears less favorable. Teachers acknowledged that, over time, the program encouraged them to work more closely with one another and with parents, creating stronger ties within the school community.

Principals had a more balanced perspective in the questionnaire results, with responses distributed evenly across all categories, from “Limited” to “Substantial.” While the data suggest variability in the perceived impact of the ES on collaboration, qualitative responses from principals were more consistent. Principals emphasized the positive role of the ES in fostering teamwork across the school. One principal observed, “You can see the collaborative work among everyone... now they feel more supported and protected by the institution.” This indicates that while not all principals experienced the same level of collaborative success, many saw significant benefits from the tool, particularly in terms of staff cohesion and collective problem-solving.

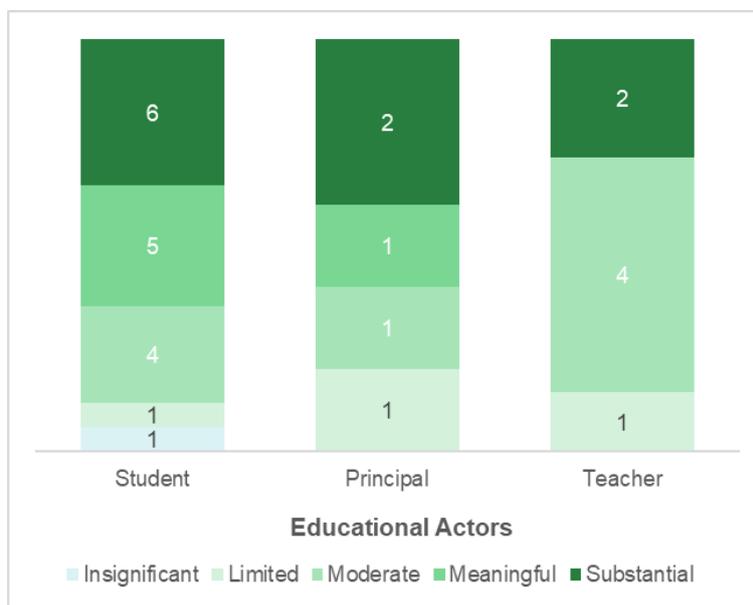
Across all stakeholders, collaboration emerged as a key theme, with 63 direct mentions in interviews. Both students and teachers frequently spoke about how working together fostered a sense of unity and helped address challenges more effectively. One teacher noted, “It helped a lot; this study should be done every year or every six months... we worked in harmony.” While the quantitative data reflect mixed opinions, the qualitative insights reveal a deeper appreciation for the value of collaboration, demonstrating how the ES has contributed to fostering stronger relationships and teamwork within the school community.

### **Impact on Educational Outcomes**

The impact of the ES on improving educational outcomes was generally viewed positively across all stakeholder groups, although perceptions varied somewhat between students, teachers, and principals. Students displayed a broad range of views, with 6 out of 18 indicating that the ES contributed “Substantially” to improving educational outcomes, while 5 felt it had a “Meaningful” impact. Together, these responses suggest that a majority of students recognized a significant positive effect of the ES. However, 4 rated the program’s impact as “Moderate,” and the other two believed that the ES had “Insignificant” or only a “Limited” impact. While most students reported positive changes, these mixed results indicate that the program’s benefits might not have been fully realized by all, possibly pointing to areas where the ES implementation could be refined to better meet students’ needs.

#### Graphic 4

To what extent do you believe the “Education Stoplight” has contributed to improving the school’s educational outcomes?



For teachers, the feedback was overwhelmingly positive. Four out of 7 teachers reported that the ES had a “Meaningful” effect on improving educational outcomes, and 2 of them rated the impact as “Substantial.” Despite these favorable responses, one of the teachers indicated that the ES’s contribution was “Moderate,” showing that while the tool has been largely effective, there may be room for further improvement in some areas of its implementation. Teachers emphasized the positive changes in their pedagogical practices and the increased focus on reflection and self-improvement, which they attributed to the ES.

Principals offered the most favorable responses, with 2 out of 5 stating that the ES had a “Substantial” impact and one of them described it as “Meaningful.” These findings suggest that principals see the ES as a highly effective tool for driving improvements within the school. Principals also highlighted in the interviews an increase in parental involvement as one of the key changes brought about by the ES. They noted the creation of WhatsApp groups to improve communication, more frequent updates on student progress, and instances where parents advocated for improvements in school infrastructure. This increase in engagement reflects the ES’s broader influence on the school environment, extending beyond classroom dynamics to include stronger collaboration between families and the school.

Overall, the ES has been widely perceived as contributing positively to educational improvements, particularly in fostering reflective practices, enhancing pedagogical strategies, and strengthening communication between school stakeholders. However, the varying levels of perceived impact, particularly among students, suggest that continued efforts are necessary to ensure the program’s benefits are felt more uniformly across the educational community.

#### CONCLUSIONS

The findings of this study demonstrate that the “Education Stoplight” (ES) effectively facilitated the identification and management of key educational challenges, providing valuable insights for improving education in Paraguay. By highlighting areas for intervention and engaging the entire school community

in an ongoing process of reflection and adaptation, the ES has enhanced individual agency and fostered a collaborative environment essential for sustainable educational progress. However, despite the recognition of specific improvements, a notable contradiction emerged: while both teachers and students acknowledged positive changes, many participants expressed a perception that there had been no significant overall improvements. This suggests that while localized gains were made, the broader perception of systemic change may take longer to materialize.

A recurring theme in the study was the participants' strong desire for ongoing support. Teachers and students emphasized the importance of continued engagement from Fundación Paraguaya, particularly the facilitators who played a key role in implementing interventions across schools. There was a clear call for more follow-up throughout the year to sustain the gains achieved through the ES and ensure its long-term impact. This reflects the need for consistent guidance to fully leverage the tool's potential.

Another significant challenge identified was the limited involvement of parents. Both teachers and principals expressed disappointment over the lack of parental engagement, noting that many parents did not participate in the questionnaire or show interest in its outcomes. There was a strong belief that greater parental involvement would significantly amplify the impact of the ES, emphasizing the critical role families play in the educational process. Addressing this gap is essential to maximizing the program's effectiveness.

While the study offers a comprehensive view of the ES's impact, several limitations must be acknowledged. The sample primarily included institutions that had already implemented the ES, which may have skewed perceptions toward more favorable outcomes. Additionally, the study did not achieve equal representation between rural and urban areas, limiting the generalizability of the findings. These limitations suggest that further research, particularly with a more diverse and balanced sample, is necessary to fully assess the ES's long-term effects.

In conclusion, the ES shows clear promise in addressing educational challenges and promoting collaboration within school communities. However, for the tool to achieve its full potential, greater parental involvement, sustained follow-up, and further research into its long-term impact are crucial. With these improvements, the ES could serve as a pivotal mechanism for sustainable educational reform in Paraguay.

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