Africa Digital Schools Initiative (ADSI)-Kenya

Midline Evaluation Brief

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February 2019
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This publication represents an executive summary of the findings of the internal GESCI Midline Evaluation of the African Digital Schools Initiative (ADSI) Programme in Kenya.

Published by:
Global E-Schools and Communities Initiative (GESCI)
Unga House
Muthithi Road, Westlands
Nairobi, Kenya
www.gesci.org

1st Edition

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1.0 Executive summary

The African Digital Schools Initiative (ADSI) Kenya midline study aimed to collect data and evidence on the progress of implementation of the ADSI blended learning school-based teacher development model, as well as assess the current effects and impact. Using a mixed methods approach, data was collected from across all the four counties where the project is implemented. Data collection took place between the months of September and October 2018 and targeted county education officials, school principals and Boards of Management (BoMs)/Parents Teachers Association (PTA) leaders, teachers and students.

The study has generated findings that will help to form critical insights into the progress and impact made since the baseline as well as identifying challenges and barriers that may need to be addressed in the remaining life of the project. The following is a summary of the findings.

- **The status of institutionalization of ADSI and ICT integration**: ADSI has succeeded in entrenching ICT integration in the participating schools at multiple levels. About 90% of the schools have either developed new ICT integration policies or improved on those that existed before the project. Stakeholders report that the school-based ICT policies have been useful for building school community buy-in and support for school leadership to promote ICT integration in teaching and investing in school ICT infrastructure and equipment. Additionally, they have helped schools manage the use and sharing of ICT resources and to protect facilities from misuse. County and national education officials report their appreciation of their engagement in the project implementation as the project is considered highly relevant and well aligned to national goals and initiatives. However, institutionalization of these policies needs further strengthening at school level with regular inclusion of ICT budgets in school plans and at a national level with greater recognition of the importance of ICT norms and standards in a sector-wide education policy.

- **The status of Digital Schools Development**: There is evidence to suggest that the programme has made significant progress towards making the participating schools achieve higher levels recognized by the Digital Schools of Distinction framework. This framework assists schools to identify the necessary steps to successfully integrate ICTs across different dimensions of leadership, teacher development, curriculum, equipment, and school culture in coherent ways. Findings indicate that all schools believe that, by following this framework, they have improved teaching and learning and enhanced learner performance. In addition, ADSI schools have developed stronger systems for acquisition and management of ICT resources and improved the use of ICT in the management and communication among school community. However, the levels of progress are still disparate amongst the schools and there is a need to motivate schools that may be lagging behind, to catch up.

- **The status of Teacher Professional Development**: The participating teachers in the programme report significant positive improvements in their technical skills in ICT, subject content knowledge as well as pedagogic practices in ICT integration. Evidence suggests that the project has achieved the following for teachers:

  - improved their access to ICT both in schools and other environments,
  - helped them develop a deeper understanding of the potential of ICT in improving teaching,
  - built their confidence in using ICT tools and equipment,
  - acquisition of modern 21st Century teaching practices
  - transferred modern workplace skills to learners
  - developed a community of practice among teachers within the county among participating teachers
  - influenced peer teachers not engaged on the programme
  - greater professional engagement with county-based officials and school-based teacher coordinators

Challenges facing effective professional development, reported by teachers include a shortage of ICT equipment, lack of time to manage the additional work load, poor internet connectivity and lack of support from some principals.
• **Status of student learning:** Learners benefitting from the ADSI programme report positive improvements not only in acquiring modern workplace skills but also improvements in their performance in academic results, particularly in Science, Technology, English and Maths (STEM) but other subjects as well. They welcome significant improvements in increased access and use of ICT equipment. The evidence suggests that the project has achieved the following for students:
  - improved skills, confidence and frequency of using computers for personal and school-related tasks,
  - improved their perceptions on the potential of computers to support learning.
  - greater opportunities to research and find out more information beyond what the teacher covered.
  - improved interest and performance in the STEM subjects
  - multiple benefits in learning – enables better understanding of difficult concepts, greater concentration, improving collaboration with other students, feeling more independent in their learning, improving the class atmosphere by making learning fun and helping them to recall what they have learnt.

Additionally, over a third of students expressed a strong preference for lessons where ICT is integrated into the teaching over conventional lessons. However, access to computers remains a challenge as the student ratio to the equipment is very high.

• **Policymakers’ views on ADSI:** County and national officials are highly supportive of the ADSI programme in their schools. The evidence suggests that the project has achieved the following for Ministry officials:
  - well aligned to government policies and plans,
  - a timely and relevant to current developments in the education sector nationally
  - improving learning outcomes for learners
  - going beyond the conventional coursework to help the students acquire skills to prepare them for the future working environments
  - combines equipment support and teacher professional development,
  - engages different actors in implementation.

In addition, the officials had very positive reviews on the ADSI project team and that the project has that the project has great potential for sustainability.

• **Major barriers to effective ADSI implementation**
  Among the challenges are:
  - Across all schools on infrastructure, facilities and equipment
    - insufficient computers/laptops and projectors
    - poor and inconsistent internet connectivity
  - Among the teachers:
    - a concern that most of the trainings were often short and hurried and with so much to cover within a short time.
    - the timings of the trainings and that chats which often clashed with other school commitments.
    - Some teachers who had been in the service for longer were said to be struggling with ICT integration
  - In some schools:
    - school principal transfers had slowed down activities
    - principals who do not support the initiative fully making it difficult to roll out activities specifically those that needed financial resources.
2.0 Background

The Global E-Schools and Communities initiative (GESCI) has worked since 2005 to provide capacity building, technical and strategic advice to countries seeking to harness the potential of ICTs in order to increase access to, and to improve the quality and effectiveness of education. GESCI in partnership with the Mastercard Foundation and the Ministries of Education in Kenya, Tanzania and Côte d’Ivoire are embarking on a five year African Digital Schools Initiative (ADSI) (2016-2020) - a comprehensive multi-country multi-year programme to implement an effective, sustainable and replicable model of digital whole school development in secondary education that will lead to improved student 21st century skills development, learning outcomes and readiness for the knowledge economy workplace.

The goal of the ADSI programme is to consolidate and develop a holistic expansion of the demonstrably successful aspects of its Strengthening Innovative Practice in Secondary Education (SIPSE) pilot model (2013-2015) in relation to its innovation practice, whole school approach, horizontal (geographic) and vertical (institutional) outreach and impact, and shared ownership. The ADSI model presents a portfolio of system-wide ICT innovation elements that can address policy coherence needs for ICT integration in teaching and learning - inclusive of: a blended learning teacher development approach, whole school involvement, school leadership capacity building, converging technologies of e- and m-learning, use and development of open education resources, an online repository of materials, digital school awards, accreditation and certification to incentivize ICT integration and progression, policy dialogues to raise awareness and influence new policy formulation and institutionalization of new/good practice. Currently, ADSI covers 80 schools (20 in each of the four counties of Kiambu, Nyamira, Narok & Taita Taveta), 80 secondary school principals, 800 teachers and 80 Boards of Management chairpersons and 80 parents association chairpersons.

In Kenya, a baseline study was carried out in third and fourth quarters of 2016 to set the benchmarks upon which the project would be monitored and evaluated. After one and a half year (representing the midpoint), a midline study was conducted to assess the extent of ADSI’s achievement of project goals, as well as identify factors that facilitate or impede its progress, and finally to provide recommendations for midcourse corrections, if any.
3.0 Midline study objectives, methodology and approach

Face to face interviews were carried out with school leaders, teachers as well as county officials. The student survey was a self-completion questionnaire which was distributed to 40 (10 from each grade/form) randomly selected students in each of the schools. Focus Group Discussions (FGDs) were conducted with carefully selected representatives of the ADSI teachers and students and the sampling aimed to have as wide a representation as possible. Key Informants Interviews (KIs) were all carried out with government officials at the county level using a discussion guide and the discussion recorded.

Quantitative data was collected from paper surveys and digitized by being entered into e-survey package on a daily basis. While this approach was able to provide a basic analysis, data was then transferred into Statistical Package for the Social Sciences (SPSS) for further analysis. It was then cleaned to take care of inconsistencies and errors, which may have occurred during coding and entry. Analysis was undertaken by computing the elementary statistics such as means,
frequencies and percentages and in some cases cross-tabulations. These were then presented in descriptive formats such as tables, graphs or narrations.

Qualitative interviews were recorded using digital voice recorders. They were then transcribed into word documents then entered into NVIVO qualitative data analysis software for coding. The data was then thematically analysed and interpreted into findings. The findings were then presented through inferential narratives illustrated using verbatim quotes.

Limitations
This study has encountered and addressed a few limitations as listed below:

- First, the study was only conducted within the ADSI intervention schools only therefore no data to compare with other schools in the county. Having noted this, we are currently in the process of seeking comparative learner achievement and enrolment in STEM subject data for the counties where we work.

- Second, for the large part the study relied on retrospective self-reported data. There is therefore the possibility that some participants had difficulties recalling important information or providing accurate information specifically in cases where they were asked to state timelines and frequency.

- Third, the study was carried out in the period preceding the national examinations therefore the time allowed in schools was restricted. This hampered the use of observation to verify some facts.

4.0 Highlights of the findings
In this brief, the findings are summarized into 10 key facts as follows;

Fact 1: ADSI has evidently improved the institutionalization and policy development in as far as ICT integration is concerned.

- Qualitative interviews with teachers further revealed that most schools had the ICT policies and that awareness on the contents of these policies was also strong among the teachers.

- Most of the policies articulate the ICT integration visions of the schools, use and management of ICT equipment and infrastructure, user guidelines and others bordered on protection of students.
Fact 2: ADSI is considered highly relevant and well aligned to national goals and initiatives with government plans and policies and the policymakers like the close collaboration in implementation.

“The ADSI project fits so well with ministry of education policy which aims to have every school digitally enrolled by 2020. I think ADSI is giving us a good platform to get started because now we have already teachers’ trained on ICT and also boards have embraced it. They are allocating resources however small to support ICT integration” Policymaker, Taita Taveta

“Yes, we do have national goals that the school is working towards, especially ensuring that all learners, irrespective of their backgrounds, acquire secondary education. Another one is making ICT part of life” Principal

Fact 3: ADSI contributed to improvements in access and usage of various ICT equipment both at school and outside among teachers.

Teachers access to ICT

<table>
<thead>
<tr>
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<th>Baseline</th>
<th>Midline</th>
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<tbody>
<tr>
<td>Have personal computers</td>
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<td>□</td>
</tr>
<tr>
<td>Have internet on personal comp</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Access internet frequently</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Regularly access internet etc</td>
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Teachers' smartphone ownership

□ Yes (99%) □ No (1%)  

Fact 4: ADSI teachers consider their skills in several ICT-related tasks to have greatly improved since baseline.

“I think for me it has been a great experience. Personally I did not know much about computers. The project has made me computer literate and I have learnt a lot personally. Earlier on I could only enter Maths project marks in the computer but now I have learnt a lot. And then for the students they have a lot of materials for the subject. There is a lot of material for geography including content, video clips...they are all there, so for me and even students we are really enjoying the project. We go to the lab once a week.” Teacher, Kiambu

“Yea especially accessing the information. I didn’t know where I can really get the information but when I attended the ADSI training I was made aware of so many areas where I can access the information and again we have interacted with teachers from various parts of the country through the ADSI platform” Teacher, Narok
Fact 5: Teachers say ADSI has improved the way they teach and made their work easier.

“It has been a wonderful experience. Of course if I compare when I was not in ADSI and after the training I feel that my teaching and learning has improved a lot since I can be able to access information easily and even assist the students to do research and that has made the learning very interesting” Teacher, Taita Taveta

“To say the truth, the teacher work load has really been reduced. The learner is doing most of the work where the teacher is usually doing more of the guidance, evaluation and correcting any misconceptions so it has changed us how we approach the tackling of the content” Teacher Taita Taveta

Fact 6: ADSI has increased the frequency of use of ICT in the curriculum, and in teaching.

Use ICTs with students in the context of teaching subjects

Used educational software related to their subject matter with their students

Used digital artifacts from student assignments and achievements

Used ICTs with students for presentations, without altering the classroom setting

Used ICT in the classroom for individual study

Used ICTs in the classroom for small group activities
Used ICT applications to monitor, evaluate and report on student achievement

Used presentation software to embed digital resources in lessons

Shared experiences of using ICT with other teachers

Used computer lab for teaching activities

Used ICTs in the classroom

Used ICTs with students for presentations, without altering the classroom setting

Used ICT in the classroom for individual study

Used ICTs in the classroom for small group activities

Used digital resources to enhance school productivity

Used digital resources to understand subject matter
Fact 7: ADSI has improved students' access and use of ICT both in and out of school. It has also improved their skills and confidence to use ICT.

Fact 8: ADSI has improved students' attitude towards ICT integration in the classroom and its benefits.

It is very important for me to work with a computer
Learning to use a new computer programme is easy for me
I think using a computer is fun
I have always been good at working with computers
It is more fun to do my work using a computer than without a computer
I use computer because I am very interested in the technology
Fact 9: Students prefer lessons where ICT is integrated than ordinary lessons. This is because they feel ICT makes them visualize and understand complex concepts.

"When teachers use computers like in a subject like biology like in reproduction you get to see the structure, how to draw it, you will be able to remember what you have learnt. So by using computers the teacher get to explain and one understand when you are stuck. The teachers give as a chance to use computers to Google the answers to questions asked" Student, Kiambu
Fact 10: Government officials have highly positive reviews of ADSI. They think it is relevant, cohesive to their plans and sustainable.

“We are talking of expanded facilities, use of ICT, integration of ICT in teaching and learning, empowerment of teachers in capacity building in terms of ICT, it has created interest in learners in terms of ICT use. We have also gone for induction training hence building our capacity. It has also reduced teachers’ movement going out to get physical teaching aids.” Policymaker, Taita Taveta

“Very relevant in this way; one, as a ministry it gave us a forum when we had both teachers, principals, board of management and PTA members come together in one forum to discuss ICT, therefore to us it was a forum which we used to push them to develop an ICT philosophy in schools and an ICT policy so that when you attend the various boards of management, they easily understand what you are trying to say. Through this we have infused ICT as a policy in all the departments be it finance, procurement as well as academic.” Policymaker, Nyamira

“They have been involving us, the person in the ground Walthaka for any activities he will send letters for my approval even when he is inviting teachers, it’s me to approve, even when they are going to involve students it’s me to approve, then when he has workshops for those teachers we have always been invited.”

“I believe the project is sustainable. Since most of teachers have ICT competencies now, when they sit with their board to convince them on acquiring laptops and maybe Wi-fi for the schools. For the new teachers coming on board they are already tech savvy though for the older one there is a bit of resistance but were are closely working with them to ensure sustainability.” Policymaker, Taita Taveta
5.0 Key conclusions, recommendations and discussions

The above findings have generated evidence and insights that can help in drawing several conclusions across the 4 domains of ADSI implementation.

- **ADSI impacts on institutionalization**: Evidence suggests that there has been growth in institutionalization of ICT integration across most of the ADSI schools. Almost all the ADSI schools have an ICT policy and or ICT user guidelines to guide the integration. There are also improvements in the level of awareness by teachers and students on the policies. Notably though, while most of the BoM Chairpersons interviewed were aware of the ADSI project, majority did not demonstrate sufficient knowledge or awareness of the policies and this could be a major barrier to institutionalization and sustainability. The ADSI project is also evidently aligned to the Kenya secondary school curriculum, the Teachers Service Commission (TSC) Teacher Education Standards including government of Kenya policy that seeks to mainstream ICT in teaching. However, there are information gaps on the extent to which ICT integration is being implemented and policies enforced.

- **ADSI impact on Digital Schools of Distinction**: Generally, there has been great progress among the participating schools in as far as their progress towards Digital Schools of Distinction status is concerned. The midline gathered evidence of strong buy-in by the school leaders, growth and improvement of ICT infrastructure across schools, access to ICT equipment by both students and teachers, a stronger culture of ICT use in administration and management and generally a more robust ICT culture among most ADSI schools. However, the level of innovation and progress was varied across schools; some schools have taken greater ownership of mainstreaming ICT in education and school life while others were still a bit slow. There are those schools that strongly identify themselves as centres of ICT distinction and have gone a long way to mainstream ICT integration in their plans, but there were those where not so much had been done and this could impede sustainability. The main challenge however remains the inadequate equipment and ICT infrastructure which reduces the frequency of ICT use in learning.

- **ADSI impact on Teacher Professional Development**: The project has had a big effect on teachers’ ICT literacy, their knowledge of ICT integration and why it is important. It has shifted their attitudes and norms around the use of ICT in teaching and changed their approaches. Generally, teachers report very positive experiences with the ADSI project which they believe is well designed, effectively implemented, relevant and useful for their professions. They speak highly about the impacts the project has had on their skills, knowledge and classroom practice. They consider the trainings enriching, futuristic and believe it helps them to be better teachers and to help students learn in a more fun, easy and collaborative way. The believe modern teaching approaches such as Project-based

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**Recommendation:** ADSI engagement with School leaders should focus on emphasizing participation and collaboration in implementing the policies. Further, there is need to give some push to schools to move from just having the policies and plans to mere tangible support such as inclusion of ICT budgets in school plans and using the ADSI lesson to influence policy and practice at both the county and national levels of shifting education policies.

**Recommendations:** Engagement with school leaders must now focus on challenging them to innovate how to resource for additional equipment without GESCI’s School leaders should also be encouraged to lobby policymakers to mainstream ICT budgets in the capitation grants.

**Recommendations:** There is need for the ADSI Team to rethink the planning of the trainings and the chats to ensure maximum participation. One strategy is to make the chats continuous rather than one hour and also consult with SBCs when organizing the training to get the most suitable timings.
Learning, use of webquests and simulations have not only enriched the content of what they teach but also helped them think critically and be at the forefront in generating content. There are three major impediments to their professional development; shortage of equipment, inadequate internet and in some cases time constraints due to workloads by the school timetable. Teachers also feel the training and the chat programmes could be adjusted to ensure maximum participation for most teachers and support better implementation.

- **ADSI impact on student learning:** ADSI has increased student access and use of ICT both at school and home. Students also rate their competencies and skills in ICT to have increased significantly as a result of the project. Students appear to have a greater understanding on the potential of ICT to improve the way they learn, they have also developed more positive attitudes towards ICT integration and have greater confidence in operating most ICT equipment. Most of the students approve of lessons where ICT is incorporated and describe them as fun, interesting and participatory making them learn easily, comprehend complex concepts but also recall more. Teachers report that learning has been more student-centred and that there are improvements in scores and learning outcomes among the students. Students also feel that ICT will be useful for them in their future life by helping them achieve educational mobility, employment, entrepreneurship and enhanced opportunities for livelihoods. However, the challenges around infrastructure remain a huge impediment as students have to share resources from time to time.

- **Policymakers’ feedback on ADSI:** Education officials have largely positive feedback on the ADSI project. They report that they like the holistic model approach of the project, its approaches that encompass; whole school ICT development, teacher professional development, equipment support and teaching support. They also like that the project aligns very well with national education plans and policies and have high regard for the ADSI teams that they work with. They positively report about the level of collaboration and joint planning and they do not consider the project intrusive or disruptive. They exhibit high buy-in and most have accompanied the project to the field and had first-hand experience. However, feedback also suggest that while the support for this project is huge among the policymakers, little seems to be happening to consolidate the gains, expand reach and or think about sustainability. The government appears to have an ICT equipment support agenda for schools yet its efficiency and veracity is not very clear. There is need for a new way of engagement in order to develop ideas on how ADSI and government could synergize their efforts.

**Recommendations:** There is need for Schools management to innovate ways of ensuring students are exposed to ICT more. One approach is to ensure every school has a plan on how many times teachers should integrate ICT in a term as well as a plan for follow-up and supervision by the Principals or the Heads of Department.

**Recommendations:** ADSI Programme Manager and country manager need to engage more with policy makers at both national and county levels to leverage the support mentioned in more tangible ways.

GESCI should follow-up with government on the computer supply to schools programme with an aim of engaging them on the ADSI model.
6.0 Lessons for implementation

The findings and conclusions have unearthed several lessons that could go a long way in improving implementation, sharpening focus as well as improving the potential for sustainability of the ADSI project. The following are some of the key ones;

- **On institutionalization:** Having school-level policies for integration of ICT is critical in creating awareness amongst stakeholders, supporting buy-in and assuring implementation. ADSI appeared to have gained better traction in schools where the policies were well communicated, displayed and embedded in the school plans and targets. Entrenching ICT integration in the strategic plan also appears to hold one of the greatest potential for ensuring sustainability of the ADSI goals and general impacts of ICT integration. However, more needs to be done to support most schools to move from just having the policies and plans to mere tangible support such as inclusion of ICT budgets in school plans and shifting education policies. In addition, MoE needs an ICT integration policy and greater clarity on ICT integration norms and standards so that it becomes sector wide.

- **On Digital Schools of Distinction Progress:** Schools where the Principals had taken ownership of the ICT integration appears to have made better progress, with teachers reporting better support and most appears to have innovated and managed to marshal more resources for infrastructure and more equipment. With a strong buy-in from the Principals, there are many possibilities for external support with equipment and infrastructure for the schools as there is evidence of schools that have partnered with NGOs and other government institutions for support.

- **On teacher professional development:** There is a strong buy-in and appreciation of the ways ICT can improve the way teachers work. However, teachers grapple with the pressures of their daily workloads and sometimes need some push to be able to deliver tasks. Empowering the SBCs to have supervisory roles and to have technical capacity to support is critical in managing delivery of the teachers. It was evident that in schools where the SBC had high ICT competency, teachers felt they were strongly supported and able to overcome technical challenges.

- **On student learning:** Project based learning has generated a lot of interest among students. Learning through developing and researching has created a new shift in the way students view their role in learning and made students feel empowered and confident. Encouraging schools to have basic ICT literacy for the students is critical in unlocking the students’ potential to achieve more. At the moment there are several schools that have made strides towards this goal but there needs to be a greater advocacy and sensitization among the school leaders for full adoption.

- **Engagement with policymakers:** ADSI has a great reputation among the policymakers at the County level. This has been as a result of close coordination and alignment of project activities with the MoE activities. There is a strong lesson that engaging and involving these policymakers in project activities such as classroom observation serves to assure them on what is going on. There is need to increase the level of involvement of policymakers and advocacy to start getting them thinking about their role in supporting the sustainability of the project.

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