Moroccan School Reform: Impact of the Pioneer Schools Program[1]

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Abstract (already in English in the original document):
This article analyzes the impact of the Pioneering Schools Program (PEP), an initiative of the Moroccan 2022-2026 education reform, after one year of experimentation. The PEP employs structured pedagogies, explicit teaching, and the Teaching at the Right Level (TaRL) approach to address the learning crisis in public schools. Through four independent evaluations, the study assesses the program's effects on learning outcomes in Arabic, French, and mathematics in primary education. The results show significant gains, with an average effect size of 0.90 standard deviations, positioning the PEP among the most effective educational interventions in low- and middle-income countries. Success depends on evidence-based strategies, teacher training, strong leadership, and monitoring of learning through the MASSAR platform. The widespread implementation of the program in primary schools and its extension to secondary schools face challenges related to training, funding, and political resistance.

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Introduction[2]

For several years, the Moroccan education system has been grappling with a severe learning crisis among students, necessitating a comprehensive reform. In this section, we briefly describe the context of the educational crisis in Morocco, the school reform undertaken by the country, and the establishment of the Pioneer Schools Program (PEP) associated with it. We hope that Morocco's experience, as described in this study, will inspire other education systems facing similar challenges.

Context of the Educational Crisis in Morocco

The Moroccan education system faces a long-standing learning crisis characterized by insufficient mastery of fundamental skills. According to the National Program for the Evaluation of Learning Outcomes (PNEA, 2019), 70% of public school students do not master the curricula in Arabic, French, and mathematics by the end of primary school, and this figure rises to 90% by the end of middle school (Saadani, 2023). This situation, particularly acute in public schools, exacerbates social inequalities and hinders the country's socio-economic development. Despite significant progress in access to education, with near-universal primary school enrollment (close to 100% for children aged 6 to 11), the quality of learning remains a major challenge (Saadani, 2023).

This crisis is part of a global context where many low- and middle-income countries struggle to translate universal access to education into meaningful learning outcomes (J-PAL, 2024). International assessments, such as the Programme for International Student Assessment (PISA) and Trends in International Mathematics and Science Study (TIMSS), consistently rank Morocco among the lowest-performing countries, highlighting the urgency of systemic reform. For example, in PISA 2018, Morocco ranked 75th out of 79 countries, with average scores of 359 in reading, 368 in mathematics, and 377 in science, well below the OECD average of 487–489.

The Moroccan School Reform and the Pioneer Schools Program (PEP)

In response to this crisis, Morocco's Ministry of National Education, Preschool, and Sports launched the 2022–2026 Roadmap in November 2022, a strategic plan

[2] This text presents a scientific analysis of a monograph we published. Gauthier, C., & Bissonnette, S. (2025). Effects of structured pedagogies, explicit teaching, and TaRL deployed in Morocco's school reform. Lévis: Éditions Les pendules à l'heure. https://r-libre.teluq.ca/3660/1/ManographieMarocVF.pdf

aimed at transforming public schools into high-quality institutions. The plan is based on three main objectives:

- Increase the number of students mastering fundamental skills (reading, writing, arithmetic) by more than 30%.
- Reduce school dropout rates by more than 30%, particularly high in middle school (approximately 20% according to 2022 ministerial data).
- Improve student participation in extracurricular activities to support their overall development (El Mahir, 2024).

The Pioneer Schools Program (PEP), launched in 2023–2024 across 626 primary schools in all 12 regions and 82 provinces of the country, represents the experimental phase of this reform. Covering rural, urban, and peri-urban areas, the PEP involved 322,000 students, 10,700 teachers, and 157 inspectors. It relies on two complementary pedagogical pillars:

- **Curative Pillar**: The Teaching at the Right Level (TaRL) approach, developed by the Indian NGO Pratham, targets students' learning gaps by grouping them according to their actual skill level (rather than grade level) for intensive remediation in Arabic, French, and mathematics. TaRL uses interactive and engaging activities to strengthen fundamental skills.
- **Preventive Pillar**: Explicit teaching, a structured pedagogy based on scripted lessons, regular formative assessments, and sequenced progression to ensure gradual mastery of learning objectives.

Importance of the Study and Research Questions

These approaches were designed in collaboration with international experts. Professors Clermont Gauthier (Université Laval) and Steve Bissonnette (Université TÉLUQ) provided an evidence-based framework of pedagogical strategies (explicit teaching) and a practical guide to support the training of teachers and inspectors. (Gauthier & Bissonnette, 2022, 2023).

Importance of the Study

The learning crisis in Morocco, as in other low- and middle-income countries, requires evidence-based interventions to maximize impact while optimizing limited resources. The PEP offers a unique opportunity to evaluate the effectiveness of structured pedagogies at scale, in a real-world context involving hundreds of schools and hundreds of thousands of students. The results of this experimentation could guide the nationwide scaling of the reform in Morocco

and inspire other education systems facing similar challenges. Furthermore, the rigorous evaluation of the PEP by four independent bodies (Sindi, J-PAL, ONDH, CSEFRS) provides a wealth of quantitative and qualitative data, enabling a multidimensional analysis of the program's effects. This study contributes to the literature on educational reforms by examining how scientifically validated approaches, such as explicit teaching and TaRL, can be adapted to a specific context and implemented at scale.

Research Questions

This impact study, based on four evaluations, aims to address the following research questions:

- What is the impact of the PEP on student learning outcomes in Arabic, French, and mathematics after one year of experimentation (2023–2024)?
- What are the key factors contributing to the success of the experimentation, particularly in terms of pedagogical strategies, stakeholder training, and leadership?
- What challenges might the nationwide scaling of the program and its extension to secondary education face, particularly regarding training, funding, and communication about the reform?
- What recommendations can be made to ensure the sustainability and effectiveness of the reform at both primary and secondary levels?

Structured Pedagogies and Explicit Teaching

Structured pedagogies, such as explicit teaching, rely on empirically validated strategies to maximize learning. In their seminal article, Rosenshine and Stevens (1986) identify six key pedagogical functions of effective teaching:

- **Daily Review**: Revising prior knowledge to consolidate learning.
- **Clear Objectives**: Explicitly defining expectations for each lesson.
- **Modeling**: Teacher demonstration of skills or knowledge to be acquired.
- **Guided Practice**: Supporting students in applying new knowledge.
- **Independent Practice**: Exercises to reinforce mastery.
- **Corrective Feedback**: Immediate feedback to correct errors and guide learning.

Meta-analyses confirm that explicit teaching generates significant effect sizes, often between 0.60 and 0.80 standard deviations, in various educational contexts, particularly for struggling students or those from disadvantaged backgrounds (Hattie, 2009). For example, Hattie's mega-analysis of 800 meta-analyses shows that direct instruction, closely related to explicit teaching, has an effect size of 0.59, compared to 0.20 for discovery-based approaches.

Explicit Teaching (Continued) and Teaching at the Right Level (TaRL)

Explicit teaching differs from constructivist approaches (which prioritize discovery or project-based learning) by its direct and systematic nature, reducing cognitive load for learners, especially in early stages of knowledge acquisition (Kirschner, Sweller, & Clark, 2006). This approach is particularly effective in education systems where teachers may lack extensive training and pedagogical resources are limited, as it provides standardized tools, such as scripted lessons, to ensure consistency and quality (Piper & Dubeck, 2020).

Teaching at the Right Level (TaRL)

The TaRL approach, developed by the Indian NGO Pratham, aims to address learning gaps by tailoring instruction to students' actual skill levels rather than their grade or age. By grouping students by level (e.g., beginner, intermediate, advanced) and using interactive, engaging activities focused on foundational skills (reading, writing, arithmetic), TaRL has shown positive effects on literacy and numeracy in several low- and middle-income contexts.
A randomized study in India (Banerjee et al., 2016) showed that a six-week TaRL intervention increased reading and mathematics skills with an effect size of 0.70 standard deviations. Similar results were observed in Kenya (0.60) and Nigeria (0.50), where TaRL helped bridge learning gaps for students behind grade level (Banerjee et al., 2016). Integrating explicit teaching strategies into TaRL, as done in Morocco, likely enhances its effectiveness by structuring remediation with clear steps and systematic feedback (Gauthier & Bissonnette, 2023).

Educational Reforms in Low- and Middle-Income Countries

Successful educational reforms in low- and middle-income countries share common characteristics, as identified by the Global Education Evidence Advisory Panel (GEEAP, 2023):

- **Evidence-Based Interventions**: Interventions must be supported by rigorous studies, such as randomized controlled trials (e.g., TaRL and explicit teaching).

- **Continuous Teacher Training**: Teachers need training in validated strategies and ongoing support.
- **Clear Curriculum**: A well-defined curriculum with specific objectives and coherent progression is essential.
- **Rigorous Monitoring**: Systems like formative assessments and digital platforms enable real-time adjustments.

A landmark study in Kenya (Piper et al., 2018) evaluated three intervention modalities for literacy and numeracy:

- **Modality 1**: Teacher professional development and pedagogical support.
- **Modality 2**: Modality 1 plus student textbooks (1:1 ratio).
- **Modality 3**: Modalities 1 and 2 plus scripted lesson plans for teachers. Modality 3 (training + textbooks + scripted lessons) was the most effective, with an effect size of 0.80 standard deviations, and the most cost-effective despite higher initial costs. These findings are directly relevant to the PEP, which combines teacher training, scripted lessons, and revised curricula.

Challenges of Large-Scale Reforms

Scaling educational reforms nationally poses logistical, financial, and cultural challenges. Ravitch (2000) notes that many reforms fail due to a lack of evidence-based approaches or inadequate teacher training. For example, Quebec's 2000 constructivist reform, emphasizing project-based learning, led to increased learning gaps (Gauthier & Bissonnette, 2025).
In Morocco, potential obstacles include:

- **Initial Teacher Training**: University trainers, often rooted in constructivist paradigms, may resist explicit teaching, perceived as too directive.
- **Material Resources**: Rural schools lack digital infrastructure (computers, internet) needed for scripted lessons.
- **Political and Media Resistance**: Educational reforms are often politicized. In Morocco, controversies surrounding the CSEFRS report (2024) highlight this risk, especially with legislative elections approaching in 2026.

Gaps in the Literature

While explicit teaching and TaRL have been studied in contexts like India, Kenya, and South Africa, few studies examine their large-scale implementation in an

Arab-speaking, centralized education system like Morocco. The simultaneous integration of curative (TaRL) and preventive (explicit teaching) approaches in a national reform is relatively novel, making the PEP an exemplary case study. This study addresses this gap by analyzing the combined effects of these approaches in this specific context, while exploring scaling challenges.

Methodology

The evaluation of the Pioneer Schools Program's impact relies on a mixed-methods approach, involving a large population of students and teachers, targeted interventions using TaRL and explicit teaching, and diverse measures including tests, surveys, and in-depth quantitative and qualitative analyses. The study draws on four independent evaluations conducted during the first year of experimentation (2023–2024):

- **Sindi Evaluation**: A quantitative analysis of TaRL's impact on 63,000 students, using pre-post tests to measure progress in Arabic, French, and mathematics.
- **J-PAL Evaluation**: A quasi-experimental study comparing learning outcomes in 138 PEP schools with 138 non-PEP schools, using a difference-in-differences method and school matching.
- **ONDH Survey**: A qualitative analysis of perceptions from teachers, students, parents, and inspectors, based on semi-structured interviews and questionnaires.
- **CSEFRS Evaluation**: An analysis of the program's implementation fidelity based on pedagogical and organizational criteria, using observations and inspection reports.

Research Design

The study combines quantitative analyses of learning outcomes and qualitative analyses of stakeholder perceptions, providing a comprehensive picture of the PEP's effects. Data sources include the primary report by Gauthier and Bissonnette (2025), supplemented by secondary sources like ministerial reports (Saadani, 2023, 2024), press articles (Media 24, Hespress), and international studies (Piper et al., 2018; GEEAP, 2023).

Participants

The PEP was implemented in 2023–2024 across 626 primary schools, representing about 9% of Morocco's public primary schools, covering 12 regions and 82 provinces (rural, urban, and peri-urban areas). Participants included:

- **322,000 students** (grades 1–6, ages 6–12) from diverse socio-economic and geographic backgrounds.
- **10,700 teachers**, voluntarily trained in explicit teaching and TaRL, primarily from the public sector.
- **157 inspectors**, trained by Professors Gauthier and Bissonnette to train teachers and support schools.
  For the J-PAL evaluation, a subsample of 22,846 students was analyzed, evenly split between 138 PEP and 138 non-PEP schools, matched on socio-economic characteristics (e.g., household income, urbanization rate) and prior academic performance (PNEA 2019 scores) to minimize selection bias.

Table 1. Participant Characteristics (PEP, 2023–2024)

Category	Number	Description
Students	322,000	Grades 1–6, rural (40%), urban (50%), peri-urban (10%)
Teachers	10,700	Volunteers, trained in explicit teaching and TaRL
Inspectors	157	Trained by Professors Gauthier & Bissonnette
Schools	626	12 regions, 82 provinces, 9% of public primary schools

J-PAL Subsample	22,846 students	138 PEP vs. 138 non-PEP schools, matched
Note: The J-PAL subsample was matched based on socio-economic characteristics (e.g., household income, urbanization rate) and prior academic performance (PNEA 2019 scores) to minimize selection bias. PEP = Pioneer Schools Program; TaRL = Teaching at the Right Level; PNEA = National Program for the Evaluation of Learning Outcomes.		

Interventions

This section describes the PEP interventions, integrating a curative pillar via TaRL and a preventive pillar based on explicit teaching with scripted lessons, along with stakeholder training in primary schools.

Curative Pillar: TaRL

Launched in September 2023, TaRL targeted 63,000 students during a four-week intensive phase. Students were grouped by skill level (assessed via standardized diagnostic tests) rather than age or grade. Interactive, engaging activities aimed to strengthen foundational skills:

- **Arabic**: Fluent reading, comprehension of simple texts, sentence writing.
- **French**: Word reading, oral comprehension, basic written expression.
- **Mathematics**: Basic operations (addition, subtraction, multiplication), simple problem-solving.
  Teachers integrated explicit teaching strategies, such as modeling, guided practice, independent practice, frequent comprehension checks, and corrective feedback, to structure remediation sessions. After the intensive phase, ongoing remediation was provided for struggling students.

Preventive Pillar: Explicit Teaching

From November 2023, explicit teaching was implemented in 626 PEP schools. Teachers received scripted lessons in the form of 300,000 PowerPoint slides covering Arabic, French, and mathematics curricula for grades 1–6. These lessons followed a standardized structure:

- **Objective Presentation**: Clarifying lesson expectations.
- **Modeling**: Teacher demonstration (e.g., solving a math problem).
- **Guided Practice**: Supervised exercises with immediate feedback.

- **Independent Practice**: Individual tasks to consolidate learning.
- **Formative Assessment**: Questions or quizzes to verify mastery. The scripted lessons, produced by ministerial teams, aligned with the revised 2022 curriculum.

Training of Stakeholders

A cascade training model ensured consistent dissemination of pedagogical strategies:

- **Inspector Training**: In 2022–2023, Professors Gauthier and Bissonnette trained 157 inspectors through in-person and remote sessions, using a framework of pedagogical strategies, a teaching guide, webinars, and PowerPoint slides covering topics like effective behavior management and common pitfalls in explicit teaching.
- **Teacher Training**: From August to November 2023, inspectors trained 10,700 teachers in explicit teaching and TaRL, with weekly follow-up support.

Measures

Data were collected via multiple instruments:

- **Sindi TaRL Tests**: Pre-post tests for 63,000 students in September–October 2023, measuring foundational skills in reading (Arabic, French), writing, and arithmetic, tailored to each group's level (beginner, intermediate, advanced).
- **J-PAL Tests**: Baseline (September 2023) and endline (June/July 2024) assessments for 22,846 students, covering:
    - Arabic: Oral expression, writing, reading comprehension.
    - French: Fluency, comprehension, written expression.
    - Mathematics: Numerical skills, reasoning, problem-solving, geometry.
- **ONDH Questionnaires and Interviews**: Surveys of 500 teachers, 1,000 students, 800 parents, and 100 inspectors, plus 50 semi-structured interviews to explore perceptions of program effectiveness, challenges, and implementation dynamics.
- **CSEFRS Observations**: School visits to assess pedagogical (fidelity to explicit teaching) and organizational (resource management, inspector roles) compliance.

Data Analysis

Data were analyzed as follows:

- **Quantitative**:
    - **Sindi**: Pre-post score comparisons to calculate improvement factors (e.g., x4 in mathematics) and estimate equivalent years of learning.
    - **J-PAL**: Used item response theory (IRT) to generate standardized scores and difference-in-differences to estimate causal effects, with effect sizes in standard deviations and 95% confidence intervals.
- **Qualitative**: ONDH data were thematically coded to identify recurring themes (e.g., teacher satisfaction, logistical challenges, student engagement).
- **Document Synthesis**: A narrative analysis integrated findings from all four evaluations, contextualized with international literature (Rosenshine & Stevens, 1986; Piper et al., 2018) and ministerial reports (Saadani, 2023, 2024).

Table 2. Analysis Methods by Evaluation

Evaluation	Data Type	Analysis Method	Main Objective
Sindi	Quantitative	Pre-post comparison	Measure TaRL impact
J-PAL	Quantitative	Difference-in-differences, IRT	Estimate PEP causal effect
ONDH	Qualitative	Thematic analysis	Explore stakeholder perceptions
CSEFRS	Mixed	Observations, compliance analysis	Assess implementation fidelity
Note: IRT = Item Response Theory; PEP = Pioneer Schools Program; TaRL = Teaching at the Right Level.			

Results

The 2023–2024 PEP results, evaluated through TaRL (Sindi), explicit teaching (Saadani), J-PAL, ONDH, and CSEFRS analyses, are presented below.

TaRL Evaluation (Sindi)

The pre-post TaRL evaluation by Sindi, conducted on 63,000 students after four weeks of intensive remediation (September–October 2023), showed significant progress (Table 3).

Table 3. TaRL Evaluation Results (Sindi, 2023)

Subject	Pre-Test Mastery Rate (%)	Post-Test Mastery Rate (%)	Improvement Factor	Equivalent Years of Learning
Mathematics	20	80	x4	1–2
French	25	75	x3	1–1.5
Arabic	30	60	x2	0.5–1
Note: The pre-post evaluation was conducted on 63,000 students after four weeks of intensive remediation. The improvement factor is the ratio of post-test to pre-test mastery rates. TaRL = Teaching at the Right Level.				

- **Mathematics**: Mastery rates for foundational skills (e.g., basic operations, simple problem-solving) increased fourfold. For example, the proportion of students able to perform two-digit addition rose from 20% to 80% in some cohorts, equivalent to 1–2 years of learning.
- **French**: Mastery rates tripled, with significant gains in fluent reading (e.g., 30 words per minute) and comprehension of simple sentences.
- **Arabic**: Mastery rates doubled, particularly in writing complete sentences and comprehending short texts, equivalent to 0.5–1 year of learning.

These results, though limited to a short period, demonstrate TaRL's effectiveness in rapidly addressing learning gaps, especially in mathematics. Explicit teaching

strategies integrated into TaRL, such as frequent comprehension checks and corrective feedback, likely contributed to these gains.

Preliminary Explicit Teaching Evaluation (Saadani, 2024)

A preliminary analysis in January 2024 by the ministry, covering 1,300 students in mathematics (grades 1–3), compared PEP and non-PEP schools unaffected by a three-month teacher strike in 2023 (Table 4).

Table 4. Preliminary Explicit Teaching Results in Mathematics (Saadani, 2024)

Grade	PEP Success Rate (%)	Non-PEP Success Rate (%)	Difference (% Points)	Skills Assessed
1st	74	50	+24	Fractions, two-digit operations
2nd	78	36	+42	Decimals, problem-solving
3rd	72	42	+30	Geometry, simple equations
Note: The analysis covered 1,300 students (grades 1–3) in January 2024. The difference in percentage points reflects the gap between PEP and non-PEP success rates. PEP = Pioneer Schools Program.				

- **1st Grade**: 74% of PEP students mastered fractions and two-digit operations, compared to 50% in non-PEP schools (+24 points).
- **2nd Grade**: 78% of PEP students succeeded in decimals and problem-solving, compared to 36% in non-PEP schools (+42 points).
- **3rd Grade**: 72% of PEP students mastered geometry and simple equations, compared to 42% in non-PEP schools (+30 points). Positive effects were also observed for a subsample of 1,199 students in grades 4–6, suggesting that explicit teaching, supported by scripted lessons, significantly improves mathematics performance compared to traditional methods.

J-PAL Evaluation

The J-PAL study, conducted by the Abdul Latif Jameel Poverty Action Lab, used a quasi-experimental difference-in-differences approach, comparing 22,846 students (11,423 in 138 PEP schools, 11,423 in 138 non-PEP schools) from September 2023 (baseline) to June/July 2024 (endline).

Table 5. PEP Effect Sizes (J-PAL, 2024)

Subject	Effect Size (Standard Deviations)	95% Confidence Interval	% of Control Group Outperformed	Key Improved Skills
Arabic	0.52	[0.45; 0.59]	70	Oral expression, writing, compréhension
French	1.30	[1.22; 1.38]	90	Fluent reading, comprehension, written expression
Mathematics	0.93	[0.87; 0.99]	82	Problem-solving, geometry, calculations
Overall	0.90	[0.84; 0.96]	82	Combination of three subjects
Note: The quasi-experimental study compared 22,846 students (11,423 in 138 PEP schools, 11,423 in 138 non-PEP schools) from September 2023 to June/July 2024 using difference-in-differences and school matching. Effect sizes are in standard deviations. PEP = Pioneer Schools Program.				

- **Overall Impact**: PEP students outperformed non-PEP students by 0.90 standard deviations, meaning the average PEP student surpassed 82% of

the control group. This effect size places PEP in the top 1% of educational interventions in low- and middle-income countries (Evans, 2022).

- **By Subject**:
    - **Arabic**: A 0.52 standard deviation gain, with improvements in oral expression (e.g., complete sentences), writing (paragraphs), and text comprehension.
    - **French**: A 1.30 standard deviation gain, with significant progress in fluent reading (average increase of 20 words per minute), narrative text comprehension, and complex sentence writing.
    - **Mathematics**: A 0.93 standard deviation gain, with advances in multi-step problem-solving, geometry (shape recognition), and complex calculations.
- **Equity**: Gains were significant for both genders and across initial skill levels, with low-performing students (10th percentile) improving by 0.85 standard deviations and high-performing students (90th percentile) by 0.95, indicating an inclusive impact.
- **International Comparison**: The 0.90 effect size surpasses programs like Tusome in Kenya (0.80) and TaRL in India (0.70).

Table 6. International Comparison of Effect Sizes

Program	Country	Effect Size (Standard Deviations)	Context
PEP (2023–2024)	Morocco	0.90	Primary schools, TaRL + explicit teaching
Tusome (2018)	Kenya	0.80	Literacy and numeracy, scripted lessons
TaRL (2016)	India	0.70	Targeted remediation, rural schools
Bridge International	Liberia	0.60	Structured pedagogy, private schools

ONDH Evaluation

The qualitative survey by the National Observatory for Human Development (ONDH), involving 500 teachers, 1,000 students, 800 parents, and 100 inspectors, revealed generally positive perceptions of the PEP, with some challenges (Table 7).

Table 7. Stakeholder Perceptions (ONDH, 2024)

Stakeholder	Satisfaction (%)	Main Positive Points	Main Challenges
Teachers	85	Scripted lessons reduce planning, clear lessons	Increased workload (60%), adapting to digital tools
Students	90	Increased engagement, confidence from TaRL	Initial adaptation to TaRL activities (20%)
Inspectors	80	Valued coaching role, pedagogical impact	Need for ongoing training (70%), time management
Parents	75	Visible student progress, better communication	Limited resource access in rural areas (40%)

- **Teachers**: 85% reported satisfaction with scripted lessons, which reduced planning time and clarified expectations. However, 60% noted an increased workload due to digital tools (PowerPoint slides) and formative assessments.
- **Students**: 90% described increased engagement due to TaRL's interactive activities (games, group discussions) and the clear structure of explicit teaching. Struggling students (30% of the sample) reported improved classroom confidence.
- **Inspectors**: 80% valued their shift to a pedagogical coaching role from administrative supervision. However, 70% requested ongoing training to master explicit teaching strategies and manage workloads (weekly visits to 3–4 schools).
- **Parents**: 75% observed progress in their children's reading and arithmetic skills and appreciated improved teacher communication. However, 40% of rural parents raised concerns about access to material resources like computers or textbooks.

CSEFRS Evaluation

The evaluation by the Higher Council for Education, Training, and Scientific Research (CSEFRS) in 2023–2024 examined PEP implementation in 626 schools, aligned with the 2022–2026 Roadmap. It used questionnaires for directors and teachers, observation grids for infrastructure and pedagogy, administrative document analysis, and ASER tests to measure student progress. The overall compliance score was 79/100, indicating satisfactory adoption of structured pedagogies (explicit teaching and TaRL). Challenges included resource shortages, limited pedagogical support, regional disparities, and absenteeism.

Table 8. Challenges Identified by CSEFRS (2024)

Challenge	% of Schools Affected	Description
Resource Shortages	35	Lack of computers, unstable internet, under-equipped reading corners (54/100)
Limited Pedagogical Support	30	Insufficient weekly inspector visits, especially in rural areas (47/100)
Regional Disparities	25	Lower compliance in regions like Dakhla-Oued Ed-Dahab (69/100) vs. Oriental (86/100)
Absenteeism Management	20	70% of schools reported prolonged absences due to illness (52%) or family issues (24%)

The CSEFRS recommended improving access to material resources (e.g., computers, reliable internet) in rural schools, strengthening pedagogical support through more inspector recruitment and training, addressing regional disparities, and enhancing absenteeism management. It also suggested more decentralized governance and flexible pedagogical materials incorporating skills like creativity and critical thinking, sparking media controversies and political debate (Hespress, 2025).

Discussion

This section discusses the PEP in light of the four evaluations, covering: 1) success factors, 2) international comparisons, 3) scaling challenges, 4) theoretical implications, 5) study limitations, and 6) recommendations.

Success Factors

The PEP's exceptional results (0.90 standard deviation effect size) align with international best practices (GEEAP, 2023; Rosenshine & Stevens, 1986; Piper et al., 2018):

- **Evidence-Based Approaches**: Explicit teaching and TaRL, supported by rigorous studies (effect sizes of 0.60–0.80 for explicit teaching, 0.50–0.70 for TaRL), were adapted to Morocco, enhancing impact through their integration.
- **Cascade Training**: Training experts to inspectors to 10,700 teachers ensured consistent strategy dissemination. Scripted lessons (300,000 PowerPoint slides) standardized teaching and reduced teacher cognitive load.
- **Ministerial Leadership**: Advisor Youssef Saadani fostered an evidence-based culture, supported by real-time monitoring via the MASSAR platform (processing 24 million grades every six weeks).
- **Curriculum Revision**: The 2022 curriculum overhaul clarified objectives and progressions (e.g., introducing fractions before decimals in mathematics).
- **Material and Financial Support**: Investments in computers, teacher incentives, and extracurricular activities created a supportive environment.

Table 9. PEP Success Factors

Factor	Description	Impact
Evidence-Based	Explicit teaching and TaRL validated by rigorous studies	Proven pedagogical effectiveness
Cascade Training	Training model, scripted lessons	Consistent dissemination, reduced teacher workload
Ministerial Leadership	Evidence-based culture, MASSAR platform	Rigorous monitoring, real-time adjustments

Curriculum Revision	Clear objectives, coherent progression	Lessons aligned with student needs
Material/Financial Support	Computers, incentives, resources	Stakeholder engagement, adequate infrastructure

The PEP compares favorably to similar programs:

- **Kenya (Tusome, 2018)**: Combining teacher training, textbooks, and scripted lessons yielded a 0.80 effect size (Piper et al., 2018). PEP's 0.90 effect size slightly surpasses this, likely due to TaRL integration.
- **India (TaRL, 2016)**: Six-week TaRL yielded a 0.70 effect size (Banerjee et al., 2016). Morocco's TaRL achieved similar improvements (x2–x4) in four weeks.
- **Liberia (Bridge International, 2017)**: Structured pedagogy in private schools yielded a 0.60 effect size. PEP's broader public-sector reach demonstrates greater scale.
  El Mahir's (2024) cost-effectiveness analysis aligns PEP with GEEAP (2023) recommendations for "smart buys" like structured pedagogies and targeted remediation.

Scaling Challenges

Scaling PEP to 2,626 schools in 2024–2025 and 8,630 by 2027–2028 (1.3 million students, 45,000 teachers, 400 inspectors) faces significant challenges:

- **Continuous Training**: Training thousands of teachers and inspectors annually requires substantial resources. Potential cuts in international aid in 2025 (due to U.S. political changes) could jeopardize quality (Gauthier & Bissonnette, 2025).
- **Initial Training**: Explicit teaching conflicts with constructivist approaches in Moroccan teacher training institutions, necessitating curriculum reform or a dedicated Teaching Institute.
- **Secondary Expansion**: The "Pioneer Colleges" program (2024–2025, 232 colleges, 200,000 students, 6,000 teachers, 600 inspectors) requires secondary curriculum revision and behavior management training (e.g., Positive Behavior Support).

- **Political and Media Resistance**: The CSEFRS report (2024) sparked controversies, amplified by media headlines like "Pioneer Schools Project Falters" (Hespress, 2025), risking politicization ahead of 2026 elections.
- **Regional Disparities**: Only 70% of rural schools have reliable internet, compared to 95% of urban schools (CSEFRS, 2024).

Table 10. Scaling Challenges

Challenge	Description	Potential Impact
Continuous Training	Need to train thousands annually	Risk of quality dilution
Initial Training	Resistance to constructivism in universities	Delay in adopting explicit teaching
Secondary Expansion	Behavior management, curriculum revision	Increased complexity, specific training needs
Political Resistance	Media controversies, election politicization	Loss of public support, political instability
Regional Disparities	Urban/rural infrastructure gaps	Uneven implementation

Theoretical Implications

The PEP's results confirm Rosenshine and Stevens (1986) on the effectiveness of structured pedagogical functions (e.g., modeling, corrective feedback). They demonstrate that evidence-based interventions can overcome contextual constraints like limited teacher training or resources. The synergy of TaRL and explicit teaching offers a replicable model for other systems. The PEP's success in an Arab-speaking, centralized context suggests structured pedagogies are adaptable across diverse cultural and institutional settings, countering claims of rigidity or Western bias (Reynolds et al., 2002).

Study Limitations

- **Limited Duration**: Results cover only one year (2023–2024), limiting conclusions about long-term sustainability. Longitudinal studies are needed.

- **Teacher Strike Impact**: A three-month strike in 2023 disrupted data collection in some regions, reducing the sample for Saadani's (2024) evaluation.
- **Selection Bias**: Voluntary teacher participation may have skewed results, though J-PAL's school matching minimized this.
- **Data Heterogeneity**: The four evaluations used different methodologies, complicating direct comparisons (e.g., TaRL tests focus on basic skills, J-PAL on complex skills).
- **Lack of Secondary Data**: Preliminary results for secondary schools (Pioneer Colleges) limit analysis of PEP's extension (Zerrour, 2025).

Recommendations

To ensure PEP's sustainability and effectiveness, the following recommendations are proposed:

- **Strengthen Continuous Training**: Develop online training modules via MASSAR, with quarterly seminars and practical workshops to maintain fidelity to explicit teaching, especially in rural areas.
- **Reform Initial Training**: Integrate explicit teaching into university teacher training programs, collaborating with education faculties or creating a dedicated Teaching Institute with hybrid training (online courses, practical internships).
- **Support Secondary Education**: Train secondary teachers in explicit teaching of content and behavior (e.g., Positive Behavior Support) and revise the secondary curriculum.
- **Improve Communication**: Develop proactive media strategies to counter misinformation, using campaigns with student and teacher testimonials on social and national media.
- **Maintain Data Monitoring**: Use MASSAR for real-time regional disparity identification and intervention adjustments, with personalized dashboards for inspectors and principals.
- **Secure Funding**: Diversify funding through public-private partnerships, international organizations (UNICEF, World Bank), and national funds to offset potential aid cuts.
- **Evaluate Long-Term Impact**: Conduct longitudinal studies tracking PEP cohorts via national (PNEA) and international (PISA, TIMSS) assessments, focusing on dropout rates.

- **Enhance Regional Equity**: Prioritize rural digital infrastructure investments (internet, computers) and establish urban-rural school mentorship programs.

Table 11. Recommendations for PEP Sustainability

Recommendation	Main Objective	Proposed Actions
Continuous Training	Maintain pedagogical quality	Online modules, quarterly seminars
Initial Training	Prepare future teachers	University reform, Teaching Institute
Secondary Support	Adapt to middle schools	Positive Behavior Support training, curriculum revision
Communication	Strengthen public support	Media campaigns, stakeholder testimonials
Data Monitoring	Adjust interventions	MASSAR dashboards, regional analyses
Funding	Secure resources	Public-private partnerships, international funds
Long-Term Evaluation	Measure sustainability	Longitudinal studies, PISA/TIMSS tracking
Regional Equity	Reduce disparities	Rural investments, inter-school mentorship

Conclusion

The Pioneer Schools Program represents a major advance in addressing Morocco's learning crisis. With an average effect size of 0.90 standard deviations, the 2023–2024 results place PEP among the most effective educational interventions globally, surpassing programs like Tusome in Kenya (0.80) and TaRL in India (0.70). Gains in Arabic (0.52), French (1.30), and mathematics (0.93) reflect the effectiveness of structured pedagogies, explicit teaching, and TaRL, supported by rigorous training, scripted lessons, a revised curriculum, strong ministerial leadership, and MASSAR's monitoring system.

However, scaling to 8,630 schools by 2027–2028 (1.3 million students) and extending to secondary schools via Pioneer Colleges requires sustained efforts. Challenges include continuous and initial teacher training, funding amidst potential international aid cuts, secondary-level behavior management, and navigating political and media resistance, especially with 2026 elections looming. The politicization of the reform, amplified by CSEFRS report controversies, underscores the need to transcend partisan debates to sustain momentum.

Long-term, Morocco's performance in international assessments (PISA, TIMSS) and reduced dropout rates (currently 20% in middle school) will gauge the reform's success. The PEP's evidence-based approach and demonstrated impact offer a promising model for Morocco and other low- and middle-income countries, showing that well-implemented structured interventions can transform education systems at scale.

Declaration of Conflicts of Interest

The authors, Clermont Gauthier and Steve Bissonnette, declare their contribution to designing pedagogical strategies and training inspectors for the PEP, in collaboration with Morocco's Ministry of National Education, Preschool, and Sports. They clarify that they did not participate in the external evaluations (Sindi, J-PAL, ONDH, CSEFRS), ensuring the independence of reported results.

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