

Disrupting Class

How disruptive innovation will change the way the world learns

**Clayton Christensen,
Michael B Horn
Curtis W Johnson**

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Introduction

This book is about how to reform the education system in American Schools. Christensen, Horn and Johnson emphasise the need for changing the paradigm completely. Christensen is an acknowledged innovation guru. In this book, he joins hands with two education experts to explain how the best practices of disruptive innovation can be applied to the school education system. More specifically, they examine how to use information technology more creatively to deliver customized education tailored to the needs of different students.

The need for a new paradigm

Schools exist to maximize human potential. They are supposed to develop the skills, capabilities and shape the attitudes of students. Schools are also supposed to help childrens think differently and encourage the development of multiple perspectives. But schools in the US are struggling to meet these lofty objectives.

Various reasons have been given to explain this phenomenon. Schools are not adequately financed. There are not enough computers in the classroom. Uninterested students and parents are another factor. But these and other factors at best offer only a partial explanation. The authors examine why the current schooling system is flawed and what can be done to improve the state of affairs.

The authors quickly make the point that what is badly needed today is a new approach to education that emphasizes more intrinsically engaging methods of learning. If students love the process of learning itself, the battle would be won. Education would then be an intrinsically motivating experience for school students.

Applying the theories of learning

The initial part of the book is devoted to theories of learning. A key point to note about learning is that we tend to learn in our own ways using different methods, different styles, and at different speeds. Each of us responds to a particular style of teaching or classroom instruction in a particular way. A one-size fits all approach can be dysfunctional.

To maximize the comfort level and minimize frustration, learning should be aligned with our intelligence. In this context, we need to redefine intelligence. It is simplistic to equate intelligence with IQ. The definition offered by well known scholar, Howard Gardner is useful here. Gardner defines intelligence as:

- ❖ the ability to solve problems that one encounters in real life
- ❖ the ability to generate new problems to solve

- ❖ the ability to offer a product or service that is valued within one's culture

Gardner has identified eight intelligences:

Linguistic - The ability to think in words and to use language to express complex meanings.

Logical – Mathematical – The ability to calculate, quantify, consider propositions and hypotheses and perform complex mathematical operations.

Spatial- Ability to think in three dimensional ways, including imagery, objects in space.

Bodily/Kinesthetic: Ability to manipulate objects and fine tune physical skills.

Musical – Ability to distinguish and create pitch, melody, rhythm and tone.

Interpersonal: Ability to understand and interact effectively with others.

Naturalist - Ability to observe patterns in nature, identify and classify objects and understand natural and human made systems.

When the educational approach is well aligned with one's stronger intelligence, people will understand the subject more easily and with greater enthusiasm. Most people excel in only two or three of the intelligences listed by Gardner. Within each type of intelligences, there are different learning styles. And within each learning style, people learn at different paces – slow, medium or fast. A system of delivery that takes into account all these dimensions will be truly effective.

The need for a student centric model

Unfortunately, schools standardize the delivery and do not customize it taking into account the unique circumstances of different students. The students who succeed in schools today do so not because of great teaching but largely because their intelligence happens to match the dominant paradigm in use in a particular classroom. When this is not the case, they struggle. For example, students who are not strong in linguistic intelligence find themselves at a serious disadvantage in the English class. Similarly, students who do not have high logical-mathematical intelligence tend to struggle in the maths class.

The need of the hour is a more student centric model. Computer based learning holds great promise in this context. Computer software can enable students to learn in ways that take into account their intelligence types and speed of learning. Software can combine content in customised sequences and in the process also help teachers move towards more value adding roles.

It is not that schools do not use computers. But the way schools use computers leaves a lot to be desired. Schools use computers to marginally improve the way they already teach and run their system. Christensen emphasizes that the right way to use computers is as a disruptive tool that will remove traditional teaching, help students to learn in the way they are naturally equipped to do and use teachers to coach students and give them individual attention.

Today, in middle and high school core academic classes in US schools, computers have little impact on the way that students learn. Teachers continue to deliver instruction in the traditional way. Computers are used by students mainly to type reports, to search the Internet for information and locate research papers and to play games. Teachers use computers to make better lesson plans and to communicate more with parents through emails and blogs. These are good but hardly path breaking applications. In short, information technology is being used in limiting ways instead of being used to transform the prevailing instructional practices.

The disruptive potential of IT

Disruptive technologies evolve in a completely different way. Christensen visualizes how computers may disrupt completely the manner in which education is imparted today. Disruptive innovation may proceed in two stages. The first stage is the introduction of computer based learning. The next stage would be the deployment of student centric technology.

In the first stage, i.e., computer based learning, the software will remain monolithic. The instructional method will largely mirror the dominant type of intelligence or learning style in each subject. However, the software may allow students to choose different ways of learning the material. Computer based learning will disrupt teacher led instruction. In the second stage, student centric technology, software can help students learn each subject in a manner that is consistent with their intelligence and learning style. Today personal tutors are available only to the rich. Student centric technology will provide "virtual" tutors to many more students who find themselves left out today. Such virtual tutors will replace personal tutors and democratize customized learning opportunities.

Christen draws upon his seminal work published as "The Innovator's Dilemma." A key point Christensen makes in that book is that disruptive innovation must strike where the opportunity exists and there is some space for the innovator to be left alone for some time. Computer based learning must not target those courses that schools consider important and want to teach inhouse. It must instead focus on courses that public schools would be relieved not to have to teach, but would be happy to offer. Using computer based courses for core subjects will only meet resistance from teachers' unions.

One smart way of operating would be to use IT where there is little activity happening because of the limitations of the current education paradigm. For example, many schools may not be offering some advanced courses simply because teachers are not available. Similarly, some students may be unable to attend school physically for some genuine, compelling reasons. Also, for students who have failed in a subject, remedial classes may be difficult to arrange in the physical mode. These are good examples of areas where there is great potential for virtual learning.

But in the long run, IT can take over many of the jobs currently handled by instructors. First, such learning will keep improving as enhanced video, audio and interactive elements are added. Gradually, the technology will also permit teachers to choose and customize the body of material to suit the individual needs of different learners. An acute shortage of teachers will facilitate the transition. As the costs of computer based learning continue to fall dramatically with scale, virtual learning will become even more attractive.

IT will push teachers into more value adding roles. Instead of delivering a one-size-fits-all instruction, teachers will spend more time with each student to help them deal with their individual problems. Teachers will act more like coaches and tutors and help students find the learning approach that is most appropriate for them. This will obviously call for teachers not only to be more technology savy but also empathetic towards the individual learning styles of students.

The current examination system will also undergo a sea change. Today, an examination typically marks the end of a course. But testing does not have to be postponed until the end of an instructional module and then administered in a batch mode. The mastery of concepts can be tested in an ongoing fashion. Rather than a fixed time for learning for all students with variable results, the amount of time to learn can vary across students. This will ensure that the resulting learning is much more consistent across students. Thus assessment and individual assistance can be interactively built into the content delivery instead of being administered in the end, as in the case currently.

Over time, we can expect user friendly technology platforms to emerge. These platforms will enable ordinary people to create software that helps different types of learners master topics that they would otherwise have struggled to learn. These simple products will be designed by parents and teachers who have a live exposure to the learning challenges faced by students. Peer learning networks will also emerge that will enable user generated content to be distributed free or for a small fee. Collaborative learning libraries will enable participants to instruct and learn from one another. These networks will harness the collective wisdom of a much larger number of people as opposed to the current monolithic teacher or administration centric model. Due to the very low awareness of the existence of learning remedies, parents and students have put up with and even become resigned to poor performance. User networks will hopefully provide exciting opportunities to deal with learning disabilities.

Christensen makes an important point that this "learners as teachers," and "teachers as learners," approach might work because many of us learn better when we teach than when we listen to a teacher. When we have to teach, the only way we can do it is to format the rules of the subject in a way that is consistent with our intelligence type.

We mentioned earlier that an important role of school education is to shape the attitudes of children. Pre School must aim at creating intellectual capacity in early childhood, cultivating strong positive self esteem and stimulating intellectual curiosity. A significant portion of a person's intellectual capacity is developed in the first 36 months. Stronger self esteem is needed to give children the confidence to grapple with difficult educational challenges and life issues as they are encountered. With proper preparation in pre school, children will be better placed to deal with the school academic curriculum.

If parents are better prepared and trained, they can handle the cognitive development of their children more effectively. High school is the place to teach courses that convey the methods of early cognitive development to tomorrow's parents. This way they will be better prepared to engage with their children at a later date.

Today, many working couples obsessed with their careers and pressed for time, hand over their children prematurely to day care centers. These parents do not realize they are giving up a great

opportunity to engage in meaningful conversations with them and developing their intellectual abilities and self esteem.

Conclusion

Attempts to reform the school system in the US have failed because they have not addressed the root cause of the inability of students to learn. The solution lies in the creative use of IT. But IT must not try to attack the problem head on. Instead, it must get around the system first addressing opportunities which are going untapped today. A disruptive innovation succeeds by focusing on affordability, accessibility, capability and responsiveness. IT can help us move towards a modular, not monolithic batch mode education system and teach students in customized ways. If society can find better ways to deploy technology effectively, the school system which is failing to deliver today can be completely turned around. Though this book has been written in an American context, the key messages are equally applicable in a country such as ours.