

# Visible Learning with Naiku

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Naiku is a next generation assessment platform, providing teachers with comprehensive assessment tools to help teachers collect data about their students to make informed instruction.

Naiku is not affiliated with Dr. John Hattie, Visible Learning Plus, or Cognition Education.

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## Introduction

In *Visible Learning* and *Visible Learning for Teachers*, Dr. John Hattie (2009, 2012) synthesizes over 900 meta-analysis research studies involving hundreds of millions of students to determine what actually works in schools to improve learning. Hattie looked into influences of the student, home, teacher, school, curricula, and instructional strategies. He found that the teacher, and specifically coupled with those strategies that help make student learning visible for the teacher, have the highest impact on learning.

Since teaching was found to have the most impact on student learning, the message from *Visible Learning* is simple – “what teachers *do* matters,” (Hattie, 2009, p 22). So, teaching must be excellent for it to positively impact student learning. What then are the hallmarks of excellent teaching? What strategies do excellent teachers use to effectively improve student learning?

In all, Hattie looked at more than 130 influences on student learning. The typical (average) effect size (d) was of all the strategies was 0.40. An effect size provides a common metric for measuring the magnitude of study outcomes. An effect size of  $d = 1.0$  indicates an increase of one standard deviation on the outcome. For example, Hattie found that programs to reduce anxiety had an effect size of  $d = 0.40$ , indicating almost half a standard deviation in increase of school achievement from programs to reduce anxiety. In comparison, giving homework to students had an effect size of  $d = 0.29$ . For an instructional strategy to be regarded as highly effective, Hattie stresses that it should have an effect size clearly above the typical effect size found of  $d = 0.40$ .

Hattie found that the instructional strategies that have the greatest impact, such as these four, help make student learning visible for teachers:

- Self-Reported Grades:  $d = 1.44$  (Highest)
- Formative Evaluation:  $d = 0.90$
- Feedback:  $d = 0.73$
- Metacognitive Strategies:  $d = 0.69$

## Visible Learning with Naiku

All four measured well above the typical influence. Below, we discuss how Naiku, a cloud-based comprehensive assessment solution, helps teachers implement these instructional strategies.

### Naiku

Naiku (“*teacher*” in Lao) is more than just an assessment solution. Naiku allows teachers to transform the assessment experience into a learning experience and provides teachers a means to implement these four highly effective instructional strategies found by Dr. John Hattie.

### Self Reported Grades

At the very top of the list of highly effective instructional strategies is what Hattie calls self-reported grades/student expectations. Students have a highly accurate understanding of their levels of

#### Self Reported Grades

Effect Size = 1.44

In Naiku, students can self-assess their confidence and set daily/weekly journals and goals in Naiku, encouraging them to set high expectations and meet them.

achievement. Thus when they are provided opportunities to self-assess and set high goals or expectations of themselves, they are more apt to achieve those high expectations and goals.

Naiku encourages student self-assessment so students are aware of their levels of achievement. In Naiku, students can self-assess by predicting their level of confidence in their answer as they solve a test question or perform a task. Naiku also encourages students to journal about their daily or weekly goals, thus learning to set high expectations of themselves.

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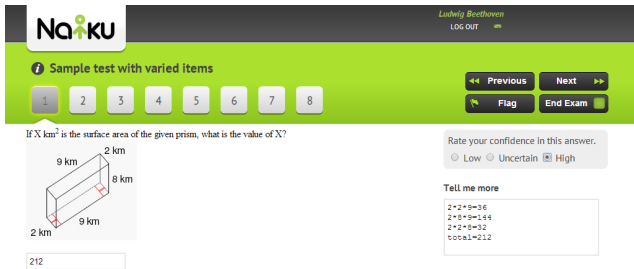


Figure 1. Student Confidence Rating and Justification

In addition, students can reflect on their performance after completing a test, and self-assess their knowledge and how well they did.

## Formative Evaluation

One of the main themes throughout *Visible Learning* is the power of feedback, which is the hallmark of formative assessment. Teachers need to know the answers to three feedback questions: “where am I going”, “how am I going”, and “where to next”? Formative evaluations are the key to ascertaining the answers to these questions. Hattie found that formative evaluations were most effective when teachers used data and evidence based models.

**Formative Evaluation** *Effect Size = 0.90*

In Naiku, teachers can assess students frequently using Quick Question (a built-in student response system) or with regular assessments to obtain necessary data to make formative evaluations.

All assessments given in Naiku can be used formatively. That is, both teachers and students receive immediate results which can be used to inform teaching and learning. Teachers are provided with data on what specific questions and standards their students did well in and those that require remediation. Plus, Naiku has a fully integrated built-in student response system called Quick Question. This allows teachers to get the benefit of on-the-fly frequent formative assessment even if they don't have a quiz or test prepared.

## Visible Learning with Naiku

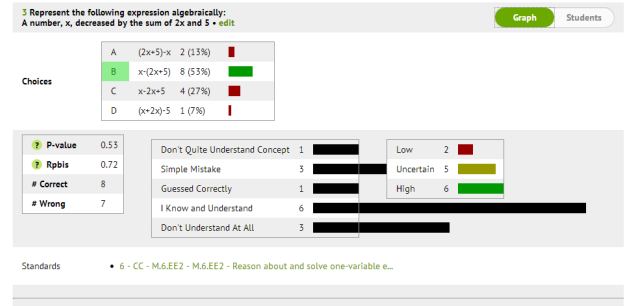


Figure 2. Item Analysis shows class confidence, reflections, and answers

All the data from Quick Question and from any assessment delivered in Naiku are stored and captured and reported by standards, allowing teachers to gain a better understanding of what their students know and don't know, thus providing feedback to the teacher on how they are doing and where they should go next.

## Feedback

As mentioned earlier, one of the important themes of *Visible Learning* is the power of feedback.

**Feedback** *Effect Size = 0.73*

In Naiku, teachers and students engage in bi-directional feedback through comments, journals, and reflections, keeping teaching and learning in sync.

Feedback is bi-directional. Teachers provide feedback to students about their performance, their mistakes, and their strengths - more than giving a score or a mark. Students also can provide feedback to teachers. Students can tell teachers about their understanding, their mistakes, their misconceptions, and their attitudes. When feedback is bi-directional, teaching and learning is synchronized and most powerful.

Feedback is an integral component of Naiku. All assessments are scored automatically and students receive immediate feedback on their performance. This not only includes their overall score but also standards proficiency. This can include automatically supplied

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answer rationale to each question for the student to view immediately post-test. In addition, teachers can and are encouraged to provide constructive and detailed comments/feedback to the student.

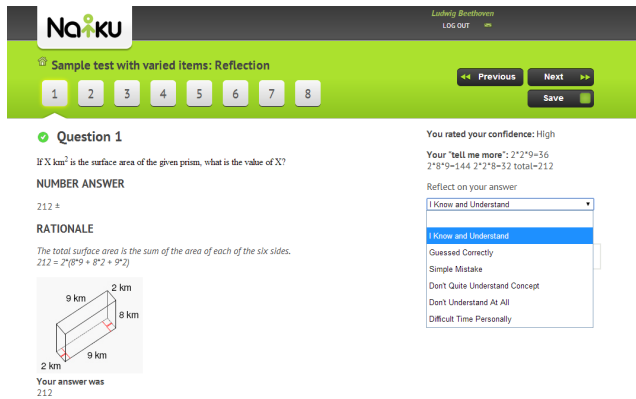


Figure 3. Students can reflect with answer rationale

Students in turn can provide feedback to teachers. They can comment on the teacher’s feedback. More crucially, students are encouraged to provide additional feedback to their teachers in the form of reflections. Students reflect on their overall performance, noting what they did well and didn’t do well. Students also reflect on their performance on each question, providing feedback to the teacher ranging from whether they understand the concept being asked, got the answer right by guessing, made a simple mistake, or don’t understand the concept at all. These reflections also provide opportunity for students to reconcile their performance with their confidence predictions. This feedback loop between teacher and student in Naiku allows the teacher and student to be in sync with their teaching and learning.

## Metacognitive Strategies

Metacognition is often defined as “thinking about thinking.” It is a higher-order thinking skill that involves active control of the cognitive processes engaged in learning. Metacognitive processes can include planning, evaluating, monitoring, and reflecting. Hattie found metacognitive strategies to have a significant impact on student learning with an effect size of 0.69.

# Visible Learning with Naiku

Naiku teaches and encourages students to engage in metacognitive thinking in three ways. First, students can journal and plan their approach and strategy to solving a problem. Second, they can think about their level of confidence and predict their performance. Third, when students engage in the reflection process, they actively think about *what* they know and they don’t and *why* they know or don’t know.

**Metacognitive Strategies**      *Effect Size = 0.69*

In Naiku, students engage and develop metacognitive strategies through journaling/planning, confidence prediction, and reflection.

## Summary

In a meta-analysis involving over 200 million students, Dr. John Hattie evaluated and ranked the effectiveness of more than 130 factors that influence student learning. Four highly effective strategies included self-reported grades, formative evaluations, feedback, and metacognitive strategies.

These strategies are inherent in Naiku and enable better assessment, where teachers and students go beyond traditional assessment of “filling-in-the-bubble”; students self-report and self-assess, teachers conduct frequent formative evaluations, teachers and students provide feedback to one another, and students actively engage in metacognitive thinking. At Naiku, we believe that better assessment leads to better learning.

## References

Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. New York, NY: Routledge.

Hattie, J. (2012). *Visible learning for teachers: Maximizing impact on learning*. New York, NY: Routledge.