Kentucky Department of EDUCATION

Questioning

Evidence-Based Instructional Practice #5

Introduction

Creating a culture that supports students in meeting intended learning outcomes within the *Kentucky Academic Standards (KAS)* is critical to establishing empowering learning environments for all students and is often reflected in the approach teachers and students use. Questions serve as a barometer for the level of thinking occurring within a classroom's learning community. Visible Learning's *MetaX Influence Glossary* (Corwin) defines questioning as a "practice by which an instructor or textbook writer poses factual or conceptual questions to students," noting it, "dates to Greek antiquity, if not earlier." Part of questioning's power as an educational practice is its flexibility. Questions can be taken up in written text, through research or via discussion, and one question may generate others as students question texts, peers or solutions (Hoffer, 2020).

According to John Hattie's research (2015), questioning has an effect size of 0.48 and has the potential, being above the hinge point of .40, to increase student achievement by over one year's growth in one year's time (Hattie, 2009; Fisher, et al., 2016). Questioning also informs other high-effect strategies, such as inquiry-based teaching (.40), inductive teaching (.44) and classroom discussion (.82), as well as being an essential element of critical thinking more generally. To establish critical thinking practices in classrooms, author Rebecca Stobaugh suggests teachers pose open-ended (divergent) questions that challenge students to think creatively and provide opportunities to practice asking, discussing and responding to those questions (Stobaugh, 2019).

Purposes of Questioning

Questions can provide new realizations by unlocking the unknown. The most effective teachers are able to ignite curiosity and excitement through the thoughtful way in which they pose questions (Marshall, 2019). However, the questions teachers ask students are more important than the answers they seek because rigorous and thoughtfully planned questions engage students, help them demonstrate depth of thinking, challenge their claims, assist them in drawing conclusions and assess students' current or prior knowledge. In addition to the benefits mentioned above, student generated questions can be used for the purposes of:

- Reviewing content;
- Fostering divergent and innovative thinking;
- Elaborating on information;
- Setting the purpose for listening or viewing content;

- Showing gaps in student comprehension;
- Making predictions;
- Challenging or wondering about the choices others make;
- Generating thinking before, during or after reading;
- Prompting thinking about a text's content, structure or language;
- Providing an area of focus for planning, instruction or research;
- Clarifying information that may be misunderstood or missing;
- Assisting teachers in guiding classroom discussion and close reading analysis; and
- Demonstrating that all students' ideas are valued and supported (Marzano, 2017; Miller, 2020; Fisher, et al., 2016; Frazin & Wischow, 2020; Hoffer, 2020).

Author Martin Renton argues teachers clearly knowing the purpose behind questions they pose to students is the single most important factor in improving their classroom questioning practices (Renton, 2020). Checking for student understanding, while important, should not become the sole intent for asking questions of students. By knowing the purpose of their questioning, teachers identify the level of thinking they want their students to engage in and can plan for that same level of thinking. As teachers consider the questioning sequences they plan to use in their classrooms, Renton identifies five frames that act as guidance in planning questioning that moves students closer towards their intended learning goals:

1. **Knowledge** - A form of closed questioning used to gauge a student's ability to remember basic facts or information and scaffold new, more complex learning;
2. **Understanding** - A form of conceptual questioning where students can demonstrate how separate facts are connected;
3. **Skills** - Focuses on what students will be able to do and how they will be working; it is about learning "how" rather than learning "what" (research skills, for example);
4. **Attitudes** - Focuses on helping students to be open-minded (through open-ended questions) and develop positive speaking, thinking and listening behaviors;
5. **High Expectations** - The questioning language, structures and protocols used in a classroom sets a culture of expectation. Teachers who use higher level questioning will produce students who engage in higher order questioning; they come to predict and internalize the language they hear every day (Renton, 2020).

Consumers and Producers of Questions

Questioning accounts for over 60 percent of a teacher's classroom talk and less than 1 percent of talk for students (Walsh, 2021). Traditionally, many schools have taught students to be *consumers* of questions rather than *producers* of them because much of students' schooling has been about answering questions posed by teachers: multiple-choice questions, short-answer questions, essays and oral questions before, during and after instruction (Nobis, Schulze, & Miller, 2019).

While questioning does much to check for student understanding, *asking* questions of students is not enough. Educators should explicitly teach students how to generate questions for themselves, so that they are better equipped to be critical consumers of information who can

support claims using credible evidence—a real-world skill needed in our democratic society (Miller, 2020).

Research Supports the Need for Questioning

Research suggests preschoolers ask around 100 questions per day. By fifth grade, students average 0-2 questions per day (Engel, 2011; Stobaugh, 2017). That rate drops dramatically by the time students reach middle school, perhaps because students grow more self-conscious about speaking out or being perceived as wrong in front of their peers as they get older. However, questioning helps to get students talking to explore, play and indulge their curiosities (Clark, Harbaugh & Seider, 2021; Frazin & Wischow, 2020).

When learners are challenged, most readers will ask questions to attempt to make meaning from difficult texts, problems or phenomena (Hoffer, 2020). Classroom discussions provide the structured time for students to feel safe and affirmed in posing those questions (For the research basis behind classroom discussion see the section in Evidence-Based Instructional Practice #4 titled "Brain Research and the Need for Discussion). While discussion is crucial to comprehension and critical thinking, observations in secondary English classes found that the average length of whole class discussions were between 14 and 52 seconds per class period - not enough time to really deepen student knowledge. Because effective teacher and student questioning fosters quality classroom talk, it is imperative that teachers use questioning to frame whole and small class discussions and deepen student understanding (Fisher, et al., 2016).

Since students' questioning skills develop as they read and engage in classroom discussions, teachers should consider generating questions during tasks rather than waiting until after they have read text or finished discussion. Questions generated during these instructional tasks help students to clarify a speaker's points, affirm their initial thinking, remember what was read or discussed, deepen their understanding of key concepts and better see others' perspectives (Bulgren, Lenz, Marquis, Schumaker & Deshler, 2002; Novak & Slattery, 2017).

Importance of Intentional Planning

According to research by Novak & Slattery (2017) Teacher preparation of questions ahead of time often leads to more rigorous questions than those generated "on-the-fly." Therefore, when planning day-to-day learning experiences, classroom discussions or assessments, it is important for teachers to reflect on the following questions:

- What is the intended purpose of this lesson/unit, assessment or discussion? Which question type or sequence is best suited to align to this purpose?
- Where might I intentionally embed opportunities to engage all learners in these questions? Have I given consideration for reluctant learners or historically marginalized students (students of color, English Language Learners, low-income students, introverts, etc.) to participate?
- Do the questions I have planned match the intended depth and rigor within the *KAS*?

- Where might I "raise the rigor" of my questions to challenge students to think more deeply using higher-order questioning?
- Have I provided opportunities to model questioning for students through think-alouds or think-alongs? Where might I incorporate modeling of metacognitive or self-questions to empower my students as questioners?

Questioning for Surface, Deep and Transfer Learning

All question types have a necessary role in the classroom and may be used at various times and in various sequences to optimize student understanding (See table 6.1). By understanding the intended purpose of *why* they are asking questions, and the depth of thinking needed at various points *within* their lessons, teachers are better equipped to move student thinking from surface to deeper levels. Moving thinking to deeper levels increases the likelihood that students will retain information and knowledge will be transferred to future learning contexts (Stanley, 2020).

Surface Level Questions

Convergent (or closed questions as they are sometimes referred) are often used when one clear, logical answer is required. These types of questions are more surface level in nature and often require a yes or no response. **Text-dependent questions also may be surface level when the information is explicitly stated in the text because they can be answered from textual facts, evidence or recall (often called "right there" questions)**. Surface level questions may emerge as students process and reflect metacognitively by using learning goals and success criteria to self-assess what they still "need to know" to move towards their learning outcomes (Walsh, 2021).

Moving to Deeper Learning

Students begin to move from **surface to deeper** learning as they ask questions to understand causal relationships (how one person or event may have caused another) or as they evaluate a person, event or thing's importance (i.e., *How will understanding ____ help me?* or *How might I evaluate ____?*) **Text-dependent questions systematically help to deepen students' textual understanding and enrich classroom discussion when used in conjunction with close reading.** Close readings using text-dependent questions should be conducted in any class where complex texts are used, not just in reading and English/language arts classes. Teachers can intentionally plan dependent questions that focus (an inferential sequence used during discussion to foster deep learning) or funnel (sequencing strategy used during surface learning periods to intentionally send students down a cognitive path) depending on the intended lesson purpose. These four phases of text-dependent questions include:

1. **Literal** - What the text says; can be answered using recall or facts;
2. **Structural** - How the text works;
3. **Inferential** - What the text means; not explicitly stated and typically open-ended; and
4. **Interpretive** - What the text inspires one to do or think (Fisher, et al., 2016; Stanley, 2020).

Text-dependent questions require students to rely on evidence from the text rather than just their own personal experiences and can relate to (1) general understandings, (2) key details, (3) vocabulary and text structure, (4) the author's purpose, inferences, or intertextual connections, or (5) opinions and arguments. Some sample text dependent questions include:

- Why would the author select this title for the chapter? (general understandings)
- What two events in this text led to the individuals seeking a solution to their problem? (key details)
- Why do you think the character/individual chose to...? (inferences)
- How does the chronological order of events help the reader to better understand the overall purpose of the text? (vocabulary and text structure)
- Compare text to text. What are the similarities and differences? How do the similarities and differences impact meaning within each text? (intertextual connections)
- How effective are the author's claims in the text? Is the evidence relevant and sufficient to support the overall argument? (argument)
- How does the author's perspective in telling his/her story influence how we perceive the characters? (author's purpose) (Frey & Fisher, 2013)

Transfer Questions

Transfer questions ignite exploration and inquiry and are often used when students wonder how something may be applied to a real-world problem or to consider what might happen if one variable of a rule, principle or concept were changed (e.g., *Could we use this for ____?* or *What if we changed ____ to ____? Would we be able to ____?*). These questions are more often open-ended or divergent in nature as students are asked to use their creativity and critical thinking to create, justify, defend, judge, predict, imagine, hypothesize or evaluate. Transfer questions move students into higher-order thinking and motivate them to self-question in new and unique learning situations (Walsh, 2021). For a more in-depth description of self-questions, see the section below on Metacognition and Self-Questioning.

Table 6.1: Types of Questions and Questioning Sequences Teachers Would Ask

Question Type	Purpose	Examples
Convergent (Closed)	Typically **surface** learning where one clear, logical answer is required; Students may be asked to name, define, identify or respond with "yes" or "no" answers.	• What is the capital of Kentucky? • Who is the author of that book?
Divergent (Open or open-ended)	Typically used for **deeper** learning where multiple answers are possible or students are encouraged to use their imagination and/or creativity;	• How might this (insert chapter/event/experiment/problem) have been different if _____ had happened?

Question Type	Purpose	Examples
	Students may be asked to create, justify, defend, judge, predict, imagine, hypothesize or evaluate.	• What was the most important invention of the 20th century? Why?
Text Dependent	Can be used for **surface or deeper** learning during close reading and/or classroom discussion. Text-dependent questions encourage students to utilize textual evidence and can be convergent or divergent.	• What words and phrases do the author repeat, and how does it impact the tone of the text? • What can you infer about _____, and what is your evidence?
Self Questions	Can be cognitive (meaning making) or metacognitive (used to self-monitor) and usually broken down into three categories: academic, dialogic, and exploratory depending on the purpose for asking (to understand, to see another viewpoint, or to explore).	• Can you tell me more about ____? (academic) • How might we think about ____ in another way? (dialogic) • What might be an alternative to ____? (exploratory)
Focusing	A sequencing strategy used during discussion to foster **deeper** learning; Helps students understand inferential and structural elements of their reading in any discipline.	• How did the setting influence the story? • Why do you believe the author chose the word/phrase _____ in this passage?
Funneling	A sequencing strategy used during **surface** learning periods to intentionally send students down a cognitive path with an end in mind; Frequently used by teachers with new or complex content or information when students are initially grappling with understanding.	• What is *(mathematical equation)*? How did you solve it? Could you have solved it another way? • What were the major events of the American Revolution? How did these events impact different groups?

*Adapted from content in *Visible Learning for Literacy: Implementing the Practices That Work Best to Accelerate Student Learning* and *Challenging Learning Through Questioning* (Fisher, et al., 2016; Renton, 2020)

Foundational Question Starters

Being able to categorize questions by type and level helps teachers have a better awareness of the cognitive rigor taking place in their classrooms. By identifying the types of questions they are asking in their classrooms, teachers are better equipped to reflect upon and improve their questioning practices. One fundamental way to raise the level of questioning is by using what Stanley refers to as the "Five Ws (and one H)"—Who? What? When? Where? Why? and How? These six form the basis for most questions asked of students and can typically be divided into lower and higher levels. Why and how questions take students beyond the literal questions found "right there" in the text to more inferential questions where students are asked to judge, evaluate, or interpret evidence. See figure 6.2 below (Stanley, 2020).

Figure 6.2: Six Foundational Question Starters

Typical Level of Questioning	Question Stem Starters
Lower Level	• Who? • What? • When? • Where?
Higher Level	• Why? • How?

*Adapted from content in *Promoting Rigor Through Higher Level Questioning* (Stanley, 2020).

Aligning Questions to the Intended Depth and Rigor of the Standards

In Kentucky, teachers are responsible for teaching the *Kentucky Academic Standards* (*KAS)* to ensure students have mastered a set of grade-level standards by the end of a school year. Teachers often rely on questioning to ensure students have mastered the standards whether it is through asking questions aloud, assessment questions, performance tasks or during discussions. Asking questions to address the content within the standards is important but asking questions at the depth and rigor that was originally intended by the standards writers is equally important. If teachers do not fully understand what the standards are asking students to know and be able to do, then the level of questioning asked of students will differ across the state and not meet the needs of all Kentucky students.

Identifying the intended depth and rigor of the standards should be the starting point to developing meaningful questions. Once educators have identified the appropriate depth and rigor of a standard, how might teachers craft questions which effectively assess student mastery? One answer may be to reference the verbs for Bloom's Taxonomy. The verbs for Bloom's levels of cognition help to indicate the levels of thinking for the standard. Each level of Bloom's Taxonomy utilizes action verbs since thinking is an active process. Below are some sample action verbs associated with each of those levels.

Table 6.5: Action Verbs Associated with Bloom's Taxonomy

Bloom's Taxonomy Cognitive Level (Lowest to highest)	**Sample Verbs Associated with This Level***
Remember	Identify, recall, describe, name, select, list, define, tell, reproduce, locate
Understand	Infer, compare, explain, interpret, classify, exemplify, summarize, illustrate, give examples of outline
Apply	Apply, model, solve, examine, produce, modify, predict, complete, illustrate, translate
Analyze	Relate, assume, correlate, prioritize, explore, relate, differentiate, conclude, simplify, compare and contrast, transform
Evaluate	Choose, argue, debate, critique, evaluate, prove, support, rate, assess, recommend
Create	Write, revise, design, invent, produce, build, improve, plan, substitute

*Note: Not a comprehensive list

Teachers should match the intended depth and rigor of the standards in designing questions for their students as outlined above so that students are meeting the grade-level expectations. However, just because a standard is written at a specific cognitive level does not mean that teachers must always stop at that level in designing questions. In order to provide rigorous opportunities for students to demonstrate their understanding, teachers can challenge students beyond the minimum expectations by taking a lower-level standard and assessing students with a higher-level question. Rather than asking students to *know* and *understand* and moving them into *evaluating* and *creating* raises the level of rigor in classrooms as students learn to transfer and apply what they have learned (Stanley, 2020).

Engaging All Students in Deeper Thinking Through Questioning

Questioning demonstrates that students have an intrinsic motivation to learn more and understand (Stobaugh, 2017). When students ask questions in the classroom, they are engaging in higher-level thinking; however, only 58% of students say they feel comfortable asking questions in their classrooms (Fisher, et al., 2018). The questions being asked in classrooms reflect the thinking and learning that is occurring, but *who* is most frequently being asked questions in classrooms is also indicative of which students are doing the deeper learning (Ritchhart & Church, 2020). Asking multiple types of questions helps to engage more students in whole class discussions, deepens students learning and makes learning visible; therefore, it is

imperative that teachers ask questions that will engage ***all*** students represented in their classrooms, including students who have been historically marginalized (Stobaugh, 2017; Marzano, 2017).

Asking Questions of Reluctant Learners

Teachers will sometimes avoid asking in-depth or complex questions of their most struggling learners because they want to avoid embarrassing them if they answer incorrectly or do not know what to say. However, this behavior sends an implicit message to students that they are not expected to do well. Robert Marzano suggests the following **considerations when asking in-depth questions of reluctant learners**:

- Provide opportunities for all students to respond to questions.
- When students struggle to answer questions, teachers can restate the question, allow students to collaborate or "phone a friend," or provide hints and clues.
- Thank all students who provide a question or response even if it is incorrect. This validates the thinking of all students and encourages future participation.
- Allow students to "opt-out" of answering until they have had more thinking time to process.
- Pause and provide adequate wait (think) time after asking questions so students have time to process information and formulate their response.
- Avoid calling only on students with their hands raised. Using a class roster to check off students or a jar of popsicle sticks labeled with each student's name will help to ensure all students have equal opportunities to respond.
- Encourage and model responding to incorrect responses in a positive manner (Marzano, 2017).

Empowering Students as Questioners

Student questions are a powerful lever for learning; they can be utilized by both students and teachers. While questioning acts as an authentic feedback tool for teachers to assess where students are along a learning progression, empowering students as questioners helps to accelerate learning and level the playing field for all learners, particularly underachieving students. According to author and researcher Jackie Walsh (2021), equipping learners as questioners provides multiple benefits for students including:

- Increasing motivation and ownership;
- Improving student performance on academic outcomes;
- Supporting students in self-regulation, reflection and monitoring;
- Increasing preparedness for college and their future workforce; and
- Improving students' abilities to assume civic responsibilities necessary for life in a democratic society (Walsh, 2021).

Knowing the benefits listed above are critical for citizens of any age, teaching students how to ask themselves questions, generate questions for others and effectively respond to questions becomes a moral imperative for today's educators.

Wait Time vs. Think Time

Several decades of classroom research consistently indicates a lack of student questioning across all grade levels and disciplines. Research from the 1970s until now points to classrooms where less than five percent of the questions asked in classrooms are from students. So why are so few students asking questions? While many students do not feel safe to take risks and ask questions in classrooms where community-building has not been a priority, the fast pacing in most classrooms is often the culprit. In classrooms where students were engaged in asking questions of themselves and their peers, consistent use of wait time was present (Rowe, 1972; Dillon, 1988; Walsh, 2021).

Research by Mary Budd Rowe suggests that waiting at least three seconds before accepting a response from students improves the quality of questions students ask (Renton, 2020). Students get little time to process information, language and ideas in today's classrooms to contribute to meaningful dialogue. This often leads to student disengagement and conversations being overrun primarily by the loud, confident, English-speaking students. However, students often viewed as less able to contribute to classroom conversations by their teachers are often not waiting passively; they are spending that time thinking. Hence, more recently language in the field has shifted from "wait time" to "think time." When given more think time, students often viewed as less able to contribute to discussion, outperform the students teachers perceive as higher ability (Stahl, 1994; Renton, 2020).

Teachers ask on average 400 questions a day of their students; however, more questions do not equate to improvements in students' learning or thinking. While improving the quality of the questions teachers ask is critical to increasing classroom rigor, what often becomes a roadblock to student thinking is the amount of wait time allowed for students to respond. The average student is only given 0.8 seconds of "think time" before teachers accept a response. Being allowed under one second to respond often leads to fewer student attempts to answer and less participation in classroom discussion. A three second minimum is recommended *before* accepting a response from students with an additional three seconds recommended *after* the response is shared. Allowing additional wait time increases the number of questions students ask, decreases the number of students who do not respond at all, encourages voluntary questioning and helps to provide an empowering learning environment for all students (Marzano & Simms, 2014; Renton, 2020).

Metacognition and Self-Questioning

Metacognition is defined as the ability to observe our own thinking. It helps students to monitor their learning and **self-regulate** (adjust an instructional strategy or approach based on self-observation or feedback) by having some knowledge about themselves and an understanding of the tasks and strategies needed to complete them. Students need explicit instruction and modeling in how to become metacognitively aware. How many times have adults been reading and gotten to the bottom of the page only to realize they have no recollection of what they just read? When this happens, adults will often go back and reread or

ask questions automatically in their head (i.e., What just happened? Does what I just read make sense?). Students need to be taught how to pause and generate their own questions periodically throughout a text using self-questioning; they are not born automatically knowing how to question themselves as they read. By teaching students to self-question, we are giving them the tools they need to monitor their comprehension and regain understanding (Berkeley, Marshak, Mastropieri & Scruggs, 2011). Teachers can model self-questioning for students using think-alouds or think-alongs (For additional information on think-alouds or think-alongs see Evidence-Based Instructional Practice #3 on Explicit Teaching and Modeling in the Model Curriculum Framework) (Fisher, et al., 2016; Walsh, 2021).

Types of Self-Questioning

There are three general types of self-questions students often ask: academic, dialogic and exploratory. Self-questions can be metacognitive or cognitive. When students ask themselves **metacognitive questions**, they are doing so to self-monitor their thinking and learning. **Cognitive self-questions** help students make meaning of what they are hearing or reading and assist learners as they problem solve to think through tasks. **Academic questions** use discipline-specific language and assist students in developing deeper content understandings which move them closer to their intended learning outcomes. **Dialogic questions** help students to understand another person's perspective or thinking. The third type, **exploratory questions**, stem solely from a student's natural curiosity and motivation to learn more or spark their own creativity (Walsh, 2021).

The comprehension strategy of questioning helps students predict and anticipate what might happen next in a text, solve problems and clarify textual information, but it can also prove valuable in teaching students relevant real-life skills as they investigate and research topics across disciplines (Frey & Fisher, 2013). Teaching students to continually self-question source accuracy and credibility is helpful as students engage in research and investigation. Teachers may want to consider posting the following model questions for students: 1) Does this site contain accurate information? 2) Is the hosting institution identified on the site? 3) When was the site last updated? Is it current information? 4) Are any included links to other sites of similar quality? Teaching students to consider these four questions will help them to critically analyze and evaluate Internet sources and bridge self-questioning habits students will use when confronted with new information in the future (Fisher, et al., 2016).

Tips and Protocols for Explicit Teaching of Self-Questioning

Education researchers Doug Fisher and Nancy Frey (2013) suggest teachers consider the following five tips for explicitly teaching self-questioning:

- Teach students how to break their reading into manageable chunks to maintain understanding.
- Encourage students to use headings and subheadings as stopping points to stop and self-question.

- Allow students to chunk information for themselves when texts do not contain headings and subheadings. Students can record questions they have in a notebook.
- Conference with individual students to check in on their self-questioning. See if students can answer the questions they generate.
- Allow time for students to practice questioning with teacher reinforcement and feedback.

Table 6.6 below offers some suggested protocols teachers can use to support students as they practice metacognitive strategies and learn to self-question.

Table 6.6: Sample Questioning Protocols to Support Self-Questioning

Questioning Protocol	Description
Question Everyone	Teachers tell students they will be calling on them randomly or by picking the student who looks least interested. Teachers may draw names from a bag or draw popsicle sticks with a student's name on them to select a random student to respond. Students are encouraged to respond whenever they are called upon by the teacher (Knight, 2013).
10 by 10	Students work in small groups or individually to generate ten questions about a given subject, text, or topic. As a group they select their best questions for use in a whole-group discussion (Stobaugh, 2019).
Think-Pair-Square-Share	Students work to form individual questions, share them with a partner, join with another pair to synthesize their questions into one and share each final group's question in a whole group discussion (Stobaugh, 2019).
Quads	Students brainstorm four questions after learning a new section of content. After trading questions with another student, students answer another person's questions. Students circulate the room pairing up and answering the questions of others until all questions are answered. Students then read and evaluate all of the responses to check for their credibility and accuracy.
Think-Puzzle-Explore (TPE)	Supports student metacognitive thinking by helping learners unpack learning goals or assess lesson/unit key concepts in a way that safely surfaces preconceptions by prompting students with: • *"What do I think I know?"* • *"What puzzles me?"* • *"How might we explore?"* When used regularly, this thinking routine is internalized for students as they transfer these questions to new learning experiences (Walsh, 2021; Ritchard & Church, 2020).

Questioning Strategies to Support Formative Assessment

To make decisions about what happens next in teaching and learning, teachers must evaluate evidence by noticing the actions of learners that best reflect their understanding of the content and skills related to the learning goals and success criteria. Assessments *as, for*, and *of* learning help educators evaluate how successful they were in implementing what works best (i.e., evidence-based instructional practices). According to John Hattie, evaluation focuses the attention on learners' progress toward what he terms their skill, will and thrill. Hattie defines **skill** as where students are in their thinking, **will** being where students are in their disposition, and **thrill** relating to students' motivations. When designing classroom formative assessment, Hattie suggests teachers keep the following questions in mind as they plan to collect meaningful evidence of student learning (Hattie, et al., 2021):

Questions for Evaluating Skill:

- Does the student focus on single ideas or one way of thinking about the experience or task, not noticing other aspects of the learning?
- Does the student work with multiple ideas, but does not yet see connections between those ideas?
- Does the student see relationships between different concepts, skills or other content?
- Does the student apply ideas to different contexts? (Walsh, 2021; Hattie, et al., 2021)

Questions for Evaluating Will and Thrill:

- Does the student recognize the difference between where he/she is and where he/she is going?
- Does the student set goals for closing this gap?
- Does the student apply learning strategies to close the gap?
- Does the student self-evaluate his or her progress in closing the gap? (Walsh, 2021; Hattie, et al., 2021).

Posing questions for students that are intentionally well thought out in advance ensures that the questions asked are relevant and meaningful for students because they align to students' personal learning goals. Students can make changes to their work and adjustments to their learning strategies when they are posed effective questions, given time to think and provided time to make decisions (Novak & Slattery, 2017).

Forms of Questioning Tools

Teachers often use written questions in various forms to formatively assess where students are along a learning progression. Some of these forms include bell ringers (questions students are given as they start class), exit tickets (end-of-lesson checks for understanding to see if students understand and are ready to move on to new learning), homework, performance tasks, pre-planned discussion questions, reflection journals and assessments. Ideally, formative assessment items should give students an opportunity to demonstrate general mastery while

pushing them to think at higher cognitive levels (Stanley, 2020). Since the ultimate goal is to empower students to generate their own higher-order questioning, teachers must continually model the types of questions they want students asking while giving them ongoing opportunities to practice through feedback and support (Novak & Slattery, 2017).

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