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The Higher Education Paradigm Shift

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Abstract: *The mass participation of higher education (HE) has been growing at an unprecedented speed since the late 20th century, and now more than one-third of people aged 25 to 65 years old have attained at least one post-secondary degree (OECD, 2019). Leading by the increasing access and diversity of participation, the ongoing transformation of higher education systems (HES) shows the dynamism of HE. It is not only majorly powered by the economic efficiency of HEIs but also the students' goals of socioeconomic improvement. Many institutions, however, take a sidestep when it comes to equal access. Quality of HE begins to raise issues when the number of students becomes overwhelming. Societal and financial factors continue to pervade the institutions as HE access broadens. To comprehend the difficulties of these institutions is to propose a better way to change the current HES. This paper is based on a number of analyses, reports and surveys to explore the process of transforming from elite education to online education with historical timelines. The paper addressed the influence of diversified accessibility on HE is further discussed, revealing many issues that hinder the current progress of transformation. Scrutinizing the economic analogy for HE also uncovers problems in the current HES. Then, the paper proposes several advantages for OHE and how it will shift the current HES.*

Keywords: *Higher Education, Paradigm Shift*

1. Society is Evolving

The first distance education course, also called correspondence course, was established in Oxford, England, accomplished and provided by Sir Isaac Pitman, with the use of postcards. He mailed educational texts and received transcriptions from students, albeit with time lags due to mail, gave them feedback. 180 years ago, correspondence courses fought with distance by bringing the same material to students living far away. In contemporary societies, the act of using mail to facilitate education has shifted to using the Internet. With a blink of an eye, people can transfer and access information with minimized cost. It seems that technology has brought unprecedented convenience to higher education, but is distance learning improving?

A comprehensive evaluation of more than 355 comparative research studies suggests that students in distance learning (technology-based) courses learn just as well as their on-campus, face-to-face counterparts. Indeed, with radio and televisions as media, distance learning remained one-ended and unproductive. The engagement with teachers was weak, and there were no efficient methods to induce the self-control for students to commit to education. Indeed, the same methodologies for campus-based higher education (CBHE) were adopted to fit with distance learning. The didactic style continued to influence learning outcomes negatively. The goal of learning is not simply to receive knowledge anymore. Yet, productively utilizing the knowledge in the future becomes important for the masses. In the distance learning transformation, from radio-television-internet education, trading knowledge gradually becomes more freely. To satisfy mass demands on HE, institutions are optimization their programs. With new online technologies emerging to create and distribute knowledge online, a more interactive and flexible learning style is adopted to revolutionize the HES.

2. Accessibility and Diversity: The Growing Participation for HE

Society has been trying to make higher education accessible and equitable to as many people as possible. Historically, the U.S. was the first country to massify HE to the general public (Altbach et al., 2011). Figure 1 indicates that the rate of people 25 years old or over completing HE increased significantly from 1940 to 1991, from 0% to 5% to 15% to 27%. The also shows the slope for the completion rate steepens after 1960, indicating a higher number of people attending higher education

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institutions (HEIs) than before. Indeed, after WWII, the booming economy and rise in middle-class population in the U.S. generated a prodigious amount of educational requests from young adults, with "40% of the age cohort attending postsecondary education in 1960", according to Altbach et al.'s report for the UNESCO 2009, Trends in Global Higher Education: Tracking an Academic Revolution.

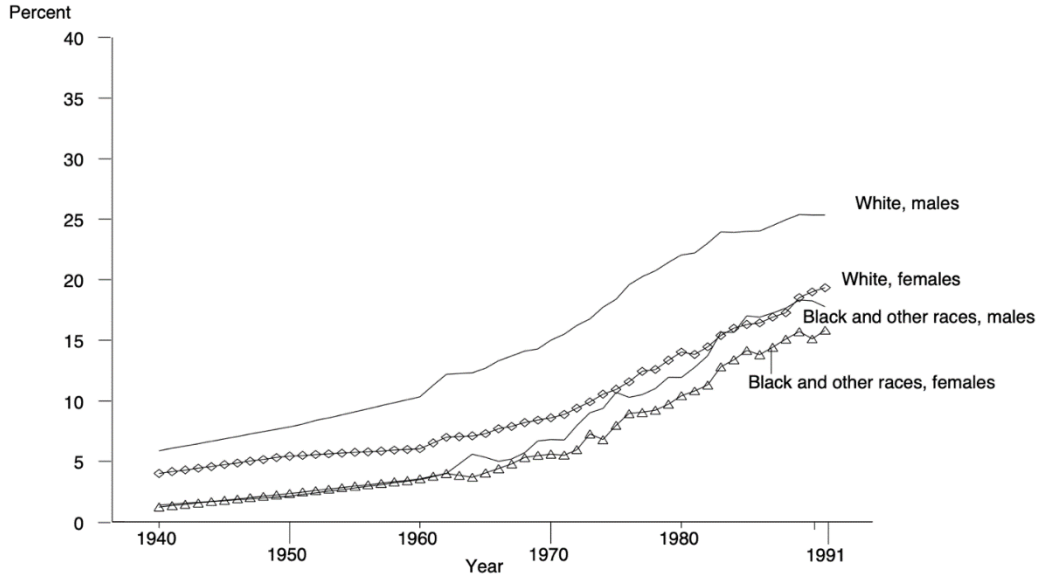

Figure 1. Rate of people 25+ years old completing 4 years of HE from 1940 to 1991, U.S.

Source: Snyder, Thomas D. "Chapter 1. Education Characteristics of the Population, by Thomas D. Snyder - Figure 4." *120 Years of American Education: a Statistical Portrait*, by Thomas D. Snyder, U.S. Dept. of Education, Office of Educational Research and Improvement, National Center for Education Statistics, 1993, pp. 8–8.

In response to the rapid growth in the participation rate, many new HEIs were built, changing the educational systems once adopted by the traditional private institutions. These institutions, particularly with CBHE, are in the lower hierarchy among all HEIs, less funded yet accommodated the majority of students, analyzed by the renowned HE researcher, Trow (1973). As further discussed below, the courses in those HEIs influenced by the increasingly diverse access are argued to have worsened the learning outcomes of HE.

As Trow (1973) proposed the transformation process of elite-mass-universal education, he recognized that the consistent growth in HE participation rate is powered by the individuals that desire social approval and self-identity through education. The concept of elite-mass-universal education, proposed and meticulously analyzed by Trow, defines the development of the HES from enrolling less than 15% to more than 50% of the age cohort. United Nations responded to individual ambitions of improvement through HE in the 4th Sustainable Development Goals (SDG 4) by stating, "By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university." With alignment to society's demand, HEIs have earnestly expanded participation in postsecondary education to improve equal access to HE to a global extent. The traditional CBHE, however, is limited by the functions, infrastructure, and economics. Inequalities in HE have interacted with socio-economics inequalities that hinder the progress of moving forward for HE paradigms. Altbach et al. (2011) summarized some essential trend forecasts on HE population from *Organization for Economic Cooperation and Development* (OECD) in Trends in Global Higher Education: Tracking an Academic Revolution. In Altbach et al. report, the authors concluded that by 2030,

- student participation will continue to expand, as will higher education systems. Only a few countries will see a contraction in student numbers;
- women will form the majority in student populations in most developed countries and will substantially expand their participation everywhere;
- the mix of the student population will become more varied, with greater numbers of international students, older students, part-time students, and other types;
- the social base in higher education will continue to broaden, along with uncertainty about how this will affect inequalities of educational opportunities between social groups;

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- attitudes and policies relating to access as well as the consciousness among disadvantaged groups will change and become more central to national debates;
- the academic profession will become more internationally oriented and mobile but will still be structured in accordance with national circumstances;
- the activities and roles of the academic profession will be more diversified and specialized and subject to varied employment contracts (Altbach et al., 2011)

Given these elements, the HE demographic will continue to diversify to a wider age range and more varied race and social groups, but a set of complexity and pressure will threaten the limitation and inequalities in the current educational paradigms. To adopt a more diverse demographic while ensuring practical outcomes and to rely on technological efficiency to shift HE paradigms are the goals.

3. Massification in HE: Concerning the Quality

In the U.S. during the post-WWII times, the unprecedented amount of enrollment challenged the elite education majorly adopted by colleges and universities to a system reformation, a process named "massification" (Trow, 1999). At the first stage, as Trow (1973) defined elite education, HE was understood to be private insufficient services exclusively for wealthy superior social groups, with enrollment taking less than 15% of the age cohort. Altbach (1999) argued that by the end of the 20th century, the majority of HEIs would be specified to mass HE. That is, with the advent of massification, colleges and universities were able to expand in response to the overwhelming education demands, primarily by building non-elite institutions, expanding classrooms, and lowering recruitment standards for both faculty and students. Moreover, before largely incorporating technology, HEIs transformed from accessible to elite-only to adopting "large class pedagogy", a learning-teaching methodology such that one instructor faces hundred to hundreds of students (Hornsby et al., 2014).

Trow's research recapitulated the possible consequence of mass HE in one point: due to a rise in the number of diverse HE requests and competing resources between various levels of institutions, different sorts of institutions would provide uneven learning outcomes (Trow, 1973). The change in the quality of HE, as massification pervades to more HEIs, has risen concerns of learning experiences and outcomes.

In accordance with Trow's portended analysis, Hornsby et al. (2014) express their concerns on massification by pointing out that taking large campus-based classes negatively influences the learning experiences. Practically speaking, they contend, teaching in large classes diminishes effective student-teacher interaction and engagement of materials, as the teaching styles are didactic (Hornsby et al., 2014). They further discussed how to maintain quality education under the circumstance of an increasingly diverse population in one classroom.

Furthermore, issues raised with maintaining the quality of mass HE, particularly in the inequalities in the learning outcomes reflected on the average incomes for HE graduates. Since HE is generally considered as a measure for individuals to improve on the employment market, the impact of massification on HE graduates' annual average income is closely examined. In figure 2, the average incomes for male graduates from HE are presented in a flexuous line with no significant rising or falling trend overall from 1959 to 1991. In the period of 1969 to 1979, nonetheless, the average incomes for males HE graduates fell from $45,000 to $35,000, in contrast to the growth in participation of HE showed in figure 1. One reason could be that with the rapidly increasing supply of HE graduates, the demands were swiftly satisfied, driving the employment cost down. As the economy slowly reached stagnation with attacks from cheap foreign commodities, the labor demands for HE graduates slowly recovered during the 1980s. However, the average incomes for male and female HE graduates remained to have a significantly large gap, with a difference of around $20,000 annually from 1979 to 1991. With women continually underperformed in the HE labor market, inequality in access is not the only concern in the educational system.

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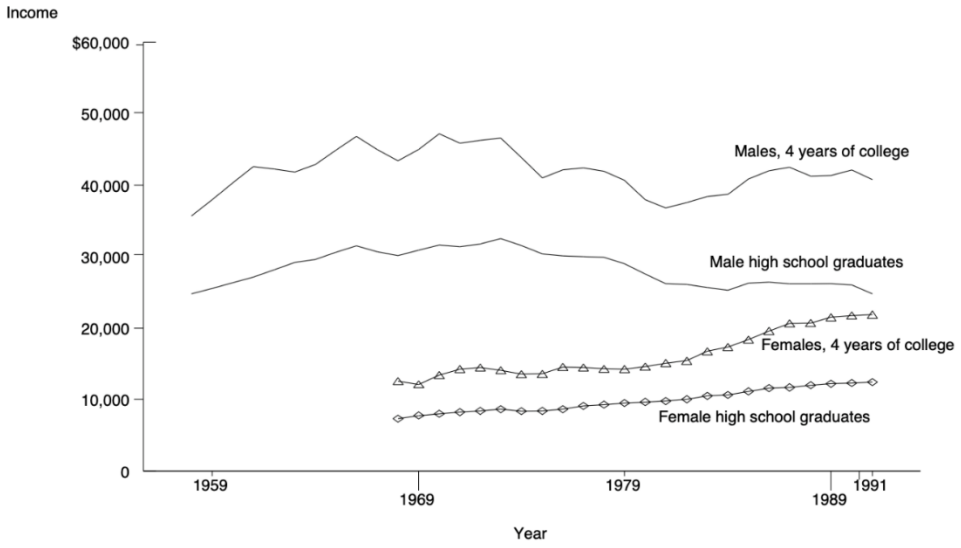

Figure 2. Annual average income of people 25+ years old from 1959 to 1991, U.S., in 1991 dollars

Source: Snyder, Thomas D. "Chapter 1. Education Characteristics of the Population, by Thomas D. Snyder - Figure 5." *120 Years of American Education: a Statistical Portrait*, by Thomas D. Snyder, U.S. Dept. of Education, Office of Educational Research and Improvement, National Center for Education Statistics, 1993, pp. 10–10

4. Increasingly Diverse Access: Challenges to Move forward

After undergone massification, the U.S. gradually became the top leading destination for studying abroad with ambitious attempts to further universalize HE globally (Marginson, 2016). In 2009, the number of international students climbed up by 80% compared to 20 years ago (Goodman, 2011). However, the diverse demographic in increasing enrollment to campus-based higher education (CBHE) shaped heavily by international elite students give rise to debates about the equality of mass HE (Lee, 2016; Marginson, 2016).

Mobility and acculturation caused by CBHE become issues because CBHE necessitates traveling and residing abroad, both within or outside of the U.S. Interested in improvements on social status and individual competence, originally affluent students naturally inclined to invest in HE as a privilege and access to international CBHE with high mobility. High participation rates induced by massified HE mainly occur in high- or middle-income families with sufficient time and financial means, a hierarchy that reduces educational opportunities for individuals with "low-income families, remote locations or excluded minorities", as proposed by Marginson (2016). The tensions between the mass student population and society's demands for egalitarian and high-quality HE continue to permeate the whole CBHE system.

As elite HEIs remaining intact during massification, social inequalities evolves into inequality in HE. The hierarchical educational system is strictly stratified by the different kinds of socio-economic groups. Being major sources for the international groups in U.S.'s HEIs, developing countries such as China and India are eagerly recruiting back the elite individuals who received HE in the U.S. To cope with the increasing costs of maintaining faculty and infrastructures without sufficient help from those elites, CBHEIs in the U.S. are trying to seek revenue by enrolling more international students with increasing tuition rates. Simultaneously, inequalities in massified HE is worsened by the increasing access for international elite students who are wealthy.

Due to the universalization of HE, demands extend more inclusively to a wider age range (Altbach et al., 2011). A study by McKinsey & Company predicts that by 2030, machine learning and robotics adoption by many companies would replace as much as 800 million jobs with artificial intelligence (AI) and automation. For CBHE, accompanying with the limited capacities of classrooms, the overwhelming number of students pressures institutions to expand in infrastructure and faculty. Lecturers of first-year fundamental courses from many CBHEIs express their concerns on the difficulty to withstand the number of students (Albertyn et al., 2016). It is unlikely for the CBHEIs to expand in 10 years to withstand the

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anticipated demands for participation that is 4 times the amount of participation now, data collected by the World Bank.

5. Counteracting with Online Higher Education (OHE): Achieving Flexibility

Arguments in earlier sections display a series of dilemmas caused by the impact of massification and diversification on CBHE. Better accommodating the widening access of a more diverse student population needs to be taken into consideration when universal HE (more than 50% age cohort, Trow, 1973) has gradually emerged in the era of post-massification time for developed countries, such as the U.S. (Altbach et al., 2011). Instead of "massive universities" proposed by Rosado et al. (2006), Guri-Rosenblit et al. (2007) argued that flexible education for the mass majority is the solution to mass HE such that "the development of flexibility with systems … enable[s] students to progress between different levels and sectors within national jurisdictions and between countries." That is, expansion and diversification do not suffice in counteracting the issues of productively and equally allocating the widening access of HE; rather, flexibility is the essential factor for a mass-oriented HE system, especially for more equal access.

One of Trow's findings from his analysis in 1999 states that "IT allows, and becomes the vehicle for, universal access to higher education". Similar recognition of technology is expressed later by Hiltz et al. (2005) in that a trend of distance education using information technology is considered to have developed for years and OHE is predicted to take over the higher education industry in the near future.

With educational social software similar to edX, Canvas, or Khan Academy, courses can be structured in a combination of synchronous and asynchronous OHE. That is, the recordings of instructors are accessible at any time, and communication tools provide live Q&A sections with face-to-face interaction. Class of any size is manageable. The larger classes for the fundamental courses can be simultaneously accessible to students from many institutions in multiple nations. To avoid disengagement of material and distractions from courses, shown in Mulryan-Kyne's research (2010), learning-teaching interaction can be in the form of emails, video chats, or online messages through education software.

As discussed in earlier sections, there is a strong interaction between the impartial access in mass HE and the social hierarchical differences. The reduced marginal cost of employing a database for asynchronous OHE materials allows the cost of HE to decrease. Although changing a substantial number of CBHE courses to OHE courses requires an investment in time, energy, and money, the potential efforts of expanding campus and dormitory are more onerous and costly in the long run. Also, the incorporation of Big Data and Artificial Intelligence (AI) (in theory) facilitates the development of feasibility such as depicting the current state of learning, predicting a personalized pedagogy using student profile data, and research on student performance and programs using data mining and machine learning.

Occupied workers may find more personal retraining programs scheduled during their leisure time. The faculty-based paradigm from "large class pedagogy" shifts to a more learner-centred individualized teaching method, and reserve the communication between faculty members and peers, without the restriction on location.

6. Why is equal access important to higher education?

There are inevitable challenges to achieve truly equal access for HE as Altbach et al. define equal access to be "overcoming the social and economic inequities within each name and the corresponding disparities that result" (p.39, 2011). Despite HEIs' attempts to remain profitable while retaining the quality of the graduates, to enforce equal access, the importance of allocating different kinds of socio-economic groups in HE needs to be magnified. In an increasingly accessible environment for HE, massification and diversification have led to inequalities in the learning experience and outcomes with an unjust demographic for enrollment of HEIs (Marginson, 2016; Altbach et al., 2011). If the learning experience and outcomes are constantly under-performing with lower-quality provision for some groups, then equal access is only part of the equality in HE. To build an educational environment without lopsidedness on age, gender, ethics, and location, HEIs are ought to be monitored with robust participation data as well as many factors that appraise the equality in HES.

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7. The Economics of Higher Education: More than a business

To think of HE as a business – an industry that supplies educational services as commodities to the student market – is not safe. That is, making connections between "universities and firms, students and customers, [and] faculty and labor markets" is a simplistic way of fitting economic concepts to the HE structure which often overlooks the non-profit nature of most institutions (Winston, 1999). For non-profit institutions, both public and private, their behaviors rely on a series of policies, societal expectations, students' learning outcomes and so on. These factors often take years to be accommodated by HE systems and make an impact.

A model was built from the students' perspectives to resemble a competitive market with students as inputs and educational services from HEIs as outputs (Rothschild et al., 1995). In the model, there is a mutual influence between the prices (tuitions) charged to students and the net gains (financial aids minus payment and learning outcomes) from HEIs, which means that the prices of HE and students' performances are decided by their interaction.

Further, the model reveals a time lag between realizing the true net gains and purchasing non-profit HE that makes the impact of true net gains on the students' tuitions to come at a later time. From HEIs' perspectives, it means that the institutions' efforts on educating the mass student population are not reflected immediately.

In other words, the non-profit HEIs may be profit-motivated as they constantly seek to increase revenue, but their costs and raw revenue in the short-term are difficult to reach even. Indeed, in practicality, the students' tuitions are significantly insufficient to cover the costs of mass HE as manifested in table 1 with a price/cost ratio of only 31.5% in 1995. To resolve this issue, a new educational system needs to be structured to reduce the fundamental costs.

Table 1. Average price/cost ratio for one student per HEI, 1995

Ranked by Dollar Value of Subsidy	*Enrollments*	*Average Student Subsidy*	*Costs: Educational "E&G&K"*	*Price: Net Tuition & Fees*	*Price/Cost Ratio*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*
	FTE	$	$	$	%
All Institutions	3,500	8,200	12,000	3,800	31.5%
Public	5,100	8,700	9,900	1,200	12.4%
Private	1,700	7,700	14,200	6,500	45.9%

Source: Winston, G. C. (1999) "Subsidies, Hierarchy and Peers: The Awkward Economics of Higher Education. Table 1, p.19-19." *Journal of Economic Perspectives* 13 (1): 13-36.

8. Reducing the cost

In post-massification times, the capacity to withstand mass HE by infrastructure and administrators in CBHE meets with the capacity to develop and distribute personalized learnings in OHE, creating significant contrasts in the fundamental costs. Many HEIs, in contemporary societies, have strategically incorporated cutting-edge technologies to structure courses and programs into OHE (Allen et al., 2008). The web-oriented collaborative software allows students to meet in real-time online. In this context, the hierarchical access and educational systems experienced from CBHE are replaced by more diverse and cost-effective paradigms, such as Massive Open Online Courses (MOOC). One of the keys to thriving in MOOCs is self-discipline on engaging participation. In the digital economy, the "traditional structures of command and control are being replaced by relationships of pedagogy: mentoring, training, and the learning organization" (Cope et al., 1999). That is, without mentors and administrators who supervise students' performances, students need to become their own educators and consistently access educational materials online.

9. Paradigms have already shifted

HE is a fundamentally good pathway in an environment with a paucity of prominent opportunities. It

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confers the resources for one to accomplish goals set in professional fields or to break the confinement of societal inequalities. In the U.S., it is difficult for the current HES to withstand the consequences from the universalization of HE, and optimization is in need to survive in the increasingly mass HE, proclaimed by KPMG's *The future of higher education in a disruptive world.*

First, the hierarchical structure in the HES is the main issue. In CBHE, the "ceiling" and "floor" of HE are structured, circumscribing the students' access and performance. The interaction between the hierarchy in HE and the difference in socio-economic structure is a complicated barrier from reaching true equal learning outcomes. OHE, however, counteracts this by reducing the expenditure difference between institutions, crossing the delimited border that exists between elite institutions and non-elite institutions. Reducing costs is a crucial procedure for non-profit institutions to be economically sustainable. To move forward in HE, OHE will increase the price/cost ratio in order to enrol the prodigious number of HE participants anticipated by McKinsey.

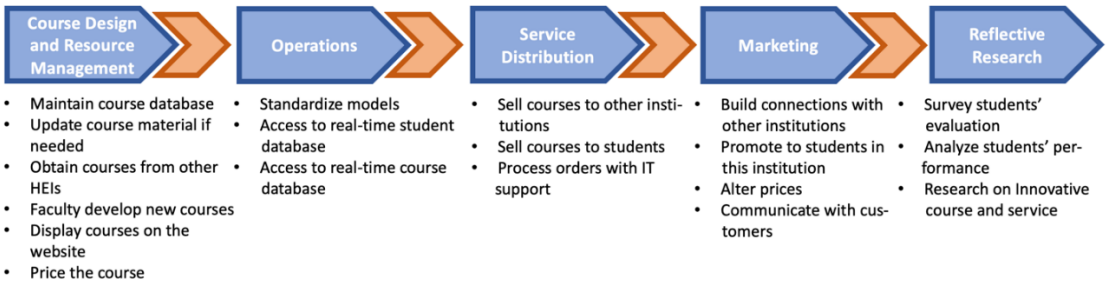

Figure 3. Value Chain for OHE

In a digital economy, knowledge as commodities is precisely priced, given the level of sophistication and accessibility. OHE as a business is more cost-effective and profitable in that it expedites the sharing process and tailors programs exclusively to each individual. From the value chain for OHE, it is clear that OHE has the flexibility to sell fundamental courses in less value, instead of bundling up with sophisticated upper-division courses. Despite profiting from tuitions, it also has the benefits to sell courses to other institutions. Combining reflective research using data analysis may have an impact on improving learning outcomes. From a survey on OHE, the researchers have found a positive relationship between the number of professors from OHE and their ratings on the learning outcomes of OHE courses. Figure 4 shows that the more comprehensively online courses offered, the higher the faculty rate on online learning outcomes.

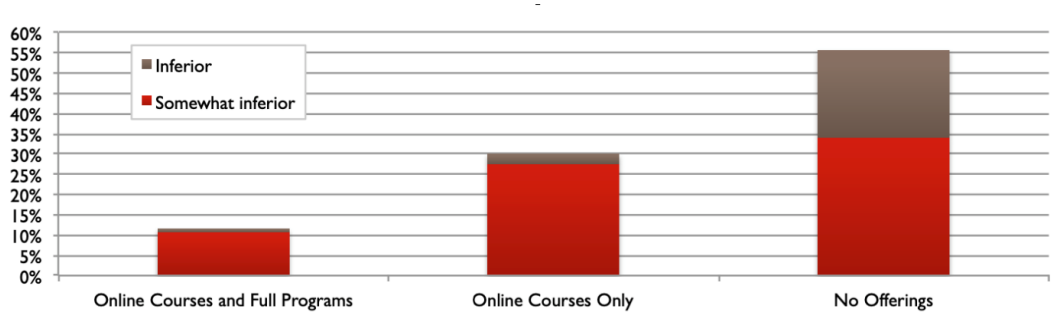

Figure 4. Rate of faculty evaluating "learning outcomes in OHE to be inferior compared to face-to-face: 2012" (Allen et al., 2013)

Source: Allen, I. E., et al. (2013) "Are Learning Outcomes in Online Comparable to Face-to-Face? - Figure on P.25." *Changing Course Ten Years of Tracking Online Education in the United States*, by I. Elaine. Allen and Jeff Seaman, Distributed by ERIC Clearinghouse, pp. 25–25

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