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TEACHING in the Digital Age

Using the Internet to Increase Student
Engagement and Understanding

SECOND EDITION



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Introduction

Sometime in the late 1990s, the world changed. It was not a single moment in time; yet, it came quickly and almost unexpectedly. The world shifted from a culture centered on network television, phones with wires, and information on paper to a world centered on cable and satellite television, digital communications, and information on computer screens.

Although no anniversary marks this incredible transition, the United States became a digitized country competing in a digitized world—and there is no turning back. Worldwide, approximately 1.1 billion people use the Internet; in North America, 230 million use it. The Internet is no longer merely a novelty or simply an interesting way to spend time. It is used for shopping, consulting doctors, making investments, obtaining mortgages, tracking packages, checking out political candidates, researching, and communicating with others. Thirty years after it was created to help university and government workers connect, the Internet continues to grow. It still has a far distance to travel.

One area still under construction is the use of the Internet in education. The education world is at a crossroads—there is no better time to be living and working in a school. As educators integrate technology and the Internet into their classrooms, they also are becoming very aware of the current brain research and the theory of multiple intelligences that are opening doors for reaching and teaching students more effectively. These three tools—the Internet, brain research, and the theory of multiple intelligences—are transforming teaching and learning as nothing that has come before.

The purpose of *Teaching in the Digital Age: Using the Internet to Increase Student Engagement and Understanding, Second Edition* is to provide teachers with practical suggestions and ideas to use these tools to help students gain a deeper understanding of and knowledge about what they are learning. This book seeks to shed light on how these separate educational tools work together to help teachers make better use of their precious classroom time as they develop integrated lessons. There are many books on the theory of multiple intelligences, on brain research, and on the Internet; yet, few books explain how these three tools complement each other.

Rather than providing a collection of classroom lessons, *Teaching in the Digital Age: Using the Internet to Increase Student Engagement and Understanding, Second Edition* presents a mosaic of educational theory and practice to help teachers design their own classroom lessons that are powerful, based on brain research, and promote student understanding. This book

uses the Understanding by Design framework proposed by Grant Wiggins and Jay McTighe¹ (1998/2005) to provide a scaffolding that teachers can use when designing Internet activities using the multiple intelligences theory and brain research. The Understanding by Design framework serves as an umbrella, constantly bringing lesson design back to the core concept of what teachers really want students to learn and understand. With this big picture in mind, the Internet, brain-compatible classroom concepts, and the theory of multiple intelligences become powerful supporting players in this challenging game of education.

THE SCOPE OF THIS BOOK

This book provides a deep and complex examination of the use of the Internet in the classroom by creating a larger framework in which the Internet, brain research, and the theory of multiple intelligences can play their roles in the overall educational process. It places the Internet in perspective—no longer as the new kid on the block, but as a substantial partner in the educational process. The Internet is not an island unto itself; teachers now recognize how it can work side-by-side with activities designed to awaken and strengthen students' intelligences. By doing this, students can be engaged and motivated like never before. Yet this book also focuses on the fact that engagement is only half of the puzzle; effectiveness is the other half. Internet-based activities that engage learners through a variety of intellectual stimulation must also be designed within the larger framework of what teachers want students to learn and be able to do.

There are literally hundreds of ways the Internet can be used with students to increase learning and understanding. To help organize the myriad projects and activities, this book uses three main categories developed by Judi Harris² (1998), who has been on the forefront of providing insight into how teachers can use the Internet in the classroom. The three main categories include interpersonal exchange, information-gathering and analysis, and problem-solving Internet activities. Although specific lesson plans are used as illustrations, the book seeks to provide activity scaffolding so that teachers may be empowered to design their own Internet-based instructional activities. Teachers will be able to create lessons based on what their students need to know and to adapt lessons to students' differing intelligences and learning needs. The theory of multiple intelligences and the principles of brain compatibility are woven throughout the book and are integrated directly into discussions about Internet projects.

Chapter 1 provides a lesson design process to help teachers integrate the theory of multiple intelligences, brain-compatible learning research, the Understanding by Design framework, and the Internet to create powerful lessons. A brief discussion on how to evaluate Web sites is also included in this chapter. Finally, an example lesson helps teachers get students started on learning about their different intelligences.

Chapter 2 introduces brain research principles that apply to the learner, examines the multiple intelligences theory of Gardner (1983), reviews the Internet briefly, and provides readers with an explanation of the Understanding by Design lesson design format developed by Grant Wiggins and Jay McTighe (1998/2005).

Chapter 3 looks at assessment and evaluation. This chapter focuses on how teachers can evaluate student understanding and develops several rubrics that can be used for any activity in this book. Rubrics for information literacy skills, Internet skills, and for multiple intelligences are provided to help teachers gain an understanding of how to best use rubrics in their instruction. The guiding principle of this chapter is the belief that assessment must be discussed with students before they work on an activity. This connects the assessment process to the instructional process.

Chapter 4 concentrates on providing information and practical suggestions to strengthen students' interpersonal exchange Internet skills. Information on skills such as using search engines, tips for making searches more effective, and guidance on using bookmarks is provided. E-mail, a powerful communication tool, is also discussed in relation to having students use it for instructional purposes. Interpersonal exchange activities are presented, offering interactive and challenging Internet activities for students to practice their Internet skills as they work in curricular areas.

Chapter 5 tackles a basic skill for the twenty-first century—information literacy. No book published on the Internet today should be without a discussion of this critical skill. With so much information at students' fingertips, students must learn to work effectively and productively with all types of information. Six information literacy skills are shared with classroom tips and a classroom lesson that provides students with practice for these skills. Suggestions for information-gathering and analysis Internet projects help teachers design Internet lessons that are based on their curriculum and that focus on giving students practice with their information literacy skills. These Internet projects also assist students in using and strengthening their multiple intelligences.

Chapter 6 begins with a focus on using questions to help direct classroom lessons and student activities. Different types of questions are featured as well as problem-solving Internet activities that employ questions to direct student learning. Again, these types of Internet activities are integrated with the multiple intelligences, enabling students to work in their different intelligences to solve problems and gain a deeper understanding of issues.

Appendix A includes a list of Web sites featured in this book as well as others of interest. Appendix B contains blank copies of rubrics used throughout the book. The bibliography includes references that support the material presented. Finally, an index concludes the book.

Designing Internet-Based Activities

In these days of high-stakes testing, laser focus on standards, and concerns about meeting the requirements of many state and federal laws, some teachers question whether they can afford the time to plan and teach an Internet-based lesson. This is understandable, as the pressures on teachers to cover so much material is huge. The important thing for teachers to know and remember is that students in classrooms nationwide are growing up in the digital age. They are naturally motivated through the use of technology. The more teachers integrate technology into their lessons, the more connected students' realities between school life and "real" life become.

Designing an effective Internet-based lesson comes easily when teachers realize it requires the same process of lesson planning they used long before the Internet came along. Teachers need to keep the big picture of what curriculum standards they want to reach and what they want students to learn and to have a good link to assessing whether these learning goals have been met. In this way, there is very little difference in lesson design, whether the Internet is used or not.

On the other hand, designing an Internet-based lesson requires teachers to bring a "wild card" to their lesson. Without the Internet, the teacher is in charge of collecting the material, disseminating information, controlling the discussion, and watching over the eventual end product. When the Internet comes into play, there are times when the teacher is asked to step aside and become an intellectual guide or facilitator. Students access information, collect their own material, have side discussions and connections, and watch over their eventual end product. In this sense, it is important for teachers to shift their thinking as they bring the Internet into their lesson-designing strategies. This chapter provides some practical suggestions for teachers as they work to bring Internet-based instruction into their classroom, baby step by baby step.

WHAT DOES A WELL-DESIGNED INTERNET ACTIVITY LOOK LIKE?

Before becoming enmeshed in the details of creating an activity, let us focus on the qualities of the activity that is being created. When a teacher creates a well-designed Internet activity, he or she strives to create an activity that demonstrates as many as possible of the following 15 components. Although by no means comprehensive, these 15 components are based on brain research and best practices and include ideas that lead to engaging and effective activities. While it is unlikely that an activity will include all of the components, the more an activity includes the better.

1. An activity is linked directly to curriculum standards. It is designed to have students work within the curriculum standards and makes students aware of what standards they are learning.
2. An activity is designed to foster deep understandings. It helps students gain deep understanding of a curriculum concept.
3. An activity is time efficient, yet allows students adequate completion time. It should not take months to complete, but students need to be given adequate time to work with it to gain understanding and go below the surface.
4. An activity is tied to students' prior knowledge. It allows students to access their prior knowledge about a subject to increase the meaning of what they are learning.
5. An activity is challenging, yet manageable. It challenges students' Internet, thinking, and problem-solving skills, yet it is not so difficult that they are unable to complete the project.
6. An activity has meaning and purpose. It has a specific purpose and is meaningful to students' lives. The content, the process, or the product must be meaningful for students.
7. An activity includes an emotional component. It has an emotional impact on students, yet it is not strong enough to cause students to shut down or be distracted. A link to personal interests assists in adding this emotional component.
8. An activity breeds curiosity in students. It must play off students' innate curiosity. The activity may begin with an open-ended question or may include interesting facts, baffle students, offer mystery, or puzzle them.
9. An activity provides choices or a sense of choice. It must give students the impression that they have some say or choice in the Internet activity. The activity may allow them several different assessment products to choose from or may provide a selection of Web sites to visit within the activity.
10. An activity uses the multiple intelligences. It provides students with opportunities to use and strengthen their multiple intelligences.

11. An activity is an opportunity for collaboration. It gives students opportunities to work with other students both in class and over the Internet on collaborative projects and activities.
12. An activity offers immediate feedback. It allows students to receive immediate feedback, guaranteeing that they are not practicing and ingraining misconceptions.
13. An activity provides time for reflection. It allows time for students to reflect on what they are learning with peers and other adults.
14. An activity offers a variety of assessments using standards and objectives. It includes an assessment directly linked to it, and standards and learning objectives are embedded into the assessment measure. This helps teachers if they are covering important standards and objectives. Assessment products are built around these standards, and students are to show their learning and growth relative to them. Activity worksheets and home-to-school correspondences can display standards prominently; teachers should discuss them frequently with students and parents.
15. An activity has a clear and final product. It should include an outcome or final product. Teachers should provide well-constructed models and products and give students clear due dates. The final target should always be within students' view.

UNDERSTANDING BY DESIGN FRAMEWORK

It is not enough to have a well-designed Internet activity. Each activity needs to be directly related to the curricular standards and be designed around how we know brains learn and retain information. To help teachers along this pathway of designing strong curriculum-based Internet activities, the Understanding by Design framework proposed by Wiggins and McTighe (1998/2005) can be used.

This framework provides a simple, yet powerful, means to organize Internet-based lessons. Students learn and understand the key concepts and skills from the lessons because teachers purposely and systematically link Internet activities to the concepts and skills they want students to learn and understand. As Wiggins and McTighe explain, "Students must perform effectively with knowledge to convince us that they really understand what quizzes and short-answer tests only suggest they get" (p. 82). Well-designed, thoughtful Internet activities can help students show us what they really know and deeply understand.

Frontward Versus Backward Lesson Design

Used by teachers for generations, traditional lesson design identifies a topic for study, uses activities to help students learn about the topic, and assesses students at the completion of the unit. This *frontward lesson design* format has stood the test of time. It promotes a sequence whereby the learning activities drive instruction. In other words, in this path to designing a lesson, when a teacher wants to teach a broad concept, the learning activities he or she develops