Report of the External Evaluation of the Support Program for Quality Education in Mother Tongues for Primary Schools in Senegal

Prepared for:
Dubai Cares

Prepared by:

Carol Benson and Shirley Miske
with Erina Iwasaki, Mbacké Diagne, and Margaret Meagher

Miske Witt & Associates International (MWAI)

Final edited English version June 8, 2019

1. Executive Summary

Brief project description and context

ARED implemented a simultaneous bilingual education model in collaboration with the National Education Ministry (MEN) of Senegal from December 2014 through August 2018, building on a successful pilot project that was implemented from 2009 to 2013. The Hewlett Foundation's external evaluation of the pilot program conducted by Dalberg found that pupils in ARED's bilingual program outperformed pupils in traditional schools (ARED, 2014). Hence, Dubai Cares provided funding to scale up the model to 98 schools and 101 classes in three regions, from December 2014 to August 2018, to contribute to bilingual education expansion as part of Senegal's national strategy for educational quality improvement.

The ARED bilingual program uses a "real time" bilingual education model. It consists of simultaneous teaching of beginning literacy in a child's mother tongue or first language (L1), Wolof or Pulaar, along with French, the second language (L2). The learner develops literacy skills simultaneously in the national language and French, based on promotion of literacy transfer between the familiar language and the new one. The model covers all of the subjects in the national curriculum of Senegal and continues to develop literacy in both languages through the end of CE2 (grade 4).

Key program elements included: (1) Teacher professional development; (2) the development of teaching and learning materials (in Pulaar and Wolof, also in French) and teachers' guides; (3) awareness-raising among communities, focusing on parent involvement in school management committees (SMCs); and (4) a solid monitoring and evaluation system.

Purpose and expected use of the evaluation

The primary purposes of the external evaluation are to provide an external assessment of program achievements; to highlight key lessons learned; to assess the sustainability of the bilingual model; and to offer recommendations to inform future decision-making and scaling up of the bilingual model in Senegal.

The fourth purpose mentioned also points to one expected use of the external evaluation; that is, to provide concrete recommendations that can inform future decisions about the scaling up of the bilingual model in Senegal to be made by the Ministry of National Education (MEN). Other expected uses of the evaluation are to provide ARED with an external assessment of its performance in implementing this program, and to share the findings internationally with researchers and scholars of linguistics and education, to inform the field more broadly of this successful approach to bilingual and multilingual education.

Summary of the evaluation methodology

In alignment with the evaluation aims, the mixed methods evaluation was designed to examine the criteria of relevance, efficiency, effectiveness, sustainability, and impact.[1] MWAI analyzed two key sources of data. First, the team examined documentary evidence, that is, existing reports, pedagogical materials produced by ARED (teachers' guides, learner materials, and training materials), monitoring data (CFEE data and national assessment data), and other publications. ARED's monitoring data were reanalyzed using rigorous statistical methods to probe for additional insights. Second, the field research team spent two-and-a-half weeks visiting schools and meeting with individuals and groups in the three ARED implementation regions (Dakar/Rufisque, Kaolack, and Saint-Louis). They conducted individual key informant interviews with ARED staff, regional and district MEN representatives involved in implementation, school directors, teachers, and school management committees; and they conducted focus group discussions with parents and students. Writing assessment data in a national language and French were also collected from students in grade 5 (CM1) in 10 sample schools across the regions.

Principal findings and conclusions

The goal of the ARED program was for bilingually educated learners enrolled in grade 1 to 4 classes that were following ARED's model to demonstrate comparatively better results than students in traditional classes in reading and mathematics at the end of the program. The program achieved this goal: Students who participated in bilingual education had significantly higher scores than students who participated in traditional education on three different assessments. In particular, MWAI's secondary analysis of ARED's monitoring data of the CFEE showed that students in bilingual classrooms who participated in bilingual education from grade 1 to grade 4 (CI to CE2) significantly outperformed traditionally taught students on 11 out of 15 sub-tests of the third term 2016-2017 CFEE, and they had higher averages for French language and communication, math, and ESVS. In the second year (2017-2018), bilingual classrooms outperformed non-bilingual classrooms on *all* sub-tests, and they had higher average French language and communication, math, and ESVS scores. This continuity over time implies that the difference and superior results between bilingual and traditionally taught students remained strong over time.

Data from the innovative writing assessment collected during fieldwork showed that, for the sample of schools/classrooms, bilingual students scored significantly higher on both the L1 (Pulaar/Wolof) and L2 (French) expressive writing assessments than traditionally taught students.

Findings from the three assessments together demonstrate that ARED's bilingual education model led to greater learner achievement than the traditional model by building a foundation of L1 and French literacy and by using both languages effectively to teach academic content.

---

[1] Evaluation criteria developed by the intergovernmental economic entity, Organisation for Economic Co-operation and Development - Development Assistance Committee (OECD-DAC).

The bilingual program's three sub-goals were: (1) for teachers, school directors and inspectors to demonstrate mastery of ARED's bilingual teaching and learning strategies, (2) to develop and distribute high-quality bilingual materials that facilitate use of the bilingual approach, and (3) for MEN policymakers, primary school inspectors, teachers, and community members to gain confidence in and support the bilingual model. The structures ARED put in place to meet these sub-goals were also successful.

The structures for training and professional development, specifically, the two-tier cascade model for training and for teacher support with the follow-on observation and reporting, were effective. The pedagogical days and pedagogical circles promoted collaboration between and among teachers, school directors and inspectors to find linguistic and pedagogical solutions to implementation issues. Teachers highly valued the materials ARED developed in L1 and L2, noting that ARED was consistent in delivering an appropriate number of the curriculum-relevant materials on time. Those interviewed for the evaluation reported continuing to use the bilingual materials in teaching, even though the model was not officially being implemented in 2018-2019.

As a result of the trainings and subsequent monitoring and support, stakeholders met or exceeded the targets for each of the sub-goals and indicators related to these structures. As of May 2017, ARED reported that 90% of inspectors, 80% of teachers and 72.5% of school directors had mastered the bilingual teaching model, while 86% of teachers and 93.9% of pupils were using the materials (ARED 2017b).

MWAI found evidence that MEN officials were significantly influenced by this model as they worked alongside ARED on its implementation. One demonstration of this influence is MEN's 2019 adoption of a "Harmonized Bilingual Model", which was largely inspired by ARED's bilingual model and officially mentions the option of real-time bilingualism. This model is the result of a consultative process promoted by ARED and implemented by MEN for harmonization of the bilingual education models used in Senegal.

According to MWAI's interviews and focus group discussions, stakeholder satisfaction with the bilingual model and with ARED's work at all levels of implementation was also very affirmative, and positive spillover effects could be seen across the program. For example, bilingual students taught some L1 literacy to their peers in traditional classes, and bilingual teachers shared their L1 knowledge and teaching strategies with their colleagues teaching in traditional classrooms. There was also unexpected synergy between schools and communities. Bilingual students taught family members how to read and write in their own languages, and family members reported starting to help children with their homework in Wolof or Pulaar. A raised awareness of the importance of the national languages of Senegal was articulated at all levels – not only for those whose own languages were Wolof or Pulaar but also for those with other mother tongues, who discovered that bringing Wolof and Pulaar into formal education made their own languages more visible and valuable.

Stakeholders at all levels engaged and participated in the program, including high-level MEN officials, IA and IEF inspectors including the bilingual focal points/trainers, members of the School Management Committees (SMCs), parents, bilingual teachers, and bilingual learners.

Stakeholders consider ARED's bilingual model superior to other forms of primary education, due to its progressive, systematic, curriculum-based and coherent approach. Nearly all stakeholders interviewed called for *generalisation* (expansion throughout the country) of ARED's bilingual model, including expansion into additional languages. Cited as particularly important was that students learned in all subjects through both L1 and French.

ARED engaged comprehensively, even exhaustively, in the implementation process, as evidenced by provision of trainings and follow-up; timely provision of textbooks, distributed in appropriate quantities; and the capacity to adapt and make improvements where needed (e.g., involving SMCs).

Challenges and recommendations

The field team identified two sets of challenges: program challenges and technical challenges.

One of the key program challenges identified is teacher mobility – a challenge that is not unique to this program. Teachers in Senegal are eligible to transfer to another school after two years, which means that the knowledge newly trained teachers have acquired through ARED's (or any other bilingual) program will go with them to a new site where they may not be able to use it. Some of the trained focal points were also lost to transfer. Therefore, it is important to find sustainable ways to continue to develop both bilingual trainers and bilingual teachers. One recommendation is for ARED to provide them with recognition or certification of the bilingual trainings they received; another recommendation for the future is to assess the languages and literacies of education personnel for appropriate school placement.

Sustainability for the bilingual program is built through aligning with MEN structures and personnel, including inspectors, school directors, and teachers. While all these stakeholders spoke positively about the program and their involvement in it, it is a challenge to ensure that these roles not become a burden. Another program recommendation is to assess carefully the time demands made on inspectors in particular, as they were called on to conduct trainings and classroom observations and to write up reports about the bilingual teachers in addition to their other responsibilities.

Not infrequently, more than one home language is spoken in a community (e.g., Wolof and Pulaar and/or another national language), which is known as linguistic heterogeneity. ARED reportedly dealt with this well, supporting inspectors, school directors and SMCs to make decisions with communities about which languages their bilingual classes would be taught in. The occurrence of linguistic heterogeneity makes it important for ARED and other organizations to continue working with communities in consensus building, training communities to do language mapping and supporting communities and SMCs in participatory decision-making strategies.

Technical challenges focus on the importance of ongoing professional development for teachers and the expansion of assessment methods. This includes the need to add more bilingual methods and strategies for teaching curricular content, as requested by the teachers; a need to develop strategies in both languages to encourage speaking and writing development (productive skills) as well as listening and reading (passive skills); and the need to assess L1 as well as L2 literacy development, and to use the L1 (or both L1 and L2) to assess all curricular content such as mathematics and ESVS.

Summary of lessons learned

Key lessons learned from this mixed methods evaluation highlight the effectiveness and the impact of ARED's simultaneous bilingual model. The following lessons learned are salient for bilingual education in Senegal and can be generalized beyond the project.

1. ARED's model of simultaneous bilingual education is efficacious. The assessment data available to this external evaluation showed that students educated for four years according to this design and approach outperform traditionally taught (French only) students.

2. Stakeholders support this model of bilingual education because from the beginning – from the first day – both languages (L1 and French) are used in the classroom and are in the curriculum and the school day. Further, expansion of the model to cover the entire six-year primary cycle, which is a related ARED initiative that has grown out of this experience, is consistent with research-based principles of bilingual education and the promotion of interlinguistic transfer.

3. ARED's development of supporting structures is effective, including: A two-tier cascade model for training inspectors (focal points), who in turn train school directors and teachers; a supervision system built into existing MEN structures where inspectors and school directors follow the work of bilingual teachers; and the addition of pedagogical days and pedagogical circles to promote collaboration between educators to find linguistic and pedagogical solutions to implementational issues.

4. Consciousness-raising workshops for parents and school management committees (SMCs) maximize the potential for synergy between L1-based bilingual school learning and home literacy learning and encourage family support for children's schoolwork.

5. Integration of bilingual education into effectively functioning national and regional structures like the IAs and IEFs promotes ownership and cooperative responsibility in bilingual education implementation.

6. ARED's consistent aim of improving the quality of education for all learners allows the organization to be flexible and to adapt to other education system needs and requests, while also earning the well-deserved respect of stakeholders at all levels.

7. ARED worked in close partnership with the MEN throughout implementation, which has built ongoing understanding and mutual support. Through a process of consultation and harmonization of models used in Senegal, which was largely inspired by ARED's bilingual model, MEN now speaks of a Harmonized Bilingual Model, which officially mentions the option of real-time or simultaneous bilingualism.

Acknowledgements

Table of Contents

List of Tables

List of Figures

List of Acronyms and Abbreviations

ADLAS	Association for the Development of the Saafi-Saafi Language /
ARED	Associates in Research and Education for Development (NGO)
BE	Bilingual Education
CFEE	Certification of Elementary Completion/ *Certificat de Fin d'Etudes Elémentaires*
DALN	The Literacy and National Languages Directorate
DC	Dubai Cares
DEE	Elementary Teaching Directorate
DPRE	Education Planning and Research Directorate/ *Direction de la Planification et de la Réforme de l'Éducation*
EGMA	Early Grade Mathematics Assessment
EGRA	Early Grade Reading Assessment
ELAN	School and National Languages/ *Ecole et Langues Nationales*
EMiLe	Multilingual Education Project/ *Enseignement Multi-Langue*
ESVS	Science and Social Life Education/ *Education à la science et à la vie sociale*
FGD	Focus Group Discussion
IA	Education Inspectorates/ *Inspection de l'Académie*
IEF	Education and Training Inspectorates/ *Inspection de l'Education et de la Formation*
INEADE	National Institute for Education and Action for the Development of Education/ *Institut national d'Etude et d'Action pour le Développement de l'Education*
KII	Key Informant Interview
L1	Home language or mother tongue
L2	Second Language learned / Additional Language (French)
LPT	Reading for All/ *Lecture Pour Tous*
M&E/MEL	Monitoring and Evaluation/Monitoring, Evaluation, and Learning
MEN	National Ministry of Education/ *Le Ministère de l'Éducation Nationale du Sénégal*
MLE	Multilingual Education
MWAI	Miske Witt & Associates International
PAQEEB	Project to improve the quality and equity of education/ *Projet d'amélioration de la qualité et de l'équité de l'éducation de base*
PAQUET	Education Sector Quality, Equity and Transparency Enhancement Program
PAQUET-EF	PAQUET in Education and Training
PSE	*Plan Sénégal Émergent*
SMC	School Management Committee/ *Comité de Gestion de l'Ecole*
USAID	United States Agency for International Development
UNESCO	United Nations Educational, Scientific and Cultural Organization

Glossary of Definitions

Interlinguistic transfer: The process that takes place within a learner's brain when skills learned in one language become available in another language as the latter language is learned.

Metalinguistic awareness: Explicit knowledge about grammar, syntax, and other aspects of language that develops in bi- and multilingual learners as they compare and contrast languages.

Linguistic heterogeneity: The presence of speakers of two or more home languages within a single community or school.

Phonemic awareness: The ability to hear, identify and manipulate phonemes, the smallest mental units of sound that help to differentiate units of meaning; or the ability to notice, think about, and work with the individual sounds in words when learning to read.

2. Purpose of the Evaluation

The "Support Program for Quality Education in Mother Tongues for Primary Schools in Senegal" has been implemented by the Senegalese Non-Governmental Organization (NGO) Associates in Research and Education for Development (ARED) in collaboration with Senegal's National Education Ministry (MEN) since 2009. The Hewlett Foundation provided early support for the program, and Dubai Cares foundation has provided grant funding since December 2014. To consolidate the gains of ARED's bilingual model and implementation in three regions of the country, Dubai Cares extended financial and technical support from November 2017 to August 2018 with the intention of contributing to the expansion of bilingual education (BE) as part of Senegal's national strategy for educational quality improvement.

Dubai Cares is committed to an evidence-based approach to program development, where monitoring and evaluation and learning (M&E/MEL) is an integral part of every program. The main purposes of this evaluation were: to provide an external assessment of program achievements (including internal/external factors affecting achievements); to highlight key lessons learned and recommendations for ARED's model and approach to implementing bilingual education; to assess the sustainability of ARED's bilingual model; and to inform future decision-making and scaling-up of ARED's bilingual model in Senegal.

Providing instruction in languages that learners speak and understand well has the potential to improve educational access, quality and equity, particularly for groups that have been marginalized in low-income countries (Ouane & Glanz 2011; UNESCO 2010, 2012). Hence, first language or L1-based bilingual (BE) or multilingual education (MLE) is a particularly important educational development initiative in low-income countries. Clearly language is not the only factor in improving educational quality, but it is widely accepted that a mismatch between the learner's language(s) and the medium of instruction is the root cause of school wastage (i.e., repetition, failure, drop-out), and it may well influence the high rate of out-of-school youth in many contexts (Benson 2014; Heugh 2011; Walter & Benson 2012).

Raising the quality of education is a top priority of the Senegalese government; and, to that end, the Ministry of Education has demonstrated its commitment to adopting a bilingual education policy with the support of key education stakeholders to identify and implement effective, evidence-based solutions. ARED focused on three important program elements of supporting quality bilingual education in three[2] Senegalese languages and French: (1) teacher professional development; (2) the development of teaching and learning materials (particularly in Pulaar and Wolof) and teachers' guides; and (3) awareness-raising among communities, with a focus on parent involvement in school management committees (SMCs). Dubai Cares has thus supported the expansion of an effective bilingual model and approach to 98 schools in Senegal.

---

[2] Two languages, Wolof and Pulaar, have been maintained throughout the program supported by Dubai Cares.

This external evaluation of ARED's program gathered data and evidence to determine to what degree and in what ways the program has been successful to date. It attended to unintended consequences (positive and/or negative) and to opportunities for program improvement that emerged during the fieldwork. This program evaluation also explores both opportunities and threats to the success of ARED's program and to its future expansion by MEN in the context of other donor-funded education project initiatives.

3. Audience for and Use of the Evaluation

The primary audiences for findings resulting from this evaluation are ARED management and staff, Dubai Cares, and the Ministry of Education and other actors directly involved in the implementation of the scaling up of bilingual education in Senegal and in other parts of the world (ARED Programme Proposal, 2014; Schedule 1, p. 5).

The evaluation will have value for ARED in terms of program quality and improvement as it aims to continue its work on behalf of Senegalese primary school-age children; and in terms of sustainability and scale-up of the ARED simultaneous bilingual education model in close collaboration with communities and with MEN. By examining the program holistically, using both qualitative and quantitative data, this evaluation pulls together the available evidence of how the program has been working and its effects on the stakeholders. Additionally, stakeholders' voices from three project implementation regions were included in analyses, and their suggestions inform the technical and programmatic recommendations.

Findings from this evaluation will provide Dubai Cares with an unbiased opinion of the programmatic achievements, both in terms of program delivery as well as results against expected outcomes. The nuances within the various findings illuminate a holistic, retrospective representation of the value of Dubai Cares' investment in the project from multiple perspectives; they also highlight the corresponding levers, factors and key stakeholders for potential scale-up in the future.

This evaluation will also provide both Dubai Cares and ARED with analyses and evidence to support wider discussions with MEN, with other actors such as Trust Africa and CSOs such as ADLAS, EMiLe, Tostan, and with the Senegalese public regarding adoption of a national language-based bilingual education policy and its implementation throughout the country. Results are directly pertinent to and aligned with national policy goals and strategies, including but not limited to the *Plan Sénegal Émergent* (PSE), Program for Improvement of Quality, Equity and Transparency in Education and Training (PAQUET-EF).

The findings from this evaluation of ARED's work in Senegal through this model and program will also be of value to others working in bilingual education implementation throughout the region and internationally; to architects and advocates of language-in-education policy; and to governments and donors investing in bilingual education efforts in low resource contexts.

4. Objectives of the Evaluation

The overarching objectives of this evaluation are to:

1. Provide independent verification of program outputs and achieved outcomes against expected results;
2. Identify and assess key internal and external factors (positive and negative) that have contributed, affected, or impeded the achievements, and how ARED has managed these factors;
3. Derive key lessons learned from the program and make recommendations that will help inform ARED and potential donors with regards to the formulation and design of similar programs with the aim of scaling up bilingual education as developed by ARED;
4. Identify if concrete sustainability plans and exit strategies were developed by ARED and if other initiatives (from ARED or other actors) are contributing to make the program's outcomes sustainable beyond the duration of Dubai Cares' financial contribution.

5. Evaluation Methodology

In alignment with the evaluation aims, this mixed methods evaluation was designed to examine the criteria of relevance, efficiency, effectiveness, sustainability, and impact.[3] MWAI analyzed two key sources of data. First, the team examined existing reports, pedagogical materials (teachers' guides, learner materials, and training materials) produced by ARED, monitoring data (CFEE data and national assessment data) and other publications. Second, the MWAI field research team conducted a series of interviews with key stakeholders (ARED staff, regional and district MEN representatives involved in implementation, school directors, teachers, school management committees, and parents). They also collected writing assessment data from students in grade 5 (CM1) in 10 sample schools across the three ARED implementation regions (Dakar/Rufisque, Kaolack, and Saint-Louis). Annex B maps the evaluation questions and targeted components (as outlined in the TOR) to the instruments used in the field.

MWAI designed the evaluation to be both retrospective and prospective, to understand what happened in the past with ARED programming and to provide recommendations for bilingual education in Senegal in the future. Time and resources did not allow for a representative sample of the 98 schools/101 classrooms in which ARED's bilingual model was implemented; however, the research team worked with ARED to identify and visit a range of contexts from the four *inspectorates de l'academie (IAs)* (Education Inspectorates) in three regions of Dakar, Kaolack, and Saint-Louis. Researchers visited a rural school, semi-urban school, and urban school in each, as represented by *IEF circonscription* (district) communes and departments. The team spoke with representatives from nine of the 10 IEFs working with ARED and visited schools in eight of the IEFs. The field

---

[3] Evaluation criteria developed by the intergovernmental economic entity, Organisation for Economic Co-operation and Development - Development Assistance Committee (OECD-DAC).

research focused on the regional (*IA*) and district (*IEF*) inspectorates (*MEN* offices), particularly those inspectors (one IEF director and one other inspector) who had been trained as bilingual education focal points/trainers.

In addition, the research included the schools and communities, particularly the school directors, bilingual teachers and members of the SMCs ARED supported. Data were collected from some schools that had experience working with ARED from the early program years and others that had started the program in 2014-2015. The team collected data from both traditionally taught and bilingually taught CM1 (grade 5) students. (Those in CM1 in 2018/2019 were the second and final cohort of bilingual learners, who have been mixed with traditional learners since ARED programming ended.) The research team collected primary data from a total of 15 schools in November 2018 and January 2019 (see Annex D for details on IAs, IEFs, schools visited, and language of ARED programming at the visited schools).

Document review
This evaluation began with a review of the 138 documents provided by ARED and Dubai Cares, as well as those identified by the research team. These documents included ARED progress reports, annual reports, teaching and learning materials, and monitoring and evaluation data (i.e., EGRA/EGMA, national assessment data, and CFEE 2018 data). See Annex E for a comprehensive list of supporting documents reviewed.

Fieldwork
In addition to the literature and data reviews, three MWAI consultants (two based in the United States and one from Senegal, all experts in bilingual education and proficient in French/English), along with their local linguist research assistants, collected data in Senegal for two weeks in November 2018. The Senegal-based research team collected data for two additional days in January 2019. The research team conducted interviews and/or focus group discussions (and audio recorded with permission) with stakeholders ranging from ARED trainers/staff, *MEN* representatives, IA and IEF supervisors, to bilingual teachers and parents who were available at schools on the days visited. Focus group discussions (FGD) were conducted with groups of eight bilingual students (four girls and four boys) chosen at random by the CM1 teacher. See Annex D for a list of all data collected.

The research team also gathered writing assessment data in L1 (Pulaar or Wolof) and L2 (French) from 386 CM1 students (273 taught bilingually and 97 taught traditionally) from schools that had implemented the ARED model. The data were designed to complement ARED's own assessments by focusing on learners' self-expressive writing skills in L1 and comparing these to their writing skills in French L2. Students were asked to complete the L1 stimulus: "One night, I dreamed that…" and to write as much as they could about the dream. On the other side of the page, they were asked to complete the same stimulus in French, choosing a different dream. Wherever possible, biliteracy skills were compared of the bilingually taught versus traditionally taught learners. For identification purposes, each student was asked to write at the top of the paper her/his name (which was kept confidential but used to identify gender and to ensure each was assessed in both languages) and the program s/he had gone through ("B" for bilingual or "T" for traditional). A list of writing assessment data collected is available in Annex D.

Analysis

During the fieldwork, discussions with education personnel were conducted mainly in French (with some discussion in Wolof or Pulaar). Parent and student interviews were conducted in Wolof or Pulaar, with preliminary analysis beginning in the field. All interviews and field notes were transcribed and translated mainly into French, and then organized into thematic units and coded using Dedoose software. Dedoose generated data for qualitative content-theme analysis, making it possible to develop theme-based tables with exemplary quotes.

Regarding the quantitative data, which included initial analysis of the writing assessment data and re-analysis of ARED national assessment data and CFEE 2018 data, the research team cleaned the data in Excel and analyzed the data in SPSS. MWAI first ran descriptive statistics on all variables. To assess differences between groups (e.g., bilingual/traditional classes, Wolof/Pulaar, and urban/rural) the team calculated independent sample t-tests. To assess differences between variables for the same set of participants (e.g., comparison of L1 score and L2 score), the research team ran dependent samples t-tests. If a t-test was significant, the research team then calculated Cohen's d as a means of effect size to assess meaningfulness as well as statistical significance, using the guidelines of $d < .2$ as a small effect, $.21 < d < .50$ as a medium effect, and $d > .50$ as a large effect (Utts & Heckard, 2006).

To assess the difference in pass rates between students who participated in bilingual education from CI to CE2 (grades 1 through 4) and students who participated in traditional classrooms, MWAI ran a Wilcoxon signed-rank test (the non-parametric equivalent to a dependent sample t-test). MWAI used a non-parametric test because of sample size differences among the two groups). For any significant Wilcoxon test, MWAI also calculated effect size using the criterion of $r < .30$ as a small effect, $.31 < r < .50$ is a medium effect, and $r = .50$ or greater is a large effect (Field, 2009).

To calculate differences by region, MWAI conducted Kruskal-Wallis tests (the non-parametric equivalent of the one-way independent ANOVA) as a conservative analysis; as the data by region had unequal sample sizes and greater variability, statisticians recommend using the KW test instead of the t-test, because "when groups with larger sample sizes have smaller variances than the groups with smaller sample sizes, the resulting F-ratio tends to be liberal" (Field, 2009, p. 360). If the K-W test was significant ($p < .05$), Mann-Whitney (MW) tests were run as post-hoc tests to determine which groups differed, applying the Bonferroni correction (.05/# of tests run). The MW tests were considered statistically significant if $p < .017$ (due to the three tests to compare all regions). For any significant MW test, MWAI also calculated the effect size r, using the criterion of $r < .30$ as a small effect, $.31 < r < .50$ as a medium effect, and $r = .50$ or greater as a large effect.

The team then drew upon document analyses, secondary analyses of extant data, primary analyses of writing assessment data, and analyses of interviews/FGDs in order to draw conclusions.

Ethical considerations

The research team maintained a neutral stance throughout the evaluation process, as the main purpose of the evaluation was to learn about the program in depth to inform future bilingual education in Senegal. The research team did not ask stakeholders personal, sensitive or leading questions. Stakeholders recorded their names, but the names have been withheld from this report to preserve anonymity, except where job titles may identify an individual.

Gender parity was a goal in our data collection but was difficult to achieve. Women were clearly underrepresented, particularly among inspectors and often among school management committee (SMC) members. The field team sought to achieve gender balance whenever possible (e.g., among bilingual students for the FGDs, and ensuring women were given a voice in FGDs and other meetings). One community had a large group of very active women, and their voices are included in the findings. Gender is noted wherever it is applicable, and the writing assessments are analyzed by gender. The ARED monitoring data was collected at the classroom level without gender disaggregation, so gender analyses were not possible with these existing data.

Limitations

Several limitations may impact the results of this evaluation. Since the final project cycle ended at the close of the school year (June 2018), the MWAI team could not observe the program implementation directly and had to rely on relevant stakeholders' recollections about their experiences with implementation of the ARED model. The CM1 students who were assessed had completed the bilingual model the year before, and the first cohort of bilingually taught learners had completed CM2 (grade 6) in June 2018 and were not included in this evaluation.

Another limitation was the timing of fieldwork, as dates were arranged soon after the contract was awarded due to the field team members' academic schedules. The team aimed to reach as many schools as possible in the three regions. At some sites it was not possible to meet with SMCs or parents. Due to limited time, data collection with students varied between focus group discussions and writing assessments on days when afternoon classes were not held. Finally, although the inspectors were on strike, the focal points and some of their supervisors came to meet with the research team, which they said was because of their interest in sharing their experiences regarding this program.

Although the schools were selected purposefully to include rural and urban schools in each of the three regions, there were more Wolof-medium (11) than Pulaar-medium schools (4) in the sample of 15 total schools visited. Thus it is possible that the findings may more accurately reflect the diversity of experiences among Wolof-medium schools and communities than of Pulaar-medium schools and communities. In addition, as mentioned above, the research team was not able to gather data from a representative sample of ARED schools. Thus, while emerging trends and results are discussed below, the findings are limited to this specific sample.

6. Composition of the Evaluation Team (including specific roles of team members)

MWAI Evaluation Field Team
- Carol Benson, PhD, Team Leader. Associate Professor in International and Comparative Education at Teachers College, Columbia University in New York.
- Mbacké Diagne, PhD, Co-team Leader. Professor at Cheikh Anta Diop University and Research Supervisor at the Centre for Applied Linguistics in Dakar, Senegal.
- Erina Iwasaki, Research Assistant. Doctoral fellow, International Education Development at Teachers College, Columbia University in New York.
- Mamadou Diallo, PhD. Pulaar language assistant. Instructor at the University of Gaston Berger in Saint-Louis, Senegal.
- Mamadou Sakho, Pulaar language assistant. Doctoral student, Cheikh Anta Diop University in Dakar, Senegal.
- Sokhna Diagne, Wolof language translator. Doctoral student, Cheikh Anta Diop University; Wolof interpreter/translator at the National Assembly of Senegal.
- Mamé Sémou Ndiaye, PhD, Wolof and Serer language translator. Cheikh Anta Diop University in Dakar.

MWAI-Minnesota Team
- Shirley Miske, PhD, Project Director, President and CEO, Miske Witt & Associates International, Shoreview, MN, USA
- Margaret Meagher, MA, Senior Researcher, Miske Witt & Associates International, Shoreview, MN USA
- Bethany Leech, MA, Program Associate, Miske Witt & Associates International, Shoreview, MN USA

7. Project Description

Context

In collaboration with the National Education Ministry, ARED has been implementing the Support Program for Quality Education in Mother Tongues for Primary Schools since 2009. Dubai Cares funded the program from December 1, 2014 to Nov 30, 2018 (with a one academic-year extension) to train educational staff (e.g., inspectors, headmasters, teachers, and regional pedagogical staff) in ARED's bilingual model; develop textbooks to facilitate bilingual teaching/learning; and mobilize key education stakeholders, community members, and school staff to understand and support bilingual education (ARED, 2018b). While Senegal's primary education system is composed of three stages (grades 1 and 2; grades 3 and 4; grades 5 and 6), ARED focused on the first two stages or grades 1 to 4 of primary education for this project; however, ARED has since received other funding for materials development to extend and pilot BE through grades 5 and 6 in 10 schools.

Senegal continues to heavily invest in its education system, as 21.58% of government expenditure was spent on education in 2017 (UIS, 2019). Investment in

education has helped spur enrollment, as the primary net enrollment rate increased from 69.59% in 2008 to 74.11% in 2017 (UIS, 2019). This surge in enrollment has challenged Senegal's education system to provide high quality education (RTI, 2015).

With 21 national languages (and French as official language), Senegal is rich in linguistic diversity and faces challenges in choosing appropriate languages of instruction in the classroom. In 2013, the Ministry instituted the Education Sector Quality, Equity and Transparency Enhancement Program (PAQUET) from 2013-2025, covering eight priorities including the use of national languages in the education system.

Underlying rationale

Given Senegal's increase in primary school enrollment and linguistic diversity, ARED has drawn on effective practices in bilingual education to create and to implement its own model, which aligns with the calls of international agencies such as UNESCO to use national languages along with French in an additive model (ARED, 2014). The PAQUET-EF identifies a number of factors affecting the quality of education in Senegal. These include the failure to promote first languages in education, poor credentials of teachers, inadequate amounts of textbooks and teaching/learning materials, and lack of pre-service and in-service teacher training (ARED, 2014). ARED's approach is built on the evidence-based assumption that introducing national languages in primary school will increase education quality by improving learner skills and reducing school dropouts by breaking down the language barrier of learning in a foreign language, facilitating teacher work to improve quality, increasing parent interested in education, and fostering local culture (ARED, 2014).

Outcomes. With a mission to "promote quality education in African languages for grassroots communities through training, publishing, educational innovations, and action research" (ARED, 2014, p. 10), ARED programming seeks the following outcomes or desired change:

  Ultimate outcome: Pupils following ARED's bilingual model will demonstrate superior mastery in reading and arithmetic at the end of the program
  Intermediate outcome 1: School teachers, school directors, and inspectors will demonstrate mastery of ARED's bilingual teaching/learning strategies and approaches
  Intermediate outcome 2: Teaching and practicing ARED's bilingual model is facilitated by classroom usage of the teaching and pedagogical materials produced
  Intermediate outcome 3: MEN policymakers, primary school inspectors, teachers, and community members will use and support ARED's bilingual model (ARED, 2018).

Stakeholders

ARED worked with a variety of stakeholders throughout the project. ARED partnered with seven advisory experts who specialized in the program areas of arithmetic, ESVS, monitoring and evaluation, reading, and language(s). ARED trained education inspectors identified as bilingual focal points who organized and supervised training and class observations and prepared quarterly evaluative summary reports. The Education and Training Inspectorates (IEFs) trained teachers,

monitored classes, and produced monthly reports, including minutes on IEF and school director activities. ARED also worked with school directors, who participated in training and supervising teachers, visiting bilingual classes bi-monthly, and preparing monthly reports for the IEFs. Finally community members formed School Management Committees that participated in their own trainings and, in some areas, created target-oriented Action Plans (PAV). The Technical Pedagogical Team (ETP) was coordinated by the Department of Primary Education at the central level and included six MEN departments; that team assisted with strategic orientation, leadership, training, evaluation, validation of pedagogical tools and monitoring. ARED also partnered with the MCG accounting firm to oversee and certify accounts. Nexus served as the communication consultant to support the preparation and implementation of a public communication plan.

Beneficiaries

At the inception of this grant in December 2014, the program was working with 10,500 pupils in CI to CE2 (grades 1 through 4), though this was reduced to 9,576 in 2015 due to loss of students from the designated classes through mobility or other reasons (ARED, 2015). Indirect beneficiaries of the program included 98 SMCs (one management committee per school, as instituted by Presidential Decree), 28 focal point inspectors (four focal point inspectors from four Education Inspectorates (IA), and 24 focal point inspectors from 10 Education and Training Inspectorates IEF), as well as 98 headmasters and 208 teachers. ARED also networked with other civil society organizations partnering with MEN that work in national languages, including ADLAS, EMiLe, Tostan, and linguists. The nation of Senegal was seen as indirectly benefitting from the program through the Ministry of National Education and its constituent services (ARED, 2018).

Conceptual model

ARED's model is original but supported by robust international research that supports additive bilingualism through the introduction of national languages in at least the first four grades of primary school as a means of contributing to learning and reducing dropout (ARED, 2015). ARED firmly believes that using national languages alongside French, combined with high-quality teacher training, availability of appropriate teaching and learning manuals in both languages, and a realistic monitoring and evaluation system can effectively address quality issues in the Senegalese education system (Dia, 2016).

ARED's model is a "real time" bilingual education model consisting of simultaneous literacy teaching in the first language (L1) or main language of the community, in this case Wolof or Pulaar, and French. At the beginning levels, an L1 literacy lesson is taught for 30 minutes, followed by a 30-minute lesson in French literacy that builds on what has been learned in the L1. According to ARED (2014), the model does not require any reform in the existing basic education curriculum, nor does it disrupt the learning curve from preschool (even if a child has learned some French), and it prepares pupils to learn two co-existing languages via interlinguistic transfer while giving pupils mobility if they transfer to a monolingual curriculum. Teaching in the L1 removes the language barrier imposed when teaching in French, since most pupils speak languages other than French at home. L1 and bilingual teaching also improves teaching quality, as teachers can explain concepts to pupils in a language they speak well, facilitating the learning of all subjects across the curriculum. Parents

develop increased interest in their children's learning, and bilingual teaching helps promote the local culture and environment (ARED, 2015).

Time frame. Beginning in 2009 and continuing through 2011, ARED offered its first simultaneous bilingual classes to primary students during their free afternoons (Dia, 2016) using the teachers' guides and first-year textbooks ARED had developed in Pulaar and Wolof. The afternoon bilingual model was implemented in 30 Pulaar or Wolof classes in Dakar, Saint-Louis, and Kaolack. ARED worked with government education structures at all levels from the beginning to facilitate ownership of the model and ensure sustainability. In 2012-2013, 100 new classes were added at the CI (grade 1) level and bilingual education moved from afternoons to mornings and whole days. An external evaluation of the program commissioned by the Hewlett Foundation in June 2013 found that pupils in ARED's bilingual program outperformed pupils in traditional schools (ARED, 2014). In view of this success, ARED sought funding from Dubai Cares to scale up the model even further, which is the program being evaluated here.

Results chain or logical framework

Annex G: Project logical framework describes the project activities, outcomes, and assumptions from ARED's Program Performance Monitoring and Evaluation Plan (ARED, 2016c).

Project monitoring system

In December 2015, with support from Dubai Cares, ARED created a thorough monitoring and evaluation (M&E) plan to document program performance. Designed to capture data for the ultimate outcome (pupil learning) and intermediate outcomes (teaching practice, stakeholder support, and teaching and learning materials), its M&E approach drew on MEN's standardized assessments together with ARED-designed tools. The plan included the following: (1) ARED progress reports; (2) Internal assessments using the Early Grade Reading Assessment (EGRA) and the Early Grade Mathematics Assessment (EGMA); (3) Official standardized assessments in French to evaluate numeracy, literacy, and Science and Social Life Education (ESVS) (organized quarterly by the IEFs); (4) Training session assessments; (5) reports from the Education and Training and Regional Inspectorates (IEFs and IAs); (6) Supervision reports of the Technical Pedagogic Team; and (7) External assessments.

The summary tables of progress towards outputs, targets, goals (see Annex I) shows ARED's impressive progress toward the targets. In brief, ARED met or exceeded the assigned targets for the goals and indicators. For example, as of May 2017, ARED reported that 90% of inspectors, 80% of teachers and 72.5% of school directors had mastered the bilingual teaching model, while 86% of teachers and 93.9% of pupils were using the materials (ARED 2017b).

Annex I outlines the outcomes and indicators used to measure progress, sources of data, targets, and underlying assumptions (ARED, 2018b). ARED was not able to meet the targeted values for the ultimate outcome using IEF or EGRA/EGMA assessments.

8. Evaluation findings

Key findings

The key evaluation findings are examined according to the OECD-DAC categories of relevance, efficiency, effectiveness, sustainability, and impact. MWAI posed additional evaluation questions based on issues from scholarship in the field of bilingual and multilingual education, which provide deeper insight into the implementation of ARED's model.

The external evaluation findings are extremely positive with regard to the following: ARED's bilingual model, ARED's work at all levels of implementation since 2014, and outcomes of model implementation in terms of learner achievement, stakeholder satisfaction, and other intended and unintended outcomes. These are the key findings:

- Students in the ARED bilingual program achieved academic success as evidenced by higher national assessment and CFEE results, near-100% promotion to secondary schools, and stakeholder comparison with students in the traditional program.
- ARED's bilingual model is congruent with international research on bilingual and multilingual education, and it is considered by stakeholders to be superior to other forms of primary education, due to its progressive, systematic, curriculum-based and coherent approach.
- Stakeholders at all levels have actively participated in the program, including high-level MEN officials, IA and IEF inspectors (particularly the bilingual focal points), SMC members, parents, bilingual teachers and bilingual learners.
- ARED has engaged comprehensively, even exhaustively, in the implementation process, as evidenced by the provision of trainings and follow-up, timely provision of textbooks in appropriate quantities, and has demonstrated high capacity to adapt and make improvements where needed.
- Based on successful practice, ARED and stakeholders have recognized the pedagogical value of extending the bilingual model to grades 5 and 6 (CM1 and CM2) through the end of primary school. This is also congruent with international research on student language and literacy learning, and ARED has proceeded (with support from another source) to move in this direction by developing materials and piloting them in 10 primary schools.
- MEN has developed and now speaks of scaling up a Harmonized Bilingual Model (MBH), which is the result of a consultative process and harmonization of bilingual models used in Senegal. This was largely inspired by ARED's bilingual model, as evidenced by official mention of "real-time" bilingual education.
- Based on our interviews, there is clear and widespread interest from stakeholders at all levels in the *generalisation* (expansion throughout the country) of ARED's bilingual model, including expansion into additional languages.

The evaluation team also identified **unexpected positive effects** of ARED's bilingual program. First, there was "spillover" (or what the team called "positive contamination") of the experimental comparative design. The bilingual and non-

bilingual cohorts did not receive completely different treatments, because bilingual students taught their peers some L1 literacy, and because bilingual teachers shared their L1 knowledge and teaching strategies with their colleagues teaching in traditional classrooms. Second, there was unexpected synergy between schools and communities. Bilingual students taught family members how to read and write in their own languages, and family members began to help children with their homework in Wolof or Pulaar.

Further, at all different levels, there was evidence of raised consciousness of the importance of the national languages of Senegal. This was true not only for those whose own languages were Wolof or Pulaar but also for those with other mother tongues, who discovered that bringing Wolof and Pulaar into formal education made their own languages more visible and valuable. This suggests that bilingual education encourages inclusiveness and does not exclude certain groups, as occasionally argued in some international contexts by detractors of bilingual education.

When a bilingual program is implemented, **issues** like parent support, teaching strategies, and linguistic questions tend to be acute in the early years. However, the concerns that stakeholders described to the field research team seemed relatively minor. It appears that ARED addressed these issues in the early years of the bilingual program. It is also possible that since the external evaluation took place after actual implementation had ended, stakeholders may have retained stronger positive memories and fewer critical perspectives since issues were no longer part of their daily experiences.

Some programmatic issues that surfaced included the following:

- Teacher mobility is a concern, making it important to find sustainable, ongoing ways to train both bilingual trainers and bilingual teachers, to provide them with recognition or certification of that training, and to assess (or allow self-assessment of) their languages and literacies for appropriate school placement;
- Linguistic heterogeneity in some communities makes it important to consider training SMCs in language mapping and participatory decision-making strategies, so that communities can agree on which L1s to use in school. (In fact, stakeholders reported that ARED handled this challenge well. For example, parents in Nioro expressed satisfaction with way the decisions were made consensually.)

Some technical aspects that emerged included the following:

- The need to introduce additional bilingual methods and strategies when teaching ESVS, mathematics, and other non-linguistic curricular content;
- The need to develop instructional strategies to encourage students' productive linguistic skills (speaking and writing) in addition to the current emphasis on receptive skills (listening and reading) in both languages, as indicated by our writing assessments and some teachers' concerns about student writing;
- Clarification for teachers and trainers during trainings of the concept of interlinguistic transfer in bilingual education in general and specifically how to facilitate transfer for learners in the ARED model; and

- The need to assess learners' L1 literacy as well as using the L1 (or both languages) to assess all curricular content (e.g. mathematics and ESVS), since students may have conceptual understanding of subject matter but inadequate L2 language skills to demonstrate this understanding.

Finally, an overwhelming concern shared by many stakeholders and the ARED team was that ARED's bilingual program paused in 2018. Stakeholders perceived that it was replaced (or displaced) in some regions of the country with the United States Agency for International Development (USAID)'s early grade reading project. Known as *Lecture Pour Tous* (Reading for All or LPT), this program has turned to the same set of ARED-trained inspectors, school directors, and teachers to implement its activities; yet, it is not a fully bilingual model. ARED has become a sub-contractor to the LPT implementing agency, Chemonics International, to assist with materials development, and despite the fact that ARED is the best organization for the job, it makes bilingual education stakeholders worried that "generalization" of ARED's model will not move forward.

These key findings constitute the basis for our discussion of the results of ARED's bilingual model and implementation in terms of the five OECD-DAC criteria. Other issues are raised based on the expert team's experience in other countries and contexts, as well as unexpected findings that are relevant to this evaluation.

Relevance

The central question here asks how relevant the activities are with regard to improving the learning opportunities and developmental outcomes of children in the three targeted regions of Senegal. This includes the relevance of the ARED bilingual model; the overall program design, including materials; and the use of monitoring and evaluation findings to inform decision-making. Other considerations are the relevance of ARED's adaptations based on contextual changes, challenges to implementation, or opportunities that arose, and the extent to which stakeholders were consulted with regard to program design and implementation or improvement. Additional questions include relevance of the activities to stakeholders and beneficiary communities, along with the relevance of the choice of national language (Wolof or Pulaar). A final consideration is the way in which the ARED bilingual program is tied to the overall aid environment in Senegal, and whether there are any notable linkages or disconnects.

Relevance of activities designed to improving learning opportunities and outcomes

Interviewed stakeholders at all levels agreed that ARED's simultaneous bilingual model and its approach to implementation were the most effective implemented in Senegal to date. Informants at the regional, district, or national levels compared ARED's simultaneous bilingual model favorably to other bilingual programs such as ELAN and EMiLe. Although MWAI did not conduct a fine-grained analysis of the other programs, stakeholders asserted that neither program was as well thought-out or as well supported as ARED's model in terms of the teaching of the L1, French, and the rest of the national curriculum. They credited ARED with being very comprehensive in its implementation approach, attending to capacity building for inspectors/trainers, school directors, bilingual teachers, SMCs and community

members; and it organized timely and adequate materials distribution to all schools. No stakeholder interviewed registered a complaint against ARED or the model. On the contrary, stakeholders at all levels had great respect for ARED's approach (*manière de travailler),* emphasizing the comprehensive nature of ARED's work and its responsiveness to needs in the implementation process.

Stakeholders were equally convinced of the bilingual program's positive effect on learners and learning outcomes. Virtually all inspectors and most school directors spoke with pride and provided data about the results of bilingual learners on the CFEE, the national primary school leaving exam given at the end of CM2 (grade 6), particularly in contrast to the results for learners who had not gone through the bilingual program. These results were in recent memory, since the earlier cohort of bilingual learners had just completed CM2 and taken the exam in June of 2018. Many also mentioned that all bilingual learners passed CM2, and that all or most were accepted into secondary school. As one school director put it, the results were "*spectaculaires.*"[i]

Parents and SMC members were also overwhelmingly positive about bilingual education, and many were appreciative of ARED's support, particularly with regard to the SMC trainings and orientations and the delivery of teaching and learning materials. Parents and SMC members likewise affirmed the use of national languages in the classroom, even those with home languages other than Wolof or Pulaar.

Relevance of the ARED bilingual model and materials

Stakeholders gave the following reasons for claiming that the ARED bilingual model is the best model implemented in Senegal so far:
- Its simultaneous approach to beginning literacy in both the national language and French;
- Its systematic, progressive approach to teaching curricular content in an understandable manner; and
- Its coherence with the national curriculum.

Inspectors and teachers often mentioned the *gain de temps* or time-saving that the simultaneous model represented, due to transfer from L1 to French. That is, although there was a 30-minute lesson in literacy in each language every day, the letters and sounds taught in the L1 that were the same in French did not have to be taught again. This allowed more time for other lessons. As one bilingual teacher noted:

Effectivement, aussi sur le niveau des acquis et de l'apprentissage. Lorsque nous décrochons de la langue locale vers la langue française, on avait plus d'activités en langue française parce que les enfants avaient déjà acquis en langue locale. Dans ma classe, on pouvait faire 5 à 6 activités et ça ne peut que renforcer la qualité de l'apprentissage.[ii]

Indeed, also on the level of learning outcomes and learning. When we moved from the local language to the French language, we had more activities in French because the children had already learned in the local language. In my class, we could do five to six activities and this can only reinforce the quality of learning.

The term "*pertinence*" (relevance) was used by many stakeholders – teachers in particular – to describe the teaching and learning materials developed and provided by ARED. The MWAI field team's analysis revealed that illustrations and topics appeared culturally relevant and represented a gender balance. ARED staff and contributors to the materials confirmed that these aspects were important considerations during the process of materials development. The materials were piloted and then adapted according to teachers' comments and input.

Both the model and the materials received high praise by inspectors, school directors, and teachers. One school director noted how learners were interested in the books when they found the books to be relevant to their lives: "*These are texts adapted to the environment. They were very meaningful here. The students were interested, as these texts speak of the child's reality.*"[lii] In addition, not only the bilingual students but also their peers and their non-bilingual teachers found the materials engaging and wanted to use them as well.

Parents also often mentioned the materials—not only receiving them on time and in sufficient numbers for each student to have a book, but also how relevant they were to the community. They described how materials were brought home and shared among family members, leading to increased family participation in children's homework assignments and a great deal of informal literacy teaching at home between bilingual learners and family members.

Relevance of the ARED program design, monitoring and evaluation

Stakeholders at all levels expressed their satisfaction and respect for the manner in which ARED worked, citing the "comprehensiveness" and presence of ARED at every level of implementation. In all cases, the Inspectors/focal points were satisfied with their training and felt that it had prepared them to work with the directors and bilingual teachers. In most cases, teachers were also satisfied with their training and with the participatory manner in which their trainers and the ARED backstopping trainers had worked with them. Some teachers said they would like more training in L1 reading and writing, vocabulary in the L1 and French for teaching curricular content, and bilingual methods.

Inspectors, school directors, and teachers sometimes mentioned issues in L1 writing, or the existence of different language varieties/dialects that complicated their work, but most felt that the language trainers (including Wolof Professor Mbacké Diagne, evaluation team member) had addressed their main issues during the trainings. This latter point demonstrates again the responsiveness with which ARED undertook its implementation work.

ARED's form of "cascade" training, as mentioned above, was actually only two steps: (1) the training of trainers, and (2) trainers' training and supervision of school directors and teachers, with ARED's support. Focal points, school directors, and bilingual teachers all greatly appreciated the *journées pédagogiques* (pedagogical workshop days for bilingual teachers and the bilingual focal points) and working in *cellules pédagogiques* (pedagogical circles or groups of bilingual teachers), all of which allowed for demonstration lessons and shared problem-solving in response to classroom challenges.

ARED's responsiveness to needs in the implementation process was evident in the timeliness of inputs (e.g., materials and per diem payments distributed on time to support training efforts). Focal points and IA supervisors said the *fiches* (forms) that ARED developed with them for classroom observations and other types of supervision and reporting were useful for inspection work. The *fiches* were a participatory form of monitoring in that they allowed for reporting within the existing IEF and IA structures as well as allowing ARED to follow implementation. One IA reported having adapted these *fiches* for use in non-bilingual schools, demonstrating their relevance to inspection work.

In addition to the *fiches*, other relevant forms of monitoring included CFEE results which were useful because they included all bilingual and non-bilingual learners in the 110 schools implementing ARED's bilingual model.

Relevance of activities to stakeholders and beneficiary communities

The degree of engagement and participation by stakeholders at all levels was impressive, including the high-level MEN officials; IA and IEF personnel, including the bilingual focal points and trainers; also parents, SMC members, bilingual teachers, and bilingual learners.

Inspectors and focal points, school directors, and bilingual teachers were all satisfied with the training and degree of support provided by ARED. Pedagogically, ARED's program respected and affirmed bilingual teachers in their practice, promoting a stance of inquiry rather than imposing (scripted) methods and curriculum. One teacher told the field research team that with ARED, the teachers were free to craft their lessons and improve gradually, and what mattered most was that the content of the lessons be successfully transmitted to the students:

> *Avec ARED, ils nous laissaient libres avec les leçons. C'est que le programme ne nous demande de faire tout à la lettre, c'est le contenu et on l'améliore petit à petit.*[iv]
>
> With ARED, they left us free to plan our lessons. The program does not ask us to do everything to the letter, [the focus is on] the content and we improve [our lessons] little by little.

Through the workshops and trainings, the teachers and the focal points/trainers reported feeling that they were part of a larger community of practice, where they could discuss their challenges and successes with one another and give and provide feedback to improve the quality of their teaching. According to an experienced IEF inspector, ARED's support to the SMCs was widely appreciated for its participatory approach:

> *ARED a appuyé les CGEs [SMCs] surtout sur le plan d'action volontariste… Les communautés ont eu à développer des activités pour comment appuyer les élèves, les enseignants dans l'amélioration de l'enseignement apprentissage.*[v]
>
> ARED especially supported the CGEs [SMCs] with their voluntary plan of action,,, The communities had to develop activities on how to support the students [and] the teachers in the improvement of teaching and learning.

According to some community members, like this parent, bilingual education is relevant in another way, which is to preserve the national language:

> *Ce programme est utile parce qu'il permet de sauvegarder notre patrimoine linguistique, qui n'est pas, d'ailleurs, à l'écrit.*[vi]

> This program is useful because it helps to preserve our linguistic heritage, which is not, otherwise, in writing.

Relevance of ARED's adaptations to contextual challenges

Contextual challenges that ARED addressed together with various stakeholders in the early years of the program included working with communities, with teachers, and with schools. By working together, ARED was able to develop relevant adaptations to deal with the challenges.

One of the early challenges included parents' initial questions and concerns about their children learning bilingually (i.e., through a national language as well as French), and the choice of Wolof or Pulaar in linguistically mixed communities. Focal points and school directors spoke of ARED's responsiveness by holding consciousness-raising workshops with community members as well as ARED support for focal points' discussions with parents to resolve these issues. In two cases, parents who had been opposed to bilingual classes and complained loudly came back later to express their gratitude, having seen how well their children did in the bilingual class. Two bilingual teachers described their experience with one mother in particular:

> *Il y avait un parent d'enfant qui venait ici là, et elle ne voulait pas le pulaar parce qu'ils parlaient le pulaar à la maison. Elle pensait que ce n'était pas la peine. Mais après, elle a compris que c'était par le pulaar que l'enfant pouvait acquérir. Maintenant l'élève était excellent et avait des résultats les plus hauts et la maman est venue s'excuser. Ce qu'elle nous a dit c'est qu'elle n'avait pas bien compris le programme. On l'a même emmenée chez l'inspecteur pour s'excuser.*[vii]

> There was a parent of a child who came here, and she didn't want Pulaar because they spoke Pulaar at home. She thought it wasn't necessary. But then she realized that it was through Pulaar that the child could acquire [French]. [Later] the student was excellent and had the highest results and the mother came to apologize. What she told us was that she had not understood the program well. We even took her to the inspector's house to apologize.

Several of ARED's reports to Dubai Cares noted that efforts to engage communities through the SMCs lagged behind other project components early on. However, when this problem became clear, ARED changed its strategy and found other relevant, direct ways to engage the communities. This new approach enabled ARED to communicate more effectively with families and communities (ARED, 2015, pp. 12 and 18; ARED, 2017, pp. 15-18) and to garner support for ARED's efforts at the community level (ARED, 2017a, p. 30; ARED, 2017b, pp. 15-18).

One school director described how parent support in the school community increased to the point of resulting in positive spillover effects of the model, as parents were learning to read from their children: "With ARED, they have a working group with APE and the women, and they discussed how to help their children succeed in school. Some parents have also learned to read thanks to the children.

Parents continue to support the children through these talks."[viii] Thus, while ARED faced challenges in working with stakeholders, they were able to adapt their model and successfully engage community members.

Other minor challenges that were resolved in relevant ways were related to teaching strategies. Focal points and teachers described, for example, how teachers would teach L1 literacy during the first 30 minutes and then find that they did not need the following full 30 minutes reserved for French, since interlinguistic transfer enabled students to transfer sounds and letters from L1 to French, and only the differences needed to be taught. Teachers reported that transfer helped them "save time," which they could then use for other learning activities.

Many school directors and teachers mentioned the focal points' school visits as well as the Pedagogical Days as supporting teachers to put ARED's bilingual model into practice effectively. Some school directors mentioned that ARED had helped them to create resources for learning, including mini-libraries or "*coins lecture*" (reading corners in the classrooms) to reinforce reading in the L1 and in French.

Relevance of the ARED bilingual program in the overall aid environment of Senegal

The final category related to relevance explores the relevance of the ARED bilingual program to the overall aid environment in Senegal, specifically with regard to bilingual education, and whether there are any notable linkages or disconnects.

ARED's work in bilingual education to date has been supported by relatively small aid packages for less than USD 1.5 million. ARED attracted Trust Africa in 2016 as a funder to support further development of bilingual materials, particularly for CM1 and CM2 (grades 5 and 6) (ARED, 2016; p.10). Additional program resource linkages also included USAID/RTI's continued funding of an action research project on promoting reading at home, and the Hewlett Foundation's funding to ARED to improve its communication plan (ARED 2016, pp. 30-31). As noted at the outset, Dubai Cares also extended the ARED bilingual program by one year to allow it to consolidate gains.

In contrast to the small-scale support that ARED's work in bilingual education has garnered, support for early reading in national languages came to Senegal in 2016 with an USAID project initiative *Lecture Pour Tous* (LPT) worth USD 73 million. The LPT model is significantly different than bilingual education, as it focuses on phonemic awareness in national languages only in the lower primary grades. LPT does not facilitate transfer from L1 to French, nor does it use bilingual teaching for content instruction such mathematics or ESVS. LPT uses its abundant resources to develop student reading books and teachers' guides that provide teachers with a scripted approach to teaching that they must follow carefully. Success in LPT is measured through the Early Grade Reading Assessment (EGRA), an assessment approach that USAID adapts and uses in every country where its early grade literacy programs are introduced.

In contrast, ARED's model covers the first four years of primary school and uses a national language and French for instruction in all aspects of the Senegalese

national curriculum. ARED's bilingual program has also developed and piloted materials for CM1 and CM2 to expand the BE model through the full six years of primary school so that students could continue to develop oral and written L1 and French proficiency simultaneously, while using both languages for cognitive development in subject matter concepts. ARED's program has measured student achievement through the same assessments that the MEN uses to measure the achievement of children taught in traditional, French-only classes.

The introduction of LPT has created a critical moment for bilingual education in Senegal, as it only addresses some literacy skills and does not cover the national curriculum. There is a disconnect between L1 and L2 instruction in LPT, as Table 1 shows.

Table 1: Comparison of ARED and LPT approaches

Aspect of Instruction	ARED's bilingual model (grades)	*Lecture Pour Tous* (grades)	Notes
Reading L1	1, 2, 3, 4 Phonemes, meaning, grammar, structures	1, 2 Phonemic awareness	ARED working in Wolof, Pulaar & Serer (previously); LPT working in same three languages
Reading L2	1, 2, 3, 4 Phonemes, meaning, grammar, structures	1, 2 Phonemic awareness	MEN reportedly demanded that LPT cover French as well as L1s
Writing L1	1, 2, 3, 4 Dictation, text production	"Systematic approach to 5 competences"[ix]	ARED model includes writing (which could be further developed); LPT will reportedly start L1 writing (strategies unknown)[x]
Writing L2	1, 2, 3, 4 Dictation, text production	?	
Facilitating inter-linguistic transfer	1, 2, 3, 4		Essential to bilingual ed (but could be developed); missing from LPT
Bilingual content instruction	1, 2, 3, 4		Essential to bilingual education and ARED model; not included in LPT

C. Benson, 2019

The funding levels of the two approaches have been drastically different (Dubai Cares funded ARED's bilingual education program for USD 1.3 million); hence, the scope and reach of the two programs is enormously different, as LPT operates in half the regions of the country, including the three regions of ARED's bilingual education program. With the conclusion of the Dubai Cares funding cycle, LPT has made use of the same human resources to implement their interventions in schools. According to stakeholders, it seems that MEN and USAID have prohibited "competing" programs in regions where LPT operates; therefore, inspectors and teachers who were trained in ARED's model have become the trainers and teachers of LPT.

Do stakeholders perceive that ARED's bilingual education and LPT are really so different? They clearly do. There were 31 stakeholder mentions of LPT in MWAI's fieldnotes, and most were fraught with concern that LPT was "not the same as bilingual education." Stakeholders observed that ARED-trained personnel and

schools that were previously implementing bilingual education, including they themselves, were now enlisted to support LPT. According to stakeholders, this was a clear indication that the "generalization" of bilingual education that they were calling for was not happening. Much of the stakeholder dissatisfaction with LPT seemed to be felt at the school and family levels, due to the disruption of bilingual education. Parents were proud of their children's superior achievement in comparison with traditionally educated students on the CFEE and national assessment tests that ARED's M&E program had published. Many inspectors and education officials expressed the desire to implement educational programs that are consistent and beneficial for students, including ARED's bilingual model.

One school director's comment represents this concern:

> *Seulement nous déplorons le fait que les enfants ne peuvent pas continuer cette méthode. Vu qu'on a vu le taux de réussite de l'année dernière, nous souhaiterions que nos élèves continuent à apprendre le bilinguisme. Notre souhait, c'est vraiment la reprise.[xi]*

> We just deplore the fact that children cannot continue learning with this method. Given last year's success rate, we would like our students to continue to learn bilingually. Our wish is really for bilingual education to be renewed.

ARED's approach to the current situation has been to maintain its clear aim to improve education for Senegalese children in any way possible. Presently, ARED continues to work with MEN and other organizations and donors to keep alive the discourse on public bilingual education. In addition, since 2016, ARED has supported *Lecture Pour Tous* in developing trainings, formative assessments, reading competencies and reading textbooks in national languages. It is a delicate balance for ARED to provide technical support to LPT's short-term reading intervention for the sake of learners while promoting its complete and well-established bilingual model. In this way, however, ARED continues to effectively demonstrate its relevance to the education system in Senegal and its commitment to support the directions of MEN's efforts.

MEN's strategic objectives as stated in the PSE (Priority Action Plan) 2014-2018 include improving the quality of teaching and learning and promoting Senegalese mother tongues. The PAQUET for 2013-2025 indicates eight priorities, one of which is "to develop the use of national languages in the education system." Inclusion of ARED's bilingual model into PAQUET would allow both national and pooled donor funding to be allocated, putting national-level decision-making in place to implement bilingual education in at least a few widely-spoken national languages. The team's meeting with high-level MEN officials indicated there is a great deal of support for bilingual education, but national decision-making as of early 2019 stopped short of making a national commitment to bilingual education.

Effectiveness

The ultimate goal of ARED's bilingual program supported by Dubai Cares was for bilingually educated learners to demonstrate comparatively better results in reading and mathematics than learners educated traditionally in French only. In addition, the three sub-goals, which parallel ARED's approach to implementation of the bilingual model, were for teachers, school directors and inspectors to demonstrate understanding of ARED's bilingual teaching strategies, to develop and make available high-quality bilingual materials that facilitate application of the bilingual approach, and for policymakers as well as stakeholders to gain confidence in and support the bilingual model (ARED, 2018). This section explores how effective the program has been in achieving these goals, and to what degree the three components contributed to its success.

Effectiveness of the bilingual education model in terms of learner achievement

<u>Bilingual versus traditional</u>
To analyze the effectiveness of the bilingual education model in terms of learner achievement, the research team conducted secondary analyses of the most recent ARED monitoring and evaluation data (2018 CFEE and national assessment data from trimester 3 (end of the school year) of 2017-2018 and 2016-2017), in addition to primary quantitative analyses on the writing assessment data and analysis of the interview data collected from stakeholders. (Annex L provides a detailed description of the CFEE and national assessment secondary analyses, and Annex M provides details on the writing assessment analyses.)

Overall, the CFEE data (secondary data collected by ARED), national assessment data (secondary data collected by ARED), and the primary writing assessment data in Pulaar/Wolof and French, all showed that students who participated in bilingual education had significantly higher scores than students who participated in traditional education. For instance, bilingual students (who participated in bilingual education from CI to CE2) significantly outperformed traditionally taught students on the 2018 CFEE. In addition, bilingual classrooms outperformed traditional classrooms on almost all subtests, and had higher averages for language and communication, math, and ESVS in trimester 3 of 2016-2017. In trimester 3 of 2017-2018, bilingual classrooms outperformed non-bilingual classrooms on *every* sub-test, and had higher average language and communication scores, math scores, and ESVS scores, implying that the difference between bilingual and traditionally taught students remained strong over time. The writing assessment data gathered during fieldwork showed that, for the sample of schools/classrooms, bilingual students scored higher on both the L1 (Pulaar/Wolof) and L2 (French) assessments than traditionally taught students (with statistically significant and moderately meaningful differences), highlighting how ARED's bilingual education model appears to have led to greater learner achievement by building a foundation of L1 literacy and facilitating transfer to French literacy.

Stakeholder interview data supported these results. The majority of MEN officials, inspectors, school directors, and teachers offered evidence of the perceived success of bilingual students. They described how bilingual students were joyous and motivated to learn, and how well the 2017 bilingual cohort succeeded in getting into *collège* (secondary school). One school director explained "*You have extraordinary*

children, all of the students have passed – there was a 100% success rate. All the students who did ARED in my school have left [gone on to secondary]! But they succeeded en masse."[xii] A bilingual student also noted how bilingual learners mastered L1, even better than their teachers: "*We were the strongest [in L1] because sometimes we corrected our teacher's mistakes.*"[xiii] One IEF inspector summarized the perspectives of many: "At the first stage, in CI-CP…the best school that won the PAQEEB [Project to improve the quality and equity of education] award was an ARED school…[our IA] has seen a cognitive gain at all levels. The child who starts with his or her language has an advantage, and that was reflected in the school results."[xiv] Thus, both the quantitative and qualitative data provide strong evidence that bilingual learners had greater academic achievement than traditionally taught students.

Females versus males
Applying a gender analysis to the writing assessment data, the research team did not find any significant differences in L1 or L2 assessments by sex (overall by sex or between bilingual males and bilingual females, or traditionally taught males and traditionally taught females) for this specific sample. This suggests that the effects of ARED's bilingual model outweighed any effects on the writing assessment experienced by being female or male, at least for the students in this sample.

Students taught in Pulaar versus students taught in Wolof
The research team also explored if there were any differences between classrooms of students who were taught in Wolof versus Pulaar. When looking at ARED monitoring data and comparing Wolof to Pulaar bilingual classrooms, on average Wolof classrooms scored higher on the spelling sub-test in trimester 3 of 2016-2017. Yet, Pulaar classrooms scored higher on the geometry and problem-solving sub-tests than Wolof classrooms in 2017-2018. More data/research is needed to explore possible factors that could help explain these differences (e.g. if spelling materials were used more often in Wolof classrooms, or if math concepts are easier to explain in Pulaar), which could inform teacher training.

When looking at the writing assessment data, there was no difference in L1 or L2 scores between bilingual students taught in Pulaar versus in Wolof, suggesting that, for this specific sample, ARED's model of teaching literacy in Pulaar was equally effective as ARED's model of teaching in Wolof in terms of L1 and L2 writing results. Interview data also showed that students felt comfortable learning in L1, as one bilingual student stated: "Learning in Pulaar awakens our consciousness and gives us wisdom."[xv] One bilingual teacher noted that students' comfort in the L1 helped fuel literacy: "The children felt good in the L1. They really loved reading.*"[xvi] Thus, assessment and interview data indicated that L1 teaching appears to have been successful in both Pulaar and Wolof.

Urban versus rural
When comparing bilingual urban and rural classrooms (as differentiated by ARED's monitoring and evaluation team), interesting differences emerged. Secondary analyses of ARED monitoring data showed that urban classrooms scored higher on average on the writing sub-test in trimester 3 of 2016-2017. Yet in 2017-2018, rural bilingual classrooms scored higher on the geography, problem-solving, and sciences sub-tests than urban bilingual classrooms. When examining the writing assessment

data, overall, students in urban areas scored higher on both L1 and L2 writing than students in rural areas (statistically significant and moderately meaningful difference). Traditional students in urban areas scored higher than traditional students in rural areas on L2 writing (statistically significant and moderately meaningful difference), possibly suggesting that urbanicity helped facilitate traditional students' literacy in French.

Regional differences
The research team also disaggregated the writing assessment data by region (Dakar, Kaolack, and Saint-Louis) for this specific sample. The students assessed in Saint-Louis scored lower than those who were assessed in Dakar and Kaolack on the L1 writing assessment (statistically significant and moderately meaningful difference). This was also true when looking at bilingual students only and traditionally taught students only. Students in Saint-Louis scored lower on the L1 writing assessment than the other two regions, suggesting that Saint-Louis students had lower literacy levels in L1 regardless of bilingual/traditional teaching exposure for this sample of students. When looking at the L2 (French) writing assessment, bilingually taught students in Kaolack scored significantly lower than bilingually taught students in Saint-Louis or Dakar. Other mediating factors may be affecting these results, such as individual teachers' and/or learners' exposure to L1 or L2 outside the classroom, and/or family members' language proficiencies. More data is needed to understand why these differences are occurring for this specific sample of students, and to understand if this trend persists in a larger and more representative sample of classrooms/students.

Writing assessment scores in L1 (Pulaar/Wolof) compared to L2 (French)
Lastly, when looking at the writing assessment results in L1 (Pulaar/Wolof) and L2 (French), there were no significant differences when comparing the L1 scores with the L2 scores overall or by any subgroup tested for this specific sample of students. There was a statistically significant, positive correlation between the L1 scores and the L2 scores ($R=.425$, p<.001) in the overall sample, suggesting that students' abilities to write in Pulaar/Wolof and French were similar for this writing assessment (for this sample). One teacher noted how L1 teaching helped facilitate participation and understanding in L2: "The students can even have blockages in French, but if we do exercises in Wolof, we have 100% of the class. They participate in Wolof and they write the problems, the operations in Wolof."[xvii] This teacher witnessed L1 participation expanding learning in L2, increasing achievement in both languages. This demonstrates the importance of introducing the L1 into the national curriculum through a bilingual model.

Effectiveness related to teacher practice and use of ARED teaching and learning materials

While the research team was not able to observe bilingual teaching in action, the desk review and fieldwork revealed that both teachers and inspectors believed that the training enhanced teaching practice. ARED's annual report indicated that, after the first year of implementing the model, teachers were using their new textbooks to a greater level than expected (ARED, 2015, p. 23).

Teachers spoke of how enjoyable bilingual teaching was because it made student learning – and teaching – easier:

> [Bilingual teaching] really made it easier for me…first, we did it in Wolof, and then we transferred to French. It taught me as it taught the students. If you see a bilingual student and a traditional student, you see a big difference, comparing their education. We teach the child, the child is educated…he will transfer his knowledge into everyday life…as a teacher, [bilingual education] makes it easier for us.[xviii]

In addition to teachers, IEF educators and school directors noted that the bilingual teachers benefitted from the ARED training and materials. One IEF inspector articulated this benefit:

> These [bilingual] teachers had an added value with more advanced and in-depth training…each time they intervened in the pedagogical circles, or in certain meetings, it was felt that these teachers had a more thorough and in-depth training.[xix]

In addition to enhancing teacher practice, stakeholders indicated that ARED's materials were widely used and praised for facilitating learning by teachers, school directors, and parents. When stakeholders were asked about their perceptions of ARED's work in implementing the bilingual model, stakeholders at all levels mentioned the *manuels* or textbooks. Stakeholders noted that the materials were relevant to their communities/ contexts, rich and interesting, and widely available (so that every learner had materials to bring home). Other teachers noted that they continue to use the ARED books this year, even though they are not implementing the bilingual model, because they are high quality. One school director noted, "These [ARED] textbooks are really well done, very rich texts and in line with the curriculum."[xx] Another teacher noted that she continues to use the ARED French books, as the materials are useful across grade levels and enhance her teacher's guide:

> There is collaboration, a continuation of what is done in the teacher's guide…the texts you see in CP, you review them in CE1 and the texts in CE1 in CE2…so I keep these texts as a good model to present to the students…the books are there and I'm not about to abandon them – they are very good.[xxi]

If future program monitoring, evaluation or research were to be conducted while classroom implementation was still in process, there could be a closer analysis of what is required of teachers to prepare their bilingual lessons; conduct ongoing, in-class formative assessments of students; and revise or enhance their lessons based on assessment findings would be very useful.

Effectiveness related to teacher, school director, and inspector mastery of ARED's bilingual teaching strategies

Mastery and demonstration of understanding bilingual strategies was a specific sub-goal of ARED's bilingual design. The means of achieving this was ARED's training model, which involved two levels – a training of trainers, which involved the inspectors and focal points in the training workshops or *journées pédagogiques;* and the trainers then working directly with the school directors and bilingual teachers. Through this model (as opposed to a cascade training of three or four levels), ARED was able to share pedagogical approaches directly. The trainers and practitioners built strong relationships through the training and then also in classroom follow-up

and monitoring visits. In most schools the field evaluation team visited, this resulted in the development of strong, supportive relationships between focal points, bilingual teachers and school directors throughout the evolution of the program and continuing up to present. For example, all school directors and teachers the field team met in Nioro IEF were highly enthusiastic about the support that they had received from their focal point inspector, who was also praised by his IEF supervisor.

In the context of speaking out against LPT, Inspectors, school directors, and teachers in turn described what about the simultaneous bilingual model was most effective. Comments regarding stakeholders' distaste for *Lecture Pour Tous* (LPT) revealed several themes, including criticisms of the pedagogy as being teacher-centered and outdated, utilizing prescribed (scripted) lesson plans, and focusing only on reading, rather than on the whole curriculum. One inspector explained,

> *Quand on regarde en termes d'analyse didactique ou pédagogique, le modèle ARED est plus en avance que LPT. Et quand on compare l'approche par les compétences de la LPT, il y a une grande différence. Parce que à ce niveau là, ils rentrent par "je fais, tu fais, nous faisons, tu fais". Là bas, l'approche par les compétences, c'est une autre approche. C'est une situation qui prend en charge l'enfant, et on descend jusqu'à l'appropriation des contenus.[xxii]*

> When considering it in terms of didactic or pedagogical analysis, the ARED model is more advanced than LPT. And when you compare the approach with LPT competencies, there is a big difference. Because with them, they come in with "I do, you do, we do, you do", and the competency-based approach is another approach. In our situation we take care of the child, and go right down to the appropriation of the content.

Teachers opined that that LPT trainers were not as knowledgeable as ARED-trained teachers, and that LPT depended on ARED-trained bilingual teachers in order to function properly. One teacher commented,

> *Enseignant [avec grimace]: ARED est plus performant. LPT, c'est ce qui a débouché grâce à ARED. La LPT a puisé sur ce que ARED a déjà fait. C'est nous les expérimentateurs.[xxiii]*

> Teacher [with a grimace]: ARED is more efficient. LPT, that's what gave it a chance thanks to ARED. LPT has built on what ARED has already done. We are the experimenters.

Other comments focused on how the LPT project had disrupted the flow of bilingual education and the advances that had already been demonstrated. Stakeholders noted that ARED's model was known and understood among teachers, and what was achieved through ARED's program should not be ignored. They expressed confusion regarding why MEN would switch to LPT, which disrupts teachers on a classroom level. As an IEF inspector emphasized,

> *Non, c'est une déclaration ! Que le bilinguisme est une option irréversible mais interrogeons nous sur ce que la LPT est en train de faire ! Et l'avenir de cette expérimentation. Il y a des questions qu'ils [LPT] n'osent pas aborder rires mais ces questions là vont revenir. Mais bon… Mais lorsque j'ai été affecté ici et j'ai suivi ce que ARED avait fait, j'ai participé aux formations et à la mise en oeuvre et j'ai compris la guerre.[xxiv]*

> No, it's a statement! That bilingual [education] is an irreversible option but let us ask ourselves what LPT is doing! And the future of this experiment. There are questions they [LPT] don't dare to address, but these questions will come up again. But then... But when I was posted here and followed what ARED had done, I participated in training and implementation and understood the war.

Additional observations were that LPT uses the national language as a crutch to switch to French rather than as an additive educational tool. Overall the comments suggested that the ARED model was more widely understood and provided more efficient support for teachers, while LPT was viewed as a different approach that does not provide effective training or support for teachers, utilizes outdated pedagogy, and disrupts the flow of bilingual education on a classroom level and system-wide.

Most stakeholders find LPT less relevant and less effective than ARED's bilingual model; moreover, they feel that MEN should take a stand regarding implementation of bilingual education throughout the country. Some mentioned the term "sovereignty" and called for MEN to take charge of the Senegalese education system, saying that foreign projects should not dictate what will be done in the schools.

Effectiveness related to stakeholder use and support of ARED's model

In summary, the above text provides extensive evidence of the ways in which stakeholders (teachers, school directors, inspectors, students, parents and communities) used and supported ARED's model and components of the model as articulated in the program's sub-goals. Inspectors, trainers and teachers alike used and demonstrated understanding of ARED's bilingual teaching strategies. ARED developed, produced, and disseminated high-quality, relevant bilingual materials, which facilitated application of the bilingual approach, and teachers reported that they continued to use the materials in 2018 and 2019, even after implementation of ARED's model had paused.

With regard to the third sub-goal of the initiative, ARED stayed in close communication with MEN throughout the implementation process, and MEN officials and policymakers demonstrated confidence in and support for the bilingual model (ARED, 2018). Recently, ARED and MEN have engaged with other organizations in a consultative process during which the various Senegalese bilingual education models were discussed and brought together in a Harmonized Bilingual Model (MBH) that MEN currently references. The MBH clearly references "real-time bilingualism," which was largely inspired by ARED's bilingual model.

Efficiency

This section examines the efficiency of ARED's implementation of the bilingual model. Key questions include to what extent ARED's bilingual program implementation made the best use of existing resources and capacity levels, how ARED could further develop these, and to what extent ARED has demonstrated its capabilities by delivering program activities and targets on schedule.

Use of existing resources and capacity levels

ARED used an array of existing resources efficiently in designing and implementing the bilingual program. With the support of financial and human resources of Dubai Cares and others, capacity was strengthened of ARED as an organization and of individuals within ARED. In turn, ARED strengthened the capacity of the inspectors, school directors and teachers to implement the bilingual program, increased the

availability of bilingual education material resources, and augmented the information available to MEN to inform national bilingual education policies and practice.

ARED's initial capacity moving into this phase of work with Dubai Cares included an awareness of how to design and implement key elements of a bilingual program developed through its early pilot project funded by Hewlett Foundation, which was underscored by the 2013 Hewlett-commissioned external evaluation that highlighted the program's success. In addition to funding this recent phase of the program, Dubai Cares invested human resources through its program officer, Ms. Sinda Oertani, to build the M&E capacity of ARED. In this way, ARED's capacity grew as it learned to monitor and analyze program targets, and to adjust program activities based on appropriate data.

Whereas some educational innovations are introduced as projects separate from the public school system, ARED integrated its work with national government education structures to expand the bilingual program model, insisting that it be MEN's program and that MEN inspectors, school directors and teachers be the implementers. ARED worked closely with MEN to select the schools, teachers, and classrooms and to identify appropriate inspectors to become bilingual focal points and trainers. Working within the education system was efficient and cost-effective for introducing a new education program into classrooms of 98 schools, and judging by stakeholder support, it will contribute to sustainability.

ARED also turned to Senegal's universities and institutes to draw on the expertise of professors and researchers with language and subject matter knowledge, and who were already well acquainted with Senegal's curriculum, assessments and pedagogy, to oversee and advise on bilingual program components, particularly trainings. ARED also drew on its own highly-regarded resources and reputation in materials development and publishing in Senegal to develop bilingual student books, guides, and training materials in appropriate languages for trainers and for teachers.

Though not comprehensive or exhaustive, the above examples illustrate the ways in which ARED's bilingual program implementation used existing resources efficiently while increasing capacity at all levels, building toward the future sustainability of bilingual education.

How ARED can further develop resources and capacity levels

ARED found that the hiring of a part-time staff person responsible for M&E was valuable for monitoring class achievement results and then communicating the findings widely. The datasets generated were useful for MWAI's external evaluation as they could be cleaned and re-analyzed to demonstrate the program's success. As a key ARED staff member noted, the NGO did not have sufficient funding to invest a great deal of staff time into monitoring and evaluation. The recommendation would be to budget for more in-depth M&E activities in future funding proposals. With more resources, it would be of value to follow individual students (with unique identification numbers) and over time (in a longitudinal study) rather than using data aggregated from entire classes, since there were students from traditional classes mixed in with former bilingual students by grades 5 and 6 (CM1 and CM2) due to student mobility and repetition.

Fortunately, our L1 and French writing assessments could be individually analyzed and results from students taught bilingually vs. non-bilingually could be compared. Writing assessments such as the one administered for this external evaluation could also be introduced, used not always as a monitoring instrument but also as a pedagogical resource for teachers to diagnose learner progress and teach or re-teach skills that are not well understood. Results of the writing assessments could be used to build teachers' professional capacity to examine how learners are incorporating phonemic awareness into their self-expressive writing, how errors can be analyzed, and how writing issues can be diagnosed and addressed as part of a process that allows for errors to be made, discovered and self-corrected.

Another aspect of M&E that could be included in future plans includes formal follow-up, using school-based data as well as learner and teacher interviews, of bilingually educated students as they continue to secondary school and beyond. This could still be done to determine to what degree having learned bilingually contributes to students' future studies and career opportunities.

With regard to ongoing use of MEN officials (e.g., inspectors and school directors) and structures, a closer analysis could be conducted to ensure that expectations for them to conduct bilingual training and monitoring are reasonable and can be integrated sustainably into their daily practices. Some inspectors mentioned to the field research team that the evaluative work kept them busy, but they were not complaining; nevertheless, it is an aspect pertaining to sustainability that could be followed up.

Extent to which ARED has demonstrated its capabilities by delivering program activities and targets on schedule

ARED delivered program activities on schedule and met or exceeded the targets for each of the sub-goals and indicators related to these structures. As reported by ARED (2017b), 90% of inspectors, 80% of teachers and 72.5% of school directors had mastered the bilingual teaching model, while 86% of teachers and 93.9% of pupils were using the materials. With regard to materials, stakeholders consistently commented on the distribution of bilingual and non-bilingual books on time and in sufficient numbers. There were no complaints about ARED's delivery of program activities and meeting targets on schedule. Some stakeholders compared ARED's efficiency with the lack of efficiency of other programs and expressed strong appreciation for ARED. One bilingual teacher explained:

> *Sur le plan des manuels, mais je n'ai jamais vu ça ! Je suis de la deuxième génération et même les parents étaient contents. Les enfants avaient 6 manuels. Donc ARED nous aidait, haha mais il y avait des problèmes de sacs, mais nous étions très gâtés en manuels. On ne peut pas manquer de le dire.[xxv]*

> In terms of textbooks, I've never seen anything like it! I am from the second generation [of bilingual teachers] and even the parents were happy. The children had 6 manuals. So ARED was helping us, haha but there were problems [shortages] of bags, but we were very spoiled in manuals. We cannot fail to say so.

In summary, based on the qualitative, quantitative and documentary evidence available for this external review, ARED's bilingual model was efficient, as it was designed to be. The program used available structures and established new structures where needed (e.g., M&E) to support program implementation as well as efficiency in learning and monitoring, and to deliver trainings and materials on time.

Sustainability

Key findings related to sustainability explore the following categories: (1) stakeholders' level of ownership of bilingual education; (2) the degree to which ARED's bilingual model and implementation processes are integrated into existing structures; (3) the potential for continuing and future efforts to be funded as part of MEN policies and strategies for improving educational quality and outcomes; and (4) any risk factors that would threaten the continuation of bilingual education.

Level of ownership by stakeholders

Qualitative data from the interviews and focus group discussions that were conducted with the numerous stakeholders demonstrate that their level of support for bilingual education is remarkably high. In addition, the 31 unsolicited negative responses from stakeholders who asserted LPT was "not bilingual education" and who compared the differences between the two and found LPT wanting, also demonstrates stakeholders' sense of ownership and loyalty to ARED's model of simultaneous bilingual education. The statements of inspectors and teachers who critiqued LPT, not simply out of loyalty but from a professional and evidence-based perspective, are summarized at the end of this section on sustainability.

Wide stakeholder ownership is central to the success of bilingual education. Most critical to its sustainability, however, is a written commitment to bilingual education by the Minister of Education or even the President of Senegal. MEN's strategic objectives as stated in the PSE (Priority Action Plan) 2014-2018 include improving the quality of teaching and learning and promoting Senegalese national languages. One of the eight priorities in the PAQUET for 2013-2025 is "to develop the use of national languages in the education system." At the time of this evaluation, despite ARED's efforts to engage that had included meetings between the ARED director and the previous Minister of Education and other MEN officials, as well as organizing and participating in donor and NGO meetings to discuss education quality issues, to date MEN's encouraging verbal statements have not yet taken concrete form. If bilingual education were included in PAQUET, this would allow both national and pooled donor funding to be allocated, putting national-level decision-making in place instead of relying on ARED to solicit funds for another cycle of piloting. The field research team's meeting with high-level MEN officials indicated there is a great deal of support for bilingual education, but decision-making as of April 2019 still stopped short of a formal, nationwide commitment to bilingual education by MEN. Meanwhile, this situation allows LPT to continue with its large-scale innovation that is seen by many to divert key resources away from bilingual education.

If ARED's simultaneous bilingual education model were to be included in PAQUET, or otherwise accepted formally, ARED would be uniquely placed for MEN to call on

the NGO for technical and logistical advice. ARED would also have the added benefit of being a known, highly respected and sought-after actor in bilingual education in Senegal. ARED is prepared to take on this role and has been preparing for this for some years.

Integration of the model and approach into existing structures and the extent to which this can ensure sustainability of the program/components of the program

Dubai Cares queried the external evaluation team about the extent to which the training provided by the inspectors and directors could be seen as ensuring sustainability; whether this model places too much burden on inspectors who do not have budgeted MEN resources to visit the schools and conduct proper monitoring; and, reflecting on the current structure of the education system, whether ARED's approach may have faced constraints from local MEN structures that could have precluded working effectively with stakeholders in ways that could be maintained beyond the program lifetime. These questions link sustainability directly to program design and program resources, as well as to the hierarchy and authority structures of the education system and to the real people charged with program implementation. The underlying question Senegal currently is in the process of answering is political; that is, a real-time model of bilingual education of using national languages alongside French for instruction needs to be made official, so that it does not forever remain a project in search of funding but rather becomes an integral part of Senegal's education system.[4]

This may change in the months ahead. At the presentation of the external evaluation findings on April 9, 2019 in Dakar, representatives of the President's office, ministers of Parliament, and a teachers' union official spoke in support of bilingual education. A teacher, a school director, and a student representative of the bilingual program gave testimonials about their support for the program, and numerous other speakers also supported ARED's simultaneous bilingual model for the wellbeing of Senegal's children and of the Republic itself. Various models of simultaneous bilingual education have been piloted and shown to be efficacious in Senegal since Independence (Mbacké Diagne, personal communication, April 9, 2019). After years of engaging MEN in discussion, and years of hearing verbal support for bilingual education with no official declaration of support, stakeholders in attendance agreed that in view of the results of the external evaluation, the time for advocacy of bilingual education in Senegal had passed, and the time for political decision-making at a national level had arrived.

Following the meeting, Senegal's teachers' unions publicly declared their support for bilingual education for the first time (Mamadou Ly, personal communication, April 17, 2019). Following the inauguration of Senegal's new President, the President's advisors included bilingual education as one of the agenda items for the President to address during his first 100 days in office.

---

[4] A Hewlett Foundation program officer who has long observed and supported simultaneous bilingual education in Senegal told us that the only solution to scalability and sustainability for bilingual education in Senegal is political (Personal communication, April 17, 2019, San Francisco, CA).
.

Potential for continuing and future efforts to be funded as part of MEN policies and strategies for improving educational quality and outcomes

At this historical moment, the potential for continuing and future efforts to be funded by donors as part of MEN policies and strategies for improving educational quality and outcomes needs to be viewed alongside the risk factors that could threaten the continuation of bilingual education. In particular, USAID's proposed expansion of LPT to all regions and districts of Senegal with accompanying funding agreements with MEN presents a potential risk to the future of bilingual education.

Based on our discussions with MEN and ARED leadership, this is clearly a critical time for bilingual education in Senegal. On the one hand, there is evidence that ARED's bilingual model has been well received, integrated well into educational and community structures, and owned to a great degree by stakeholders at all levels.

On the sustainability side, it appears at this moment in time (with the last cohort of students in CM1, having completed four years of bilingual education), in the three regions and four IAs where ARED has been working, that there is widespread support for bilingual education expansion. Most of the trained bilingual teachers, school directors and focal points who support bilingual education are still working in their schools or regions, and many of them called for *généralisation*, that is, for expanded implementation throughout the country, and in additional languages. One inspector noted how important it is for the trainers who have worked with ARED to continue their work to create a "critical mass" of trained bilingual educators.

Most of the risk factors appear to be related to bilingual education not yet having made it into MEN's strategic plan, which would allow development of a concrete implementation plan to be carried out with both national and pooled donor funding. The current situation creates a loss of momentum and the potential loss of trained bilingual educators. To the public, ARED's bilingual model appears to have been replaced or displaced, at least for now, by LPT. Also, ARED has been left on its own to look for funds to renew its work in bilingual education, while MEN (under the previous government and Minister of Education) has agreed that LPT, a USD 73 million intervention of USAID, will move into the regions where ARED has been working and beyond, up to 7 regions total (according to ARED[xxvi] and as noted in the LPT presentation at the CIES conference in April 2019 in San Francisco).

These risks could be mitigated and ARED's bilingual model could be expanded if one of the following possibilities emerges. First, a future USAID approach to supporting national governments and ministries according to a "landscape approach" to monitoring and evaluation with potentially more flexible programming is in the planning stages in Washington DC. Ostensibly this approach will help USAID refrain from engineering a collision of (literacy) learning approaches and, in the case of Senegal, fund the bilingual education initiative that MEN requests. At present, however, USAID's funds appear to be available to support only LPT, not a proven bilingual model.

Another possibility is that colleagues at USAID Senegal may be willing to consider a modified approach that includes a strong research component that would include following bilingual education. In this scenario, ARED could apply the bilingual model

in one entire region in which LPT is not working, as discussed with the field research team. Ideally, an impact study would be designed to examine the effects of the bilingual model (with unique ID numbers assigned to every girl and boy in the study), over time (longitudinal), and compared to matched pair schools or classes in a contiguous region where LPT is being rolled out. This research could yield valuable findings both for USAID's model and for the bilingual model. The aim is to provide the highest quality education for Senegalese children's learning and literacy development through CM2 (grade 6) and to support their success going into secondary school. It is hoped that this idea might be able to spark a collaborative approach to working with the MEN rather than pitting two different initiatives against each other and allowing bilingual education to falter due to funding discontinuities.

Impact

Impact can be defined as the results (positive or negative) of an intervention on individuals and on a system (whether school, school-community, or MEN), and/or the implications it has for attitudes and practices in a certain context.

Impact on children and children's learning

ARED's program clearly had a strong impact on children in the 98 schools where the bilingual education model program was implemented, both in terms of achievement (as elaborated previously under "Effectiveness" results) and in terms of the success of the bilingual cohort's pass rate and acceptance into secondary school. The impact on children's learning, on children's interactions with parents in the home regarding support for their homework assignments and interactions related to L1 literacy, and on individual children's future studies was quite remarkable. Taken together, these results also had an impact on the attitudes and the aspirations of families in the community regarding the effectiveness of their schools and the value of sending their children to school. For example, members of a women's organization in one community told the field team that they wanted their children to learn in their language up to university.

Impact on Ministry of Education officials

ARED's bilingual model and program have had widespread effects on stakeholders at all levels. One of the clearest indications of a positive impact was the fact that in the qualitative data there were 42 calls from stakeholders at all levels for *generalisation* (nationwide implementation and expansion to additional national languages) or "continuation" of ARED's bilingual model in the Senegalese school system.

The field researchers spoke with the Secretary General and the Director of Elementary Education, both highly experienced educators, about ARED's bilingual model and the implementation of bilingual education in Senegal. Both were extremely enthusiastic about the future of bilingual education as part of MEN policy. Both have been part of discussions in various fora regarding the inclusion of bilingual education in the strategic plan (PAQUET II). They were well informed and very aware of the differences between bilingual education and LPT.

Impact on inspectors, school directors, and teachers

The inspectors were strong in their support for bilingual education and for national languages in Senegal in general. The ARED model also had a strong influence on school directors, some of whom said they had become activists for bilingual education. One school director welcomed the research team with these statements:

> *Nous sommes ravis de vous accueillir, la mission d'évaluation ARED. Donc comme vous l'avez dit, on l'a vécu pendant 4 ans. C'est un bon programme. Dans la mesure où les enfants apprennent dans leur langue vers la langue étrangère. Les enfants sont bien à l'aise dans la classe. Ils s'activent et quand on voit le transfert vers la L2, on voit que le niveau s'améliore, comparés aux autres élèves monolingues. En général, les enfants bilingues sont meilleurs que les autres. C'est pour vous dire que l'expérimentation a bien réussi. C'est à pérenniser et à ancrer dans le cursus scolaire du Sénégal.[xxvii]*

> We are delighted to welcome you, the ARED evaluation mission. So as you said, we lived it for four years. It's a good program. To the extent that children learn using their own language and moving into the foreign language. The children are comfortable in the classroom. They get active and when we see the transfer to L2, we see that the level improves, compared to other monolingual students. In general, bilingual children are doing better than others. This is to tell you that the experiment was a success. This must be made permanent and anchored in Senegal's school curriculum.

The impact on teachers, school directors, inspectors seems to have been profound. One indication was the "spillover" effect (or what the team called "positive contamination") of the bilingual classes on the traditional classes. Students taught their peers in non-bilingual classes, and bilingual teachers taught their colleagues. One inspector explained the spillover effect on teachers in this way:

> *Les enseignants de classes monolingues sollicitent le soutien de leur pair. Il y a un esprit d'émulation et ils ont vu mieux résultats aussi. Chaque enseignant veut faire de son mieux.[xxviii]*

> Teachers of monolingual classes seek the support of their peers. There is a spirit of emulation and they have seen better results too. Every teacher wants to do his or her best.

Impact on communities

The impact of ARED's work in bilingual education is also apparent from the interview comments from parents and SMC members:

> *Nous sommes conscients de l'utilité de la langue maternelle, nous souhaitons que cela soit introduit dans toutes les étapes même au secondaire. On doit pas l'arrêter ; les enfants viennent à la maison nous montrer comment on lit le wolof et comment on nomme les choses et nous rectifient. On entend de wolof riche et de niveau élevé avec les enfants.[xxix]*

> We are aware of the usefulness of the mother tongue, we want it to be introduced in all stages, even in secondary school. We must not stop it; the children come to the house to show us how to read the Wolof and how to name things and correct us. We hear rich and high-level Wolof amongst the children.

Additional questions were raised based on the team's experiences in evaluating bilingual education programs. The following points will be addressed here:

1. Whether or not assessment was done in the L1 as well as in French.
2. To what degree ARED's bilingual model is consistent with evidential and theoretical principles of L1-based bi/multilingual education internationally.
3. How teacher placement is done, and whether or not it accounts for teachers' linguistic proficiencies (oral and written).
4. Whether or not linguistic heterogeneity is a factor in implementing ARED's model, and to what degree stakeholders accept the use of Wolof or Pulaar if their home languages are different.

Assessment in the L1

Most school directors and teachers who were interviewed had not used the national language for formal assessment, although some teachers and even IEFs had used the L1 to assess literacy skills and some early mathematics content. One focal point raised this question*:*

> *Il y avait aussi ce souci là. Est-ce qu'il ne fallait pas attendre que ces enfants soient au CM2 pour qu'on puisse faire une évaluation dans les deux langues?[xxx]*
>
> There was also this concern. Shouldn't we wait until these children are in fifth grade before we can do an assessment in both languages?

In that educator's opinion, the focus on learning through the L1 in the early years meant that most assessment should be in the L1 until higher grades, when both languages could be used because students' French would be more advanced, an opinion that coincides with research on bilingual assessment.

Theoretical soundness of ARED's model

There is no globally perfect model of bilingual education; while there are basic principles established in the international literature, for example the well-documented principle of interlinguistic transfer, there are different ways to promote bilingual learning depending on the context. Any form of bilingual or multilingual education must take into consideration the varying language proficiencies of learners and teachers, the goals of the formal education system, the linguistic and cognitive demands of society, the aspirations of parents and communities, and a range of other factors. This means that from a development perspective, ARED's involvement in developing this simultaneous bilingual model has been highly productive, and this model appears to be functioning quite well in the Senegalese regions where it has been implemented. Any current challenges encountered in implementing the approach are part of a very necessary, participatory process in which ARED has played an essential role. In a sense these challenges are "growing pains" that have surfaced through the iterative process which ARED has facilitated.

From MWAI's perspective, challenges to the model included: some educators' incomplete understandings of interlinguistic transfer; some educators' idea that all content had to be equal in the L1 and in French; and the need many expressed for

expanded pedagogical vocabulary in the L1, particularly for teaching non-linguistic content areas but also for metalinguistic discussions (that is, discussions about language, like parts of speech, explaining conjugations, and so on). Even though ARED and focal points and teachers themselves addressed these needs as much as they could in trainings and other support activities during implementation, there is still room for improvement.

Bilingual education is based on interlinguistic transfer, which explains why literacy and concepts learned in a familiar language do not need to be re-taught in a new language. Some teachers and trainers used terms like "interference" or "equivalence," which seemed to indicate that they were not fully aware of how interlinguistic transfer works and how to facilitate it. Indeed, ARED's *Guide de lecture Wolof-Pulaar (2013, p. 27)* uses the term *interférence* with relation to transfer, suggesting that features of transfer like overgeneralization (e.g. application of L1 grammar or spelling rules to the L2, which might or might not be applicable) are seen negatively. Actually it is a positive sign that learners are transferring skills in general, and what they need are comparison/contrast lessons to help them learn which rules to use when and for which languages.

ARED has been working with Counterpart International (USDA) in Saint-Louis to promote L1-L2 transfer, as this was already recognized as an area that could be further developed.[xxxi] Since many teachers mentioned the "gain de temps" (time-saving element) associated with teaching reading in the L1 and the L2 simultaneously, it can be assumed that they automatically recognized that they didn't have to re-teach aspects of language that were the same across languages. However, to develop understandings further, we offer some technical suggestions about how to explicitly facilitate transfer and the importance of teaching differences as well as similarities between the L1 and the L2; see below in Annex N.

Regarding ARED's bilingual model, it is a clear improvement over the most widely used model in post-colonial countries, what is known as an early-exit transitional model, meaning that the learner's own language is used for only for one to three years, after which the L1 "exits" from the school in favor of a "transition" to exclusive use of a dominant language (Heugh 2011). The pedagogical critiques of early-exit models are compounded by sociological ones; they have been called short-sighted and discriminatory, representing a language-as-problem orientation (Ruíz 1984) and focusing on acquisition of the dominant language rather than developing literacy and learning in all languages. Current research indicates that the pedagogical and cognitive benefits would be much greater with continued development of the L1 (Cummins 2009; Thomas & Collier 1997, 2002). Transfer continues throughout the life of a bi/multilingual, and research shows that stronger L1 skills have great potential to strengthen L2 skills (Cummins 2009). ARED's model kept both languages in the curriculum over the four years from CI to CE2, with results that were reportedly quite positive. Further, ARED has been piloting an extension of the model in CM1 and CM2 (years 5 and 6) in 10 schools, which is completely in line with current international thinking about maintaining and developing the L1 for as long as possible in the school system so that learners gain higher-level literacy as well as cognitive skills in both the L1 and the additional language(s). This has further societal benefits in that the L1 is no longer seen as a problem, but a resource and more on par with French.

Teacher placement

Overall it appeared that most bilingual teachers were well chosen based on their linguistic as well as their pedagogical skills, which ARED reviewed in collaboration with inspectors and school directors. Teacher mobility is an issue, however, and it would be necessary in future to train a larger, critical mass of bilingual teachers so that all bilingual classes could continue to be staffed. In some cases, the inspectors chosen as focal points were strong pedagogically, but there was some mobility and some weakness as well – especially in terms of report writing. ARED reportedly acted quickly to work with the IAs and IEFs to fill in the gaps, but it is an indication that training extra educators would be advised for implementation of future programs.

Some of the bilingual teachers requested certificates that would verify their training and participation in the program, a suggestion included in the recommendations below.

Linguistic heterogeneity

Focal points and school directors mentioned linguistic heterogeneity as an issue that had to be addressed – and was resolved – in some communities when ARED initiated this program. One surprising finding was that bilingual education appeared to have raised stakeholders' consciousness of the importance of national languages of Senegal in general, not only to those whose own languages were Wolof or Pulaar, the languages of this bilingual program, but also to those with other mother tongues, who felt that bringing Wolof and Pulaar into formal education made their own languages more visible and valuable. This opinion was expressed most eloquently by a Bainouk parent who was interviewed in a community in the Kaolack region. When asked why he accepted that his child would be in the Wolof-French bilingual class, he replied:

> *C'est que j'ai constaté que si les enfants viennent à la maison et si je l'aide à mieux comprendre ses leçons j'emploie ma langue maternelle, le baynouk, et ils comprennent plus vite. C'est à travers cela que j'ai compris que s'ils apprennent par le wolof qui est une langue qu'ils parlent bien mieux que leurs parents, et le français, il pourront mieux comprendre. Les parents aussi y gagnent parce qu'on apprend le wolof mieux aussi.[xxxii]*

> It is because I have found that if the children come home and I help them to better understand their lessons, I use my mother tongue Bainouk, and they understand faster. It is through this that I have understood that if they learn through Wolof, which is a language that they speak much better than their parents, and French, they will be able to understand better. Parents also benefit because we learn Wolof better too.

That parent went on to explain that he made his child responsible for reading to him in Wolof and explaining the assignment, and that the parent helped explain tasks in Bainouk. It seemed clear that bilingual education had liberated him to speak his mother tongue with his children. In the same parent meeting, as this was a heterogeneous community, Diagne (MD) had this interaction with SMC members:

Membre SMC : Oui c'est d'ailleurs venu très tardivement [l'éducation bilingue]. On y gagne doublement en acceptant le wolof qui n'est pas notre propre langue maternelle.
MD : Donc c'est pourquoi la maîtresse nous a dit que ceux qui ne sont pas de langue maternelle wolof sont beaucoup plus performants. C'est à cause de ça n'est-ce pas ?
Membre SMC : Oui c'est ça ; ils ont deux à trois langues qu'ils peuvent parler et deviennent plus intelligents.[xxxiii]

SMC member: Yes, it came very late [bilingual education]. We have gained twice as much by accepting Wolof, which is not our own mother tongue.
MD: So that's why the teacher told us that those who are not Wolof native speakers are much more successful. It's because of that, isn't it?
SMC member: Yes that's right; they have two to three languages they can speak and become more intelligent.

Interestingly, bilingual teachers in other schools reported that the non-L1 learners did even better in the bilingual program than those whose L1 was Wolof or Pulaar. (MWAI team member Benson heard a similar report while investigating speakers of languages other than one used in a program in Nepal. It seems that multilingual communities accept other non-dominant languages if they feel they are benefiting their children.) According to the parents quoted above, ARED's bilingual program contributed to their children's multilingualism and thus their intelligence.

Synergy between schools and communities with regard to L1 literacy

One unexpected finding was the synergy between schools and communities with regard to L1 use, particularly L1 literacy. The observed synergy between schools and communities with regard to L1 literacy was quite positive, and quite likely can be traced not only to the success of the model in developing L1 literacy in the learners, but also to ARED's work with SMCs and community members. Many community activities were related to the school and to literacy in the local language, for example:
- Parents and other family members learning to read their own languages;
- Parents helping their children with their studies;
- Parents expressing pride that their children are speaking, reading and writing the L1 "better than ourselves";
- Bilingual lessons in health, raising awareness of community health (e.g. washing hands before eating, or going to school in clean clothes);
- Imams and *chefs de quartier* (community leaders) paying attention to the bilingual program due to the positive effects observed in their communities.

These effects might not have been predicted, but they tell a clear story about how ARED's bilingual model has contributed to the values and health of communities.

9. Conclusions

ARED's bilingual model and program of implementation should clearly be considered a resounding success. Stakeholders were nearly unanimous regarding the need for the National Ministry of Education to take charge of expanding bilingual education throughout the country. Even with the understandable challenges mentioned—such as teachers' need for more pedagogical vocabulary in national languages, or questions about promoting interlinguistic transfer—no one critiqued ARED's approach or questioned the need to generalize bilingual education throughout Senegal.

It appears that ARED's bilingual program has contributed to raising the consciousness of all stakeholders, from MEN officials and IA and IEF inspectors to school directors, teachers, students, parents and communities. In a country where national languages have been devalued at the expense of promoting French, the former colonial language, this program's use of just two major national languages, Wolof and Pulaar, seems to have had transformative effects on how teachers teach and learners learn, as well as how family members interact with their children going to school. These examples touch on the importance of national languages in education to address fundamental issues of access and quality of education, but further, issues of mutual respect and self-respect.

Additionally, due to the participatory action research model that ARED chose to implement, teachers appear to have discovered and developed their own languages through the workshop and trainings held by ARED-trained inspectors. One bilingual teacher commented on how he rediscovered a love for his language as equally complex and developed language as French. Another teacher said he gained an appreciation for other national languages as well as his own:

> *Tu vois l'importance… C'est notre langue maternelle. Et puis ARED ne se limitait pas qu'au wolof hein. Parce qu'il y avait d'autres enseignants qui faisaient le pulaar, d'autres langues. Nous aussi, on en a profité pour apprendre ces autres langues. Je ne dis pas que de la langue wolof mais aussi d'autres langues.[xxxiv]*

> You see the importance... It's our mother tongue. And ARED wasn't just limited to Wolof, was it? Because there were other teachers who did Pulaar, other languages. We also took the opportunity to learn these other languages. I'm not saying only Wolof but also other languages.

It was noteworthy the teachers reported enjoying teaching bilingual classes, as the students reacted positively and engaged more in their learning. Teachers noted that students understood the content of the lessons better, they were more engaged and participated more actively in lessons than students in traditional French-medium classes, and they were able to do more activities and go deeper into the topics discussed. Students, in turn, reported loving school and demonstrated their development of metalinguistic competencies, i.e. understandings of important features of their languages.

At the level of the community, the bilingual programs are very much appreciated and have had a positive impact on parenting and strengthening the ties between home and school. With the introduction of national languages, textbooks have become more culturally and linguistically relevant for the families and communities as well. There were reports that parents and family members can now take interest in what is taught at school. The national languages are directly relevant to the communities who mostly operate in these languages and enhance the social ties within the community. There were reports of bilingual students teaching their siblings, grandparents and extended family members to read and write their home languages. Finally, in linguistically heterogenous communities, there are indications that the introduction of Wolof or Pulaar, even where it is not the L1, has liberated parents to speak their home languages more and teach them to their children. While French may lack relevance to their daily lives, the use of national languages in bilingual

education seems to raise awareness and reaffirm the value of non-dominant languages in Senegal.

One imam the team interviewed, while completely supportive of the bilingual program, also had wise words about being careful to implement educational programs that serve the students with a continuous, integrated, and coherent learning experience that can teach them how to live their lives well. As stakeholders noted, the implementation of USAID's LPT project without referring to the good work done in bilingual education can lead to widespread discouragement. This good work in bilingual education should be recognized not only by MEN, but also by donors, who should be listening to stakeholders, to MEN and to each other about what directions the education system needs to take.

10. Recommendations

This section suggests actions to address some of the challenges identified by this evaluation, either by stakeholders or by evaluation team members. MWAI hopes that ARED may be able to integrate some of these contributions into future work in bilingual education. The programmatic and strategic recommendations relate to how ARED may strengthen its programs, and how it may move forward given current conditions. The technical recommendations (see Annex N) are designed to address issues with the bilingual model and the approach taken by ARED.

Programmatic recommendations

The programmatic and strategic recommendations relate to both how ARED may strengthen its programs and how it may move forward given current conditions in Senegal. Some immediate measures are recommended to address support for existing stakeholders like bilingual teachers and trainers, while others are more strategic regarding the future.

Support for existing stakeholders

As mentioned above, some of the bilingual teachers had requested **certificates** that would verify their training and participation in the bilingual program; for this reason MWAI recommends that this be explored further. One suggestion is that ARED, in collaboration with the IAs and IEFs, provide certificates with documentation of the training and experience that the bilingual teachers have gained. It might be motivational for a similar procedure to be undertaken on behalf of the school directors and inspectors/focal points. If there is a way for all of these stakeholders to be individually recognized by MEN, this could also be both motivational and strategic, since these are the future educators of new bilingual classes and trainers of new bilingual teachers. Another worthwhile effort would be to find ways for MEN to register this information in the employment dossiers of both teachers and inspectors, so that these human resources are readily available for future opportunities in bilingual education.

Because teacher mobility has been an issue, future bilingual programs need to be able to draw on a larger pool of trained teachers. For example, it could be valuable

for ARED to contribute to the **curriculum of teacher training institutions**, working so that all future teachers are prepared to teach bilingually. This means that L1 literacy and linguistic study needs to be a part of teacher training, as well as bilingual pedagogy. Again, such training would eventually need to become part of teachers' dossiers so that they can be hired to teach bilingually in the appropriate languages.

Regarding the assessment and follow-up of the bilingual student cohorts, MWAI recommends that ARED consider use of the **L1 for assessment**, as well as for monitoring and evaluation. This serves to demonstrate the range of skills learners have developed in Wolof or Pulaar, which are the skills available to transfer to French. It is also important to "measure what is treasured," which is a purposeful inversion of the expression: If the national languages are truly valued, then they should be part of any assessment system. ARED is well placed to work with MEN to develop curriculum-based examinations that use national languages or are bilingual. It would be very interesting to follow up on the academic progress of the current bilingual cohort as they enter grade 6 (CM2), and the cohort before them as they enter secondary school. The patterns of their academic progress could offer insight into the observed differential in learning outcomes, retention, and other impacts on these students compared to a cohort of traditionally educated students over time.

Strategies to promote ARED's bilingual model in the context of LPT implementation

As noted in the findings, an overwhelming concern shared by many stakeholders as well as the ARED team was the pausing of ARED's bilingual program in 2018 and its perceived replacement (or displacement) in some regions of the country, using bilingually trained inspectors, school directors and teachers, by USAID's early grade reading project implemented by Chemonics known as *Lecture Pour Tous*. Meanwhile, it is uncertain how MEN will proceed with planning concrete actions to implement bilingual education through its strategic planning, as LPT has become more than a distraction. As of this evaluation, the (former) Minister of Education had not yet made a clear statement that MEN would support bilingual education implementation as part of its strategic plan so that it can be funded by pooled donors. The *Secrétaire Générale* and the *Directrice de l'Enseignement Elementaire* are supporters of ARED's model and feel the time is ripe. Meanwhile, LPT has taken over in the regions where ARED was implementing bilingual education, using ARED-trained inspectors and teachers because they are the best qualified for working with national languages. ARED has taken the most positive strategy possible in this context—to provide technical inputs because ARED wants what is best for Senegalese learners—but the effect is that LPT appears to be displacing and replacing ARED's bilingual approach in these IAs.

When the field research team met with the Directrice of Chemonics and her deputy, the latter whom is formerly of MEN and is highly familiar with ARED's good work in bilingual education, they asked why LPT and BE could not overlap, working in the same regions. The director told us that it was "*absolument possible*," yet it was later learned that USAID official regulations that two competing programs cannot operate in the same district, the Secretary General (MEN) reportedly has had to encouraged ARED to work in other IAs.

Acknowledging that ARED is more aware of the intricacies and the changing nature of the situation, two alternatives are presented here that ARED might consider in terms of working toward the next phase of bilingual education implementation.

1. ARED could urge collaboration in IAs where ARED has been working in bilingual education, maximizing the human resources (trained bilingual focal points, school directors and teachers) and showing that bilingual education is a complete program, whereas LPT focuses on reading (decoding). Staying in the regions where ARED is well established has the added benefit of building on momentum and raising stakeholders' motivation based on past positive experiences.

2. As suggested in a discussion the field research team had with some inspectors, another alternative is for ARED to move to a new IA that is not working with LPT and use all of the lessons learned by this program to implement bilingual education across the region (IA), in all schools. ARED should also consider using the materials for CM1-CM2 to implement a **six-year bilingual model**, which would increase the potential to have outstanding results by the end of the primary cycle. ARED could possibly work with MEN to bring trained focal points from other regions to serve as resources for the new IA. As discussed with ARED in December, Thiès region could be a good choice.

MWAI understands that MEN officials and ARED discussed this latter possibility in early 2019, projecting it as an opportunity to roll out the bilingual model comprehensively. First, the recommendations for dealing with technical issues could be addressed in advance through teacher professional development. Second, materials that have been piloted through grade 6 could be included in the plans. Third, the programmatic issues mentioned could also be studied at close range (for example, how inspectors deal with the workload if all schools in their areas become bilingual schools). Fourth, the support promised by the teachers' unions could be marshaled so that the teachers continue to be at the forefront of the initiative and their professional opinions and experiences are continually taken into account. Finally, this could allow bilingual education implementation to be studied at close range, promoting collaborative research that will continue to build the evidence base about the value of bilingual education, how it can be expanded to further languages and regions in Senegal, and what lessons can be learned for the region and internationally.

11. Lessons Learned

ARED's work to promote and implement its simultaneous bilingual model offers the field of bilingual education some important lessons. The following are most salient and relevant to bilingual education in Senegal and can be generalized beyond the project.

1. ARED's model of simultaneous bilingual education is efficacious. The assessment data available to this external evaluation showed that students educated for four years according to this design and approach outperform traditionally taught (French only) students.

2. Stakeholders support this model of bilingual education because from the beginning – from the first day – both languages (L1 and French) are used in the classroom and are in the curriculum and the school day. Further, expansion of the model to cover the entire six-year primary cycle, which is a related ARED initiative that has grown out of this experience, is consistent with research-based principles of bilingual education and the promotion of interlinguistic transfer.

3. ARED's development of supporting structures is effective, including: A two-tier cascade model for training inspectors (focal points), who in turn train school directors and teachers; a supervision system built into existing MEN structures where inspectors and school directors follow the work of bilingual teachers; and the addition of pedagogical days and pedagogical circles to promote collaboration between educators to find linguistic and pedagogical solutions to implementational issues.

4. Consciousness-raising workshops for parents and school management committees (SMCs) maximize the potential for synergy between L1-based bilingual school learning and home literacy learning and encourage family support for children's schoolwork.

5. Integration of bilingual education into effectively functioning national and regional structures like the IAs and IEFs promotes ownership and cooperative responsibility in bilingual education implementation.

6. ARED's consistent aim of improving the quality of education for all learners allows the organization to be flexible and to adapt to other education system needs and requests, while also earning the well-deserved respect of stakeholders at all levels.

7. ARED worked in close partnership with MEN throughout implementation, which has built ongoing understanding and mutual support. Through a process of consultation and harmonization of models used in Senegal, which was largely inspired by ARED's bilingual model, MEN now speaks of a Harmonized Bilingual Model, which officially mentions the option of real-time or simultaneous bilingualism.

List of Annexes
- Annex A: Terms of Reference for the evaluation
- Annex B: Evaluation matrix
- Annex C: Timetable
- Annex D: List of data (individuals interviewed, stakeholder groups and/or communities consulted)
- Annex E: List of supporting documentation reviewed (references in APA format)
- Annex F: Research instruments
- Annex G: Project logical framework
- Annex H: Specific monitoring data, as appropriate
- Annex I: Summary tables of progress towards outputs, targets, goals
- Annex J: Evaluator's biographies
- Annex K: A review of program reports
- Annex L: A review of extant assessment data
- Annex M: Writing assessment analyses and results
- Annex N: Four Technical Recommendations and Ideas for comparison/contrast charts to promote teaching for transfer
- Annex O: Stakeholders' perceived comparative advantages of bilingual education

List of Appendices (accompanying documents)
- Appendix A: Terms of Reference
- Appendix B: Evaluation Matrix
- Appendix C: Research Instruments
- Appendix D: Excel document male/female student demographic data

Annex A: Terms of Reference for the evaluation

The Terms of Reference for this evaluation can be found in the accompanying set of documents, Appendix A.

Annex B: Evaluation matrix

The Evaluation Matrix for this evaluation can be found in the accompanying set of documents, Appendix B.

Annex C: Timetable

Schedule and Deliverables	Date(s) delivered
Inception report, including understanding of Terms of Reference and scope; relevant methodology to be adopted; evaluation design and key questions; and workplan for the assignment and evaluation matrix	November 2018
1. **Phase I** Pre-fieldwork investigation and desk studies (U.S.-based) via telephone/electronic communication.	Oct 15 – Nov. 17, 2019
2. **Phase II** Fieldwork in Senegal; meetings in Dakar and school-based research in the three regions (Saint-Louis, Dakar and Kaolack). Second round of fieldwork in Pulaar schools.	Nov. 18 – Dec. 2, 2018 Jan. 7-9, 2019
3. **Phase III Initial findings workshop** to be presented upon finalization of the field visit to Senegal (with Dubai Cares participating via Skype), outlining the initial findings from the desk review and data collection.	Dec 1, 2018
4. **Draft report** complying with Dubai Cares' report standards, submitted for Dubai Cares' feedback, comments, questions, and inputs. MWAI will also present the draft report to a wider audience if requested.	March 11, 2019/ March 15, 2019
5. **Final report** incorporating Dubai Cares' input – a 30-page maximum report including an executive summary of key findings, conclusions, and actionable recommendations (conforming to Annex 1 of the TOR) in both English and French, and a final presentation to Dubai Cares and partner staff.	April 9, 2019/ June 8, 2019

Annex D: List of data (individuals interviewed, stakeholder groups and/or communities consulted)

Figure 1: IAs, IEFs and schools visited (W=Wolof/French; P=Pulaar/French)

IA Rufisque

IEF Rufisque commune
- Ecole Castor (W)

IEF Sangalkan dept

IA Saint-Louis

IEF Saint-Louis dept
- Ecole Hadji Cheikou Wade (W)

IEF Saint-Louis commune
- Ecole Bolly Diaw (W)

IEF Podor
- Ecole Elimane Racine Sy (P)
- Ecole Fanaye Diery 1 (P)

IA Kaolack

IEF Kaolack dept
- Ecole Ibrahima Falll (W)

IEF Kaolack commune
- Ecole Guédel Mbodj (W)
- Ecole Kabatoki (W)
- Ecole Koutal (W)

IEF Nioro
- Ecole Insa Bobo Ba (W)
- Ecole Kabacoto (P)
- Ecole Keur Sette Diakhou (W)
- Ecole Porokhane Toucouleur (P)

IA Dakar

IEF Grand Dakar
- Ecole HLM 4D (W)
- Ecole Derkelé 2A (W)

Table 2: List of data collected by school, instrument, stakeholder, and individual

School	Instrument	Stakeholder	Individuals (Names and Demographics)
Rufisque	FGD	School Inspectors	Insp Dione (IA), Insp Gaye (point focal), Insp Samba, Insp Yacine Fall (trainer)
Castor	KII	School Director	Directrice Magatte Kane Faye
Castor	Writing Assessment	Students	47 students from CM1, 29BE and 18T
Castor	KII	BE Teacher	Maîtresse Mme Dieng née Coumba Ngom
Saint-Louis Municipality	FGD	IA and IEFs of Saint-Louis Commune et Département	Inspecteur de l'académie Boubacar Sow, Inspecteur Abdoulaye Sall (point focal, chargé de la coordination des activités ARED), Inspecteur Sélbé Badiane (IEF St Louis Département), le chargé de la communication de IEF St Louis Commune), Mme Coura Gueye (chargé du partenariat IEF Saint-Louis Commune)

School	Instrument	Stakeholder	Individuals (Names and Demographics)
Bolly Diaw	FGD	School director and 2 bilingual teachers	Dir Doudou Say, Mme Aminata Ibaou Diop (f), Other BE teacher (m)
Bolly Diaw	Writing Assessment	Students	51 students from CM1, 39BE and 12T
Bolly Diaw	KII	bilingual teacher	Aminata Ibaou Diop
Bolly Diaw	FGD	Parents and SMCs	Coura Gueye (chargé du partenariat)
El Hadji Chekikou Wade Gandon	FGD	School director, 2 bilingual teachers, and parents	school dir (m), 2 BE teachers (1f, 1m), 3 parents (3m)
El Hadji Chekikou Wade Gandon	Writing Assessment	Students	24 students from CM1, 18BE and 6T
Podor	KII	School Inspector	Inspecteur Diouf
Elimane Racine Sy	KII	School Director	Dir Oumar Diallo
Elimane Racine Sy	KII	Bilingual Teacher	et maîtresse bilingue Mme Oureta Mjam
Fanaye Diery 1	KII	School Director	Directeur Ibrahima Kan
Fanaye Diery 1	FGD	Former Bilingual Teachers	3m
Fanaye Diery 1	Writing Assessment	Students	45 students from CM1, 29BE and 16T
Kabatoki	FGD	Directeur, Parents et Enseignants	Dir Malik Fall, et 2 maîtres (1 Monsieur Faye and 1f Madame Mbaye), et 4 parents
Kabatoki	FGD	Students	3f, 4m
Ibrahima Fall	FGD	Directeur, Parents et Enseignants	Directeur: Youssou gaye et Maîtresse EB Madame Sall (f) et Maître EB Adama Djouf (m) et parents: (2m, 1f)
Ibrahima Fall	FGD	Bilingual alumni in lower secondary	Tabara Thiam et Anta Gueye
Ibrahima Fall	FGD	Students	4m, 4f, CM1
School	Instrument	Stakeholder	Individuals (Names and Demographics)
Kaolack Municipality	FGD	IA and IEFs of Kaolack Commune et Département	Mme Kadia Diallo, Insp François Faye (point focal), Secrétaire Générale de l'IA Amadou Ba, et Habib Ba (IEF Kaolack commune)
Guédel Mbodj	KII	Director and 2 bilingual teachers	Directeur Lamine Simall; Madame Wade et Mme N'dour
Guédel Mbodj	Writing Assessment	Students	44 students BE de CM1
Guédel Mbodj	FGD	Parents and SMC members	2m, 2f

School	Instrument	Stakeholder	Individuals (Names and Demographics)
Koutal	KII	School Director	Directeur Diagne
Koutal	KII	Former bilingual teachers	M. Youssou Gueye et Mme Asse Diop
Koutal	FGD	Students	8 students from CM1 (5 males and 3 females)
Koutal	KII	Parent	1 parent (male and treasurer of SMC)
Nioro	KII	IEF	IEF Baba Thiam, point focal Babacar Diop
Keur Sette Diakhou	FGD	School Director	Moussa Touré de l'IEF (responsable de l'alphabétisation), Directeur Mamadou Bousso Tall
Keur Sette Diakhou	KII	Former bilingual teachers	M. Ousmane Sy et M. Baye Macoumba N'diaye
Keur Sette Diakhou	FGD	Parents	6f, 2m
Keur Sette Diakhou	FGD	Students	8 students (6m, 2f)
Insa Bobo Ba	FGD	Director and 2 bilingual teachers	Directeur Monsieur Gueye, 2 male bilingual teachers (Mamadou Ba et Ibrahima Gueye)
Insa Bobo Ba	Writing Assessment	Students	36 students (34BE, 2T) from CM1
Insa Bobo Ba	KII	Parent	Faly Ndiaye de l'Association Parents Eleves
Grand Dakar	FGD	IEF	IEF Abdoulaye Wade, point focal inspecteur Ibrahima Dione
HLM 4D	FGD	Director and Teachers	Directrice Mdm Sokhna Nduiye, 1 BE teacher Mdm Camara
HLM 4D	Writing Assessment	Students	36 studnets (27 BE, 9T) from CM1
Derkelé 2A	KII	School Director	Directrice Yacine Gueye
School	**Instrument**	**Stakeholder**	**Individuals (Names and Demographics)**
Derkelé 2A	FGD	Teachers	2 BE teachers (Mme Mané and Mme Mbengue), Directrice Yacine Gueye
Derkelé 2A	FGD	Students	8 students (3m, 5f)
Nioro	KII	IEF	focal point Babacar Diop
Kabacoto	KII	School Director	Mme Bineta Ba (f)
Kabacoto	Writing Assessment	Students	37 students from CM1, 21 BE and 16 T
Kabacoto	FGD	Parents	3m
Kabacoto	FGD	Students	5m, 5f
Porokhane Toucouleur	KII	School Director	M. Ndiaye (f)
Porokhane Toucouleur	Writing Assessment	Students	41 students from CM 1, 23 BE and 18 T

Porokhane Toucouleur	FGD	Students	5m 5f
Porokhane Toucouleur	FGD	Parents	6m
MEN	FGD	Sec Gen and Dir EE	Secrétaire Générale Mme Ndeye Khady Mbodj & Directrice de l'Enseignement Elementaire Mme Aby Cissé

Annex E: List of supporting documentation reviewed

Associates in Research and Evaluation for Development [ARED]. (2014). *Dubai Cares pro-forma proposal outline: Support project for quality education in mother tongues for primary schools in Senegal (Phase III: 2013-2018).* Dakar, Senegal: ARED.

ARED. (2015a). *Rapport semestriel du projet d'appui à l'éducation de qualité en langues maternelles pour l'école élémentaire au Sénégal Période du 01 décembre 2014 au 15 juin 2015.* Dakar, Senegal: ARED.

ARED. (2015b). *Program performance monitoring and evaluation plan.* Dakar, Senegal: ARED.

ARED. (2015c). *Support project for quality education in mother tongues from primary schools in Senegal: Change Request.* Dakar, Senegal: ARED.

ARED. (2015d). *Support project for quality education in mother tongues in primary schools in Senegal: Annual report, December 1, 2014-November 30, 2015.* Dakar, Senegal: ARED.

ARED. (2016a). *Annual report 2015: Support project for quality education in mother tongue in primary schools in Senegal (Period: from December 1st, 2014 to November 30th, 2015).* Dakar, Senegal: ARED.

ARED. (2016b). *Support project for quality education in mother tongues in primary schools in Senegal: Interim report, December 1, 2015-June 15, 2016.* Dakar, Senegal: ARED.

ARED. (2016c). *Annual report 2016: Support project for quality education in mother tongue in primary schools in Senegal (Period from January 1st, 2016 to December 31st, 2016).* Dakar, Senegal: ARED.

ARED. (2016d). *Program performance monitoring & evaluation plan.* Dakar, Senegal: ARED.

ARED. (2017a). *Rapport semestriel du projet d'appui à l'éducation de qualité en langues maternelles pour l'école élémentaire au Sénégal Période du 01 janvier 2017 au 30 juin 2017.* Dakar, Senegal: ARED.

ARED. (2017b). *Support project for quality education in mother tongues for primary schools in Senegal: Annual Report, January 1, 2017-November 30, 2017.* Dakar, Senegal: ARED.

ARED. (2018a). *Support project for quality education in mother tongues for primary schools in Senegal: Progress report, December 1, 2017-June 15, 2018.* Dakar, Senegal: ARED.

ARED. (2018b). *Support project for quality education in mother tongues for primary schools in Senegal: Final Report, December 1, 2014-November 30, 2018*. Dakar, Senegal: ARED.

Bartlett, L., Dowd, A.J., & Jonason, C. (2015). Problematizing Early Grade Reading: Should the post-2015 agenda treasure what is measured? *International Journal of Educational Development* 40 (2015) 308–314

Benson, C. (2014). School access for children from non-dominant ethnic and linguistic communities. Background paper commissioned by UIS-UNICEF. Montréal: UIS-UNICEF Global Report on Out-of-School Children. http://allinschool.org/wp-content/uploads/2015/01/OOSC-2014-Ethnic-linguistic-minorities-final.pdf

Benson, C. (forthcoming). Lessons from the Global South about assessing literacy: Results from an independent writing assessment of Indigenous learners in northeastern Cambodia. *International Journal of Educational Development*.

Dia, A.K. (2016). ARED: Une expertise au service d'une education de qualité au Sénégal. *Education et sociétés plurilingues, 41*. Retrieved from https://journals.openedition.org/esp/930.

Dubai Cares (2018). *Terms of reference for final program evaluation.* Dubai: Dubai Cares.

Field, A. (2009). *Discovering statistics using SPSS (third edition).* Thousand Oaks, CA: SAGE Publications Inc.

Heugh, K. (2011). Theory and practice—Language education models in Africa: Research, design, decision-making and outcomes. In A. Ouane & C. Glanz (eds.), *Optimising Learning, Education and Publishing in Africa: The Language Factor. A Review and Analysis of Theory and Practice in Mother-Tongue and Bilingual Education in Sub-Saharan Africa*, 105–156. Hamburg: UNESCO UIL/Tunis: ADEA. https://unesdoc.unesco.org/ark:/48223/pf0000212602

Mejía, J. & Pouezevara, S. (2011). Using EGRA as a national reading diagnostic: Nicaragua and Senegal. In A. Grove & A. Wetterberg (Eds.), *The Early Grade Reading Assessment: Applications and interventions to improve basic literacy.* (pp. 39-82). Research Triangle Park, NC: RTI Press.

Miske, S. & Joglekar, A. (2018). Using or misusing the Early Grade Reading Assessment? Examining a measure of Payment by Results in the Girls' Education Challenge. In A. Wiseman (Ed.) *International Perspectives on Education and Society 2017.* Emerald: Bingley, West Yorkshire, U.K.

Ministry of Education, Republic of Senegal. (2015). *Service Note: Appointment of technical team charged with extending bilingual education linguistically and geographically following the ARED model.* Dakar, Senegal: Ministry of Education.

RTI International. (2015). Report on language of instruction in Senegal. Washington, D.C.: U.S. Agency for International Development. Retrieved from https://ierc-publicfiles.s3.amazonaws.com/public/resources/Senegal%20LOI%20paper_FINAL.pdf.

Ruíz, R. (1984). Orientations in language planning. *NABE Journal* 8:2, 15-34.

Sprenger-Charolles, L. (2008). *Early Grade Reading Assessment (EGRA) results from Senegalese primary school students learning to read in French and in Wolof.* Paris, France: World Bank. Retrieved from https://hal.archives-ouvertes.fr/hal-00733603v2/document.

Thomas, W. & Collier, V. (Dec. 1997). *School effectiveness for language minority students.* Washington DC: National Clearinghouse for Bilingual Education. http://www.thomasandcollier.com/assets/1997_thomas-collier97-1.pdf

Thomas, W. & Collier, V. (2002). *A national study of school effectiveness for language minority students' long-term academic achievement.* Santa Cruz CA: Center for Research on Education, Diversity and Excellence. http://www.thomasandcollier.com/assets/2002_thomas-and-collier_2002-final-report.pdf

UNESCO Institute for Statistics [UIS]. (2019). *Education and literacy – Senegal.* Retrieved from http://uis.unesco.org/country/SN.

Utts, J.M. & Heckard, R.F. (2006). *Statistical ideas and methods.* Belmont, CA:Thomson Higher Education.

Walter, S. & Benson, C. (2012). Language policy and medium of instruction in formal education. In B. Spolsky (Ed.), *The Cambridge handbook of language policy* (pp. 278-300). Cambridge: Cambridge University Press.

Annex F: Research instruments

The following research instruments were used in the collection of data for this evaluation. Instruments can be found in the accompanying documents, Appendix C.

1. Telephone interviews
2. Writing assessment instrument
3. FGD with parents
4. KII with parents
5. FGD with teachers
6. FGD with school directors
7. KII with inspectors
8. FGD with MEN officials
9. FGD with pupils

Annex G: Project logical framework

Table 3: ARED results framework (ARED, 2016c)

Ultimate Outcome: Students that follow the ARED bilingual model demonstrate, at the end of the program, superior mastery in reading, maths, and in ESVS (social and natural science)			
Activity	**Immediate outcome**	**Intermediate Outcome**	**Underlying Assumptions**
Activity 1.1.1: Hold two training sessions for teachers on bilingual pedagogic strategies and approaches and the use of textbooks each year. **Activity 1.1.2** Organize three pedagogical days each year **Activity 1.1.3**: Conduct support missions for the 208 teachers for a better implementation of bilingual pedagogic strategies and approaches proposed by ARED	**Immediate outcome 1.1:** Teachers are able to demonstrate understanding of the bilingual strategies and approaches used by ARED	**Intermediate outcome 1:** ARED bilingual teaching model is mastered and implemented by teachers, directors, and inspectors	The teachers, directors and inspectors believe in the bilingual curriculum and stay in the program.
Activity 1.2.1: Train twice/year (teachers at the same time) the 98 school directors for an outreach supervision of bilingual teachers experimenting the model **Activity 1.2.2:** Conduct support missions for the 98 school directors for an adequate outreach supervision of bilingual teachers experimenting the model	**Immediate outcome 1.2:** Directors are able to conduct an effective outreach supervision of teachers applying the ARED bilingual model.		
Activity 1.3.1: Train once/year the 24 inspectors on supervision, monitoring and capacity-building tools of bilingual class teachers and directors. **Activity 1.3.2:** Conduct support missions for 24 inspectors for a better use of monitoring, supervision and capacity-building tools of bilingual class teachers and directors	**Immediate outcome 1.3:** Inspectors are able to supervise, monitor and build the capacity of bilingual class teachers and inspectors		

Ultimate Outcome: Students that follow the ARED bilingual model demonstrate, at the end of the program, superior mastery in reading, maths, and in ESVS (social and natural science)			
Activity	**Immediate outcome**	**Intermediate Outcome**	**Underlying Assumptions**
Activity 2.1.1: Draft, validate and print reading and maths books for Grade 4 **Activity 2.1.2:** Draft, validate and print social and natural science books 1st stage **Activity 2.1.3:** Reprint Grade 2 and Grade 3 books **Activity 2.1.4:** Distribute free of charge reading, math and social and natural science books to program students.	**Immediate outcome 2.1:** Reading, math, social and natural science books are available and used by students	**Intermediate outcome 2:** Teaching and practice of model is facilitated by (more widespread) distribution and usage of bilingual teaching and learning material in classroom	The hierarchy does not require using textbooks other than those from ARED.
Activity 2.2.1: Design, validate and print guides of the second stage **Activity 2.2.2:** Design, validate and print social and natural science guides of the second stage **Activity 2.2.3:** Distribute free of charge guides of the second stage and social and natural science 1st stage to program teachers	**Immediate outcome 2.2:** Guides are available and used by teachers, directors and inspectors		
Activity 2.3.1: Develop, validate and print learning tools (Posters, workbooks) **Activity 2.3.2:** Distribute free of charge learning tools (Posters, workbooks)	**Immediate outcome 2.3:** Posters and workbooks are available and used in the literate environment of bilingual classes		

Ultimate Outcome: Students that follow the ARED bilingual model demonstrate, at the end of the program, superior mastery in reading, maths, and in ESVS (social and natural science)			
Activity	**Immediate outcome**	**Intermediate Outcome**	**Underlying Assumptions**
Activity 3.1.1: Assign and incentivize the 208 classes of the bilingual program to the teachers **Activity 3.1.2:** Supervise the proper delivery of teaching-learning (ARED pedagogic team)	**Immediate outcome 3.1:** ARED bilingual model is correctly implemented in classes	**Intermediate outcome 3:** Policymakers within the National Education Ministry, technical staff/managers working in primary education, teachers and the community support actively the ARED bilingual model	The current political administration remains status quo in support of bilingual curriculum and no major policy shifts occur.
Activity 3.2.1: Raise awareness of the community about ARED bilingual model **Activity 3.2.2** Train school management committees about their roles in the implementation and support of the model **Activity 3.3.3:** Include ministry representatives (technical team) in all the levels of intervention (field visits including M&E, training sessions, technical meetings)	**Immediate outcome 3.2**: The community is able to support and promote ARED model		

Annex H: Specific monitoring data, as appropriate

For this report, MWAI reviewed and re-analyzed the following monitoring data:
- National standard assessment data, trimester 3 of 2016-2017
- National standard assessment data, trimester 3 of 2017-2018
- CFEE 2018 data

Annex I: Summary tables of progress towards outputs, targets, goals

Table 4: ARED's M&E plan including progress towards outputs, targets, and goals (ARED, 2018b)

Ultimate Outcome	Verifiable Indicator		Baseline (Values obtained Nov 2015)	Values obtained May 2017	Sources	Target**	Underlying Assumptions
Students that follow the ARED bilingual model demonstrate superior mastery in reading, math and ESVS at the end of the program.	Indicator 1	IEF reading results ARED versus non-ARED pupils	10.71 % (June 2015)	10.7 %	IEF standardized assessment	(+15%) June 2017	The MEN will continue to use IEF as a standardized tool. No disruptions (i.e. strikes) will impede the administration of IEF.
		IEF arithmetic results ARED versus non-ARED pupils	8.13 % (June 2015)	10.6 %			
	Indicator 2	IEF ESVS results ARED versus non-ARED pupils	ND (The tests are not done in the same language)	8.4%	IEF standardized assessment	(+20%) June 2017	
	Indicator 3: Results of ARED pupils vs. results of non-ARED pupils based on EGRA		1.83 (baseline variance INEADE)	10.6	EGRA assessment May 2016	(25) May, 2017	

Ultimate Outcome	Verifiable Indicator	Baseline (Values obtained Nov 2015)	Values obtained May 2017	Sources	Target**	Underlying Assumptions
	Indicator 3: Results of ARED pupils vs. results of non-ARED pupils based on EGMA	NA5	4.2	EGMA assessment November 2016	(30) May, 2017	No disruption (i.e. strikes) will impede administration of the test
Intermediate outcome 1: ARED bilingual teaching model is mastered and implemented by teachers, headmasters and inspectors	**Indicator 1.1:** % of teachers mastering ARED bilingual teaching model	51.2 %	80%	Classroom observation mission reports, including teachers' interviews	80% in November 2017	Some teachers trained on the ARED bilingual model will be transferred to other schools, requiring replacement teachers with less experience working with the bilingual curriculum
	Indicator 1.2: % of headmasters mastering ARED bilingual teaching model	64.1%	72.5 %	Headmasters' interviews + Inspectors and TECHNICAL TEAM report review by ARED	80% in November 2017	Transfer of headmasters will have a direct, reduced impact on the mastery levels
	Indicator 1.3: % of inspectors mastering ARED bilingual model	67.5%	82.7% (October 2016)	Training session assessment results and Inspectors' report review by ARED	90% in November 2017	Transfer of inspectors will have a direct, reduced impact on inspector mastery

---

[5] NA=Not Available

Ultimate Outcome	Verifiable Indicator	Baseline (Values obtained Nov 2015)	Values obtained May 2017	Sources	Target**	Underlying Assumptions
Intermediate outcome 2: Teaching and practice of the model is facilitated by (more widespread) distribution <u>and usage</u> of bilingual teaching and learning material in classrooms	**Indicator 2.1:** reported usage rates of this material by teachers at school	63.9%	66.7 %	Classroom observation mission reports, including teachers' interviews	80% in November 2017	Despite the existence of other manuals provided by the MEN, Teachers continue using ARED textbooks.
	Indicator 2.2: reported usage rates of this material by pupils at school	83%	93.9%	Classroom observation mission reports, including pupils' interviews	85% in November 2017	
	Indicator 2.3: Familiarity of teachers with material	71.1%	86%	Classroom observation mission reports, including teachers' interviews	85% in November 2017	
	Indicator 2.4: Familiarity of pupils with material	62,8%	80.3%	Classroom observation mission reports, including pupils' interviews	75% in November 2017	

Ultimate Outcome	Verifiable Indicator	Baseline (Values obtained Nov 2015)	Values obtained May 2017	Sources	Target**	Underlying Assumptions
Intermediate outcome 3: Policymakers within the National Education Ministry, technical staff/managers working in primary education, teachers and the community actively support the ARED bilingual model	**Indicator 3.1:** Average of awareness-raising sessions organized by school management committees	0 in 2015	4[6]	Headmasters' report review by ARED	2 in November 2017	
	Indicator 3.2: % teachers of the program who adhere to the ARED Model	89 %	90 %	Teachers' interviews	80% in November 2017	Teachers will see the benefits of bilingual instruction
	Indicator 3.3: number of decisions and initiatives made by the government in favor of implementing/scaling up bilingual curriculum influenced by ARED model.	3	2	Media and official documents	3 in November 2017	The current government position in support of bilingual curriculum remains consistent without making changes

---

[6] On average in the 10 SMCs trained

Annex J: Evaluators' biographies

MWAI utilized an experienced team of US-based and Senegalese evaluators, supported by Dr. Shirley Miske, President and CEO, Miske Witt & Associates International.

Evaluation Team

Field Research Team Leader: Dr. Carol Benson, Teachers College, Columbia University, is an internationally recognized evaluator and researcher who has 25 years' experience working in the implementation, policy development and evaluation of bilingual education (also known as L1-based multilingual education or MLE) programs in African, Latin American and Asian contexts as well as in the U.S. and Europe. She is acquainted with ARED staff, ARED's work, and with the complexity of language issues in West Africa. She previously conducted an evaluation for a USAID education project in Senegal. Professor Benson, holds a PhD Social Sciences and Comparative Education,1994.

Co-Team Leader: Dr. Mbacké Diagne is a researcher at Cheikh Anta Diop University, Dakar, Senegal and is a Wolof language specialist and a researcher on descriptive linguistics, bilingual education, contrastive linguistics, African language planning and policy and contrastive linguistics. Diagne was a former primary, secondary teacher and a former inspector of education in Senegal. He participated in the 2003 national symposium to create a policy document and an action plan to eradicate illiteracy and to promote national languages in Senegal. He has written extensively on linguistics and language teaching in Senegal and beyond. He is well acquainted with ARED, its approach and its materials, having been a trainer of trainers and materials consultant. He holds a PhD in Languages, Literature and Societies.

Research Associate: Ms. Erina Iwasaki is a doctoral fellow in Comparative and International Education and Philosophy at Teachers College, Columbia University. Her research interests focus on multilingual education and the assessment of multilingual learners. Ms. Iwasaki lived in West Africa as a child, holds MAs from France and the U.S., and has experience in qualitative data collection and analysis.

Director/Administrative Advisor and MN Team Leader: Dr. Shirley Miske, President and CEO of Miske Witt and Associates International (MWAI) has had a career-long interest in bilingual/multilingual education. She was a bilingual (Spanish-English) early grade teacher in the US (Texas, Massachusetts); she taught English as a Foreign Language in Guatemala and Spanish to secondary school students in Hong Kong. Her MA is from Stanford University in Bilingual/Cross-cultural education (1980). Miske founded MWAI after completing a PhD in Education at Michigan State University (1995) with a focus on Comparative and International Development Education. Subsequently Dr. Miske has developed wide-ranging expertise in program design and implementation along with evaluation and research.

Evaluation Support Team:

Dr Mamadou Diallo, Pulaar language assistant, PhD on descriptive linguistics, teacher at University of Gaston Berger of Saint-Louis

Mr Mamadou Sakho, Pulaar language assistant, Doctorate student on descriptive linguistics

Ms Sokhna Diagne, Wolof language translator, doctorate on descriptive linguistics, Wolof interpreter and translator at the National Assembly of Senegal

Dr Mamé Sémou Ndiaye, Wolof and Serer language translator, has just completed his PhD in discourse analysis at at Cheikh Anta Diop University in Dakar.

Annex K: A review of program reports

In response to Dubai Cares Terms of Reference, MWAI proposed to conduct three desk studies. This review of program reports is the first of three studies.

Desk study 1: Brief review of past program reports, paying particular attention to the data collected to monitor the component indicators and outcomes and the program ultimate indicators and outcomes; as well as exploring the findings in the reports that address the same themes named above.

A review of documents prepared by ARED (mostly semi-annual and annual reports) from the initial grant proposal in September 2014 to a final report submitted in December 2018 describes a project that was carried out largely as planned with tactical modifications and improvements along the way. ARED made consistent progress toward its goals as measured by student test results, pedagogical materials produced and disseminated, and trainings conducted, however it fell short of the final student achievement targets as measured by EGRA/EGMA tests administered in May of 2017 (Associates in Research and Evaluation for Development, 2018a, p18). The area that lagged was the engagement of "School Management Committees" or SMCs. While there were some positive results from a small group of SMCs, many never really took off. When this became clear, ARED changed its strategy and found other direct ways of engaging the communities to garner support for their efforts (Associates in Research and Evaluation for Development, 2017a, p.30, Associates in Research and Evaluation for Development, 2017b, p.15-18).

Contextual factors mentioned repeatedly throughout the reports included data on Senegal's overall economic growth and its position within the region, Senegal's national development goals and the place of bilingual education within them (ARED, 2016c, p.6-9), additional funding secured by ARED to work on complementary angles to those in the current project (Associates in Research and Evaluation for Development, 2017b, p.36, Associates in Research and Evaluation for Development, 2018b, p.32), and the dissemination of ARED's work to other efforts aligned with this project (e.g. Associates in Research and Evaluation for Development, 2017b, p.36-38).

There were not any major course changes throughout the project, however, in December 2015, a proposal was submitted and approved to reapportion some funds and strengthen the monitoring and evaluation component. This was the first formal change requested. The second was to extend the program by one year to allow the final cohort of 3rd graders to complete their 4th year in the bilingual program (Associates in Research and Evaluation for Development, 2018b, p.35).

The difficulties faced were primarily late or insufficient reporting from inspectors, teacher and student mobility, and lackluster involvement from SMCs (Associates in Research and Evaluation for Development, 2018b, p.28-30). Mobility was beyond the control of the project (p.29), inspector workload needs to be considered in future project proposals, and ARED changed its strategy with regard to SMCs which produced better results in the 10 pilot groups where it was implemented (Associates in Research and Evaluation for Development, 2018a, p.18), however there was not time to roll out the new approach to all 98 SMCs.

Key points from the following documents are highlighted to provide a brief synopsis of the project, its evolution over four years, the impact it has had to date, and the opportunities for

scaling up. Most are semi-annual or annual reports submitted to Dubai Cares over the course of the grant.

1. Associates in Research and Evaluation for Development. (2014, September 30). *Dubai Cares pro-forma proposal outline: Support project for quality education in mother tongues for primary schools in Senegal (Phase III: 2013-2018).* **Dakar, Senegal: ARED.**

This document outlines ARED's model for implementing bilingual education within Senegal's national primary school system (page 13), the major challenges they see, and the educational issues the project intends to address (pages 9 and 10). ARED's model is "real time," meaning that French and the local language (either Wolof or Pulaar) are used simultaneously in instruction throughout the first four years of elementary education (pages 13 and 14).

ARED's model was developed and tested on a smaller scale from 2009-2013. An external evaluation showed their model of bilingual teaching, along with appropriate textbooks, trained teachers, and the support of the administration and community, produced higher test results at all levels than French-only instruction (pages 12 and 13). Major challenges to bilingual education are listed as: funding, capacity-building of staff, lack of quality materials, community support (page 9). This project sets out to address each of these challenges in an integrated fashion and to replicate the successes seen in the earlier project on a larger scale.

Quality is the primary overall challenge facing primary education in Senegal, according to a government report (PAQUET-EF). Students are not making the educational progress the country hopes for. Lack of quality can be attributed to poor credentials and training of teachers, inadequate textbooks, a weak management and assessment system and the failure to promote national languages in the education system (page 9).

With a government initiative to "develop the progressive use of national languages in the educational system beyond functional literacy," (page 10) ARED's model is well-positioned for implementation on a larger scale. Scalability is currently being supported by an international consultancy called "Management Systems International" which is helping ARED develop a scaling up plan, establishing "pre-requirements," and implementing the process in close collaboration with the Ministry of Education (page 26). The plan is for both parties to continue meeting to develop a cost-effective scaling up process and to engage other stakeholders and potential funders (page 27). Stakeholder agencies within Senegal and potential funders are listed on page 27.

2. Associates in Research and Evaluation for Development. (2015, June 30). *Rapport semestriel du projet d'appui à l'éducation de qualité en langues maternelles pour l'école élémentaire au Sénégal, Période du 01 décembre 2014 au 15 juin 2015.* **Dakar, Senegal: ARED.**

[Support project for quality education in mother tongues in primary schools in Senegal: Semi-Annual report, December 1, 2014-June 15, 2015.]

The first progress report shows that the project got off to a good start. With education being relatively well-funded by the national government (6.2% of GDP compared to 4.5% average in the rest of sub-Saharan Africa, with 46% of this going to primary education) and national authorities supportive of the effort to improve bilingual education, conditions were relatively good (page 5). The 2012 presidential election was successful, suggesting a relatively stable

political climate in the coming years and an economy poised to grow more rapidly than in recent years (page 7).

The bad news was that the number of students the project initially expected to impact was reduced by 6.2%, from 10,593 pupils to 9,576 (624 fewer) (page 29) due to the loss of students from the designated classes and the removal of one of the old classes from the program due to the teacher not following the program. Note that the national average for student attrition is 10%, so 6% is actually below average. And strikes continued to perturb the number of instructional days as various teacher unions demonstrated for better working conditions (page 7).

Teacher trainings, textbook production, and community engagement activities commenced as planned. A baseline evaluation was conducted for all 101 new classes in the program (page 23). Nonetheless, weaknesses were discovered in the inspectors' reports. ARED staff found that they lacked detail because the inspectors did not actually visit classes (page 24). ARED staff, from their field visits, also discovered that some teachers were not successfully mastering the transition between French and the local language in their instruction. These problems were discussed with Dubai Cares and a new evaluation specialist was hired to better address these issues (page 24). This specialist's salary cost the same as two previous positions, but the new hire was more qualified to meet Dubai Cares' standards (page 30).

3. Ministry of Education, Republic of Senegal. (2015, August 12). *Service Note: Appointment of technical team charged with extending bilingual education linguistically and geographically following the ARED model.* **Dakar, Senegal: Ministry of Education.**

This document is important because it officially appoints a technical team within the Ministry of Education to extend ARED's program to more national languages and regions within Senegal.

4. Associates in Research and Evaluation for Development. (2015, December 11). *Program performance monitoring and evaluation plan.* **Dakar: ARED.**

The monitoring and evaluation plan (PMP) outlines the activities and tools ARED and its associates will use to track its activities against set targets and provide analysis and reporting to its two primary funders: Dubai Cares and the William and Flora Hewlett Foundation. Evaluations are carried out approximately every six months and include standardized assessments, classroom observations, interviews, and document reviews.

5. Associates in Research and Evaluation for Development. (2015, December 11). *Support project for quality education in mother tongues from primary schools in Senegal: Change Request.* **Dakar, Senegal: ARED.**

This document outlines modifications to the monitoring and evaluation plan that ARED plans to implement now that they are a year into the project and have a better appreciation for conditions on the ground. Changes are requested for the work plan, the budget and the performance measurement plan (PMP). The revised PMP was developed in close collaboration with Dubai Cares. It includes tools that were developed specifically for the project as well as national assessment tools used in other contexts. There are some adjustments to the training schedules, but no impact on the project's bottom line. The change request was approved by Dubai Cares' CEO, Tariq Al Gurg.

6. Associates in Research and Evaluation for Development. (2015, December 29). *Support project for quality education in mother tongues in primary schools in Senegal: Annual report, December 1, 2014-November 30, 2015.* **Dakar, Senegal: ARED.**

The annual report of the first year adds monitoring and evaluation to the other three primary components of the grant (training of teaching staff, development of teaching and learning materials, mobilization of the community, teaching staff, and school authorities) (page 5). In terms of results, it asserts that bilingual class students perform better than monolingual class students across the board (pages 21 and 22), more than half the teachers understand the model (page 23), the teachers are using their new textbooks to a greater level than expected (page 23), and community and political leaders have voiced a strong commitment to the program (page 23). It also notes that ARED has not worked with school management committees (SMC) as they had originally planned. Working with SMCs requires going through the inspectors, but this has proven difficult. They are considering a change of tactic (based on the findings of RTI/USAID action research) to go directly to parents and community members using a variety of communication methods. They would still collaborate with the SMCs, but not rely on them so heavily to get their message out. They will pause SMC trainings while they consider this new strategy (pages 12 and 18).

This report notes six decisions favoring bilingual education in recent months (pages 23 and 24):
1) A cabinet meeting adopted directive 6, the progressive use of national language in the educational system and literacy.
2) National Literacy Week in September dedicated a day to ARED and its work toward bilingual education.
3) The Ministry of Education set up technical team (described above) to work on extending ARED's bilingual program.
4) The Ministry of Education signed an official letter to work with ARED to solicit donors to financing the scaling up of bilingual education.
5) The Ministry of Education set up a committee to propose a model for bilingual education in Senegal with a charge to make its recommendations in early 2016.
6) USAID announced that it will request a proposal to implement a five-year program to improve reading based on national languages. Large NGOs have contacted ARED for partnership in responding to this call.

The report also notes that ARED obtained funding from Hewlett to improve its communication strategies and presence by designing a new logo, creating a brochure, and better shaping its corporate identity (page 33). ARED was also selected as a subcontractor of RTI to carry out action research on improving support for parents reading to their children. This research will inform a new strategy for community engagement than was originally proposed (page 18).

7. Associates in Research and Evaluation for Development. (2016, July 1). *Support project for quality education in mother tongues in primary schools in Senegal: Interim report, December 1, 2015-June 15, 2016.* **Dakar, Senegal: ARED.**

The project continued to perform well in the second year. The government continued to support the bilingual model as it seeks to improve the overall quality of educational outcomes in its schools (page 5). Monitoring and evaluation activities showed progress on most performance indicators (pages 19-24). In those where the desired progress is not achieved, ARED notes that it will refine the activity or take a different approach, e.g. improving the teacher trainings, revising the content presented in the textbooks, or providing more guidance around the problem of code switching or explaining certain concepts in the national languages (page 29).

External events continue to support ARED's basic assumptions. Senegal's president stated that national languages should figure into Senegal's overall development plan and administrative functioning (page 7), pupils in ARED test classes won a national reading competition focused on understanding and fluency (page 25, box), and ARED's work was showcased during an international seminar organized by a group of French development organizations (page 25). In addition, USAID announced its support for a reading program in the national languages (page 30). What lacks is a clear scalability plan from the Ministry of Education (page 30). Nonetheless, ARED continues to gather evidence to support its model and uses its lobbying capacity to overcome obstacles (page 30).

8. Associates in Research and Evaluation for Development. (2016, December 31). *Rapport annuel du projet d'appui à l'éducation de qualité en langues maternelles pour l'école élémentaire au Sénégal, Période du 01 janvier 2016 au 31 décembre 2016.* **Dakar, Senegal: ARED.**

[Support project for quality education in mother tongues in primary schools in Senegal: Annual report, January 1, 2016-December 31, 2016]

In 2015, Senegal's economy grew by 6.5%, the highest rate since 2003. Regionally, this rate was second only to the Cote d'Ivoire (page 6). State funding for education increased an average of 12.5% annually since 2011 and increased support for bilingual education continued to figure prominently into the national conversation on improving quality (page 8).

ARED's trainings and textbook production continued in vigor during this period. Teachers continued to be trained and pedagogical materials were produced (pages 14-18). ARED attracted another funder, Trust Africa, to support further development of materials (page 10). They also continued to receive funding from USAID/RTI for the actional research project on promoting reading at home, and the Hewlett Foundation for developing a better communication plan (pages 30 and 31). They remained optimistic that they would meet the grant's targets (page 32).

9. Associates in Research and Evaluation for Development. (2017, June 30). *Rapport semestriel du projet d'appui à l'éducation de qualité en langues maternelles pour l'école élémentaire au Sénégal, Période du 01 janvier 2017 au 30 juin 2017.* **Dakar, Senegal: ARED.**

[Support project for quality education in mother tongues in primary schools in Senegal: Semi-annual report, January 1, 2017-June 30, 2017]

Contextual factors in this term's report highlight the implementation of Senegal's development plan and from 2012 to 2035, with its current priorities (2014-18) to implement a 10-year basic education cycle, improve teacher training, improve learning conditions (facilities and materials), eradicate illiteracy, and promote national languages in basic teaching, literacy work, and linguistic research. Constraints mentioned include the high poverty rate (46.7%), despite favorable economic growth (6.5 % in 2015 and 6.6% in 2016) and geographic disparities—in rural areas ⅔ of the population lives in poverty compared to ¼ in Dakar. In addition, many students do not encounter the national education system at all; they attend Koranic schools instead. Achievement rates for students passing the elementary school test increased from 49.7% in 2006 to 65.9% in 2013, however the dropout rate remained at 9.8%. One test, the "Jangando" found that 78.6% of 2nd year students could read the text given in the test and

63.4% could not read frequently-used words in the curriculum and one out of six passed the reading test (page 10). Clearly, quality of instruction and results continued to dog the system as a whole and the state listed bilingual instruction as one of its strategies to address this shortcoming (page 10).

Results from classroom observations during this period showed that teachers enacted bilingual teaching strategies in their classrooms more than during the previous observation period (page 28) and student test scores showed better results for the bilingual classes than the monolingual ones (page 26), especially in reading (page 37).

After three years of disappointing results with the SMCs, ARED officially changed its strategy to work directly with community fora, groups that have some relationship with the SMCs, but are not necessarily within the formal education system (and to whom the inspectors are not "gatekeepers.") ARED found these groups to be a better channel for communicating their message to families and communities (pages 15-18).

10. Associates in Research and Evaluation for Development. (2017, November 30). *Support project for quality education in mother tongues for primary schools in Senegal: Annual Report, January 1, 2017-November 30, 2017.* **Dakar, Senegal: ARED.**

During this period, the biggest spike in activity was book production with 17,573 books produced, validated, printed & distributed (page 5). On the political scene, the presidential mandate was reduced from 7 to 5 years, a high council of territorial communities was established and official status was developed for the head of the opposition. Economic growth was 6.6%, West Africa's second best (page 6). The poverty rate, however, remained high at 46.7%. This rate dropped only 1.8% between 2006 and 2011 with poverty more highly concentrated in rural areas (page 7). The program continued to cover 101 3rd grade classes, reaching 4047 pupils in 98 schools (page 13).

This report discussed the change in strategy for engaging communities/SMCs. SMCs were set up by Presidential Order in July of 2014 with the mission to strengthen relations between schools and communities. The are appointed by school inspectors and operate under Voluntary Action Plans (page 15). Previous reports documented the difficulties ARED faced when attempting to engage the SMCs.

This report detailed how they implemented a training program for these groups on their roles and responsibilities within the bilingual education program to educate and enthuse the community and provide direct support to the program (page 15). Before these training forums, ARED organized preparatory meetings within each target community to share information with the inspectors, install a technical community of headmasters and inspectors, inform the SMCs of the importance of the forums, set up organizing committees and give a preliminary report on the project (page 16). The forums gave ARED a chance to present the bilingual program in more detail, present the framework of the SMCs, identify the difficulties facing SMCs and form working groups and convince communities to get involved (page 16). These fora led to the functional establishment of SMCs in the target communities, along with voluntary action plans that included the integration of the bilingual program. Examples are provided of specific supports the SMCs gave to the programs once they were established and functional (page 18).

ARED notes that there is a wide gap in activity between the two communities/SMCs that received this training and the others (page 17). Later in the report (page 33), ARED reports training 10 SMCs using their new approach with the following results:

- SMCs are more aware of their level of involvement in school activities
- SMC members are empowered to take part in managing the education system at a grassroots level
- SMCs recognize the need for good governance and accountability in the management of resources
- The SMC members have better ownership of the bilingual program and its requirements

From these accounts it seems that, if engaging and empowering SMCs and/or similar community groups is included in a scale up plan, significant resources would have to be devoted to training.

This report also summarizes the EGRA/EGMA tests given to a sample of 500 students in the bilingual program and 500 in a control group. The students in the bilingual program scored slightly better than those in the control group (see page 27 for details).

ARED's visibility continued to grow this year. The National Basic Education Week focused on using national languages in primary schools and publicly launched the "Reading Nation" program books and participated in several conferences and fora related to books and education (page 37). ARED reported being on track to meet all of its targets except one which was quite ambitious in the first place (a difference of 25.3 points on the EGRA/EGMA tests between control and experimental groups). They are pleased with the other test score results, but note that more focus is needed on teacher supervision and the involvement of SMCs (page 38-39).

11. Associates in Research and Evaluation for Development. (2018, August 15). *Support project for quality education in mother tongues for primary schools in Senegal: Progress report, December 1, 2017-June 15, 2018.* **Dakar, Senegal: ARED.**

This report reads as an end-of-project report, however, the project was extended for one year, so it is actually a progress report. Nonetheless, there are several key items to note:

Beginning in 2016/17, the country has been implementing a "Reading for All" program, funded by USAID and contracted to CHEMONICS. ARED is a subcontractor to CHEMONICS. Their role is to "share expertise in developing modules and providing training, prepare and conduct formative assessments of tools designed for teachers and pupils, and develop norms for pupils and teachers" (page 8). They were also asked to develop textbooks for the first and second grade components (page 8). The subcontract from CHEMONICS to implement "Reading for All" is for $2.7 million over 4 years.

The report states that the program has reached 10,500 pupils since December 2014 and of these, 6453 pupils completed their 4-year bilingual cycle. The program currently covers 101 3rd grade bilingual classes and reaches 4047 pupils, 76.9% in Wolof/French classes and 23.1 in Pulaar/French classes. ARED has worked with 208 teachers, 98 headmasters, 98 school management committees, and 28 inspectors. This year, 101 teachers are involved (page 9).

There is a discussion of SMCs worth noting as working with this group has been the thorniest part of the project. ARED noted a big gap in commitment between SMCs that have received training and those that haven't. They also noted that communities with community fora preceding SMC trainings enhanced community ownership of the program (page 18). Community fora plus SMCs seem to have the best results, although the only data cited are examples with no empirical comparisons (page 18).

ARED continued to build its presence in Senegal and abroad by attending the Trust Africa International Workshop, the 3rd International Conference of the Global Partnership for Education, and the Global Teacher Prize (page 21). The trip to Dubai yielded other important contacts as well. Dubai Cares' CEO followed up on a discussion begun in Dakar several weeks earlier where he told ARED that he hopes that ARED will become Dubai Cares' implementing agency in Senegal (page 21). He also met the Mayor of Kaolack and said that he would support the Kaolack commune in particular and asked ARED to submit a concept note on how to improve access to basic education for underprivileged children in the Kaolack Commune (page 22). ARED also met with the Varkey Foundation and left with two ideas to explore—initiating a Bilingual Education Prize for teachers and setting up a distance learning system for bilingual teachers based on a similar program in Ghana. This project would reach 4000 teachers once implemented (page 23).

12. Associates in Research and Evaluation for Development. (2018, December 10). *Support project for quality education in mother tongues for primary schools in Senegal: Final Report, December 1, 2014-November 30, 2018.* **Dakar, Senegal: ARED.**

This final report summarized many of the issues and themes detailed in previous reports. The tables on pages 15-19 summarized the activities carried out and their impacts. On page 18 we see that the program's "ultimate outcome" which was that "students who follow the ARED bilingual model demonstrate superior mastery in reading, math, and ESVS (math and social studies) at the end of the program was met, however, they fell short of the "target" difference, meaning that the difference between the two groups was not as great as was hoped for.

This target was set when the updated PMP was approved in 2015, one year into the project, though it's unclear on what basis it was set. Page 30, point 6.7, notes that when objectives were being set for the PMP there was some confusion between the variances (set objectives) and the performance values obtained (reading and arithmetic) in the baseline. This is not explored further.

In addition about half of the intermediate outcomes related to implementation of the model by teachers and usage of materials were met, but those that were not, were fairly close to the targets.

There is some discussion on page 25 about the variation in the magnitude of difference between language and communication and arithmetic, suggesting that the bilingual approach makes more of a positive impact on language and communication than arithmetic, but this has not been fully analyzed.

Mobility of teachers and pupils is discussed as a major implementation difficulty beyond ARED's control. Because the program invests so much in teacher training when a teacher, headmaster, or inspector moves, a gap is created as the new person does not have the training the previous one received. Students also leave school for a variety of reasons beyond ARED's control. ARED strongly encouraged its schools and collaborators to be transparent about this mobility so that it could be taken into account for monitoring and evaluation purposes (page 29).

Two change requests were made over the course of the project—the first in 2015 to develop and consolidate a monitoring and evaluation plan (detailed above) and the second in 2017 to re-allocate the gains from exchange rate variations to extend the program for an extra academic year so that current 3rd graders could continue the bilingual curriculum into 4th grade (pages 34-35).

- Desk study 2: Review and analyze available assessment data (ARED reading, math, ESVS; additional Government-mandated assessment data, if appropriate; EGRA and EGMA) relevant to evaluate learner outcomes in recent years at the national level and especially in the ARED implementation areas. Compare the assessments if/as feasible.

In addition to collecting primary data, MWAI also reviewed ARED assessment data including language and communication, math, ESVS and CFEE data. MWAI specifically analyzed data from trimester 3 in 2016-2017, 2017-2018, and the CFEE 2018 data from pupils in Dakar, Kaolack, and Saint-Louis, as these data were most relevant to evaluate learner outcomes in recent years at the national level in ARED implementation areas. MWAI also reviewed the EGRA and EGMA data collected by ARED and external evaluators since the beginning of the program. Below is a detailed description of this desk review, results, and limitations.

1) National standardized assessments

Description of national assessment test, sample, and research questions
As part of the program performance monitoring and evaluation plan, ARED incorporated standardized assessments used by the Ministry of National Education (MEN) to support the measurement of learning outcomes (ARED, 2015). ARED collected and analyzed the official standardized assessments in French to evaluate numeracy, literacy and ESVS organized by the Education and Training Inspectorates (IEF) each quarter for all students, as compared against students who participated in the standard French-based curriculum (ARED, 2015).

For the third trimester of 2017 and 2018, standardized evaluations were used to assess bilingual and monolingual classes in each IEF district. To select the traditional (or control) classes, ARED first chose traditional classes that were at the same schools as the bilingual schools (if possible). Otherwise, ARED chose monolingual classes that were closest to the bilingual classes as a control (e.g., CM2 school Taiba Niassene and the CM2 school Taiba Niassene 2). The standardized national assessments tested students on language and communication (with sub-tests of grammar, conjugation, vocabulary, spelling, reading, and writing); math (sub-tests included digital activities, measurement, geometry, and problem solving) and ESVS (sub-tests included history, geography, sciences, living together, and living in the environment). Each sub-test was scored on a range of 0-10, and the sub-tests were then averaged to create an average for language and communication, math, and ESVS. The following demographic data were also collected at the classroom level: region, urban/rural, bilingual/traditional, class size, and number of students who took the tests. Focal point inspectors completed the data sheets and submitted these to ARED. ARED staff then entered the data into Excel by classroom and analyzed (calculating average scores in reading and arithmetic, first calculating the percent averages of school averages scored in term 3 at every IEF).

In the final progress report, ARED stated the bilingual pupils outperformed pupils in the traditional classroom, students taught in Wolof outperformed students taught in Pulaar,

and bilingual pupils in urban areas outperformed bilingual pupils in rural areas (ARED, 2018). While ARED reported averages and percentages by sub-group, the statistical significance and effect size (measuring the magnitude of the effect) remained unclear.

Thus, MWAI conducted additional analyses on the third trimester 2016-2017 and 2017-2018 national assessment data to answer the following questions:
1. In trimester 3 of 2017 and 2018, what were the significant and meaningful differences (if any) between bilingual and traditional classes in terms of average classroom performance on language and communication, math, and ESVS?
2. How did average classroom performance scores on language and communication, math, and ESVS vary by urban/rural (and for bilingual classes) Wolof/Pulaar?

Data analysis
MWA cleaned the data in Excel and analyzed the data in SPSS. MWAI first ran descriptive statistics on all variables. To assess differences between bilingual/traditional classes, Wolof/Pulaar, and urban/rural, MWAI calculated t-tests. If a t-test was significant, MWAI then calculated Cohen's d as a means of effect size to assess meaningfulness as well as statistical significance, using the guidelines of $d < .2$ as a small effect, $.21 < d < .50$ as a medium effect, and $d > .50$ as a large effect (Utts & Heckard, 2006).

Results
2016-2017 data
National standardized assessment data were collected from 119 classrooms in during the third trimester of 2016-2017. The region and type of classrooms where data were collected are outlined in the figure below. Of the 119 classrooms, 22 were traditional classrooms in rural areas, 31 were traditional classrooms in urban areas, 34 were bilingual classrooms in rural areas, and 32 were bilingual classrooms in urban areas. Of the 66 bilingual classrooms, 20 were taught in Pulaar and 46 were taught in Wolof.
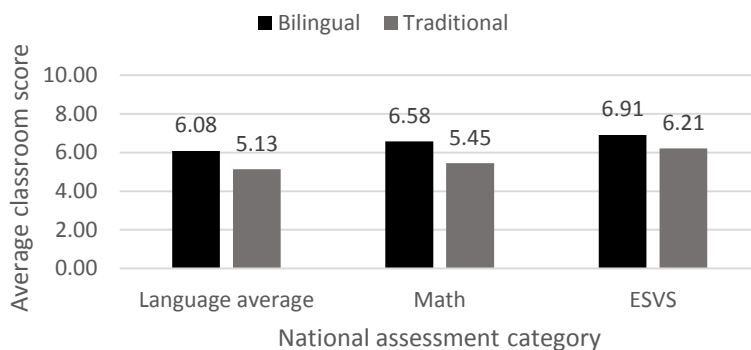
Figure 2: 2016-2017 Trimester 3 student performance data (number of classrooms by type and region)

In analyzing the average classroom scores on the third trimester national assessments from 2017, the bilingual classrooms outperformed the non-bilingual classrooms on all

sub-tests with significant and meaningful differences (medium or large) except for conjugation, spelling, living together, and living in the environment. When looking at overall averages for language (averaging scores from Grammar, Conjugation, Vocabulary, and Spelling for each classroom), bilingual classrooms (M = 6.07, sd = 1.17) scored higher than traditional classrooms (M = 5.13, sd = 0.97) and this difference was significant with a large effect size (t = -4.724, p < .001, d = 0.90). Results were similar for the average math scores, as bilingual classrooms (M = 6.58, sd = 1.28) scored higher than traditional classrooms (M = 5.44, sd = 1.00 and this difference was significant with a large effect size (t = -5.264, p < .001, d = 1.01). Bilingual classrooms also outperformed traditional classrooms in average ESVS scores, as bilingual classrooms averaged 6.91 (sd = 1.26), while traditional classrooms averaged 6.21 (sd = 1.22; t = -3.028, p =.003, d = 0.57; see Figure 2. These findings enhance ARED's reports noting the differences between bilingual classrooms and traditional classrooms are significant with large effect sizes (d > .50).
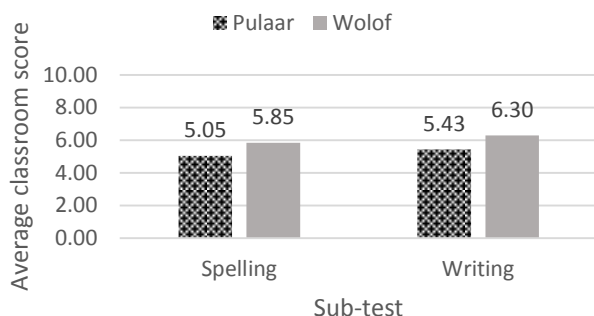
Figure 3: Significant differences on average National Assessment Scores for Trimester 3 2016-2017 by classroom type (bilingual n=66, traditional n=52)

MWAI also analyzed the bilingual classroom data to determine any differences in national assessment scores by language taught (Pulaar or Wolof). In previous reports, ARED stated that Wolof classrooms scored higher than Pulaar classrooms on language and communication and arithmetic, but there were no details on statistical significance or effect size, and it was unclear what data ARED analyzed (year and trimester; ARED, 2018). Using the 2016-2017 trimester 3 data, MWAI found that, on average, students in Wolof classrooms (M = 6.30, sd = 1.71) scored higher on the spelling sub-test than students in Pulaar classrooms (M = 5.42, sd = 1.32) and this difference was significant with a large effect (t = -2.042, p = .045, d = .61; see Figure 4). Wolof classrooms had significantly more students in class than Pulaar classrooms (Wolof M = 51.69, sd = 30.57; Pulaar M = 20.95, sd = 7.8) and this difference was significant with a large effect size (t = -4.416, p <.001, d = 1.71). Similarly, Wolof classrooms had significantly more students present on the day of the test than Pulaar classrooms (Wolof M = 50.60, sd = 30.43; Pulaar M = 19.85, sd = 7.74) and again this difference had a large effect size (t = -4.437, p <.001, d = 1.72). All other sub-tests and overall combined average scores (language/communication, math, and ESVS) did not differ significantly by Pulaar and Wolof classrooms.
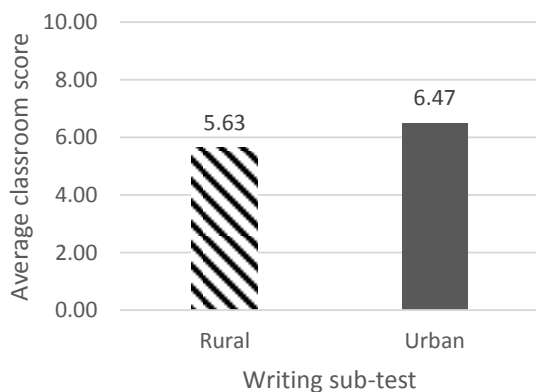
Figure 4: Significant and meaningful differences on sub-tests by language of bilingual classroom, Trimester 3 2016-2017 (Pulaar n=20, Wolof n=46)

Lastly, MWAI analyzed these data to determine any differences in *bilingual* classrooms by urban and rural classrooms. ARED reported that bilingual students in urban areas on average scored higher in language and communication and arithmetic than bilingual pupils in the rural areas (yet it was not clear which year/trimester of data ARED analyzed). Results from the MWAI t-tests using the 2016-2017 trimester 3 data showed that urban classrooms scored significantly higher (M = 6.47, sd = 1.70) than rural classrooms (M = 5.63, sd = 1.51) on the writing sub-test only, and this difference was significant with a large effect size (t = -2.135, p = .037, d = .52; see Figure 5). Similar to Wolof/Pulaar comparisons, bilingual urban classrooms had significantly more students in class than bilingual rural classrooms (Bilingual urban M = 59.19, sd = 33.54; Bilingual rural M = 26.76, sd = 11.73) and this difference was significant with a large effect size (t = -5.297, p <.001, d = 1.27). Similarly, bilingual urban classrooms had significantly more students present on the day of the test than bilingual rural classrooms (Bilingual urban M = 58.61, sd = 33.34; Bilingual rural M = 25.21, sd = 10.37) and again this significant difference had a large effect size (t = -5.559, p <.001, d = 1.33). All other sub-tests and overall combined average scores (language/communication, math, and ESVS) did not differ significantly for bilingual classrooms by urban/rural.
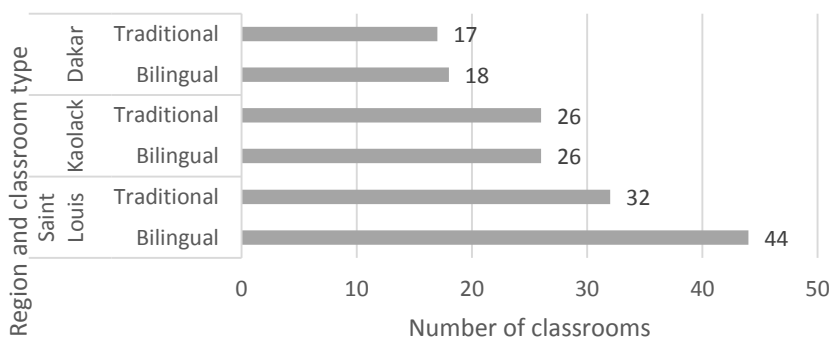
Figure 5: Significant and meaningful differences on sub-tests by urbanicity of bilingual classroom, Trimester 3 2016-2017 (Rural n=34, Urban n=32)
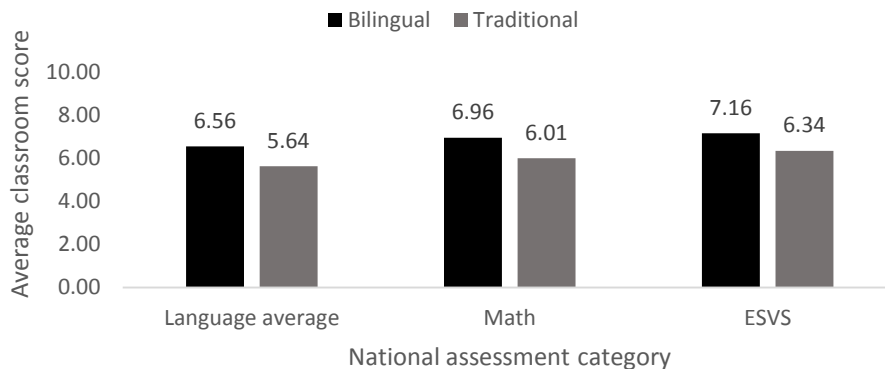
2017-2018 data

National standardized assessment data were also collected from 163 classrooms in the third trimester of 2017-2018. The region and type of classrooms where data were collected are outlined in the figure below. Of the 163 classrooms, 38 classrooms were traditional in rural areas, 37 were traditional in urban areas, 50 were bilingual in rural areas, and 38 were bilingual in urban areas. Of the 88 bilingual classrooms, 37 were taught in Pulaar and 51 were taught in Wolof.

Figure 6: 2017-2018 Trimester 3 student performance data (number of classrooms by type and region)
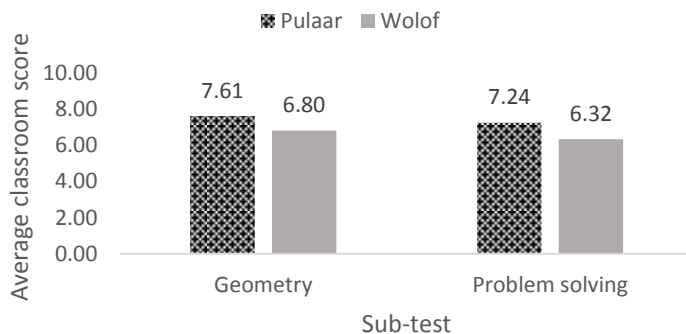

In analyzing the average classroom scores on the third trimester national assessments from 2018, bilingual classrooms had a significantly fewer students, as an average of 37 students in bilingual classrooms were in attendance and took the exam, while traditional classrooms had, on average, 45 students ($t = 2.403$ $p = .017$, $d = -.38$). The bilingual classrooms outperformed the non-bilingual classrooms on *every* sub-test (and differences were statistically significant and with medium to large effect sizes, data upon request). When looking at overall averages for language (averaging scores from Grammar, Conjugation, Vocabulary, and Spelling for each classroom), bilingual classrooms ($M = 6.56$, $sd = 1.35$) scored higher than traditional classrooms ($M = 5.64$, $sd = 0.93$) and this difference was significant with a large effect size ($t = -5.014$ $p < .001$, $d = 0.81$). Results were similar for the average math scores, as bilingual classrooms ($M = 6.96$, $sd = 1.24$) scored higher than traditional classrooms ($M = 6.01$, $sd = 0.93$) and this difference was significant with a large effect size ($t = -5.456$ $p < .001$, $d = 0.88$). Bilingual classrooms also outperformed traditional classrooms in average ESVS scores, as bilingual classrooms averaged 7.16 ($sd = 1.16$), while traditional classrooms averaged 6.34 ($sd = 0.89$; $t = -4.98$, $p < .001$, $d = 0.80$; see Figure 7). These findings enhance ARED's reports noting the differences between bilingual classrooms and traditional classrooms are significant with medium or large effect sizes. In addition, these results show how, over time, the difference between bilingual and non-bilingual pupils remains strong.

Figure 7: Significant differences on average National Assessment Scores for Trimester 3 2017-2018 by classroom type (bilingual n=87, traditional n=75)

MWAI also analyzed the bilingual classroom data to determine any differences in national assessment scores by language taught (Pulaar or Wolof). In contrast to the 2016-2017 trimester 3 data, for the trimester 3 data from 2017-2018, MWAI found that, on average, students in Pulaar classrooms ($M = 7.61$, $sd = 1.47$) scored higher on the geometry sub-test than students in Wolof classrooms ($M = 6.80$, $sd = 1.32$), and this difference was significant with a large effect ($t = 2.730$, $p = .008$, $d = -.58$). In addition, on average, students in Pulaar classrooms ($M = 7.24$, $sd = 1.53$) scored higher on the problem-solving sub-test than students in Wolof classrooms ($M = 6.32$, $sd = 1.47$), and this difference was significant with a large effect ($t = 2.844$, $p = .006$, $d = -.61$; see Figure 8). All other sub-tests and overall combined average scores (language/communication, math, and ESVS) did not differ significantly by Pulaar and Wolof classrooms. Class sizes and attendance also significantly differed in Pulaar classrooms versus Wolof classrooms in trimester 3 of 2017-2018. Pulaar classrooms had an average of 24.58 students ($sd = 8.01$) while Wolof classrooms had an average of 47.27 students ($sd = 26.33$), and this difference was significant and meaningful ($t = -5.002$, $p < .001$, $d = 1.26$).
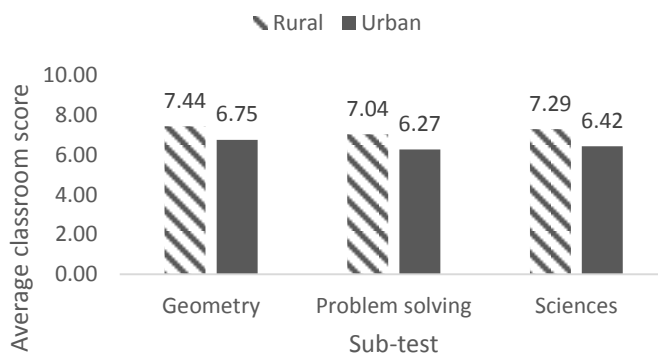
Figure 8: Significant and meaningful differences on sub-tests by language of bilingual classroom, Trimester 3 2017-2018 (Pulaar n=37, Wolof n=51)

Lastly, MWAI analyzed these data to determine any differences in bilingual classrooms by urban and rural classrooms. Results from the MWAI t-tests of the trimester 3 2017-2018 data showed that urban classrooms scored significantly lower ($M = 6.75$, $sd =$

91

1.23) than rural classrooms ($M = 7.44$, $sd = 1.52$) on the geography sub-test, and this difference was significant with a large effect size ($t = 2.923$, $p = .024$, $d = -.51$; see Figure 9). Similarly, when analyzing the problem-solving sub-test, urban classrooms scored significantly lower ($M = 6.27$, $sd = 1.54$) than rural classrooms ($M = 7.04$, $sd = 1.50$), and this difference was significant with a large effect size ($t = 2.374$, $p = .020$, $d = -.51$). When looking at the sciences sub-test, urban classrooms scored significantly lower ($M = 6.61$, $sd = 1.41$) than urban classrooms ($M = 7.29$, $sd = 1.66$), and this difference was significant with a medium effect size ($t = 2.033$, $p = .045$, $d = -.45$). All other sub-tests and overall combined average scores (language/communication, math, and ESVS) did not differ significantly for bilingual classrooems by urban/rural. Class sizes and attendance also significantly differed in bilingual urban and bilingual rural classrooms in trimester 3 of 2017-2018. Urban classrooms had an average of 51 students in attendance taking the exam ($sd = 27.49$) while rural classrooms had on average 26 students taking the exam ($sd = 9.16$), and this difference was significant and meaningful ($t = -5.88$, $p < .001$, $d = 1.15$).

Figure 9: Significant and meaningful differences on sub-tests by urbanicity of bilingual classroom, Trimester 3 2017-2018 (Rural n=50, Urban n=38)

Limitations
The quarterly assessment data are limited in the following ways:
1. The data were collected and analyzed at the classroom level and did not follow bilingual students individually. The ARED evaluation coordinator noted that while most students in each class had participated in the bilingual program in previous years, on average there were five to six students who were not in bilingual programs in the past; thus, the bilingual classrooms oftentimes included students who had not participated in bilingual education previously.
2. Both class sizes and attendance (the number of students taking the exams) varied in trimester 3 when comparing bilingual/nonbilingual (2017-2018 only), Pulaar/Wolof, and bilingual urban/bilingual rural, as traditional classes (2017-2018), Wolof classes (2016-2017 and 2017-2018), and bilingual urban classes (2016-2017 and 2017-2018) had significantly more students. so class size may be an important variable to take into consideration when interpreting test results.
3. As these tests vary from one year to another, MWAI was not able to analyze change over time (as the test items and ranges changed).

92

4. Qualitative data indicated that there was disparity in results by IEFs (for instance the 3 IEFs in Kaolack). Yet, the samples of classrooms per IEF were too small to run analyses to determine any differences statistically by IEF (e.g., there is data from only 5 bilingual and 5 traditional classrooms in the Kaoloack commune in 2018 and 2017).

2) CFEE data

Brief description of CFEE test, sample, and research questions
The CFEE (Certificate of Elementary Completion) is the end of primary school national exam, given at the end of CM2 (grade 6). This exam is the first national exam that primary children take, and if a student passes the CFEE, they can then go further to secondary school. CFEE data were collected from both ARED bilingual classrooms and traditional classrooms. To select the traditional (control) classes, ARED first chose traditional classes that were at the same schools as the bilingual schools (if possible). Otherwise, ARED chose monolingual classes that were closest to the bilingual classes as a control (e.g., CM2 school Taiba Niassene and the CM2 school Taiba Niassene 2). From previous CFEE data, ARED reported that two students from Ndoffane 2 School, grade 4 who were supposed to be in grade 5 (CM1) went directly to grade 6 (CM2) after they passed all the tests and exams of the CFEE (ARED, 2016a). MWAI did not review any ARED reports with analysis or results/interpretations of the CFEE 2018 data, so MWAI analyzed these data to see if they help explain differences among bilingual classrooms and students who participated in bilingual education from CE to CE2.

Thus, MWAI conducted additional analyses on the 2018 CFEE data to answer the following questions:
1. Did pass rates between bilingual and traditional classes differ on the CFEE in 2018?
2. Did students who participated in bilingual education from CI to CE2 perform significantly better on the CFEE than students who did not participate solely in bilingual education from CI to CE2?

Data analysis
MWA cleaned the data in Excel and analyzed the data in SPSS. MWAI first ran descriptive statistics on all variables. MWAI also calculated the following variables:
- Number of students in each class were traditionally taught from CE to CE2 (Total number of students – total number of bilingual students)
- Number of students who were traditionally taught who passed the CFEE in each class (total number of students who passed – total number of bilingual students who passed)
- Overall pass rate for each class (total # of students who passed / total students in class)
- Bilingual student pass rate (total number of bilingual students who passed the CFEE / total number of bilingual students in the class) * 100

- Traditionally-taught student pass rate (total number of traditionally-taught students who passed the CFEE / total number of traditionally-taught students in the class) * 100

To assess difference in pass rates between bilingual and non-bilingual classrooms, MWAI conducted t-tests. If a t-test was significant, MWAI then calculated Cohen's d as a means of effect size to assess meaningfulness as well as statistical significance, using the guidelines of $d < .2$ as a small effect, $.21 < d < .50$ as a medium effect, and $d > .50$ as a large effect (Utts & Heckard, 2006).

To assess the difference in pass rates in bilingual classrooms only between students who participated in bilingual ed from CI to CE2 and students who participated in traditional classrooms (as students were mixed in 2018), MWAI ran a Wilcoxon signed-rank test (the non-parametric equivalent to a dependent sample t-test). MWAI used a non-parametric test because the number of bilingual and nonbilingual students in each class varied greatly between and among classes). For any significant Wilcoxon test, MWAI also calculated effect size using the criterion of $r < .30$ as a small effect, $.31 < r < .50$ is a medium effect, and $r = .50$ or greater is a large effect (Field, 2009).
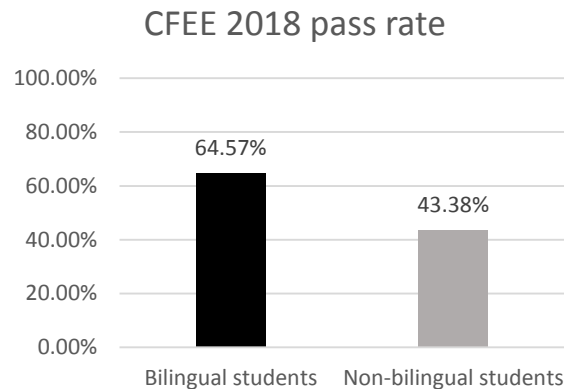
Results of CFEE analysis

CFEE data were collected from 119 classrooms in 2018. To select the control classes, ARED first chose traditional classes that were at the same schools as the bilingual schools (if possible). Otherwise, ARED chose monolingual classes that were closest to the bilingual classes as a control (e.g., CM2 school Taiba Niassene and the CM2 school Taiba Niassene 2). It is important to note that from 2017-2018, all classes were taught traditionally (as the ARED program was terminated after 2016-2017). Yet, it was hypothesized that the effects of participating in ARED's program in CI to CE2 would influence performance on CFEE; thus, MWAI analyzed the 2018 CFEE data to explore this hypothesis. Data were collected from 4 classrooms in Dakar, 41 classrooms in Kaolack, and 74 classrooms in Saint-Louis.

Of the total 119 classrooms, 68 classrooms were taught by a bilingually trained teacher (35 Pulaar, 33 Wolof), while 51 classrooms were taught by a traditionally trained teacher. When comparing at the classroom level, MWAI found that there was not a statistically significant difference between pass rates for bilingual and traditional classrooms on the 2018 CFEE exam (bilingual $M = 55.35$, $sd = 23.85$; traditional $M = 57.3$, $sd = 22.01$; $t = 0.46$, $p = .648$). When examining the pass rates between *students* who participated in bilingual programming from CI to CE2 compared to students who did not participate in bilingual programming from CI to CE2, interesting differences emerge (which are masked in the larger classroom pass rates, as bilingual and non-bilingual students were mixed into class together in 2018). Of the total 119 classrooms, 68 classrooms had at least one student who participated in bilingual education from CI to CE2, while 105 classrooms had at least one student who did was traditionally-taught from from CI to CE2. Students who participated in bilingual education from CI to CE2 had significantly higher pass rates on the 2018 CFEE ($M = 64.57$, $sd = 26.09$) than students who did *not* participate in bilingual education from CI to CE2 ($M = 43.38$, $sd =$

29.46) and this difference had a medium effect size ($z = -4.81$, $p < .001$; $r = -0.37$; see Figure 10).

CFEE 2018 pass rate

Limitations

As the ARED program was discontinued in 2017-2018, students who previously participated in bilingual education were mixed in classes with students who had participated in traditional education. More sophisticated analyses could be run with additional student-level data (e.g., differences by female/male students, language spoken at home, other important student-level variables) to more deeply understand factors that affect success of bilingual education in relation to CFEE scores.

3) EGRA and EGMA

EGRA and EGMA assessments were conducted in December 2014, November 2016 and May 2017 with 500 pupils in bilingual classrooms and 500 pupils in traditional French classrooms from the three project regions. First, an external baseline evaluation of the new 101 classes was conducted using the EGRA and EGMA by the National Institute for Studies and Action for the Development of Education (INEADE), a body of the National Education Ministry in charge of evaluations in the education sector (ARED narrative report, 2015). The evaluation was quasi-experimental in nature, surveying 500 students in bilingual classrooms and 500 students in traditional French classrooms (10 students randomly selected from one experimental and control classes at 50 schools). ARED then attempted to follow these classrooms in November 2016 and May 2017 by administering EGRA and EGMA tests.

In December 2014, INEADE reported a low global average of 26.81 points, with the bilingual classes scoring 27.95 and the control classes scoring 25.67 (the difference between groups was not significant) (ARED progress report, 2015; INEADE, 2015). The average math score was 29.96, with the control classes scoring 30.1 and the bilingual classes scoring 29.83 (and again this difference was not significant) (INEADE rapport, 2015). Dakar (42.11) scored higher than Saint-Louis (24.19), and boys (29.66) scored higher than girls (26.39). This external evaluation cited learning conditions, such as

temporary shelters, location (urban/rural), and teacher education were all related to scores. Since INEADE ran significance tests on these data and included these tests in the report, MWAI did not see value-added of re-running analyses for this report.

ARED then conducted additional EGRA/EGMA assessments in November 2016 and May 2017. ARED reported that, for the second EGRA exam in November 2016, on average the bilingual classes scored 21.17 points higher for reading, 14.96 higher for letter reading, 10.49 for invented words, and 9.58 for familiar words (ARED, 2016b). The average score on the EGMA for bilingual classes was 54.29 compared to 51.45 for the control classes. Yet, 228 of the 1000 students were absent on the day of the test, which may have affected results (ARED, 2016b).

ARED conducted the final EGRA and EGMA tests in May 2017 (ARED, 2018b). In the final progress report, ARED noted that the experimental classes outperformed the control classes in both November 2016 and May 2017 on the arithmetic test based on the EGMA protocol, increasing the variance from November 2016 to May 2017. Overall scores on the EGRA were noted (see Table 5 below). Yet, ARED noted significant change in the sample over time (3.9% repeated and 9.8% dropped out – see MEN Report 2016). While it would be interesting to conduct further analyses on these data (e.g., to determine statistical significance and effect size), because of the limitations of EGRA/EGMA testing, MWAI focused time and efforts analyzing MWAI writing assessment data rather than re-analyzing previous EGRA and EGMA data.

Table 5: EGRA results from 2014-2017 for control versus experimental groups

Period	Control class	Experimental class	Variance
INEADE baseline 2014	25.67	27.65	1.98
November 2016	29.09	43.13	14.04
May 2017	50.30	60.90	10.6

Conclusion
This secondary analysis of ARED's most recent monitoring data from the ARED implementation areas shows that students who participated in ARED's bilingual education program from CE to CE2 had significantly higher pass rates on the 2018 CFEE than students who did not participate in bilingual education from CE to CE2. In addition, bilingual classrooms outperformed non-bilingual classrooms on almost all national assessment tests for language and communication, math, and ESVS in trimester 3 of 2016-2017 – this difference grew in trimester 2 of 2017-2018, as ARED bilingual classrooms outperformed non-bilingual classrooms on *every subtest*. There was no clear pattern when comparing Wolof and Pulaar classrooms or urban and rural classrooms, as significant differences on subtests changed from one year to the next, suggesting that other factors (e.g., class sizes, teacher training, teacher's home language spoken at home, etc.) may also be influencing national assessment scores.

Description of writing assessment test, sample, and research questions
In addition to the interviews and focus groups, MWAI administered a writing assessment in both L1 (either Wolof or Pulaar, the language of the ARED bilingual program at the specific school) and L2 (French) to document bilingual and traditional learners' progress in developing literacy skills in both languages, as well as to provide diagnostic information related to teaching, learning, and policymaking.

Adapted from Benson's work in Cambodia (Benson, forthcoming) the writing assessment asked students to complete the following prompt: "*One night, I dreamed that…*". The prompt was both explained to the class and written on the board in the L1, which was assessed first. Each student received one piece of lined paper and data collectors recorded each student's name, sex (female/male), and if they were taught bilingually from CI to CE2 (yes/no). Following the L1 assessment, students were asked to turn over the paper and write about a different dream in French, with the same prompt then written on the board in French.

By analyzing the writing assessments, MWAI attempted to answer the following research questions:
1. How do L1 scores differ between bilingually taught students and traditionally taught students?
   Sub-question: Are there any differences by male/female, region, urban/rural, or students taught in Pulaar vs. Wolof?

2. How do L2 scores differ between bilingually taught students and traditionally taught students?
   Sub-question: Are there any differences by male/female, region, urban/rural, or students taught in Pulaar vs. Wolof?

3. What are the similarities and differences in L1 and L2 writing assessment scores?
   Sub-question: If and how do L1 and L2 writing assessment scores differ for different groups (overall, bilingual only, traditional, female, male, bilingual female, bilingual male, traditional female, traditional male, urban, rural, bilingual urban, bilingual rural, traditional urban, traditional rural, Pulaar-taught students, and Wolof-taught students)?

MWAI collected the writing assessment data in November of 2018 from 10 classrooms of CM1 (year 5) students in 10 schools (one classroom per school), which represented a range of school districts and regions in which ARED's bilingual model was implemented. Since most of the bilingual students had completed the four-year bilingual program the year before, they had been joined in all but one school by differing numbers of students who had gone through the traditional program. All classrooms were assessed in both L1 (Pulaar or Wolof, depending on the language used for ARED's bilingual model) and L2 (French). That meant that traditionally educated

learners were asked to write in their L1 – even though they had not technically been taught literacy in that language. The research team assessed all students in L1 in order to learn the extent to which students could write in the L1 to gauge if and how they might transfer what they had learned in French to their L1, possibly due to spillover from bilingual teaching.

Data analysis
To analyze the assessments, the research team translated the L1 assessments into French or English, analyzed the complexity of sentences, and assigned a score to each individual student assessment. The same was done for the L2 French assessments by research team members who were proficient in French.

Table 6: Writing assessment codes and description

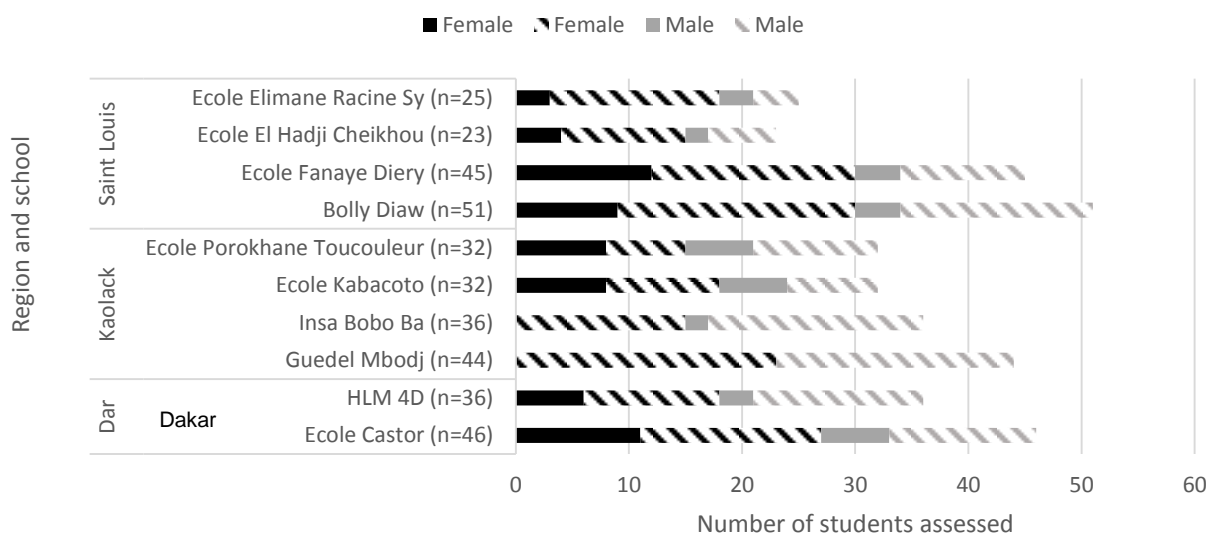| Code	Description
14	Multiple sentences (medium to long) with few/no errors (0-2 errors)
13	Multiple sentences (medium to long) with some errors (3-4 errors)
12	Multiple sentences (medium to long) with many errors (5+ errors)
11	Multiple sentences (short) with few/no errors (0-2 errors)
10	Multiple sentences (short) with some errors (3-4 errors)
9	Multiple sentences (short) with many errors (5+ errors)
8	Long sentence with few/no errors (0-2 errors)
7	Long sentence with some errors (3-4 errors)
6	Long sentence with many errors (5+ errors)
5	Short sentence with few/no errors (0-2 errors)
4	Short sentence with some errors (3-4 errors)
3	Short sentence with many errors (5+ errors)
2	A few words with meaning
1	Appear to be copied from environment
0	Nothing or unintelligible

The research team then conducted the statistical analyses of the assessments. The team cleaned the data in Excel and analyzed the data in SPSS. First, the team ran descriptive statistics on all variables (statistics available upon request). To answer the first and second research questions and assess differences between bilingual/traditional classes, male/female, urban/rural, and Pulaar/Wolof, the team then calculated independent samples t-tests. To answer the third research question (differences between L1 and L2 scores), the team calculated dependent samples t-tests. If a t-test was significant ($p < .05$), MWAI then calculated Cohen's d as a means of effect size to assess meaningfulness as well as statistical significance, using the guidelines of $d < .2$ as a small effect, $.21 < d < .50$ as a medium effect, and $d > .50$ as a large effect (Utts & Heckard, 2006). MWAI also calculated a Pearson's correlation for the third research question. To calculate differences by region, MWAI conducted Kruskal-Wallis tests (the non-parametric equivalent of the one-way independent ANOVA) as a conservative analysis; as the data by region had unequal sample sizes and greater variability, statisticians recommend using the KW test instead of the t-test, because "when groups with larger sample sizes have smaller variances than the groups with smaller sample

sizes, the resulting *F*-ratio tends to be liberal" (Field, 2009, p. 360). If the K-W test was significant (*p* <.05), Mann-Whitney (MW) tests were run as post-hoc tests to determine which groups differed, applying the Bonferroni correction (.05/# of tests run). The MW tests were considered statistically significant if *p* <.017 (due to the 3 tests to compare all regions). For any significant MW test, MWAI also calculated the effect size *r,* using the criterion of *r* < .30 as a small effect, .31< *r* < .50 is a medium effect, and *r* = .50 or greater is a large effect.

Results

MWAI collected writing assessment data from 386 students (209 females, 162 males, and 15 unknown) in 10 schools (2 schools in Dakar, 4 schools in Kaolack, and 4 schools in Saint-Louis). Of the 386 students, 83 were attending school in Dakar, 158 were attending school in Kaolack, and 145 were attending school in Saint-Louis (for a total of 239 in urban locations and 147 in rural locations). In addition, 273 were taught bilingually (97 were taught traditionally), and 209 were females (161 were males). See Figure 11 for a detailed breakdown of students by sex and bilingual/traditional by school.

Figure 11: Number of students assessed by school, bilingual/traditional, and sex (n=370)

Research question 1: How do L1 scores differ between bilingually taught students and traditionally taught students?

MWAI scored the L1 and L2 writing assessments on a range of 0-14 (0 being illegible, 14 being multiple sentences (medium to long) with 0-2 errors. The overall mean for the L1 writing assessment was 7.95 (long sentence with few to no errors), demonstrating the degree to which CM1 students surveyed could express themselves in writing Wolof or Pulaar.
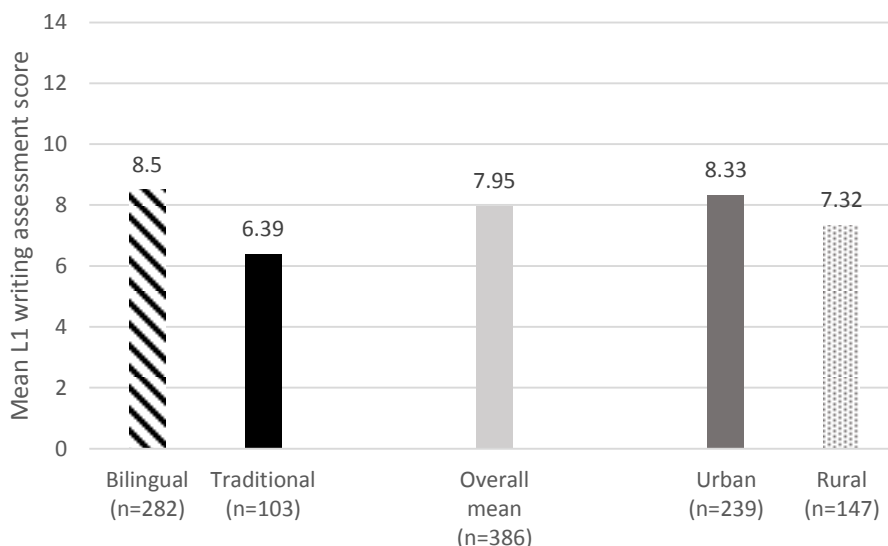
L1 writing assessment data showed that bilingual students (*M* = 8.50, *sd* = 4.52) scored higher than traditional students (*M* = 6.39, *sd* = 4.47), and this difference was

99

statistically significant and moderately meaningful ($t = $ -4.000, $p < .001$, $d = 0.47$). This demonstrates that students educated bilingually in these sample schools had significantly better L1 writing results than those in traditional programs for this sample.

When analyzing the L1 scores by male/female, there were no significant differences overall, nor were there significant differences between bilingual males and bilingual females L1 scores or traditionally taught males vs. traditionally taught females L1 scores for this sample of ARED schools.

Overall, for this sample of schools, students attending schools in urban areas ($M = 8.33$, $sd = 4.66$) scored higher on the L1 writing assessment than students in rural areas ($M = 7.32$, $sd = 4.64$), and this difference was significant and moderately meaningful ($t = $ -2.082, $p = .038$, $d = 0.22$; see Figure 12). When examining bilingual students only, there were no differences on L1 scores among urban ($M = 8.59$, $sd = 4.55$), and rural areas ($M = 8.31$, $sd = 4.46$, t -0.484, $p = .629$). When examining traditional students only, there was no statistical difference among urban and rural (possibly because of the smaller sample sizes, traditional urban $M = 7.19$, $sd = 4.93$; traditional rural $M = 5.71$, $sd = 4.51$; $t = $ -1.586, $p = .116$), nor were there differences among urban and rural areas when looking at traditional students only.

Figure 12: L1 writing assessment scores overall, bilingual/traditional, and by urban/rural
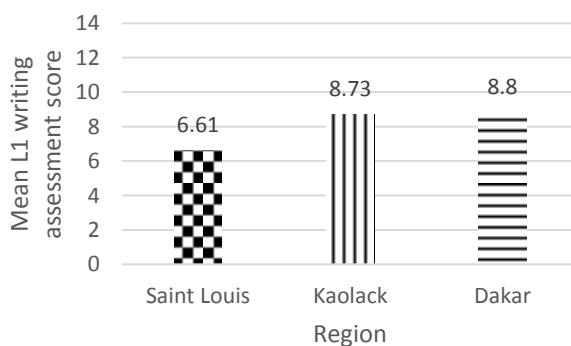

In addition, when comparing bilingual students only, there was no difference in L1 scores between students from schools where ARED taught in Pulaar versus students from schools where ARED taught in Wolof. This would suggest that ARED's model is equally effective when teaching in Pulaar and Wolof in this sample of schools.

When analyzing differences by region, Saint-Louis students scored lower (Saint-Louis $M = 6.61$, $sd = 4.57$) than both Dakar ($M = 8.80$, $sd = 5.05$) and Kaolack students ($M = 8.73$, $sd = 4.28$), and these differences were significant and moderately meaningful ($KW = 22.31$, $p < .001$; Saint-Louis/Dakar $z = $ -3.708, $p < .001$, $r = $ -.25; Saint-Louis/Kaolack z

= -4.191, $p < .001$, $r = -.24$; see Figure 13). Similar patterns emerged when looking at differences among *bilingual* students only by region – Saint-Louis students scored significantly lower (Saint-Louis $M = 7.53$, $sd = 4.39$) than both Dakar ($M = 9.14$, $sd = 5.03$) and Kaolack students ($M = 9.02$, $sd = 4.27$), and these differences were significant with medium and small effect sizes ($KW = 10.64$, $p = .005$; Saint-Louis/Dakar $z = -2.66$, $p = .008$, $r = -.21$; Saint-Louis/Kaolack $z = -2.74$, $p = .006$, $r = -.18$). Again, when looking at *traditional* students only by region, Saint-Louis students scored significantly lower (Saint-Louis $M = 4.27$, $sd = 4.23$) than both Dakar ($M = 7.85$, $sd = 5.07$) and Kaolack students ($M = 7.75$, $sd = 4.25$), and these differences were significant with medium and small effect sizes ($KW = 15.14$, $p = .001$; Saint-Louis/Dakar $z = -2.66$, $p = .008$, $r = -.21$; Saint-Louis/Kaolack $z = -2.74$, $p = .006$, $r = -.18$). These results suggest that, for this sample of schools, other mediating factors may be affecting the lower L1 results from both traditional and bilingually taught students in Saint-Louis (e.g., individual teachers and/or learners' exposure outside the classroom, and/or families proficiencies in the L1 or L2).
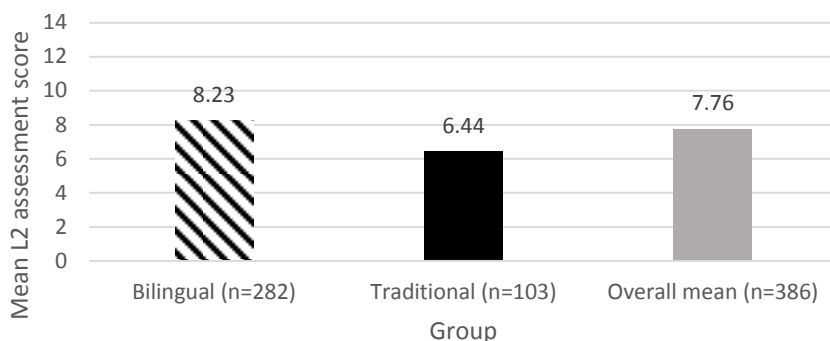
Figure 13: L1 mean writing assessment score by region (n=386)

Research Question 2: How do L2 scores differ between bilingually taught students and traditionally taught students?

The overall mean score for the L2 writing assessment was 7.76 (range 0-14) for this sample of schools. Similar to the L1 results, bilingually taught students scored significantly higher ($M = 8.23$, $sd = 3.68$) than traditionally taught students ($M = 6.44$, $sd = 4.07$), and this difference was moderately meaningful ($t = -4.12$, $p < .001$, $d = 0.45$; see Figure 14). This means that ARED's bilingual model did not disadvantage students in their learning of French for this school sample; on the contrary, bilingually taught students seemed to have an advantage in French (as they scored higher than traditionally taught students on this assessment in these specific schools). This finding complements other research on bilingual education which has found that investment in L1 literacy creates positive effects on L2 literacy due to interlinguistic transfer (Cummins, 2009).
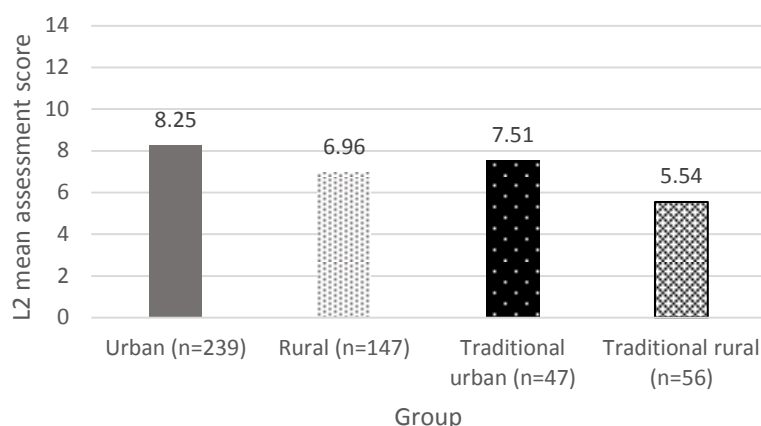
Figure 14: L2 writing assessment scores by bilingual/traditional and overall

Also similar to the L1 results, there were no significant differences in L2 scores by male/female overall, or by female/male within the bilingual or traditional categories for this specific sample (see the accompanying documents, Appendix D). Again, this suggests that the effects of ARED's bilingual model outweighed any effects experienced by being female or male for this sample. More representative data is needed to see if this trend persists for the larger sample of ARED students/classrooms.

On the L2 writing assessment, students in this sample attending schools in urban areas ($M = 8.25$, $sd = 3.54$) scored higher than students in rural areas ($M = 6.96$, $sd = 4.23$), and this difference was significant and moderately meaningful ($t = -3.219$, $p = .001$, $d = 0.32$; see Figure 15). When examining bilingual students only, there were no differences between L2 assessment scores among students from rural and urban areas. Yet, when examining traditional students only, there was a significant and moderately meaningful difference on the L2 exam, as traditional urban students scored higher ($M = 7.51$, $sd = 3.59$) than traditional rural students ($M = 5.54$, $sd = 4.26$; $t = -2.516$, $p = .013$, $d = 0.50$). Since there was a significant difference among traditionally taught urban and rural students on the L2 assessment in this sample, but not between bilingually taught urban and rural students on the L2 assessment, this suggests the bilingual approach helps mitigate intermediate factors (such as living in an urban location) that may affect literacy success in L2 (French) for this sample. Further research could reveal if then trend persists in a larger sample of ARED classrooms, and whether the bilingual approach also mitigates other intermediate factors (e.g., teacher experience or level of education).

Similar to L1, when comparing bilingual students only, for this sample of schools, there was no difference in L2 scores between students taught in Pulaar versus students taught in Wolof, indicating that students taught in Pulaar and Wolof performed equally well in the French writing assessment.

In contrast to the L1 writing assessment results, there were no significant differences by region on the L2 writing assessment scores, indicating that students overall across the three regions had similar writing abilities in French. Yet, when analyzing L2 writing assessment scores from *bilingual* students only, interesting results emerged. Bilingual students in Saint-Louis had significantly *higher* L2 writing assessment results Saint-Louis $M = 8.92$, $sd = 3.68$) than Kaolack (Kaloack $M = 7.56$, $sd = 3.78$), and this difference was significant with a small effect size ($KW = 7.96$, $p = .019$; Saint-Louis/Kaolack $z = -2.72$, $p = .007$, $r = -.18$). This contrasts the L1 writing assessment results, where Saint-Louis students (bilingual and traditional) scored significantly lower than Kaolack for this sample of schools. To understand the difference, additional details on the Ministry's programming in Saint-Louis during the corresponding year will be needed.

Research Question 3: What are the differences in L1 and L2 writing assessment scores?

When looking at L1 scores compared to L2 scores for each student in this sample of schools, there were *no* significant differences among any groups, showing that students did not score significantly different on the L1 and L2 assessments. MWAI compared L1 scores to L2 scores for the overall sample, bilingual students only, traditional students only, females only, males only, bilingual females only, bilingual males only, traditional females only, traditional males only, urban only, rural only, bilingual urban only, bilingual rural only, traditional urban only, traditional rural only, Pulaar students only, and Wolof students only and found *no* significant differences between L1 and L2 scores. In addition, there was a significant, positive correlation between L1 scores and L2 scores ($R = .425$, $p < .001$) for the overall sample. These findings suggest that, for this sample of students, regardless of bilingual/traditional teaching, sex, urban/rural location, and

language students were taught in (Pulaar and Wolof), students' abilities to write in Pulaar/Wolof and French were similar for this writing assessment.

Limitations
These findings should be interpreted with caution for the following reasons:
- The research team was not able to gather data from a representative sample of ARED schools/classrooms, so these findings are limited to this sample only. More data/research is needed to examine if these trends persist for the wider sample of schools where ARED has worked.
- The writing assessment was administered only once, and the findings would be strengthened with multiple prompts analyzed in a similar manner to gauge students' writing on a variety of subjects/days.
- While the translations were completed by proficient speakers, they were not back-translated to check for meaning and discuss discrepancies among assistants.
.

The first part of this annex lists four technical recommendations that are based on the analysis of the field team's data. Following the technical recommendations is a series of examples (e.g., comparison/contrast charts), which can be adapted to promote teaching for transfer in the bilingual classroom.

Technical recommendations

1. Addressing possible misunderstandings of interlinguistic transfer

Some educators seemed to misunderstand transfer between L1 and French, that is, they thought all teaching had to be done in both languages, or that the L1 might cause errors in French. Actually, learners transfer all kinds of linguistic knowledge between their languages, and often apply aspects of their stronger language to make guesses about how their new language functions; this may appear to be an error, or "interference" of the L1, but it is evidence that learners are using all of their resources and that they just need to learn which aspects of the two languages are similar or different. It may be that some educators are misled by the "simultaneous" nature of the model, and the scheduling of equal time in each language, believing that each aspect of the L1 has an "equivalence" in French, but this is of course not true. One teacher actually explained quite clearly that equivalence between Wolof and French is not always possible:

> *Il y a des contenus qui existent en français mais qui n'existent pas en wolof. Par exemple…il n'y a pas d'homophones dans la langue wolof. Il faut tout simplement faire cette leçon dans la langue française. Tu ne peux pas commencer avec la langue wolof. Au niveau de la conjugaison, les temps composés… bon les élèves comprennent le passé en wolof, la terminaison 'on' mais si tu entres dans les temps composés… avec l'auxiliaire, il y avait des difficultés.[xxxv]*

> There are contents that exist in French but do not exist in Wolof. For example…there are no homophones in Wolof. We simply have to teach this lesson in French. You cannot start with the Wolof language. At the level of conjugation, the compound verbs... well the students understand the past in Wolof, the ending "on" but if you enter the compound past... with the auxiliary, there are difficulties.

This should be viewed rather that each language has features that the other does not have, and that these are not "difficulties" but simply "differences" between the two languages, differences that should be explicitly taught to students.

Another concern is that educators may consider French the reference language, as this inspector seems to suggest:

> *Une autre difficulté, c'est la terminologie en langues. Il y a des réalités qui ne sont pas très bien assimilées. Il n'y a pas de problèmes en français mais il y a des difficultés en grammaire en wolof; difficiles notions dans les langues nationales.[xxxvi]*

> Another difficulty is language terminology. There are realities that are not very well assimilated. There are no problems in French but there are difficulties in grammar in Wolof; difficult notions in national languages.

From this viewpoint, educators may find aspects of national languages challenging when they are different from French, the language in which those educators had studied. Both languages are resources, and trainers and teachers must be encouraged to see them as such – to allow for mistakes as part of the learning process, and to develop pedagogical strategies that promote transfer between the national language and French. (See below for ideas for comparison/contrast charts to promote teaching for transfer.) As bilingual education evolves in Senegal, teachers will develop better understandings themselves of their own languages and of how to compare and contrast national languages with French to promote interlinguistic transfer.

2. Using the L1 for assessment of learning outcomes

As mentioned above, the MWAI field research team found that L1 had been assessed to some extent in the early years, but that L1 assessment was not used formally by MEN or by ARED. MWAI would suggest that it is important to assess language and literacy skills as well as non-linguistic content in the L1 as well as in French, for several reasons:

1. Due to interlinguistic transfer, learners who have well developed L1 literacy will have similarly well-developed French literacy, while those with difficulties in the L1 need remediation so that they have strong skills to transfer to French;
2. A bilingual curriculum includes competencies in both languages that should be taught and assessed;
3. A bilingual curriculum relies heavily on L1 communication in the early years to teach academic content, and it is most valid to assess that content using the medium of instruction (or using both languages).

There are a number of examples of bilingual assessments for non-linguistic content areas. One possible format has been piloted in science classrooms in Cape Town, South Africa using ixiXhosa and English in what is called a side-by-side assessment, where the same questions are written in both languages, one language on each side of the page, and learners can answer on either side (see Annex L). Importantly, as long as the answer is understandable, it is not corrected for spelling or grammar, but for the content of the answer. This makes sense because the teacher needs to know if learners understand or can apply the science content of the lessons.

It is common for bilingual programs to focus on the dominant language, often forgetting that the learning foundation built in the L1 is well worthy of assessment. Therefore, the lack of L1 use for assessment in the program was one of the expected issues encountered. Hence, the team conducted a writing assessment that it had developed in L1 and French with 15 CM1 classes, and why the non-bilingual students in those classes were kept for comparison purposes. The recommendation here is that bilingual

teachers do continuous as well as summative assessment in the L1 as well as in French.

Assessing writing is useful because it demonstrates the literacy skills that learners have acquired and where they still need to learn orthographic conventions, for example. Asking learners to write their own thoughts or experiences promotes self-expression and ensures that their written work is not simply copied from classroom print. Analysis of errors allows teachers to see what skills need to be taught or re-taught. Benson's work (2016-present) with writing assessments in Cambodia has also demonstrated their value for:

- *Diagnosis of literacy development stages*: The differences between grades 2 and 3, including the number of spelling issues, show that children are still learning writing conventions in L1 and that teachers need to pay more attention to writing based on sound-letter correspondence.
- *Comparison of bilingual and non-bilingual learners*: Bilingual learners in grade 2 wrote more complex ideas than non-bilingual learners in grade 3. This is a relatively easy way to demonstrate what learners gain from using their L1 for initial and continuing literacy.
- *Positively influencing literacy teaching and learning:* Even though this assessment was out of the ordinary, simply conducting it encouraged bilingual trainers and teachers to consider using more in-class writing activities.

In the context of ARED's bilingual model, the results of the writing assessment suggest that while some of the above effects were visible, the fact that many CM1 students still had difficulty writing their own thoughts in the L1 suggests that teachers need to develop strategies to encourage productive linguistic skills (speaking and writing) in both languages. This also suggests that ARED might include in trainings and in the teachers' guides a set of strategies to expand on productive skills in both L1 and French, as described next.

3. Expanding on writing strategies in L1 and L2

As mentioned above, the writing assessments demonstrate that while bilingual learners have some advantages, they clearly lack experience expressing themselves in writing. The L1 potentially allows self-expression to be developed right from the early years, since learners can already communicate orally in the L1. Some reasons that teachers may not teach the productive skills of speaking and writing are: that they come from teacher-directed pedagogical traditions, that they are accustomed to using French which blocks communication, that they have large classes, and/or that they are not familiar with strategies that encourage learners to express themselves orally or in writing.

Simple strategies for facilitating oral expression include asking open questions, or questions for which there is no right or wrong answer. Asking learners to describe routines or tell about a family member's special skill are other strategies. Storytelling and story reading can be used to ask learners to predict what might happen or invent an

ending. In all of these cases, the focus is discussion, interaction and meaning-making rather than on perfection. It seems that the focus may be on correct pronunciation, for example when a school director spoke about the differences between u and ou.[xxxvii]

At the end of this annex ("Examples of oral L1 competencies") are excerpts from Malone (2015), who suggests a set of indicators or competencies (based on the Thai national curriculum) to promote oral expression in L1. Those focusing on **accuracy** give teachers an opportunity to correct students, while those focusing on **meaning** give learners an opportunity to learn from making mistakes. Many skills could transfer from L1 to L2 as vocabulary develops in both languages.

Malone's work to promote a two-track approach could be useful to ARED, both for the teachers' guides and for the trainings. Seeing literacy as having two tracks, an **accuracy** track and a **meaning** track, helps teachers to know when to correct students and when to allow them to learn from their mistakes and express themselves. Annex N contains a basic list of materials for language development from Malone (2007) that lists the types of materials useful to teach skills focusing on accuracy and skills focusing on meaning. It is important for teachers to understand that dictation is only one small activity in writing, which would be found in the accuracy track. The team noted that ARED's (2013) *Guide de Lecture Pulaar et Wolof, Etape 1* gave very limited instructions about teaching writing, mentioning that it should be "participative" (p. 27) but working mainly on "*remediation graphophonologique*" (remediation of letter-sound correspondence) and dictation.

4. Promoting bilingual methodology for teaching non-linguistic content

As mentioned above in the results section, teachers' comments about the "simultaneous" aspects of the bilingual model and the need for "equivalent terminology" in the L1 and French seemed to indicate that they were trying to teach each subject in both languages, as well as searching for similarities to promote transfer. This comment from an inspector is an example, of which there were several:

> *Au niveau de la préparation, beaucoup de gens ont soulevé ce problème. Les maîtres quelque fois qu'ils pensaient que c'était un double travail. Préparer la fiche bilingue, ils travaillaient sur les deux langues et ils pensaient que c'était un double emploi.[xxxviii]*

> In terms of preparation, many people have raised this issue. The teachers sometimes thought it was a double job. To prepare their bilingual lesson, they worked in the two languages and they thought it was double the work.

In a bilingual approach, things do not have to be done twice; the actual content may be learned through one language or the other, with the acknowledgement that new terms may be introduced in the language that is less familiar (French in this case). There are a number of bilingual methods and strategies for teaching non-linguistic curricular content. Two simple and related ones are known as Preview-Review and Alternate Days; both could be considered "sandwich" methods because they often start and end with learners' strongest languages but use the additional language in between. Preview-Review takes place within a single content lesson, often observing these steps:

In the L1	In the L2	In the L1
Discuss the main ideas of the lesson, connecting it to learners' experiences and putting reference ideas (images, vocabulary) on the board.	Teach the actual content of the lesson, developing new vocabulary by using the images on the board and/or new images in the textbook.	Check for understanding and link ideas back to the text, the references on the board and learners' experiences.

The Alternate Day approach takes a similar strategy but uses one language per day for a content lesson, for example a math lesson as in the following:
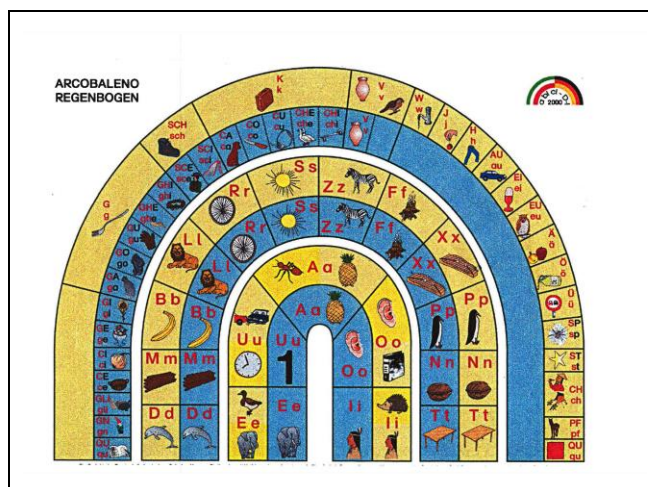
Monday	Tuesday	Wednesday
In the L1	In the L2	In the L1
Teach the new concepts of the math lesson, connecting them to learners' experiences, practicing, and checking for understanding.	Practice the new concepts again using L2 terminology, and if learners are following the lesson, extend the content further.	Check for understanding of the concepts and extended content, and re-teach if necessary.

[Repeat steps] |

Ideas for comparison/contrast charts to promote teaching for transfer

Transfer between languages, particularly when it is based on foundational literacy skills in the L1 or a familiar language, can be promoted through explicit teaching of certain linguistic features. Comparison and contrast between the learners' languages and literacies help them build on what they know while calling attention to key similarities and differences between their languages. Contrastive charts serve as teaching aids and references on the classroom walls.

For example, when introducing literacy in both the national language and in French, it is helpful to have an alphabet in each—as well as a contrastive alphabet chart. The figure below shows a creative example from an Italian (represented in blue) and German (represented in yellow) bilingual program. The shared graphemes, phonemes and keywords are presented in the two inner arches, while the outer arch contrasts the language-specific phonemes and/or graphemes. This chart can be used as a reference; for example, it has been used in a "show and tell" session where children brought something from home and needed to find the initial letter/sound of the word in each language and notice if they were the same or different.

Rainbow dual language contrastive chart to promote explicit teaching of certain literacy skills

In countries with three languages in their primary program, contrastive charts are even more useful; for example, the figure below shows charts from a Rajbanshi-Nepali-English program in Nepal on sentence structure and "question" words that would support L2 and L3 lessons on what these languages have in common with and how they are different from the L1. Such charts could also serve as references for learners doing exercises or working on their own.

Contrastive grammar chart examples

Sentence structure
L1 S – O – V . Subject-Object-Verb
L2 S – O – V . Subject-Object-Verb
L3 S – V – O . Subject-Verb-Object

Question structure
L1 S – O – V ? Subject-Object-Verb
L2 S – O – V ? Subject-Object-Verb
L3 V – S – V – O ? Verb-Subject-Verb-Object

Key vocabulary chart

L1	L2	L3	Calls for:
(fill in)	…	Who	*person*
…	…	What	*thing*
…	…	When	*time*
…	…	Where	*place*
…	…	Why	*reason*
…	…	How	*way*

Example of a bilingual content test

Gr 5 Side-by-side science test from Cape Town, South Africa (English/isiXhosa)
Learners can chose the language of response to any question.

a. Pollination and Fertilisation in plants	**a. uMvumvuzelo kunye noQhamiso kwizityalo**
Sexual reproduction in plants	Amalungu esizalo kwizityalo
Pollination is the process of getting pollen from an anther to a stigma. When a pollen grain lands on a stigma, it grows a tube down the style to the eggs. One pollen grain fertilises each egg.	Umvumvuzelo (pollination) yinkqubo apho umungu (pollen) osuka kwi-antari yesityalo othi ungene kwi-stigma okanye isamkeli-mungu. Xa iinkozo zomungu zingenile kwisakheli-mungu zithi zikhule zibe yityhubhu ukuhla ngoluthi-lwesityalo (style) ukuya emaqandeni. Ukhozo lomungu luthi luqhamise (fertilize) iqanda ngalinye lwesityalo.
Pollen moves from anther to stigma in two main ways. It is either blown by wind, or it is carried by insects or birds. Wind, insects and birds are called pollinators.	Umungu (pollen) uhamba ngeendlela ezimbini ezingundoqo. Uthi uphetshethwe ngumoya okanye uthathwe zizinambuzane neentaka. Loo ke ithetha ukuthi umoya, izinambuzane neentaka zizimvumvuzeli (pollinators)
b. Key words	**b. Isigama esibalulekileyo**
Pollination Pollinators Pollen Stigma Style Eggs Ovary Fertilisation	Umvumvuzelo Izimvumvuzeli Umungu I-stigma (I-sakheli-mungu) Uluthi-lwesityalo Amaqanda I-ovari (isizalo) Uqhamiso
c. Assessment	**c. Uvavanyo**
1. How does pollination happen? 2. What is a female part in plants called? 3. Work in groups. How does pollination get from one place to another? Bring different kinds of flowers into the classroom. Compare the appearance of the flowers.	1. Lwenzeka njani na umvumvuzelo kwityalo? 2. Leliphi ilungu lobumama kwizityalo? 3. Sebenzani ngokwamaqela. Chazani ukuba lwenzeka njani na umvumvuzelo okanye I-polineyshini kwizityalo? Yizani neentlobo-ntlobo zentyatyambo kwigumbi lenu lokufunda nize nithelekise inkangeleko yeentyatyambo.

Source: Plüddemann, Peter; Braam, Daryl; October, Michellé & Wababa, Zola (2004) Dual-medium and parallel-medium schooling in the Western Cape: From default to design. PRAESA Occasional Papers No. 17. Cape Town: PRAESA. http://www.praesa.org.za/wp-content/uploads/2017/01/Paper17.pdf

Examples of oral L1 competencies

INTRODUCTION TO SCHOOL LIF

Thai MOE standards for KG, general	MLE-specific learning outcomes: The students will	Indicators—focus on meaning [M] and focus on accuracy [A] The students will demonstrate that they have achieved this outcome when they…
I.1 Have self-discipline; take responsibility; follow agreed-upon actions	Understand and follow classroom rules	1. Listen to classroom rules and then summarize the rules [M][1] 2. Help formulate classroom rules [M] 3. Participate in tidying up the classroom and keeping it clean [M] 4. Follow rules correctly [A]
I.1 Have self-discipline; take responsibility; follow agreed-upon actions	Understand school "culture" feel comfortable interacting with students, teachers in the classroom	5. Know the names of other students and teacher [M] 6. Come to school regularly and on time (no special activity) 7. Take responsibility for helping keep the classroom neat & tidy 8. Listen attentively and respond appropriately to the T's[2] questions, directions and requests (no special activity) [M] 9. Use the proper procedure and terms to ask for permission to enter and leave class [A] 10. Use classroom materials appropriately [M] 11. Follow proper procedures for before-school activities [A]
3.1 Work enthusiastically 3.3 Work well with others	Interact appropriately, confidently and fluently with teacher, classmates, others in the classroom	12. Show interest in what other students are saying [M] 13. Listen and contribute to large and small group discussions / activities [M] 14. Help peers who don't understand or are having trouble with procedures [M] 15. Use proper terms for greetings and goodbye [A]

ORAL LI

From Thai MOE standards for KG, general	MLE-specific learning outcomes: The students will	Indicators—focus on meaning and focus on accuracy: The students will demonstrate that they have achieved this competency when they
5.3 Have good communication skills	Understand and use basic LI rules for speaking and listening	1. Use LI vocabulary accurately to talk about familiar topics (school, family, community) [A] 2. Speak clearly and fluently [A] 3. Use correct grammar, pronunciation and tone when talking about familiar topics [A] 4. Use tone of voice that is appropriate for different purposes [A] 5. Use correct words to describe time, location, and people when relating a story or experience. [A]
5.3 Have good communication skills 5.7 Able to relate knowledge and skills	Interact (listening and speaking) confidently and accurately in conversations about familiar topics (school, family, community)	6. Understand and use language for questions, explain, solve problems [M] 7. Describe relationships among family members, people in the community [M] 8. Describes objects of interest to the class [M] 9. Listen to LI stories and then talk about the characters OR act out the story OR re-tell the story OR change the ending of the story [M] 10. Draw a picture and then tell the "story" in their picture [M] 11. Give simple description of events that they have experienced [M] 12. Create and tell an original story [M] 13. Express ideas, thoughts, expectations clearly when talking about familiar topics [M] 14. Answer open-ended (how and why) questions confidently [M]
No MOET competencies for this learning outcome	Have a basic knowledge of LI language structure and sound system	15. Identify different sounds in the environment [A] 16. Join with others in the class to say words that have the same sounds [A] 17. Listen to several words that have the same beginning, middle and end sounds and identify the sound that is the same in all 3 words [A] 18. Listen to several words that are the same except for one feature (initial sound, tone, etc.) and identify the difference [Ex: cat / hat] [A] 19. Listen to T and be able to identify the same rhyming words [A] 20. Be able to answer questions from the listening story [M] 21. Participate with friends in the story that is told [M]

Source: Malone, Susan (2015) ACTIVITIES RESOURCE BOOK: LANGUAGE EDUCATION Mother Tongue (L1)-Based Multilingual Education (Early grades). https://www.sil-lead.org/susanmalone

Basic list of materials for language development component in Mother-Tongue-based MLE

Susan Malone 2007

Focus on meaning / focus on accuracy:

	Emphasis: meaning and communication (focus on whole texts)	Emphasis: accuracy and correctness (focus on parts of the language)
Listening	Listen in order to understand, think critically	Recognize and distinguish sounds, recognize parts of words
Speaking	Speak with understanding to communicate knowledge, ideas, experiences	Use correct vocabulary, pronunciation, grammar
Reading	Read for meaning and understanding in order to apply, analyze, evaluate texts, create new knowledge	Decode texts by recognizing letters, syllables, tone marks, syntax, grammar
Writing	Write to communicate knowledge, ideas, experiences, goals	Form letters, words, sentences, paragraphs properly and neatly; spell words accurately; use correct grammar

Materials for meaning and accuracy

Focus ▶	L1		L2	
	Meaning	Correctness	Meaning	Correctness
Listening	Listening stories		TPR Guide	
Speaking	Pictures of familiar activities, places		Pictures of familiar activities, places; L1 Picture Books without text	
Reading	Graded reading materials starting with Picture Story Books (no text)	Pre-reading, pre-writing activities; L1 alphabet chart; alphabet books; L1 primer	Diglot stories, graded L2 reading materials	L2 alphabet chart; alphabet books; Transfer primer for L2 alphabet
Writing	Exercise books for creative writing	Workbooks	Exercise books for creative writing	Workbooks

PLUS:

- List of L2 terms that the students need to learn as they gain basic interpersonal communication skills in L2
- List of L2 terms from the textbooks (math, science, etc.) that the students will need to learn as they begin using L2 as one of the languages of instruction.
- Lesson plans for each component
- Teachers' Guides with explanations for each of the activities in the Lesson Plan

Malone, Susan (2007) Basic list of materials for language development component in mother tongue-based MLE..
https://www.sil-lead.org/susanmalone

Annex O: Stakeholders' perceived comparative advantages of bilingual education

Type of advantage	#	Representative comments
Success of bilingual vs. traditional learners	26	*Les enfants bilingues ont toujours de meilleurs résultats.*[xxxix] Bilingual children always have better results. [Inspector] *ARED est venu à un point nommé pour adresser le problème crucial de la lecture. Si on regarde la première génération, on a les résultats très satisfaisants des CM2- presque 90% de réussite. Ces enfants sont plus forts. Ces élèves savent décoder et décortiquer les textes.*[xl] ARED has come to perfect moment to address the crucial issue of reading. If we look at the first generation, we have the very satisfactory results of [last year's] CM2 [sixth year] - almost 90% success rate. These children are stronger. These students know how to decode and dissect texts. [School director] *Par rapport aux élèves, on a toujours comparé les classes bilingues aux classes traditionnelles et on a constaté que les classes bilingues étaient au dessus des classes traditionnelles.*[xli] In relation to students, bilingual classes have always been compared to traditional classes and it has been found that bilingual classes are above traditional classes. [School director] *Tu as des enfants extraordinaires, tous les élèves sont passées. Il y a eu un taux de réussite de 100%. Tous les élèves qui ont fait ARED dans mon école sont partis ! Mais ils ont réussi en masse.*[xlii] You have extraordinary children, all of the students have passed. There was a 100% success rate. All the students who did ARED in my school have left [gone on to secondary]! But they succeeded en masse. [School director]
Joy in learning in bilingual education	26	*Les enfants se sentaient bien en L1. Ils aimaient bien la lecture.*[xliii] The children felt good in L1. They really loved reading. [Bilingual teacher] *L'apprentissage du pulaar éveille la conscience et il donne de la sagesse.*[xliv] Learning in Pulaar awakens our consciousness and gives us wisdom. [Bilingual student]
Better quality learning	31	*La façon dont les élèves ARED lisent, c'est différent des autres élèves. On remarque ça. La fluidité, la compréhension et même la vitesse, ils lisent aisément et ce, depuis le CP.*[xlv] The way that ARED students read is different from other students. We have noticed that. The fluidity, the understanding and even the speed, they read easily and this [has been happening] since the second year. *Je viens d'arriver dans cette école l'année dernière mais j'ai beaucoup apprécié cette classe ARED. Très bénéfique. Cette classe là, excellait dans toutes les matières, la lecture, qui est l'entrée dans l'apprentissage, les mathématiques. J'ai comparé la classe bilingue avec la classe non bilingue et j'ai observé comment la maîtresse enseignait et je voyais une nette différence. Ce n'était pas la même chose. Là, la compréhension était trop difficile à cause du français dans la classe non bilingue et dans les classes bilingues, c'était trop facile.*[xlvi] I just arrived at this school last year but I really appreciate this ARED class. Very beneficial. This class excelled in all subjects, reading, which is the entry into learning, mathematics. I compared the bilingual class with the non-bilingual

		class and observed how the teacher taught and I saw a clear difference. It was not the same thing. There, comprehension was too difficult because of the French in the non-bilingual class and in the bilingual classes, it is so easy. [New school director]
Participation in class	13	*Il y a la participation des élèves. Les élèves écoutent leurs camarades et participent sans problème.*[xlvii] There is student participation. The students listen to their classmates and participate without problem. [Bilingual teacher] [When asked whose L1 was the strongest, teacher or students:] *On était les plus forts parce que dès fois on rectifiait les erreurs de notre maîtresse.*[xlviii] We were the strongest because sometimes we corrected our teacher's mistakes. [Bilingual student]
Under-standing	42	*[Les élèves] comprennent vite et résoudent les exercices facilement. Il n'y a plus de barrière linguistique.*[xlix] [The students] understand right away and solve their exercises easily. There is no more language barrier. [Bilingual teacher] *Même les élèves peuvent avoir des blocages en français mais si on leur fait des exercices en wolof, on a 100% dans la classe. Ils participent en wolof et ils écrivent les problèmes, les opérations en wolof.*[l] The students can even have blockages in French but if we do exercises in Wolof, we have 100% in the class. They participate in Wolof and they write the problems, the operations in Wolof. [Bilingual teacher]
Meta-linguistic awareness	15	*Les enfants reconnaissait aussi les fautes dans les émissions de télé qui utilisent le français pour écrire en wolof. Les émissions de télé ont pleins de fautes en wolof. Par exemple, en wolof, le **g** c'est [comme **g** de dog en anglais) et le **k** à la télé, ils écrivent **kh** alors que ça doit être **x** ou **q**.*[li] The children also recognized mistakes in TV shows that use French to write in Wolof. TV shows are full of mistakes in Wolof. For example, in Wolof, the **g** is [like **g** in dog in English) and the **k** on TV, they write as **kh** when it should be **x** or **q**. [School director] *Le son **é** en français s'écrit sans accent en wolof et quand il s'agit du son **e** il s'écrit comme suite **ë** en wolof et **gn** comme dans consi**gn**e s'écrit avec un **n** tildé (ñ).*[lii] The sound in French is written without accent in Wolof and when it is the sound **e** it is written as **ë** in Wolof and **gn** as in consi**gn**e is written with an **n** tildé (ñ). [Bilingual students]

The field data showed that most stakeholders did not think that LPT was anything like bilingual education; they saw the differences and preferred ARED's model, as shown in Table A6 below. The MWAI team's fieldnotes showed 31 coded mentions of discontent with the LPT program, with additional mentions embedded within conversations coded other topics (e.g., calls for implementing bilingual education throughout the country). Most often stakeholders themselves raised the issue of LPT, frequently comparing the program unfavorably with ARED's bilingual model, as shown in the table. Much of the dissatisfaction seems to have been experienced at the school and family levels, due to the disruption of bilingual education. Inspectors and education officials expressed the desire to implement educational programs that are consistent and beneficial for students.

Table A6: Comments regarding *Lecture Pour Tous*

Reasons given for disliking LPT	Representative comments
Teacher-centered pedagogy	*Enseignant 1: Et puis ici, c'est le maître qui est au centre des acquis.* *Enseignant 2: L'autonomie de l'enfant n'est pas respectée.*[liii] Teacher 1: And then here [regarding LPT], it is the teacher who is at the centre of teaching. Teacher 2: The child's autonomy is not respected.
Prescribed lesson plans	*Enseignant: L'autre différence c'est que avec LPT, il faut suivre les manuels à la lettre alors que avec ARED, ils nous laissaient libres avec les leçons.*[liv] Teacher: The other difference is that with LPT, you have to follow the manuals to the letter, whereas with ARED, they left us free to plan our lessons.
Outdated pedagogy	*Directeur: C'est la façon, c'est la pédagogie du modelage dirigée. C'est à dire, rien ne vient de l'élève. Tout vient du maître. Voilà. Moi j'ai déploré ça. J'ai dit qu'on a connu la pédagogie par le contenu. La PPO, la pédagogie par objectifs. Aujourd'hui on veut revenir encore… (rires)*[lv] Director: It's the way, the pedagogy of directed modelling. That is, nothing comes from the student. Everything comes from the teacher. There you go. I deplored that. I said that we have known pedagogy through content. [This is] PPO, pedagogy by objectives. Today we want to go back [to the past]... (laughs) *Inspecteur: Quand on regarde en termes d'analyse didactique ou pédagogique, le modèle ARED est plus en avance que LPT. Et quand on compare l'approche par les compétences de la LPT, il y a une grande différence. Parce que à ce niveau là, ils rentrent par "je fais, tu fais, nous faisons, tu fais". Là bas, l'approche par les compétences, c'est une autre approche. C'est une situation qui prend en charge l'enfant, et on descend jusqu'à l'appropriation des contenus.*[lvi] Inspector: When considering it in terms of didactic or pedagogical analysis, the ARED model is more advanced than LPT. And when you compare the approach with LPT competencies, there is a big difference. Because with them, they come in with "I do, you do, we do, you do", and the competency-based approach is another approach. In our situation we take care of the child, and go right down to the appropriation of the content.
LPT is only reading, whereas BE is the whole curriculum	*Enseignant: Il y a une différence. LPT c'est en lecture seulement. Alors que le bilinguisme c'était pour toutes les matières. Les mathématiques, l'éveil, tout. Il fallait passer par la L1 pour faciliter la compréhension de la L2. Dans toutes les disciplines. Alors que là c'est que la lecture.*[lvii] Teacher: There is a difference. LPT is reading only. Meanwhile bilingual education is for all subjects. Mathematics, science, everything. It is necessary to go through the L1 to facilitate the understanding of the L2. In all disciplines. Whereas [with LPT] it is only reading. *Inspecteur: LPT est seulement une intervention sur la lecture alors que ARED est une intervention sur toutes les disciplines.*[lviii] Inspector: LPT is only an intervention on reading while ARED is an intervention on all disciplines.

	Maîtresse: L'éducation bilingue est plus approfondie. La LPT c'est la lecture simplement. [...] en langue nationale pour le français.[lix] Teacher: Bilingual education is more thorough. LPT is simply reading… in the national language to get to French. *Inspecteur : En regardant ce nouveau projet de l'LPT, il n'est pas complet. Un enfant qui lit et écrit sa propre langue - cela représente une grande mobilisation de la communauté et permet aux parents d'accompagner l'apprentissage de leurs enfants. C'est très positif pour la communauté.*[lx] Inspector: Looking at this new project LPT, it's not complete. A child who reads and writes his/her own language – that represents a high level of community mobilization and allows parents to accompany their children's learning. It is very positive for the community.
No support for teaching materials	*Directeur: et là monsieur, je reviens sur le problème de la motivation. ARED, nous directeurs d'école on recevait à chaque fois une motivation. C'est le contraire de la LPT.* *Enseignant: Avec la motivation (of ARED), tu peux aller acheter des matériels dont tu as besoin. Par exemple, des feutres pour afficher, des papiers. Tout pour afficher, c'est nous qui allons acheter avec nos propres moyens. Mais avec ARED, même si nous savons que tôt ou tard nous allons perdre l'argent, ils nous payent.*[lxi] Director: And now, sir, I come back to the problem of motivation. With ARED, we school principals received a motivation each time. This is the opposite of LPT. Teacher: With the motivation (of ARED), you can go and buy the materials you need. For example, markers to display, poster paper. Everything for display [for LPT], we are the ones who must buy with our own means. But with ARED, even if we knew that sooner or later we will no longer get money, they paid us.
LPT trainers not as knowledgeable as ARED-trained teachers	*Directeur: Non, [LPT] ne peut pas remplacer. Alors, nous qui avons participé à la formation d'une semaine [LPT], nous avons beaucoup beaucoup contribué au séminaire. Et les formateurs l'ont reconnu. Et les enseignants aussi qui avaient ces classes ARED ont encore beaucoup contribué lors de la formation. Et ces formations ici, tous les enseignants qui doivent avoir les classes de LPT ont suivi une formation d'une semaine ici mais les enseignants qui étaient dans ARED ont aussi beaucoup contribué. Ils l'ont reconnu à l'unanimité.*[lxii] Director: No, [LPT] cannot replace [bilingual education]. So, we who participated in the one-week training [LPT], we contributed a lot to the seminar. And the trainers recognized it. And the teachers who had these ARED classes also contributed a lot during the training. And those trainings here, all the teachers who must have LPT classes have been trained for a week, but the teachers who were in ARED have also contributed a lot. They unanimously recognized this. *Inspector: ARED est leur [LPT's] assistant. On leur dit souvent, "faîtes comme ARED."*[lxiii] Inspector: ARED is their [LPT's] assistant. They are often told, "Do it like ARED." *Enseignant: On a senti avec l'LPT, ils ont pris des gens qui n'étaient pas impliqués comme nous et ils viennent nous poser des questions. C'est CI et CP. Ce n'est pas un bon programme. On ne peut pas remplacer un programme par un autre.*[lxiv] Teacher: We felt with the LPT, they took people who were not involved like us

	and they came to ask us questions. It's only CI and CP. It's not a good program. You can't replace one program with another.
Less care for choosing linguistically homogeneous sites	*Inspector: Oui, si on dit faîtes comme ARED, ça veut dire qu'il y a beaucoup de forces, beaucoup de réussite. Donc, c'est la maîtrise de la langue à l'écrit et à l'oral ensuite zone homogène avant de fonctionner. Avec Lecture Pour Tous, c'est pas comme ça…[lxv]* Inspector: Yes, if you say do it like ARED, it means that there are a lot of strengths, a lot of success. So it is the mastery of the language in writing and orally, then in homogeneous areas before functioning. With *Lecture Pour Tous*, it's not like that...
Needs ARED-trained bilingual educators to function	*Enseignant [avec grimace]: ARED est plus performant. LPT, c'est ce qui a débouché grâce à ARED. La LPT a puisé sur ce que ARED a déjà fait. C'est nous les expérimentateurs.[lxvi]* Teacher [with a grimace]: ARED is more efficient. LPT, that's what gave it a chance thanks to ARED. LPT has built on what ARED has already done. We are the experimentors. *Enseignant: Le projet LPT est obligé de nous recruter pour faire leur travail.[lxvii]* Teacher: The LPT project is obliged to recruit us to do their work. *Directeur et enseignant: Bon nombre d'experts ARED sont dans la LPT. La majorité du personnel bilingue est dans la LPT.[lxviii]* Principal and teacher: Many ARED experts are in LPT. The majority of bilingual staff are in LPT.
Confuses people about what happened to bilingual education	*Directeur: Le nouveau programme avec LPT suscite une confusion au niveau de l'instituteur, car la manière dont il déroule leur programme est à contrepied à ce qu'ARED a inculqué aux maîtres et aux élèves.[lxix]* Director: The new program with LPT creates confusion at the level of the teacher, because the way their program runs is at odds with what ARED has taught teachers and students. *Parent: Je n'en sais rien de ce programme [LPT], car il n'implique ni l'instituteur ni le parent d'élève.[lxx]* Parent: I don't know anything about this program [LPT], because it does not involve either the teacher or the student's parents. *IEF: On nous amène un nouveau programme qu'on ne comprend pas [rire sarcastique].[lxxi]* IEF: They bring us a new program that we don't understand [sarcastic laughter]. *Enseignant: Ah… je ne l'ai même pas compris. Je l'ai entendu mais je ne l'ai pas compris.[lxxii]* Teacher: Ah... I really haven't understood it. I have heard of it but I haven't understood it.
Uses the national language to transition to French	*Enseignant: Ils [LPT] disent que la langue nationale est une béquille. une béquille seulement pour passer à la langue française. Bon j'ai dit à un formateur, comme la langue est support, il ne faut pas utiliser le manuel. Quand tu enseignes à l'enfant comment écrire, lire et parler dans sa langue, ce n'est plus une béquille. C'est un outil pédagogique.[lxxiii]* Teacher: They [LPT] say that the national language is a crutch. A crutch just to

	switch to French. So I told a trainer, since language is support, you should not use the manual. When you teach the child how to speak, read and write in his or her language, it's no longer a crutch. It is an educational tool.
Disrupts the flow of what has been done	*IEF: Non, c'est une déclaration ! Que le bilinguisme est une option irréversible mais interrogeons nous sur ce que la LPT est en train de faire ! Et l'avenir de cette expérimentation. Il y a des questions qu'ils [LPT] n'osent pas aborder rires mais ces questions là vont revenir. Mais bon… Mais lorsque j'ai été affecté ici et j'ai suivi ce que ARED avait fait, j'ai participé aux formations et à la mise en oeuvre et j'ai compris la guerre.*[lxxiv] IEF: No, it's a statement! That bilingual [education] is an irreversible option but let us ask ourselves what LPT is doing! And the future of this experiment. There are questions they [LPT] don't dare to address, but these questions will come up again. But then... But when I was posted here and followed what ARED had done, I participated in training and implementation and understood the war. *Directeur: Il y a aussi LPT ici là et il y a cassure. La façon d'enseigner pose problème.*[lxxv] Dir: There is also LPT here and there is disruption. The way of teaching is problematic. *Enseignant: Si ce projet [LPT] arrive, c'est qu'un autre différent de ce qu'on a appris. Pourquoi ne pas continuer avec le modèle ARED et le développer davantage ? Pourquoi amener un autre modèle alors qu'on a beaucoup travaillé avec ARED ? Ce que ARED a fait, on ne doit pas écarter ce qui a été fait. On doit se baser sur ça.*[lxxvi] Teacher: If this project [LPT] comes, it's just another one that's different from what we've learned. Why not continue with the ARED model and develop it further? Why bring another model when we have worked a lot with ARED? What ARED has done, we must not rule out what has been done. We have to rely on that. *Inspecteur: Moi ce que je voudrais ajouter c'est que lorsque les ONGs ou les programmes se développent au sein du ministère de l'éducation nationale, ce qui devrait être fait au départ, n'est pas fait. C'est d'associer la réflexion avec ce qui se passe sur le terrain. Parce que souvent, par exemple, l'USAID peut venir et dire avec son background, voilà c'est ce que je veux apporter. Mais c'est le ministère qui doit être fort et suffisamment responsable pour dire, c'est notre système éducatif. Si vous voulez venir avec vos stratégies OK, mais on s'assoit avec le terrain pour voir ce qu'il y a là bas, ce qu'il y a déjà. Ce que le ministère veut faire, est ce que ça peut s'intégrer avec ce que le ministère est en train de faire ? Est-ce que quelqu'un d'autre est en train de faire ? Si on le met, est ce que ça va être un doublon ? ou des choses parallèles qui ne vont pas se toucher ? Et ça, ça perturbe souvent les enseignants. Ils ne savent pas à quel saint se vouer.*[lxxvii] Inspector: I would add that when NGO programs develop within the Ministry of National Education, what should be done in the first place is not done. It is to reflect on what is happening in the field. Because often, for example, USAID comes and says with its background, that's what it wants to bring. But it is the Ministry that must be strong and responsible enough to say, it is our education system. If you want to come with your strategies OK, but we sit down with the field to see what's there, what's already there. What the department wants to do, can it fit in with what the department is doing? Is anyone else doing it? If we do it, will it be a duplicate? Or parallel things that won't touch? And that often disturbs teachers. They don't know what to do with themselves.

i 2018.11.30_FGD_Directrice et Enseignant Ecole HLM4D
ii 2018.11.28_FGD_Directeur et Enseignants Ecole Insa Bobo Ba
iii 2018.11.26_FGD_Directeur, Parents et Enseignants Ecole Kabatoki 1 Kaolack
iv 2018.11.28_KII_Enseignants bilingues Ecole Keur Sette Diakhou Nioro
v 2018.11.30_FGD_IEF Grand Dakar
vi 2019.01.08_FGD Parents.Ecole Porokhane Toucouleur
vii 2018.11.23_FDG_Anciens enseignants bilingues Ecole Fanaye Diery 1 Podor
viii 2018.11.27_FGD_Parents Ecole Guédel Mbodji Kaolack
ix 2018.11.30_FGD_Chemonics LPT directrices
x 2018.11.30_FGD_Chemonics LPT directrices
xi 2018.11.30_FGD_Directeur et Enseignant Ecole HLM4D Dakar
xii 2018.11.27_KII_Directeur et Enseignants Ecole Guédel Mbodj
xiii 2018.11.27_KII_Enseignants bilingues Ecole Koutal
xiv 2018.11.22_FGD_IA Saint-Louis
xv 2019.01.08_FGD_Eleves bilingues Ecole Kabacoto
xvi 2018.11.27_KII_ Directeur et Enseignants Ecole Guédel Mbodj
xvii 2018.11.27. KII Directeur et Enseignants Ecole Guédel Mbodj
xviii 2018.11.27_KII_Enseinants bilingues Ecole Koutal 2 Kaolack
xix 2018.11.30_FGD_IEF Grand Dakar
xx 2018.11.30_KII_Director Ecole Derkele 2A
xxi 2018.11.27_FGD_Parents Ecole Guédel Mbodji Kaolack
xxii 2018.11.27_FGD_IA et IEF Kaolack Commune et Département
xxiii 2018.11.27_KII_Enseignants bilingues Ecole Koutal 2 Kaolack
xxiv 2018.11.30_FGD_IEF Grand Dakar
xxv 2018.11.28_FGD_Directeur et Enseignants Ecole Insa Bobo Ba Nioro
xxvi 2018.11.29_KII_Mamadou Ly ARED
xxvii 2018.11.26_FGD_Directeur, Parents et Enseignants Ecole Kabatoki 1 Kaolack
xxviii *2018.11.22_FGD_IA Saint-Louis*
xxix 2018.11.27_FGD_Parents Ecole Guédel Mbodji Kaolack
xxx 2018.11.30_FGD_IEF Grand Dakar
xxxi 2018.11.29_KII_Mamadou Ly ARED
xxxii 2018.11.27_FGD_Parents Ecole Guédel Mbodji Kaolack
xxxiii 2018.11.27_FGD_Parents Ecole Guédel Mbodji Kaolack
xxxiv 2018.11.26_FGD_Directeur, Parents et Enseignants Ecole Ibrahima Fall Kaolack
xxxv 2018.11.30_FGD_Directeur et Enseignant Ecole HLM4D Dakar
xxxvi 2018.11.30_FGD_IEF Grand Dakar
xxxvii 2018.11.27_KII_Directeur Ecole Koutal 2 Kaolack
xxxviii 2018.11.30_FGD_IEF Grand Dakar
xxxix 2018.11.22_FGD_IA Saint-Louis
xl 2018.11.28_KII_Directeur Ecole Keur Sette Diakhou Nioro
xli 2018.11.30_FGD_Directrice et Enseignant Ecole HLM4D
xlii 2018.11.26_FGD_Directeur, Parents et Enseignants Ecole Ibrahima Fall
xliii 2018.11.27_KII_ Directeur et Enseignants Ecole Guédel Mbodj
xliv 2019.01.08_FGD_Eleves bilingues Ecole Kabacoto
xlv 2018.11.27_KII_ Directeur et Enseignants Ecole Guédel Mbodj
xlvi 2018.11.23_KII_Directeur Ecole Elimane Sy
xlvii 2018.11.28_FGD_Directeur et Enseignants Ecole Insa Bobo Ba
xlviii 2018.11.27_FGD_Eleves bilingues Ecole Koutal

xlix 2018.11.27_KII_Enseignants bilingues Ecole Koutal

l 2018.11.27_KII_Directeur et Enseignants Ecole Guédel Mbodj

li 2018.11.26_FGD_Directeur, Parents et Enseignants Ecole Ibrahima Fall

lii 2018.11.27_FGD_Eleves Ecole Koutal

liii 2018.11.27_KII_Directeur et Enseignants Ecole Guédel Mbodj Kaolack

liv 2018.11.28_KII_Enseignants bilingues Ecole Keur Sette Diakhou Nioro

lv 2018.11.27_KII_Directeur et Enseignants Ecole Guédel Mbodj Kaolack

lvi 2018.11.27_FGD_IA et IEF Kaolack Commune et Département

lvii 2018.11.27_KII_Directeur et Enseignants Ecole Guédel Mbodj Kaolack

lviii 2018.11.22_FGD_IA Saint-Louis

lix 2018.11.26_FGD_Directeur, Parents et Enseignants Ecole Kabatoki 1 Kaolack

lx 2018.11.21_FGD_IA Rufisque

lxi 2018.11.27_KII_Directeur et Enseignants Ecole Guédel Mbodj Kaolack

lxii 2018.11.27_KII_Directeur et Enseignants Ecole Guédel Mbodj Kaolack

lxiii 2018.11.28_KII_IEF de Nioro

lxiv 2018.11.23_FDG_Anciens enseignants bilingues Ecole Fanaye Diery 1 Podor

lxv 2018.11.28_KII_IEF de Nioro

lxvi 2018.11.27_KII_Enseinants bilingues Ecole Koutal 2 Kaolack

lxvii 2018.11.27_KII_Directeur et Enseignants Ecole Guédel Mbodj Kaolack

lxviii 2018.11.26_FGD_Directeur, Parents et Enseignants Ecole Kabatoki 1 Kaolack

lxix 2019.01.08_KII_Directeur et enseignant bilingue Ecole Kabacoto

lxx 2018.11.28_KII_Parent Ecole Insa Bobo Ba Nioro

lxxi 2018.11.28_KII_Parent Ecole Insa Bobo Ba Nioro

lxxii 2018.11.30_FGD_Enseignants bilingues Ecole Derkele 2A Dakar

lxxiii 2018.11.28_KII_Enseignants bilingues Ecole Keur Sette Diakhou Nioro

lxxiv 2018.11.30_FGD_IEF Grand Dakar

lxxv 2018.11.26_FGD_Directeur, Parents et Enseignants Ecole Ibrahima Fall Kaolack

lxxvi 2018.11.30_FGD_Enseignants bilingues Ecole Derkele 2A Dakar

lxxvii 2018.11.27_FGD_IA et IEF Kaolack Commune et Département