21st CENTURY EMPLOYABILITY SKILLS

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A Labor Market Analysis of Soft Skills in Imperial County

COMMUNITY COLLEGES
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CAREER EDUCATION

C·O·E CENTERS OF EXCELLENCE
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Table of Contents

Introduction

Researchers have analyzed *21st century employability skills* for years due to their importance in the labor market. 21st century employability skills have also been referred to as "soft skills," "baseline skills," "essential skills," "foundational skills," and "emotional intelligence" in literature. A recent study by Burning Glass Technologies found that, on average, one in three skills requested in 25 million U.S. job postings is a baseline skill.[1] According to studies from Harvard[2] and Stanford,[3] occupations with the greatest increase in employment and wage over time have been those that require both "soft" and "technical" skills.[4]

Based on existing literature and labor market research, the San Diego-Imperial Center of Excellence for Labor Market Research (COE) identified 25 most commonly found 21st century employability skills in online job postings, and grouped them into the following six categories:[5]

Effective Oral and Written Communication

1. Bilingual
2. Communication skills [6]
3. Presentation skills
4. Writing

Agility and Adaptability

9. Flexibility/adaptability
10. Meeting deadlines
11. Multi-tasking
12. Organizational skills
13. Time management

Accessing and Analyzing Information

19. Analytical skills
20. Basic mathematics
21. Detail-oriented
22. Research

Collaboration Across Networks

5. Building effective relationships
6. Customer service
7. Positive disposition
8. Teamwork/collaboration

Initiative and Entrepreneurialism

14. Leadership
15. Planning
16. Project management
17. Self-starter
18. Supervisory skills

Critical Thinking and Problem Solving

23. Creativity
24. Critical thinking
25. Problem solving

The COE adopted these categories from Wagner's (2008) *The Global Achievement Gap*, and identified the 21st century employability skills using Burning Glass Technologies, a software program that collects online jobs postings from over 40,000 sources and extracts labor market information such as employer-requested skills and certifications from each job posting.[7] These categories are organized in the order of the greatest number online job postings to the least in Imperial County, with descriptions of each provided below.

[1] The Human Factor: The Hard Time Employers Having Finding Soft Skills." Burning Glass Technologies, 2015. burning-glass.com/wp-content/uploads/Human_Factor_Baseline_Skills_FINAL.pdf

[2] "The Growing Importance of Social Skills in the Labor Market," Deming, D, NBER Working Paper. 2015. nber.org/papers/w21473

[3] "The Payoff to Skill in the Third Industrial Revolution," Liu, Y, and Grusky, D. American Journal of Sociology. 2013. jstor.org/stable/10.1086/669498

[4] "The Human Factor: The Hard Time Employers Having Finding Soft Skills." Burning Glass Technologies, 2015. burning-glass.com/wp-content/uploads/Human_Factor_Baseline_Skills_FINAL.pdf

[5] Adopted from Wagner, Tony. The global achievement gap: Why even our best schools don't teach the new survival skills our children need—and what we can do about it. 2008.

[6] Includes "written communication" and "verbal/oral communication"

[7] "The Human Factor: The Hard Time Employers Having Finding Soft Skills." Burning Glass Technologies, 2015. burning-glass.com/wp-content/uploads/Human_Factor_Baseline_Skills_FINAL.pdf

Effective Oral and Written Communication: LinkedIn Learning (2020) identified "communication" as one of the top three skills in the workplace.[8] Technology allows companies to have virtual teams not only throughout the United States, but all over the world. Therefore, the "ability to express one's views clearly … and to communicative effectively across cultures" is highly valued by employers.[9]

Collaboration Across Networks: As virtual and global collaboration increases, employees must be able to work with people of different generations and backgrounds. Workers who can trust, understand, and appreciate diverse cultures will have a competitive advantage over others.[10]

Agility and Adaptability: Employers need workers who are resilient, adaptable, and flexible to change. Technology intensifies the rate of change in the workplace, provides an overwhelming amount of data, and increases complexity of problems that companies face each day.[11]

Initiative and Entrepreneurialism: "Leadership and management" is also one of the top three skills in the workplace identified by LinkedIn Learning (2020). As companies become "less hierarchical and more reciprocal and relational," workers need to be able to take initiative and lead by influence, not by force.[12]

Accessing and Analyzing Information: LinkedIn Learning (2020) explains that "as companies continue to collect and analyze more data than ever before, they need people who can help interpret and take action on the data to drive growth."[13]

Critical Thinking and Problem Solving: "Creative problem solving and design thinking" is also one of the top three skills identified by LinkedIn Learning (2020). According to Wagner (2008), "The habit of asking good questions was most frequently mentioned as an essential component of critical-thinking and problem-solving skills."[14] Employees will have to work together to figure out solutions to cross-departmental problems; management will not simply provide the answers.[15]

To determine which 21st century employability skills in these categories have the greatest labor market need in Imperial County, the following sections provide an analysis of online job postings for these skills between 2009 and 2019. (For more information, view *Appendix A: Methodology and Definitions*.) The purpose of this brief is to provide labor market information about 21st century employability skills to assist the San Diego and Imperial Counties Community Colleges with program development and strategic planning.

[8] 2020 Workplace Learning Report. LinkedIn Learning.
[9] Wagner, T. The global achievement gap. 2008.
[10] Wagner, T. The global achievement gap. 2008.
[11] Wagner, T. The global achievement gap. 2008.
[12] Wagner, T. The global achievement gap. 2008.
[13] 2020 Workplace Learning Report. LinkedIn Learning.
[14] Wagner, T. The global achievement gap. 2008.
[15] Wagner, T. The global achievement gap. 2008.

21st Century Employability Skills in Online Job Postings

In the accompanying chart, 21st century employability skills are ranked by the popularity of their use in online job postings. In a comparison of data sets, nine of the 10 most sought-after skills nationally were also among top 10 in Imperial County (see skills in **bold** in Exhibit 1).

Exhibit 1: Ranking of 21st Century Employability Skills in Online Job Postings
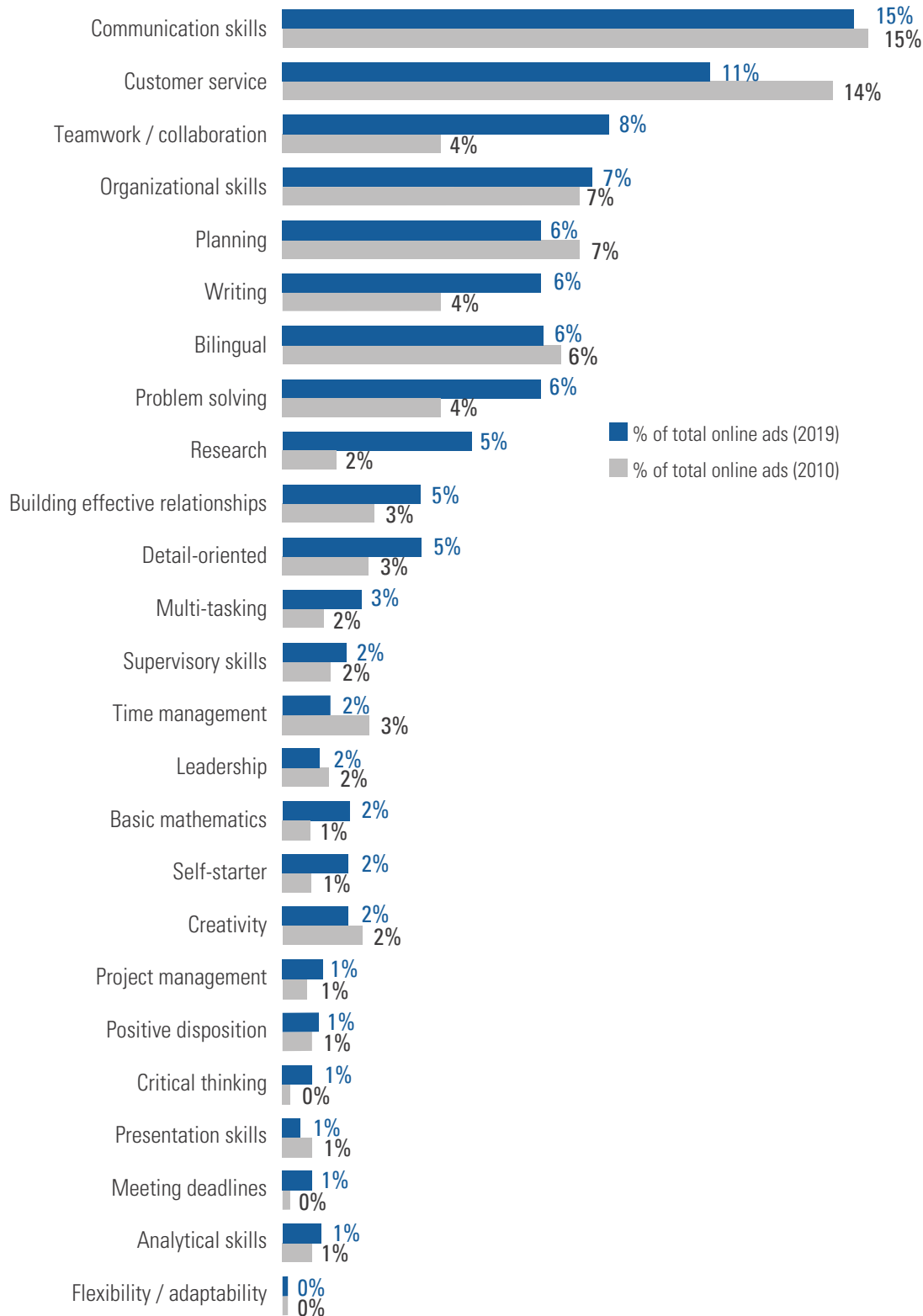### Nationally vs. Imperial County (2019)[16]

Ranking	Nationally	Number of Online Job Postings	Imperial County	Number of Online Job Postings
#1	**Communication skills**	10,994,935	**Communication skills**	875
#2	**Customer service**	5,943,562	**Customer service**	667
#3	**Teamwork / collaboration**	5,679,348	**Teamwork / collaboration**	455
#4	**Organizational skills**	5,118,526	**Organizational skills**	433
#5	**Problem solving**	4,405,156	**Planning**	363
#6	Detail-oriented	4,317,466	**Writing**	361
#7	**Planning**	3,717,073	Bilingual	341
#8	**Writing**	3,571,532	**Problem solving**	329
#9	**Research**	3,090,160	**Building effective relationships**	286
#10	**Building effective relationships**	2,656,196	**Research**	286
#11	Multi-tasking	2,574,045	Detail-oriented	285
#12	Creativity	2,263,083	Multi-tasking	163
#13	Project management	2,257,324	Supervisory skills	142
#14	Flexibility / adaptability	2,191,471	Leadership	125
#15	Time management	1,893,579	Time management	125
#16	Leadership	1,366,427	Basic mathematics	114
#17	Positive disposition	1,208,837	Self-starter	101
#18	Presentation skills	1,181,014	Creativity	98
#19	Self-starter	1,131,022	Project management	83
#20	Meeting deadlines	1,049,847	Positive disposition	82
#21	Bilingual	942,328	Critical thinking	57
#22	Analytical skills	938,870	Presentation skills	55
#23	Supervisory skills	725,067	Meeting deadlines	53
#24	Critical thinking	719,791	Analytical skills	35
#25	Basic mathematics	684,454	Flexibility / adaptability	N/A

[16] Labor Insight/Jobs. Burning Glass Technologies. "Nationwide" or "Imperial, CA." Full year 2019.

21st Century Employability Skills with the Greatest Labor Market Demand

According to Burning Glass Technologies, employers are more likely to post skills in job ads that they are "worried won't be commonly available in their candidate pool."[17] To determine which skills have the greatest demand in Imperial County, the COE analyzed the percentage of each skill out of all online job postings in 2010 and 2019 (Exhibit 2).[18] "Communication skills" has consistently been the top skill in the county.

Exhibit 2: Percentage of Total Number of Online Job Postings by 21st Century Employability Skill Imperial County (2010 & 2019)

Skill	% of total online ads (2019)	% of total online ads (2010)
Communication skills	15%	15%
Customer service	11%	14%
Teamwork / collaboration	8%	4%
Organizational skills	7%	7%
Planning	6%	7%
Writing	6%	4%
Bilingual	6%	6%
Problem solving	6%	4%
Research	5%	2%
Building effective relationships	5%	3%
Detail-oriented	5%	3%
Multi-tasking	3%	2%
Supervisory skills	2%	2%
Time management	2%	3%
Leadership	2%	2%
Basic mathematics	2%	1%
Self-starter	2%	1%
Creativity	2%	2%
Project management	1%	1%
Positive disposition	1%	1%
Critical thinking	1%	0%
Presentation skills	1%	1%
Meeting deadlines	1%	0%
Analytical skills	1%	1%
Flexibility / adaptability	0%	0%

[17] "The Human Factor: The Hard Time Employers Having Finding Soft Skills." Burning Glass Technologies, 2015. burning-glass.com/wp-content/uploads/Human_Factor_Baseline_Skills_FINAL.pdf
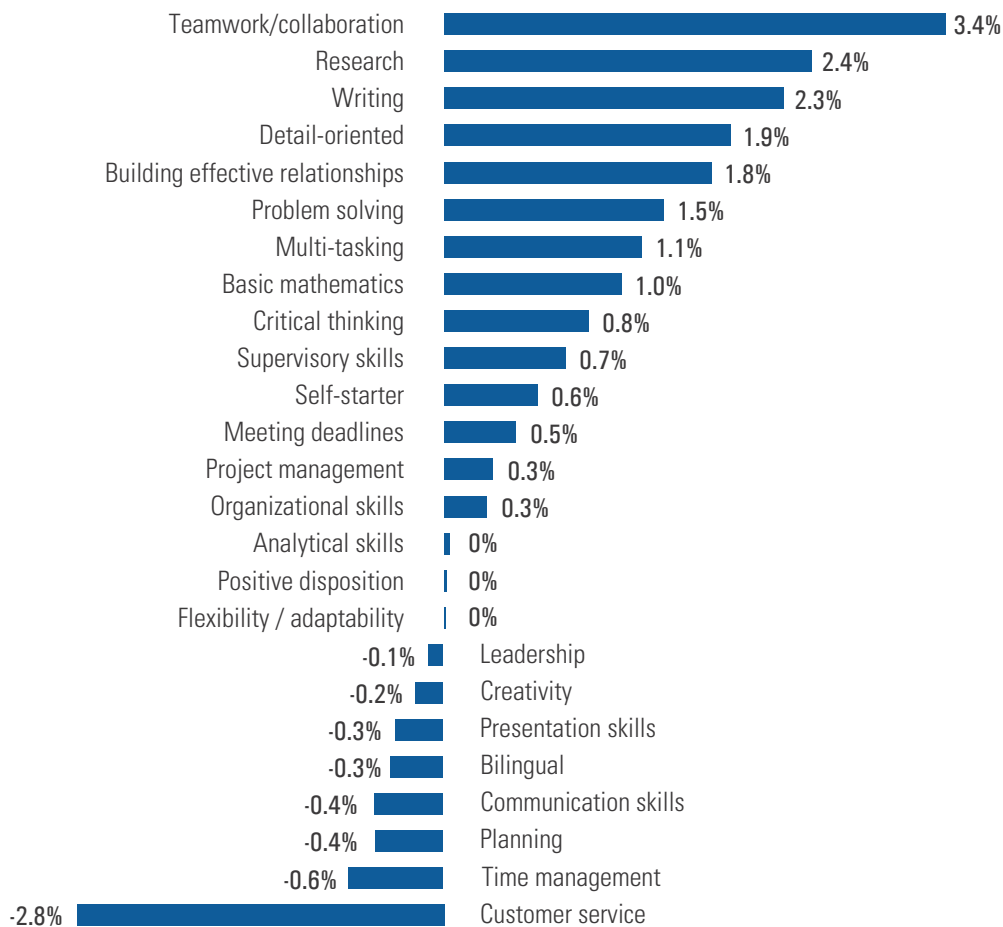
[18] Labor Insight/Jobs. Burning Glass Technologies. Imperial, CA. Full years 2010 and 2019.

21st Century Employability Skills with Potential Supply Gaps

Additionally, Burning Glass Technologies reported that employers tend to post skills with increased frequency when they have difficulty finding candidates with those qualities. The following exhibit illustrates the difference in the percentage makeup of each skill for all job postings between 2010 and 2019 (Exhibit 3).[19] The percentage change between 2010 and 2019 suggests that "teamwork/collaboration" has the greatest supply gap in Imperial County due to the increased frequency in which the skill was posted.

Exhibit 3: Difference in Percentage Makeup of Total Online Job Postings in Imperial County Between 2010 and 2019 by 21st Century Employability Skill

Skill	Percentage
Teamwork/collaboration	3.4%
Research	2.4%
Writing	2.3%
Detail-oriented	1.9%
Building effective relationships	1.8%
Problem solving	1.5%
Multi-tasking	1.1%
Basic mathematics	1.0%
Critical thinking	0.8%
Supervisory skills	0.7%
Self-starter	0.6%
Meeting deadlines	0.5%
Project management	0.3%
Organizational skills	0.3%
Analytical skills	0%
Positive disposition	0%
Flexibility / adaptability	0%
Leadership	-0.1%
Creativity	-0.2%
Presentation skills	-0.3%
Bilingual	-0.3%
Communication skills	-0.4%
Planning	-0.4%
Time management	-0.6%
Customer service	-2.8%

Conclusion

The 21st century employability skills analyzed in this study are not all inclusive. Skills such as "Microsoft Excel," "Microsoft Word + Office," "Computer skills + typing," and other information and communication technologies (ICT) literacy skills are also the top skills in online job postings. Data and ICT literacy, similar to "basic mathematics" may be seen as technical skills instead of soft skills. However, instead of focusing on the nuances and naming conventions, the San Diego-Imperial COE produced this study in hopes that it would provide guidance for the community colleges as they develop programs specific to soft skills for the 21st century workplace.

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[19] Labor Insight/Jobs. Burning Glass Technologies. Imperial, CA. Full years 2010 and 2019.

Appendix A: Methodology and Definitions

Methodology

To better understand "21st century employability skills," the San Diego-Imperial Center of Excellence for Labor Market Research (COE) conducted a literature review of empirical studies and related articles (see Appendix B: References). The COE determined that the six of the "seven survival skills for the twenty-first century" in Tony Wagner's (2008) *The Global Achievement Gap* provided the necessary framework to group and categorize skills most commonly found in online job postings. The six groups or categories are:

1. Critical Thinking and Problem Solving

2. Collaboration Across Networks and Leading by Influence

3. Agility and Adaptability

4. Initiative and Entrepreneurialism

5. Effective Oral and Written Communication

6. Accessing and Analyzing Information

To identify which 21st century employability skills should be analyzed in this brief, the COE referenced Burning Glass Technologies, a software program that collects online jobs postings from over 40,000 sources and extracts labor market information such as employer-requested skills and certifications from each job posting.[20] Burning Glass Technologies released a study on "baseline skills" (using their 14,000-skill taxonomy), which analyzed more than 25 million job postings in the U.S. between 2014 and 2015. The COE adopted 25 of the 28 most commonly posted skills listed in the report, with the exception of "Microsoft Excel," "MS Word + Office," and "computer skills + typing." The COE considers these skill to be *technical* or *software skills*, so they were greyed out from the list below and excluded from the analysis.

Most Commonly Requested "Baseline Skills" in 25 Million U.S. Job Postings			
Communication skills	Planning	Multi-tasking	Analytical skills
Organizational skills	Computer skills + typing	Time management	Bilingual
Writing	Research	Leadership	Meeting deadlines
Customer service	Detail-oriented	Basic mathematics	Self-starter
Microsoft Excel	Building effective relationships	Creativity	Listener
MS Word + Office	Project management	Presentation skills	Critical thinking
Problem solving	Supervisory skills	Teamwork	Positive disposition

[20] "The Human Factor: The Hard Time Employers Having Finding Soft Skills." Burning Glass Technologies, 2015. burning-glass.com/wp-content/uploads/Human_Factor_Baseline_Skills_FINAL.pdf

"Listener" was originally in the national study, however, when the COE attempted to pull data for "listener" as a skill in the Labor Insight/Jobs tool of Burning Glass Technologies, the tool failed to produce any data. Therefore, for this brief, "listener" was also excluded.

Additionally, while "flexibility / adaptability" was not originally in the national Burning Glass Technologies study, this specific skill was consistently referenced in the literature review and was recommended by experts in the field. As a result, the COE included "flexibility / adaptability" in the analysis and extracted data for this skill using the "key word" feature in the Labor Insight/Jobs tool of Burning Glass Technologies.

The final list of 21st century employability skills analyzed in this brief, and their respective categories, are listed below:

Effective Oral and Written Communication

1. Bilingual
2. Communication skills [21]
3. Presentation skills
4. Writing

Collaboration Across Networks

5. Building effective relationships
6. Customer service
7. Positive disposition
8. Teamwork/collaboration

Agility and Adaptability

9. Flexibility/adaptability[22]
10. Meeting deadlines
11. Multi-tasking
12. Organizational skills
13. Time management

Initiative and Entrepreneurialism

14. Leadership
15. Planning
16. Project management
17. Self-starter
18. Supervisory skills

Accessing and Analyzing Information

19. Analytical skills
20. Basic mathematics
21. Detail-oriented
22. Research

Critical Thinking and Problem Solving

23. Creativity
24. Critical thinking
25. Problem solving

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[21] Includes "written communication" and "verbal/oral communication"

[22] "Adaptability" was identified in several literature to be a 21st century employability skill; however, it was not included in Burning Glass's 14,000-skills taxonomy. Therefore, the COE used the key term, "flexibility" when analyzing online job postings to represent "adaptability."

Definitions of 21ˢᵗ Century Employability Skills

As a result of the above methodology, the following 25 skills were analyzed in this brief. Definitions for these skills were derived from Burning Glass Technologies, with the exception of "flexibility/adaptability."[23]

21ˢᵗ Century Employability Skill	Definition
Analytical skills	Analytical skill is the ability to visualize, articulate, conceptualize or solve both complex and uncomplicated problems by making decisions that are sensible given the available information.
Basic mathematics	Mathematics is the study of topics such as quantity (numbers), structure, space, and change.
Bilingual	Bilingual means involving or using two languages.
Building effective relationships	Building relationships is about your ability to identify and initiate working relationships and to develop and maintain them in a way that is of mutual benefit to both yourself and the other party. Good relationships are the key to getting things done and are essential when your success is dependent on others.
Communication skills	The ability to convey information to another effectively and efficiently. This skill includes verbal/oral communication and written communication.
Creativity	Mental characteristic that allows a person to think outside of the box, which results in innovative or different approaches to a particular task.
Critical thinking	Experience objectively examining assumptions (adopted rules of thumb) underlying current beliefs to assess their correctness and legitimacy, and thus to validate or invalidate business beliefs.
Customer service	Experience working with customers to ensure their satisfaction with a product or service.
Detail-oriented	A detail-oriented person is someone who pays attention to the details and can make a conscious effort to understand causes instead of just the effects, and that does this in a second nature type of way.
Flexibility/adaptability	"Adaptability is a willingness to confront or change your own ideas and preconceptions. Flexibility is more a willingness to 'meet others halfway' procedurally."[24]
Leadership	Leadership is both a research area and a practical skill encompassing the ability of an individual or organization to "lead" or guide other individuals, teams, or entire organizations.
Meeting deadlines	Experience measuring, managing and reporting on time delivery.
Multi-tasking	In computing, multitasking is a concept of performing multiple tasks (also known as processes) over a certain period of time by executing them concurrently.
Organizational skills	The ability to use your time, energy, resources, etc. in an effective way so that you achieve the things you want to achieve.
Planning	Planning (also called forethought) is the process of thinking about and organizing the activities required to achieve a desired goal.

[23] Labor Insight/Jobs. Burning Glass Technologies.

[24] blog.corenetglobal.org/blog/do-you-know-the-difference-between-adaptability-and-flexibility

21st Century Employability Skill	Definition
Research	Experience performing creative and systematic work to understand a product, market, or customer, either before building a new solution, or to troubleshoot an existing issue.
Positive disposition	Optimism is a mental attitude a happy belief that the outcome of some specific endeavor, or outcomes in general, will be good.
Presentation skills	Presentation skills are the skills you need in delivering effective and engaging presentations to a variety of audiences. These skills cover a variety of areas such as the structure of your presentation, the design of your slides, the tone of your voice and the body language you convey.
Problem solving	Problem solving consists of using generic or ad hoc methods, in an orderly manner, for finding solutions to problems.
Project management	Project management is the discipline of initiating, planning, executing, controlling, and closing the work of a team to achieve specific goals and meet specific success criteria.
Self-starter	A self-starter is a person who has initiative.
Supervisory skills	Supervision is an act or instance of directing, managing, or oversight.
Teamwork/collaboration	Collaboration and teamwork require a mix of interpersonal, problem solving, and communication skills and are needed for a group to work together towards a common goal.
Time management	Time management is the process of planning and exercising conscious control over the amount of time spent on specific activities - especially to increase effectiveness, efficiency or productivity.
Writing	Experience expressing business messages effectively in written form. This may include planning drafting and revising as necessary.

Additional References

4th Annual 2020 Workplace Learning Report. LinkedIn Learning. (2020). learning. linkedin.com/resources/ workplace-learning-report

Marlow, W., Hughes, D. & Bundy, A. (2018). *The New Foundational Skills of the Digital Economy: Developing the Professionals of the Future.* Burning Glass Technologies. burning-glass.com/research-project/new-foundational-skills

The Human Factor: The Hard Time Employers Having Finding Soft Skills. Burning Glass Technologies (2015) burning-glass.com/wp-content/uploads/Human_ Factor_Baseline_Skills_FINAL.pdf

Wagner, T. (2008). *The global achievement gap: Why even our best schools don't teach the new survival skills our children need—and what we can do about it.* New York: Basic Books.

Trilling, B. & Fadel, C. (2009). *21st century skills: Learning for life in our times.* John Wiley & Sons.

Appendix B: Data Tables

Number of Online Job Postings by 21st Century Employability Skill (United States)[25]

21st Century Employability Skill	Number of Online Job Postings (2010)	21st Century Employability Skill	Number of Online Job Postings (2019)
Communication skills	3,121,871	Communication skills	10,994,935
Customer service	1,735,180	Customer service	5,943,562
Organizational skills	1,185,143	Teamwork / collaboration	5,679,348
Teamwork / collaboration	1,140,449	Organizational skills	5,118,526
Planning	1,126,539	Problem solving	4,405,156
Problem solving	1,079,303	Detail-oriented	4,317,466
Writing	1,011,433	Planning	3,717,073
Research	976,145	Writing	3,571,532
Detail-oriented	832,026	Research	3,090,160
Project management	807,776	Building effective relationships	2,656,196
Creativity	666,670	Multi-tasking	2,574,045
Building effective relationships	613,979	Creativity	2,263,083
Multi-tasking	569,803	Project management	2,257,324
Flexibility / adaptability	458,278	Flexibility / adaptability	2,191,471
Leadership	432,537	Time management	1,893,579
Time management	383,991	Leadership	1,366,427
Presentation skills	353,901	Positive disposition	1,208,837
Self-starter	293,377	Presentation skills	1,181,014
Analytical skills	278,022	Self-starter	1,131,022
Bilingual	256,632	Meeting deadlines	1,049,847
Supervisory skills	241,039	Bilingual	942,328
Meeting deadlines	240,287	Analytical skills	938,870
Positive disposition	224,702	Supervisory skills	725,067
Basic mathematics	120,951	Critical thinking	719,791
Critical thinking	97,694	Basic mathematics	684,454

Total number of U.S. online job postings in 2010 = 12,417,459

Total number of U.S. online job postings in 2019 = 36,340,519

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[25] Labor Insight/Jobs. Burning Glass Technologies. "Full year 2010" or "Full year 2019" AND "Nationwide" AND "Skill: [Name of Skill]"

Number of Online Job Postings by 21st Century Employability Skill (Imperial County)[26]

21st Century Employability Skill	Number of Online Job Postings (2010)	21st Century Employability Skill	Number of Online Job Postings (2019)
Communication skills	412	Communication skills	875
Customer service	380	Customer service	667
Organizational skills	191	Organizational skills	433
Planning	178	Planning	363
Bilingual	164	Bilingual	341
Teamwork / collaboration	115	Teamwork / collaboration	455
Problem solving	111	Problem solving	329
Writing	104	Writing	361
Building effective relationships	81	Building effective relationships	286
Detail-oriented	78	Detail-oriented	285
Time management	74	Time management	125
Research	66	Research	286
Leadership	61	Leadership	125
Creativity	50	Creativity	98
Supervisory skills	46	Supervisory skills	142
Multi-tasking	44	Multi-tasking	163
Positive disposition	37	Positive disposition	82
Presentation skills	32	Presentation skills	55
Self-starter	30	Self-starter	101
Project management	29	Project management	83
Basic mathematics	24	Basic mathematics	114
Analytical skills	15	Analytical skills	35
Meeting deadlines	11	Meeting deadlines	53
Critical thinking	5	Critical thinking	57
Flexibility / adaptability	N/A	Flexibility / adaptability	N/A

Total number of Imperial County online job postings in 2010 = 2,713

Total number of Imperial County online job postings in 2019 = 5,927

26 Labor Insight/Jobs. Burning Glass Technologies. "Full year 2010" or "Full year 2019" AND "Imperial, CA" AND "Skill: [Name of Skill]"

Important Disclaimers

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