

Planning for Technology

Dedicated to our wives: Charlotte Whitehead, Sandra Jensen, and Marlys Ann Boschee.

Planning for Technology

*A Guide for School Administrators,
Technology Coordinators, and
Curriculum Leaders*

Second Edition

Bruce M. Whitehead

Devon F. N. Jensen

Floyd Boschee





FOR INFORMATION:

Corwin
A SAGE Company
2455 Teller Road
Thousand Oaks, California 91320
(800) 233-9936
www.corwin.com

SAGE Publications Ltd.
1 Oliver's Yard
55 City Road
London EC1Y 1SP
United Kingdom

SAGE Publications India Pvt. Ltd.
B 1/1 1 Mohan Cooperative Industrial Area
Mathura Road, New Delhi 110 044
India

SAGE Publications Asia-Pacific Pte. Ltd.
3 Church Street
#10-04 Samsung Hub
Singapore 049483

Acquisitions Editor: Arnis Burvikovs
Associate Editor: Desirée A. Bartlett
Editorial Assistant: Ariel Price
Production Editor: Amy Schroller
Copy Editor: Lana Todorovic-Arndt
Typesetter: C&M Digital (P) Ltd.
Proofreader: Penelope Sippel
Indexer: Sheila Bodell
Cover Designer: Edgar Abarca

Copyright © 2013 by Corwin

All rights reserved. When forms and sample documents are included, their use is authorized only by educators, local school sites, and/or noncommercial or nonprofit entities that have purchased the book. Except for that usage, no part of this book may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without permission in writing from the publisher.

Printed in the United States of America

A catalog record of this book is available from the Library of Congress.

ISBN 9781452268262

This book is printed on acid-free paper.

13 14 15 16 17 10 9 8 7 6 5 4 3 2 1

Contents

Foreword	vii
<i>Daniel J. Hoelsing</i>	
Preface	x
Rationale and Purpose	x
What's New in This Book	xi
Acknowledgments	xiv
About the Authors	xv
1. Changing Environments in Technology	1
Technology: A Catalyst for Change	1
Educational Technology and Innovations in Learning	3
Focusing on Social Media and Ethical Issues	14
School Technology Goals	16
Strategies for Success	17
Future Challenges	20
Reflective Activities	20
2. Leadership and Planning	21
Educational Leadership in the 21st Century	21
Technology for School Leaders	31
Technology Leadership Roles	34
Establishing and Maintaining Commitment	39
Project Outline	42
Yearly Plans	56
Future Challenges	58
Reflective Activities	59
3. Technology and Professional Development	60
Professional Development Based on Strategy	60
Professional Development Models	71
Strategies for Success	74
Future Challenges	79
Reflective Activities	79
4. Teaching and Learning With Technology	81
Technology Linked With the Context	81
Going Deeper Into Teaching and Learning With Technology	104

Future Challenges	116
Reflective Activities	116
5. The Culture of Technology	117
The Principal as the Builder of Technology Culture	117
A Culture of Responsibility	134
Future Challenges	145
Reflective Activities	146
Resource A	147
6. Public Relations and Technology	149
Administrative Roles in Public Relationships	149
The Public Relations Process	153
Communication Strategies	158
School-Community Relations	166
Future Challenges	168
Reflective Activities	169
7. Financial Management	170
Funding Public Education	171
Successful Grant Writing for Technology	177
Grant Proposal	179
Implementation Plan	185
Success in Financing Technology	192
Future Challenges	197
Reflective Activities	197
8. Infrastructure: Future-Proofing School Technology Plans	198
Consider Learning and Communication	199
Future-Proofing Your Technology Infrastructure	206
Regional Centers and Technology Hubs	211
Management, Service, and Maintenance	214
Technology Infrastructure Elements in 21st Century Schools	222
Future Challenges	226
Reflective Activities	226
9. Technology Plan Evaluation	228
The Final Piece of the Puzzle	228
Leadership	230
Measuring Connectivity	233
Strategies for Success	234
Future Challenges	258
Reflective Activities	258
References	259
Index	267

Foreword

This textbook, *Planning for Technology: A Guide for School Administrators, Technology Coordinators, and Curriculum Leaders* (second edition), provides educators with indispensable tools that engage learners and enhance learning. In the 21st century, the way we engage learners to their learning is often electronic. The transition to an electronic, mobile environment requires educators to create a classroom environment that allows students to become more active participants in their own education. This learning environment is a complex interplay among content, pedagogy, and technology.

At the core of a successful education system is an effective technology plan. The authors masterfully outline the complexity of this plan into a practical reality. The plan focuses on increased student achievement as the overall goal. The authors also help readers reflect on the importance of effective professional development, identification of emerging technologies to promote student engagement, selection and financing of technologies, evaluation of the general educational program, and the development and implementation of a successful public relations program.

Within the book, readers are shown that a modern technology plan respects that students are demanding a rich learning environment that utilizes their knowledge of complex social networks, instant information retrieval, and real-time feedback that provides up-to-the-minute performance evaluations. This changing environment that goes beyond the classroom walls requires educators to satisfy the following concepts of negotiation, relationship, commitment, and engagement as they engage with students and their learning. The technology plan that supports this evolution must be fluid, flexible, and responsive to individual student needs and also place teachers and administrators in their proper roles to coordinate and implement a learning community that promotes digital citizenship through responsible and safe use.

The challenge in all school districts is the identification of technologies and a plan for securing, deploying, and replacing outdated equipment. The authors recognize that most school administrators struggle with shrinking resources and the financial commitment necessary to keep effective tools in the hands of educators and their students. Included in this textbook are activities for securing grants, ideas for reallocation of school resources, and evaluation instruments to assess the effectiveness of their technology infrastructure, applications, and programs.

The authors use the term *future proofing* when talking about their technology infrastructure to assist readers in understanding the impact an effective technology plan has on the quality and sustainability of today's learning environment. In their presentation of school technology, the authors also help readers understand that the development and implementation of a successful public relations plan are instrumental to educating parents, district patrons, and local, state, and federal legislators needed to create policy and financial resources to support equitable access to quality education in the 21st century.

At the core of all successful educational plans is the presence of quality leadership in guiding educational reform. The authors stress the importance of shared leadership in providing a vision for information literacy and global awareness as a major part of our daily lives. This shift requires school administrators, technology coordinators, and curriculum leaders to understand the need for changing learning environments and the implementation of innovation in meeting the increasing challenge of cultural diversity and equitable access for all students.

The authors provide an organized approach for school leaders to move through the book, chapter by chapter, and develop a strategic plan for improving learning in their school district. While the book presents material in a spiraling order, each chapter provides educators with information that can stand alone or build on information from other chapters.

Although each school district has unique needs, the information provided in each chapter is presented in such a manner that it could serve as a template for a successful local technology plan. For example, the charts, cases, applications, study questions, and exercises, and activities included in each chapter provide ready-to-use information for developing technology plans, promotional brochures, and technological resources for administrators, teachers, parents, and community patrons. In addition, the authors provide reflective activities that encourage readers to personalize the information and apply it to their local situations. To accomplish this, each chapter concludes with a series of reflective activities and questions that encourage readers to reflect on and enhance their personal understanding and interpretation of school technology as it relates to the concepts presented in that chapter.

The authors have successfully updated the first edition to reflect the changes in education and the use of technology in schools in the 21st century. The second edition outlines specific changes, and it also recognizes the need for providing increased flexibility for educational systems to adapt in an environment of continual change. Innovation and flexibility are central to our competitive global society, and successful education systems are those that provide learning environments that go beyond the walls of the school building.

Additionally, the authors have placed greater responsibility on educational leaders and educators to develop a shared vision, mission, and goals to promote the use of technology in addressing a more diverse and mobile student population. Professional learning communities and distributive leadership models provide an innovative platform for promoting school reform through technology. This climate of change is exciting for students and offers greater parent participation in sharing the responsibility for safe and effective use of

technology during the school day and extending the learning activities outside of the regular school day.

Cloud computing and expanded wireless networks provide a flexible and connected learning environment that requires school leaders to create an infrastructure that is adaptive to the ever-changing reality of technology. The need to create better cybersecurity and develop students' knowledge of digital citizenship through safe, responsible use is central to provide anytime-anywhere 21st century learning.

Planning for Technology: A Guide for School Administrators, Technology Coordinators, and Curriculum Leaders (second edition) is a must-have for school leaders and educators interested in designing educational systems and learning environments to prepare students to compete in a global society. The promotion of a shared vision and the practical framework for planning, developing, implementing, and evaluating learning environments supported with the infusion of technology reflects the wisdom of leadership theory and practice.

The formal educational background and practical experience of the authors make this book a real treasure. This one-of-a-kind book serves as a great reference for school districts that choose to develop quality learning environments and embed technology, innovation, equity, and engagement as central to the development of life-long learning.

*Dr. Daniel J. Hoesing, Superintendent
Schuyler Community Schools
Schuyler, Nebraska*

Preface

Milestones in science and technology have marked the march of human progress. Gutenberg’s creation of movable type in the 15th century laid the foundation for universal literacy. Watt’s invention of the steam engine in the 18th century launched the Industrial Revolution. The inventiveness of Bell and Marconi in the 19th and 20th centuries—creating the telephone and radio—helped bring a global village into being. However, as Shakespeare wrote, “What’s past is prologue.” In the 21st century, “we must begin to think far more seriously about what our current education is prologue to—and whether that is enough” (Prensky, 2013, p. 27). The global economy is being reshaped by machines that generate and analyze vast amounts of data; by devices such as smartphones and tablet computers; by smarter, nimbler robots; and by technology services that let businesses rent computer power when they need it. In essence, computers and information technologies are transforming nearly every aspect of American life. America’s schools cannot be an exception to this information revolution. Computers and information technologies must be a part of the way most American students learn. As a high school student told Marc Prensky (2013), “you think of technology as a tool, we think of it as a foundation; it underlies everything we do” (p. 23). Prudent integration of our evolving and powerful technology demands that we rethink our curriculum.

RATIONALE AND PURPOSE

The reason for updating the bestselling first edition of *Planning for Technology: A Guide for School Administrators, Technology Coordinators, and Curriculum Leaders* is to assist school administrators, technology coordinators, and curriculum leaders in their never-ending quest for a shared vision to improve schooling. The role and use of newly emerging technologies has had a massive impact on changing how learning happens. We have shifted to concepts like mobile learning, digital learning, social network learning, and BYOD (Bring Your Own Device). To enhance equity and eliminate pockets of excellence, current and future school leaders need an all-encompassing vision of how technology can help transform teaching and learning at all levels. As part of this shared vision, school administrators also need a toolbox containing tried-and-true examples of what actually works. By collectively brainstorming strategies and reviewing best practices across the globe, the authors

have collected a true balance of ideas, models, and strategies that have been proven successful in many schools.

The fundamental purpose of the text is to offer educators practical exercises that will help form a technology vision and plan related to their local context. This unique book provides essential information and activities that will help school administrators, technology coordinators, and curriculum leaders as they seriously consider deepening their understanding of technology and establishing a school plan for effectual integration of emerging technologies in their schools.

This is a must-read textbook for anyone wanting to know what is new and what really works in our technology-rich schools. The three main reasons why this is a must-have book are as follows:

- It strategically and intentionally connects the dots for leadership and instructional change as it relates to 21st century learning.
- It empowers leaders to act boldly and creatively when integrating evolving technology demands and how we need to rethink curriculum.
- It provides an incredibly powerful planning tool to move our nation's classrooms technologically into the future.

WHAT'S NEW IN THIS BOOK?

The title of Chapter 1 has been changed from “Changing Strategies in Technology” to “Changing Environments in Technology” to shift from discussing specific strategies to exploring technology as a reality that is much deeper than just a set of strategies. Readers are introduced to the concept of 21st century schools in this chapter. The chapter also recognizes the different nature of students and their relationship with technology and how this is impacting the practical use of technology in schools. There is also an important discussion on how technology is integral in school reform. Readers are also introduced to the role that social media can have in 21st century classrooms.

Chapter 2 refocuses the reader's attention to the important role of the school leader in bringing school reform through technology. In this sense, the concept of distributive leadership is discussed as a means for integrating technology. There is also an important discussion on setting up a climate of technology change through leadership that is tied to technology standards for school leaders. Some necessary changes were also made to the Project Outline activity that will help readers through vision, mission, and goal setting.

Substantial changes were made to Chapter 3. A whole new practical activity is provided to help readers link professional development to learning powered by technology for 21st century learning. There is also a new and important discussion on professional learning communities in this second edition. In line with this, readers are given a chance to reflect on how understanding concepts of adult learning theory can be a tool for improving professional development.

Although the title of Chapter 4, “Teaching and Learning With Technology,” remains the same, the content and focus is completely new. This chapter brings to the reader's attention the concept of the 21st century classroom and what it looks like. In this dialogue, the chapter explores several new models for conceiving the

21st century educational experience. The models presented are Shifting Minds out of Canada, the Partnership for 21st Century Skills, the Organisation for Economic Co-operation and Development (OECD) Framework for 21st Century Learning, and the National Educational Technology Standards for Teachers (NETS-T) Model for 21st Century Competencies. A new activity in Chapter 4 helps readers to reflect on how they can create a 21st century school environment. There is also a new discussion on linking pedagogy to technology. This component explores how pedagogy is changing as a result of a more integrated relationship between technology and the curriculum. Two examples of practitioners questioning mobile technology and its impact on pedagogy are provided. One of the examples is the concept of technological pedagogical content knowledge. In the end, the completely new chapter encourages readers to consider the new relationship among technology, pedagogy, and content in the 21st century classroom.

As a result of the changing context of technology in schools, the authors felt it necessary to add a chapter to the second edition: Chapter 5, “The Culture of Technology.” This chapter challenges readers to move beyond understanding technology integration as just a matter of the devices of technology to actually creating a whole new culture of technology in schools. The authors show how the principal is essential in building this culture of technology. Readers are encouraged to reconsider how they conceptualize the idea of control as it relates to technology in the classroom. The nine themes of digital citizenship are presented in addition to an exploration of the new culture of digital citizens. The chapter ends with how educational leaders need to create a culture of responsibility in their schools. The key idea here is that the concept of control and safety with technology has shifted to one of shared responsibility among educators, students, and families.

Chapter 6 is about public relations and technology. It is still a relevant and important consideration for school administrators, and so appropriate changes have been made to make it current and relevant.

In Chapter 7, important new data on the funding of public education is provided to readers. Included are the possible new funding sources derived from federal budget changes as it relates to technology in schools. Changes have been made to the grant proposal activity to make it more workable for readers.

Another exciting new addition explores the concept of future-proofing schools in Chapter 8. The authors discuss creating an infrastructure that is adaptive to the ever-changing reality of technology. Two examples are provided from schools that have future-proofed their technology infrastructure. Readers can use these examples to help inspire their own technology infrastructure to align with 21st century realities. In the discussion, components such as cyber-infrastructure, cybersecurity, wireless networks, cloud computing, and E-Rates are presented to readers.

The final chapter, Chapter 9, “Technology Plan Evaluation,” updates the discussion to ensure that technology plans align with state and national standards. The authors added a new Technology Plan Evaluation activity to aid readers in assessing their level of technology maturity as well as a Technology Planning Analysis Rubric to help administrators assess the soundness of their plan.

Each chapter concludes with a series of reflective activities. The purpose of these activities is to allow readers to apply insightful strategies as they attempt to employ the book's technology framework to their local contexts and realities.

With a dependence on innovative educational ideas and advocacy, as well as new phases of anytime-anywhere learning, this book provides school administrators, technology coordinators, and curriculum leaders with the practical tools needed to create a working, technological framework that is appropriate for their schools and students. It is an exciting educational time when educators, students, and families can really come together to create a growing generation of responsible digital and global citizens. The activities, research, theory, and practice contained in this book will assist with the infusion of technology in our 21st century schools.