Chapter One— Why Check for Understanding?

1. **What are common ways that teachers check for understanding? Identify some approaches that are effective and some that are not effective. What differentiates an approach as effective or not?**

Teachers frequently check for understanding by addressing the class at large with a one-word question like, “Okay?” or perhaps a bit more descriptive question such as, “Does everyone understand?” Although the teacher means well, and is attempting to be sure students have gained important understanding of the material, many times the teacher only receives blank stares or an “U-huh” in return. This type of checking for understanding gives little or no meaningful learning status information to either the students or the teacher.

One approach that more effectively checks for understanding would be pairing students and having them explain their developing understanding to a classmate and receiving clarifying questions and feedback from the classmate in return. Throughout this process the teacher can observe paired discussions, offering real-time input to pairs as well as gather information from many pairs and address the class at the end of the discussion period, offering important points of reinforcement. The teacher could also have student groups present well-constructed examples. In a mathematics classroom this process could be used in pairing or clustering students to solve problems collaboratively, gaining perspectives on alternative problem solving approaches. Again, the teacher can check in with student groups during the problem solving session and have groups present their approach, solution and insights, if appropriate.

The distinguishing feature of an effective approach in checking for understanding is the extent to which individual students gain meaningful feedback on their level of understanding of the concept under study. An effective check allows individual students to focus on specific areas that need strengthening.

2. **Discuss the differences between formative and summative assessments. When is each appropriate for use in the classroom?**

The major difference between formative and summative assessments is intent. Formative assessments are designed to yield ongoing actionable information for both students and teachers to improve understanding within a unit of study. For students, they help target areas of need for reinforcement and for teachers they help identify concepts students are having difficulty with and can highlight the need for different instructional methods to achieve the desired level of understanding.

Summative assessments are designed to measure the cumulative level of student understanding, typically at unit end. They serve to measure student competency after
the instructional and formative assessment phase is complete. Summative assessments are generally not used as interim learning measures but can be, for example, in the case where unit assessments build toward a comprehensive assessment, such as with a semester examination.

**Chapter Two—Using Oral Language to Check for Understanding**

1. **What is oral language?**

Oral language is composed of both speaking and listening, each being critical to the quality of interpersonal communication, certainly including in the classroom. Speaking and listening collectively form the foundation for human thinking, arguably the genesis of learning.

There are different contexts, or registers, of language depending on the setting and participants in a given discussion. Given that an adult, the teacher, typically structures the classroom learning environment, engaging young or adolescent students on the learning journey, the range of oral language can be varied and complex.

8. **Consider the example of history teacher Ted Clausen. What type of environment needs to be created such that students can discuss incorrect responses and identify flaws in the answers?**

For this type of dialogue to occur, Mr. Clausen has clearly established a safe learning environment where students do not fear teacher or peer ridicule for incorrect answers along their way to achieving understanding. He has obviously set class norms where collaborative inquiry and open, collective search for truth is highly valued.

The example of Mr. Clausen’s teaching leads us to believe he leads students through a process of developing a strong topical foundation and is comfortable with students mildly challenging his prior statements because he quickly provides clarification and adeptly steers students toward a deeper level of understanding. His classroom is evidently operated in a trusting and focused free-flowing exchange where the quality of dialogue, and subsequent understanding, scaffolds.

This appears to be an example of a competent, confident, trusted and student-centered educator.

**Chapter Three—Using Questions to Check for Understanding**

2. **What types of questions help students think and provide teachers with an opportunity to check for understanding?**

In order for teachers to accurately check for understanding they need real-time information on student comprehension. To do this, teachers must engage student thinking and elicit responses in such a way as to determine individual and group understanding. The types of questions that accomplish this exist on the continuum of Bloom’s taxonomy including Knowledge, Comprehension, Application, Analysis, Synthesis and Evaluation, ranging from fact recall to making complex inferences.
There are many forms of effective questions such as the Sample Question Stems found on page 46, all of which stimulate student critical thinking and require them to personally communicate their current understanding. Along with alternative forms of questions teachers need to consider the use of physical aids in determining student understanding such as response cards and hand signals.

7. Consider the interaction between Ms. Jacobsen and her students. What is unique about this interaction? How does she engage her students through questioning? What questions would you like to ask her?

As a fellow math teacher I find her five finger strategy quite effective even if students might say it seems like an elementary school idea. I wonder in jest based on my experience with Middle School students which finger they might hold up for a response of one but that can be managed. What I find unique in this method is the ability to gather real-time information from every student and quickly ascertain problem solving step difficulty, with no additional materials required. As Fisher and Frey point out she could then provide further explanation where needed before advancing to the next step in reaching a solution, thereby significantly reducing the likelihood of needing to return to an interim solution step which can confuse some students and waste time. Another benefit to this strategy is she engages the students who prefer to be non-verbal in class. As a possible improvement idea it might be more efficient for five finger responses to be a full fist, allowing the teacher to then search for only fingers in the air.

I would ask Ms. Jacobsen what her experience has been in correlating the extent of full class five finger responses with quantitative formative and summative assessment results. Has she done a quantitative analysis that by providing additional explanation on one through four finger responses students demonstrate improved understanding on assessments? I would also ask her if she has any verbal strategies she employs to equal effect.

Chapter Four—Using Writing to Check for Understanding

1. Recap your thinking thus far about the ways in which teachers can check for understanding. What happens as you write? Did you discover ideas you didn’t know you had? Did you clarify your thinking? Did you identify new questions?

As I reflect on checking for understanding it occurs to me that I currently employ many strategies that benefit formative student understanding including unit preassessments, sample problems when I teach, assigning problems for students to work at their collaborative table clusters, directed questioning to students, open response questioning of the class, providing time at the end of class for students to begin homework during which I check in on student understanding, assigning homework problems including odd-numbered questions which students can check the answers against in the textbook, and asking for homework questions students want help with at the beginning of class. I typically do not assign a grade for these except in the case of homework where I typically assign a completion grade, looking for earnest student effort in solving problems. I also employ graded formative assessments generally in the form of quizzes that are included in the class grade as a component of quantifying student understanding.
Checking for understanding requires the productive, positive participation of students as they engage in deepening their understanding, so it is important to get a sense of individual learning styles, needs and personalities in order to maximize their success. Each class has its own interpersonal chemistry and it has always fascinated me how teaching the same subject matter to different classes can take varying paths due to students asking different questions and my use of alternative methods of instruction.

As I construct these thoughts I am further convinced that I want to start a reflection journal in my classes. I have used reflection questions on assessments in the past but especially now that all students have MacBooks, and the vast majority enjoy using them, I have a perfect opportunity to regularly employ this tool to help students think more deeply about their learning and learn more about themselves and mathematics through writing. I do have additional implementation questions such as the timing and frequency of journal entries, whether and how to grade them and how to provide meaningful feedback. The grading question is complex because whereas grading should be about measuring demonstrated competency, many students are conditioned by the extrinsic motivation of grades and will apply serious effort only on work where a grade will be assigned.

Writing has always helped me clarify my thoughts as it has been my experience that crafting thoughts in written form both allows my thoughts to free-flow and through the construction of proper sentence structure requires me to crystallize meaning.

2. Discuss why writing can be used as an assessment tool across the curriculum and not just in English/Language Arts classes?

Adding to my thoughts in the answer above, as Fisher and Frey point out writing is thinking. Since thinking is the requisite foundation of the learning process it follows then that writing can and should be used to broaden and assess student understanding. This is clearly relevant to all subject areas including math and science.

Having taught high school physics and mathematics as well as middle school math, I can see the benefits of including writing in what many would consider atypical writing subjects. I believe the power of reflection is considerable for both students and teachers because when we stop and reflect on our learning journey we naturally tend to consider what has gone well and what needs to be improved. If we help students extend those thoughts about areas needing reinforcement they are more likely to take positive steps to deepen their understanding.

Chapter Five—Using Projects and Performances to Check for Understanding

1. What are the differences between projects and performances? When could each be used in checking for understanding?

Projects and performances vary widely depending on the chosen scope and venue of the undertaking. The duration of projects can be a few days or even a semester and projects can also be a subset of a performance. Generally speaking projects focus more on written material and perhaps a culminating paper or visual display while
performances rely more on the creative acting out of participants to express the desired concepts.

Both can be used at any time but as Fisher and Frey point out performances lend themselves to more frequent use. Teachers can organize pairs or even groups of four to six students to create skits or rhymes to develop fun and meaningful engagements that support understanding. It could be argued students pay greater attention watching their peers act out a concept than listening to yet another sage-on-the-stage teacher lecture. At a minimum, performances or mini-projects create a more lively learning environment. Teachers can check for understanding of both the performing group from their efforts and the class at large through follow-up discussion.

2. What projects or performances have you been involved with that were especially powerful to your own learning?

Although this might not fit the classical definition of a project, I recently had a revelation in my graduate work. The culminating project of Plymouth State’s Graduate Studies course is a paper in which we build upon previous reading and further develop thoughts on a topic we are passionate about. I had chosen authentic learning methods as my topic but as I reflected on my previous work in Research Design where I investigated employing technology to deepen student understanding, I began to formulate a broader vision of effective education.

I had been contemplating several individual components of effective education including assessment, authentic learning, curricular standards, technology and reflection and had begun designing my master’s degree program of study, but over the December holidays a revelation occurred. An acronym, SMART, emerged that elegantly describes to me the critical elements of effective education in the 21st Century. The acronym stands for Standards, Methods of Authentic Learning, Assessment, Reflection and Technology. At that moment, my program of study took shape and I took two exciting additional steps. One, I immediately acquired the domain name rights to theeffectiveeducator.com, along with a number of other related domain names, and I created a professional wiki, theeffectiveeducator.wikispaces.com. Over the past two months I have engaged colleagues in this undertaking as well as my students, where they have joined discussions on topics of interest to them, such as Digital Natives versus Digital Immigrants. This has been a powerful learning experience for me and more importantly, for my students.

Chapter Six—Using Tests to Check for Understanding

1. Discuss a time when you had a formal test. How did you feel? What did you do to prepare for the exam? What types of knowledge were tapped on the test and what types were not?

Last November I took the MAT since it is a required element in applying for admission to Plymouth State’s graduate program. Although some current graduate students informed me there is no minimum score requirement, that PSU is primarily adhering to accreditation standards, I took no solace as I always strive to put forth
quality effort. I was nervous because although I believe I command a reasonably strong vocabulary the MAT is an analogies test, placing a premium on nuanced differences of word usage. Since my professional work mainly focuses on mathematics, with many applications in science and business settings, I do not feel as confident as perhaps a language arts or social studies teacher might.

I secured a practice workbook and first identified how the test is scored. Having devoted many hours to helping students prepare for the SAT, conduct college searches and prepare college applications, I knew it was important to understand the impact of blank and incorrect answers. I then found out the test duration, exact question format, and, finally, began to prepare through taking practice tests. It is telling that my first efforts were devoted to test scoring and test management issues, not the material being assessed. As I stated above, the only knowledge assessed was a singular attempt at demonstrating my mastery of word analogies. Of course, PSU considers many other criteria in its admissions policy including undergraduate records, statement of intent, resume and recommendations. Incidentally, I was pleased when I received my MAT score report.

4. As you read the chapter, update the strategy grid (below) by adding a description of the strategy in your own words and ways in which you can use the strategy to check for understanding. Share your ideas with others who use the same strategy.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Description</th>
<th>How I can use it ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple Choice</td>
<td>• objective questions</td>
<td>• daily lessons both orally and from SmartBoard</td>
</tr>
<tr>
<td></td>
<td>• stem and response options from teacher-generated list</td>
<td>• include on formative and summative assessments</td>
</tr>
<tr>
<td></td>
<td>• generally measures lower-level learning objectives</td>
<td>• do post-assessment item analysis and reinforce concepts as needed</td>
</tr>
<tr>
<td></td>
<td>• easy to grade</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• item analysis and follow-up friendly</td>
<td></td>
</tr>
<tr>
<td>Short Answer</td>
<td>• students either complete a statement or answer direct questions using a word, phrase, number or symbol</td>
<td>• include on formative and summative assessments</td>
</tr>
<tr>
<td></td>
<td>• generally measures knowledge and comprehension</td>
<td>• use as a student self-reflection opportunity either formatively or summatively</td>
</tr>
<tr>
<td></td>
<td>• more subjective,</td>
<td>• post-assessment item analysis and</td>
</tr>
<tr>
<td></td>
<td>harder to grade</td>
<td>reinforce as needed</td>
</tr>
<tr>
<td>----------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| **Dichotomous Choices** | • declarative statement analysis (true/false)  
• easy to develop/score  
• item analysis and follow-up friendly  
• less discriminating than multiple choice  
• encourages rote memorization | • daily lessons both orally and from SmartBoard  
• include on formative and summative assessments  
• post-assessment item analysis and reinforce as needed |
| **Essays**          | • extended responses  
• assesses higher level learning outcomes  
• subjective grading and time-consuming | • include on formative and summative assessments for reflection and synthesis  
• ongoing math journal |

**Chapter Seven—Using Common Assessments and Consensus Scoring to Check for Understanding**

1. **Discuss the importance of using data to improve student achievement. Note how assessments are useful in planning instruction.**

Without the benefit of data, schools would have to rely on the power of interpersonal persuasion to determine improvement strategies. At a minimum this begs the question of how the school would know to what extent improvement had been made, and depending upon the competence of the winning persuasion the school could embark on a questionable and even harmful path. Quantifiable measurement serves to minimize subjectivity and maximize objectivity.

Fisher and Frey share excellent examples of why assessment items need to be aligned with standards in order to enable meaningful post-assessment evaluations of the extent to which individual standards have been assessed and how well students have performed, as well as generate dialogue on the efficacy of questions and possible variations in teacher instruction.

Assessments provide an iterative improvement process whereby student achievement is measured and analyzed, followed by teacher reflection to inform needed instructional interventions and future teaching practice. Over time as teachers develop symbiosis between assessment and instruction student achievement will be the beneficiary.
2. Review the protocol for using common assessments and do an inventory of your school. Which of these components are in place, or could easily be put in place? Which will require professional development and/or administrative support?

Under previous administration a significant focus was placed on cross-campus curricular alignment, the so-called One School Two Campus initiative. For Algebra I, both campuses, including Middle and High Schools, participated in a yearlong task force to begin developing common assessments, discuss essential teaching agreements, develop common learning resources and align curricular scope and sequence. I served as co-chair of this task force, along with a colleague on the Pudong campus, as a part of my role as Middle School Department Chair. We made excellent progress on all fronts but it was quite time-intensive. We reviewed several teacher versions of a Unit One common assessment and successfully crafted a common cross-campus, middle and high school Unit One common assessment still in use today.

Additional such alignment work can certainly be done but it is a question of administrative priorities. Our school has many initiatives underway and at times we suffer from dilution of effort in trying to address too many. As the WASC reaccreditation team recommended, our students would be best served by aligning organizational efforts and maintaining continuity of focus on fewer major initiatives.