

Online Education and its Effect on the workforce

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Abstract— *The use of technology in education, commonly defined as electronic learning (e-learning), is commonplace in the curricula of the 21st century. The role of e-learning in professional development and workforce advancement, and more specifically, its impact on Louisiana's workforce, was analyzed. Broader statewide efforts to address barriers and challenges that impact local adult learning opportunities are also examined. This paper also reviews the benefits of online education as it impacts on students, institutions, state and federal government, and the society in its entirety. Two models are proposed: the first addresses outreach programs to improve enrollment and retention of adult students; the second discusses methodologies to ensure the successful implementation of online programs to help those adult students to succeed.*

Keywords— *E-learning, enrollment, online education, retention, workforce.*

I. INTRODUCTION

The word “education” is subject to various misconceptions. It goes beyond the common perception of just attending classes and being in a formal school setting. It is a process of learning in which knowledge, skills and values are acquired and imparted. Level of education is reflected by the level of productivity of individuals and of a nation as a whole. There are two modes of learning in higher education. They are on-ground/traditional learning, and electronic learning (e-learning). Most schools use these two methods of learning to deliver courses. In the past, the most widely used mode among schools was the traditional method, with e-learning used as either a substitute or a second choice. Now, the significance of online education has increased and it is perceived to be as potent as the traditional method.

E-learning can be seen as a digital way of learning wherein electronic technologies are used to access educational curricula outside the traditional classroom. The Internet has fundamentally altered teaching and learning practices as universities seek to apply the benefits of emerging information communication technology (Anderson & Elloumi, 2004). This mode of learning supports distance education which allows students who are geographically distant to access learning materials. This is regarded as a very potent means to

increase enrollment because those who cannot make it to traditional classrooms on a regular basis due to various reasons are given an opportunity to earn a college or higher degree.

1.1 Statement of Problem

In the United States, higher education has long driven individual social mobility and collective economic prosperity. Nonetheless, the nation's labor force includes 71.2% of individuals, 25 years old and over, who still lack a college degree (US Census Bureau, 2014). The same records show that 78.2% of the state of Louisiana's labor force, 25 years old and over, lack a college degree. In the 21st century, these numbers cannot sustain any nation or state as it strives for competitive growth, productivity, development and expansion.

The problem is that individuals lack the necessary education and skills to meet the demands of the workforce. This is becoming an increasing concern as employers cannot seem to find qualified people to fill vacant positions. One possible reason for this phenomenon is that individuals are either not seeking education or that they are dropping out as a result of the various commitments and responsibilities. Developing and empowering the workforce requires enabling people to acquire the needed education.

1.2 Research Objective

This research aims to show the impact of education in improving the quality of individuals and the workforce. Information has no value unless it is accessible. This research will therefore show the very crucial role online education plays in ensuring that education is accessible to everyone, anywhere and anytime. This research also aims to show the cost effectiveness of online education.

II. LITERATURE REVIEW

An increase in individuals' level of educational attainment is consistent with an increase in their productivity in the labor market, which explains higher wages for more educated workers. Taking this into account, it is safe to say that “...better-educated workers earn more than their less-educated peers” (Cipollone, 1995).

Table 1: Level of Education and Standard of Living for Louisiana and the United States

	UNITED STATES	LOUISIANA
High school graduate or higher, % of persons age 25 years and above (2009-2013)	86%	82.6%
Bachelor’s degree or higher, % of persons age 25 years and above (2009-2013)	28.8%	21.8%
Number of unemployed citizens (2014)	8,688,000 (5.6% of labor force)	159,360 (7.2% of labor force)
Number living at or below the minimum wage (2014)	3,300,000	53,000

Source: Bureau of Labor Statistics & US Census Bureau, 2014.

Table 1 shows the number of people educated up to the high school level versus those who continued beyond the high school level. It also shows levels of unemployment as well the number of people living on or below the minimum wage. In other words, this table shows the impact of higher education on earning potential as well as level of employment.

According to the Bureau of Labor Statistics (2014), about 99% of the people who live at or below the minimum wage have no bachelor’s degree. In addition, as shown in Fig. 1, MSNBC News (2016) indicated that from 1974 to 2014, percentage weekly earnings have drastically declined for individuals who have no bachelor’s degree; while individuals with a bachelor’s degree and higher have enjoyed a 14.1% increase in earnings within that timeframe.

Table 2 measures labor underutilization for Louisiana and the United States from 2011-2013. It also reveals levels of unemployment, discouraged workers, individuals marginally attached to the labor force as well as individuals who actually worked but lost their jobs.

Persons marginally attached to the labor force are those who currently are neither working nor looking for work but indicate that they want and are available for work, and have looked for work sometime in the past 12 months. Discouraged workers, a subset of the marginally attached, are those who give job-market related reasons for not currently looking for work. Persons employed part-time for economic reasons are those who want and are

available for full-time work but have had to settle for a part-time schedule (Bureau of Labor Statistics, 2014).

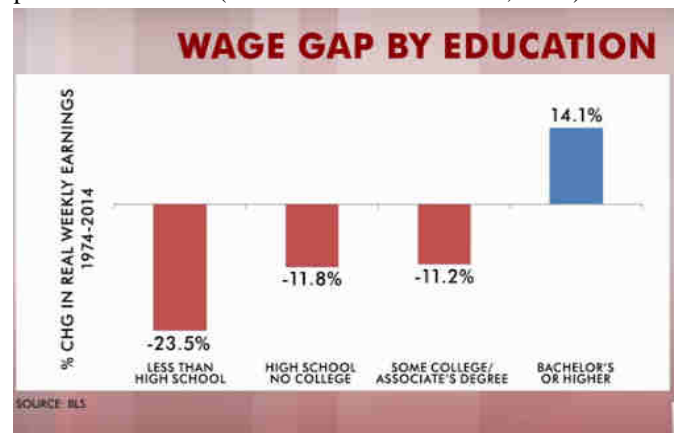


Fig.1: Wage Gap by Education

Source: MSNBC, 2016.

In order to address the issue of unemployment as portrayed in Table 2, it is important to examine the following factors:

- Lack of required education and skill to qualify people for the numerous available jobs or even to create their own businesses.
- Lack of motivation.

Table 2: Labor Underutilization for Louisiana and the United States, Annual Averages (As % of labor force)

Measure	Louisiana			United States		
	2011	2012	2013	2011	2012	2013
U-1 Persons unemployed 15 weeks or longer.	4.0	3.9	3.4	5.3	4.5	3.9
U-2 Job losers and persons with temporary jobs.	3.5	3.0	3.3	5.3	4.4	3.9
U-3 Total unemployed	7.8	7.1	7.0	8.9	8.1	7.4
U-4 Total unemployed plus discouraged workers.	8.4	7.6	7.5	9.5	8.6	7.9
U-5 Total unemployed, plus discouraged workers, plus persons marginally attached to the labor force.	9.5	8.5	8.6	10.4	9.5	8.8

Measure	Louisiana			United States		
	2011	2012	2013	2011	2012	2013
U-6 Total unemployed, plus persons marginally attached to the labor force, plus total employed part-time.	13.4	11.9	12.7	15.9	14.7	13.8

Source: Bureau of Labor Statistics, 2014

Lack of required education and skill

Three Million Open Jobs”, a CBS News documentary which aired on November 11, 2012, is an eye-opener as to how many vacant jobs are out there with no one qualified enough to fill them. According to the documentary, every month since 2009, more than 20 million Americans have been either out of work or underemployed. “Despite that staggering number, there are about three million job openings in the US. Just in manufacturing, there are as many as 500,000 jobs that aren’t being filled because employers say they cannot find qualified workers” (CBS News, 2012). Karl Hutter, the chief operating officer of Click Bond in Carson City, Nevada, made a statement saying “We are hiring. We’re hiring and we need to find good people and that’s really what the challenge is these days”. Among all other jobs, Information Technology staff are greatly needed to fill up jobs in the country. In fact, it is one of the top 10 most sought-after job skills, along with fields like engineering and nursing (Weiss, 2009). Larry Jacobson, executive director of the National Society of Professional Engineers, is of the view that, given the imminent retirement of baby boomers, companies are looking to replace more than half of their staff over the next eight years (Weiss, 2009).

According to The Workforce Innovation and Opportunity Act (2012), 52% of adults aged 18-65 in the United States lack the literacy skills necessary to identify, interpret, or evaluate one or more piece of information. This underscores the need to bolster our nation’s workforce development system and help put Americans back to work. Now more than ever, effective education and workforce development opportunities are critical to a stronger middle class. We need a system that prepares workers for the workforce, while helping businesses find the skilled employees they need to compete and create jobs in America (WIOA, 2012).

Lack of motivation

The willingness and drive to look for a job is an issue of concern. People are not motivated to work, and there are various reasons that could be identified: Many of them,

due to their lack of necessary education and skills, feel that it is pointless trying to search for jobs when the odds are that they will be declined anyway.

Another very important factor which makes individuals stay home is the unemployment benefits the government provides. This creates a lack of motivation. In Louisiana, 36% of the unemployed receive benefits and in states like Arizona and Hawaii, 49% and 43% respectively, of the unemployed receive benefits from the government (McIntyre, 2011). Employers and economists point out that extending jobless benefits gives the unemployed less incentive to seek new work (Whitehouse, 2010).

The central question of state economic policy is what can be done to boost the economic well-being of people in a state (Berger & Fisher, 2013). Incomes and wages can increase across an economy when productivity increases, and productivity can only increase when the quality of labor increases. Education offers individuals a set of skills meant to enhance quality. Jobs require this level of individual productivity, and as a result, lack of education will lead to few or no job opportunities. Those with college degrees earn, on average, \$4.4 million over the course of their lives, compared to the \$1.2 million earned by individuals that graduate from high school, but don’t earn university degrees (College Scholarships, 2015).

In order to address the issues of lack of education and lack of motivation, implementing and propagating online education will be of utmost importance.

Benefits of Online Education

E-learning is unquestionably the most convenient way to obtain education. If done right, it can produce great results in empowering the workforce. The numerous benefits of E-learning, which include accessibility, lower total cost, convenience, flexibility, variety and continuity, make e-learning an effective tool in enhancing individuals’ input in the workforce.

Information technology (IT) has become more robust and easier to use, and it increasingly permeates academic activities in higher education as nearly all institutions have a major interest in e-learning. The 2013 Educause Center for Analysis and Research (ECAR) study of e-learning revealed that nearly all institutions (98%) have at least some departments, units, or programs with a major interest in e-learning; with more than 80% of institutions offering at least several courses online (Bichsel, 2013).

According to the Overseas Employment Development Board (2012), online education has the following advantages:

- **More suitable learning environment:**

Lectures and other materials are electronically delivered to the student, who will read them and complete assignments. Students will not have to fight

traffic, find parking spaces, and leave work early to go to class, or miss important family time.

- **Convenience and Flexibility:**

Learning and teaching can occur at more convenient times which are productive for both students and teachers. Online education provides the user freedom and independence with regards to time, speed, and variance of learning styles. Course materials are always accessible online, thereby increasing convenience.

- **Lower Total Costs:**

From the students' point of view, online programs can be a more affordable option than traditional colleges. For example, there are no commuting costs, e-books are cheaper than their hardcopy equivalent, and additional fees such as lab fees, technology fees, and other miscellaneous fees are not charged. For institutions, on the other hand, the online platform for education could be expensive to set up, but after initial set-up costs, it is fairly affordable to run.

- **Career advancement and Continuity:**

Online learning can allow individuals who work to continue their education. As a result, these individuals pursuing academic credentials do not have to choose between work and school. It also creates an avenue for older individuals who discontinued school to continue and even attain higher qualifications.

III. METHODOLOGY

The purpose of this paper is to review existing literature exploring the importance of online education in promoting the professional development of the workforce and to examine broader statewide efforts to address adult learning challenges. This paper equally reviews and discusses strategies to enhance the quality of e-learning and instruction. Two models are proposed: the first aims to enhance recruitment, enrollment and retention efforts of institutions; and the second explores three elements necessary for enhancing the quality of e-learning.

Model 1

Education is a very important factor that distinguishes individuals in the labor market. Figure 2 (See appendix) is a visual representation of a model colleges can adopt in order to increase their enrollment. It seeks to address the problem of lack of education and lack of motivation to acquire degrees by attempting to reach out to prospective students, collect information about their field preferences and design programs to suit their areas of interest. Colleges can use the model to increase their enrollments. There are three phases in institutions' endeavors to achieve this:

The first phase involves colleges' roles in reaching prospective students using the advertisement medium. Advertisements could be done via social media such as Facebook, Twitter, YouTube video series and Blogs, TV, radio stations, and visual displays at sporting events. Social networking is becoming the norm, and it is an avenue for information about products and services to be made known to the public. Another way colleges could connect with prospective students is through their alumni. Alumni can be a very great source of information as to where and how to locate prospective students. They can also help to build a formidable network that can make the institution reputable. When these prospective students are reached, the feedback goes to the institution as information. The institution now has a target market as it strives for an increased enrollment and retention rate. Note that this phase is a process that may be repeated several times in order to reach the maximum number of people in order to move to the next phase of the program. The second phase involves the college adopting the information gathered to conduct a survey, webcast or web conference. The survey is directed towards these prospective students based on the academic field in high demand by the labor force. It will inform them about the career paths that are in high demand and determine whether their interests are in line with those program options. The survey will also aim at collating students' income levels as well as proximity to traditional classrooms. Information is gathered, analyzed and results combined, which in turn returns to the college as feedback. This gives the college a guide as to what courses to offer online in order to meet their demands. The survey equally identifies income levels of the target population which will give the college an idea of the amount of funds needed for education services. Also, based on the survey, the institution should know what extra-curricular activities to provide.

The third phase involves the creation of programs to meet the demands of prospective students, bearing in mind the career paths in highest demand. This phase includes creation and/or improvement of programs offered by the institution. It also includes catering to those who cannot afford to be in traditional classrooms for various reasons through creation of online programs.

Model 2

In order for the institution to maintain quality online programs, a holistic approach of student readiness, faculty readiness and institutional readiness should be adopted. The proposed model in Figure 3 (see appendix) illustrates different components that can help achieve this goal.

As seen in Fig. 3, a student cannot take an online class without having full access to a computer. A readiness course needs to be administered to all students who desire

to take an online course, one which tests the student's readiness to take the course by testing effectiveness in reading, technology, learning styles and typing skills. Ongoing training is another important component that needs to be provided for all students; this training will help educate students on how the online platform works. Finally, students have to make sure they get intimately involved with the online environment, making sure there is as much interaction as possible. Time management is a very important for students' online success. Students need to set aside adequate time for assignments, tests and any other work required by the instructor. Instructors can motivate online students by rewarding points to the processes online students use in order to arrive at the final answer. Such processes include thinking, interaction, collaboration, communication, and application (Reynard, 2008). These components help students achieve readiness. Instructors need to have full access to updated technology for use in their online classes. In-service training should be provided by the E learning department on Blackboard usage and curriculum design. The online curriculum should be designed to foster collaboration, engagement and student-instructor interaction. Instructors should encourage all online students to show innovation and demonstrate critical thinking and application. The engagement of students in an online course is especially important because "without intentional engagement of students, little, if any, learning will take place" (Association to Advance Collegiate Schools of Business, 2010). This should include applications such as wikis, discussion boards, chats sessions, blogs, group tasks and peer assessments. Instructors should have a mechanism in place for time management in online classes. They need to realize that online classes may require constant monitoring in order to respond in a timely manner to students' needs. Finally, constant motivation is needed to stay abreast of upcoming technology and changing curriculum. These five components all lead to faculty readiness for online courses.

The role of the institution, however, is not to be underestimated; the institution needs to provide up-to-date technology for instructors and students in order to foster the online learning process. Student support services, including library services, disability services, retention office, student counseling, etc., should be available. These are vital parts that help motivate and assist students in their pursuits in online classes. Incentives and continuous support should be given to faculty who embark on teaching an online course to motivate them to continue teaching it. The concept of motivating faculty that comply with the established online policies to create a successive online learning environment is important. The combined readiness and

commitment of students, faculty, and the institution to online learning leads to successful online education. Finally, the institution needs to always provide an evaluation mechanism that helps evaluate online course instructors and students. Feedback sought from assessment helps to make the much-needed improvement for online courses. These three components lead to institutional readiness for online learning (Samman et al., 2013).

COST ANALYSIS

In December 2014, 5.0 million jobs were reported open for hire, which was the highest level of job openings since January 2001 (US Bureau of Labor Statistics, 2015). Also, over 1.9 million jobs were reported open for hire in the southern region of the United States (US Bureau of Labor Statistics, 2015). Table 3 (see appendix) shows the jobs in demand in the state of Louisiana, the number of openings in those jobs, and their average wages. This reveals how much the economy is losing. If these jobs are filled, considering their annual salaries, more wealth will be in circulation and this will boost the economy of Louisiana. The state would also benefit in terms of income taxes, property taxes, and fees.

It is also pertinent to note that Table 3 (see Appendix) lists only ten job categories in high demand in Louisiana, which shows how much the state of Louisiana is losing because of its uneducated and unskilled populace. In 2014, the State of Louisiana records 159,360 individuals unemployed and as a result, living on unemployment benefits. The state can save more by investing in education (US Bureau of Labor Statistics, 2015).

Table 4 (see appendix) analyzes a sample of 6,070 job vacancies in Louisiana as of 2013. With these 6,070 vacancies filled, there will be \$4,628,253,600 in earnings annually. Note that this is just for a sample size of 10 occupations (5.7% of the total number of vacancies in Louisiana), which in turn is 2.1% of the total number of vacancies in the entire United States. With a 6% Louisiana tax rate and a 25% federal tax rate (Bankrate, 2015), Louisiana earns \$277,695,216 annually and the federal government earns \$1,157,063,400 annually just in income taxes from this population sample size.

Table 4 (see Appendix) shows the number of vacant jobs using the sample size, the total amounts that could be earned, and what the state and federal governments could make just on income taxes. Seeing how much can be gained from an educated and skilled population, government investment in online education will be of utmost importance, because the online medium of education could reach a larger section of the population.

Case Study

Tables 3 and 4 illustrate how profitable it could be if the job vacancies were filled by qualified individuals and

how much both the federal and state government stand to gain. This section shows how profitable the online mode of instruction is to institutions that adopt online education. Using Arizona State University (ASU) Online as a case study, Table 5 (see Appendix) shows the increasing enrollment rates recorded by the university. In 2012, ASU Online also recorded a graduating number of 497 students with a combined average GPA of 3.5 (ASU Online, 2012). In addition, ASU on-ground recorded a graduation rate of 63% from the 2008 cohorts (ASU, 2014) as opposed to the 93% online graduation rate recorded by US News & World Report (2014). These numbers show the impact of online education as regards cost, enrollment, retention and performance.

Table 5 also shows the profit recorded by ASU Online for various academic years and summer semesters. In 2012, it recorded a profit of \$4,388,100 for the fall and spring semesters, and \$2,759,200 for the summer semester. In 2013, a profit of \$3,564,300 for the fall and spring semesters, and \$3,975,100 for the summer semester was recorded. In 2014, ASU Online recorded a profit of \$7,386,200 for the fall and spring semesters, and \$2,844,200 for the summer semester.

IV. CONCLUSION

More than two decades ago, Marshall & Tucker (1992) made a bold prediction: "The future now belongs to societies that organize themselves for learning... What we know and can do holds the key to economic progress, just as command of natural resources once did." Much attention is currently focused on the potential offered by the new computing and communications technologies for enriching and extending the provision of distance education and perhaps for reducing costs (European Commission, 1996).

Internet-based technology facilitates and propagates education which as a result, makes for more educated and skilled personnel who are qualified and capable of fulfilling the demands of employers these days. Not only does higher education qualify individuals for job positions, it equally makes for a higher standard of living. This is evident in the Literature Review (Figure 1) which shows the percentage increase in income for individuals with higher education as opposed to the percentage decrease in income of those without higher education. Also, as seen in Tables 4 and 5, implementing online education will economically benefit the federal and state governments as well as the hosting institutions. Online education not only increases enrollment and retention rates while profiting institutions (see Table 5), it also yields improved academic outcomes as shown in the case study of ASU Online. Considering all these factors, this research maintains that online education has a positive

impact on the workforce and as such should be implemented statewide.

V. RECOMMENDATION

This research recommends the virtual platform of online education. The online virtual platform is a learning experience which depends solely on technology to facilitate distance learning. It is a method of learning that has been proven to be a 'cure' for lack of education and high levels of unemployment, with its potential to reach a much wider range of people.

The research equally recommends involvement of the Louisiana Department of Education in ensuring that institutions are funded to implement certain programs online. It proposes that the Louisiana Department of Education should analyze and determine ten job fields in highest demand in the state. This analysis suggests that the Louisiana Department of Education should request proposals from universities in Louisiana where these universities will state their strengths and areas where they possess a competitive advantage in offering courses that are line with these 10 professions. These proposals should then be evaluated and the 10 most qualified (1 for each profession) will be picked. The schools that are chosen to offer programs in those 10 fields would then be awarded funds to implement these programs online. Analysis of the jobs in highest demand should be done every four years, and for any new field that emerges as one of the highest in demand, the same process of selection will be made to award funds to implement the program online. This is to equip individuals with the necessary job-related skills.

This research paper advocates for an outreach program to reach prospective students, then based on survey results (as described in model 1), the institution should create and consolidate programs using the online learning platform. This will enable those who cannot physically attend school to access lectures, interacting remotely with peers and facilitators.

In summary, effective online education is a blend of pedagogy, technology, and support. For meaningful online learning experiences, prospective online learners should evaluate the strengths of these three elements and play an active role in exploring the increased interaction opportunity that online learning provides (Yoon, 2003). The elements of pedagogy and technology are inherent in online education, but the most uncertain element is the support, government support specifically. As earlier projected, online education is a means to reach a larger population, and because education can equip individuals to obtain jobs, the profit is worth the investment.

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APPENDIX

Table 3: Job Vacancies in High Demand in Louisiana (2010-2013) and Long Term Projections for Occupations to 2022

Occupation Title	Number of Vacancies (2010)	Number of Vacancies (2011)	Number of Vacancies (2012)	Number of Vacancies (2013)	Projected Growth (2022)	State Average Annual Wage	Educational criteria
Accountants and Auditors	510	570	648	750	2,200	\$63,090	Bachelor's Degree
Computer Information Technology	810	825	1,030	1,120	6,190	\$60,000	Bachelor's Degree
Engineering/ Technicians	1,020	1,020	1,100	1,300	4,030	\$80,000	Bachelor's / Associate Degree
Pharmacists	200	180	170	180	680	\$110,000	Doctoral / Professional Degree
Physical Therapists	110	100	130	140	680	\$78,330	Doctoral / Professional Degree
Nurse Practitioners	N/A	N/A	80	90	130	\$92,230	Master's Degree

Registered Nurses	1,710	1,420	1,820	1,810	8,510	\$61,780	Associate's Degree
Market Research Analyst / Marketing Specialist	90	90	80	120	560	\$50,000	Bachelor's Degree
Lawyers	270	330	270	330	1,050	\$110,000	Doctoral / Professional Degree
Business Operation Specialists	350	440	310	230	1,390	\$57,050	Bachelor's Degree

Source: Louisiana Workforce Commission, 2014.

Table 4: Total Job Vacancies (sample size), Total Amount in Earnings and Federal & State Gains from Income Taxes

Items	2013	Projected Growth (2022)
Total Job Vacancies	6,070	25,420
Total Amount in Earnings	\$4,628,253,600	\$19,382,241,600
Federal Government's Gains From Income Taxes	\$1,157,063,400	\$4,845,560,400
State Government's Gains From Income Taxes	\$277,695,216	\$1,162,934,496

Table 5: ASU Online History (in thousands of dollars)

	2012	2013	2014
Fall 21st day			
Fall (Part Time Students)	5,094	7,444	9,959
Fall (Full Time Students)	3,931	5,386	7,018
Tuition Total \$	40,226.8	57,833.7	80,261.1
Financial Aid	6,747.7	9,795.0	13,719.0
Central Online Operations	3,800.0	3,800.0	4,400.0
Reimburse the academic departments	6,137.7	9,935.4	14,233.8
Reimburse the external vendors	18,767.8	30,739.0	40,522.1
Misc. Expenses (Tax Charge)	385.5		
Subtotal Expenses	(35,838.7)	(54,269.4)	(72,874.9)
Net Total	4,388.1	3,564.3	7,386.2
Note: Includes College Managed and Vendor Offered Courses			
Tuition Summer \$	7,285.7	12,044.0	15,421.1
Financial Aid	833.4	1,457.0	2,532.8
Reimburse the academic departments	985.2	1,615.3	1,783.2
Reimburse the external vendors	2,652.5	4,996.6	8,260.9

Misc Expenses (Tax Charge)	55.4		
Subtotal Expenses	(4,526.5)	(8,068.9)	(12,576.9)
Net Summer	2,759.2	3,975.1	2,844.2

Source: ASU Online, 2015

Fig. 2: Model College Institutions Could Adopt to Increase Enrollment and Retention

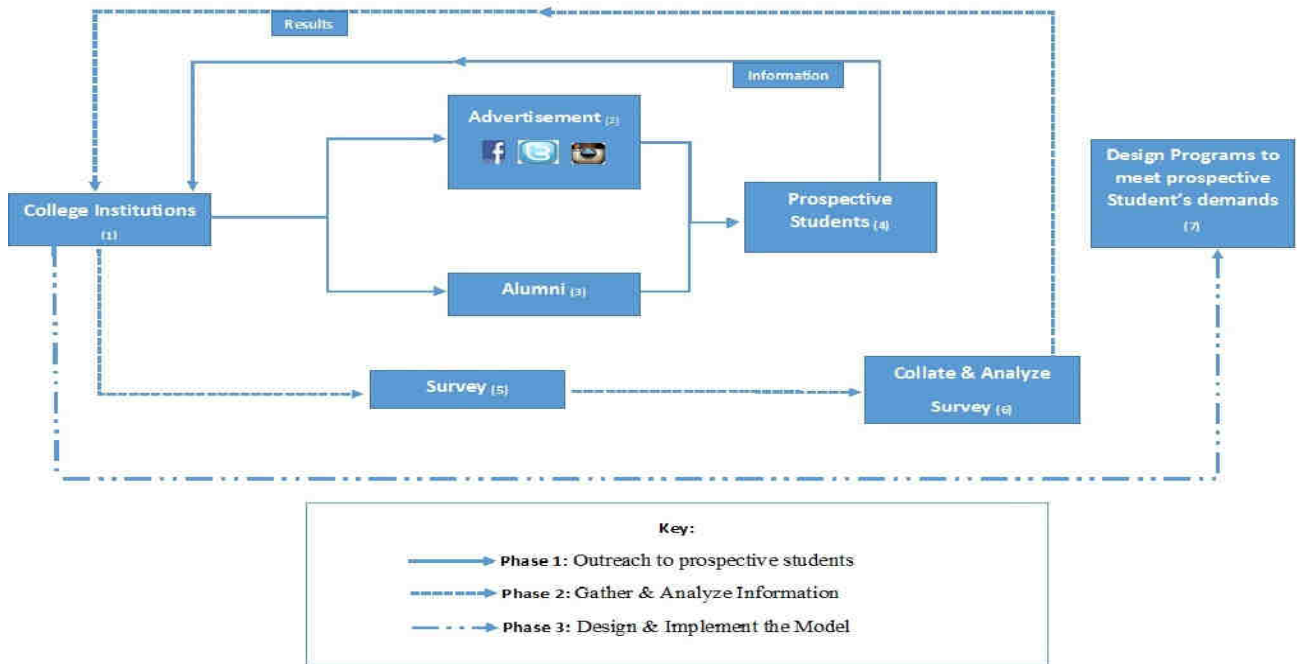


Fig. 3: Model for Enhancing Online Learning

