Foreword

We have always had devices and those devices have always influenced or mediated communication, including education. Technology use in education has typically operated around a discussion of the device and its implementation, while this *Handbook of Research on Transformative Digital Content and Learning Technologies* frames device use in terms of how active learning pedagogies promote learning using digital content. Active and meaningful learning has become the terminology to characterize the overall purpose for learner-centered technologies. My concern for any technology use and any pedagogical approach is based on learning outcomes, the purpose for learning technologies which use digital content. A commonly used analogy is the choice of tools depends on the task at hand. Bransford, Brown, and Cocking (2000) suggest four interrelated features of learning environments that should be kept in mind when selecting a pedagogical approach and tools for knowledge development and application, features to keep in mind when reading these chapters:

1. Learning settings must be learner-centered;
2. Teaching decision must take into account the nature of what is to be learned and what constitutes competence or mastery;
3. Ongoing formative assessments of both student and teacher learning, and
4. Connections to the context of the real world.

Another prompt for the reader is to pose a generic research question; namely, “How does X-learning technology-based pedagogies help Y-learners achieve Z-learning outcomes?” By asking this question, the reader can also see how the pedagogy is distributed across the teacher and the students and the extent of learner-centered teaching.

The editors cited several broad learning outcomes to be addressed by chapters in this handbook, including:

1. Derive meaning and understanding,
2. Form new mental representations of content, and
3. Reconstruct new knowledge based on student experiences.

One prompt is to have readers look for purpose and learning outcomes in these chapters and answer the question: Why use these tools and pedagogies? In terms of learning outcomes, I see student engagement and active learning as a major focus. The authors view student engagement as a key purpose but may not explicitly identify engagement as a learning outcome. When active or engaged learning is an
overall purpose for teaching, then it is useful to define through learning outcomes what is meant by these engagement and community-building words, thus enabling student performance to be assessed. The chapters in this handbook document activities across higher education (8 chapters) and public school settings (5). The higher education chapters addressed primarily learning outcomes in terms of the technology use, developing student Information and Communications Technology (ICT) literacy (access, inclusion, quality), motivation, and engagement. Other chapters focused on academic skills and access. The learning outcomes addressed in the chapters on PK-12 settings include three chapters on science learning, involving concepts, the inquiry process, and an important incidental learning outcome, that of tapping and stimulating curiosity in students. Two other chapters address students with second language and audio processing needs. In addition, two chapters examined the professional development of teachers (Chapter 1) and prospective teachers in a teacher education program (15). Two chapters address technology issues in a nonformal setting tapping Universal Design for Learning principles (Chapter 5) and a community setting to promote wellness (Chapter 6). Three chapters discuss technology that might be useful across all educational settings including tutorials (Chapter 8), MakerSpaces (Chapter 12), and video (Chapter 18).

Another way of summarizing the range of chapters in this Handbook and direct reader attention is in terms of the digital tools presentation of content or what I would label as the educational intervention. These digital transformative tools included video and social media (3), iPad use (3), UDL and assistive technology (2), and specific tools (3) such as cloud computing, WebEx, and MakerSpaces. An interesting observation is that eight of the twenty chapters examined intervention models or processes for in-class or distance applications of learning technologies. These included 1:1 device initiatives (laptop or iPad), online access criteria, a 3-phase multicultural project teams process, Digital Wellness Model, and MakerSpace Activity Process (MAP).

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REFERENCES