SERIES: 4 OF 6

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EDUCATION AND KNOWLEDGE CREATION CLUSTER: WORKFORCE NEEDS ASSESSMENT

SACRAMENTO CAPITAL REGION

February 2016

Prepared by: Centers of Excellence,
Los Rios Community College District

Valley Vision

Burris Service Group

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INTRODUCTION

Starting in 2008, the six-county Sacramento Capital region (El Dorado, Placer, Sacramento, Sutter, Yolo and Yuba counties) was rocked by the global recession, losing 10 percent of the region's jobs. In response, regional leaders initiated Next Economy, an action plan to accelerate job creation and new investment in six high-growth business (industry) clusters. Valley Vision, a regional civic leadership organization, managed the three-year Next Economy design, research and implementation process on behalf of a wide range of private and public sector partners.

As of late 2015, after a lagging recovery, the region's economy picked up momentum, with the unemployment rate decreasing while job growth is accelerating. Valley Vision received funding from the JPMorgan Chase & Co to better understand how the region's key growth industry clusters have changed since the original Next Economy research was conducted in 2012, and what new opportunities are emerging. Valley Vision is partnering with the Los Rios Center of Excellence and the Burris Service Group on this effort.

Cluster research is a widely accepted standard of practice for developing regional prosperity strategies to address multiple facets of a region's complex economy. Industry clusters reduce operating costs by shortening supply chains; increasing the flow of information regarding new business opportunities; concentrating workforce training needs in select occupations; and speeding up the identification of gaps in products or services.[1] Firms in identified clusters may also have a reduced risk of failure, as these firms are better supported by the supply chain and can respond more rapidly to shifts in the marketplace.

This report presents findings on the analysis of the Education and Knowledge Creation cluster. It is one in a series of six reports covering Next Economy-identified clusters. Additional reports include advanced manufacturing, the "clean economy," food and agriculture, information and communications technologies, and life sciences and health services.[2] Each report provides an overview of the cluster, industry trends and economic impact, as well as an overview of the top demand occupations in the cluster requiring postsecondary education or training, along with projected occupational demand, institutions providing related education and training, and possible workforce gaps. Visit valleyvision.org or coeccc.net to access completed reports.[3]

This research will be used to develop cluster-based workforce action plans. Valley Vision will work alongside regional education, and workforce and economic development partners to convene six cluster-based employer forums, setting priorities and developing strategies to address critical workforce gaps, better align education and workforce development resources to meet employer and workforce needs, and strengthen the regional economy overall.

[1] Cluster Manufacturing: A Supply Chain Perspective

[2] Sacramento Area Council of Governments (SACOG) is the principal research for the Food and Agriculture Cluster study, which will focus primarily on industry trends and excludes workforce development and training needs.

[3] Reports will be posted to the valleyvision.org and coeccc.net websites throughout the spring 2016 when finalized.

CLUSTER DEFINITION

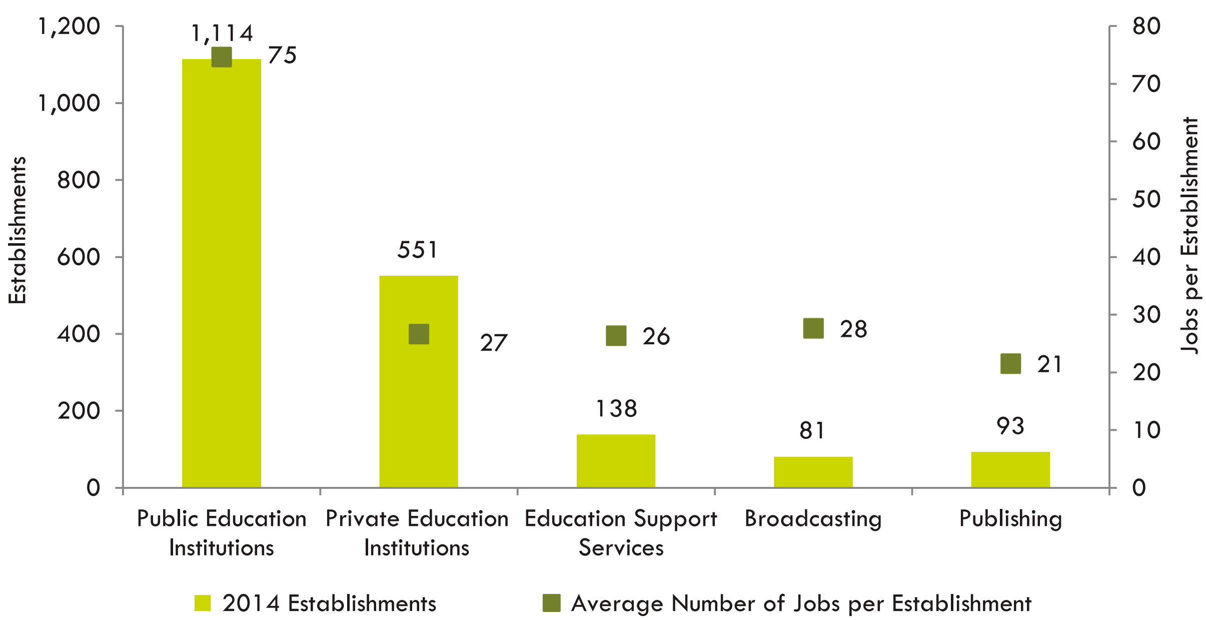
The Education and Knowledge Creation cluster includes industries and establishments that provide systematic information or instruction for the purpose of knowledge creation or learning. Within the cluster, there are five subsectors:

- **Private Education Institutions,** typically controlled by nongovernmental agencies, include preschools, secondary schools, colleges and universities.
- **Public Education Institutions,** supported primarily by public funds, include preschools, secondary schools, colleges, and universities.
- **Education Support Services** provide non-instructional services that support educational processes or systems, such as educational testing services, guidance counseling, and student exchange programs.
- **Publishing** establishments produce newspapers, magazines, other periodicals, and books.
- **Broadcasting** establishments create content or acquire the right to distribute and broadcast content via radio, television or Internet.

ESTABLISHMENTS

Exhibit 1 displays establishments and the average number of jobs per establishment for the Education and Knowledge Creation subsectors in the Sacramento Capital region. As shown, public education institutions have the most establishments and the highest number of workers per establishment compared to other subsectors in the region.

Exhibit 1: Establishments and Average Employment by Subsector, Education and Knowledge Creation Cluster, Sacramento Capital Region, 2014[4]



[4] EMSI: QCEW Employees, Non-QCEW Employees, and Self-Employed, 2015.3

CONCENTRATION OF EMPLOYMENT

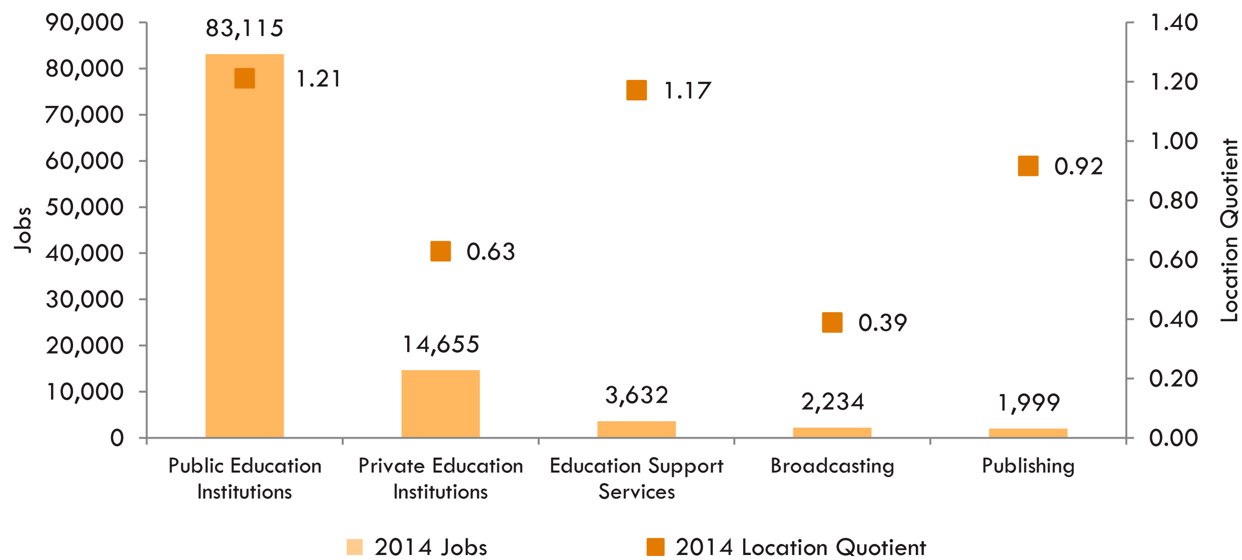
In 2014, there were about 105,600 jobs in the Education and Knowledge Creation cluster, 10 percent of the total employment in the Sacramento Capital region. As shown in Exhibit 2, the largest subsector is public education institutions (79%; 83,100 jobs), followed by private education institutions (14%; 14,700 jobs). Combined, education support services, broadcasting and publishing comprised the remaining seven percent of the cluster.

Location quotient analysis compares the total employment in a region relative to the total employment in a larger area, in this case, California. A location quotient of less than one indicates a lower concentration of employment for that industry in the region than in the state overall. A location quotient of more than one indicates a higher concentration of employment for the region than in the state overall.

In the Sacramento Capital region, public education institutions, education support services and publishing have location quotients that are close to one, indicating an average concentration of employment compared to other areas of the state. The private education institutions and broadcasting subsectors have location quotients well below one, indicating a lower than average concentration of employment. Within the subsectors, there are industries with above average location quotients, indicating a high concentration of employment for those industries than in the state overall. These include:

- **Public Education Institutions:** Colleges, Universities, and Professional Schools (State Government) (1.49 LQ); and Colleges, Universities, and Professional Schools (Local Government) (1.99 LQ)
- **Private Education Institutions:** Junior Colleges (1.53 LQ); Apprenticeship Training (2.55 LQ); Other Technical and Trade Schools (1.61 LQ); and Sports and Recreation Instruction (1.3 LQ)
- **Education Support Services:** Exam Preparation and Tutoring (1.51 LQ); and Educational Support Services (2.31 LQ)
- **Broadcasting:** Radio Networks (1.52 LQ)

Exhibit 2: Total Employment and Location Quotient by Subsector, Education and Knowledge Creation Cluster, Sacramento Capital Region, 2014[5]



[5] EMSI: QCEW Employees, Non-QCEW Employees, and Self-Employed, 2015.2

TRENDS AND PROJECTIONS

The Education and Knowledge Creation cluster declined by three percent over the last five years, mostly due to significant cuts in funding to public education. Over the next five years, the Education and Knowledge Creation cluster is projected to grow by 3 percent, adding about 3,400 jobs by 2019. The private education institutions subsector is projected to add the most jobs, followed by public education institutions and education support services. Publishing and broadcasting are expected to decline over this time period.

Exhibit 3: Employment Trends and Projections, Education and Knowledge Creation Cluster, Sacramento Capital Region, 2009–2019[6]

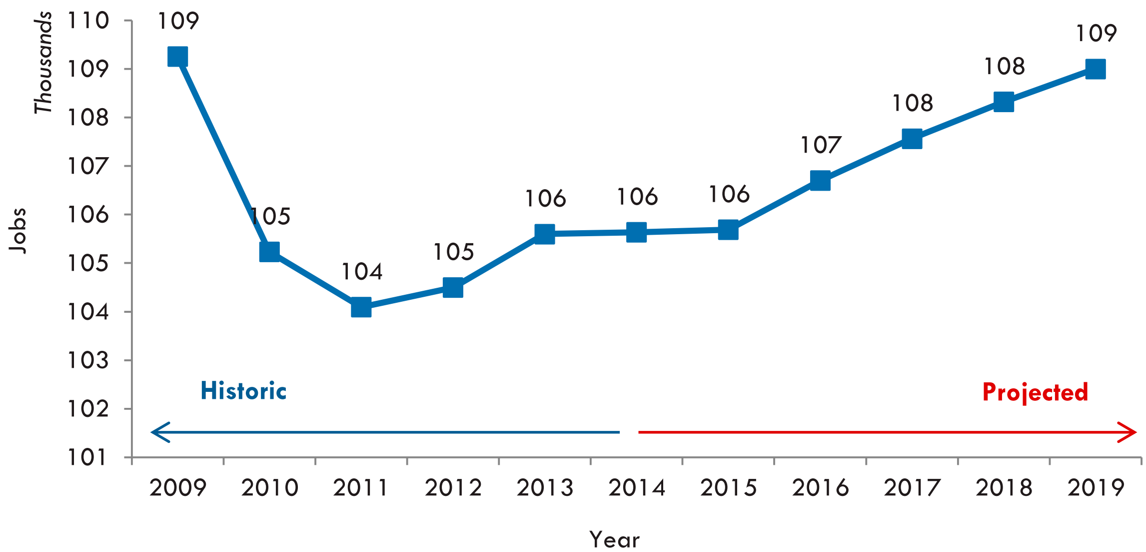


Exhibit 4: Employment Projections by Subsector, Education and Knowledge Creation Cluster, Sacramento Capital Region, 2014–2019[6]

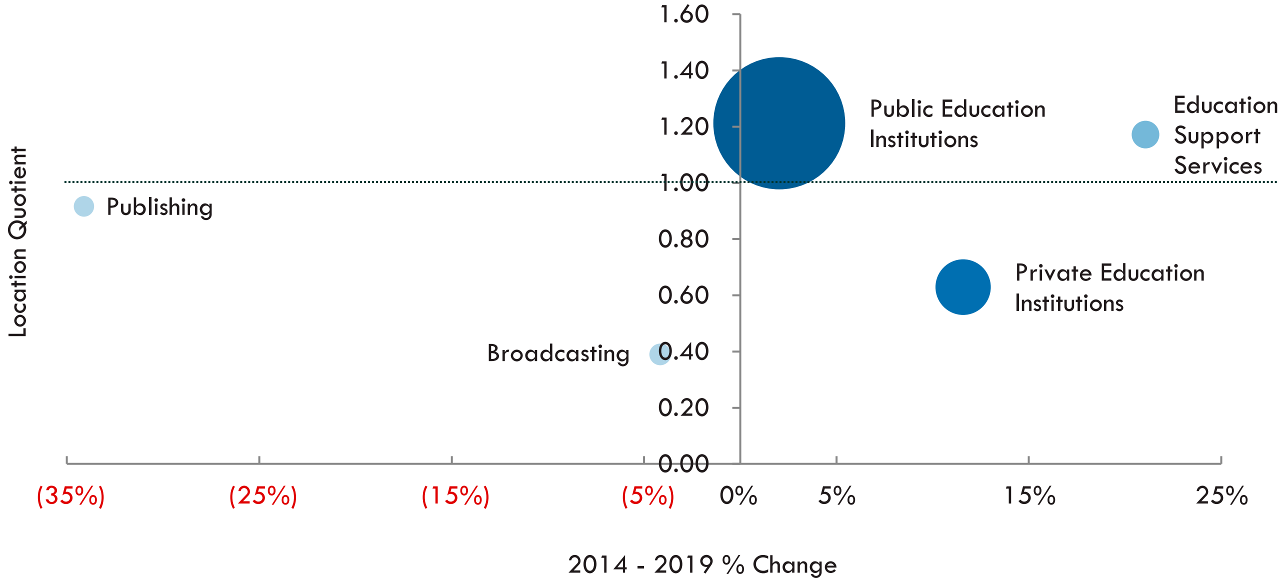
Education and Knowledge Creation Subsector	2014 Jobs	2019 Jobs	Change	% Change
Private Education Institutions	14,655	16,352	1,697	12%
Public Education Institutions	83,115	84,796	1,681	2%
Publishing	1,999	1,317	(682)	(34%)
Broadcasting	2,234	2,141	(93)	(4%)
Education Support Services	3,632	4,397	765	21%
Total	**105,636**	**109,004**	**3,368**	**3%**

[6] EMSI: QCEW Employees, Non-QCEW Employees, and Self-Employed, 2015.2

TRENDS AND PROJECTIONS

The bubble chart below compares the projected five-year growth rate to the concentration of employment in the region, where the size of the bubble indicates the total number of jobs for that subsector. Public education institutions, education support services and publishing agencies have an average concentration of employment compared to other areas of the state. The broadcasting and private education institutions subsectors have a below average concentration of employment. Public education institutions is the largest subsector, but with slow projected growth over the next five years.

Exhibit 5: Growth Rate vs. Subsector Concentration, Education and Knowledge Creation Cluster, Sacramento Capital Region[7]

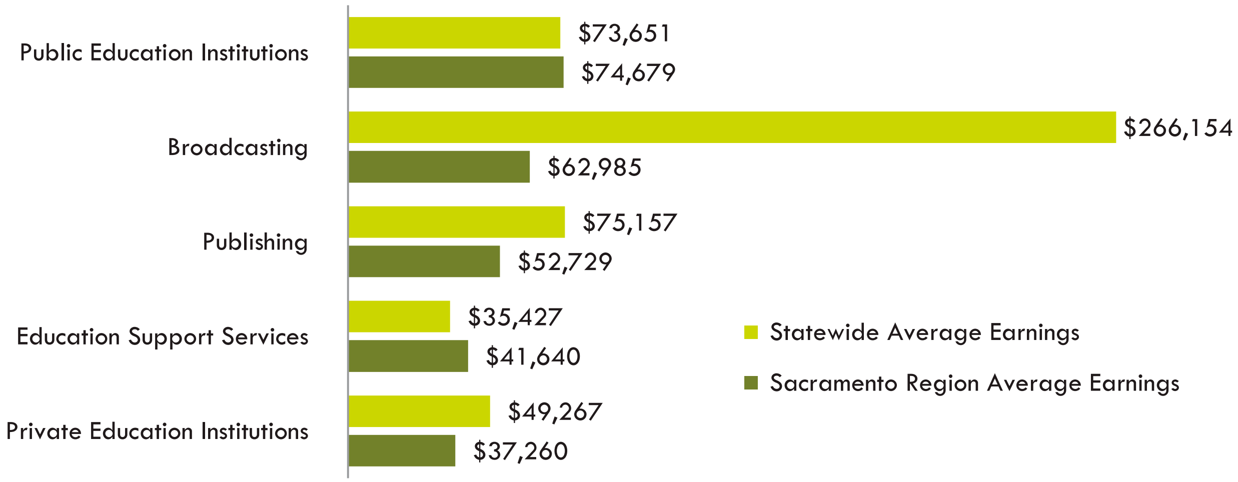


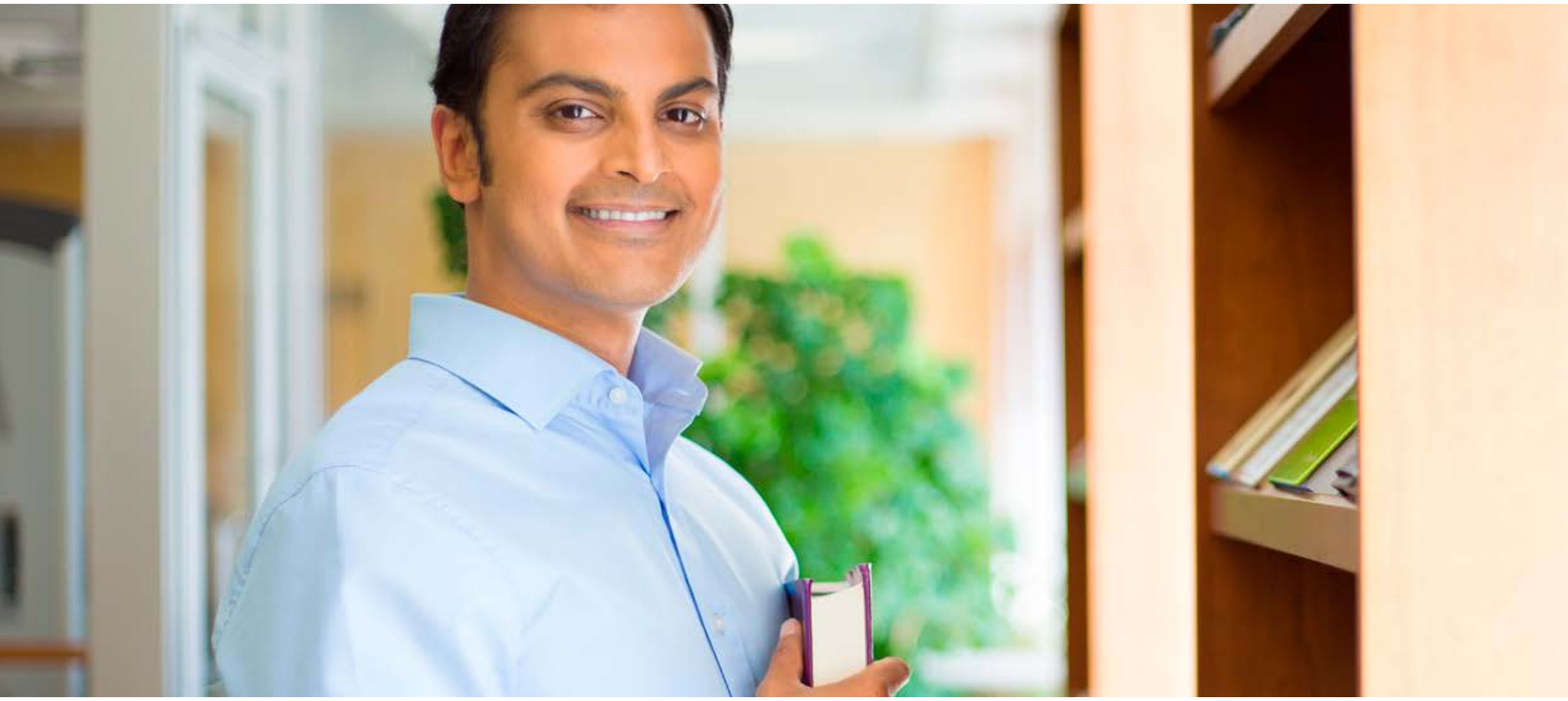
[7] EMSI: QCEW Employees, Non-QCEW Employees, and Self-Employed, 2015.2

EARNINGS

Public education institutions provide the best earnings in the Sacramento Capital region, followed by broadcasting. However, broadcasting wages are significantly higher in other areas of the state than in the Sacramento Capital region. All of the Education and Knowledge Creation cluster subsectors, except public education institutions, provide earnings that are below the regional average across all industries.[8] The earning calculation includes an average of all wages, salaries, proprietor earnings and supplemental earnings (such as retirement benefits, bonuses, etc.) for all occupations in the subsector.

Exhibit 6: Earnings by Subsector, Education and Knowledge Creation Cluster, Sacramento Capital Region, 2014[9]





[8] The average earnings across all industries in the Sacramento region is $63,400 and includes wages, salaries, proprietor earnings and supplements.

[9] EMSI: QCEW Employees, Non-QCEW Employees, and Self-Employed, 2015.2

SHIFT SHARE ANALYSIS

Shift share analysis is a method for determining how much of regional job growth can be attributed to national trends and how much is due to unique regional factors. Exhibit 7 displays four key components:

- **Industrial Mix Effect –** represents the share of regional industry growth explained by the growth of the specific industry at the national level.
- **National Growth Effect –** represents how much of the regional industry's growth is explained by the overall growth of the national economy. Given that the nation's economy is growing, it is normal to see positive change in each subsector.
- **Expected Change –** the change expected due to national growth effect and industry mix effects.
- **Regional Competitive Effect –** explains how much of the change in the subsectors is due to some unique competitive advantage that the region possesses, because the growth cannot be explained by national trends in the industry or the economy as a whole.

Three of the five subsectors are significantly underperforming compared to national trends; two subsectors are slightly overperforming. This suggests that the region does not have a competitive advantage in the Education and Knowledge Creation cluster compared to other areas of the nation.

Exhibit 7: Shift Share Analysis by Subsector, Education and Knowledge Creation Cluster, Sacramento Capital Region, 2014–2019[10]

	Industrial Mix Effect	National Growth Effect	Expected Change	Regional Competitive Effect
Private Education Institutions	782	888	1,670	27
Public Education Institutions	(1,792)	5,036	3,244	(1,564)
Publishing	(581)	121	(460)	(222)
Broadcasting	7	135	142	(235)
Education Support Services	432	220	652	113
Cluster Total	**(1,153)**	**6,400**	**5,247**	**(1,880)**

[10] EMSI: QCEW Employees, Non-QCEW Employees, and Self-Employed, 2015.2

ECONOMIC IMPACT

Economic impact provides a quantitative method to estimate the total economic benefit from a project, or in this case, an industry cluster. In other words, it is the "ripple effect" of all economic activities resulting from that cluster. Impact analysis is typically comprised of direct, indirect and induced impacts:

- Direct impacts are those resulting from the expenditures of operations within that industry cluster.
- Indirect impacts are those resulting from suppliers of that cluster spending money and hiring employees.
- Induced impacts are the combined value of employees of the industry cluster spending money at a household level.

Combined, these three variables equate to the total economic impact of a project or industry cluster.

The Education & Knowledge cluster impacts the Sacramento Capital region's economy in several ways. The IMPLAN input output model was used to measure the cluster's total economic impacts. First, the cluster directly benefits the economy through the operations and jobs supported by the establishments within its subsectors. Exhibits 8 and 9 show that the Education & Knowledge cluster directly contributes roughly $24.1 billion in output and 106,000 jobs to the regional economy. In addition to this direct effect, these establishments generate an indirect impact through their supplier purchases—about $12.8 billion in output and 81,000 jobs are created within sectors that generally supply this cluster. Finally, the Education & Knowledge cluster creates an induced effect of nearly $9.5 billion and approximately 68,000 jobs as a result of consumption activities within the local economy of both direct (cluster) and indirect (supplier) employees.

Exhibit 8: Total Output Impacts[11]

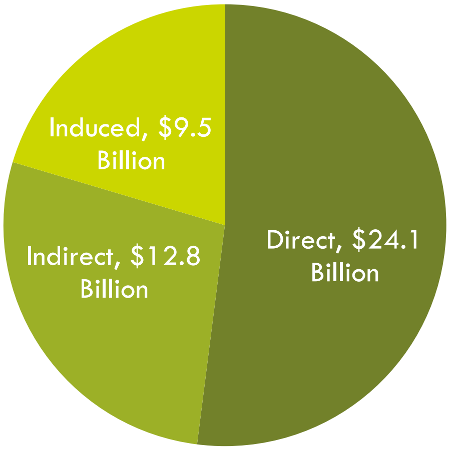
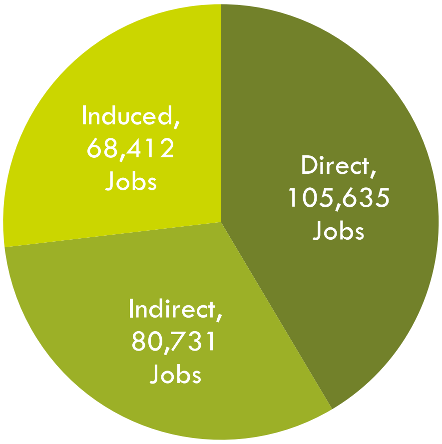


Exhibit 9: Total Employment Impacts[11]



[11] EMSI employment and IMPLAN 2013 data coefficients

ECONOMIC IMPACT

The Education & Knowledge cluster contributes a total of $46.4 billion in output, 255,000 jobs and $17.6 billion in labor income. Exhibit 10 breaks down the employment impacts by each subsector within the Education & Knowledge cluster and by output, employment, and labor income (which includes all forms of employment income, including employee compensation and proprietor income). With about $42.0 billion in output, 219,000 jobs, and $16.0 billion in labor income, the public education institutions subsector accounts for the largest share of the cluster's total economic impacts while the education support services subsector has the smallest share (except in employment where publishing accounts for the smallest share).

Exhibit 10: Total Economic Impacts by Cluster Subsector[12]

	Direct	Indirect	Induced	Total
Output				
Total	*$24,118,116,854*	*$12,801,360,648*	*$9,455,970,198*	*$46,375,447,699*
Public Education Institutions	$21,676,315,368	$11,759,078,854	$8,607,790,366	$42,043,184,589
Private Education Institutions	$811,234,626	$264,339,138	$376,012,121	$1,451,585,885
Education Support Services	$183,520,747	$66,181,351	$89,205,761	$338,907,859
Broadcasting	$1,011,545,597	$557,319,019	$275,916,277	$1,844,780,894
Publishing	$435,500,515	$154,442,286	$107,045,672	$696,988,473
Employment				
Total	*105,635*	*80,731*	*68,412*	*254,777*
Public Education Institutions	83,115	73,652	62,273	219,040
Private Education Institutions	14,655	1,744	2,721	19,120
Education Support Services	3,632	442	645	4,719
Broadcasting	2,234	3,921	1,998	8,153
Publishing	1,999	971	775	3,745
Total Labor Income				
Total	*$9,754,494,797*	*$4,530,589,994*	*$3,108,223,558*	*$17,592,069,892*
Public Education Institutions	$8,925,511,057	$4,231,939,785	$2,861,781,580	$16,019,232,422
Private Education Institutions	$497,788,477	$76,046,606	$125,017,834	$698,852,917
Education Support Services	$115,648,329	$20,623,231	$29,658,383	$165,929,943
Broadcasting	$215,546,934	$201,980,372	$91,765,760	$509,293,066
Publishing	$109,807,716	$53,361,366	$35,592,461	$198,761,543

ECONOMIC LEAKAGE

Supply chain leakage is a primary factor in determining the value of an industry multiplier used to define the total "ripple effect" of that industry cluster. Stronger supply chain linkages, better described as a cluster using more locally sourced products and services, has a reciprocal benefit of lower leakage, increasing the multiplier and the total impact on the surrounding economy.

It was determined through an in-depth analysis of the Education & Knowledge Creation cluster and its subsets, that there is a high level of supply chain leakage, roughly 75 percent. Conversely, 25 percent of goods and services supporting the industry cluster are purchased within the region.

[12] EMSI employment and IMPLAN 2013 data coefficients

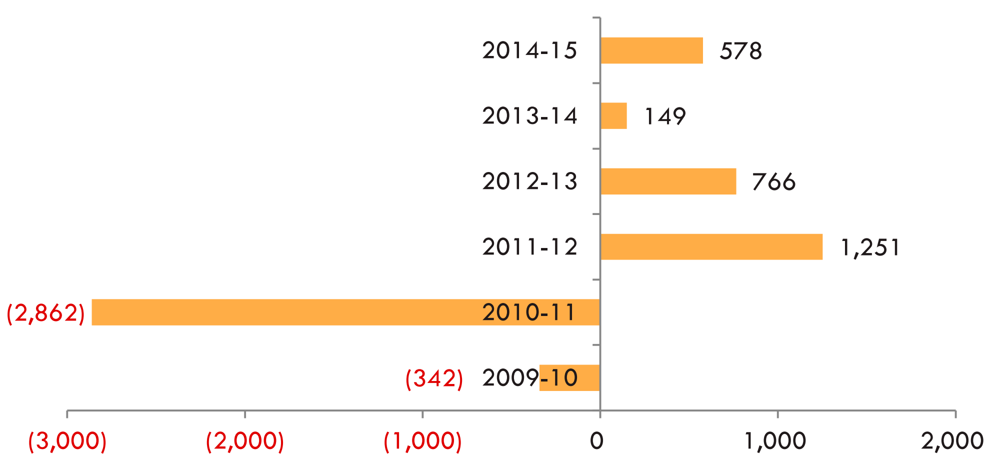
INDUSTRY TRENDS IN EDUCATION AND KNOWLEDGE CREATION

Several environmental, demographic and regulator factors are expected to influence demand for teachers and education support professions. These include:

- **Optimistic hiring forecast** as school budgets stabilize post-recession. During the recession, K-12 new teacher hiring froze and layoffs occurred for those with the least seniority due to state funding cuts. In California, nearly 32,000 teaching jobs were eliminated between 2007 and 2012. Secondary schools in the Sacramento Capital region reduced their teacher workforce between 30 and 70 percent.[13] These staff reductions created larger class sizes with fewer education programs, support services and resources.[14] Credentialed teachers who were laid-off either entered other professions or opted to work at charter schools.

  In the Sacramento Capital region, public schools experienced the largest decline in teacher staffing levels in the 2010-11 academic year. As the state budget recovered from the recession, school districts starting hiring teachers, a trend which is expected to continue into the short-term future. The California Department of Education estimates that K-12 public school districts in the Sacramento Capital region will need to hire 1,288 teachers in 2016-17 academic year.

Exhibit 11: Change in FTE Teacher Staffing Levels, Secondary Public Schools, Sacramento Capital Region[15]



- **Per-pupil spending may significantly increase driving demand for more services and staff in the education field.** In the proposed budget for 2016–17, Governor Brown has substantially increased funds to support K-12 education that will allow schools to expand base programs and services. Per-pupil expenditures would increase to $10,591, an additional $368 over 2015–16 levels. And total per-pupil spending after adding all sources of funding would rise to $14,550, a $366 increase over 2015–16.
- **Resurgence of enrollment in university teacher training programs.** The economic downturn that led to school districts' teacher lay-offs and hiring freezes discouraged students from entering university teacher preparation programs, resulting in a decline of more than 24,000 candidates — a 55% reduction in enrollments over the past five years statewide.[16] Total teacher preparation enrollment was reduced alone by 24 percent between 2011–12 and 2012–13.

[13] *New Teachers Scarce After State Funding Cuts,* Sacramento Bee, March 7, 2014.

[14] *Investing in Our Future: Returning Teachers to the Classroom,* Executive Office of the President, August 2012.

[15] California Department of Education. Data Reporting Office. Report Prepared: 2/5/2016.

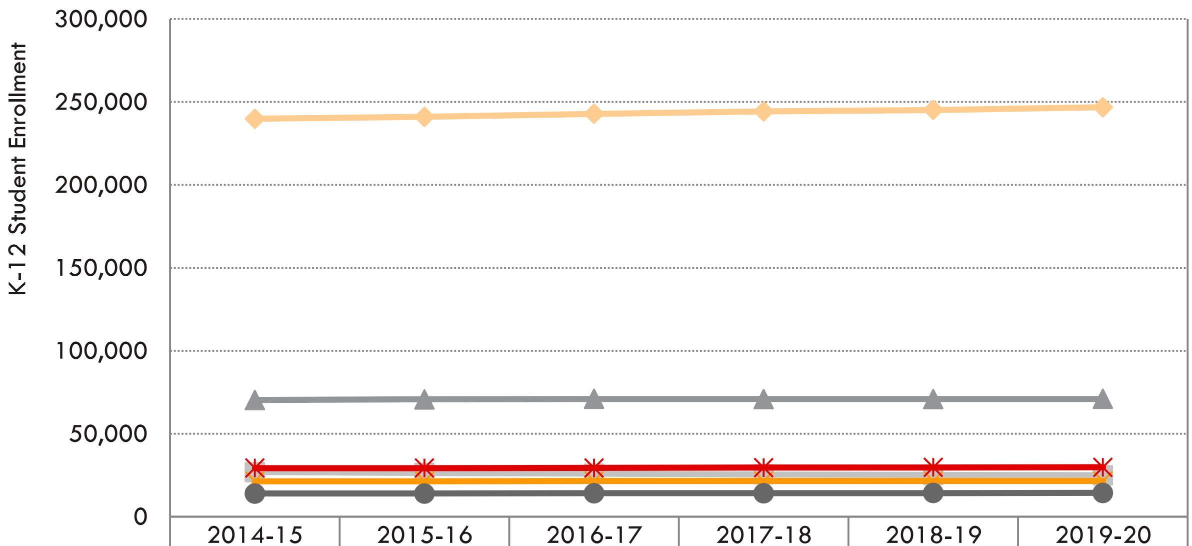
[16] http://www.ctc.ca.gov/reports/TS-2013-2014-AnnualRpt.pdf

INDUSTRY TRENDS IN EDUCATION AND KNOWLEDGE CREATION

With increased teacher hiring underway, college students are now again being encouraged to enter teaching careers, including programs at Cal State University Sacramento and UC Davis. However, due to fewer students currently in the teacher education preparation pipeline, it may take a few years for educational supply to balance with the projected demand.

- **Upcoming teacher retirements unlikely to create future workforce shortages.** Even with the region's aging population, teacher retirements are unlikely to create future staffing shortages over the next five to ten years as previously expected.[17] According to analysis conducted by The Center for Teaching and Learning at WestEd, the number of teachers nearing retirement age is expected to remain constant over the next few years. Rather, governmental policy and demographic shifts will have a more significant impact on demand.
- **Changing student enrollment projections drive teacher hiring.** Shifting age populations among individual communities may increase or keep teacher hiring flat. As shown in Exhibit 12, all of the Sacramento Capital region counties anticipate enrollment growth, except for El Dorado County. Within the counties, some districts anticipate growth while others continue to plan for enrollment declines.

Exhibit 12: Secondary Student Enrollment Projections by County, Sacramento Capital Region[18]



	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Sacramento	239,894	241,096	242,862	244,307	245,251	246,830
El Dorado	26,913	26,360	26,003	25,505	25,178	25,002
Placer	70,422	70,790	71,100	70,951	71,007	71,028
Sutter	21,459	21,490	21,641	21,567	21,596	21,585
Yolo	29,341	29,385	29,439	29,632	29,746	29,833
Yuba	13,976	14,050	14,185	14,257	14,344	14,438

[17] Black, A., Tiffany-Morales, J., Tyler, N., and Sarnoff, R. (2013). *Teacher Retirement Trends in California: 2006/07–2011/12.* A Report by the Center for the Future of Teaching and Learning at WestEd. San Francisco: WestEd. Report available at: http://www.sjsu.edu/secondary/trtc.pdf

[18] California Department of Education. Data Reporting Office. Report Prepared: 2/5/2016.

INDUSTRY TRENDS IN EDUCATION AND KNOWLEDGE CREATION

- **Anywhere, anytime learning and lifelong learning opportunities abound.** With Internet-based education and mobile computation — anywhere, anytime learning is moving out of the classroom and onto screens and even embedded in the built environment of mobile and other devices. This type of learning will mean that informal and ad hoc education will more fully complement formal education and credentialing systems.

  Beyond online education credit courses offered by college and university programs, there are now a multitude of short online courses and tutorials called MOOCs — Massive Open Online Courses — offered by universities such as Stanford, UC Berkley, Harvard and MIT, among others that offer training or certifications to assist in skill development for both professionals and lifelong leaners, with many subjects offered for free.[19] With increases in longevity, a more volatile economy and accelerating technological changes, lifelong learning and adult education will continue to expand. The idea that education is reserved for youth will soon become indefensible, even counter-productive. Continuous professional development and skill acquisition will be necessary to serve older, multi-career individuals.

Industries in knowledge creation have undergone a technological transformation that has forever changed the way broadcasting and publishing will be accessed and personalized by the consumer. Broadcasting and publications — their media production and business, perhaps more than any other industries — have been disrupted by the Internet. Television, radio, newspapers, magazines, and books have become more decentralized and personalized for the consumer.

As media is converted into digital forms, how information is accessed — news and entertainment — has radically changed. Today's media industry provides consumers with an overwhelming number of options for on-demand news and information, powered by broadband or wireless networks. Consumers are now able to self-direct how they interact with media and selectively control the type of content they access. These shifting consumer preferences are stifling traditional knowledge creation industries. Some of the recent trends include:[20]

- **Television Broadcasting:** As increasing number of viewers are opting for Internet streaming options. Companies which make changes to meet consumer preferences by offering interactive and customized services will be more successful.
- **Radio Broadcasting:** Digital media platforms like podcasts, MP3 players and streaming radio have inundated the radio industry for the past five years, providing stiff competition. As with television broadcasting, many traditional radio broadcasters are integrating online and customized access.
- **Newspaper Publishing:** Digital versions of newspapers have become the go-to source of news for many consumers. Adopting technological innovations using Internet and mobile platforms will help publishers to expand real-time reporting while cutting traditional printed publication's labor, printing and distribution costs.
- **Book Publishing:** The shift in technology and consumer preferences for mobile reading devices such as e-readers, iPADs and tablets, and e-book publications have created restructuring in the publishing industry, leading to a decline in book publishing and its revenue. As consumers have products and reading materials easily available online, book publishers are developing new products such as e-books and generating additional revenue from the demand for college textbooks as college enrollments increase.

[19] online.stanford.edu and www.edX.org

[20] IBISWorld.com

OCCUPATION DEMAND

Twelve (12) occupations were selected for inclusion in the study based on the following criteria:

- Annual job openings were significant.
- The minimum education requirement is a high school diploma plus on-the-job training, postsecondary award, associate degree or bachelor's degree.

Exhibit 13 displays the employment demand for the Education and Knowledge Creation cluster occupations selected for inclusion in the study. Over the next five years (2014–2019), these occupations are projected to grow by 4%, adding about 1,200 new jobs and 3,800 replacement jobs.[21] Sacramento Capital region employers will need to fill as many as 1,000 openings annually to keep pace with cluster growth, retirements and other separations.

Elementary school teachers is the largest occupation in the group with the most annual openings over the next five years. Secondary school teachers and middle school teachers are also large occupations with significant annual openings created by new job growth and replacement needs. For each occupation, replacement estimates include retirements and general separations, but not turnover within the occupation. As such, replacements and new job growth combined is a good measure of demand for workers.

Exhibit 13: Employment Outlook, Education and Knowledge Creation Occupations, Sacramento Capital Region, 2014–2019[22]

Description	2014 Jobs	2019 Jobs	2014–2019 Change	2014–2019 % Change	Total Replace-ments	Total Openings	Annual Openings
Elementary School Teachers	10,226	10,662	436	4%	1,265	1,701	340
Secondary School Teachers	5,191	5,308	117	2%	777	894	179
Middle School Teachers	3,082	3,250	168	5%	370	538	108
Teachers and Instructors, All Others	2,625	2,844	219	8%	236	455	91
Education, Training, and Library Workers	1,843	1,900	57	3%	86	143	29
Kindergarten Teachers	1,707	1,766	59	3%	266	325	65
Training and Development Specialists	1,616	1,789	173	11%	158	331	66
Writers and Authors	915	906	(9)	(1%)	114	114	23
Library Technicians	802	847	45	6%	225	270	54
Advertising Sales Agents	778	735	(43)	(6%)	147	147	29
Editors	550	501	(49)	(9%)	75	75	15
Producers and Directors	410	423	13	3%	81	94	19
Total	**29,747**	**30,931**	**1,186**	**4%**	**3,802**	**5,089**	**1,017**

[21] This study excludes occupations that require more than a bachelor's degree. As such, postsecondary instructors were not selected for inclusion in the study.

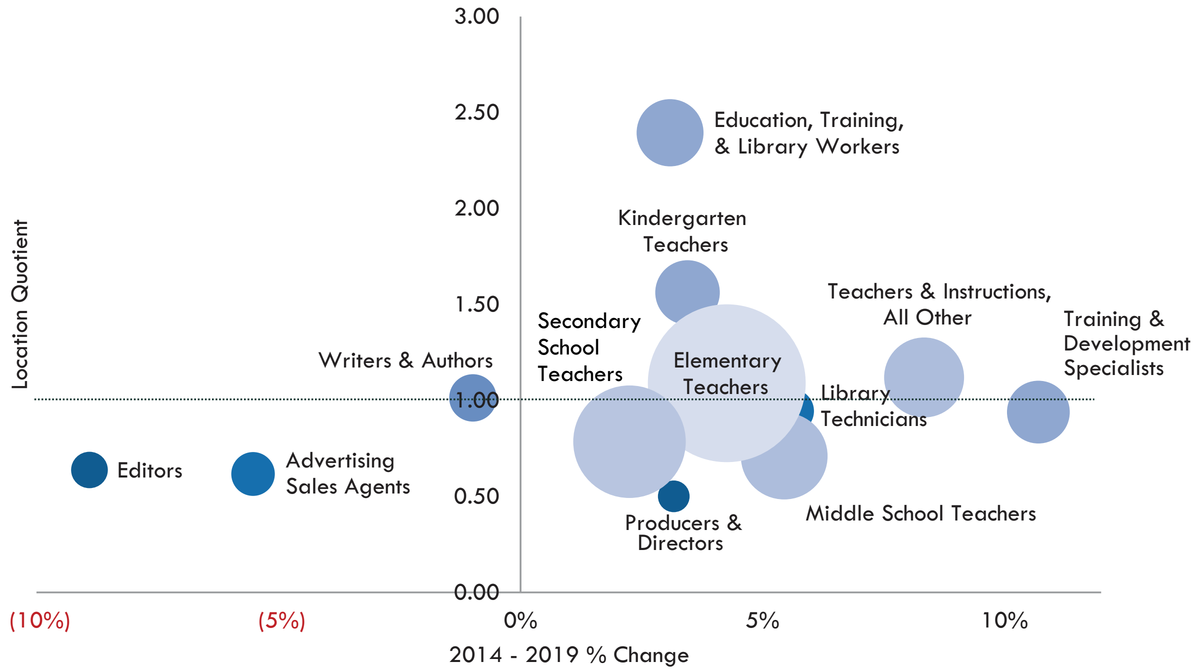
[22] EMSI: QCEW Employees, Non-QCEW Employees, and Self-Employed, 2015.2

OCCUPATION DEMAND

In addition to industry analysis, location quotient can also be applied to occupations. In this case, the location quotient compares an occupation's total employment in a region relative to the state's total employment for that occupation. A location quotient of less than one indicates a lower concentration of employment for that occupation in the region than in the state overall. A location quotient of more than one indicates a higher concentration of employment for the occupation than in the state overall.

The bubble chart below compares the concentration of occupation employment to the projected five-year growth rate in the region, where the size of the bubble indicates the total number of jobs for each occupation. As shown below, elementary school teachers is the largest occupation, with average concentration in the region and a moderate projected growth rate. Education, training and library workers have an above average location quotient and a moderate projected growth rate. Training and development specialists is projected to grow faster than any other occupation in the group, with an average concentration of employment in the region. Editors and advertising sales agents, two of the smallest occupations in the group, are projected to decline, with below average employment concentrations.

Exhibit 14: Growth Rate vs. Occupation Concentration, Education and Knowledge Creation Occupations, Sacramento Capital Region[23]

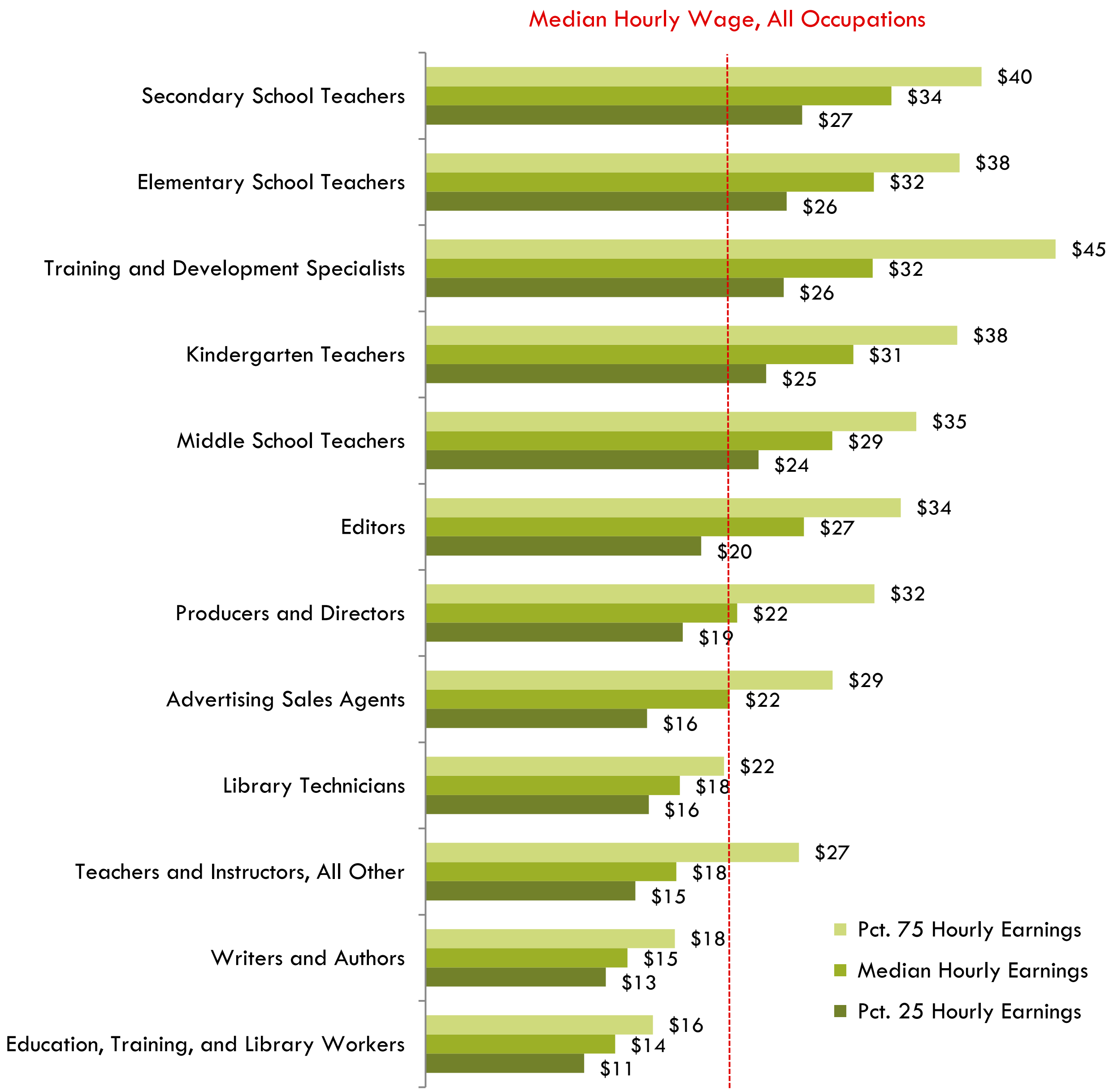


[23] EMSI: QCEW Employees, Non-QCEW Employees, and Self-Employed, 2015.2

OCCUPATIONAL WAGES

About half of occupations in the Education and Knowledge Creation cluster earn wages that are close to or above the regional median wage across all occupations. Secondary school teachers is the highest paid occupation (based on median hourly earnings), followed by elementary school teachers and training and development specialists. The lowest paid occupations in the group include teachers and instructors, all other, writers/authors and education, training and library workers. The median hourly earnings across all occupations in the Sacramento Capital region is $22.69 per hour.

Exhibit 15: Hourly Wages, Education and Knowledge Creation Occupations, Sacramento Capital Region, 2015[24]



[24] EMSI: QCEW Employees, Non-QCEW Employees, and Self-Employed, 2015.2

EDUCATION ASSESSMENT

This section provides a review of the training and education supply programs supporting the Education and Knowledge Creation cluster for the occupations selected for inclusion in this study. Exhibit 16 identifies the minimum education requirements for the Education and Knowledge Creation cluster occupations. The minimum education requirement for the majority of occupations is a bachelor's degree.

Exhibit 16: Minimum Education Requirements, Education and Knowledge Creation Occupations

Description	Entry Level Education	Typical On-The-Job Training
Advertising Sales Agents	High school diploma or equivalent	Moderate on-the-job training
Editors	Bachelor's degree	None
Education, Training, and Library Workers	Bachelor's degree	None
Elementary School Teachers	Bachelor's degree	Internship
Kindergarten Teachers	Bachelor's degree	Internship
Library Technicians	Postsecondary non-degree award	None
Middle School Teachers	Bachelor's degree	Internship
Producers and Directors	Bachelor's degree	None
Secondary School Teachers	Bachelor's degree	Internship
Teachers and Instructors, All Other	Bachelor's degree	Internship
Training and Development Specialists	Bachelor's degree	None
Writers and Authors	Bachelor's degree	Moderate on-the-job training

Exhibit 17, on the following page, lists the colleges with certificate and degree programs that provide a workforce pipeline to the Education and Knowledge Creation cluster. The table includes an estimate of the certificate and degrees conferred each year by program, based on a three-year historical average.

In the Sacramento Capital region, there are 25 training programs supporting the Education and Knowledge Creation cluster occupations. These programs confer an average of 749 degrees and certificates annually. Based on a high level assessment of supply and demand, there could be gaps in the workforce pipeline in two areas: teaching occupations and library workers. The supply and demand data also suggests that there could be a significant oversupply of writers, authors and editors.

The total certificates and degrees conferred provide some information about the supply of workers to an industry or cluster. However, it is limited in that there are several unknown variables that impact the supply, such as migration trends, employer preferences, worker preparedness, qualified unemployed labor force, and graduate/completion duplication. Therefore, it is necessary to conduct additional research to verify potential training shortages in the region.

EDUCATION ASSESSMENT

Exhibit 17: Educational Programs & Awards, Education and Knowledge Creation Occupations, Sacramento Capital Region[25&26]

Category	College	Program	Award Type	3-Year Average
Teaching	California State University-Sacramento	Teaching Credential	Postbaccalaureate Certificate	No Data
	California State University-Sacramento	Child Development	Bachelor's degree; Master's degree	231
	California State University-Sacramento	Teacher Education	Master's degree	178
	Rudolf Steiner College	Waldorf Teacher Education	Postbaccalaureate Certificate	24
	University of California-Davis	General Education	Master's degree	42
	University of California-Davis	Teaching Credential	Postbaccalaureate Certificate	143
	University of Phoenix-Sacramento Valley Campus	Elementary Education and Teaching	Master's degree	6
	University of Phoenix-Sacramento Valley Campus	Secondary Education and Teaching	Master's degree	8
	William Jessup University	Elementary Education and Teaching	Bachelor's degree	21
	William Jessup University	Teacher Education	Master's degree and Postbaccalaureate Certificate	8
Library Workers	Sacramento City College	Library & Information Technology	Associate degree; Certificate	12
Writers, Authors & Editors	American River College	Journalism & Mass Communication	Associate degree	5
	American River College	Technical Communication	Associate degree; Certificate	5
	Cosumnes River College	Broadcast Journalism	Associate degree	0
	Cosumnes River College	Journalism	Associate degree	4
	Sacramento City College	Journalism	Associate degree; Certificate	3
	Sierra College	Journalism	Associate degree	1
	California State University-Sacramento	Journalism	Bachelor's degree	40
Producers/ Directors	Cosumnes River College	Television Production	Associate degree; Certificate	3
	Cosumnes River College	Radio Production	Associate degree; Certificate	1
	Cosumnes River College	Radio, Television & Film Production	Associate degree	3
	Yuba College	Mass Communications	Associate degree; Certificate	5
Advertising Agents	American River College	Advertising and Sales Promotion	Associate degree	0
	Sacramento City College	Advertising	Associate degree	1
	Cosumnes River College	Advertising/Public Relations Program	Associate degree	No Data

[25] California Community College Chancellor's Office Data Mart. National Center for Education Statistics (NCES). Higher education institutions are required to report completion data to NCES if they participate in any federal financial assistance program authorized by Title IV of the Higher Education Act. Completion data not reported to the NCES or CCCCO Data Mart were not included in the estimate.

[26] The 3-year average is based academic years 2011-12, 2012-13 and 2013-14 for private education institutions and public four-year universities and 2012-13, 2013-14, and 2014-15 for community colleges.

SKILLS ASSESSMENT

Exhibit 18 displays the top skills and professional credentials for the Education and Knowledge Creation cluster occupations selected for inclusion in this study. The data is based on analysis of job posting data, aggregated by Burning Glass. This online tool uses intelligent "spidering" to search the Internet for job listings, removes duplication, and aggregates the data into a search database. As shown below, most of the skills/knowledge areas are specialized and require specific training and skills.

Exhibit 18: Skill and Professional Credential Preferences, Education and Knowledge Creation Occupations[27]

Occupation	Top Skill/Knowledge Areas	Top Certifications/ Professional Credentials
Advertising Sales Agents	Advertising, sales, marketing, persuasion, management training, cold calling, business development, and account management	None listed
Editors	Editing, journalism, social media, Adobe Photoshop, copy editing, video editing, proofreading, content management and blogging	None listed
Education, Training, and Library Workers	Troubleshooting technical issues, faxing, personnel management, office equipment, workshops, record keeping and data management	None listed
Elementary School Teachers	Lesson planning, curriculum development, maintaining student records, group instruction, assessment data, managing student data, child cognitive development and record keeping	First Aid CPR AED, Certified Testing Expert Level, Certified Teacher
Kindergarten Teachers	Lesson planning, child development, curriculum development, group instruction, record keeping and first aid	None listed
Library Technicians	Repair, record keeping, office equipment, word processing, library reference, inventory maintenance, data entry, library resources, and scheduling	Typing Certification
Middle School Teachers	Child development, lesson planning, child supervision, first aid, training programs, record keeping, workshops and curriculum development	First Aid CPR AED, Certified Teacher
Producers and Directors	Broadcasting, social media, Adobe Photoshop, video production, journalism, scheduling, collaboration, video editing, content management, and concept development	Project Management Certification
Secondary School Teachers	Lesson planning, curriculum development, record keeping, group instruction, tutoring, workshops, educational programs, maintaining student records, and report writing	Certified Teacher
Teachers and Instructors, All Other	Tutoring, record keeping, lesson planning, screening, scheduling, faculty training, mentoring, first aid, child development and workshops	First Aid CPR AED
Training and Development Specialists	Training programs, training materials, technical training, instructional design, sales scheduling, onboarding, collaboration, workshops and learning management systems	None listed
Writers and Authors	Copy writing, journalism, social media, technical writing/editing, blogging, proofreading, concept development, content management, concise and creative writing	None listed

[27] Burning Glass, 2015.

SUMMARY

The Education and Knowledge Creation cluster represents a range of industries and establishments that provide systematic information or instruction for the purpose of knowledge creation or learning. The cluster is comprised of two categories: education (private and public institutions and support services) and knowledge creation (publishing and broadcasting establishments).

In 2014, the Education and Knowledge Creation cluster employed 105,600 workers, 10 percent of the Sacramento Capital region's total workforce. The majority of the cluster's workforce is employed by public education institutions. In the Sacramento Capital region, there are several environmental and market conditions that are impacting the Education and Knowledge Creation cluster.

- **Education.** The Sacramento Capital region's educational workforce rebounded after the recession to employ more teachers and administrators funded by additional tax revenues and driven by new state guidelines. This swell of recent employment has created optimism among students and other professionals interested in entering the teaching profession as evidenced by an increase in university teacher preparation enrollments. However, it could take a few years for students in the pipeline to become credentialed and qualified for employment.
- **Knowledge Creation.** Broadcasting and publications —their media production and business, perhaps more than any other industries, have been disrupted by the Internet. Television, radio, newspapers, magazines, and books have become more decentralized and personalized for the consumer. As consumer preferences shift, many traditional publishers and broadcasters struggle to keep pace with the changing environment, causing a decline in revenues and subsequently staffing levels. These declines are projected to continue in the short-term future.

Twelve (12) occupations were selected for inclusion in the study based on the total number of job openings and minimum education requirements, including:

Education-Related Occupations

- Education, Training, and Library Workers
- Elementary School Teachers
- Kindergarten Teachers
- Library Technicians
- Middle School Teachers
- Teachers and Instructors, All Other
- Training and Development Specialists
- Secondary School Teachers

Broadcasting and Publication-Related Occupations

- Advertising Sales Agents
- Editors
- Producers and Directors
- Writers and Authors

SUMMARY

Over the next five years, occupations in the Education and Knowledge Creation cluster are projected to grow modestly, adding about 1,200 new jobs and 3,800 replacement jobs. All of the education-related occupations are projected to add new positions, while most of the broadcasting and publication-related occupations are projected to decline. However, annual demand for replacement workers is strong across the cluster. About half of occupations in the Education and Knowledge Creation cluster earn wages that are close to or above the regional median wage. The minimum education requirement for the majority of occupations in the Education and Knowledge Creation cluster is a bachelor's degree.

In the Sacramento Capital region, there are 25 training programs supporting the Education and Knowledge Creation cluster occupations. These programs confer an average 749 degrees and certificates annually. Based on a high level assessment of supply and demand, there could be gaps in the workforce pipeline in two areas: teaching occupations and library workers. The supply and demand data also suggests that there could be a significant oversupply of writers, authors and editors.

Valley Vision, along with the Center of Excellence and other partners, will be conducting forums with Education and Knowledge Creation employers to review the cluster findings, high priority occupation and skills gaps that can be addressed through a concerted cluster workforce action plan. Priorities that may be elevated based on this analysis include:

1. Conduct additional research on the supply and demand of teaching occupations to identify areas in short supply (such as academic and CTE disciplines).
2. Expand library technician programs to meet the projected labor market needs.
3. Develop articulation agreements among community colleges and universities to strengthen the teacher training pipeline.

APPENDIX A: EDUCATION AND KNOWLEDGE CREATION CLUSTER DEFINITION

The Education and Knowledge Creation cluster is comprised of the following NAICS codes.

Private Education Institutions

611110 Elementary and Secondary Schools

611210 Junior Colleges

611310 Colleges, Universities, and Professional Schools

611410 Business and Secretarial Schools

611420 Computer Training

611430 Professional and Management Development Training

611511 Cosmetology and Barber Schools

611512 Flight Training

611513 Apprenticeship Training

611519 Other Technical and Trade Schools

611610 Fine Arts Schools

611620 Sports and Recreation Instruction

611630 Language Schools

611692 Automobile Driving Schools

611699 All Other Miscellaneous Schools and Instruction

Public Education Institutions

902611 Elementary and Secondary Schools (State Government)

902612 Colleges, Universities, and Professional Schools (State Government)

903611 Elementary and Secondary Schools (Local Government)

903612 Colleges, Universities, and Professional Schools (Local Government)

Education Support Services

519120 Libraries and Archives

611691 Exam Preparation and Tutoring

611710 Educational Support Services

902619 All Other Schools and Educational Support Services (State Government)

903619 All Other Schools and Educational Support Services (Local Government)

Publishing

323117 Books Printing

511110 Newspaper Publishers

511120 Periodical Publishers

511130 Book Publishers

511199 All Other Publishers

519110 News Syndicates

519190 All Other Information Services

Broadcasting

515111 Radio Networks

515112 Radio Stations

515120 Television Broadcasting

519130 Internet Publishing and Broadcasting and Web Search Portals

MORE ABOUT...

More About The Centers of Excellence

The Centers of Excellence (COE) for Labor Market Research deliver regional workforce research and technical expertise to California community colleges for program decision making and resource development. This information has proven valuable to colleges in beginning, revising, or updating economic development and Career Technical Education (CTE) programs, strengthening grant applications, assisting in the accreditation process, and in supporting strategic planning efforts.

The Centers of Excellence Initiative is funded in part by the Chancellor's Office, California Community Colleges, Economic and Workforce Development Program. The Centers aspire to be the leading source of regional workforce information and insight for California community colleges. More information about the Centers of Excellence is available at **www.coeccc.net**.

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More About Valley Vision

Since 1994, Valley Vision's work has driven transformative change and improved lives across Northern California. An independent social impact and civic leadership organization headquartered in Sacramento, Valley Vision strengthens our communities through unbiased research, boundary-crossing collaboration and change leadership. Our work improves overall quality of life and creates the conditions for economic prosperity and community health and vitality.

More About Burris Service Group

The Burris Service Group (BSG) is a full-service consulting practice providing expertise in economic development, strategic economic research, real estate site strategy, management, and institutional growth. The company was established based on the clear need that advisory services be delivered in an "action-oriented" form. The founder of BSG, Robert Burris, brings to his clients an active local and international network of professionals, as well as 20 years of experience in economic development, market and economic analysis, commercial real estate information, corporate sales, and consulting.

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