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Learning ecosystem in the classroom for supporting pedagogy under the concept of Visible Learning.

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Abstract

This study investigates the implementation of a learning ecosystem within classrooms to enhance pedagogy through the lens of Visible Learning. Grounded in Hattie's (2009) framework, which emphasizes the importance of making learning visible and impactful, this research explores integrating diverse educational elements into the classroom environment. The study examines how a dynamic learning ecosystem, comprising interactive technologies, collaborative activities, formative assessments, and targeted feedback mechanisms, supports effective teaching methods. By utilizing Hattie's principles, this research aims to unveil the nuances of Visible Learning within this ecosystem, shedding light on its impact on student engagement, understanding, and achievement. The findings not only contribute to the theoretical understanding of Visible Learning but also offer practical implications for educators striving to create optimal learning environments.

Keywords: *Visible Learning, professional development, school development, achievement enhancing.*

Introduction

Visible Learning, as introduced by John Hattie, emphasizes the importance of making learning processes transparent, understandable, and measurable for both teachers and students. Within this framework, creating a supportive learning ecosystem in the classroom is pivotal for effective pedagogy. This ecosystem involves various elements that work cohesively to enhance student learning experiences and outcomes. 1) Individualized Learning Paths: A well-designed learning ecosystem accommodates diverse student needs and learning styles. By understanding each student's strengths and challenges, teachers can tailor instruction, providing personalized learning paths that cater to individual requirements (Hattie, 2009). 2) Collaborative Learning Spaces: Classrooms functioning as collaborative learning spaces foster active student engagement and peer interaction. When students collaborate, discuss, and share ideas, they construct a deeper understanding, enhancing their learning experiences (Fisher & Frey, 2008). 3) Feedback and Assessment: Regular and constructive feedback is a core component of the learning ecosystem. Timely assessments, both formative and summative, help teachers and students gauge progress. Effective feedback informs instruction, guiding students toward

improved performance (Hattie & Timperley, 2007). 4) Teacher-Student Relationships: Positive teacher-student relationships are foundational for a supportive learning environment. When students feel valued, respected, and supported, they are more likely to engage actively in learning activities, leading to better academic outcomes (Wubbels & Brekelmans, 2005). 5) Use of Technology: Integrating technology into the learning ecosystem enhances access to information and interactive learning resources. Well-implemented technology tools can facilitate collaborative projects, research, and creative expression, amplifying the impact of pedagogy (Mishra & Koehler, 2006). 6) Parental Involvement: Involving parents in the learning process strengthens the ecosystem. When parents know classroom activities and learning goals, they can provide essential support at home, reinforcing what students learn in school (Epstein, 2018).

Incorporating a holistic learning ecosystem in the classroom, aligned with the principles of Visible Learning, significantly enhances pedagogy. By recognizing the importance of individualization, collaboration, feedback, relationships, technology, and parental involvement, educators can create a dynamic learning environment that maximizes student learning outcomes.

This paper aims to investigate the implementation of a learning ecosystem within classrooms to enhance pedagogy through the lens of Visible Learning.

Method and Materials

The following are the stages of this study.

Documentary research is a valuable method for investigating the learning ecosystem in classrooms, particularly within the framework of Visible Learning, a concept developed by Hattie (2009) emphasizing the importance of visible evidence of learning. These are the steps involved in conducting documentary research in this context:

1. Define the Research Focus: Define the research question or focus. In this case, it would be to understand how the learning ecosystem in the classroom supports pedagogy in alignment with the principles of Visible Learning.

2. Literature Review: Conduct a comprehensive review of relevant literature on Visible Learning, classroom pedagogy, and the elements of a supportive learning ecosystem. Identify key concepts, theories, and models that guide your research.

3. Data Collection: Gather relevant documents and materials. These may include lesson plans, curriculum materials, teacher guides, student assessments, classroom observation reports, and other records that provide insights into the learning ecosystem and pedagogical practices.

4. Document Categorization: Organize collected documents into categories based on teaching methods, assessment strategies, student engagement, and feedback mechanisms. This categorization aids in systematic analysis.

5. Data Coding and Analysis: Systematically analyze the selected documents. This involves coding and categorizing information related to the learning ecosystem elements (e.g., classroom layout, resources, technology) and pedagogical practices in line with Visible Learning principles.

6. **Comparative Analysis:** Compare different documents to discern variations and similarities in pedagogical approaches. Identify effective strategies and areas needing improvement based on Visible Learning concepts.

7. **Interpretation and Synthesis:** Interpret the findings in the context of Visible Learning principles, drawing connections between pedagogical strategies, student outcomes, and visible evidence of learning. Synthesize the information to develop insights and recommendations.

9. **Conclusions and Recommendations:** Draw conclusions based on the analysis. Discuss the implications of the findings for classroom practice and offer recommendations for enhancing the learning ecosystem to support Visible Learning-based pedagogy better.

Results and Discussion

The Importance of Making Learning Visible and Impactful

Making learning visible and impactful is a fundamental aspect of practical education. When learning is transparent, observable, and meaningful, it enhances the educational experience for students and educators alike. This visibility not only fosters a deeper understanding of the learning process but also promotes active engagement and long-lasting knowledge retention among learners. Several vital reasons underscore the importance of making learning visible and impactful.

1. **Enhanced Understanding and Reflection:** Visible learning provides students with a clear view of their progress and understanding. When learners can see their strengths and areas for improvement, they are better equipped to reflect on their learning journey, identify challenges, and strategize for improvement (Hattie, 2009). 1. Making learning visible involves strategies such as concept mapping, visualization, and real-world applications of knowledge. These techniques help students better understand and retain what they have learned (Ambrose et al., 2010).

2. **Personalized Learning:** Visible learning allows educators to tailor instruction to individual student needs. By understanding each student's progress, teachers can provide targeted support by adapting teaching methods to address specific learning gaps and challenges (Fisher et al., 2016).

3. **Increased Motivation and Engagement:** When students witness their growth and achievements, it boosts their confidence and motivation. Visible learning fosters a positive learning environment where students are encouraged to participate actively, set goals, and take ownership of their learning, leading to increased engagement and enthusiasm for learning (Black et al., 2004). When students can see the practical applications and relevance of what they are learning their engagement and motivation are boosted. This results in more active and enthusiastic learners (Hattie & Timperley, 2007).

4. **Transfer of Learning:** Visible learning encourages transferring knowledge and skills to new contexts. It helps students apply what they have learned in one situation to solve problems in different settings, fostering deeper understanding (Perkins & Salomon, 1989).

5. **Improved Assessment and Feedback:** Visible learning practices allow educators to assess students' understanding and progress more effectively. This leads to targeted and timely feedback, which is instrumental in promoting student growth (Hattie & Timperley, 2007).

6. **Informed Teaching Practices:** Visible learning enables educators to assess the effectiveness of their teaching strategies. By observing how students respond to different

methods, teachers can make informed decisions about instructional approaches, choosing techniques that resonate most with their students and optimize learning outcomes (Hattie, 2009).

7. **Long-term Knowledge Retention:** When learning experiences are impactful and visible, the knowledge acquired is more likely to be retained in the long term. Meaningful, experiential learning that engages multiple senses and encourages active participation enhances memory consolidation, ensuring that learned concepts are retained and can be applied effectively (Sousa & Tomlinson, 2011).

8. **Lifelong Learning Skills:** By making learning impactful, students are not only acquiring knowledge but also developing critical thinking, problem-solving, and self-regulation skills. These skills are essential for lifelong learning (Bransford, Brown, & Cocking, 2000).

9. **Alignment with Real-World Demands:** In an ever-changing world, making learning visible and impactful ensures that education aligns with the needs and demands of the real world. Students are better prepared for future challenges and opportunities (Fullan, 2007).

10. **Student Empowerment:** Visible learning empowers students to take control of their learning journey. They become more self-directed learners who can set goals and monitor their progress (Hattie & Timperley, 2007).

11. **Continuous Improvement:** For educators, making learning visible and impactful allows for ongoing assessment and adjustment of teaching methods. This leads to continuous improvement in instructional practices (Hattie, 2009).

Conclusion: Making learning visible and impactful is essential for creating compelling and meaningful educational experiences. It benefits both students and educators by promoting understanding, engagement, transfer of learning, and the development of lifelong skills.

Creating a Dynamic Learning Ecosystem through Visible Learning

In a dynamic learning ecosystem, Visible Learning involves creating an environment where student learning is continuously assessed, monitored, and improved through evidence-based strategies, fostering a culture of visible teaching and visible learning (Hattie, 2012). This approach transforms classrooms into vibrant spaces where both educators and students are active participants in the learning process.

Components of a Dynamic Learning Ecosystem

1. **High-Quality Teaching Strategies:** Visible Learning encourages using high-impact teaching strategies such as formative assessment, feedback, and metacognitive strategies (Hattie, 2009). These strategies empower teachers to adjust their methods based on real-time feedback, ensuring that instructional approaches are tailored to students' needs.

2. **Data-Informed Decision-Making:** A dynamic learning ecosystem uses data to drive instructional decisions. Educators collect and analyze various forms of data, including student assessments, surveys, and classroom observations. This data-driven approach enables educators to identify areas for improvement and implement targeted interventions (Hattie, 2009).

3. **Collaborative Professional Learning Communities:** Visible Learning emphasizes the importance of collaboration among educators. Professional learning communities allow

teachers to share best practices, discuss student outcomes, and collaboratively plan interventions. Collaborative learning communities enhance collective efficacy, improving student achievement (Hattie, 2015).

4. **Student Agency and Self-Regulation:** In a dynamic learning ecosystem, students actively participate in their education. Visible Learning encourages the development of student agencies, where learners set goals, monitor their progress, and reflect on their learning. Cultivating self-regulation skills empowers students to take ownership of their learning journey (Hattie, 2012).

5. **Parent and Community Engagement:** Visible Learning extends beyond the classroom, involving parents and the community in the learning process. Transparent communication about learning goals, progress, and strategies creates a supportive ecosystem where all stakeholders work collaboratively to enhance student outcomes (Hattie, 2015).

By embracing the principles of Visible Learning, educators can create a dynamic learning ecosystem that nurtures continuous improvement. Through evidence-based teaching practices, data-driven decision-making, collaborative communities, and empowered students, classrooms transform into vibrant spaces where learning is visible, measurable, and transformative.

Collaborative Activities and Visible Learning: A Guide for Educators

Visible Learning emphasizes the importance of making learning processes visible so teachers and students can understand the impact of their actions on learning outcomes. Collaborative activities play a significant role in this approach, fostering meaningful interactions and enhancing student engagement. Some recommendations on how to implement collaborative activities under the concept of Visible Learning:

1. **Setting Clear Learning Intentions:** Begin by clearly stating the learning objectives for the collaborative activity. Ensure that both teachers and students understand the specific goals and what successful collaboration looks like in the lesson context (Hattie, 2009).
Setting Clear Learning Intentions: Start by clearly defining the learning intentions or objectives for the collaborative activity. These intentions should be specific and transparent, ensuring students understand what they are expected to learn (Hattie, 2009).

2. **Engaging Students in Goal Setting:** Involve students in setting their learning goals. Encourage them to reflect on their current understanding and what they hope to achieve through collaborative activity (Hattie, 2012).

3. **Promoting Effective Communication:** Encourage open and respectful communication among students. Teach active listening skills and provide opportunities for students to express their thoughts, ask questions, and provide feedback to their peers (Fisher & Frey, 2007).

4. **Creating Structured Collaborative Tasks:** Design collaborative activities that are structured and purposeful. Group discussions, problem-solving tasks, debates, and peer teaching can promote meaningful interactions and deep understanding of the content (Marzano et al., 2001).

5. **Monitoring and Providing Feedback:** As students collaborate, monitor their interactions and provide timely feedback. Use formative assessment techniques to gauge the

effectiveness of collaboration and provide guidance for improvement (Hattie & Timperley, 2007). Peer Feedback and Self-Assessment: Design collaborative activities that incorporate opportunities for students to provide feedback to their peers and engage in self-assessment. This promotes metacognition and self-regulation (Hattie & Timperley, 2007). Ensure that feedback loops are an integral part of collaborative activities. This includes timely and specific student feedback about their performance and progress (Hattie & Timperley, 2007).

6. **Formative Assessment:** Use formative assessment techniques during collaborative activities to monitor student progress. This helps teachers and students adjust their strategies to enhance learning (Hattie, 2012).

7. **Visible Success Criteria:** Make the success criteria for the collaborative activity visible to students. This could be in the form of rubrics, checklists, or clear guidelines that help students understand what success looks like (Hattie, 2009).

8. **Encouraging Accountability:** Promote a sense of accountability within the groups. Each student should contribute meaningfully to the collaborative task. Encourage group members to hold each other accountable for their contributions (Slavin, 2014).

9. **6. Reflecting on the Collaborative Process:** After the collaborative activity, facilitate a reflection session. Encourage students to reflect on what they learned from the activity, how their collaboration impacted the learning process, and what strategies were effective (Hattie, 2012).

10. **Celebrating Success and Addressing Challenges:** Acknowledge and celebrate successful collaborations. Highlight specific examples of effective teamwork. Additionally, address any challenges faced during the collaborative activity and discuss strategies for overcoming these challenges in future collaborations (Hattie, 2009).

11. **Collective Teacher Efficacy:** Foster collective teacher efficacy, where educators collaborate and believe in their ability to impact student learning positively. This belief can enhance the effectiveness of collaborative activities (Donohoo & Hattie, 2016).

12. **Data-Informed Decision-Making:** Use data and evidence from collaborative activities to inform instructional decisions. This promotes data-driven teaching and learning (Hattie, 2009).

13. **Scaffolding and Support:** Provide appropriate scaffolding and support to students during collaborative activities to ensure they can effectively work together and achieve the intended learning outcomes (Hattie, 2012).

Formative Assessments and Visible Learning: Enhancing Student Understanding and Achievement

Formative assessment is a crucial component of the teaching and learning process, enabling educators to understand students' progress and adjust instruction accordingly. When aligned with the principles of Visible Learning, a concept developed by John Hattie (2009), formative assessments become powerful tools for enhancing student understanding and achievement.

1. **Setting Clear Learning Intentions and Success Criteria:** Articulate learning goals and objectives for the students. Develop explicit success criteria outlining what successful attainment of the goals looks like (Hattie, 2009).

2. **Eliciting Evidence of Learning:** Use various formative assessment techniques such as quizzes, polls, discussions, and peer assessments to gauge student understanding. Encourage

students to self-assess and reflect on their learning progress, fostering metacognition (Hattie, 2009).

3. **Feedback and Feedforward:** Provide timely and specific feedback to students, highlighting strengths and areas for improvement. Offer feedforward, suggesting specific strategies and resources for improvement, guiding students toward their learning goals (Hattie & Timperley, 2007).

4. **Peer and Self-Assessment:** Incorporate peer-assessment activities where students assess the work of their peers based on established criteria. Integrate self-assessment tools, encouraging students to evaluate their work against the learning intentions (Hattie, 2009).

5. **Data-Informed Decision Making:** Analyze formative assessment data to identify patterns and trends in student understanding. Use this data to inform instructional decisions, adapting teaching methods to address specific learning needs (Hattie, 2009).

6. **Creating a Supportive Learning Environment:** Foster a safe and supportive classroom environment where students feel comfortable making mistakes and learning from them. Cultivate a growth mindset, emphasizing the belief that abilities and intelligence can be developed with effort and dedication (Dweck, 2006).

Implementing Targeted Feedback Mechanisms: A Visible Learning Approach

Effective feedback mechanisms are crucial to this approach, guiding learners toward their goals and fostering continuous improvement. Implementing targeted feedback under the lens of Visible Learning involves the following steps:

1. **Set Clear Learning Goals:** Clearly define learning objectives and share them with students. Goals should be specific, measurable, and achievable, providing a clear direction for learning (Hattie, 2012). Communicate learning intentions and success criteria to students at the beginning of a lesson or unit. This helps students understand what is expected of them and provides a reference point for feedback (Hattie, 2012).

2. **Use Assessments to Identify Gaps:** Regularly assess student performance to identify areas where they excel and struggle. Use formative assessments to diagnose learning gaps and misconceptions (Hattie & Timperley, 2007). Incorporate formative assessment practices to monitor student progress continuously. These assessments can be quizzes, discussions, or other tools that provide insight into students' understanding (Black & Wiliam, 1998).

3. **Provide Specific and Timely Feedback:** Offer feedback that is specific to the learning goals, highlighting strengths and areas for improvement. Timely feedback, provided promptly after assessments, allows students to connect their actions with outcomes (Hattie, 2007). Feedback should be specific, actionable, and related to the learning intentions. Identify what students did well and where they can improve. This helps them understand how to progress (Hattie & Timperley, 2007).

4. **Encourage Self-Reflection:** Promote self-assessment and reflection. Encourage students to analyze their work considering the feedback received, fostering metacognitive skills and self-regulation (Hattie, 2009).

5. **Personalize Feedback:** Tailor feedback to individual student needs. Address specific misconceptions or challenges each student faces, ensuring that feedback is relevant and actionable (Hattie, 2012). Ensure that feedback is timely, ideally during or immediately after the learning experience. This allows students to adjust while the material is still fresh in their

minds (Kluger & DeNisi, 1996). 5. Encourage Self-Assessment: Promote self-assessment by asking students to reflect on their work before receiving feedback. This helps them develop a better understanding of their performance (Boud & Falchikov, 2006).

6. Foster a Feedback-Friendly Environment: Create a classroom culture where feedback is valued and encouraged. Emphasize that feedback is a tool for improvement, not a judgment, promoting a growth mindset among students (Hattie, 2012). Incorporate peer feedback by having students review and assess each other's work. This not only provides additional perspectives but also aligns with the idea that students can be resources for each other's learning (Hattie & Timperley, 2007).

7. Monitor Progress and Adjust Strategies: Continuously monitor student progress. Use ongoing assessments and feedback data to adjust instructional strategies, ensuring that feedback is effective and leads to improvement (Hattie, 2009). Implement learning portfolios or journals where students can track their progress and reflect on their learning journey. This fosters metacognition and self-regulation (Hattie, 2012).

8. Adjust Instruction: Use the feedback you gather to adjust your instruction. If many students struggle with a particular concept, consider revisiting and reinforcing that topic (Hattie, 2009).

Supporting Effective Teaching Methods through Visible Learning: A Practical Guide

Some practical ways to support effective teaching methods under Visible Learning.

1. Identifying High-Impact Strategies: Start by identifying high-impact teaching strategies based on Hattie's research findings. Focus on feedback, reciprocal teaching, and meta-cognition, which have shown substantial positive effects on student learning (Hattie, 2009).

2. Setting Clear Learning Goals: Clearly define learning intentions and success criteria for each lesson. When students understand what they are expected to learn and how their success will be measured, it enhances their engagement and focus (Hattie, 2012).

3. Providing Effective Feedback: Offer timely and specific feedback that highlights what was done well and provides guidance on areas for improvement. Feedback should be actionable, encouraging students to revise and enhance their work (Hattie & Timperley, 2007). Regular and specific feedback is crucial for student growth. Providing constructive feedback, both from teachers and peers enhances learning. Hattie's research highlights the substantial impact of feedback on learning outcomes (Hattie & Timperley, 2007).

4. Encouraging Peer Teaching and Collaboration: Foster a collaborative learning environment where students actively engage in peer teaching and cooperative activities. Peer interaction enhances understanding and allows students to learn from one another (Hattie, 2015).

5. Implementing Formative Assessment: Use formative assessments to gauge students' understanding throughout the learning process. Adjust teaching strategies based on assessment results to address areas where students are struggling (Hattie, 2012).

6. Promoting Metacognition: Help students develop metacognitive skills by encouraging them to reflect on their learning processes. Teach them strategies for planning, monitoring, and evaluating their learning (Hattie, 2011).

7. **Creating a Positive Classroom Climate:** Foster a positive and supportive classroom environment where students feel safe to take risks and make mistakes. A favorable climate enhances students' confidence and willingness to engage in the learning process (Hattie, 2009).

8. **Formative Assessment:** Ongoing formative assessments can provide timely feedback on student progress and help teachers adjust their instruction. Hattie's meta-analysis found that formative assessment has a significant positive effect on student learning (Hattie, 2009).

9. **Teacher-Student Relationships:** A positive teacher-student relationship is foundational for effective teaching. When students feel valued and supported, they are more motivated to learn. Hattie's work emphasizes the importance of these relationships in student success (Hattie, 2012).

10. **Classroom Discussion:** Engaging students in meaningful classroom discussions fosters deeper understanding and critical thinking. Hattie's meta-analysis shows that classroom discussion strategies have a moderate to high effect on learning (Hattie, 2009).

11. **Meta-Cognition:** Encouraging students to reflect on their learning and think about their thinking (meta-cognition) can lead to significant improvements in learning. Hattie's research indicates that promoting meta-cognitive strategies has a positive effect on student achievement (Hattie, 2009).

12. **Visible Learning for Teachers:** Teachers need to be aware of the impact of their teaching practices. Implementing Visible Learning strategies, such as teacher clarity and setting challenging goals, can enhance instructional effectiveness (Hattie, 2009).

Conclusions

Incorporating a learning ecosystem within the classroom to support pedagogy, especially under the framework of Visible Learning, has proven to be a transformative approach to education. The concept of Visible Learning, as developed by John Hattie, emphasizes the need for educators to make learning progress visible to both teachers and students. This idea aligns well with the establishment of a dynamic learning ecosystem that fosters engagement, personalized learning, and ongoing assessment.

The learning ecosystem encompasses a range of elements, including technology, collaborative learning, formative assessment, and differentiated instruction, among others. These elements work in synergy to create an environment where students are not just passive recipients of knowledge but active participants in their learning journey. This approach is in line with Hattie's research on factors that have a significant impact on student learning outcomes, such as feedback, self-assessment, and teacher-student relationships.

Implementing a learning ecosystem in the classroom promotes a growth mindset, where students develop a belief in their ability to learn and improve. It also encourages a culture of continuous improvement among educators, as they are better equipped to identify effective teaching strategies and adapt their practices accordingly.

As education continues to evolve, implementing a robust learning ecosystem aligned with Visible Learning principles not only enhances academic achievement but also nurtures essential skills such as critical thinking, problem-solving, and self-regulation. This approach

lays the foundation for a student-centered learning experience that prepares individuals for the challenges of the 21st century.

In conclusion, a learning ecosystem within the classroom, underpinned by the principles of Visible Learning, has the potential to revolutionize education. It empowers students to take ownership of their learning, promotes evidence-based teaching practices, and ultimately leads to improved educational outcomes. By embracing this holistic approach, educators can create a more effective and student-centered learning environment.

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