

## ISSUES FACED BY EDUCATION IN THE 21<sup>ST</sup> CENTURY

*Francisco Solano Portela Neto\**

### ABSTRACT

This article contains apprehension and research, by the author, of 21<sup>st</sup> century issues and trends in the field of education. After an introduction which attempts to discern the major emphases of 21<sup>st</sup> century education, namely the preeminence and customization of learning (over teaching), the article deals with four areas: (1) technology utilization; (2) student needs, uniqueness, and abilities; (3) educator roles, now and in the future; and (4) the connection between teaching and learning. The article ends by presenting some practical considerations that can be implemented in the 21<sup>st</sup> century teaching-learning process, and with a reminder that the changes needed are in content, methodology, and approach, and not in the eternal principles that sustain society and hold together the very field of education.

### KEYWORDS

Digital immigrants; Digital natives; Educational digital technology; Makerspaces; Role of teachers; Student needs; Teaching vs. learning; 21<sup>st</sup> century learning.

### INTRODUCTION

If there is a prevalent axis that characterizes education in the 21<sup>st</sup> century, it is the emphasis on the preeminence of learning (over teaching) and that this learning should be customized to the individual needs of the students.

---

\* B.A. in Applied Mathematics (*Magna Cum Laude*), Shelton College (Cape May, NJ); Master of Divinity (M.Div.), Biblical Theological Seminary (Hatfield, PA); *Litterarum Humanarum Doctor* (L.H.D.), Gordon College (Boston, MA). Professor-coordinator of Christian Education at Andrew Jumper Presbyterian Graduate Center and professor of Systematic Theology at Rev. José Manoel da Conceição Presbyterian Seminary, in São Paulo.

Christensen, Horn, and Johnson<sup>1</sup> based on this focus of student-centric education, issue a call for widespread and productive use of technology, with which customized learning is made possible. The contrast is made with 20<sup>th</sup> century (or older) education, which, according to the authors, resembles an industrial production line, where students, grouped uniformly by age brackets, receive batch education,<sup>2</sup> independently of their cognitive levels, or whether they are adequately following what is being taught.<sup>3</sup> Wimberley<sup>4</sup> reinforces the need for individualized teaching/learning and describes the two crucial factors that will result in this customized approach: “motivation + engagement = personalized (individualized) learning.” This article explores four areas of 21<sup>st</sup> century education that represent changes of paradigms and claims for innovation, namely, technology, awareness of student needs, the role of educators, and new perspectives on binomial learning vs. teaching.

### 1. TECHNOLOGY UTILIZATION IN 21<sup>ST</sup> CENTURY EDUCATION

Many educators have understood that the utilization of technology in the sphere of education, in this 21<sup>st</sup> century, is something that is not optional, nor merely important, but actually a mandatory path that needs to be followed (Starr, 2016, May 10; Armstrong, 2014). It is obvious that, otherwise, the educational field cannot keep abreast of all the other fields that not only utilize, but also widen and deepen their tasks by the use of technology. This situation is reinforced by the continuous decline in prices and the increasing abundance of educational software.

Wimberley<sup>5</sup> warns that the installation of equipment and even adequate software in schools is no guarantee that there will be improvement or even changes in the way teaching is performed. He affirms that all this investment can be used “not as a platform for innovation, but to sustain and maintain conventional teaching.” Therefore, there is some perception that needs to be developed and some foundational-work that needs to be done for an effective use of technology, such as: (1) Awareness that the target is not to facilitate teaching, but to improve learning; and, (2) Inclusion of students in the choice, both of equipment as well as of software, while surveying them in order to

<sup>1</sup> CHRISTENSEN, M.; HORN, B.; JOHNSON, W. *Disrupting class: How disruptive innovation will change the way the world learns*. New York: McGraw Hill, 2011.

<sup>2</sup> Ibid., p. 242.

<sup>3</sup> Ibid., p. 21-42.

<sup>4</sup> WIMBERLEY, A. (n.d., c). The equation of motivation [video webcast]. Retrieved from <https://download.liberty.edu/courses/7tt0l.mp4>.

<sup>5</sup> WIMBERLEY, A. (n.d., a). Right equipment, wrong decisions [video webcast]. Retrieved from <https://download.liberty.edu/courses/4p78u.mp4>.

discern how they learn and what media will be more effective to accomplish the target of improved learning. Kennedy, Judd, Churchward, and Gray<sup>6</sup> have found that students that have been born in this age of digital connectivity, or, to use Marc Prensky's<sup>7</sup> terminology, that are *digital natives*, have a very low tolerance for discursive teaching, while preferring information that is fast and channeled through multiple means.

Christensen *et al.*<sup>8</sup> call attention to the fact that, in the 21<sup>st</sup> century, information technology should not be used merely to perpetuate a traditional classroom, and that if this is what will be done, there will be no usefulness. Even online learning in the 21<sup>st</sup> century should be rethought and should take better advantage of technology advancements to allow for improved personalized learning. Online education is being hailed as the greatest change in the teaching-learning process, and many believe that in this century many conventional educational practices will be replaced by this new form of learning (Myers, 2011, November 13). However, much current online learning is not really customized, but is *batch-administered*. In this respect, it is not much different than the distance learning that has been practiced for decades, through regular mail. Students continue to be fitted into a mold, and there is still much that has to change in this area. This should occur, for instance, in the teacher-student relationship, and in the working individually at one's own pace, taking advantage of current interconnectivity and the universality of digital technology that can much enhance the online learning experience.

In the classroom setting, the challenge for a proper use of technology in a student-centric 21<sup>st</sup> Century education, will be to find creative ways of using students' own devices – BYOD, or *bring your own device*,<sup>9</sup> and to do away with the traditional computer labs. The challenge for educators, upon implementing these programs, is how to keep the students' personal devices productively engaged in the learning process, and not dispersed in mere entertainment or even inadequate sites.<sup>10</sup> In response to this need, a number of controlling programs have been designed and made available in order to keep

<sup>6</sup> KENNEDY, G.; JUDD, T.; CHURCHWARD, A.; GRAY, K. First year students' experiences with technology: Are they really digital natives? *Australasian Journal of Educational Technology*, 24(1), 108-122, 2008, p. 109. Retrieved from: <https://ajet.org.au/index.php/AJET/article/view/1233/458>.

<sup>7</sup> PRENSKY, M. Digital natives, digital immigrants [Part 1]. *On the Horizon* 9:5 (2001): 1-6. doi:10.1108/10748120110424816.

<sup>8</sup> CHRISTENSEN *et al.*, *Disrupting class*, p. 80-84.

<sup>9</sup> ADHIKARI, J.; MATHRANI, A.; SCOGINGS, C. Bring your own devices classroom: Exploring the issue of digital divide in the teaching and learning contexts. *Interactive Technology and Smart Education*, 13:4 (2006): 323-343.

<sup>10</sup> O'BANNON, B.; THOMAS, K. Teacher perceptions of using mobile phones in the classroom: Age matters. *Computers & Education*, 74 (2014): 15-25. doi:10.1016/j.compedu.2014.01.006.

students focused, while controlling dispersion, and the choice of these increases exponentially every year.<sup>11</sup>

## 2. STUDENT NEEDS, UNIQUENESS AND ABILITIES

The renowned French educator Edgar Morin (1921-) writes about this new perception of the importance of the uniqueness of each student. He says: "... there is something more than the mere difference between one individual to another, and that is the fact that every individual is a subject on his own."<sup>12</sup> Christensen *et al.*, writing about technological adaptation needed to cater to individual students' needs, uniqueness, and abilities, say: "The next generation of teachers needs to learn how to build these tools [student-centric tools] for different types of learners and operate in these new environments."<sup>13</sup> That many educators are starting to appreciate this individuality of students is a welcomed change, especially because it harmonizes with a Christian worldview.

21<sup>st</sup> century pedagogy is recognizing the *difference* and *dignity inherent* to each human being. Previously, for many decades, educational theorists had often harbored a collectivist framework, reflecting Marxist tenets, where society overrides the rights and the essence of individual needs. This individuality is at the core of Christian thought, even though we should prefer the term *uniqueness* (expressing singular conditions of each person) to *individuality* (which may carry the connotation of absence of altruism, and promotion of egotism).

God has created us unique, with singular characteristics. The relationship that the Creator maintains with his creatures is essentially an individual relationship. There is a corporate sense, such as denoted by the expression "God's people," and by the biblical teaching that individual prerogatives or singular traits can never be dissociated from one's collective responsibilities. But the understanding that each student is a unique person before the Creator should lead educators, and especially Christian educators, as well as Christian schools, to strive to provide personalized attention to the individual progress of each student. This awareness should also generate compassion in the Christian educator, and in the school structure, for the ones that are left behind, leading to the assumption of greater responsibilities to prepare them for a competitive world, in which there will be plenty of incomprehension and where the defense of the weak is seldom present.

<sup>11</sup> HESS, K. 10 BYOD mobile device management suites you need to know. *ZD Net*, June 11 (2012). Retrieved from <http://www.zdnet.com/article/10-byod-mobile-device-management-suites-you-need-to-know/>.

<sup>12</sup> MORIN, E. *Introdução ao Pensamento Complexo* (Introduction to Complex Thought). Lisbon, Portugal: Instituto Piaget, 1991, p. 78. (My translation).

<sup>13</sup> CHRISTENSEN et al., *Disrupting class*, p. 247.

The recognition of the singularity of each student has generated some teaching-learning models for the 21<sup>st</sup> century that take this perception into account, for instance, the *competency-based* approach, “that builds on individualized learning tailored to the uniqueness of each student.”<sup>14</sup> Also, the progress of technology has enabled customization of teaching and there are many detailed manuals and books that provide important guidelines for the necessary steps to accomplish this adequately, such as the one written by Boni Hamilton.<sup>15</sup>

### 3. EDUCATOR ROLES, NOW AND IN THE FUTURE

It has been said that our current framework of education is teacher-based, therefore the role of the teacher is central in the process, while the 21<sup>st</sup> century is characterized by a “student-paced culture.”<sup>16</sup> In this digital culture, on account of technological changes and rising perception of student singularities, the role of the teacher needs to shift, in order to promote effective learning. Nevertheless, it does not follow that the figure of the teacher is less important, now and in the future, than it had been in the past; only the tasks will change, but they imply guidance and overseeing of the educational process. In a video-cast, Wimberley<sup>17</sup> reinforces the thought that even in student-centric education we will need teachers to be central in the process.

The shift of the role of the teacher will mostly occur in two areas. First, there will be a change from current lecturers to agents of customization, providing ways of catering to students’ singularities. Second, from non-critically consuming and passing on educational materials, to managers of what can be called the *taxonomy of learning*, which would be sifting through the ever increasing amount of educational data available, in order to classify the learning steps, and prioritize to the students that which has to be learned. In all of these, teachers, even though many will be *migrants* to digital technology,<sup>18</sup> will have to learn how to use and apply it and will continue to play a very important role.

<sup>14</sup> SULLIVAN, S. C.; DOWNEY, J. A. Shifting educational paradigms: From traditional to competency-based education for diverse learners. *American Secondary Education* 43:3 (2015): 4-19, p. 6.

<sup>15</sup> HAMILTON, B. *Integrating technology in the classroom: Tools to meet the needs of every student*. Eugene, OR: ISTE, International Society for Technology in Education, 2015. ISBN: 978-1-56484-490-3 [e-book].

<sup>16</sup> MYERS, C. Clayton Christensen: Why online education is ready for disruption, now. *Insider*, November 13 (2011). Retrieved from [https://thenextweb.com/insider/2011/11/13/clayton-christensen-why-online-education-is-ready-for-disruption-now/#.tnw\\_EGMZcHKx](https://thenextweb.com/insider/2011/11/13/clayton-christensen-why-online-education-is-ready-for-disruption-now/#.tnw_EGMZcHKx).

<sup>17</sup> WIMBERLEY, A. (n.d., b). *Student-centric learning* [video webcast]. Retrieved from <https://download.liberty.edu/courses/w6fet.mp4>.

<sup>18</sup> PRENSKY, Digital natives, digital immigrants.

#### 4. CONNECTION BETWEEN LEARNING AND TEACHING

The connection between learning and teaching transpires even in the biblical terms used to express them. The Old Testament uses the same word – *lamad* (לָמַד) to express teaching and learning.<sup>19</sup> Teaching is the word used in the active voice, learning is the same word used in the passive voice (to be taught), and this expresses the intrinsically interwoven nature of the two concepts. In the New Testament, the philological situation is not different. Paul uses the same word 16 times, this time in Greek, (διδάσκω), that is translated both as *to teach*, as well *to learn*, or *being instructed*, again in accordance to when the active or passive voice is used.<sup>20</sup>

When the teaching-learning process is adequately performed, teachers are supposed to be constantly learning, and learners will inevitably teach. But there is no question that learning is the objective of teaching, and this precedence is evidenced by the fact that learning can progress even without a teacher, and also because teaching is evaluated based on the effectiveness of learning – that is, if students fare well, teachers have done their job well.

Christensen *et al.*, defending the use of customizing software, wrote that “There is mounting evidence that students’ learning is maximized when content is delivered ‘just above’ their current capabilities.”<sup>21</sup> The teacher is the manager of this, calibrating the process in such a way that the learner, using Vygotsky’s terminology,<sup>22</sup> will leap from the *actual developmental* level to the *level of potential development*.

#### CONCLUSION

Educational practices in the 21<sup>st</sup> century are being changed or *disrupted* in many ways, according to the usage of the term by Christensen *et al.*<sup>23</sup> Disruption is often coupled with innovation, and *disrupted innovation* attempts to apply to the educational field incremental and sustainable shifts that have been applied in the business world, especially due to the advancement of digital technology. This contrasts with gradual improvements that come short of catering to students’ needs and individual ways of learning.<sup>24</sup> These changes involve all stakeholders of the educational spectrum, and Christensen *et al.* issue a

<sup>19</sup> KAPELRUD, A. Lamad. In BOTTERWECK, G.; RINGGREEN, H.; FABRY, H. (Eds.), *Theological Dictionary of the Old Testament*: Vol 8 (pp. 4-10). Grand Rapids, MI: Eerdmans, 1997.

<sup>20</sup> ABBOT-SMITH, G. *A manual Greek lexicon of the New Testament*. Edinburgh, Scotland: T&T Clark, 1977, p. 113-114.

<sup>21</sup> CHRISTENSEN *et al.*, *Disrupting class*, p. 175.

<sup>22</sup> VYGOTSKY, L. *Mind in society: Development of higher psychological processes*. Cambridge, MA: Harvard University Press, 1978, p. 86.

<sup>23</sup> CHRISTENSEN *et al.*, *Disrupting class*.

<sup>24</sup> *Ibid.*, p. 11.

call to the private sector to fund research that will help to substantiate educators to “learn how different people learn” and students how to “best educate themselves and each other.”<sup>25</sup> They further affirm that “teachers’ colleges need to realize that teachers need different kinds of skills,”<sup>26</sup> and graduate schools must move “beyond doing descriptive research that seeks average tendencies,” and go deeper into studying anomalies that may actually point out the way that the teaching-learning process should go in this 21<sup>st</sup> century.<sup>27</sup>

On the practical side, many changes can be implemented, besides massive investment in digital technology, which can substantially raise the learning experience and practices in 21<sup>st</sup> century schools. As has been previously mentioned, BYOD programs<sup>28</sup> can be implemented with very little investment from the school’s side. Drastically increasing out-of-classroom activities will promote student engagement, their role as protagonists, self-learning, and individual progress. Dismantling current computer labs will allow schools to transform these rooms into *makerspaces*,<sup>29</sup> shops that are outfitted from simple tools to cutting edge 3D printers, that provide a hands-on approach, group projects, and creativity, skills that are much needed in the job market of the 21<sup>st</sup> century. The author of this article visited Illinois Institute of Technology (May 17, 2017) where they have a *makerspace* on a higher educational level. There, a transdisciplinary class is mandatory to all fields, and law students develop their group projects together with engineering and education majors, and so on. It is a truly innovative and intercultural approach.

In the 21<sup>st</sup> century, perhaps more attention can be given to cutting-edge educational methodologies, such as the *whole-brain approach* which attempts to maintain the student busy, repeating and interacting the whole time, but which also engages each student in teaching their classmates. Initially devised for elementary education, this incipient movement, which has a growing association of schools and educators that adopted the methodology ([www.wholebrainteaching.com](http://www.wholebrainteaching.com)), has brought collaborative learning to young children, while at the same time progressing all the way to undergrad college classes.<sup>30</sup>

With all these forward leaps needed in the educational field, one must be aware that changes are necessary in some of the content, in the approach and methodology, but there is no room for the disruption of God-given eternal

---

<sup>25</sup> Ibid., p. 245.

<sup>26</sup> Ibid., p. 247.

<sup>27</sup> Ibid.

<sup>28</sup> ADHIKARI, MATHRANI, SCOGINGS, *Bring your own devices classroom*.

<sup>29</sup> ROSLUND, S.; RODGERS, E. *Makerspaces*. Ann Arbor, MI: Cherry Lake Publishing, 2014.

<sup>30</sup> HUGHES, M.; HUGHES, P.; HODGKINSON, I. R. In pursuit of a “whole-brain” approach to undergraduate teaching: Implications of the Herrmann brain dominance model. *Studies in Higher Education*, 1:2 (2016): 1-17. doi 10.1080/03075079.2016.1152463

principles and values that hold society together. It is significant that even secular educators are recognizing this. Mishra and Mehta, in an article, state that, “The challenges that face us in the 21st century... cannot be done merely through a vacuous, ungrounded form of creativity and collaboration (though clearly these skills will be essential).”<sup>31</sup> Their point is that there can be an over-emphasis on technology, but the knowledge thus acquired will be meaningless, unless grounded in the humanities. As Christians we realize that the most important thing in the educational process is the preservation of God’s eternal principles by responsible educators, for the well-being of their students and for the good of humankind. These should learn how to appreciate their students and know how to direct their thoughts and lives towards their Creator, whom they should honor with their newly acquired skills and abilities.

### RESUMO

Este artigo apresenta o entendimento e a pesquisa realizada pelo autor sobre questões e tendências que têm caracterizado o campo da educação neste século. Após uma introdução na qual procura discernir as ênfases majoritárias na educação do século 21, mais especificamente a precedência e a customização do aprendizado (acima do ensino), o artigo trata de quatro áreas: (1) A utilização da tecnologia; (2) As necessidades dos alunos, suas singularidades e habilidades; (3) Os papéis do educador, agora e no futuro; e (4) A conexão entre o ensino e a aprendizagem. O artigo conclui apresentando algumas considerações práticas que podem ser implementadas no processo de ensino-aprendizagem do século 21, com um alerta de que mudanças podem ser necessárias no conteúdo, metodologia e na abordagem, mas não nos princípios eternos que sustentam uma sociedade e que conservam coeso o próprio campo da educação.<sup>32</sup>

### PALAVRAS-CHAVE

Imigrantes digitais; Nativos digitais; Tecnologia educacional digital; *Makerspaces*; Papel dos professores; Necessidades dos alunos; Ensino x aprendizagem; Aprendizagem no século 21.

---

<sup>31</sup> MISHRA, P.; MEHTA, R. What we educators get wrong about 21st-century learning: Results of a survey. *Journal of Digital Learning in Teacher Education*, 33:1 (2017): 6-19. doi:10.1080/21532974.2016.1242392

<sup>32</sup> Este artigo é uma adaptação e atualização de um *paper* não publicado apresentado à Liberty University (Lynchburg, Virginia) como parte dos estudos de doutorado que o autor realizava naquela instituição.