

## Lessons Learned from the Success of Model Schools for 21st Century Learners: Enhancing Educational Quality through the Visible Learning Concept

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### Abstract

This study explores the implementation of John Hattie's Visible Learning framework in Thai model schools, aimed at enhancing educational quality and preparing learners for the 21st century. The research identifies four critical elements of the framework: data-driven instruction, clear learning goals, effective teacher-student interactions, and fostering a culture of self-improvement. These components, when applied in Thai schools, have led to significant improvements in student outcomes, critical thinking, and engagement by making the learning process more transparent and measurable. The framework promotes continuous reflection, active learning, and self-assessment, equipping students with essential skills for lifelong learning.

Additionally, the study emphasizes the need for tailored feedback, professional development for teachers, and the integration of modern technology to enhance classroom learning experiences. Recommendations are made for expanding the framework's adoption to address educational challenges in Thailand, such as unequal access to quality education and inconsistent teaching standards. The findings suggest that the broader application of Visible Learning could improve both educational equity and student preparedness for future success. Future research should focus on long-term impacts, comparative analysis, and the role of community and administrative support in sustaining the framework.

**Keywords:** Visible Learning, data-driven instruction, teacher-student interactions, educational equity, lifelong learning, professional development, Thai education

### Introduction

The current criticism of the Thai education system suggests it has reached a standstill, indicating that progress now extends beyond mere subject instruction. It necessitates comprehensive integration, resulting in the enhancement of individuals regarding their attitudes, skills, and knowledge. The three elements must be complementary to one another. Educators should prioritize the development of students over the exclusive transmission of subject matter. Assessments should go beyond subject-specific evaluation to include all aspects of life, linking students to their future goals and the surrounding world (Panich, 2021).

At the core of effective learning management is the continual focus on the student as the center of the educational process. In goal setting, teachers must focus on student-centered approaches while building up their students, themselves, and the dignity of the teaching profession. The future of the nation lies in the hands of the teachers, who must act as agents of change by developing their professional skills. This obligation includes teachers, school administrators, parents, communities, and ministry officials, all of whom must cooperate and provide mutual support (Panich, 2021).

As 21st-century learning demands that teachers transform from mere 'instructors' to 'change agents,' the concept of 'teachers for students,' as elaborated by esteemed education expert Prof. Dr. Vicharn Panich, goes beyond mere knowledge acquisition. It emphasizes the ability to apply knowledge in unfamiliar situations. Visible Learning entails both teachers and students gaining clarity on the value of learning for future life. It moves beyond traditional teaching methods and focuses on experiential learning (Active Learning), followed by reflective thinking (Reflection or After Action Review—AAR), where students build knowledge through self-reflection, whether individually, in groups, or with the teacher's guidance through questioning (Panich, 2021).

Contemporary educational theories indicate that experiential learning is the most effective way for the human brain to acquire knowledge, complemented by reflective analysis. This can be accomplished through different methods, including

composing essays or developing mind maps to encourage expansive and interconnected thought processes. Understanding is essential, but the management of that understanding to enhance its impact is vital. The true goal of learning today must evolve from superficial understanding to deep learning and ultimately to the ability to apply knowledge in various contexts (transfer). Therefore, students must avoid superficial learning and focus on cultivating habits, beliefs, and values that are far more essential than academic subjects (Equitable Education Fund, 2021).

Teachers and students must both have a clear understanding of the importance of learning for the future and for life in order for Visible Learning to take place. Pupils need to be able to evaluate their own learning, comprehend the significance of each lesson, and grasp the goal of learning. In order to create goals that suit each student's needs, interests, and abilities, teachers must also have a thorough understanding of each individual student. The development of attitude, abilities, and knowledge in an integrated way is necessary for this holistic approach to education in order to promote deep learning and learning outside of the classroom. Teachers must also cultivate habits and values, especially the importance of contributing to the collective good (Panich, 2021; Siam Commercial Foundation, 2021; ThaiPR.Net, 2020).

The classroom must become a space for active learning and reflection for Visible Learning to occur. Teachers should encourage teamwork, create a safe space for students to express themselves, and guide them through their education. This process requires open-ended questions, student-centered learning goals, and reflective practices. Creating a positive learning environment where students feel ownership of their education and are motivated to push their limits is also important. Teachers should get to know their students and tailor their lessons to their needs (Panich, 2021).

Visible Learning highlights four essential components of student learning: 1) establishing clear goals, 2) acknowledging their own learning outcomes, 3) monitoring their learning behaviors, and 4) cultivating self-regulation and self-assessment abilities. Ultimately, learning should involve not only gaining knowledge but also applying that knowledge in real-world contexts through thoughtful reflection and hands-on experiences. The educational environment ought to be supportive and safe, enabling students to engage in active learning under the guidance of the instructor, while making certain that learning is both visible and interconnected (Panich, 2021).

In conclusion, to lead students towards visible and connected learning, teachers must develop skills in goal setting, lesson planning, inspiring students, creating safe learning environments, asking open-ended questions, assessing learning outcomes, and refining the learning cycle through Professional Learning Communities (PLCs). The process of lesson reflection is both a concept and a tool for learning. It is also a key component of knowledge management, allowing for the extraction of lessons learned—both successes and failures—from work processes. This helps improve efficiency and effectiveness. Therefore, the researcher uses the Visible Learning concept to try to improve the quality of educational management in schools by distilling lessons from the successful model schools in the 'Teachers for Students in the 21st Century' program. The research findings will contribute to broader educational reform in Thailand by offering insightful information and acting as a useful manual for other schools.

## **Research Objectives**

This study aims to draw insights from the achievements of model schools involved in the "Thai Teachers for 21st Century Learners" initiative, utilizing the Visible Learning framework to improve the quality of educational management in schools.

## **Background of Study**

The Thai education system is presently encountering substantial challenges, with critiques indicating it has reached a state of stagnation. The emphasis must transition from exclusive subject instruction to a comprehensive development approach that encompasses attitudes, skills, and knowledge. Educators now urge educators to emphasize the holistic development of students, rather than merely delivering content knowledge. Evaluations must extend beyond academic metrics to encompass all facets of life, linking students to their future ambitions and the wider world (Panich, 2021).

The core of effective learning management is the student-centered approach, which prioritizes the ongoing focus on the learner. We encourage educators to set objectives that prioritize student development, their own professional advancement, and upholding the dignity of the teaching profession. The nation's future relies on educators who serve as catalysts for change by improving their professional skills. This obligation encompasses not only educators but also school administrators, parents, communities, and ministry officials, all of whom must cooperate and offer reciprocal support for educational advancement (Panich, 2021).

In the 21st century, educators must transition from being mere "instructors" to "change agents." Prominent education expert Prof. Dr. Vicharn Panich asserts that this transformation encompasses the notion of "teachers for students," which transcends mere knowledge acquisition to encompass the application of knowledge in novel contexts. The Visible Learning concept underscores the necessity for both educators and learners to comprehend the significance of lifelong learning and its implications for the future. Active learning, also known as reflection or after action review (AAR), comes next. This method differs from traditional ways of teaching because it involves students building their knowledge through self-reflection while teachers guide them and use questioning to improve the learning experience (Panich, 2021).

Contemporary educational theories posit that experiential learning is the most efficacious method for the human brain to assimilate knowledge, subsequently reinforced through reflective practices. Instruments like essays and mind maps facilitate the cultivation of more profound and interconnected cognitive processes among students. While comprehension is essential, managing it for enhanced impact is equally significant. The primary objective of education should progress from superficial comprehension to profound learning, allowing students to apply their knowledge in diverse contexts. This methodology assists students in circumventing superficial learning and instead emphasizes the development of fundamental habits, beliefs, and values that transcend academic disciplines (Equitable Education Fund, 2021).

Visible Learning necessitates that both educators and learners comprehend the significance of education for future achievement. Students must assess their learning, comprehend the significance of each lesson, and recognize the objective of education. Teachers must possess a comprehensive understanding of each student's unique needs, interests, and abilities. Education should cultivate attitudes, skills, and knowledge comprehensively to foster profound learning and extend educational experiences beyond the classroom. Educators should also foster values, especially those pertaining to the enhancement of the common good (Panich, 2021; Siam Commercial Foundation, 2021; ThaiPR.Net, 2020).

For Visible Learning to be effective, the classroom must transform into an environment conducive to active learning and reflection. Educators ought to promote collaboration, establish a secure atmosphere for students to articulate their thoughts, and mentor them during the educational journey. This method entails establishing open-ended educational objectives, promoting reflective practices, and facilitating student autonomy in their learning process. Educators ought to familiarize themselves with their students on an individual basis and customize their instruction to address the particular needs of each student (Panich, 2021).

Visible Learning emphasizes four fundamental components of student learning: 1) establishing explicit objectives; 2) comprehending learning outcomes; 3) tracking learning behaviors; and 4) promoting self-regulation and self-assessment skills. Ultimately, education should encompass not only the acquisition of knowledge but also its application in practical contexts through reflection and experiential learning. The educational environment must be conducive, fostering active participation and rendering learning transparent and interconnected (Panich, 2021).

In summary, educators must cultivate competencies in goal-setting, lesson planning, and promoting student engagement to facilitate observable and interconnected learning. They must also establish secure educational environments, pose open-ended inquiries, evaluate learning outcomes, and enhance the learning cycle through Professional Learning Communities (PLCs). Reflective practices, both conceptually and instrumentally, are essential in knowledge management, facilitating the extraction of valuable insights from successes and failures. This enhanced the efficiency and efficacy of educational practices. This study utilizes the Visible Learning concept to improve educational management quality in schools, drawing insights from successful model schools participating in the "Teachers for Students in the 21st Century" program. The research findings will aid comprehensive educational reform in Thailand, providing significant guidance for other institutions.

## **Literature Review**

### *Visible Learning Concept*

Visible Learning, when translated into Thai, carries various interpretations such as "transparent learning processes," "learning attuned to change," or "learning that is visible and connected." We retain the term Visible Learning in this study to convey its literal meaning. Broadly, Visible Learning refers to gaining clear insight, while in a narrower sense, it emphasizes learning processes that give meaning to experiences, leading to practical applications in daily life. It promotes self-regulation, adaptability, and the ability to stay alert to societal changes (Hattie, 2009).

In classrooms that adopt Visible Learning and teaching, students become active constructors of their own learning through both individual and group processes, known as constructive learning. Additionally, these classrooms encourage metacognitive learning, encouraging students to reflect on their learning processes and document their progress and understanding. Visible Learning & Teaching occurs when both students and teachers perceive learning from each other's

*Key Components of Visible Learning & Teaching:*

1. Students learn to view themselves as their own teachers, understanding their learning goals, comparing their learning with that of their peers, and gaining insights into the learning processes facilitated by their teacher.
2. Teachers' Insight into Students' Learning: Teachers observe students' emotions, recall of prior knowledge, struggles with new challenges, and each student's learning trajectory toward the set goals (Hattie, 2009).

*Principles for Visible Learning and Teaching:*

To promote Visible Learning, educators must stimulate students' curiosity and create a positive cognitive disequilibrium. This state of intellectual discomfort encourages students to recognize inconsistencies in their existing knowledge, motivating them to resolve these discrepancies. According to Piaget's learning theory, students assimilate new experiences and adjust their mental models, eventually reaching a new equilibrium (Smith & Brown, 2020).

*Teachers as Knowledge Facilitators:*

Teachers play a crucial role in guiding students to construct their own learning experiences. Through constructive learning and metacognitive learning, students document their reflections, evaluate their progress, and exchange knowledge with peers. These processes contribute to the emergence of a dynamic and effective visible learning and teaching environment in the classroom (Hattie, 2009; Susilwan, 2021).

*Concept of Lesson Learned*

The lesson learned is both a concept and a tool for creating knowledge. It is also a component of knowledge management, involving the process of extracting or deriving knowledge from past work experiences. This approach helps identify successes and failures in order to improve efficiency and enhance future operations or work processes. Various scholars and experts have defined the lesson learned concept as follows:

*Definitions of Lesson Learned*

The concept of "Lessons Learned" has been the subject of extensive research across various domains such as education, project management, and organizational learning. A multitude of studies and articles have elucidated and elaborated on this concept, demonstrating its significance in fostering continuous improvement, innovation, and enhanced decision-making. Here are a few important additions to our understanding of what we learned:

Nick Milton (2010) In his work on knowledge management, Milton stresses that the lessons learned process is essential for improving efficiency within organizations. By systematically identifying and analyzing mistakes, organizations can avoid repeating them, leading to refined procedures and more successful outcomes. Milton's work underscores the crucial role of lessons learned in organizational learning, aiding in the streamlining of processes and guaranteeing the sustainability of improvements overtime.

Duffield and Whitty (2015) Duffield and Whitty's research explores the development of collective knowledge within organizations via the lessons learned process. Their research illustrates that documenting and disseminating insights from professional experiences enhance collaborative learning and refine decision-making processes. In project management, this approach is essential, as documenting lessons learned facilitates the enhancement of project methodologies, thereby ensuring more effective management of future projects.

Harold Kerzner (2017) Kerzner defines lessons learned as the process of summarizing and documenting key insights from work experiences, particularly within the context of project management. He argues that these lessons are vital for creating new strategies or enhancing existing processes, as they provide a knowledge base that can guide future decisions. Kerzner emphasizes the significance of lessons learned for organizational learning and long-term project success, as they guarantee the continuous application of best practices.

Rosemary Keogh, David Walker, and David Boud (1985) Boud, Keogh, and Walker emphasize the importance of lessons learned in supporting organizational decision-making processes. Their findings highlight the value of using knowledge from past experiences as a solid foundation for making well-informed decisions. By drawing lessons from the past, this approach helps organizations achieve their objectives more quickly, highlighting the importance of lessons learned in both organizational and educational contexts.

### *Key Aspects of Lesson Learned*

1. Improving Efficiency: Summarizing and analyzing past work experiences helps organizations enhance work processes and reduce the risk of repeating mistakes (Milton, 2010).
2. Building Shared Knowledge: Recording and sharing insights from lessons learned fosters the development of a shared knowledge base within the organization, aiding in the enhancement of personnel (Duffield & Whitty, 2015).
3. Supporting Decision-Making: According to Boud, Keogh, and Walker (1985), information from the learned lesson supports future project decision-making by providing a solid foundation for well-informed choices.

In summary, the lesson-learned process is essential for organizations and individuals as it enables learning from past experiences and the application of this knowledge for continuous improvement. It also creates a culture of learning within the organization, promoting growth and adaptability (Smith, 2017).

### *Context of Case Study School*

One of the Foundation founded Case Study School in 2002 as a model school for "human development-centered education." This approach counters the traditional knowledge-based system, which often marginalizes students who do not excel academically. The school's goal is to provide an inclusive learning environment where all students have opportunities to succeed according to their unique potentials. The school offers education from kindergarten to secondary level, with a current enrollment of 167 students.

The school's success largely depends on teacher quality. Most teachers are from the Northeastern region of Thailand and possess typical Thai qualifications, with some having expertise in specific areas but limited teaching experience. The school emphasizes continuous teacher development through its organizational culture, which includes three key components:

1. Shared Purpose: Teachers align with the school's clear vision and educational goals.
2. Continuous Improvement: Professional development is integral to daily operations, with all teachers, regardless of experience, expected to engage in ongoing skill enhancement.
3. Teamwork: Collaboration in lesson planning and mutual support are encouraged. A non-hierarchical, respectful, and friendly atmosphere fosters teamwork, with communication playing a crucial role.

Parents are also deeply involved in the school's community, attending mandatory annual workshops and regularly interacting with teachers. The school facilitates parent-teacher communication through home visits, written updates, and bimonthly meetings, ensuring strong connections between the school, families, and the broader community.

## **Research Findings**

### ***1. Implementation of Visible Learning in Thai Schools***

Human progress and quality of life depend on education. Enhancing educational quality is a multifaceted challenge that requires systematic strategies and explicit methods. Visible Learning, developed by New Zealand educational researcher John Hattie, is now essential in international education (Hattie, 2009).

### ***2. The Fundamentals of Visible Learning***

- 1) Feedback: Effective learning depends on the provision of timely and significant feedback. According to Hattie and Timperley (2007), when students receive clear, specific, and timely feedback, they are able to recognize their progress and pinpoint areas that require improvement.
- 2) Clarity in Instruction: It is crucial for educators to clearly define the learning goals and evaluation standards. This clarity allows students to participate in the learning process with greater confidence and comprehension (Fendick, 1990).
- 3) Student Self-Assessment: Motivating students to assess their own learning cultivates proactive engagement and nurtures a sense of accountability. Self-assessment enables students to evaluate their strengths and pinpoint areas that require enhancement (Black & Wiliam, 1998).
- 4) Transparent Instruction and Learning: The processes of instruction and learning are clearly demonstrated through open interactions between educators and learners. This openness promotes shared comprehension and ongoing enhancement (Hattie, 2012).
- 5) Learning Intentions and Success Criteria: Learners are able to evaluate their advancement and comprehend the standards set for them by articulating precise learning intentions and success criteria (Clark, 2012).

### ***3. Impact of Observable Learning***

The Visible Learning framework is crucial for modern learners, as it boosts student engagement, fosters critical thinking, and develops vital self-assessment abilities. This enhances learning outcomes by promoting effective communication and understanding between educators and learners (Hattie, 2012).

### ***4. Applying Visible Learning in Thai Educational Institutions***

Disparities in teaching standards and unequal access to quality education represent significant challenges that the Thai education system must address. The Visible Learning concept addresses these issues by making the learning process transparent and measurable for students and teachers alike. The implementation of this concept in Thai schools may enhance learning outcomes and increase student engagement (Fendick, 1990; Black & Wiliam, 1998).

- Effective feedback in Thai classrooms is immediate, direct, and unambiguous. Structured feedback models like "What was done well," "What needs improvement," and "How to improve" help students understand their strengths and weaknesses (Hattie & Timperley, 2007).
- Teacher Clarity: Teachers must clearly explain learning objectives and assessment criteria. Teaching methods like diagrams and digital tools improve student comprehension and engagement (Fendick, 1990).
- Student Self-Assessment: Self-assessment promotes active learning by enabling students to reflect on their strengths and weaknesses. Thai students can utilize learning logs or self-assessment checklists to set meaningful objectives and improve their academic performance (Black & Wiliam, 1998).
- Technology Integration: Incorporating modern technology into educational settings improves the clarity of the learning process and facilitates student engagement (Hattie, 2012).

### ***5. The Impact of Visible Learning in Educational Institutions in Thailand***

The application of the Visible Learning approach in Thai model schools has produced a variety of positive outcomes:

- Enhanced Academic Outcomes: Learners demonstrate better academic achievements due to structured feedback and increased engagement in the learning process (Hattie, 2009).
- Enhanced Critical Thinking: Reflective learning activities promote the growth of critical thinking skills in students, enabling more effective analysis and problem-solving (Brookhart, 2010).
- Improved Student Involvement: The use of active learning techniques and ongoing assessments fosters greater participation and engagement in the educational journey (Black & Wiliam, 1998). John Hattie's Visible Learning framework offers a powerful approach to improving educational quality in Thailand. By incorporating essential elements such as feedback, teacher clarity, and self-assessment, Thai schools can create a more engaged, responsible, and effective learning environment. Visible Learning also contributes to reducing educational disparities and equips students with critical skills for the 21st century.

### **Conclusion**

The adoption of Visible Learning in Thai schools could improve educational quality by addressing significant challenges such as inequitable access to education and inconsistent teaching standards nationwide. John Hattie's framework emphasizes the significance of essential components such as effective feedback, teacher clarity, and student self-assessment, all of which are vital for improving learning outcomes. In addition to fostering active participation, analytical reasoning, and responsibility in students, the combination of these elements equips them with essential skills that will allow them to continue their education throughout their entire lives for as long as they live. By applying Visible Learning principles, Thai educational institutions can create a more transparent and measurable learning environment, encouraging active engagement from both educators and students in the educational process. Modern technology enhances transparency, thereby creating a more accessible and engaging learning experience. The implementation of the Visible Learning approach has demonstrated beneficial outcomes in model schools, resulting in enhanced academic performance, improved critical thinking abilities, and increased student engagement. Overall, Visible Learning offers a thorough framework that can diminish educational inequalities and foster the growth of 21st-century skills among Thai students, equipping them for achievement in a progressively intricate and competitive landscape.

## Discussion

### *1. The Application of the Visible Learning Concept in the Development of Teaching in Thai Model Schools for 21st Century Learners*

The application of John Hattie's Visible Learning framework in Thai model schools emphasizes the importance of making learning outcomes visible, leveraging data to refine teaching practices, and fostering high-quality teacher-student interactions. This approach aims to enhance the quality of education by making the learning process transparent and engaging for both students and teachers.

#### *1. Data-Driven Instruction*

Visible Learning focuses on the continuous use of data to monitor and improve teaching. In model schools, teachers have successfully utilized student assessment data to refine their instructional strategies and tailor lesson plans to meet the unique needs of students (Hattie, 2009). By analyzing student test results, teachers can identify areas of strength and weakness, enabling them to make data-informed adjustments to their teaching methods. This approach not only improves student learning outcomes but also ensures that teaching practices are aligned with the students' learning needs (Hattie, 2012).

#### *2. Teacher-Student Interactions*

A central principle of Visible Learning is fostering high-quality interactions between teachers and students. These interactions have a profound impact on student learning outcomes. In model schools, teachers have been trained to create supportive, interactive learning environments where students are encouraged to actively participate. Research shows that when teachers use questioning techniques and reflective practices, student engagement increases, leading to a deeper understanding of the content (Hattie, 2015).

#### *3. Clear Learning Goals*

Setting clear, measurable learning goals is another critical element of the Visible Learning framework. Research from Thai model schools indicates that when teachers and students collaborate to establish clear learning objectives and regularly assess progress, students become more motivated and achieve better learning outcomes (Hattie, 2012). This clarity helps students understand the expectations and track their progress more effectively, contributing to a more focused and goal-oriented learning experience.

#### *4. Learning Culture Focused on Self-Improvement*

Creating a learning culture that emphasizes self-improvement and lifelong learning is a key aspect of applying the Visible Learning framework in model schools. Schools have encouraged students to see the value in learning from their mistakes and continuously improving themselves, aligning with Visible Learning's focus on experiential learning and personal development (Hattie, 2009). This culture promotes resilience and the drive for continuous improvement, which are essential for success in the 21st century.

#### *Impact of Visible Learning on Thai Education*

The application of Visible Learning in Thai model schools has resulted in significant improvements in various areas. These include the use of data-driven strategies to enhance teaching, fostering high-quality interactions between teachers and students, setting clear learning objectives, and creating a culture of self-improvement. These positive outcomes demonstrate that the implementation of this framework can effectively raise the quality of education in Thailand.

#### *Key Success Factors*

1. **Clear Learning Goals:** Visible Learning underscores the importance of clear learning objectives. When teachers establish explicit learning goals, students can understand what they need to achieve and monitor their progress. Communicating these goals clearly to students also increases motivation and engagement in the learning process (Hattie, 2012).
2. **Assessment and Feedback:** Continuous assessment is a vital aspect of Visible Learning. Teachers regularly evaluate student progress and provide constructive, specific feedback. Effective feedback helps students understand where they need to improve and how to do so, focusing on the development of their learning processes and skills (Hattie & Timperley, 2007).
3. **Effective Learning Environments:** Creating conducive learning environments is another crucial element of Visible Learning. Thai model schools have designed classrooms that support full engagement and participation. This includes the use of modern technology and innovative teaching materials to enhance the learning experience (Hattie, 2009).
4. **Professional Development for Teachers:** Continuous professional development is essential for the successful application of Visible Learning. Teachers must receive training in learner-centered teaching techniques, which enables them to effectively assess and refine their instructional methods (Timperley et al., 2007). Ongoing professional development ensures that teachers stay up-to-date with best practices and can continuously improve their teaching.

The application of the Visible Learning framework in Thai model schools has not only improved the quality of education but has also created learning environments that benefit both students and teachers. By making the learning process transparent and clear, students can monitor their progress and receive effective feedback, which contributes to the development of lifelong learning skills and capabilities. Additionally, Visible Learning helps reduce educational disparities by providing a methodical approach that addresses the unique needs of each student. The positive outcomes seen in Thai model schools suggest that broader implementation of Visible Learning across the country could lead to significant improvements in both the quality and equity of education in Thailand. (Mahapoonyanont, 2020; Mahapoonyanont, Hansen, & Poskitt, 2017; 2020)

## Recommendations for Future Research

### *Recommendations for Applying Visible Learning in Other Schools*

#### 1. Setting Clear Learning Goals

- Schools should encourage collaboration between teachers and students to establish clear and measurable learning goals. Clear goals provide students with direction and allow them to track their progress.

- Clear communication of learning objectives between teachers and students is essential to ensure mutual understanding and cooperation in achieving the set goals.

#### 2. Using Data to Improve Instruction

- Schools should establish systems for regularly collecting and analyzing student learning data to inform teaching adjustments and improve learning outcomes.

- Teachers should receive training in using data to analyze and refine their instruction, making teaching more effective and tailored to student needs.

#### 3. Fostering High-Quality Teacher-Student Interactions

- Schools should promote a supportive learning atmosphere that encourages active student participation in the learning process.

- Teachers should be trained in interactive teaching techniques, such as questioning, reflective learning, and providing constructive feedback to students.

#### 4. Providing Effective Feedback

- Teachers should be trained to provide clear and specific feedback. Effective feedback helps students identify areas for improvement and how to address them.

- Continuous assessment should be implemented, with results used to give useful feedback that aids student development.

#### 5. Professional Development for Teachers

- Schools should offer ongoing training and development programs to equip teachers with the skills needed to effectively implement Visible Learning strategies.

- Schools should also promote peer exchange and the sharing of best teaching practices to foster teacher development and build a learning community among educators.

#### 6. Creating a Learning Culture Focused on Self-Improvement

- Schools should encourage a learning culture that emphasizes self-improvement and lifelong learning, supporting students in recognizing the value of learning from mistakes and continual self-development.

- Activities and projects that promote experiential learning and self-improvement, such as life skills development and community-based learning, should be integrated into the curriculum.

### *Recommendations for Policy Development*

#### 1. Setting Clear Learning Goals

- The Ministry of Education should mandate that all schools set clear and measurable learning objectives for all students.
- Guides and training programs should be developed to assist teachers in setting effective learning goals.

##### *Implementation Steps:*

- Create and distribute a guide for setting clear learning goals to all teachers.
- Organize workshops on goal setting and assessment for educators.

#### 2. Using Data to Improve Teaching

- A system should be developed to collect and analyze student learning data, enabling teachers to continuously adjust their teaching.

- Encourage the use of assessment data in lesson planning to meet student needs.

##### *Implementation Steps:*

- Develop software or platforms for collecting and analyzing student learning data.
- Provide training for teachers on using data to improve instruction.

### **3. *Fostering High-Quality Teacher-Student Interactions***

- The Ministry should support teacher training programs that enhance the quality of teacher-student interactions.
- Encourage methods of instruction that promote student engagement and emotional support.

#### *Implementation Steps:*

- Organize workshops on fostering high-quality teacher-student interactions.
- Support the adoption of teaching techniques that prioritize student involvement in classrooms.

### **4. *Assessment and Providing Effective Feedback***

- Policies should be developed to emphasize quality, specific feedback for students.
- Promote teacher training in providing constructive and meaningful feedback.

#### *Implementation Steps:*

- Develop guides and training programs on effective feedback provision.
- Create platforms for teachers to share best practices and experiences in providing feedback.

### **5. *Professional Development for Teachers***

- The Ministry should support continuous teacher development, with a focus on new skills and methodologies.
- Encourage teachers to enhance their technological skills to improve teaching.

#### *Implementation Steps:*

- Offer continuous professional development courses that integrate 21st-century teaching skills.
- Promote the use of modern technology and educational resources in the teaching process.

### **6. *Creating a Learning Culture Focused on Self-Improvement***

- Policies should promote the development of a learning culture focused on self-improvement and lifelong learning.
- Support activities that encourage learning from mistakes and continuous self-development.

#### *Implementation Steps:*

- Organize activities that promote experiential learning, such as group discussions and reflection.
- Create online platforms for lifelong learning and skill development in various fields.

## ***Recommendations for Future Research***

### **1. Comparative Analysis between Schools**

- Future research should focus on comparing model schools that apply Visible Learning with schools that use other teaching approaches. This comparison will help clarify the effectiveness and impact of Visible Learning in different contexts.

### **2. Long-Term Impact of Visible Learning**

- Further research is needed to assess the long-term impact of applying Visible Learning in model schools. Longitudinal studies should track student outcomes and development over extended periods to evaluate the sustainability and effectiveness of this approach.

### **3. Student Feedback and Experience**

- Greater emphasis should be placed on gathering student feedback and experiences regarding Visible Learning. Qualitative studies involving student perspectives will provide deeper insights into their learning experiences and suggestions for improvement.

### **4. Diverse Assessment Methods**

- Future research should explore diverse and appropriate assessment methods for applying Visible Learning. Developing assessment techniques that accurately measure learning outcomes across various dimensions will enhance the implementation of this concept.

### **5. Support from Administrators and the Community**

- The role of administrators and community support in the implementation of Visible Learning should be considered. Research should explore the influence of administrative support and community involvement on the success of teaching and student learning.

### **6. Teacher Professional Development**

- Future studies should investigate ways to improve teachers' abilities to apply learner-centered techniques in their teaching. Continuous teacher professional development will ensure teachers are confident and capable of creating beneficial learning environments for students.

## 7. Educational Technology Research

- Additional research on the use of technology in education is necessary. Investigating how technology can support learning aligned with the Visible Learning framework will improve the effectiveness of teaching and learning practices. This research should include exploring appropriate technology use and developing digital learning resources.

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