



HPE point of view: Education needs a new approach





Introduction

The transition from the industrial to the digital era is having a seismic impact on business and society. Nations that adjust quickest to this tectonic shift will find themselves propelled up the global value rankings. The converse will be true for those nations, developed or developing, that remain in a digitally torpid state.

Education is central to this transition. It underpins society, as well as determines its future fortunes. However, the educational requirements for a digital society are quite different to those of the industrial era.

This paper explores where we are with respect to primary and secondary education, along with the actions needed to build an education system that is fit for purpose in the post-industrial world.

Current situation

First, let us look at where we are today.

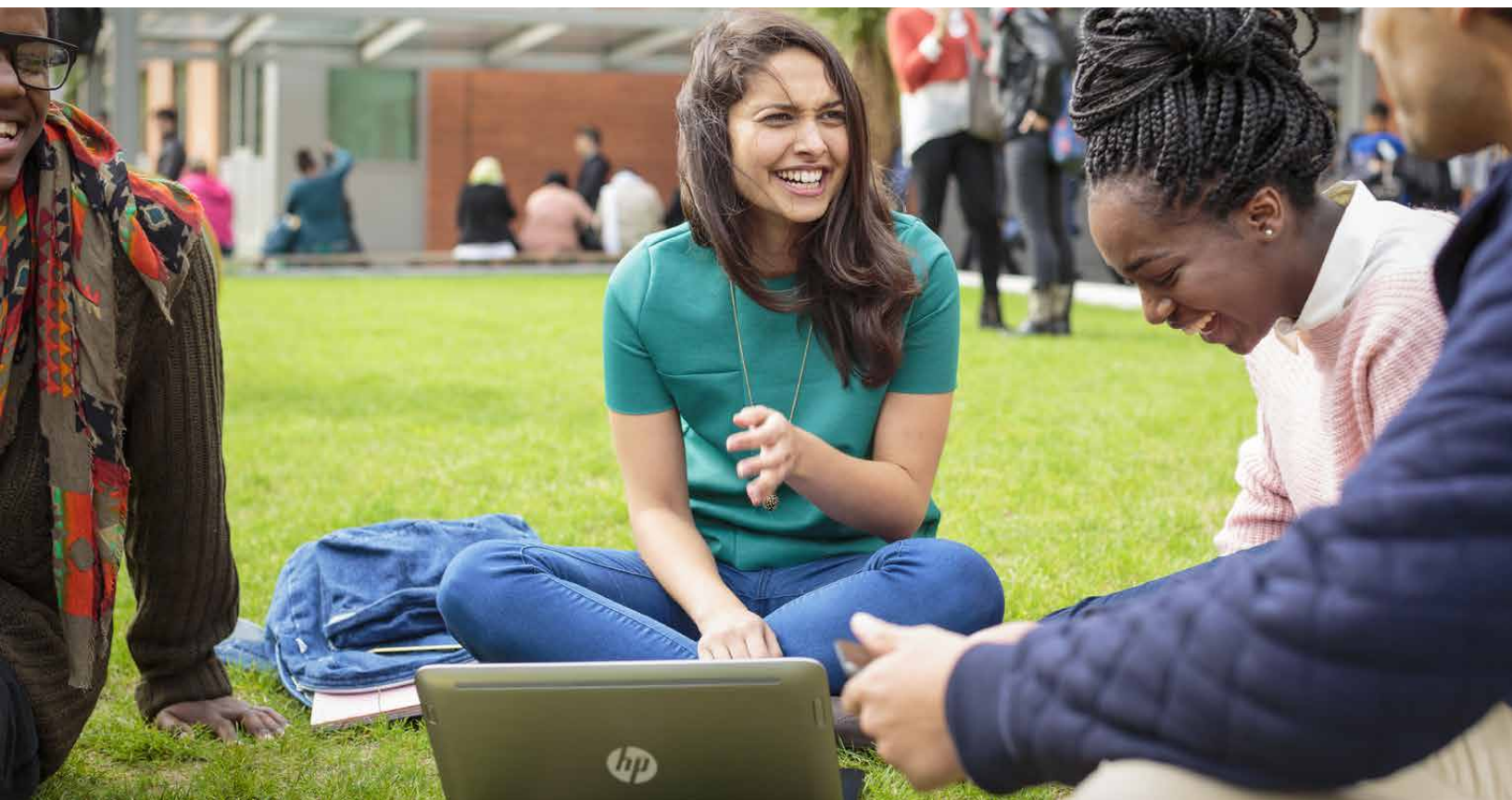
- The teacher is the expert. The student is a somewhat passive learner, constrained by the teacher's expertise. Consequently, lessons become exercises in "data transfer." The expert speaks and the learner endeavors to capture their wisdom, with little time to discuss the topic and explore adjacent themes.
- New technology is permeating into the school, but often in a disjointed manner. Thus, the learner is getting an inconsistent experience as they transition between lessons. Some teachers have developed digital syllabuses. Whereas others require the learner to carry many textbooks around from morning to night.

- The digital economy requires new skill sets. The extent to which these skills are being taught is highly variable. Therefore, many students are arriving in the workplace ill-equipped for work.
- There is currently poor or non-existent measurement of student engagement. The “learn by heart and repeat” model is redolent of the industrial era. Push the learners along the “learning conveyor belt” as efficiently as possible, whilst accepting that there will inevitably be some “defects” emerging from the process. This “one-size-fits-all” approach is both unfair and lazy.
- Students are not receiving a “joined-up” experience with respect to their academic journey. Pre, during, and post phases are disconnected or sub-optimal. Better integration is required between the learning and the administrative experiences associated with the learning journey.
- Education is increasingly taking place beyond the classroom in the form of distance and online learning. This is not a new phenomenon. Nevertheless, there is a high degree of variability in the quality of the content, the associated learning management systems (LMS), and their integration into the wider enterprise systems.
- The feedback loop linking the learning to the understanding is far from real time. Thus, the impact of the feedback is diminished.

It’s not getting any easier

The situation is likely to get worse.

- The traditional teacher-centric model is no longer fit for the purpose. It worked well for the industrial era, where compliance and the ability to follow instructions were important. However, in a world where creativity is the key to adding value beyond what can be offered by an algorithm or a robot, this model is damaging the employment prospects of our future workers.
- Students expect to consume much of their education on devices of their own choosing, each device potentially being an entry point for hackers.
- As education becomes more technology-dependent, educational establishments are ill-prepared to act as technology managers. This is not their core business, yet it needs professional attention.
- There is a trend toward students taking ownership of their learning, with the teacher being the leader of the process and not the subject-matter expert.
- The jobs students will be taking up do not necessarily exist today. Educational programs need to be increasingly agile to reflect market demands. Generic skills such as the ability to collaborate, service orientation and emotional intelligence, project management, creativity, and pattern matching as well as analytics are the key.
- Educational establishments are increasingly undertaking initiatives that require collaboration beyond the school gates, and the sharing of resources between institutions. This requires a robust and secure infrastructure.
- There are whole hosts of technologies on the horizon, including augmented and virtual reality, which will require suitable infrastructure for their delivery.
- Even the physical layout of the classroom will become more fluid as the number of learning formats increases.



What this could mean

The implications of the aforementioned points are significant.

- More technology increases the likelihood of security breaches. Such attacks have the potential to disrupt learning and damage the reputation of the educational establishment concerned. Increasingly, such subversive behavior is likely to originate from within the student community.
- Educational establishments are unlikely to become an expert at technology management. This is not their core business.
- Students are expecting a better experience, both with respect to their access to great content (both in and beyond the school walls), other students, and the degree to which they expect to be coached to success. Organizations that fail to address this will fail to attract the best students.
- As technology becomes more integrated with the individuals, via mobile phones and wearables, the students, in essence, become sensors that need significant data management. Students themselves will need ready access to this data, expecting it to be served up in useful formats.
- Teacher-centric education is crushing the innate creative abilities of our future workers. This will have very serious implications for the value propositions of societies that do not take remedial action.

A new approach is required

- Schools need a student-centric approach to new technology adoption. This is reflective of a broader power-axis shift. Other examples include the relationship between employers and employees, governments and citizens, as well as vendors and buyers. In the digital age, the “customer” is definitely the king.
- However, the needs of the teachers and administrators must also be included. And possibly even the students’ parents or guardians and other public services departments.
- Education is a 24x7 business, so the infrastructure must support student-to-student and student-to-teacher collaboration outside of normal school hours.
- Students and teachers need instantaneous feedback on their learning to accelerate the learning process.
- Student analytics that measures metrics such as number of library visits and number of online learning modules accessed need to be put in place. These are the keys to determining student engagement, which in turn is a key measure of a successful learning outcome.
- Learning content sources beyond the school need to be made easily accessible, keeping security and privacy in mind. Such content must be LMS compatible to ensure a consistency of management.
- Students’ learning should be applicable to increasingly real-world scenarios. The use of virtual reality will thus be essential from both a realism and practicality perspective.
- The teacher’s ability to control who has access to what and for how long, again needs to be woven into the LMS.
- Educational infrastructure must be flexible enough to embrace emerging technologies such as mobile devices, smart glasses, and even haptic gloves.
- As scientific research becomes increasingly data-intensive, particularly in computer modeling, the ability to be able to acquire extra capacity as and when needed will be critical.

Recommendations

- Enable the infrastructure to support a hybrid setup because it’s likely that the services needed by the key educational stakeholders will be delivered via a variety of sources, across on-premise and public or private cloud environments.
- Build an LMS that is flexible to embracing new learning modules. The provision of valuable insights in usage and learning metrics is the key to a successful learning outcome.
- Develop a methodology that increases the speed of curriculum review. The traditional approach of a review every five to 10 years will not suffice in the digital economy.
- Ensure that there are systems to capture both the students’ engagement and data on test scores, which when integrated with their learning data can be used to coach the student to the most successful outcome. On the other hand, with the right algorithms, the same data could be used to anticipate potentially high-impact problems, which can be resolved before any damage is done.
- Make sure that the infrastructure is sufficiently flexible and secure to facilitate easy collaboration, regardless of the user type or their location.
- Recommend schools to consider outsourcing technology management to an organization that sees this as their core business.
- Recognize that the role of the teacher or educator is changing, and migrate your faculty to this new model immediately.



Summary

The world is changing. Education not only needs to keep up but also take the lead, so that humanity makes the right choices with respect to the direction we take. New technology is the key to this.

Education is at a pivotal point in its evolution. The motivation to learn is shifting from the teacher (extrinsic) to the learner (intrinsic). Increasingly, workers need to make sense of disparate sources of data, often in collaboration with others. The education system needs to empower learners to take charge of their learning, particularly with respect to their ability to acquire what they need to know to then assimilate and integrate the related information to deliver valuable outcomes. The student's ability to work with others, particularly those they have never met or ever likely to meet face to face, on a project-oriented basis will be a critical skill for work in the digital era.

New technology has the power to truly help students gain a richer experience from their education, and to do so at an increasingly reduced cost, which is critical in helping developing nations compete with developed nations.

A reliable IT infrastructure will be a key to this. The exponential growth in educational data will require increasingly sophisticated analytics tools to turn it into digestible insight. Schools are becoming less an institutional or architectural concept, and more defined by where the student chooses to learn.

Disruption is a common theme as we transition to a post-industrial world. Education will not be exempt from the disruption. The emergence of massively open online courses (MOOCs) is an example of the radical changes already underway. Whether MOOCs work in their current form has yet to be established. However, the need to deliver greater value for less cost will be a driver of disruption.

So, we need to build the future of education on strong technology foundations. As laptops and tablets pervade the classroom, the need to provide seamless connectivity in a secure manner will become paramount.

Wireless, video-strength technology will be an expectation of every student, as will access to collaborative tools that enable students to communicate with each other, and their teachers. And these collaborations will take place beyond the confines of the school walls, so again security is important. Analytic tools will be valuable in helping all stakeholders keep on track. The associated education services will increasingly originate from various providers and infrastructures, so a capacity to manage a hybrid IT environment will be essential.

As we have highlighted in this paper, there is great scope to improve the learner's experience and improve the likelihood of successful outcomes, which in most cases means employability. Establishments that embrace this opportunity to reinvent education will be achieving the goal of delivering more for less, without having to compromise their existing financial models.

About the authors

Pierre Mirlesse: Pierre Mirlesse leads HPE Mobility business in the EMEA region. Mirlesse joined HP (now known as Hewlett Packard Enterprise) over 20 years ago, advising industries and government organizations in their digital experience transformation. He has held a number of executive positions around the globe including Middle East-Africa VP, Worldwide SMB VP based in Palo Alto, Asia-Pacific VP for HP Managed Print Services, and distribution director in Middle East, Africa, and Eastern Europe.

Pierre is a recognized industry keynote speaker. He now lives in the U.K. with his family. Find out more about Pierre on LinkedIn: ch.linkedin.com/in/pierremirlesse

Ade McCormack: Ade McCormack is a near futurist, digital strategist, keynote speaker, and an author. He is a columnist with CIO magazine, and a former columnist of Financial Times, focusing on digital leadership. His experience extends over three decades and almost 30 countries across many sectors. He has written a number of books, including one on the future of work (Beyond Nine to Five—Your career guide to the digital age). He has also lectured at MIT Sloan School of Management on digital leadership. For more information on Ade, visit ademccormack.com.



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