CALIFORNIA COMMUNITY COLLEGES
ECONOMIC & WORKFORCE DEVELOPMENT PROGRAM

BUSINESS AND WORKFORCE
PERFORMANCE IMPROVEMENT INITIATIVE

Industry Scan Report
Los Angeles, Orange, and San Francisco Bay Regions

Video and Computer Game Occupational Profiles Report

Centers of Excellence for
Los Angeles, Greater Silicon Valley and Bay Region

October 2006

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Video and Computer Game Occupational Profiles Report

October 2006

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Centers of Excellence for Los Angeles, Greater Silicon Valley and Bay Region
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THE BUSINESS AND WORKFORCE PERFORMANCE IMPROVEMENT INITIATIVE IS A GRANT-FUNDED PROJECT THROUGH THE ECONOMIC & WORKFORCE DEVELOPMENT PROGRAM OF THE CALIFORNIA COMMUNITY COLLEGES. OUR MISSION IS TO STRENGTHEN CALIFORNIA'S WORKFORCE AND ADVANCE ECONOMIC GROWTH THROUGH EDUCATION, TRAINING AND JOB DEVELOPMENT.

Acknowledgement

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BASED ON A 2006 SURVEY OF VIDEO AND COMPUTER GAME EMPLOYERS IN BOTH THE LOS ANGELES/ORANGE COUNTY AND SAN FRANCISCO BAY REGIONS, IT IS ESTIMATED THAT VIDEO AND COMPUTER GAME COMPANIES WILL REQUIRE AN ADDITIONAL 2,500 TO 4,500 WORKERS OVER THE NEXT 12 MONTHS ACROSS BOTH REGIONS, WHILE COMPANIES THAT PROVIDE SERVICES TO THE INDUSTRY MAY REQUIRE AN ADDITIONAL 1,500 TO 2,500 EMPLOYEES ACROSS BOTH REGIONS. *Source: Godbe Research*

Summary

The Video and Computer Game Occupational Profiles Report contains detailed information and data about the video and computer game occupations that have been validated by primary research. This report is a compilation of findings about the occupations obtained by surveying employers in the industry.

The Video and Computer Game Occupational Profiles Report is a companion to the **Industry Scan Report** prepared by the Centers of Excellence for Los Angeles, Greater Silicon Valley and Bay Region**.** The Industry Scan Report confirms the video and computer game industry is an emerging and growing sector in the Los Angeles/Orange County and San Francisco Bay regions of California. With increasing employment opportunities, livable wages and a defined career path for advancement, the industry's growth presents strong opportunities for community colleges to build upon their existing programs.

In the **Industry Scan Report**, video and computer game occupations were grouped into the following five functions:

- Game design
- Art
- Programming
- Production
- Testing

To validate the needs of the industry, the Centers of Excellence contracted with Godbe Research to survey video and computer game firms in the regions described above**.** A survey questionnaire (See Appendix A) was developed that obtained information about each occupational function within the following areas:

- Current Employment
- Projected Employment
- Occupational Shortage Indicators
- Entry-Level Job Titles
- Entry-Level Education Requirements
- Entry-Level Work Experience
- Entry-Level Skill Requirements
- Entry-Level Skill Deficiencies
- Wage Level

A copy of the **Industry Scan Report** is available at: http://cccewd.net/resource.cfm?i=8

OCCUPATIONAL OUTLOOK

Occupational Overview

In order to gain an insight into the future direction of occupational trends in the video and computer game industry, employers were interviewed specifically about their employees in five occupational functions: Game design, art, programming, production, and testing. Table 1 on page 3 provides an overview of the main findings for each occupational function, and allows for a comparison of the findings across the different functions.

Strong Occupational Employment Growth

Employment demand is expected to be strong across all occupational groups over the next year, while the highest percentage growth is expected in the game design and programming functions. The expected increases in employment for each function are as follows:

- Game design – 33% growth;
- Programming – 31% growth;
- Art – 28% growth;
- Testing – 25% growth;
- Production – 19% growth.

Occupational employment growth is expected to be particularly strong in the Los Angeles and Orange County region; responding companies indicated that that they expect to increase overall employment by 44 percent across all occupational functions in the next 12 months. By comparison, employment growth in the Bay Area region is also expected to be strong, rising by an expected 16 percent across all five occupational groups in the next year.

Employee Demand Exceeds Supply

The survey findings also provided strong indications that current demand for video and computer game employees exceeds supply in the programming, art, game design, and production functions. In the programming function, for example, 80 percent of employers faced either “Some” or “Great” difficulty finding suitable applicants, while 30 percent said they “Always” or “Frequently” hired new recruits from outside of California. By comparison, there was less indication of a current shortage of applicants for the game testing function as only three percent of respondents had to recruit new hires from outside the state. For this occupational function, 33 percent of employers reported facing either “Some” or “Great” difficulty finding suitable applicants.

Table 1 Summary of Occupational Findings by Function

All Positions	Game Design	Art	Programming	Production	Testing
Number of Companies	48	53	44	61	31
Avg. Employees per Company	7.3	17.8	21.5	10.4	26.6
Current Employees	349	943	945	633	825
Projected Employees in 12m	463	1,208	1,237	753	1,032
Emp. Growth over Next 12m	33%	28%	31%	19%	25%
% Increasing Emp. over Next 12m	51%	70%	67%	52%	56%
Some/Great Difficulty Finding Applicants	73%	67%	80%	63%	33%
Always/Frequently Recruit from Outside California	26%	30%	30%	22%	3%
Entry-Level Positions					
Typical Job Title	Junior Game Designer	Artist	Junior Programmer	Assistant Producer	Game Tester
% Require Bach. or Higher	44%	45%	78%	51%	27%
% Require Less than a Bach.	56%	55%	22%	49%	73%
Median Work Experience	< 1 year	< 1 year	1-2 years	1-2 years	No formal experience
Most Important Skill	Creative	Artistic	Technical competence	Interpersonal	Written communication
Biggest Skill Deficiency	Technical competence	Technical competence	Technical competence	Interpersonal	Technical competence
Typical Salary (US)	$43,486	$45,675	$52,989	$51,364	$24,797

OCCUPATIONAL PROFILES

Game Design

Description

Game designers write the game concept, story lines, character interactions, and game play elements, including the mission, theme, and rules of play. Occupations in this group include lead designer, game designer, and level designer.

Current Employment

The first occupational question of the survey (See Appendix A for complete Survey Questionnaire) covering the game design function asked respondents to record the number of employees currently working in this function at their business location.

> Q10a. How many **total** employees currently work specifically on game design at your location?

Of the 93 responding companies, 31 reported that they did not currently have any individuals employed in the game design function at their business location, while a further 14 respondents either did not know how many employees worked in this function or failed to provide a response to this question. The remaining 48 companies which provided a response to this question employed a total of 349 game design individuals at their business locations, ranging from one game design employee at nine locations, up to 61 at one location. The average number of game design employees per business location was 7.3, while the median number of employees was lower at three.

The majority of game design employees (95%) worked for Sample A companies. A total of 332 individuals were employed across 41 Sample A companies, averaging 8.1 per business location. By comparison, just seven Sample B companies reported employing a total of 17 game design employees, an average of 2.4 per business location. In the Bay Area region, a total of 20 companies reported employing 145 workers in the game design function, an average of 7.3 employees per company. By comparison, 28 companies in the Los Angeles and Orange County region employed a total of 204 game design workers, also averaging 7.3 per company.

Table 2 Current Game Design Employment by Sample Group and Region

Company Group/ Region	Total Employees	Number of Companies	Average Employees per Company
Sample A	332	41	8.1
Sample B	17	7	2.4
Bay Area	145	20	7.3
LA/OC	204	28	7.3
All Companies	**349**	**48**	**7.3**

Across the five occupational functions covered by this study, game design employees represented nine percent of all individuals employed in these functions.

Projected Employment

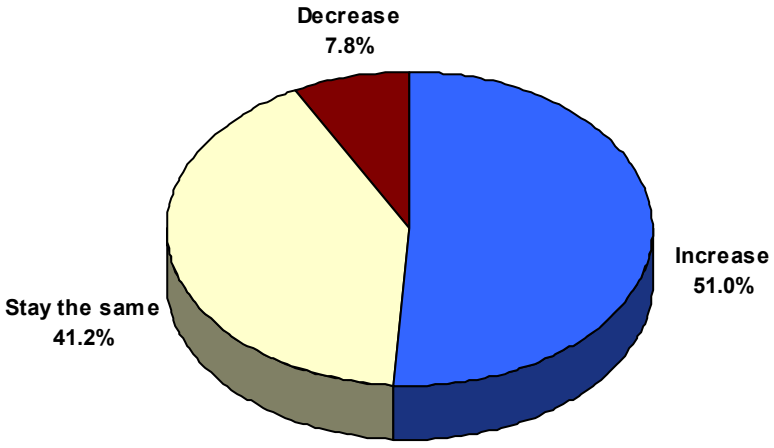
The next occupational question of the survey covering the game design function asked respondents to estimate the number of workers employed in this function at their business location in 12 months' time.

> Q11a. How many employees do you estimate will be employed in game design at your location in 12 months' time?

Of the 93 responding companies, 27 reported that they did not expect to have any individuals employed in the game design function at their business location in 12 months' time, while a further 26 respondents either did not know how many employees worked in this function or failed to provide a response to this question. Where companies provided details of current employment levels but did not provide an estimate of employment for this function in 12 months' time, the overall company growth rate for the next 12 months was used to estimate the number of game design employees in 12 months' time at these companies.

Short-term total employment growth within the game design function across all companies was found to be particularly strong, rising by 33 percent over the next 12 months. On average, companies expected to add an additional 2.2 game design employees per business location over the next 12 months, while the median growth per company was one additional employee (see Table 3 on page 6). Overall, eight percent of companies expected that the number of game design employees would fall over the next 12 months, 41 percent expected the number to stay the same, while 51 percent expected to increase the number of employees in this job function (see Figure 1).

Figure 1 Expected Change in Game Design Employees over the Next 12 Months



In Sample A companies, total employment growth within the game design function over the next 12 months was slightly higher than the average for all companies, at 34 percent. By comparison, overall growth for Sample B companies was lower at 12 percent (note: the Sample B growth rate should be treated with caution as it is based on a small number of companies and total employees). On average, Sample A companies expected to add an additional 2.7 game design employees per business location over the next 12 months, while the median growth per company was one additional employee (see Table 3). Overall, five percent of Sample A companies expected that the number of game design employees would fall over the next 12 months, 43 percent expected the number to stay the same, while 52 percent expected to increase the number of employees in this job function.

By region, total employment growth was forecast to be strongest in the Los Angeles and Orange County region, with companies reporting that they expect to employ 40 percent more game design employees in 12 months time. By comparison, overall growth for Bay Area companies was lower, but still strong at 23 percent. On average, Bay Area companies expected to add an additional 1.6 game design employees per business location over the next 12 months, while companies in the Los Angeles and Orange County region expected to hire an additional 2.7 game design employees on average over the next year.

Overall, 10 percent of Bay Area companies expected that the number of game design employees will decrease over the next 12 months, 38 percent expected the number to stay the same, while 52 percent expected to increase the number of employees in this job function. In Los Angeles and Orange County, seven percent of companies expected that the number of game design employees would fall over the next 12 months, 43 percent expected the number to stay the same, while 50 percent expected to increase the number of employees in this job function.

Table 3 Game Design Employment Growth by Sample Group and Region

Company Group/ Region	Current Employment	Projected Employment in 12 Months	Employment Growth (%)	Average Employee Growth per Company
Sample A	332	444	33.7%	2.7
Sample B	17	19	11.8%	0.2
Bay Area	145	178	22.8%	1.6
LA/OC	204	285	39.7%	2.7
All Companies	**349**	**463**	**32.7%**	**2.2**

Occupational Shortage Indicators

In order to help determine whether there is a current shortage of suitable game design applicants, companies were first asked to record the level of difficulty faced finding applicants who met the company's hiring standards.

> Q12a. Please tell me whether your business has no difficulty, some difficulty, or great difficulty finding applicants for the game design occupational group.

Figure 2 below shows that a majority of companies involved in the video and computer game industry faced difficulties finding suitable game design recruits who met their company's hiring standards. Of the companies that provided a response to this question, which excludes the "DK/NA" responses, 73 percent faced at least "Some difficulty" finding suitable applicants for this job function, while just under a third (32%) faced "Great difficulty." This finding provides some indication that there is either a current shortage of game designers seeking employment, or that the skills, education, and training of game designers who are seeking employment do not meet company hiring standards.

Figure 2 Difficulty Finding Game Design Applicants

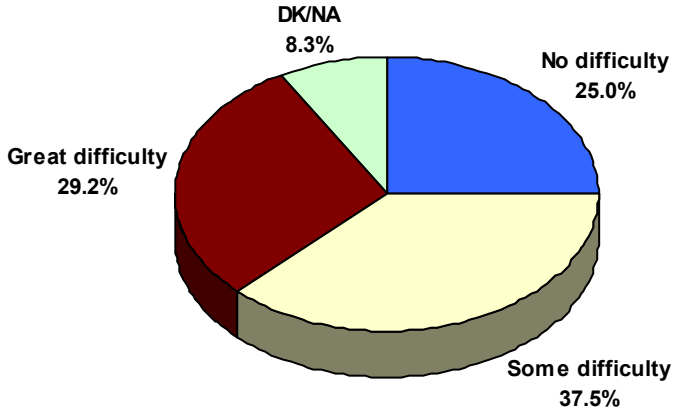
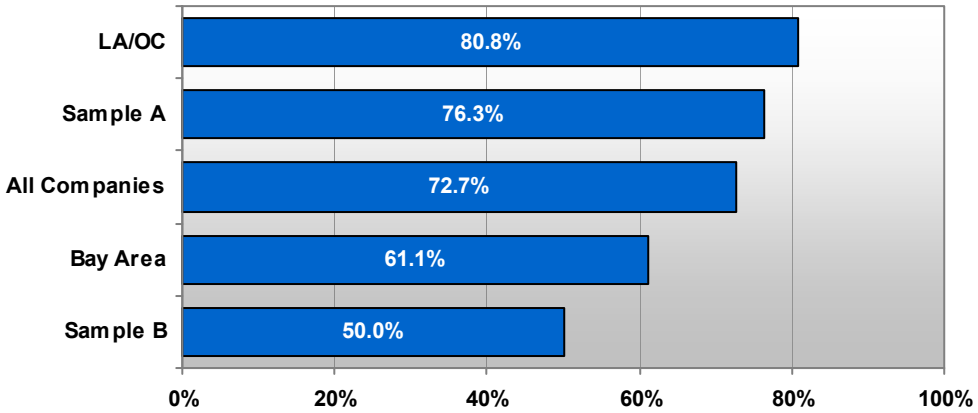


Figure 3 shows that companies based in Los Angeles and Orange County reported the most difficulty finding suitable game design applicants. Over 80 percent of companies that provided a response to this question faced either "Some" or "Great" difficulty finding suitable applicants for this function.

Figure 3 Difficulty Finding Game Design Applicants by Sample Group and Region



The next question asked companies to indicate how often they recruited individuals from outside of California for the game design function.

> Q13a. Please indicate if you always, frequently, sometimes, rarely, or never recruit individuals from outside of California for the game design function.

Figure 4 below shows that a minority of companies involved in the video and computer game industry reported that they "Rarely" or "Never" recruited game design employees from outside of California. Of the companies that provided a response to this question, which excludes the "DK/NA" responses, 26 percent "Always" or "Frequently" recruited candidates from outside the state, while a further 34 percent "Sometimes" hired non-Californian game design employees. These findings provide further indication that there is either a current shortage of California-based game designers seeking employment, or that the skills, education, and training of game designers who reside in the state do not meet company hiring standards.

Figure 4 Frequency Companies Recruit Game Designers from Outside California

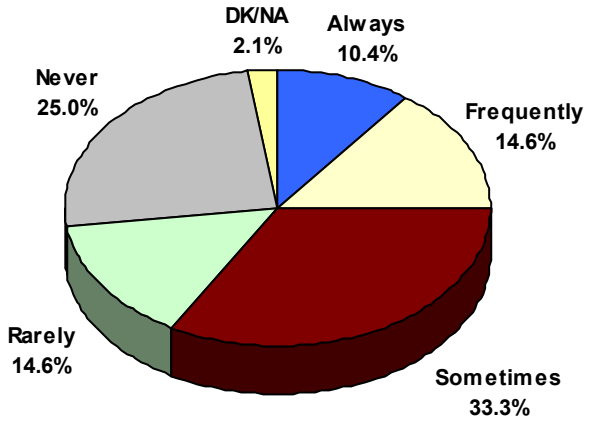
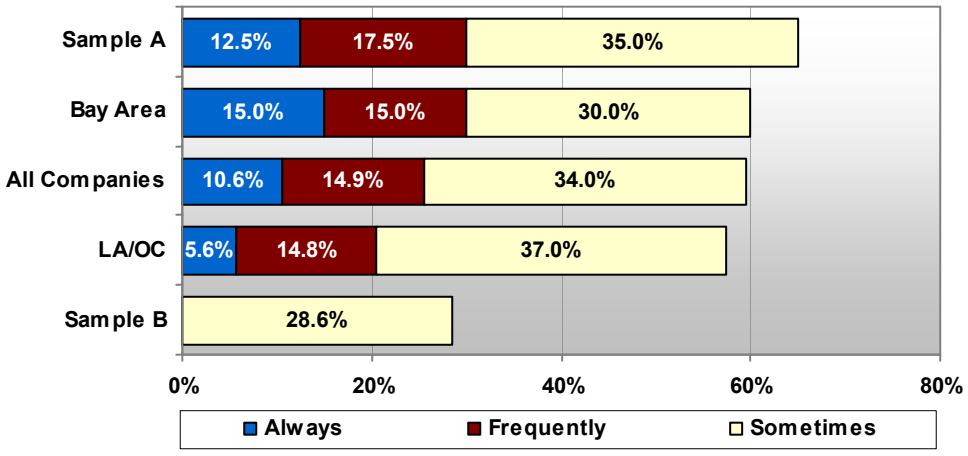


Figure 5 shows that Sample A companies were the most likely to recruit game design candidates from outside of California. Sixty-five percent of companies that provided a response to this question either "Sometimes," "Frequently," or "Always" recruited employees from outside the state for this function.

Figure 5 Recruitment of Game Design Employees from Outside California by Sample Group and Region

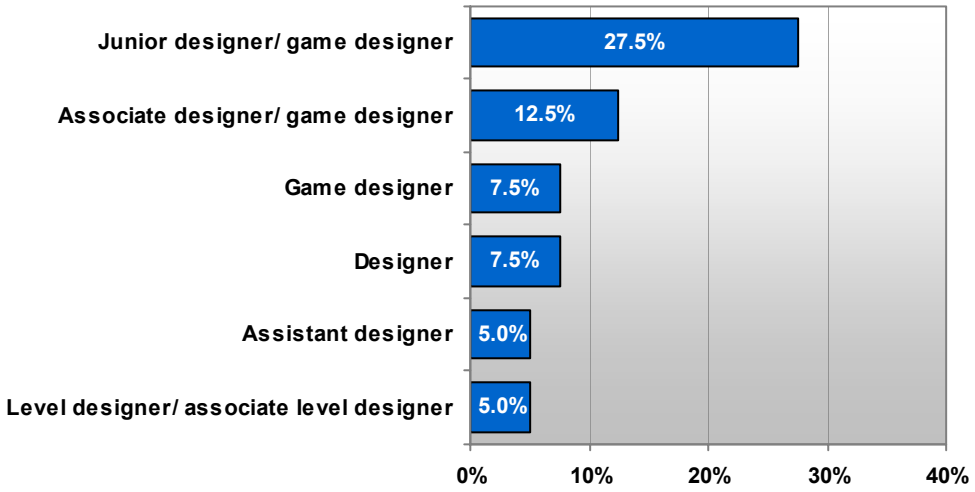


Entry-Level Job Titles

Q14a. What are the occupational job titles which your company uses for **entry-level** positions in the game design function?

The most frequently used job title for entry-level employees in the game design function was "Junior designer" or "Junior game designer," with 28 percent of respondents indicating that they use this job title at their company. Figure 6 indicates the most frequently used job titles and the proportion of companies which reported using them. In addition to the reported job titles, five percent of companies indicated that they do not hire entry-level employees in the game design function.

Figure 6 Entry-Level Game Design Job Titles

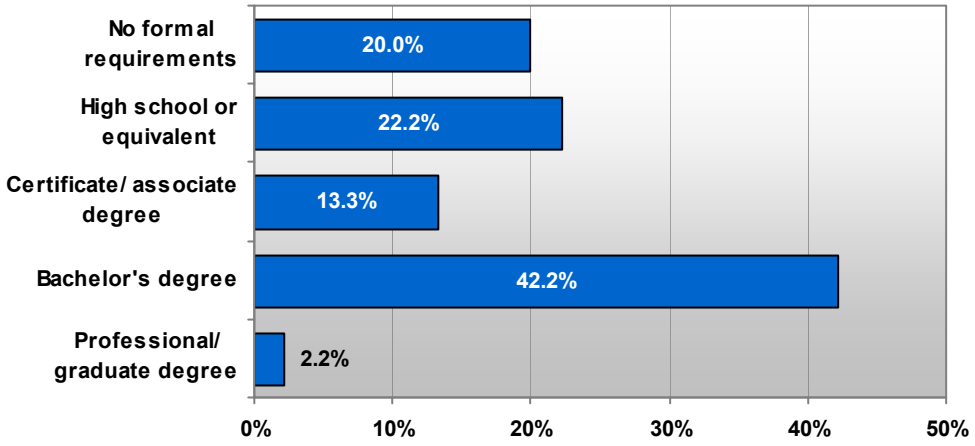


Entry-Level Education Requirements

Q15a. What is the typical education requirement for successful **entry-level** applicants within the game design function?

The most frequently requested education requirement for entry-level employees in the game design function was a "Bachelor's degree" (42%), followed by "Completion of high school or equivalent" (22%). Overall, 56 percent of respondents indicated that entry-level game design positions do not require either a bachelor's, professional, or graduate degree.

Figure 7 Entry-Level Game Design Education Requirements

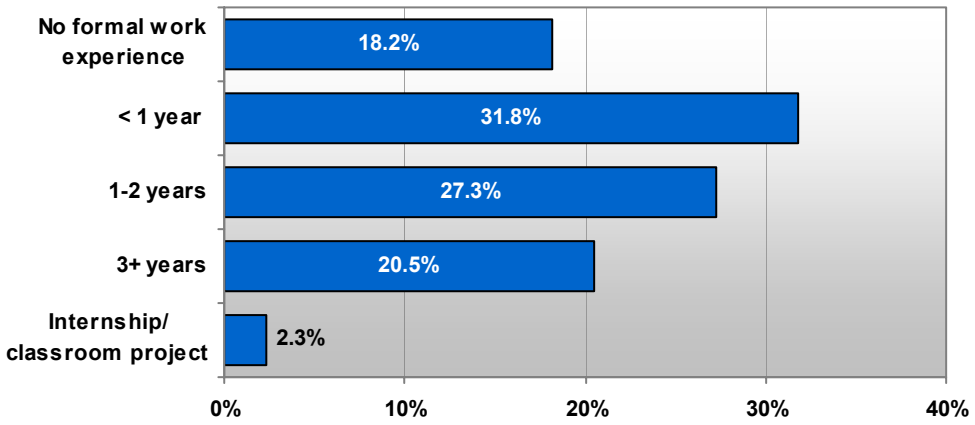


Entry-Level Work Experience

Q16a. What is the typical level of related work experience for **entry-level** applicants in the game design function at your location?

The most frequently requested work experience requirement for entry-level employees in the game design function was "Up to one year of work experience in a related occupation" (32%), followed by "One to two years' experience in a related occupation" (27%).

Figure 8 Entry-Level Game Design Work Experience Requirements

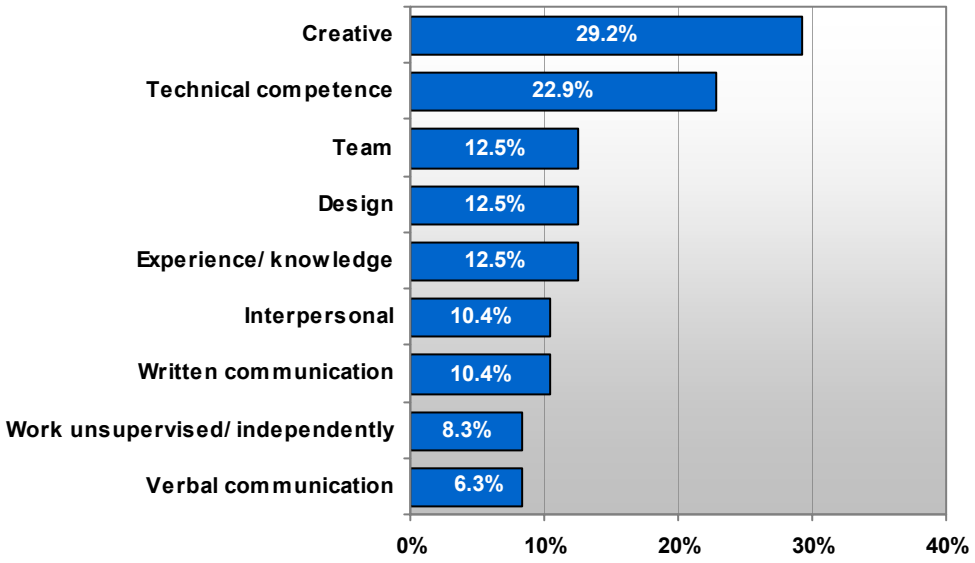


Entry-Level Skill Requirements

Q17a. Please tell me what the most important skills are when considering **entry-level** applicants for occupations in the game design function.

The survey found that the most important skills required for entry-level game design employees were "Creative skills" (indicated by 29% of employers) and "Technical competence" (23%). A total of 18 skills of importance were indicated by employers for this job function.

Figure 9 Skills of Importance for Entry-Level Game Designers

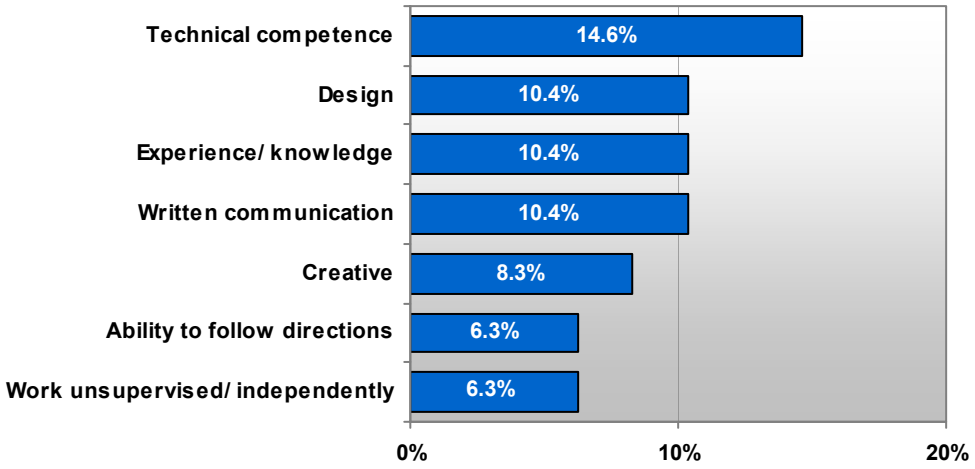


Entry-Level Skill Deficiencies

Q18a. Please tell me which skills your **entry-level** game design employees are currently most deficient in.

The main skill deficiencies found among entry-level game design employees were "Technical competence" (indicated by 15% of employers), "Design skills" (10%), and "Written communication skills" (10%), while 10 percent of employers also highlighted a general lack of experience and/or knowledge. A total of 19 skill deficiencies were indicated by employers for this job function.

Figure 10 Skill Deficiencies of Entry-Level Game Designers



Wage Levels

Table 4 shows that the average entry-level wage for game designers in the US video and computer game industry was $43,486. By comparison, the average wage for all game designers was $63,986. As salary levels in California tend to be higher than the national average, it is estimated that entry-level game designers in the state typically earn around $45,000 a year on average.

Table 4 Game Design Wage Levels

Job Title	Experience	Annual Average Salary
Game Designer	Up to 3 years	$43,486
Game Designer	3-6 years	$54,777
Game Designer	Over 6 years	$69,813
Writer	Up to 3 years	$51,944
Writer	3-6 years	$61,000
Creative Director / Lead Designer	3-6 years	$72,125
Creative Director / Lead Designer	Over 6 years	$88,734

Source: Game Developer's 5th Annual Salary Survey, April 2006

Art

Description

Artists create images and are responsible for all graphic elements of the game, including characters, character movements, and environments, using traditional or computer skills. Also included in this group are those responsible for music and sound composition. Occupations include artist, lead artist, character artist, animator, texture artist, and sound designer.

Current Employment

The first occupational question of the survey covering the art function asked respondents to record the number of employees currently working in this function at their business location.

> Q10b. How many **total** employees currently work specifically on art at your location?

Of the 93 responding companies, 26 reported that they did not currently have any individuals employed in the art function at their business location, while a further 14 respondents either did not know how many employees worked in this function or failed to provide a response to this question. The remaining 53 companies which provided a response to this question employed a total of 943 art individuals at their business locations, ranging from one art employee at eight locations, up to 300 at one location. The average number of art employees per business location was 17.8, while the median number of employees was lower at five.

The majority of art employees (91%) worked for Sample A companies. A total of 855 individuals were employed across 39 Sample A companies, averaging 21.9 per business location. By comparison, 14 Sample B companies reported employing a total of 88 art employees, an average of 6.3 per business location. In the Bay Area region, a total of 23 companies reported employing 536 workers in the art function, an average of 23.3 employees per company. By comparison, 30 companies in the Los Angeles and Orange County region employed a total of 407 art workers, averaging 13.6 per company.

Table 5 Current Art Employment by Sample Group and Region

Company Group/ Region	Total Employees	Number of Companies	Average Employees per Company
Sample A	855	39	21.9
Sample B	88	14	6.3
Bay Area	536	23	23.3
LA/OC	407	30	13.6
All Companies	**943**	**53**	**17.8**

Across the five occupational functions covered by this study, art employees represented 26 percent of all individuals employed in these functions.

Projected Employment

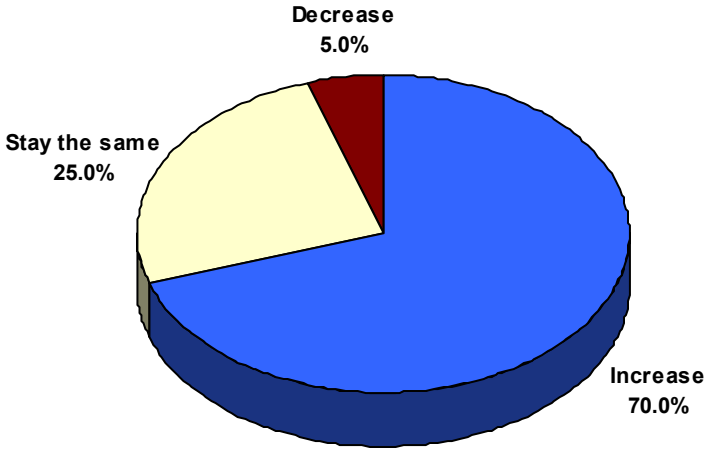
The next occupational question of the survey covering the art function asked respondents to estimate the number of workers employed in this function at their business location in 12 months' time.

> Q11b. How many employees do you estimate will be employed in art at your location in 12 months' time?

Of the 93 responding companies, 18 reported that they did not expect to have any individuals employed in the art function at their business location in 12 months' time, while a further 26 respondents either did not know how many employees worked in this function or failed to provide a response to this question. Where companies provided details of current employment levels but did not provide an estimate of employment for this function in 12 months' time, the overall company growth rate for the next 12 months was used to estimate the number of art employees in 12 months' time at these companies.

Short-term total employment growth within the art function across all companies was found to be particularly strong, rising by 28 percent over the next 12 months. On average, companies expected to add an additional 4.4 art employees per business location over the next 12 months, while the median growth per company was one additional employee. Overall, five percent of companies expected that the number of art employees would fall over the next 12 months, 25 percent expected the number to stay the same, while 70 percent expected to increase the number of employees in this job function.

Figure 11 Expected Change in Art Employees over the Next 12 Months



In Sample A companies, total employment growth within the art function over the next 12 months was the same as the average for all companies, at 28 percent. By comparison, overall growth for Sample B companies was lower at 25 percent. On average, Sample A companies expected to add an additional 5.4 art employees per business location over the next 12 months, while the median growth per company was two additional employees. Overall, seven percent of Sample A companies expected that the number of art employees would fall over the next 12 months, 20 percent expected the number to stay the same, while 73 percent expected to increase the number of employees in this job function.

By region, total employment growth was forecast to be strongest in the Los Angeles and Orange County region, with companies reporting that they expect to employ 42 percent more art employees in 12 months time. By comparison, overall growth for Bay Area companies was lower, but still strong at 18 percent. On average, Bay Area companies expected to add an additional 3.8 art employees per business location over the next 12 months, while companies in the Los Angeles and Orange County region expected to hire an additional 4.9 art employees on average over the next year.

Overall, eight percent of Bay Area companies expected that the number of game design employees will decrease over the next 12 months, 28 percent expected the number to stay the same, while 64 percent expected to increase the number of employees in this job function. In Los Angeles and Orange County, three percent of companies expected that the number of art employees would fall over the next 12 months, 23 percent expected the number to stay the same, while 74 percent expected to increase the number of employees in this job function.

Table 6 Art Employment Growth by Sample Group and Region

Company Group/ Region	Current Employment	Projected Employment in 12 Months	Employment Growth (%)	Average Employee Growth per Company
Sample A	855	1,098	28.4%	5.4
Sample B	88	110	25.0%	4.5
Bay Area	536	631	17.7%	3.8
LA/OC	407	577	41.8%	4.9
All Companies	**943**	**1,208**	**28.1%**	**4.4**

Occupational Shortage Indicators

In order to help determine whether there is a current shortage of suitable applicants for the art function, companies were first asked to record the level of difficulty faced finding applicants who met the company's hiring standards.

> Q12b. Please tell me whether your business has no difficulty, some difficulty, or great difficulty finding applicants for the art occupational group.

Figure 12 below shows that a majority of companies involved in the video and computer game industry faced at least "Some" difficulty finding suitable art recruits who met their company's hiring standards. Of the companies that provided a response to this question, which excludes the "DK/NA" responses, two-thirds (67%) faced at least "Some difficulty" finding suitable applicants for this job function, while just under a quarter (23%) faced "Great difficulty." This finding provides some indication that there is either a current shortage of game artists seeking employment, or that the skills, education, and training of game artists who are seeking employment do not meet company hiring standards.

Figure 12 Difficulty Finding Art Applicants

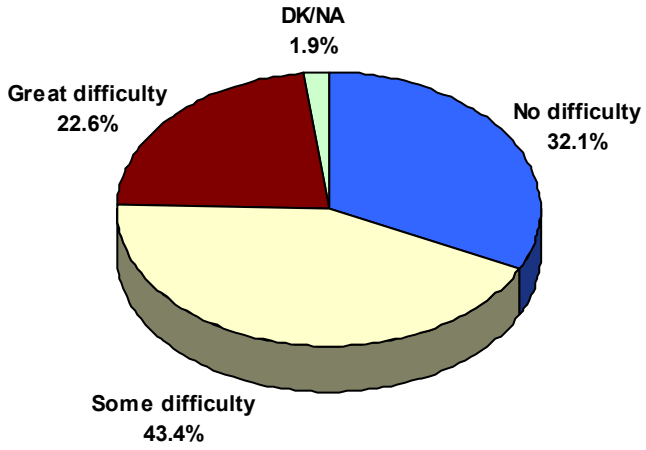
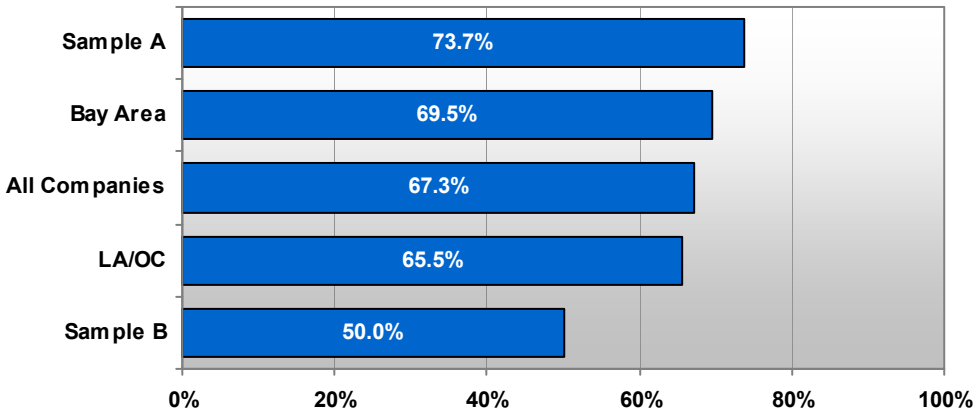


Figure 13 shows that Sample A companies and those based in the Bay Area reported the most difficulty finding suitable art applicants. Seventy-four percent of Sample A companies and 70 percent of Bay Area companies faced either "Some" or "Great" difficulty finding suitable applicants for this function.

Figure 13 Difficulty Finding Art Applicants by Sample Group and Region



The next question asked companies to indicate how often they recruited individuals from outside of California for the art function.

> Q13b. Please indicate if you always, frequently, sometimes, rarely, or never recruit individuals from outside of California for the art function.

Figure 14 below shows that just under half the companies involved in the video and computer game industry reported that they "Rarely" or "Never" recruited art employees from outside of California. Overall, 30 percent of respondents indicated that they "Always" or "Frequently" recruited candidates from outside the state, while a further 21 percent "Sometimes" hired non-Californian art employees. These findings provide further indication that there is either a current shortage of California-based game artists seeking employment, or that the skills, education, and training of game artists who reside in the state do not meet company hiring standards.

Figure 14 Frequency Companies Recruit Art Employees from Outside California

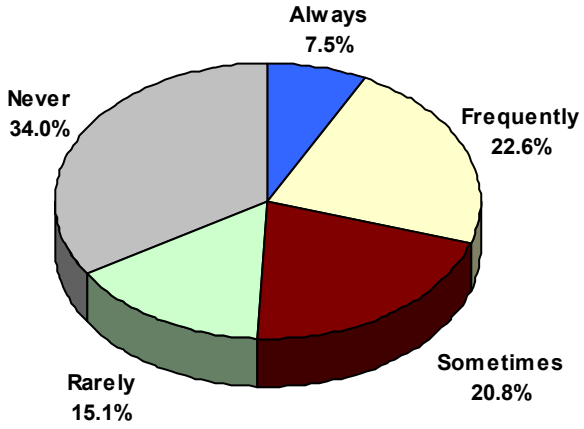
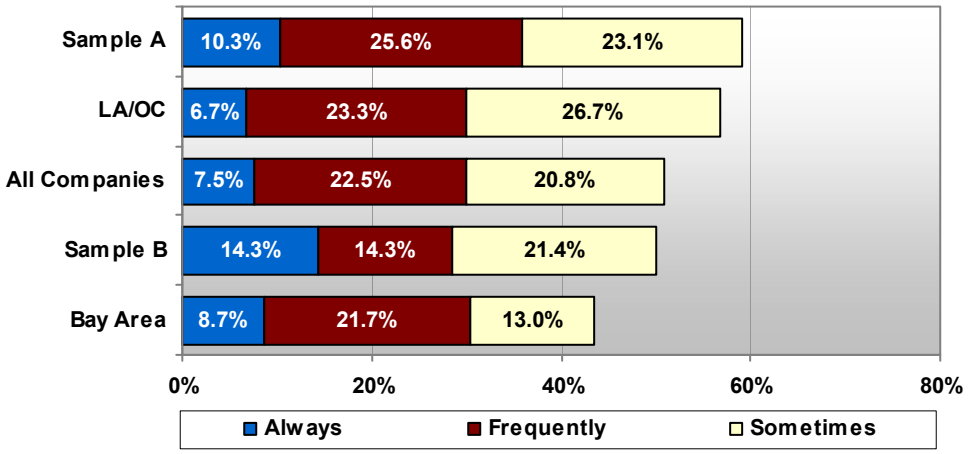


Figure 15 shows that Sample A companies were the most likely to recruit artists and animators from outside of California. Fifty-nine percent of companies that provided a response to this question either "Sometimes," "Frequently," or "Always" recruited employees from outside the state for this function.

Figure 15 Recruiting Art Employees from Outside California by Sample Group and Region

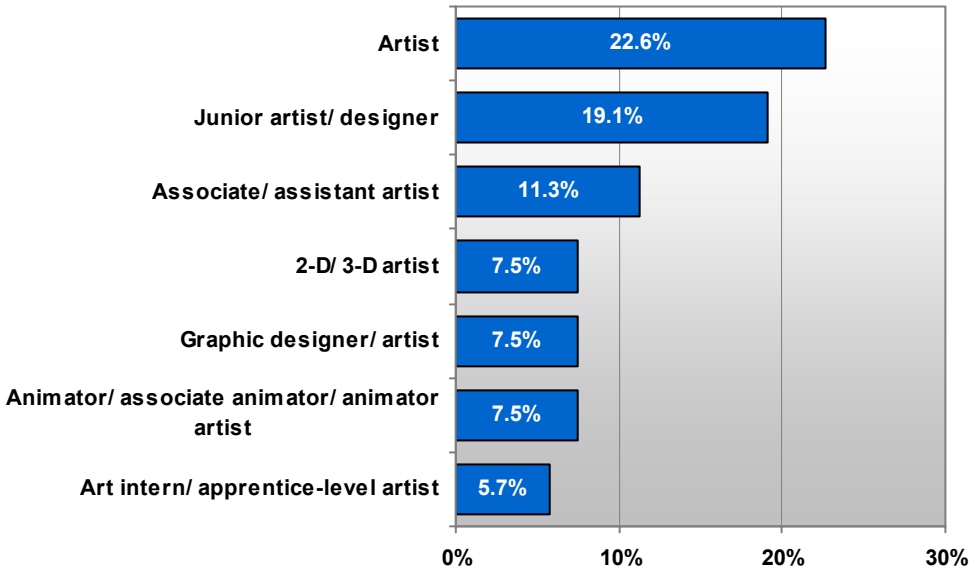


Entry-Level Job Titles

Q14b. What are the occupational job titles which your company uses for **entry-level** positions in the art function?

The most frequently used job title for entry-level employees in the art function was "Artist" with 23 percent of respondents indicating that they use this job title at their company. Figure 16 indicates the most frequently used job titles and the proportion of companies which reported using them. In addition to the reported job titles, two percent of companies indicated that they do not hire entry-level employees in the art function.

Figure 16 Entry-Level Art Job Titles

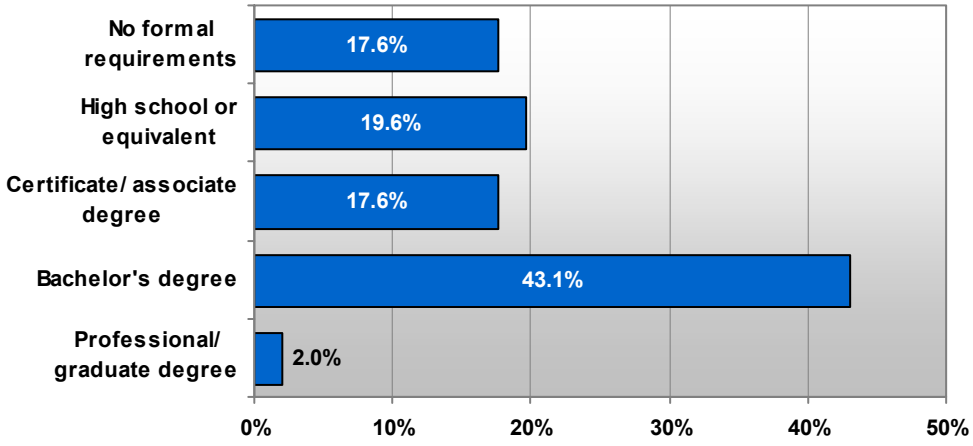


Entry-Level Education Requirements

Q15b. What is the typical education requirement for successful **entry-level** applicants within the art function?

The most frequently requested education requirement for entry-level employees in the art function was a "Bachelor's degree" (43%), followed by "Completion of high school or equivalent" (20%). Overall, 55 percent of respondents indicated that entry-level art positions do not require either a bachelor's, professional, or graduate degree.

Figure 17 Entry-Level Art Education Requirements

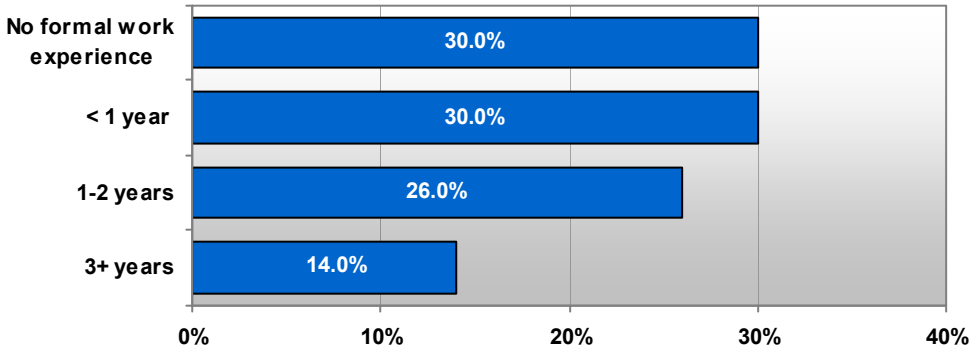


Entry-Level Work Experience

Q16b. What is the typical level of related work experience for **entry-level** applicants in the art function at your location?

The most frequently requested work experience requirements for entry-level employees in the art function were "No formal work experience"(30%) and "Up to one year of work experience in a related occupation" (30%).

Figure 18 Entry-Level Art Work Experience Requirements

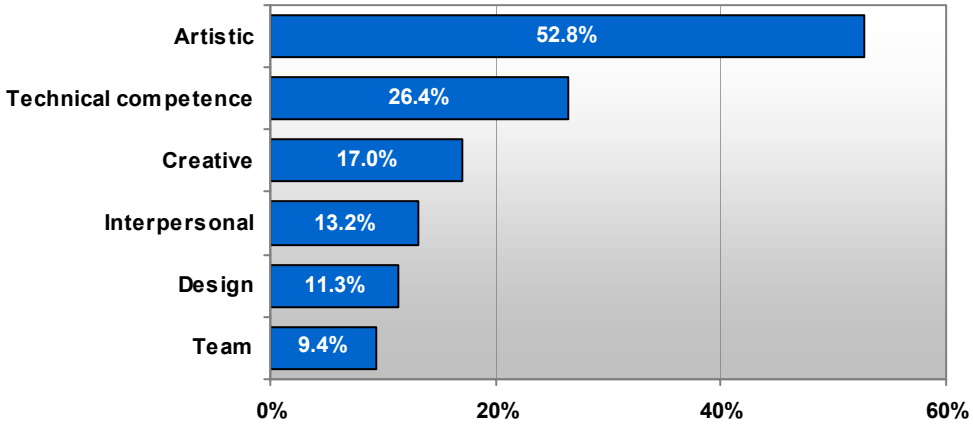


Entry-Level Skill Requirements

Q17b. Please tell me what the most important skills are when considering **entry-level** applicants for occupations in the art function.

The survey found that the most important skills required for entry-level art employees were “Artistic skills” (indicated by 53% of employers), “Technical competence” (26%), and “Creative skills” (17%). A total of 18 skills of importance were indicated by employers for this job function.

Figure 19 Skills of Importance for Entry-Level Artists

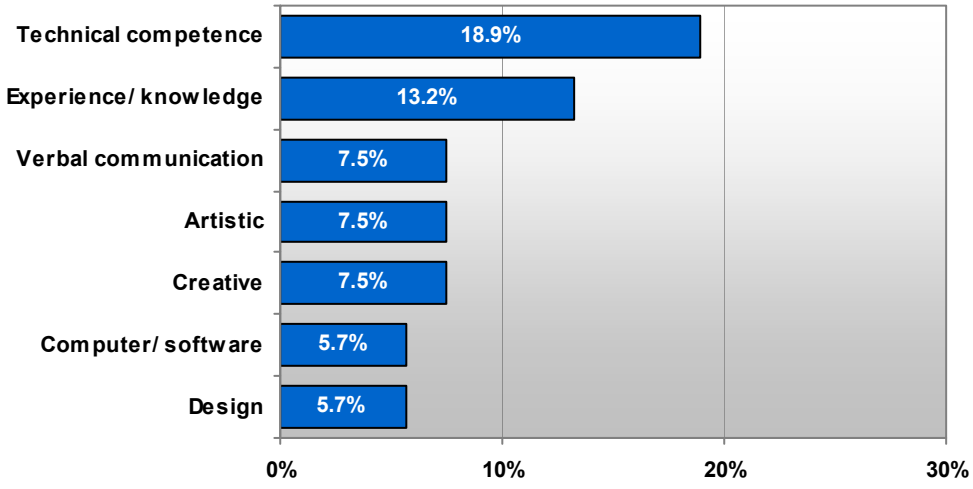


Entry-Level Skill Deficiencies

Q18b. Please tell me which skills your **entry-level** art employees are currently most deficient in.

The main skill deficiency found among entry-level art employees was “Technical competence” (indicated by 19% of employers), while 13 percent of employers also highlighted a general lack of experience and/or knowledge. A total of 15 skill deficiencies were indicated by employers for this job function.

Figure 20 Skill Deficiencies of Entry-Level Artists



Wage Levels

Table 7 shows that the average entry-level wage for artists and animators in the US video and computer game industry was $45,675. As salary levels in California tend to be higher than the national average, it is estimated that entry-level game designers in the state typically earn around $48,000 a year on average.

Table 7 Art Wage Levels

Job Title	Experience	Annual Average Salary
Artist / Animator	Up to 3 years	$45,675
Artist / Animator	3-6 years	$61,065
Artist / Animator	Over 6 years	$69,457
Lead Artist / Animator	3-6 years	$68,112
Lead Artist / Animator	Over 6 years	$82,750
Art Director	3-6 years	$65,313
Art Director	Over 6 years	$98,696
Sound / Audio Designer or Engineer, or Composer / Musician	Up to 3 years	$51,959
Sound / Audio Designer or Engineer, or Composer / Musician	3-6 years	$60,093
Sound / Audio Designer or Engineer, or Composer / Musician	Over 6 years	$82,666
Sound / Audio Director	3-6 years	$62,206
Sound / Audio Director	Over 6 years	$90,833

Source: Game Developer's 5th Annual Salary Survey, April 2006

Programming

Description

Programmers or engineers are responsible for writing the code and for the development of game-related software, such as game development tools. Occupations in this function include junior programmer, software engineer, game programmer, AI programmer, and graphics programmer.

Current Employment

The first occupational question of the survey covering the programming function asked respondents to record the number of employees currently working in this function at their business location.

> Q10c. How many **total** employees currently work specifically on programming at your location?

Of the 93 responding companies, 35 reported that they did not currently have any individuals employed in the programming function at their business location, while 14 respondents either did not know how many employees worked in this function or failed to provide a response to this question. The remaining 44 companies which provided a response to this question employed a total of 945 programming individuals at their business locations, ranging from one programming employee at six locations, up to 300 at one location. The average number of programming employees per business location was 21.5, while the median number of employees was lower at 4.5.

The majority of programming employees (79%) worked for Sample A companies. A total of 743 individuals were employed across 34 Sample A companies, averaging 21.9 per business location. By comparison, 10 Sample B companies reported employing a total of 202 programming employees, an average of 20.2 per business location. In the Bay Area region, a total of 18 companies reported employing 670 workers in the programming function, an average of 37.2 employees per company. By comparison, 26 companies in the Los Angeles and Orange County region employed a total of 275 programming workers, averaging 10.6 per company.

Table 8 Current Programming Employment by Sample Group and Region

Company Group/ Region	Total Employees	Number of Companies	Average Employees per Company
Sample A	743	34	21.9
Sample B	202	10	20.2
Bay Area	670	18	37.2
LA/OC	275	26	10.6
Bay Area Sample A	486	15	32.4
LA/OC Sample A	257	19	13.5
Bay Area Sample B	184	3	61.3
LA/OC Sample B	18	7	2.6
All Companies	**945**	**44**	**21.5**

A further analysis of the data by sample group and region found that the average number of programming employees in Sample A companies was higher in the Bay Area region (32.4) compared to the Los Angeles and Orange County region (13.5). This was also the case for Sample B companies, although this breakdown must be treated with caution due to very low sample sizes.

Across the five occupational functions covered by this study, programming employees represented 26 percent of all individuals employed in these functions.

Projected Employment

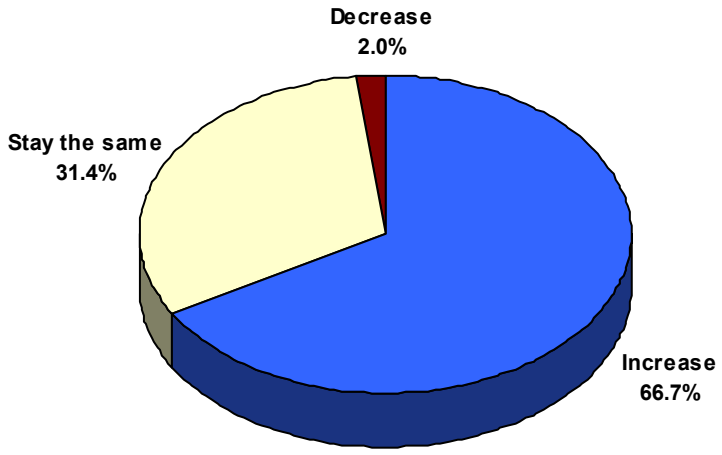
The next occupational question of the survey covering the programming function asked respondents to estimate the number of workers employed in this function at their business location in 12 months' time.

> Q11c. How many employees do you estimate will be employed in programming at your location in 12 months' time?

Of the 93 responding companies, 25 reported that they did not expect to have any individuals employed in the programming function at their business location in 12 months' time, while a further 26 respondents either did not know how many employees worked in this function or failed to provide a response to this question. Where companies provided details of current employment levels but did not provide an estimate of employment for this function in 12 months' time, the overall company growth rate for the next 12 months was used to estimate the number of programming employees in 12 months' time at these companies.

Short-term total employment growth within the programming function across all companies was found to be particularly strong, rising by 31 percent over the next 12 months. On average, companies expected to add an additional 5.7 programming employees per business location over the next 12 months, while the median growth per company was two additional employees. Overall, two percent of companies expected that the number of programming employees would fall over the next 12 months, 31 percent expected the number to stay the same, while 67 percent expected to increase the number of employees in this job function.

Figure 21 Expected Change in Programming Employees over the Next 12 Months



In Sample A companies, total employment growth within the programming function over the next 12 months was slightly higher than the average for all companies, at 32 percent. By comparison, overall growth for Sample B companies was lower at 28 percent. On average, Sample A companies expected to add an additional 6.1 programming employees per business location over the next 12 months, while the median growth per company was two additional employees. Overall, three percent of Sample A companies expected that the number of programming employees would fall over the next 12 months, 23 percent expected the number to stay the same, while 74 percent expected to increase the number of employees in this job function.

By region, total employment growth was forecast to be strongest in the Los Angeles and Orange County region, with companies reporting that they expect to employ 53 percent more programming employees in 12 months time. By comparison, overall growth for Bay Area companies was lower, but still strong at 22 percent. On average, Bay Area companies expected to add an additional 7.4 programming employees per business location over the next 12 months, while companies in the Los Angeles and Orange County region expected to hire an additional 4.7 programming employees on average over the next year.

Overall, five percent of Bay Area companies expected that the number of programming employees will decrease over the next 12 months, 35 percent expected the number to stay the same, while 60 percent expected to increase the number of employees in this job function. In Los Angeles and Orange County, 29 percent of companies expected the number of programming employees to stay the same, while 71 percent expected to increase the number of employees in this job function.

Table 9 Programming Employment Growth by Sample Group and Region

Company Group/ Region	Current Employment	Projected Employment in 12 Months	Employment Growth (%)	Average Employee Growth per Company
Sample A	743	979	31.8%	6.1
Sample B	202	258	27.7%	4.7
Bay Area	670	817	21.9%	7.4
LA/OC	275	420	52.7%	4.7
All Companies	**945**	**1,237**	**30.9%**	**5.7**

Occupational Shortage Indicators

In order to help determine whether there is a current shortage of suitable programming applicants, companies were first asked to record the level of difficulty faced finding applicants who met the company's hiring standards.

> Q12c. Please tell me whether your business has no difficulty, some difficulty, or great difficulty finding applicants for the programming occupational group.

Figure 22 below shows that a majority of companies involved in the video and computer game industry faced difficulties finding suitable programming recruits who met their company's hiring standards. Of the companies that provided a response to this question, which excludes the "DK/NA" responses, 80 percent faced at least "Some difficulty" finding suitable applicants for this job function, while over half (51%) faced "Great difficulty." This finding provides a strong indication that there is a current shortage of game programmers with the relevant skills, education, and training required by recruiting companies.

Figure 22 Difficulty Finding Programming Applicants

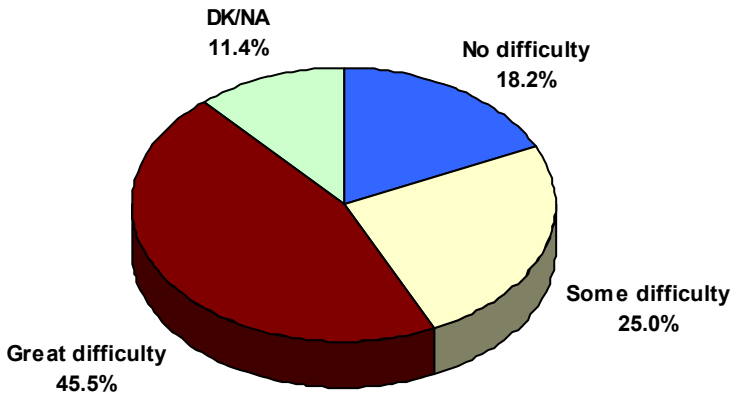
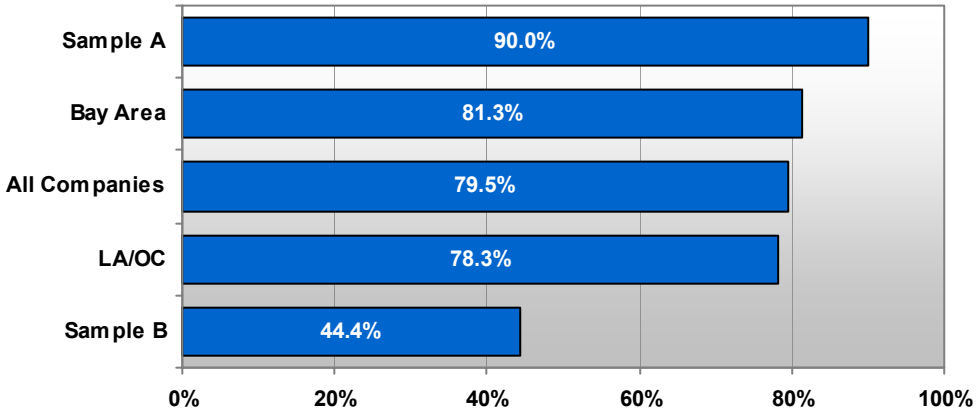


Figure 23 shows that Sample A companies and those based in the Bay Area reported the most difficulty finding suitable programming applicants. Ninety percent of Sample A companies and 81 percent of Bay Area companies faced either “Some” or “Great” difficulty finding suitable applicants for this function.

Figure 23 Difficulty Finding Programming Applicants by Sample Group and Region



The next question asked companies to indicate how often they recruited individuals from outside of California for the programming function.

> Q13c. Please indicate if you always, frequently, sometimes, rarely, or never recruit individuals from outside of California for the programming function.

Figure 24 below shows that only around a quarter of responding companies reported that they "Rarely" or "Never" recruited programming employees from outside of California. Overall, 30 percent of respondents indicated that they "Always" or "Frequently" recruited candidates from outside the state, while a further 41 percent "Sometimes" hired non-Californian programming employees. These findings provide further indication that there is there is a current shortage of game programmers with the relevant skills, education, and training required by recruiting companies.

Figure 24 Frequency Companies Recruit Programmers from Outside California

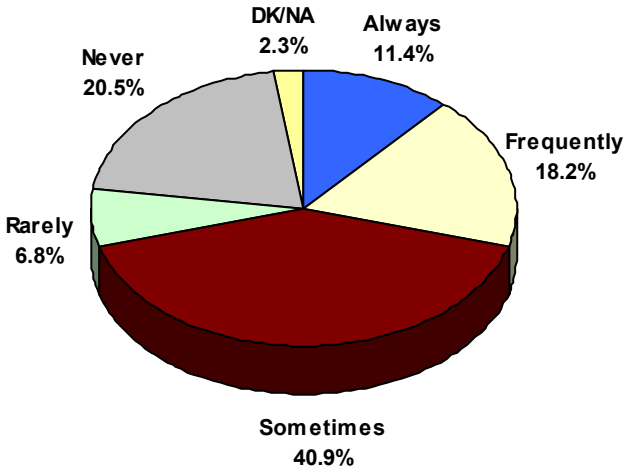
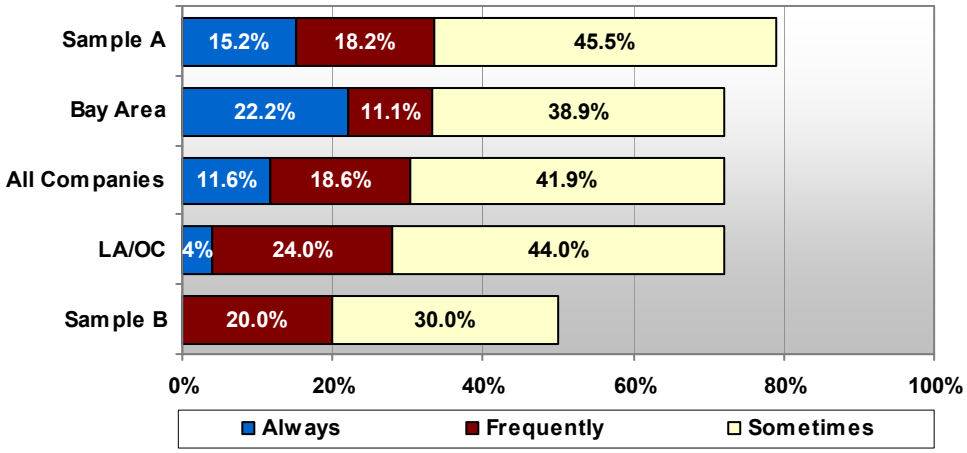


Figure 25 shows that Sample A companies were the most likely to recruit game design candidates from outside of California. Sixty-eight percent of companies that provided a response to this question either "Sometimes," "Frequently," or "Always" recruited employees from outside the state for this function. Bay Area companies were the most likely to "Always" recruit from outside California for this function (22%).

Figure 25 Recruiting Programming Employees from Outside California by Sample Group and Region

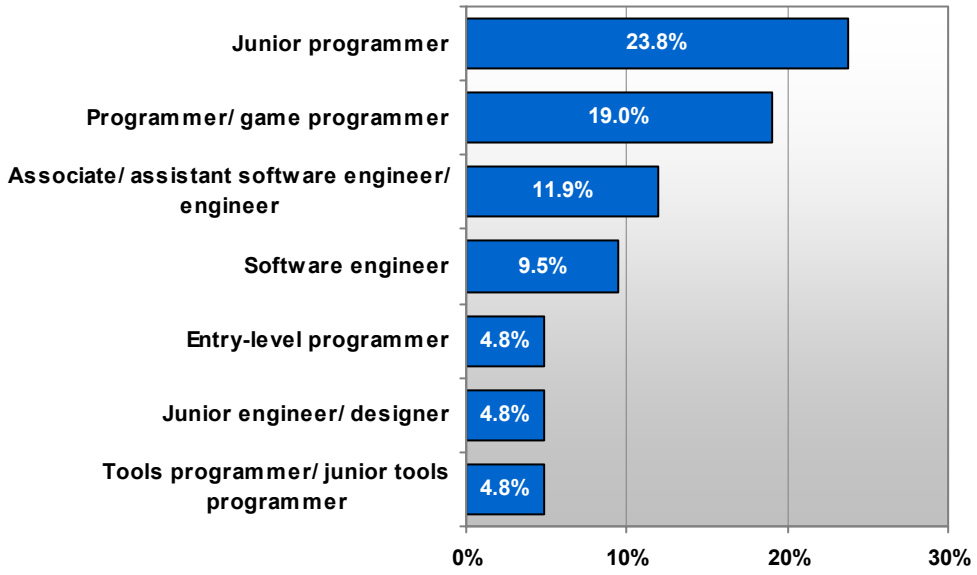


Entry-Level Job Titles

Q14c. What are the occupational job titles which your company uses for **entry-level** positions in the programming function?

The most frequently used job title for entry-level employees in the programming function was "Junior programmer" with 24 percent of respondents indicating that they use this job title at their company. Figure 26 indicates the most frequently used job titles and the proportion of companies which reported using them. In addition to the reported job titles, two percent of companies indicated that they do not hire entry-level employees in the programming function.

Figure 26 Entry-Level Programming Job Titles

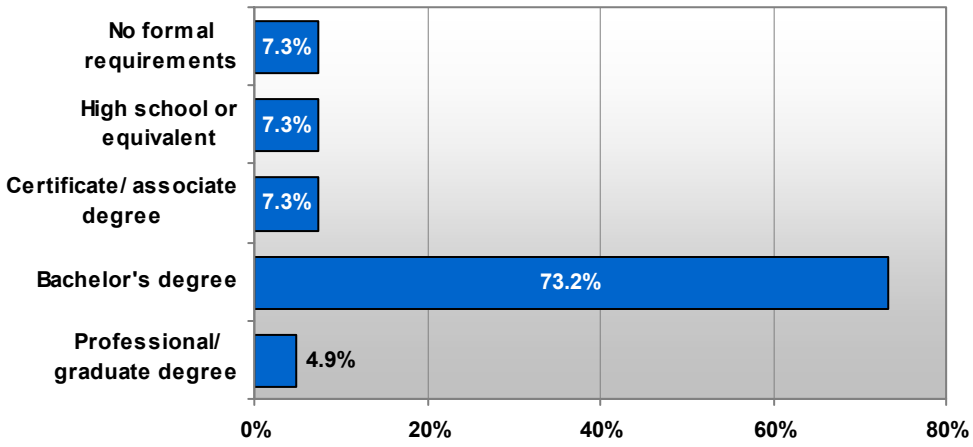


Entry-Level Education Requirements

Q15c. What is the typical education requirement for successful **entry-level** applicants within the programming function?

The most frequently requested education requirement for entry-level employees in the programming function was a "Bachelor's degree" (73%). Overall, 22 percent of respondents indicated that entry-level programming positions do not require either a bachelor's, professional, or graduate degree.

Figure 27 Entry-Level Programming Education Requirements

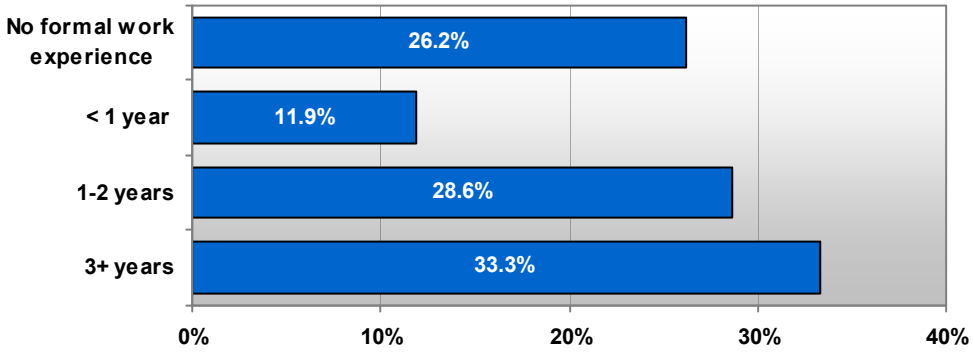


Entry-Level Work Experience

Q16c. What is the typical level of related work experience for **entry-level** applicants in the programming function at your location?

The most frequently requested work experience requirement for entry-level employees in the programming function was "Three or more years' experience in a related occupation"(33%), followed by "No formal work experience" (26%).

Figure 28 Entry-Level Programming Work Experience Requirements

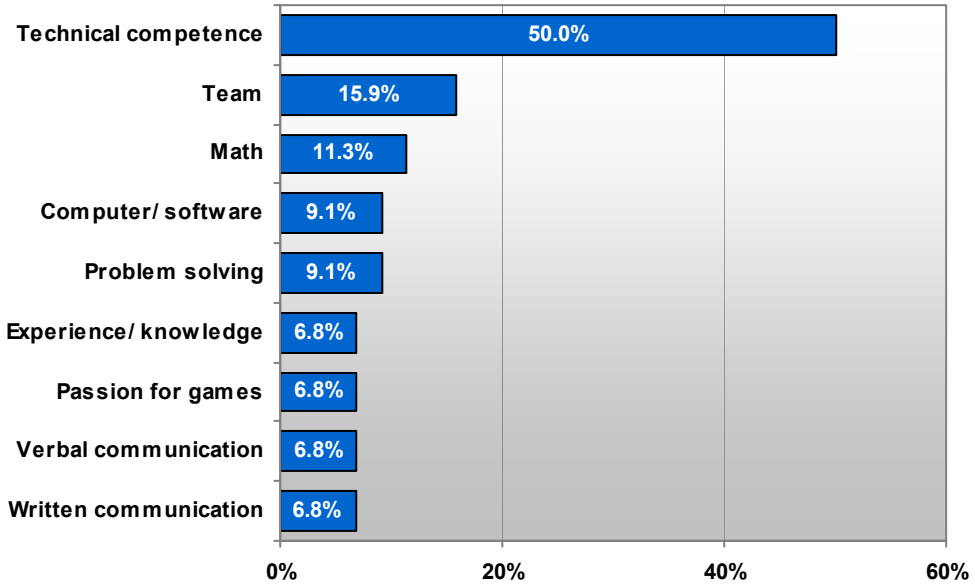


Entry-Level Skill Requirements

Q17c. Please tell me what the most important skills are when considering **entry-level** applicants for occupations in the programming function.

The survey found that the most important skills required for entry-level programming employees were "Technical competence" (indicated by 50% of employers) and "Ability to work as part of a team" (16%). A total of 15 skills of importance were indicated by employers for this job function.

Figure 29 Skills of Importance for Entry-Level Programmers

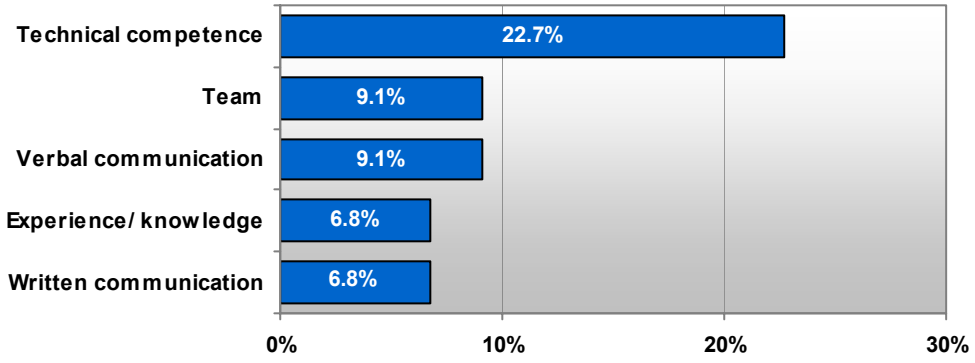


Entry-Level Skill Deficiencies

Q18c. Please tell me which skills your **entry-level** programming employees are currently most deficient in.

The main skill deficiencies found among entry-level programming employees were "Technical competence" (indicated by 23% of employers), "Ability to work as part of a team" (9%) and "Verbal communication skills" (9%). Employers indicated a total of 16 skill deficiencies for this job function.

Figure 30 Skill Deficiencies of Entry-Level Programmers



Wage Levels

"Software programmers are typically highly educated and well compensated. Entry-level game programmers can earn around $61,152 per year – roughly 71% more than the national average salary of all recent college graduates."

Crandall & Sidack, 2006

Table 10 shows that the average entry-level wage for programmers and engineers in the US video and computer game industry was $52,989. As salary levels in California tend to be higher than the national average, it is estimated that entry-level game designers in the state typically earn around $56,000 a year on average.

Table 10 Programming Wage Levels

Job Title	Experience	Annual Average Salary
Programmer / Engineer	Up to 3 years	$52,989
Programmer / Engineer	3-6 years	$73,618
Programmer / Engineer	Over 6 years	$90,658
Lead Programmer	Up to 3 years	$76,848
Lead Programmer	3-6 years	$100,528
Lead Programmer	Over 6 years	$65,313
Technical Director	3-6 years	$107,738
Technical Director	Over 6 years	$121,071

Source: Game Developer's 5th Annual Salary Survey, April 2006

Production

Description

The production team is in charge of overseeing and organizing the overall game development process and the people involved with that process. Responsibilities typically include budgeting, scheduling, and business management functions. Occupations in this group include producer, associate producer, assistant producer, project manager, project coordinator.

Current Employment

The first occupational question of the survey covering the production function asked respondents to record the number of employees currently working in this function at their business location.

> Q10d. How many **total** employees currently work specifically on production at your location?

Of the 93 responding companies, 18 reported that they did not currently have any individuals employed in the production function at their business location, while a further 14 respondents either did not know how many employees worked in this function or failed to provide a response to this question. The remaining 61 companies which provided a response to this question employed a total of 633 production individuals at their business locations, ranging from one production employee at 11 locations, up to 200 at one location. The average number of production employees per business location was 10.4, while the median number of employees was lower at three.

The majority of production employees (79%) worked for Sample A companies. A total of 500 individuals were employed across 44 Sample A companies, averaging 11.4 per business location. By comparison, 17 Sample B companies reported employing a total of 133 production employees, an average of 7.8 per business location. In the Bay Area region, a total of 25 companies reported employing 347 workers in the production function, an average of 13.9 employees per company. By comparison, 36 companies in the Los Angeles and Orange County region employed a total of 286 production workers, averaging 7.9 per company.

Table 11 Current Programming Employment by Sample Group and Region

Company Group/ Region	Total Employees	Number of Companies	Average Employees per Company
Sample A	500	44	11.4
Sample B	133	17	7.8
Bay Area	347	25	13.9
LA/OC	286	36	7.9
All Companies	**633**	**61**	**10.4**

Across the five occupational functions covered by this study, production employees represented 17 percent of all individuals employed in these functions.

Projected Employment

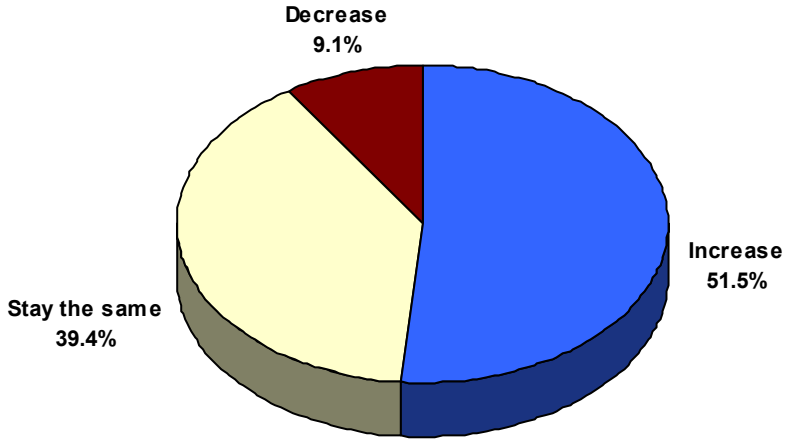
The next occupational question of the survey covering the production function asked respondents to estimate the number of workers employed in this function at their business location in 12 months' time.

> Q11d. How many employees do you estimate will be employed in production at your location in 12 months' time?

Of the 93 responding companies, 13 reported that they did not expect to have any individuals employed in the production function at their business location in 12 months' time, while a further 26 respondents either did not know how many employees worked in this function or failed to provide a response to this question. Where companies provided details of current employment levels but did not provide an estimate of employment for this function in 12 months' time, the overall company growth rate for the next 12 months was used to estimate the number of production employees in 12 months' time at these companies.

Short-term total employment growth within the production function across all companies was found to be particularly strong, rising by 19 percent over the next 12 months. On average, companies expected to add an additional 1.8 production employees per business location over the next 12 months, while the median growth per company was one additional employee. Overall, nine percent of companies expected that the number of production employees would fall over the next 12 months, 39 percent expected the number to stay the same, while 52 percent expected to increase the number of employees in this job function.

Figure 31 Expected Change in Production Employees over the Next 12 Months



In Sample A companies, total employment growth within the production function over the next 12 months was lower than the average for all companies, at 14 percent. By comparison, overall growth for Sample B companies was higher at 38 percent. On average, Sample A companies expected to add an additional 1.5 production employees per business location over the next 12 months, while Sample B companies expected to add an additional 2.5 production employees per business location over the next 12 months.

Overall, nine percent of Sample A companies expected that the number of production employees would fall over the next 12 months, 46 percent expected the number to stay the same, while 46 percent expected to increase the number of employees in this job function. For Sample B companies, 10 percent expected numbers to fall, 25 percent expected them to remain constant, while 65 percent expected to take on more production employees over the next year.

By region, total employment growth was forecast to be strongest in the Los Angeles and Orange County region, with companies reporting that they expect to employ 27 percent more production employees in 12 months time. By comparison, overall growth for Bay Area companies was lower at 13 percent. On average, Bay Area companies expected to add an additional 1.6 production employees per business location over the next 12 months, while companies in the Los Angeles and Orange County region expected to hire an additional 1.9 production employees on average over the next year.

Overall, seven percent of Bay Area companies expected that the number of production employees will decrease over the next 12 months, 44 percent expected the number to stay the same, while 48 percent expected to increase the number of employees in this job function. In Los Angeles and Orange County, 10 percent of companies expected that the number of production employees would fall over the next 12 months, 36 percent expected the number to stay the same, while 54 percent expected to increase the number of employees in this job function.

Table 12 Production Employment Growth by Sample Group and Region

Company Group/ Region	Current Employment	Projected Employment in 12 Months	Employment Growth (%)	Average Employee Growth per Company
Sample A	500	570	14.0%	1.5
Sample B	133	183	37.6%	2.5
Bay Area	347	391	12.7%	1.6
LA/OC	286	362	26.6%	1.9
All Companies	**633**	**753**	**19.0%**	**1.8**

Occupational Shortage Indicators

In order to help determine whether there is a current shortage of suitable production applicants, companies were first asked to record the level of difficulty faced finding applicants who met the company's hiring standards.

> Q12d. Please tell me whether your business has no difficulty, some difficulty, or great difficulty finding applicants for the production occupational group.

Figure 32 below shows that a just over half of the companies involved in the video and computer game industry faced difficulties finding suitable programming recruits who met their company's hiring standards. Of the companies that provided a response to this question, which excludes the "DK/NA" responses, 63 percent faced at least "Some difficulty" finding suitable applicants for this job function, while 18 percent faced "Great difficulty." This finding provides some indication that there is either a current shortage of production candidates seeking employment, or that the skills, education, and training of production candidates who are seeking employment fall short of company hiring standards.

Figure 32 Difficulty Finding Production Applicants

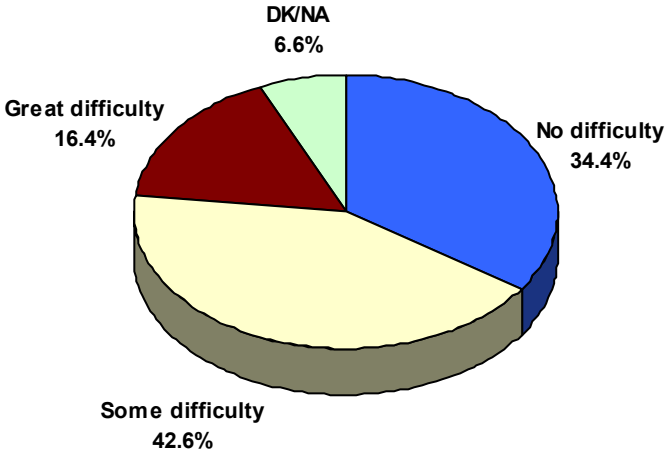
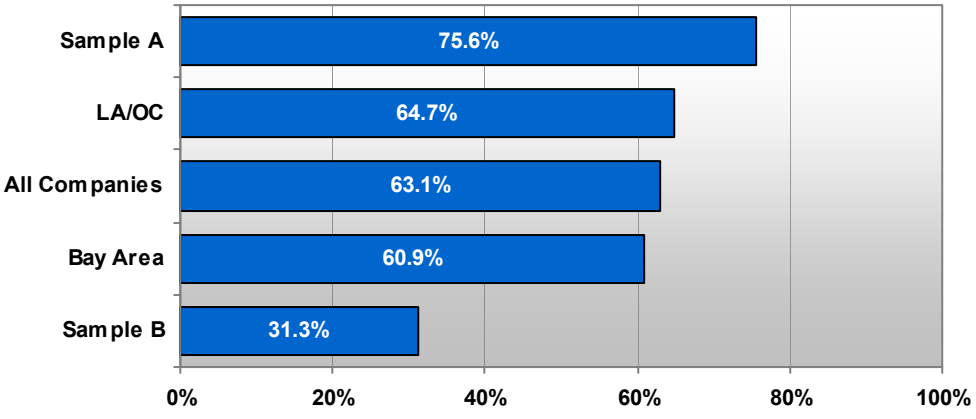


Figure 33 shows that Sample A companies and those based in the Los Angeles and Orange County reported the greatest difficulty finding suitable production applicants. Seventy-six percent of Sample A companies and 65 percent of Los Angeles and Orange County companies faced either "Some" or "Great" difficulty finding suitable applicants for this function.

Figure 33 Difficulty Finding Production Applicants by Sample Group and Region



The next question asked companies to indicate how often they recruited individuals from outside of California for the production function.

> Q13d. Please indicate if you always, frequently, sometimes, rarely, or never recruit individuals from outside of California for the programming function.

Figure 34 below shows that around half of the responding companies reported that they "Rarely" or "Never" recruited production employees from outside of California. Overall, 21 percent of respondents indicated that they "Always" or "Frequently" recruited candidates from outside the state, while a further 28 percent "Sometimes" hired non-Californian production employees. These findings provide further indication that there is either a current shortage of California-based game producers seeking employment, or that the skills, education, and training of game production candidates who reside in the state do not meet company hiring standards.

Figure 34 Frequency Companies Recruit Producers from Outside California

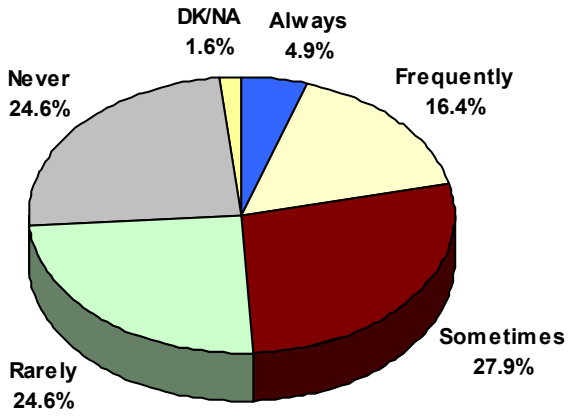
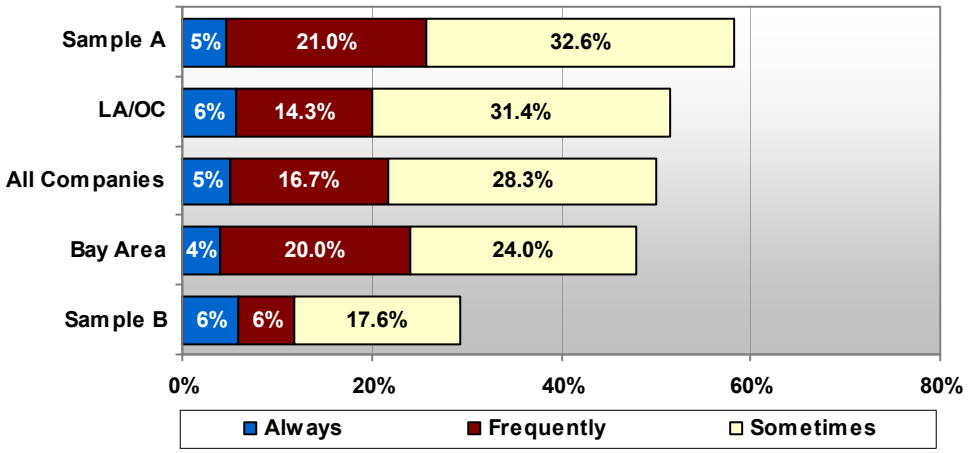


Figure 35 shows that Sample A companies were the most likely to recruit production candidates from outside of California. Sixty-eight percent of companies that provided a response to this question either "Sometimes," "Frequently," or "Always" recruited employees from outside the state for this function. Bay Area companies were the most likely to "Always" recruit from outside California for this function (22%).

Figure 35 Recruiting Production Employees from Outside California by Sample Group and Region

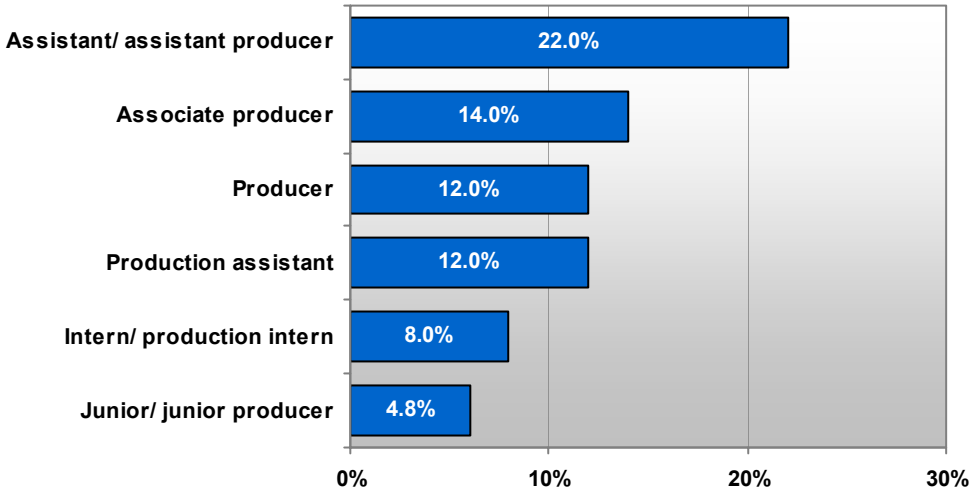


Entry-Level Job Titles

Q14d. What are the occupational job titles which your company uses for **entry-level** positions in the production function?

The most frequently used job title for entry-level employees in the production function was “Assistant” or “Assistant producer” with 22 percent of respondents indicating that they use this job title at their company. Figure 36 indicates the most frequently used job titles and the proportion of companies which reported using them. In addition to the reported job titles, two percent of companies indicated that they do not hire entry-level employees in the production function.

Figure 36 Entry-Level Production Job Titles

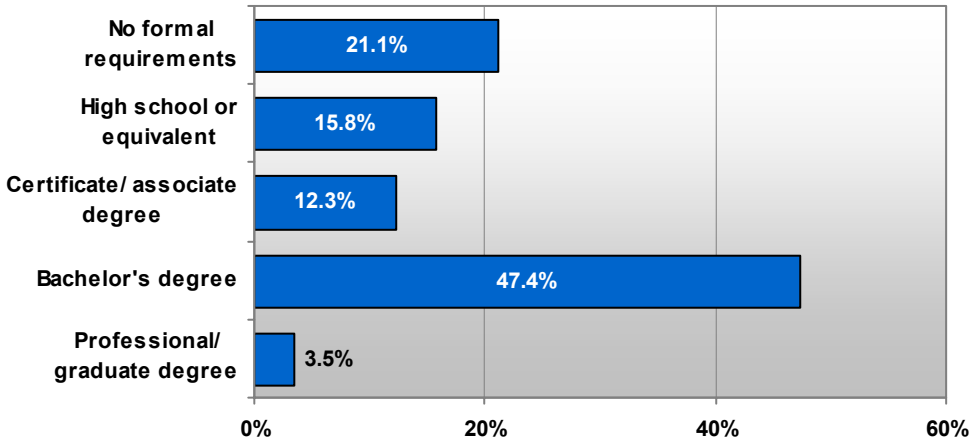


Entry-Level Education Requirements

Q15d. What is the typical education requirement for successful **entry-level** applicants within the production function?

The most frequently requested education requirement for entry-level employees in the production function was a "Bachelor's degree" (47%), followed by "No formal education requirements" (21%). Overall, 49 percent of respondents indicated that entry-level production positions do not require either a bachelor's, professional, or graduate degree.

Figure 37 Entry-Level Production Education Requirements

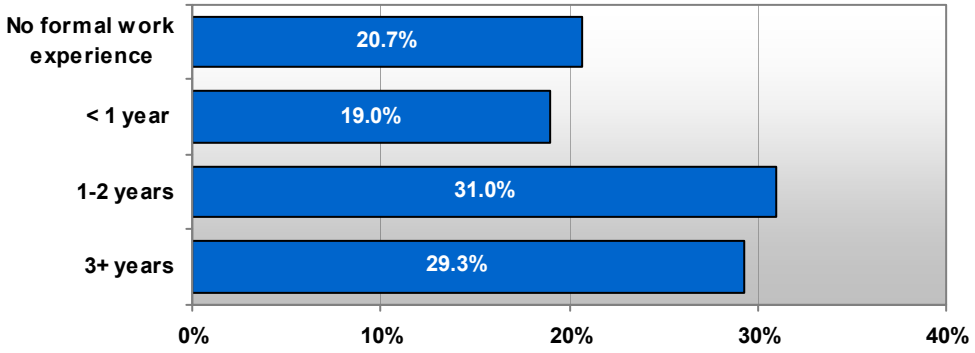


Entry-Level Work Experience

Q16d. What is the typical level of related work experience for **entry-level** applicants in the production function at your location?

The most frequently requested work experience requirement for entry-level employees in the production function was "One to two years' experience in a related occupation"(31%), followed by "Three or more years' experience in a related occupation" (29%).

Figure 38 Entry-Level Production Work Experience Requirements

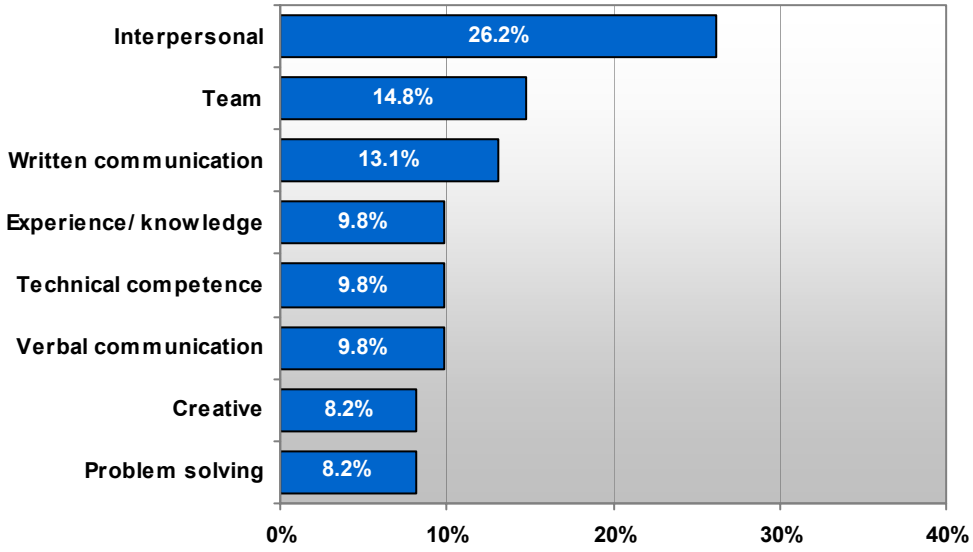


Entry-Level Skill Requirements

Q17d. Please tell me what the most important skills are when considering **entry-level** applicants for occupations in the production function.

The survey found that the most important skills required for entry-level production employees were “Interpersonal skills” (indicated by 26% of employers), “Ability to work as part of a team” (15%), and “Written communication skills” (13%). A total of 24 skills of importance were indicated by employers for this job function.

Figure 39 Skills of Importance for Entry-Level Production Employees

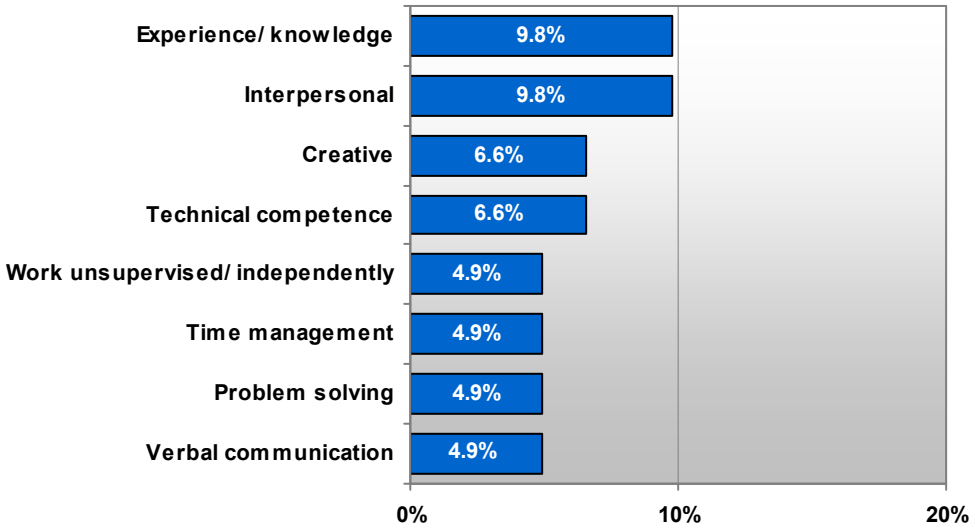


Entry-Level Skill Deficiencies

Q18d. Please tell me which skills your **entry-level** production employees are currently most deficient in.

The main skill deficiencies found among entry-level production employees were "Interpersonal skills" (indicated by 10% of employers), "Creative skills" (7%) and "Technical competence" (7%), while 10 percent of employers also indicated a general lack of experience and/or knowledge. Employers indicated a total of 19 skill deficiencies for this job function.

Figure 40 Skill Deficiencies of Entry-Level Production Employees



Wage Levels

Table 13 shows that the average entry-level wage for producers and project leads in the US video and computer game industry was $51,364. As salary levels in California tend to be higher than the national average, it is estimated that entry-level game designers in the state typically earn around $54,000 a year on average.

Table 13 Production Wage Levels

Job Title	Experience	Annual Average Salary
Producer / Project Lead	Up to 3 years	$51,364
Producer / Project Lead	3-6 years	$66,375
Producer / Project Lead	Over 6 years	$85,342
Executive Producer	Over 6 years	$127,375

Source: Game Developer's 5th Annual Salary Survey, April 2006

Testing

Description

The testing team looks for and finds errors or bugs in the game before it is published. Occupations include lead tester, QA tester and tester.

Current Employment

The first occupational question of the survey covering the testing function asked respondents to record the number of employees currently working in this function at their business location.

> Q10e. How many **total** employees currently work specifically on testing at your location?

Of the 93 responding companies, 48 reported that they did not currently have any individuals employed in the testing function at their business location, while a further 14 respondents either did not know how many employees worked in this function or failed to provide a response to this question. The remaining 31 companies which provided a response to this question employed a total of 825 testing individuals at their business locations, ranging from one testing employee at seven locations, up to 300 at one location. The average number of testing employees per business location was 26.6, while the median number of employees was lower at four.

The majority of testing employees (95%) worked for Sample A companies. A total of 781 individuals were employed across 24 Sample A companies, averaging 32.5 per business location. By comparison, seven Sample B companies reported employing a total of 44 testing employees, an average of 6.3 per business location. In the Bay Area region, a total of 15 companies reported employing 573 workers in the testing function, an average of 38.2 employees per company. By comparison, 16 companies in the Los Angeles and Orange County region employed a total of 252 testing workers, averaging 15.8 per company.

Table 14 Current Testing Employment by Sample Group and Region

Company Group/ Region	Total Employees	Number of Companies	Average Employees per Company
Sample A	781	24	32.5
Sample B	44	7	6.3
Bay Area	573	15	38.2
LA/OC	252	16	15.8
All Companies	**825**	**31**	**26.6**

Across the five occupational functions covered by this study, testing employees represented 22 percent of all individuals employed in these functions.

Projected Employment

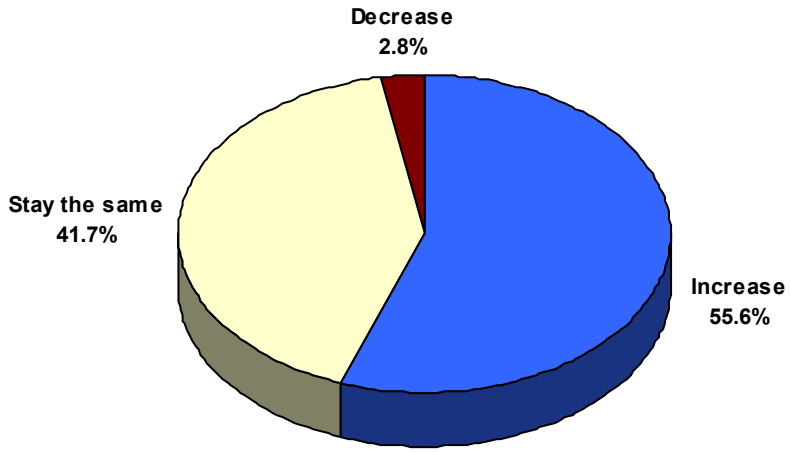
The next occupational question of the survey covering the testing function asked respondents to estimate the number of workers employed in this function at their business location in 12 months' time.

> Q11e. How many employees do you estimate will be employed in testing at your location in 12 months' time?

Of the 93 responding companies, 37 reported that they did not expect to have any individuals employed in the testing function at their business location in 12 months' time, while a further 26 respondents either did not know how many employees worked in this function or failed to provide a response to this question. Where companies provided details of current employment levels but did not provide an estimate of employment for this function in 12 months' time, the overall company growth rate for the next 12 months was used to estimate the number of testing employees in 12 months' time at these companies.

Short-term total employment growth within the testing function across all companies was found to be particularly strong, rising by 25 percent over the next 12 months. On average, companies expected to add an additional 5.8 testing employees per business location over the next 12 months, while the median growth per company was one additional employee. Overall, three percent of companies expected that the number of testing employees would fall over the next 12 months, 42 percent expected the number to stay the same, while 56 percent expected to increase the number of employees in this job function.

Figure 41 Expected Change in Testing Employees over the Next 12 Months



In Sample A companies, total employment growth within the testing function over the next 12 months was slightly lower than the average for all companies, at 24 percent. By comparison, overall growth for Sample B companies was higher at 52 percent (note: the Sample B growth rate should be treated with caution as it is based on a small number of companies). On average, Sample A companies expected to add an additional 6.8 testing employees per business location over the next 12 months, while the median growth per company was one additional employee. Overall, four percent of Sample A companies expected that the number of testing employees would fall over the next 12 months, 33 percent expected the number to stay the same, while 63 percent expected to increase the number of employees in this job function.

By region, total employment growth was forecast to be strongest in the Los Angeles and Orange County region, with companies reporting that they expect to employ 63 percent more testing employees in 12 months time. By comparison, overall growth for Bay Area companies was lower at nine percent. On average, Bay Area companies expected to add an additional 3.1 testing employees per business location over the next 12 months, while companies in the Los Angeles and Orange County region expected to hire an additional 7.9 testing employees on average over the next year.

Overall, six percent of Bay Area companies expected that the number of testing employees will decrease over the next 12 months, 31 percent expected the number to stay the same, while 63 percent expected to increase the number of employees in this job function. In Los Angeles and Orange County, 50 percent expected the number of testing employees would stay the same over the next 12 months, while 50 percent expected to increase the number of employees in this job function.

Table 15 Testing Employment Growth by Sample Group and Region

Company Group/ Region	Current Employment	Projected Employment in 12 Months	Employment Growth (%)	Average Employee Growth per Company
Sample A	781	965	23.6%	6.8
Sample B	44	67	52.3%	2.6
Bay Area	573	622	8.6%	3.1
LA/OC	252	410	62.7%	7.9
All Companies	**825**	**1,032**	**25.1%**	**5.8**

Occupational Shortage Indicators

In order to help determine whether there is a current shortage of suitable game testing applicants, companies were first asked to record the level of difficulty faced finding applicants who met the company's hiring standards.

> Q12e. Please tell me whether your business has no difficulty, some difficulty, or great difficulty finding applicants for the testing occupational group.

Figure 42 below shows that a majority of companies involved in the video and computer game industry had no difficulty finding suitable testing recruits who met their company's hiring standards. Of the companies that provided a response to this question, which excludes the "DK/NA" responses, 67 percent faced "No difficulty" finding suitable applicants for this job function, while the remaining 33 percent faced "Some" or "Great difficulty" finding applicants. This finding suggests that, while there may be some shortage of game testers with the suitable skills, education, and training required by companies, for the most part companies do not face difficulties finding applicants for this function.

Figure 42 Difficulty Finding Testing Applicants

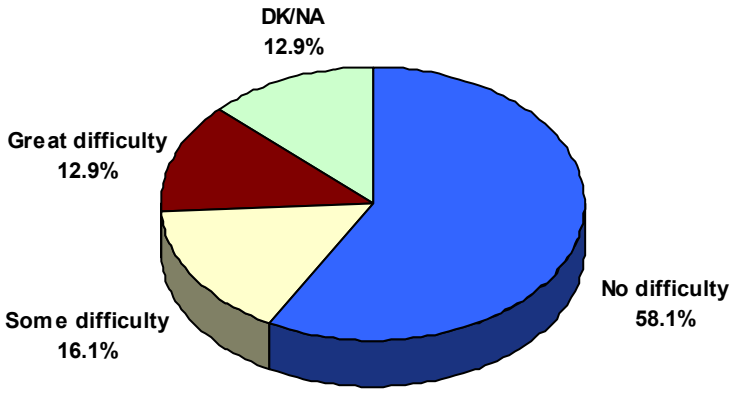
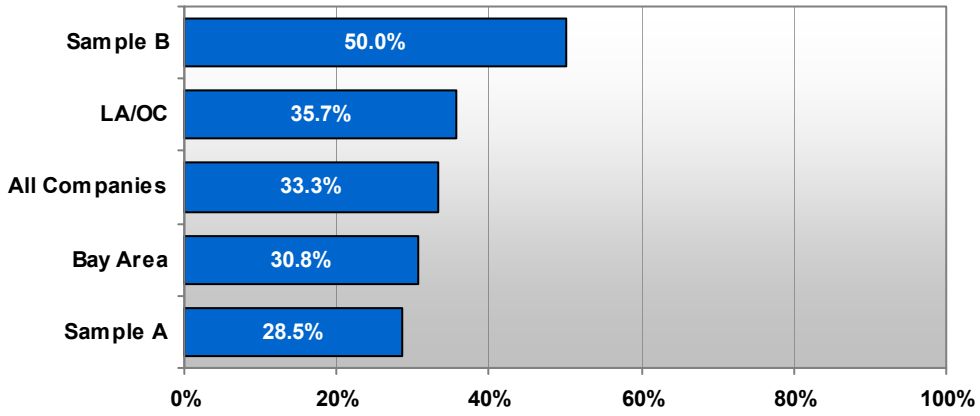


Figure 43 shows that Sample B companies reported the most difficulty finding suitable game testing applicants, with 50 percent of companies in this group indicating that they faced either "Some" or "Great" difficulty finding suitable applicants for this function. This may suggest that game testers have a preference for working for larger companies with better-known game titles.

Figure 43 Difficulty Finding Testing Applicants by Sample Group and Region



The next question asked companies to indicate how often they recruited individuals from outside of California for the testing function.

> Q13e. Please indicate if you always, frequently, sometimes, rarely, or never recruit individuals from outside of California for the testing function.

Figure 44 below shows that the majority of companies involved in the video and computer game industry (71%) reported that they "Never" recruited game testers from outside of California, while a further 13 percent "Rarely" recruited employees from outside the state. These findings provide further indication that there is little shortage of candidates seeking employment as game testers within California.

Figure 44 Frequency Companies Recruit Testers from Outside California

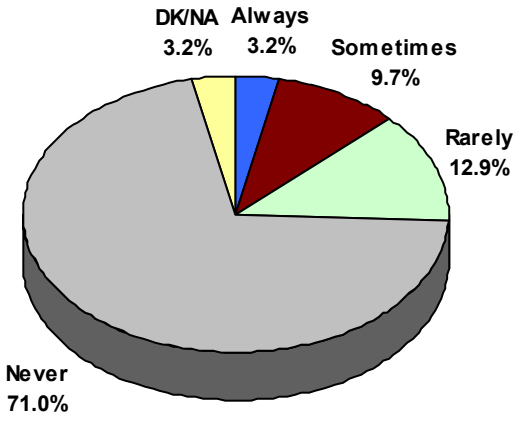
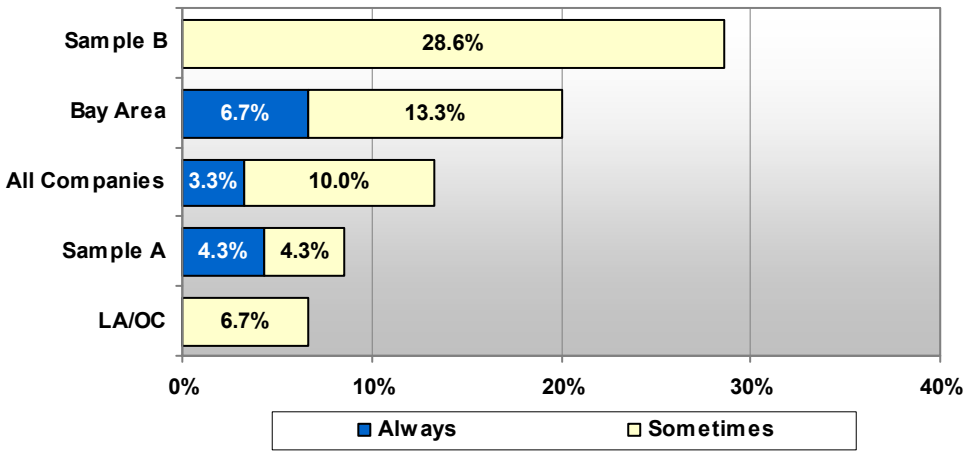


Figure 45 shows that Sample B companies were the most likely to recruit game testing candidates from outside of California. Twenty-nine percent of companies that provided a response to this question "Sometimes" recruited employees from outside the state for this function.

Figure 45 Recruiting Testing Employees from Outside California by Sample Group and Region

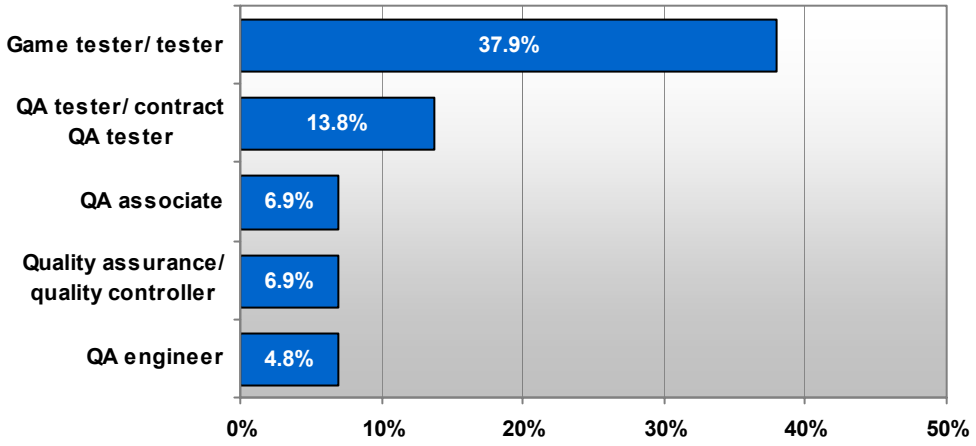


Entry-Level Job Titles

Q14e. What are the occupational job titles which your company uses for **entry-level** positions in the testing function?

The most frequently used job title for entry-level employees in the testing function was "Game tester" or "Tester" with 38 percent of respondents indicating that they use this job title at their company. Figure 46 indicates the most frequently used job titles and the proportion of companies which reported using them. In addition to the reported job titles, two percent of companies indicated that they do not hire entry-level employees in the testing function.

Figure 46 Entry-Level Testing Job Titles

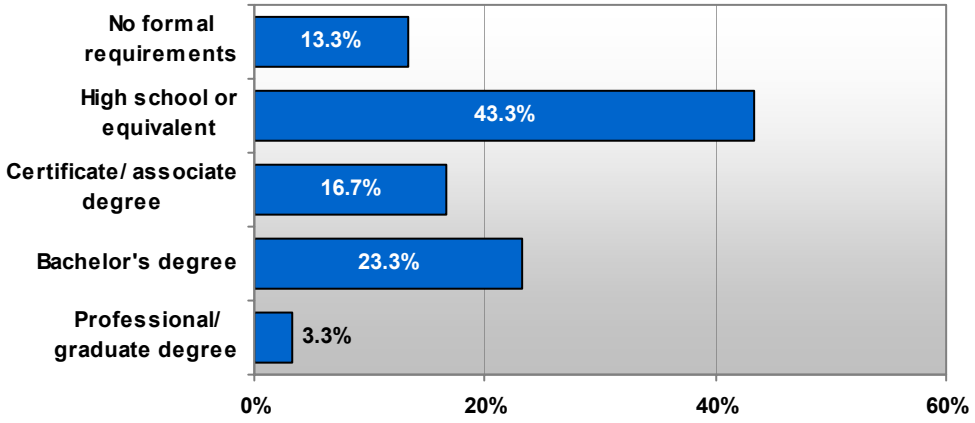


Entry-Level Education Requirements

Q15d. What is the typical education requirement for successful **entry-level** applicants within the production function?

The most frequently requested education requirement for entry-level employees in the testing function was "Completion of high school or equivalent" (43%), followed by a "Bachelor's degree" (23%). Overall, 73 percent of respondents indicated that entry-level testing positions do not require either a bachelor's, professional, or graduate degree.

Figure 47 Entry-Level Testing Education Requirements

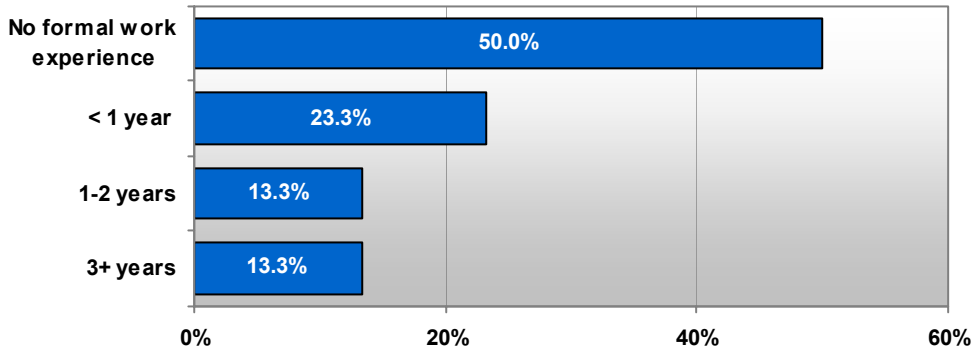


Entry-Level Work Experience

Q16e. What is the typical level of related work experience for **entry-level** applicants in the testing function at your location?

The most frequently requested work experience requirement for entry-level employees in the testing function was “No formal work experience” (50%) followed by “One to two years’ experience in a related occupation“(23%).

Figure 48 Entry-Level Testing Work Experience Requirements

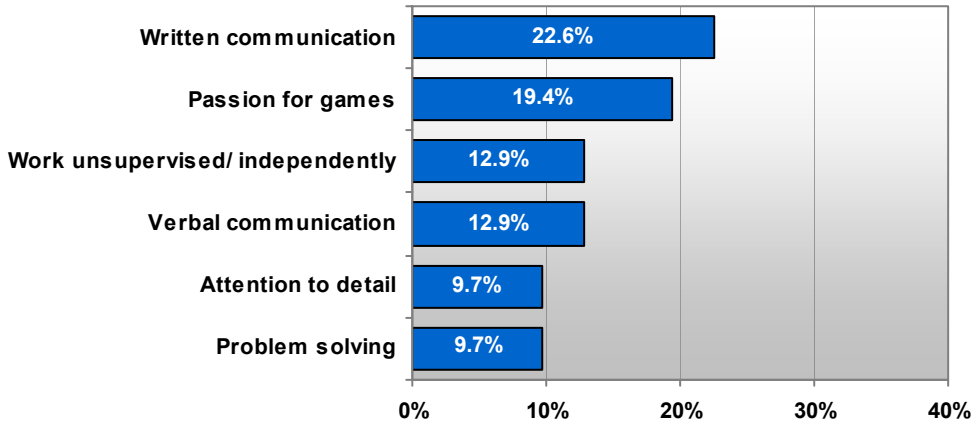


Entry-Level Skill Requirements

Q17e. Please tell me what the most important skills are when considering **entry-level** applicants for occupations in the testing function.

The survey found that the most important skills required for entry-level testing employees were “Written communication skills” (indicated by 23% of employers) and a “Passion for games” (19%). A total of 14 skills of importance were indicated by employers for this job function.

Figure 49 Skills of Importance for Entry-Level Testers

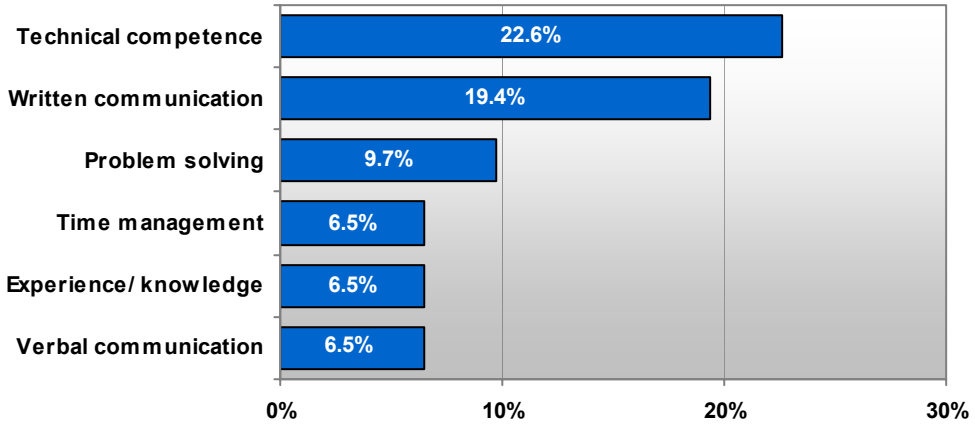


Entry-Level Skill Deficiencies

> Q18e. Please tell me which skills your **entry-level** testing employees are currently most deficient in.

The main skill deficiencies found among entry-level testing employees were "Technical competence" (indicated by 23% of employers), "written communication skills" (19%) and "Problem solving skills" (10%). Employers indicated a total of 10 skill deficiencies for this job function.

Figure 50 Skill Deficiencies of Entry-Level Testers



Wage Levels

Table 16 shows that the average entry-level wage for testers in the US video and computer game industry was $24,797. As salary levels in California tend to be higher than the national average, it is estimated that entry-level testers in the state typically earn around $27,000 a year on average.

Table 16 Testing Wage Levels

Job Title	Experience	Annual Average Salary
Tester	Up to 3 years	$24,797
Tester	3-6 years	$29,722
QA Lead	Up to 3 years	$33,125
QA Lead	3-6 years	$43,125
QA Lead	Over 6 years	$61,310

Source: Game Developer's 5th Annual Salary Survey, April 2006

Appendix A: Survey Questionnaire

Godbe Research
June 2006
FINAL TOPLINES

Video and Computer Game Employer Survey
2006 (n = 93)

Hello, my name is _____. May I please speak to [name] or [the person handling staffing at [company]?]

Hello, my name is _____and I'm calling on behalf of the ***California Community Colleges***, who would value your participation in a survey that will help address your future business needs for trained and educated employees in the video and computer game industry.

<< If needed>> The survey should take approximately fifteen minutes of your time. By answering this survey, you can help the California Community College system develop the appropriate type of training that will prepare the employees you will be looking for in the future.<<end of optional section 2>>

<< If needed>> The survey has been commissioned by the California Community Colleges, which are committed to developing the regional workforce. The survey is being conducted by Godbe Research, an independent research firm. <<end of optional section 3>>

<< If needed>> Your individual responses will not be published – only aggregate information will be used in the final report <<end of optional section 4>>

Sample A Responses	62%	(n = 58)
Sample B Responses	38%	(n = 35)
Bay Area Responses	42%	(n = 39)
Los Angeles/Orange County Responses	58%	(n = 54)

First, I'd like to ask you a few general questions about your business.

1. Could you please confirm that your company or organization is involved in _____? [INSERT COMPANY DESCRIPTION]

Yes	100%	[Sample A Skip to Q4, Sample B Skip to Q3]
No	0%	[Continue]
DK/NA/Refused	0%	[Continue]

2. Could you confirm that your company is involved in the video and computer game industry?

Yes	100%	[Sample A Skip to Q4, Sample B Continue]
No	0%	[TERMINATE]
DK/NA/Refused	0%	[TERMINATE]

3. Approximately what proportion of the work at your company or organization is provided for the video and computer game industry? (n = 93)

100%	62%
80-99%	3%
60-79%	4%
40-59%	5%
20-39%	9%
5-19%	16%

4. How many employees currently work at your business location?

Overall Total	7,901	(n = 93)
Sample A Total	6,600	(n = 58)
Sample B Total	1,301	(n = 35)
Bay Area Total	4,502	(n = 39)
Los Angeles/Orange County Total	3,399	(n = 54)

5. Of the _____ [INSERT RESPONSE TO Q4] employees, how many are currently employed on a **temporary or project** basis at your business location?

Overall Total	2,162	(n = 52)
Sample A Total	1,537	(n = 35)
Sample B Total	625	(n = 17)
Bay Area Total	1,056	(n = 21)
Los Angeles/Orange County Total	1,106	(n = 31)

6. How many total employees do you expect to have 12 months from now? [CURRENT AMOUNT IS Q4]

Overall Total	9,460	(n = 90)
Sample A Total	7,961	(n = 56)
Sample B Total	1,499	(n = 34)
Bay Area Total	5,006	(n = 37)
Los Angeles/Orange County Total	4,454	(n = 53)

7. Next, I'm going to read a list of issues facing the region's video and computer game industry workforce in the coming years. Please tell me how much difficulty your firm faces in addressing these workforce needs.

Here's the (first/next) one: _____. Please tell me whether your business has no difficulty, some difficulty, or great difficulty in dealing with this issue, or is it not an issue that your firm has considered?

Randomize

All Companies (n = 93)

	No difficulty	Some difficulty	Great difficulty	Not an Issue	(DON'T READ) DK/NA
A. Developing strategies to retain valuable employees	40%	41%	0%	16%	3%
B. Recruiting entry-level employees with adequate training and education	37%	33%	11%	16%	3%
C. Recruiting non entry-level employees with adequate skills and work experience	23%	40%	22%	14%	2%
D. Retaining valuable employees that could be hired by competitors	29%	47%	3%	18%	2%
E. Recruiting a diverse workforce	41%	19%	10%	27%	3%

Bay Area Companies (n = 39)

	No difficulty	Some difficulty	Great difficulty	Not an Issue	(DON'T READ) DK/NA
A. Developing strategies to retain valuable employees	39%	46%	0%	10%	5%
B. Recruiting entry-level employees with adequate training and education	36%	41%	10%	10%	3%
C. Recruiting non entry-level employees with adequate skills and work experience	23%	44%	21%	10%	3%
D. Retaining valuable employees that could be hired by competitors	31%	54%	3%	10%	3%
E. Recruiting a diverse workforce	41%	21%	15%	21%	3%

Los Angeles/Orange County Companies (n = 54)

	No difficulty	Some difficulty	Great difficulty	Not an Issue	(DON'T READ) DK/NA
A. Developing strategies to retain valuable employees	41%	37%	0%	20%	2%
B. Recruiting entry-level employees with adequate training and education	37%	28%	11%	20%	4%
C. Recruiting non entry-level employees with adequate skills and work experience	22%	37%	22%	17%	2%
D. Retaining valuable employees that could be hired by competitors	28%	43%	4%	24%	2%
E. Recruiting a diverse workforce	41%	19%	6%	32%	4%

8. Next, I'd like to ask you about employee development practices at your business location. As I read each of the following employee development practices, please indicate whether your business uses each practice.

Randomize

All Companies (n = 93)

	Yes	No	(DON'T READ) DK/NA
A. Formal on-the-job training	60%	36%	4%
B. Career advancement programs	24%	70%	7%
C. Employer-paid outside training	47%	50%	3%
D. Tuition assistance at a college or university	20%	77%	2%

Bay Area Companies (n = 39)

	Yes	No	(DON'T READ) DK/NA
A. Formal on-the-job training	67%	28%	5%
B. Career advancement programs	23%	67%	10%
C. Employer-paid outside training	54%	41%	5%
D. Tuition assistance at a college or university	23%	74%	3%

Los Angeles/Orange County Companies (n = 54)

	Yes	No	(DON'T READ) DK/NA
A. Formal on-the-job training	56%	41%	4%
B. Career advancement programs	24%	72%	4%
C. Employer-paid outside training	43%	56%	2%
D. Tuition assistance at a college or university	19%	80%	2%

9. Next, I'd like to ask you about how your firm recruits applicants for hiring. As I read each of the following recruitment practices, please indicate whether your firm uses each practice.

Randomize

All Companies (n = 93)

	Yes	No	(DON'T READ) DK/NA
A. Hire recruitment agencies	39%	60%	1%
B. Offer internship opportunities	71%	29%	0%
C. Work with local community college programs or university departments for recruiting	50%	51%	0%

Bay Area Companies (n = 39)

	Yes	No	(DON'T READ) DK/NA
A. Hire recruitment agencies	41%	59%	0%
B. Offer internship opportunities	64%	36%	0%
C. Work with local community college programs or university departments for recruiting	64%	36%	0%

Los Angeles/Orange County Companies (n = 54)

	Yes	No	(DON'T READ) DK/NA
D. Hire recruitment agencies	37%	61%	2%
E. Offer internship opportunities	76%	24%	0%
F. Work with local community college programs or university departments for recruiting	39%	61%	0%

Occupation - Related Questions

Now, I'm going to ask you about specific occupational functions or teams at your company. The titles we are using may differ from specific titles used in your company. For these questions, I would like you to try to equate your company's titles with the more generic ones we will use here. The functions are:

A. Game Design – The game design team writes the game concept, character interactions, and game play elements. Occupations in this group include lead designer, game designer, and level designer.

B. Art – The art or artistic team creates images and composes music and sound, using traditional or computer skills. Occupations include artist, character artist, animator, texture artist, and sound designer.

C. Programming – The programming team writes code and develops game-related software, such as game development tools. Occupations include software engineer, game programmer, AI programmer, and graphics programmer.

D. Production – The production team is in charge of overseeing development of a video or computer game. Occupations include producer, associate producer, assistant producer, and project manager.

E. Testing – The testing team looks for and finds errors in the game before it is published. Occupations include lead tester and tester.

10. Please tell me how many individuals at your location are currently employed specifically in each of these functions. Here's the (first/next) one____ (READ FUNCTIONS IN SEQUENCE). How many **total** employees currently work specifically on ____ (REPEAT FUNCTION) at your location?

A. Game Design

Overall Total	349	(n = 48)
Sample A Total	332	(n = 41)
Sample B Total	17	(n = 7)
Bay Area Total	145	(n = 20)
Los Angeles/Orange County Total	204	(n = 28)

Has game design employees	52%	(n = 48)
No game design employees	33%	(n = 31)
DK/NA	15%	(n = 14)

B. Art

Overall Total ---------- 943 (n = 53)
Sample A Total ---------- 855 (n = 39)
Sample B Total ---------- 88 (n = 14)
Bay Area Total ---------- 536 (n = 23)
Los Angeles/Orange County Total ---------- 407 (n = 30)

Has art employees ---------- 57% (n = 53)
No art employees ---------- 28% (n = 26)
DK/NA ---------- 15% (n = 14)

C. Programming

Overall Total ---------- 945 (n = 44)
Sample A Total ---------- 743 (n = 34)
Sample B Total ---------- 202 (n = 10)
Bay Area Total ---------- 670 (n = 18)
Los Angeles/Orange County Total ---------- 275 (n = 26)

Has programming employees ---------- 47% (n = 44)
No programming employees ---------- 38% (n = 35)
DK/NA ---------- 15% (n = 14)

D. Production

Overall Total ---------- 633 (n = 61)
Sample A Total ---------- 500 (n = 44)
Sample B Total ---------- 133 (n = 17)
Bay Area Total ---------- 347 (n = 25)
Los Angeles/Orange County Total ---------- 286 (n = 36)

Has production employees ---------- 66% (n = 61)
No production employees ---------- 19% (n = 18)
DK/NA ---------- 15% (n = 14)

E. Testing

Overall Total	825	(n = 31)
Sample A Total	781	(n = 24)
Sample B Total	44	(n = 7)
Bay Area Total	573	(n = 15)
Los Angeles/Orange County Total	252	(n = 16)
Has testing employees	33%	(n = 31)
No testing employees	52%	(n = 48)
DK/NA	15%	(n = 14)

11. Next, please tell me how many total individuals you estimate will be employed in each of these functions at your location 12 months from now. Here's the (first/next) one_____ (READ FUNCTIONS IN SEQUENCE). How many employees do you estimate will be employed in _____ (REPEAT FUNCTION) at your location in 12 months' time?

A. Game Design

Overall Total	281	(n = 40)
Sample A Total	263	(n = 34)
Sample B Total	18	(n = 6)
Bay Area Total	125	(n = 18)
Los Angeles/Orange County Total	156	(n = 22)
Has game design employees in 12 months	43%	(n = 40)
No game design employees in 12 months	29%	(n = 27)
DK/NA	28%	(n = 26)

B. Art

Overall Total	638	(n = 49)
Sample A Total	530	(n = 36)
Sample B Total	108	(n = 13)
Bay Area Total	313	(n = 21)
Los Angeles/Orange County Total	325	(n = 28)
Has art employees in 12 months	53%	(n = 49)
No art employees in 12 months	19%	(n = 18)
DK/NA	28%	(n = 26)

C. Programming

Overall Total ---------- 726 (n = 42)
Sample A Total ---------- 473 (n = 31)
Sample B Total ---------- 253 (n = 11)
Bay Area Total ---------- 500 (n = 17)
Los Angeles/Orange County Total ---------- 226 (n = 25)

Has programming employees in 12 months ---------- 45% (n = 42)
No programming employees in 12 months ---------- 27% (n = 25)
DK/NA ---------- 28% (n = 26)

D. Production

Overall Total ---------- 452 (n = 54)
Sample A Total ---------- 280 (n = 37)
Sample B Total ---------- 172 (n = 17)
Bay Area Total ---------- 168 (n = 23)
Los Angeles/Orange County Total ---------- 284 (n = 31)

Has production employees in 12 months ---------- 58% (n = 54)
No production employees in 12 months ---------- 14% (n = 13)
DK/NA ---------- 28% (n = 26)

E. Testing

Overall Total ---------- 436 (n = 30)
Sample A Total ---------- 370 (n = 22)
Sample B Total ---------- 66 (n = 8)
Bay Area Total ---------- 215 (n = 13)
Los Angeles/Orange County Total ---------- 221 (n = 17)

Has testing employees in 12 months ---------- 32% (n = 30)
No testing employees in 12 months ---------- 40% (n = 37)
DK/NA ---------- 28% (n = 26)

[FOR QUESTIONS 12 THROUGH 18, ONLY ASK ABOUT THE OCCUPATIONAL FUNCTIONS WHERE RESPONDENTS INDICATED THEY CURRENTLY HAVE EMPLOYEES IN Q10]

12. Next, I'm interested in the level of difficulty your business has in finding applicants who meet the company's hiring standards. Please tell me whether your business has no difficulty, some difficulty, or great difficulty finding applicants for the following occupational groups. (READ IN SEQUENCE)

All Companies

	No difficulty	Some difficulty	Great difficulty	(DON'T READ) DK/NA
A. Game design (n = 48)	25%	38%	29%	8%
B. Art (n = 53)	32%	43%	23%	2%
C. Programming (n = 44)	18%	25%	46%	11%
D. Production (n = 61)	34%	43%	16%	7%
E. Testing (n = 31)	58%	16%	13%	13%

Bay Area Companies

	No difficulty	Some difficulty	Great difficulty	(DON'T READ) DK/NA
A. Game design (n = 20)	35%	35%	20%	10%
B. Art (n = 23)	30%	57%	13%	0%
C. Programming (n = 18)	17%	17%	56%	11%
D. Production (n = 25)	36%	40%	16%	8%
E. Testing (n = 15)	60%	20%	7%	13%

Los Angeles/Orange County Companies

	No difficulty	Some difficulty	Great difficulty	(DON'T READ) DK/NA
A. Game design (n = 28)	18%	39%	36%	7%
B. Art (n = 30)	33%	33%	30%	3%
C. Programming (n = 26)	19%	31%	39%	12%
D. Production (n = 36)	33%	44%	17%	6%
E. Testing (n = 16)	56%	13%	19%	13%

13. We're interested in how often your business recruits individuals from outside of California for each function. As I read each function, please indicate if you always, frequently, sometimes, rarely or never recruit individuals from outside of California for that function. (READ IN SEQUENCE)

All Companies

	Always	Frequently	Sometimes	Rarely	Never	(DON'T READ) DK/NA
A. Game design (n = 48)	10%	15%	33%	15%	25%	2%
B. Art (n = 53)	8%	23%	21%	15%	34%	0%
C. Programming (n = 44)	11%	18%	41%	7%	21%	2%
D. Production (n = 61)	5%	16%	28%	25%	25%	2%
E. Testing (n = 31)	3%	0%	10%	13%	71%	3%

Bay Area Companies

	Always	Frequently	Sometimes	Rarely	Never	(DON'T READ) DK/NA
A. Game design (n = 20)	15%	15%	30%	10%	30%	0%
B. Art (n = 23)	9%	22%	13%	17%	39%	0%
C. Programming (n = 18)	22%	11%	39%	6%	22%	0%
D. Production (n = 25)	4%	20%	24%	24%	28%	0%
E. Testing (n = 15)	7%	0%	13%	7%	73%	0%

Los Angeles/Orange County Companies

	Always	Frequently	Sometimes	Rarely	Never	(DON'T READ) DK/NA
A. Game design (n = 28)	7%	14%	36%	18%	21%	4%
B. Art (n = 30)	7%	23%	27%	13%	30%	0%
C. Programming (n = 26)	4%	23%	42%	8%	19%	4%
D. Production (n = 36)	6%	14%	31%	25%	22%	3%
E. Testing (n = 16)	0%	0%	6%	19%	69%	6%

14. What are the occupational job titles which your company uses for **entry-level** positions in each of the following functions: (READ IN SEQUENCE. ALLOW UP TO THREE RESPONSES). Note: responses may sum to more than 100% as more than one answer was allowed.

A. Game Design (n = 40)

Junior designer/junior game designer	28%	(n = 11)
Associate designer/associate game designer	13%	(n = 5)
Game designer	8%	(n = 3)
Designer	8%	(n = 3)
Assistant designer	5%	(n = 2)
Level designer/associate level designer	5%	(n = 2)
3-D designer	3%	(n = 1)
Concept designer	3%	(n = 1)
Coordinator	3%	(n = 1)
Game design intern	3%	(n = 1)
Technical staff	3%	(n = 1)
DK/NA	23%	(n = 9)
Don't hire entry level	5%	(n = 2)
None	3%	(n = 1)

B. Art (n = 53)

Artist	23%	(n = 12)
Junior artist/junior designer	19%	(n = 10)
Associate artist/assistant artist	11%	(n = 6)
2-D/3-D artist	8%	(n = 4)
Graphic designer/graphic artist	8%	(n = 4)
Animator/associate animator/animator artist	8%	(n = 4)
Art intern/apprentice level artist	6%	(n = 3)
Composer/composer in training	4%	(n = 2)
Concept designer	4%	(n = 2)
Coordinator/associate coordinator	4%	(n = 2)
Designer/web designer	4%	(n = 2)
Junior character/environment artist	4%	(n = 2)
Assistant engineer	2%	(n = 1)
Assistant sound editor	2%	(n = 1)
Associate cinematic artist	2%	(n = 1)
Modeler	2%	(n = 1)
Scanning Technician	2%	(n = 1)
Sound assistant	2%	(n = 1)
DK/NA	6%	(n = 3)
Don't hire entry level	2%	(n = 1)
None	2%	(n = 1)

C. Programming (n = 42)

Junior programmer	24%	(n = 10)
Programmer/game programmer	19%	(n = 8)
Associate/assistant software engineer/ engineer	12%	(n = 5)
Software engineer	10%	(n = 4)
Entry-level programmer	5%	(n = 2)
Junior engineer/junior designer	5%	(n = 2)
Tools programmer/junior tools programmer	5%	(n = 2)
Application programmer	2%	(n = 1)
Developer	2%	(n = 1)
Game play programmer	2%	(n = 1)
Programming intern	2%	(n = 1)
Runner	2%	(n = 1)
Technical staff	2%	(n = 1)
DK/NA	10%	(n = 4)
Don't hire entry level	2%	(n = 1)
None	2%	(n = 1)

D. Production (n = 50)

Assistant/assistant producer	22%	(n = 11)
Associate producer	14%	(n = 7)
Producer	12%	(n = 6)
Production Assistant	12%	(n = 6)
Intern/production intern	8%	(n = 4)
Junior/junior producer	6%	(n = 3)
Assistant project manager	2%	(n = 1)
Coordinator	2%	(n = 1)
Engineer	2%	(n = 1)
Game director	2%	(n = 1)
Junior production artist	2%	(n = 1)
Localization coordinator	2%	(n = 1)
Production artist	2%	(n = 1)
Production specialist	2%	(n = 1)
Program assistant	2%	(n = 1)
DK/NA	10%	(n = 5)
Don't hire entry level	2%	(n = 1)
None	2%	(n = 1)

E. Testing (n = 29)

Game tester/tester	38%	(n = 11)
QA tester/contract QA tester	14%	(n = 4)
QA Associate	7%	(n = 2)
Quality assurance/quality controller	7%	(n = 2)
QA engineer	7%	(n = 2)
Coordinator	3%	(n = 1)
Entry-level tester	3%	(n = 1)
Intern	3%	(n = 1)
QA Analyst	3%	(n = 1)
DK/NA	7%	(n = 2)
Don't hire entry level	3%	(n = 1)
None	3%	(n = 1)

15. Next, I'd like to know what the typical education requirement is for successful **entry-level** applicants within each function? The categories are: (INTERVIEWER READ OPTIONS). Ok, here's the (first/next) one: (READ FUNCTION IN SEQUENCE). What are the typical education requirements for successful applicants in this function at your location? (CONTINUE UNTIL ALL ITEMS ARE READ).

No formal education requirements	1
Completion of high school or equivalency	2
Certificate or Associate Degree	3
Bachelor's Degree (B.A., B.S.)	4
Professional or Graduate Degree (M.S, Ph.D.)	5
DK/NA (DON'T READ)	6

Education Requirements	**1**	**2**	**3**	**4**	**5**	**6**
A. Game design (n = 48)	19%	21%	13%	40%	2%	6%
B. Art (n = 53)	17%	19%	17%	42%	2%	4%
C. Programming (n = 44)	7%	7%	7%	68%	5%	7%
D. Production (n = 61)	20%	15%	11%	44%	3%	7%
E. Testing (n = 31)	13%	42%	16%	23%	3%	3%

16. Next, for the same list, I'd like to know, what the typical levels of related work experience for **entry-level** applicants within each function? The categories are: (INTERVIEWER READ OPTIONS). Ok, here's the first one: (READ FUNCTION IN SEQUENCE). What is the typical level of work experience for successful applicants in this Function at your location? (CONTINUE UNTIL RESPONDENT ANSWERS, OR ALL ITEMS ARE READ).

No formal work experience ----------1
Up to one year of work experience
in a related occupation ----------2
One to two years' experience in a related
occupation----------3
Three or more years' experience in a related
occupation----------4
(DON'T READ) DK/NA----------5
Other (Please specify: _____) ----------6

Education Requirements	**1**	**2**	**3**	**4**	**5**	**6**
A. Game design (n = 48)	17%	29%	25%	19%	6%	4%
B. Art (n = 53)	28%	28%	25%	13%	4%	2%
C. Programming (n = 44)	25%	11%	27%	32%	2%	2%
D. Production (n = 61)	20%	18%	30%	28%	3%	2%
E. Testing (n = 31)	48%	23%	13%	13%	3%	0%

17. Please tell me what the most important skills are when considering **entry-level** applicants for occupations in the _____ (READ FUNCTION) function? [DON'T READ LIST. RECORD FIRST TWO RESPONSES]

A. Interpersonal skills----------1
B. Technical competence----------2
C. Written communication skills----------3
D. Verbal communication skills----------4
D. Ability to work unsupervised/independently ----------5
E. Ability to work as part of a team----------6
F. Problem-solving skills----------7
G. Effective time management ----------8
H. Ability to follow directions ----------9
I. Foreign languages---------- 10
J. Artistic skills ---------- 11
K. Math skills ---------- 12
L. Creative skills ---------- 13
M. Design skills---------- 14
N. Dexterity/coordination---------- 15
O. Other (Please specify: _____) ---------- 16
P. Specific computer software program---------- 17

Important Skills

A. Game Design (n = 48)

Creative skills	29%	(n = 14)
Technical competence	23%	(n = 11)
Ability to work as part of a team	13%	(n = 6)
Design skills	13%	(n = 6)
Experience/knowledge	13%	(n = 6)
Interpersonal skills	10%	(n = 5)
Written communication skills	10%	(n = 5)
Ability to work unsupervised/independently	8%	(n = 4)
Verbal communication skills	8%	(n = 4)
Problem solving skills	6%	(n = 3)
Ability to follow directions	4%	(n = 2)
Artistic skills	4%	(n = 2)
Passion for games	4%	(n = 2)
Ability to learn	2%	(n = 1)
Ability to succeed/learn	2%	(n = 1)
Attention to detail	2%	(n = 1)
Diverse skills	2%	(n = 1)
Motivational skills	2%	(n = 1)
DK/NA/Refused	15%	(n = 7)

B. Art (n = 53)

Artistic skills	53%	(n = 28)
Technical competence	26%	(n = 14)
Creative skills	17%	(n = 9)
Interpersonal skills	13%	(n = 7)
Design skills	11%	(n = 6)
Ability to work as part of a team	9%	(n = 5)
Ability to follow directions	4%	(n = 2)
Ability to work unsupervised/independently	4%	(n = 2)
Passion for games	4%	(n = 2)
Problem solving skills	4%	(n = 2)
Strong portfolio	4%	(n = 2)
Verbal communication skills	4%	(n = 2)
Computer/software skills	2%	(n = 1)
Effective time management/efficiency	2%	(n = 1)
Experience/knowledge	2%	(n = 1)
Math skills	2%	(n = 1)
Motivational skills	2%	(n = 1)
Written communication skills	2%	(n = 1)
DK/NA/Refused	9%	(n = 5)

C. Programming (n = 44)

Technical competence	50%	(n = 22)
Ability to work as part of a team	16%	(n = 7)
Math skills	11%	(n = 5)
Computer/software skills	9%	(n = 4)
Problem solving skills	9%	(n = 4)
Experience/knowledge	7%	(n = 3)
Passion for games	7%	(n = 3)
Verbal communication skills	7%	(n = 3)
Written communication skills	7%	(n = 3)
Ability to work unsupervised/independently	5%	(n = 2)
Interpersonal skills	5%	(n = 2)
Programming/coding skills	5%	(n = 2)
Strong portfolio	5%	(n = 2)
Ability to follow directions	2%	(n = 1)
Creative skills	2%	(n = 1)
DK/NA/Refused	14%	(n = 6)

D. Production (n = 61)

Interpersonal skills	26%	(n = 16)
Ability to work as part of a team	15%	(n = 9)
Written communication skills	13%	(n = 8)
Experience/knowledge	10%	(n = 6)
Technical competence	10%	(n = 6)
Verbal communication skills	10%	(n = 6)
Creative skills	8%	(n = 5)
Problem solving skills	8%	(n = 5)
Artistic skills	7%	(n = 4)
Ability to follow directions	5%	(n = 3)
Attention to detail	5%	(n = 3)
Math skills	5%	(n = 3)
Ability to work unsupervised/independently	4%	(n = 2)
Design skills	4%	(n = 2)
Organizational skills	4%	(n = 2)
Strong portfolio	4%	(n = 2)
Ability to multitask	2%	(n = 1)
Ability to succeed	2%	(n = 1)
Computer/software skills	2%	(n = 1)
Effective time management/efficiency	2%	(n = 1)
Good attitude/work ethic	2%	(n = 1)
Leadership skills	2%	(n = 1)
Passion for games	2%	(n = 1)
Project management skills	2%	(n = 1)
DK/NA/Refused	11%	(n = 7)

E. Testing (n = 31)

Written communication	23%	(n = 7)
Passion for games	19%	(n = 6)
Ability to work unsupervised/independently	13%	(n = 4)
Verbal communication skills	13%	(n = 4)
Attention to detail	10%	(n = 3)
Problem solving skills	10%	(n = 3)
Ability to follow directions	6%	(n = 2)
Ability to work as part of a team	6%	(n = 2)
Interpersonal skills	6%	(n = 2)
Technical competence	6%	(n = 2)
Creative skills	3%	(n = 1)
Design skills	3%	(n = 1)
Effective time management/efficiency	3%	(n = 1)
Experience/knowledge	3%	(n = 1)
DK/NA/Refused	16%	(n = 5)

18. Please tell me which skills, your **entry-level** _____ (READ FUNCTION) employees are currently most deficient in? [DON'T READ LIST. RECORD FIRST TWO RESPONSES]

A. Interpersonal skills ---- 1
B. Technical competence ---- 2
C. Written communication skills ---- 3
D. Verbal communication skills ---- 4
D. Ability to work unsupervised/independently ---- 5
E. Ability to work as part of a team ---- 6
F . Problem-solving skills ---- 7
G. Effective time management ---- 8
H. Ability to follow directions ---- 9
I. Foreign languages ---- 10
J. Artistic skills ---- 11
K. Math skills ---- 12
L. Creativity skills ---- 13
M. Design skills ---- 14
N. Dexterity/coordination ---- 15
O. Other (Please specify: _____) ---- 16

Deficient Skills

A. Game Design (n = 48)

Technical competence	15%	(n = 7)
Design skills	10%	(n = 5)
Experience/knowledge	10%	(n = 5)
Written communication skills	10%	(n = 5)
Creative skills	8%	(n = 4)
Ability to follow directions	6%	(n = 3)
Ability to work unsupervised/independently	6%	(n = 3)
Ability to work as part of a team	4%	(n = 2)
Artistic skills	4%	(n = 2)
Foreign languages	4%	(n = 2)
Ability to learn	2%	(n = 2)
Computer/software skills	2%	(n = 1)
Good attitude/work ethic	2%	(n = 1)
Math skills	2%	(n = 1)
Organizational skills	2%	(n = 1)
Passion for games	2%	(n = 1)
Problem solving skills	2%	(n = 1)
Project development	2%	(n = 1)
Verbal communication skills	2%	(n = 1)
DK/NA/Refused	25%	(n = 12)
None	4%	(n = 2)

B. Art (n = 53)

Technical competence	19%	(n = 10)
Experience/knowledge	13%	(n = 7)
Verbal communication skills	8%	(n = 4)
Artistic skills	8%	(n = 4)
Creative skills	8%	(n = 4)
Computer/software skills	6%	(n = 3)
Design skills	6%	(n = 3)
Ability to work unsupervised/independently	4%	(n = 2)
Strong portfolio	4%	(n = 2)
Ability to follow directions	2%	(n = 1)
Ability to work as part of a team	2%	(n = 1)
Attention to detail	2%	(n = 1)
Concept skills	2%	(n = 1)
Foreign languages	2%	(n = 1)
Interpersonal skills	2%	(n = 1)
DK/NA/Refused	28%	(n = 15)
None	2%	(n = 1)

C. Programming (n = 44)

Technical competence	23%	(n = 10)
Ability to work as part of a team	9%	(n = 4)
Verbal communication skills	9%	(n = 4)
Experience/knowledge	7%	(n = 3)
Written communication skills	7%	(n = 3)
Ability to work unsupervised/independently	5%	(n = 2)
Artistic skills	5%	(n = 2)
Computer/software skills	5%	(n = 2)
Interpersonal skills	5%	(n = 2)
Organizational skills	5%	(n = 2)
Problem solving skills	5%	(n = 2)
Programming/coding skills	5%	(n = 2)
Foreign languages	2%	(n = 1)
Math skills	2%	(n = 1)
Project estimation	2%	(n = 1)
Strong portfolio	2%	(n = 1)
DK/NA/Refused	20%	(n = 9)
None	7%	(n = 3)

D. Production (n = 61)

Experience/knowledge	10%	(n = 6)
Interpersonal skills	10%	(n = 6)
Creative skills	7%	(n = 4)
Technical competence	7%	(n = 4)
Ability to work unsupervised/independently	5%	(n = 3)
Effective time management/efficiency	5%	(n = 3)
Problem solving skills	5%	(n = 3)
Verbal communication skills	5%	(n = 3)
Ability to work as part of a team	4%	(n = 2)
Foreign languages	4%	(n = 2)
Written communication skills	4%	(n = 2)
Artistic skills	2%	(n = 1)
Computer/software skills	2%	(n = 1)
Leadership skills	2%	(n = 1)
Math skills	2%	(n = 1)
Organizational skills	2%	(n = 1)
Project management skills	2%	(n = 1)
Processing skills	2%	(n = 1)
Strong portfolio	2%	(n = 1)
DK/NA/Refused	38%	(n = 23)
None	4%	(n = 2)

E. Testing (n = 31)

Technical competence	23%	(n = 7)
Written communication	19%	(n = 6)
Problem solving skills	10%	(n = 3)
Effective time management/efficiency	6%	(n = 2)
Experience/knowledge	6%	(n = 2)
Verbal communication skills	6%	(n = 2)
Ability to work as part of a team	3%	(n = 1)
Ability to work unsupervised/independently	3%	(n = 1)
Attention to detail	3%	(n = 1)
Creative skills	3%	(n = 1)
DK/NA/Refused	32%	(n = 10)
None	3%	(n = 1)

19. Does your company outsource any functions or departments? **[If YES, probe for details of the outsourced functions – what functions are outsourced, where are the companies located which they use – in California, elsewhere in US, or overseas?].**

All Companies (n = 93)

Yes	46%
No	54%
DK/NA/Refused	0%

Bay Area Companies (n = 39)

Yes	51%
No	49%
DK/NA/Refused	0%

Los Angeles/Orange County Companies (n = 54)

Yes	43%
No	57%
DK/NA/Refused	0%

Outsourced Functions (n = 37)

Art	35%
Programming	24%
Audio	11%
Music	11%
Production	8%
QA	8%
Design	5%
Development	5%
Editorial/data editing	5%
Everything	5%
3-D Animation	3%
Consulting	3%
Database	3%
Engineering	3%
Porting	3%
PR	3%
Printing	3%
Project management	3%
Sales	3%
Sound recording	3%
Specialty divisions	3%
Testing	3%
Voice technologies	3%

Regions (n = 34)

California	62%
USA	18%
Worldwide	38%

20. If an occupation has a set degree requirement, such as a B.A. or a B.S., has your firm hired or considered hiring individuals into that occupation with less than that degree but with work-related experience or a specific certificate?

All Companies (n = 93)

Yes	82%
No	9%
DK/NA/Refused	10%

Bay Area Companies (n = 39)

Yes	85%
No	10%
DK/NA/Refused	5%

Los Angeles/Orange County Companies (n = 54)

Yes	80%
No	7%
DK/NA/Refused	13%

21. Are there any specific occupations that your firm currently, or in the near future, will have a need for that were not specifically discussed in this survey? (OPEN ENDED. ALLOW UP TO FOUR RESPONSES) (n = 34)

Marketing	21%
Media/sales	21%
3-D artist	6%
Animator	6%
Audio/audio engineer	6%
Business management/development	6%
Composer	6%
Customer support	6%
Operations	6%
Productions	6%
Project manager	6%
Administration	3%
Controller	3%
Designer	3%
Effects	3%
Finance	3%
IT department	3%
Localization	3%
Manager	3%
Network engineer	3%
Post-production	3%
Production supervisor	3%
Publisher	3%
Rigging	3%
Sound designer	3%
Story artist	3%
System administrator	3%
Technical artist	3%
Work ethics	3%

We've completed all the questions about occupations. Before we finish I'd like to ask a few general questions and then verify your contact information.

22. What is your firm's level of interest in the following training and education programs that could be developed by local community colleges for the video and computer game workforce. As I read each possible program, please tell me whether your business would have no interest, some interest, or great interest in the program.

Randomize

	No interest	Some interest	Great interest	(DON'T READ) DK/NA
A. A highly-specialized two-year associates degree program designed to meet the specific workforce needs of local game companies	40%	34%	24%	2%
B. Customized training programs for your employees	48%	37%	14%	1%
C. A game design and development certificate	46%	29%	18%	7%
D. A cross-disciplinary two-year associates degree program to prepare students for a video game-related bachelor's or graduate degree	37%	41%	18%	4%

23. Would your company be interested in working with the community colleges in your area to help develop the types of programs required to generate a highly-skilled workforce for your industry in the years ahead?

Yes	62%
No	33%
DK/NA/Refused	4%

And finally, could you please verify your company information.

D1a Company name _____
D1b Company address (include City and Zip) _____
D1c Name of Respondent _____
D1d Position of Respondent _____
D1g Phone number of respondent _____
D1h Email of respondent _____

Thank you very much for your time.