Program Endorsement Brief: 0614.20/Electronic Game Design
Computer Game Design; Computer Game Programming
Orange County Center of Excellence, August 2019

Summary Analysis
The Orange County Center of Excellence for Labor Market Research (COE) prepared this report to provide Los Angeles/Orange County regional labor market supply and demand data related to two middle-skill computer game design and programming: computer occupations, all other (15-1199), and multimedia artists and animators (27-1014). Middle-skill occupations are generally defined as those that may require some postsecondary education.[1] These occupations typically require a bachelor's degree, but are considered middle-skill because approximately one-third of workers in the field have completed some college or an associate degree. This report is intended to help determine whether there is demand in the local labor market that is not being met by the supply from community college programs that align with relevant occupations.

Based on the available data it appears that there is a supply gap for these computer game design and programming occupations in the region. **Therefore, the COE endorses this proposed program for the following reasons:**

Demand:

- Over the next five years, there is projected to be **1,781 jobs available annually** in the region due to retirements and workers leaving the field, **which is more than the 65 awards conferred annually** by community colleges and four-year colleges in the region.
- However, the computer occupations, all other (15-1199) SOC code includes a variety of emerging occupations, including video game designers, database architects, and web administrators. Since the SOC code does not solely represent video game designers, **the number of annual job openings is likely overstated.**

Supply:

- There is **1 community college** in the region (Golden West) that has an electronic game design program, conferring an average of **1 award annually** between 2015 and 2018.
- Between 2013 and 2016, there were an average of **64 awards conferred annually** in related training programs by **5 four-year colleges** in the region.

Occupational Demand
Exhibit 1, on the following page, shows the five-year occupational demand projections for these two computer game design and programming occupations. In Los Angeles/Orange County, the number of jobs related to these occupations is projected to decrease by less than 1% through 2023. However, there will be nearly 1,800 job openings per year through 2023 due to

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[1] The COE classifies middle-skill jobs as the following:
- All occupations that require an educational requirement of some college, associate degree or apprenticeship;
- All occupations that require a bachelor's degree, but also have more than one-third of their existing labor force with an educational attainment of some college or associate degree; or
- All occupations that require a high school diploma or equivalent or no formal education, but also require short- to long-term on-the-job training where multiple community colleges have existing programs.

retirements and workers leaving the field. It is important to note that the computer occupations, all other (15-1199) SOC code includes a variety of emerging occupations, including video game designers, database architects, web administrators, and other computer occupations. Since the SOC code does not solely represent video game designers, the data in Exhibit 1 is likely overstated for computer game designers/programmers.

Exhibit 1: Occupational demand in Los Angeles and Orange Counties[2]

Geography	2018 Jobs	2023 Jobs	2018-2023 Change	2018-2023 % Change	Annual Openings
Los Angeles	17,765	17,451	(314)	(2%)	1,307
Orange	6,209	6,442	233	4%	474
Total	**23,974**	**23,893**	**(81)**	**(0%)**	**1,781**

Wages—Typical entry-level hourly wages for occupations related to computer game design and programming throughout the region are between $17.99 and $25.69.[3] Typical entry-level wages for these occupations are higher than the California Family Needs Calculator hourly wage for one adult in the region ($15.04 in Los Angeles County and $17.36 in Orange County). Typically, experienced workers earn between $45.44 and $53.07, which is higher than the California Family Needs Calculator wage estimates for both counties. Regional average wages are below the average statewide wage of $43.81 for these occupations. Wage information, by county, is included in Appendix A.

Job Postings—There were 1,647 online job postings related to computer game design and programming listed in the past 12 months. The highest number of job postings were for animator, graphic designer, game designer, visual effects artist and environment artist. The top specialized software and programming skills were: Photoshop, Maya AfterEffects, Illustrator and Python. The top three employers, by number of job postings, in the region were: Activision, Blizzard Entertainment and Electronic Arts. Of the 1,647 online job postings, 5% list a minimum education requirement.

Educational Attainment—The Bureau of Labor Statistics (BLS) lists a bachelor's degree as the typical entry-level education for multimedia artists and animators, and computer occupations, all other. The national-level educational attainment data indicates that between 27.4% and 36.9% of workers in the field have completed some college or an associate degree. Of the 5% of computer game design and programming job postings listing a minimum education requirement in Los Angeles/Orange County, 55% (42) request a high school diploma or vocational training and 45% (35) request an associate degree.

Supply
Community College Supply—Exhibit 2, on the following page, shows the three-year average number of awards conferred by community colleges in the related TOP code: Electronic Game Design (0614.20). Golden West is currently the only college in the region with a completion in the

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[2] Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.
[3] Entry-level wage is defined as the twenty-fifth percentile hourly wage. Wages for experienced workers are defined as the seventy-fifth percentile hourly wage.

past three years. Between June 2018 and May 2019, there were two other related program recommendation requests from regional community colleges.

Exhibit 2: Regional community college awards (certificates and degrees), 2015-2018

TOP Code	Program	College	2014-15 Awards	2015-16 Awards	2016-2017 Awards	3-Year Award Average
0614.20	Electronic Game Design	Golden West	1	1	1	1
		Total/Average	**1**	**1**	**1**	**1**

Four-Year College Supply—Because this occupation typically requires a bachelor's degree, it is important to consider the supply from four-year institutions in the region that provide training programs for computer game design and programming. Exhibit 3 shows the annual and three year average number of awards conferred by these institutions in the related Classification of Instructional Programs (CIP) Code: Animation, Interactive Technology, Video Graphics and Special Effects. Due to different data collection periods, the most recent three-year period of available data is 2013 to 2016. Between 2013 and 2016, four-year colleges conferred an average of 64 awards annually in related training programs.

Exhibit 3: Regional four-year college awards (bachelor's degrees), 2013-2016

CIP Code	Program	College	2013-14 Awards	2014-15 Awards	2015-16 Awards	3-Year Award Average
10.0304	Animation, Interactive Technology, Video Graphics and Special Effects.	Argosy University-The Art Institute of California-Orange County	8	13	9	10
		Art Center College of Design	0	17	28	15
		Laguna College of Art and Design	11	7	22	13
		Loyola Marymount University	18	18	22	19
		Mt Sierra College	8	7	5	7
		Total/Average	**45**	**62**	**86**	**64**

Appendix A: Occupational demand and wage data by county
Exhibit 4. Los Angeles County

Occupation (SOC)	2018 Jobs	2023 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75th Percentile)
Computer Occupations, All Other (15-1199)	10,551	10,820	269	3%	759	$24.60	$35.76	$51.45
Multimedia Artists and Animators (27-1014)	7,214	6,630	(584)	(8%)	548	$18.67	$33.57	$45.59
Total	**17,765**	**17,451**	**(314)**	**(2%)**	**1,307**			

Exhibit 5. Orange County

Occupation (SOC)	2018 Jobs	2023 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75th Percentile)
Computer Occupations, All Other (15-1199)	5,444	5,651	207	4%	408	$27.90	$40.40	$55.87
Multimedia Artists and Animators (27-1014)	766	792	26	3%	66	$14.46	$24.25	$33.19
Total	**6,209**	**6,442**	**233**	**4%**	**474**			

Exhibit 6. Los Angeles and Orange Counties

Occupation (SOC)	2018 Jobs	2023 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75th Percentile)
Computer Occupations, All Other (15-1199)	15,995	16,471	476	3%	1,167	$25.69	$37.39	$53.07

Occupation (SOC)	2018 Jobs	2023 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75th Percentile)
Multimedia Artists and Animators (27-1014)	7,979	7,422	(557)	(7%)	614	$17.99	$32.21	$45.44
Total	**23,974**	**23,893**	**(81)**	**(0%)**	**1,781**			

Appendix B: Sources

- O*NET Online
- Labor Insight/Jobs (Burning Glass)
- Economic Modeling Specialists, International (EMSI)
- Bureau of Labor Statistics (BLS)
- Employment Development Department, Labor Market Information Division, OES
- Employment Development Department, Unemployment Insurance Dataset
- Living Insight Center for Community Economic Development
- California Community Colleges Chancellor's Office Management Information Systems (MIS)
- California Family Needs Calculator, Insight Center for Community Economic Development
- Chancellor's Office Curriculum Inventory (COCI 2.0)

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