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Introduction

Sometimes it is important to state up front what something is not. The Technology Together approach, the topic of this book, is not a product. Rather, Technology Together is a process, a collection of tips and hints and a way of perceiving professional development. It is not a rigid technology program or project that you complete step by step – it is a flexible framework for ongoing information and communication technology (ICT) integration and professional development.

It was never our intention to produce a step-by-step process guaranteed to work for all teachers in all school contexts. Rather, the Technology Together model is conceived of as a general approach to teacher professional learning, designed to be flexibly adjusted to individual school contexts. Every teacher, every class and every school context is acknowledged as unique and distinctive; therefore, the processes we suggest are adaptable to the culture and context of each school. The implementation of the model will be shaped by a range of factors, including leadership styles, school size, backgrounds and interests of the staff, history of previous ICT professional development initiatives and hardware and software resources.

So why have we developed and written about such an approach? Teachers in primary and secondary classrooms face ever-increasing expectations and greater levels of accountability. Rapid developments in ICT and much espoused assumptions about how such technology will change learning environments remain among the major professional challenges faced by the profession.

Over the last decade, ratios of computers to students have decreased in many countries and an increasing number of schools use 1-to-1 computing (one computer or mobile device per student). Interactive whiteboards (IWBs) have found their way into a large number of classrooms and the power and potential of mobile technologies have begun to be recognised. New communications systems not only enable messages to be distributed instantly to all teachers, students and/or parents, but also allow collaborations between classes in different schools and even different countries, as well as interactions with local, national and international subject experts. Virtual worlds create new environments for learning that we are only just beginning to imagine.

In any one school, we typically find teachers and students with diverse levels of experience and confidence with technology. Some are creative and skilled with their ICT use, while others resist, resent or fear the challenges that technology represents. Even those who are using existing technologies will face the prospect of needing to continually learn and change.

Professional development for teachers in ICT thus remains a major educational imperative, presenting significant financial and strategic challenges to school systems and governments internationally. Numerous studies point to the limitations of traditional professional development approaches, which focus on skills-based training within competency-oriented frameworks. This research instead emphasises the importance of a positive attitude towards integration, enthusiasm, lack of anxiety and approach to teaching and learning as key factors in ICT adoption by teachers (Ertmer & Ottenbreit-Leftwich, 2010).

Effective ICT professional learning requires the development of attitudes, values and beliefs that foster confidence and an openness in teachers towards ongoing learning and adaptability to change. It also requires changes in school cultures and established understandings of the way teacher learning is approached. There is a strong case for ICT professional development approaches that promote lifelong technology learning where teachers are more self-directed in identifying what they need to learn and in undertaking the actual learning process.

The approach to teacher professional development we describe in this book and on our website, <http://technologytogether.scu.edu.au>, incorporates such an emphasis. The Technology Together model offers guidance to those who support and assist teachers as learners. It inspires confidence to challenge the teachers with whom you work – and particularly to recognise the benefits of fostering learner independence rather than dependence.

Technology Together: Whole-School Professional Development for Capability and Confidence is intended to guide teachers and schools towards becoming capable technology users so that new and emerging ICT can be integrated into classrooms in creative, purposeful, student-centred ways. The Technology Together website provides a wide range of resources to assist you to implement the model in your school and to support the learning of your colleagues. Together, these resources detail the philosophy, theory, principles and practices that make up the Technology Together process, providing opportunities for you to consider how these ideas can best be applied in your own school context.

Quotes and resources

Throughout this book we place a strong emphasis on maintaining the teachers' voices and sharing comments, feedback, stories and suggestions from participants who have been directly involved with implementing Technology Together in their schools. This book contains numerous quotes from participants. Quotes throughout the book made by teachers and school leaders who participated in the development of Technology Together appear in italicised paragraphs such as this one:

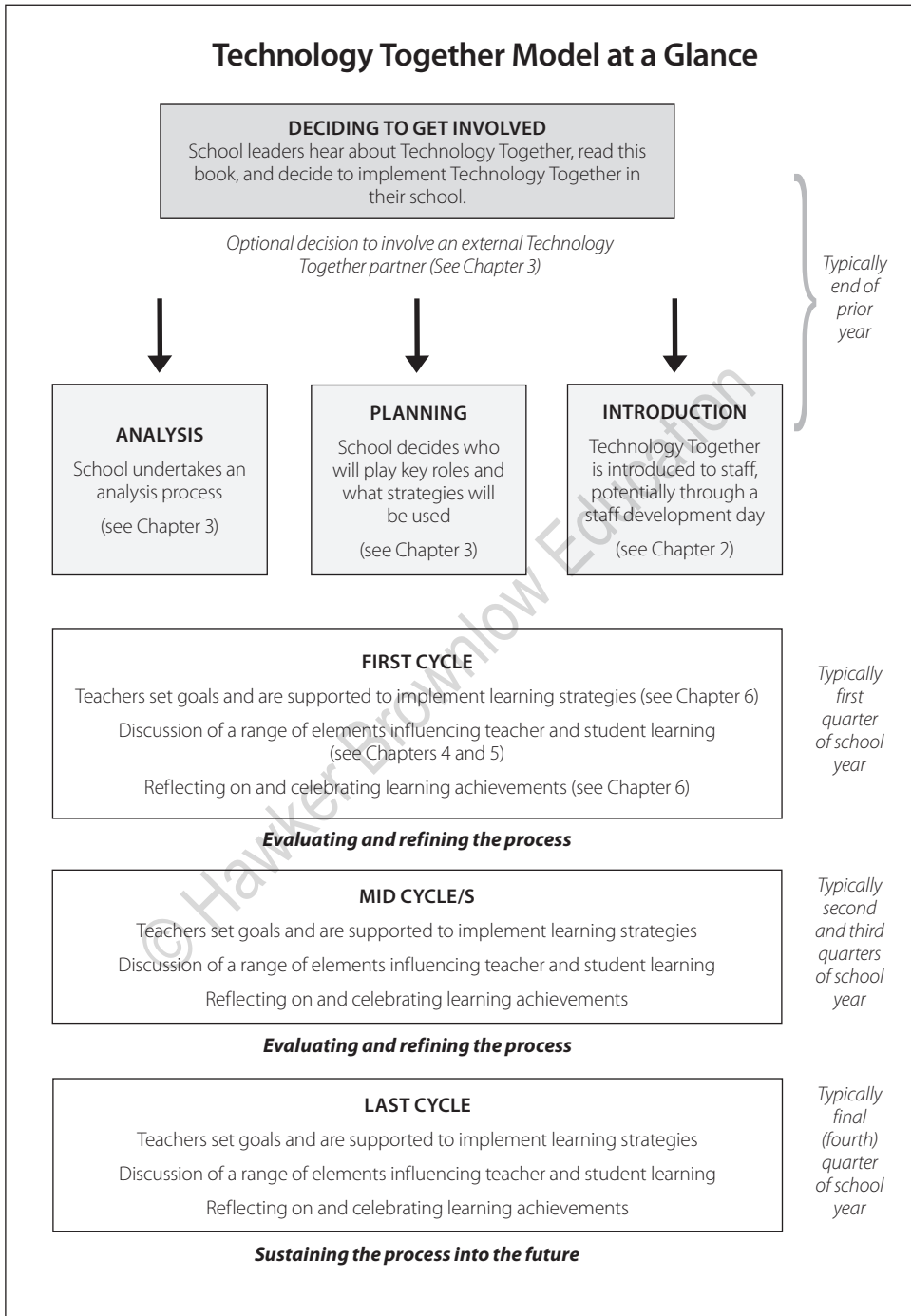
Participation in the Technology Together project has led to a cultural change in our school.

There are more than 70 resources in *Technology Together: Whole-School Professional Development for Capability and Confidence*. Throughout this book you will see **Resource** set in boldface. **Resource** alerts you to a figure, a table, a form or a display that is keyed to the List of Resources in Appendix A. Some of the resources are downloadable from the authors' website.

Chapter summaries

Chapter 1 explains why a whole-school approach to ICT learning is so important and how the Technology Together model addresses this need. We describe what it means to be a capable technology user and why a focus on values, attitudes and beliefs is beneficial. We present feedback from teachers who have developed and implemented the Technology Together process to explain how it can benefit school communities. We also discuss the theoretical foundations of the approach, grounding the metacognitive approach firmly in contemporary understandings of learning and educational change. Finally, we explain how the Technology Together website, used in conjunction with this book, can support your school to implement Technology Together.

Chapter 2 provides an overview of the eight foundational pillars – key ideas serving as a framework for Technology Together – including an introduction to the metacognitive approach that underpins the process. We also explore the metaphor of ICT learning as a



Much research over the past two decades has focused on the role of self-efficacy in technology learning (see, for example, the early work of Compeau & Higgins, 1995). Self-efficacy refers to individuals' beliefs in their capacity to perform on a particular task. It is not so much concerned with the skills you have, but with your personal judgment of these skills. Self-efficacy is different from self-esteem, which is a generalised evaluation of the whole self. Rather, self-efficacy is specific to a particular task or context. For instance, someone can have high self-efficacy as a singer but low self-efficacy as a technology user. Computer self-efficacy, then, is not about technology skills per se but rather individuals' beliefs about their skills, knowledge and abilities.

When considering affective aspects of technology learning we also need to consider computer anxiety. Again, much research has documented and attempted to understand what might be defined as irrational, emotional distress experienced by an individual when using or considering the use of computer technology (Igarria & Iivari, 1995). Quite obviously, people who are less anxious (technophrenics) are much more likely to interact with technology than people who are more anxious (technophobics).

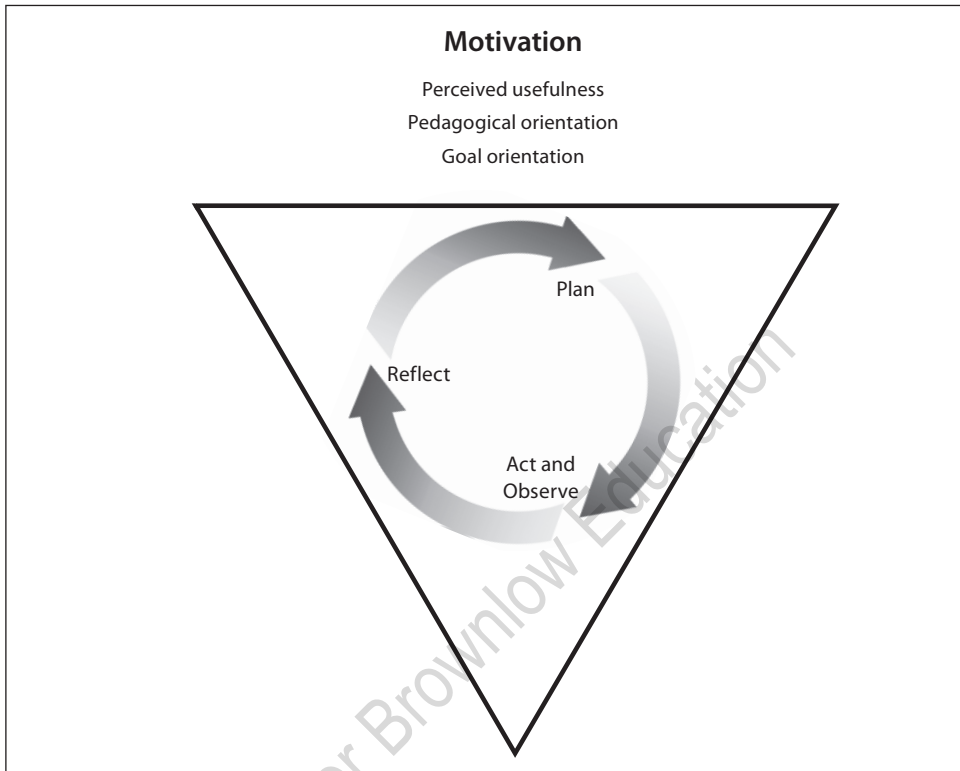
Learned helplessness is another important affective element and is when learners, faced with challenges or difficulties, abandon problem-solving strategies. Put simply, such learners fail to help themselves and become "failure accepting" to avoid the implication of low ability. People who demonstrate learned helplessness often employ self-handicapping tactics, such as procrastination and blaming others in an attempt to circumvent responsibility for their lack of success or fear of failure.

Learned helplessness often relates to attribution; in other words, people's explanations for the causes of events in their life. The basic premise of attribution theory is that individuals' beliefs about what causes these events influence their expectations, which, in turn, influence their behaviour. Typical attributions in relation to success include ability, effort, hard work or luck/chance. Attribution can get in the way of good learning and sometimes is used as an excuse for not integrating ICT at all.

Motivation

The second metacognitive dimension is motivation. It seems fairly obvious that teachers need to be motivated in order to effectively integrate ICT in their teaching. Motivation has traditionally been considered as either extrinsic (driven by factors outside the individual) or intrinsic (driven by factors within the individual). In the case of ICT integration, extrinsic motivation might include curriculum requirements, school or department directives, or social and parental expectations. Intrinsic motivation might include teachers' personal interests or passions for ICT, teachers' beliefs in the importance of students learning to use

Figure 4.3 The visual model of the metacognitive approach to computer learning, focused on motivation



Fostering perceived usefulness

In Chapter 2, we identified perceived usefulness as one of the most important elements of a metacognitive approach. We emphasised the enormous influence it has on teachers' motivation to engage in technology learning as well as the amount they retain from their learning experience. For many people (although not all) if a computer skill does not have immediate application, they will not be interested in it, as the following quote illustrates:

At the time I grasped all that was involved, but I could see no use for PowerPoint at that stage and my skills became redundant. Then many months later, when I was about to work on a presentation, I needed to be shown again – it was relevant, I had a need to learn and I was more determined to retain my new skills. When I think back to how my computer skills have increased and diversified, it has only been successful when I've pursued something for my own interest.