❖ DISRUPTION TOWARD STUDENT-CENTRIC LEARNING

We state above that in the first phase of disruption of the instructional system the software will likely be complicated and expensive to build. The reasons for this can be traced to the use of the existing commercial system when marketing the software, as noted previously, as well as to the relative immaturity of Web 2.0 software. Within a few more years, however, two factors that were absent in stage 1 that are critical to the emergence of stage 2 will have fallen into place. The first will be platforms that facilitate the creation of user-generated content. The second will be the emergence of a user network, whose analogues in other industries would include eBay, YouTube, and dLife (for patients with diabetes and their families). The tools of the software platform will make it so simple to develop online learning products that students will be able to build products that help them teach other students. Parents will be able to assemble tools to tutor their children. And teachers will be able to create tools to help the different types of learners in their classrooms. These instructional tools will look more like tutorial products than courseware. But rather than being "pushed" into classrooms through a centralized selection process, they will be pulled into use through self-diagnosis— by teachers, parents, and students. User networks, not value-chain businesses, will be the business models of distribution. This will allow parents, teachers, and students to offer these teaching tools to other parents, teachers, and students.

We illustrate these stages of disruption in Figure 5.2 as successive planes of competition, where each plane comprises a commercial system. The rear-most plane of competition represents the present public school systems, as well as most private and chartered schools. They are characterized by monolithic instruction, as noted previously. Textbook development and production, school district adoption decisions, the systems of instruction, and assessment are all monolithic because customization is prohibitively expensive.

technology enabled Pixar to create *better* movies—to the point that Disney had to buy Pixar in order to stay in the game. Now the technology is making it so simple that *lots* of people can create their own animations. Check them out on YouTube. Second Life is a very popular online, three-dimensional world that is "imagined and created entirely by its residents."[5]

Distribution through User Network Business Models

The initial motivation for creating these tutoring tools could very well be "local"—for family, friends, or a teacher's own students to use. If history is any guide, however, the best of these tools will spread in popularity very quickly, and exchanges will emerge through which this user-generated content can be offered to others for free or a fee. By illustration, the software-as-a-service company Salesforce.com features an "AppExchange" on its Web site. There, people who have developed programs from QuickBase or platforms like it, can post the applications they have created, and other users can join and find applications that fit their needs.

Though still in their infancy, user networks such as these—user-generated, collaborative learning libraries through which participants worldwide can instruct and learn from one another—are emerging.[6] These networks will harness the innovative energies of a much larger group of insightful people than is possible in today's value-chain business models that dominate the creation and sale of traditional textbooks and their use in monolithic instruction. As these networks become known and platform tools for building these products become easier and easier to use, a user who figured out how to teach spelling to people strong in logical-mathematical intelligence could go to an exchange, develop a tool, post it, and see what happens. As content is used over time, users will rate it, as they rate books on Amazon.com and movies on Netflix, so that others can easily find the tools that match the way they best learn.

One insight that educators can glean from the health-care industry is that people are quite good at self-diagnosis