

A RELIABLE WAY FOR WORKERS IN CANADA'S
PRINTING AND GRAPHIC COMMUNICATIONS
INDUSTRY TO ACCESS TRAINING THAT EQUIPS
THEM WITH THE SKILLS THEY NEED TO
SUCCEED AND THE INDUSTRY TO PROSPER

BRIDGING THE GAPS



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Canada

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Bridging the Gaps is a vital planning tool prepared by the Canadian Printing Industries Sector Council (CPISC). Founded in April 2006, CPISC is a national forum that collaborates with printing and graphic communications industry employers, employees, educators, suppliers and representatives of governments to create and implement innovative strategies for skills development and progressive HR management practices. In doing so, CPISC enables all key players in the printing and graphic communications industry to work together in partnership to improve the quality of the industry's current and future workforce.

EXECUTIVE SUMMARY

Today's printing and graphic communications industry requires a highly skilled workforce like never before. Technology has shifted and advanced rapidly. Competition is fierce. Training dollars are limited. The industry is changing and so are the required skill sets of its workforce. But do employees have the skills they need to do their jobs?

Using the industry's national skill standards for key occupations in the prepress, press, and finishing and bindery process areas, the Canadian Printing Industries Sector Council (CPISC) undertook a study to determine if employers and educators were teaching the basic, core and operational skills set out in the skill standards and, if not, which skills are required by employees. A training-delivery model for the industry was also developed to guide employees on the path to life-long learning.

This report examines gaps between actual and required on-the-job skills for prepress operators, output specialists, colour specialists, lithographic web offset press operators, lithographic sheet-fed offset press operators, flexographic press operators, digital press operators, bindery operators and finishing operators. It compares shortfalls against available training from employers and educators.

The most startling gaps exist when comparing the current and required core skills of press operators: 39% of web offset press operators require teamwork skills to take on leadership roles and promote teamwork within an organization; 34% of digital press operators lack workflow process and control skills to apply scheduling principles and analyze and interpret production performance; 32% of all press operators require quality assurance skills such as maintaining quality-control systems, programs and policies; 29% of web offset, sheet-fed offset and flexographic press operators lack health and safety skills; and 29% of web offset and digital press operators are not equipped with an in-depth understanding of industry and printing processes that can be used to educate and inform others.

This report also confirms that current training is largely one-dimensional. Despite the complexity of the industry, the speed of its transformation and the variety of skills its workers require, training is largely informal teaching that is performed on the job and restricted to tasks within specific process areas. As a result, the outcomes of this kind of training vary widely based on the knowledge and skills of particular mentors, the capacity and experience of learners, and the availability of formal and informal training resources within companies that provide training.

A 'one-size-fits-all' approach will not address the diverse training requirements of this industry, and therefore this report presents a model that can be adopted by small, medium and large-sized firms. This new training-delivery model makes it possible for current and future workers to get the training they need, bridging the gaps between existing and required skills.

The model also enables experienced workers to keep up with the skills requirements associated with advancing technology and helps employers nurture an adaptable and highly-skilled workforce that will increase prosperity in the industry, all while supporting training providers as they develop and supply programs to meet the industry's needs.

First and foremost, the model ensures that training will focus on the learner, following the learning path of employees as they move throughout their careers in the industry. Skills will be the foundation of all learning and training will be delivered through various proven methods that range from formal education to workplace learning and employer-provided training. CPISC's forthcoming certification program will formally recognise workers' skills and knowledge, and just as importantly, workplace skills assessment and training will enable skilled workers to pass on their knowledge to the next generation.

Moving forward, this report contains five recommendations to sustain the new training-delivery model. CPISC will lead the industry by informing potential employees about the industry's vibrant career path, accrediting training programs who teach the national skill standards, developing a certification program, providing training resources and information to help skill development, and finally by providing mentorship resources to support both mentors and learners through this learning process.

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WHY WE CONDUCTED THIS STUDY

Change. Never before in its long and successful history has the Canadian printing and graphic communications industry undergone such a period of seismic change.

Two factors above all are driving this radical transformation. First, advanced technologies and equipment are emerging at a rapid pace, raising expectations among consumers, placing new demands on workers and fundamentally altering the industry's landscape. And second, trade barriers are coming down, opening up export markets for Canadian printing and graphic communications companies and exposing those firms to new sources of competition from abroad.

To take full advantage of these changes, employers in the industry are introducing business practices that enable companies to incorporate new technologies, foster greater integration of core processes, take advantage of emerging markets and fend off competitors. In fact, these new practices now make it possible for printing and graphic communications firms that once specialized in solely one market segment to provide products and services in an array of areas. As a result, Canada's commercial printers—the 8,345 companies that specialize in traditional, non-digital printing services—are now competing with thousands of companies in other industry sectors, including graphic-design firms, converted paper products manufacturers, packaging and labelling companies, and newspaper, periodical and directory publishers.

In the midst of these fundamental technological and marketplace transformations, Canada's printing and graphic communications industry also faces a shortage of workers. This anticipated labour scarcity will be brought about by the expected retirement of a large segment of older workers combined with a lack of an adequate number of new workers entering the industry. Even then, the industry does not simply need a greater number of workers. The industry needs more of a new kind of worker—printing and graphic communications experts who are tech savvy, who are ambitious and who are eager to embrace the far-reaching changes that are shaping Canada's printing and graphic communications industry. Nurturing this kind of worker requires the industry to determine exactly what kind of training workers need.

Indeed, employers and employees in the industry are relying increasingly on training and skills-development to keep pace with change, bridge gaps in skills and make sure workers remain highly skilled and the industry competitive in the global economy. The Canadian Printing Industries Sector Council fully understands these challenges. Founded in 2006, we are rallying the entire industry to make sure it has sufficient numbers of skilled employees in

key occupations. Achieving that goal means the industry must carry out a variety of tasks. In terms of skills and training—the focus of this report—two tasks are paramount:

- The industry must assess the skills of workers, find out if gaps exist between workers' actual and required skills, and determine whether training is available to address any gaps.
- The industry then must establish a reliable way for workers to access training that equips them with the skills they need to succeed.

Assess the training needs of workers

Using the industry's national skill standards for key occupations in prepress, press, and finishing and bindery process areas, CPISC undertook a study to determine if employers and educators were teaching the basic, core and operational skills set out in the skill standards and, if not, which skills are required by employees.

Basic skills, which are common to all occupations in Canada, are often called enabling skills because workers use them to gain or use other skills. Basic skills are reading, writing, decision-making, problem solving, computer literacy, mathematical skills, interactive communications, and planning and organizing.

Core skills are those used by workers in every occupation in the industry. Requiring some industry knowledge, these skills are teamwork, quality assurance, client service, printing processes, health and safety, and workflow processes and control.

It is important to bear in mind that basic and core skills are divided into two groups based on their complexity. Profiles have been created to indicate which level of complexity is required for each skill in each occupation in the industry. For instance, when a person possesses fundamental reading skills, that person is able to read text to perform routine tasks and find simple information. When a person possesses more advanced reading skills, that person is able to read lengthy and complex text to extract and interpret information. Questionnaires for industry employers and training providers were developed in view of the different levels of complexity required for—and assigned to—each of the skills and occupations. This skills and occupations information was also considered when selecting research methods and preparing questionnaires.

Operational skills are job-specific skills that workers require to perform the activities that make up their jobs. The operational skills for each key occupation in prepress, press, and finishing and bindery are listed in section three of this report.

To address training challenges associated with the development of these kinds of skills, CPISC conducted a preliminary study of the programs offered by training providers and educational institutions in Canada. Results of this study showed that a more in-depth analysis of training provided to workers was required.

As a result, CPISC undertook a comprehensive five-step assessment of the training requirements of workers, followed up by the development of a training-delivery model to ensure workers can access the training they need. Outlined in detail within this report, this assessment determined the skills required by workers in key occupations within the industry. The assessment then identified gaps that exist between workers' actual and required skills, and whether training is available to address the gaps. These findings are presented in sections three and four of this report.

CPISC determined that the study would centre on the skills and training for the main occupations in prepress, press, and finishing and bindery. In prepress, the main occupations are: prepress operators, output specialists and colour specialists.

- **Prepress operators** check and prepare files and documents. Their tools are complex software products that adjust and manipulate the components of a file, including images, colour and text.
- **Output specialists** translate electronic files to printed documents and make sure documents print in the correct order or direction to prepare for binding.
- **Colour specialists**, an emerging occupation within the industry, ensure the colour of files is correct before files are printed and make certain that the equipment used to prepare and proof files are calibrated correctly so that images will print as expected.

The main occupations in press are four types of press operators:

- **Lithographic web offset press operators** run machines—some up to four storeys high—that print long-run documents such as newspapers and magazines.
- **Lithographic sheet-fed offset press operators** produce a diverse set of documents such as books, flyers and posters.
- **Flexographic press operators** use technology that prints images on uniquely shaped objects such as bottles and cans.
- **Digital press operators** use computer software to carry out processes that are closely integrated with both prepress and bindery.

The main occupations in finishing and bindery are bindery operators and finishing operators.

- **Bindery operators** run one or multiple machines that gather, bind, stitch, collate, fold and cut printed documents or other kinds of printed materials.
- **Finishing operators** run one or multiple machines that put the finishing touches on printed material. Using die cutters, applying foil and holograms, and embossing, cutting, folding and laminating documents enables these workers to add style, security features and other design elements that are practical and aesthetic.

CPISC used the skill standards for these occupations to create a questionnaire for employers and a questionnaire for training providers. Respondents could complete questionnaires online or over the telephone. Gathering responses from employers and training providers is the best way to identify what gaps exist between the skills that are required by industry workers and the current skills possessed by industry workers, and determine whether or not training is available to bridge any identified gaps.

To be even more precise, the questionnaires have made it possible for the industry to gain answers to three fundamental questions that form the heart of this report:

1. Do workers in these occupations possess the basic, core and operating skills they need to perform in their jobs?
2. Which basic and core skills required by all industry workers are taught by training providers?
3. Which distinctive operating skills required by workers in each of the three process areas (prepress, press, and finishing and bindery) are taught by training providers?

This report—*Bridging the Gaps*—presents several key findings uncovered via the responses from employers and training providers to the questionnaires, and uses the findings to answer the three fundamental questions listed above.

Make sure workers can access training that equips them with required skills

The industry also has taken those findings and combined them with the results of additional research to answer a fourth question: Which training-delivery model would be ideally suited for the industry to address any skills gaps?

In fact, the model is a proven guide to shape and produce all the industry's training. It makes it possible for new workers to access the training they need; for experienced workers to keep up with the skills requirements associated with advances in technology and equipment; for employers to nurture an adaptable, highly skilled workforce that will fuel increased productivity, competitiveness and prosperity throughout the industry; and for training providers to supply programs and services that meet the precise needs of the industry.



WHOM WE TALK TO

Gathering clear responses from a substantial number of employers and training providers is the best way to identify gaps between skills that are required by industry workers and those skills possessed by industry workers; to determine whether or not training is or is not available to bridge any gaps; and to come up with a training-delivery model to make sure workers get the training they need.

PREPRESS

To gain that vital information, CPISC had 150 employers complete the relevant questionnaire related to prepress workers: 133 employers completed questionnaires over the telephone, while 17 completed questionnaires online. Fifty training providers completed their version of the questionnaire—all of them via telephone. The following provides a breakdown of the industry employers and training providers that completed questionnaires.

Industry Employers

By market segment

CPISC canvassed a wide cross-section of employers in the industry—from general commercial and digital printers to graphic-design firms and speciality printing shops. Sixty-seven percent of the employers we spoke with classify their primary market segment as general commercial printing. More than half of respondents—54 percent—cite their core market as digital printing, while nearly that percentage—49 percent—indicate that they perform electronic prepress services.

Although these three market segments constitute a large number of respondents, CPISC also heard from employers in other market segments, including:

- quick printing (42 percent),
- traditional prepress (42 percent),
- business forms (41 percent),
- labels or wrappers (38 percent),
- other finishing services (36 percent),
- magazines or periodicals (32 percent),
- books (31 percent),
- greeting cards (27 percent),
- packaging (25 percent),
- financial or legal (20 percent),
- newspapers (18 percent),
- tags, tickets and tape (16 percent),
- trade bindery (16 percent), and
- screen printing (15 percent).

The total of these percentages exceeds 100 percent because many respondents indicate that they carry out a variety of tasks and serve multiple markets.

By province

Nearly half of the respondents employ prepress operators in Ontario. Respondents from British Columbia and Alberta constitute 15 percent each in the study, while the figures for Quebec and Saskatchewan are 10 percent each. Manitoba represents eight percent of respondents. The Atlantic Provinces (New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador) combine to account for 11 percent of respondents. Again, the total of these percentages exceeds 100 percent because many respondents indicate that they provide services in more than one province.

By size

Forty-seven percent of employers who we contacted during the research employ ten or fewer workers, with 29 percent employing five or fewer. A small share of respondents—12 percent—employ more than 100 people.

CPISC made every effort to gather data from a representative sample of employers in terms of size. Representatives of the organization made numerous telephone calls to reach employers of all kinds. At the same time, many small businesses in the industry do not employ output specialists and colour specialists.

By occupation

Nearly all respondents—99 percent—employ prepress operators, with 49 percent of respondents indicating that they employ one to three prepress operators and 10 percent pointing out that they employ more than ten.

A large majority of respondents—82 percent—employ output specialists. Nearly half—46 percent—employ one to two, 33 percent employ three to ten and three percent employ more than ten.

Sixty-five percent of respondents employ colour specialists. Forty-three percent employ one to two, 17 percent employ three to five and five percent employ six to ten.

Training Providers

By type

Of the training providers who completed questionnaires, 40 percent represent post-secondary schools, 32 percent secondary schools and 28 percent private trainers.

By province

Twenty-four percent of respondents offer training in Ontario, 14 percent both in Alberta and Quebec, 12 percent in Manitoba and ten percent both in British Columbia and Nova Scotia. Training providers from Saskatchewan, Prince Edward Island, and Newfoundland and Labrador represent a total of six percent of respondents. Twelve percent of respondents offer training in more than one province.

PRESS

CPISC received completed questionnaires related to press workers from 63 employers: 28 spoke with CPISC representatives over the telephone, while 35 completed questionnaires online. Thirty-six training providers completed their version of the questionnaire. The following provides a breakdown of the industry employers and training providers that completed questionnaires.

Industry Employers

By market segment

The majority of employers—72 percent—we spoke with classify their primary market segment as general commercial printing. More than half of respondents—57 percent—cite their core market as digital printing, while 42 percent indicate that they print business forms.

Although these three market segments constitute a large number of respondents, CPISC also heard from employers in other market segments, including:

- finishing services (39 percent),
- labels or wrappers (37 percent),
- traditional prepress (37 percent),
- electronic prepress service (36 percent),
- quick printing (36 percent),
- magazines or periodicals (24 percent),
- tags, tickets and tape (21 percent),
- books (21 percent),
- packaging (17 percent),
- financial or legal (16 percent),
- greeting cards (15 percent),
- trade bindery (14 percent),
- newspapers (13 percent), and
- screen printing (11 percent).

The total of these percentages exceeds 100 percent because many respondents indicate that they carry out a variety of tasks and serve multiple markets.

By province

Nearly half of respondents employ press operators in Ontario. Respondents from British Columbia constitute 15 percent in the study, while the figures for Alberta are 14 percent. Quebec represents 12 percent of respondents, Manitoba eight and Saskatchewan five. The Atlantic Provinces (New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador) combine to account for 13 percent of respondents. Again, the total of these percentages exceeds 100 percent because many respondents indicate that they provide services in more than one province.

By size

Fifty-two percent of employers who were contacted during the research employ ten or fewer workers, with 29 percent employing five or fewer. A small share of respondents—nine percent—employs more than 100 people.

By occupation

The majority of respondents—55 percent—employ fewer than four press operators, while 29 percent employ four to ten of these workers. Respondents, on average, employ seven press operators. With respect to specific types of press operators:

- Most respondents—80 percent—employ lithographic sheet-fed press operators. Sixty-one percent of respondents indicate they employ one to three of these workers, while only two percent employ 25 or more of these workers.
- Nearly 20 percent of respondents employ lithographic web offset press operators. Eight percent indicate they employ one to three of these workers, eight percent employ four to ten of these workers, and three percent employ more than ten of these workers.

- Eleven percent of respondents employ flexographic press operators. Five percent indicate they employ one to three of these workers, two percent employ four to ten of these workers, and four percent employ more than ten of these workers.
- Sixty-one percent of respondents employ digital press operators. More than half—55 percent—employ one to three of these workers, and six percent employ four to ten of these workers.

Training Providers

By type

Of the training providers who responded to the questionnaire, 59 percent represent secondary schools, 22 percent private trainers and 19 percent post-secondary schools.

By province

Thirty-nine percent of respondents offer press-related training in the Prairie Provinces, 22 percent in Ontario, 17 percent in British Columbia and the Atlantic Provinces, and only three percent in Quebec. Six percent of respondents offer training in more than one province.

FINISHING AND BINDERY

CPISC had 150 employers complete the relevant questionnaire related to finishing and bindery workers: 129 completed questionnaires over the telephone, while 21 completed questionnaires online. Forty training providers completed their version of the questionnaire. The following provides a breakdown of the industry employers and training providers that completed questionnaires.

Industry Employers

By market segment

A majority of employers—69 percent—who completed questionnaires classify their primary market segment as general commercial printing. More than half of respondents—60 percent—cite their core market as digital printing, while 53 percent cite quick printing.

Although these three market segments constitute a large number of respondents, CPISC also heard from employers in other market segments, including:

- business forms (46 percent),
- electronic prepress service (42 percent),
- other finishing services (41 percent),
- labels or wrappers (39 percent),
- traditional prepress (39 percent),
- books (35 percent),
- trade bindery (33 percent),
- greeting cards (30 percent),
- magazines or periodicals (29 percent),
- financial or legal (26 percent),
- tags, tickets and tape (23 percent),
- packaging (21 percent),
- screen printing (13 percent), and
- newspapers (10 percent).

The total of these percentages exceeds 100 percent because many respondents indicate that they carry out a variety of tasks and serve multiple markets.

By province

Thirty-seven percent of respondents employ finishing and bindery operators in Ontario. Respondents from British Columbia constitutes 20 in the study, while the figures for Alberta are 17 percent, Manitoba ten percent, Saskatchewan nine percent and Quebec seven percent. The Atlantic Provinces (New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador) combine to account for 13 percent of respondents. Again, the total of these percentages exceeds 100 percent because many respondents indicate that they provide services in more than one province.

By size

More than half of employers—56 percent—who were contacted during the research employ ten or fewer workers, with 32 percent employing five or fewer. A small share of respondents—four percent—employs more than 100 people.

By occupation

Nearly all respondents—89 percent—employ finishing operators, with 60 percent of respondents indicating that they employ one or two finishing operators and nine percent pointing out that they employ five or more.

Ninety-one percent of respondents employ bindery operators. A majority—58 percent—employ one or two, 19 percent employ three to five and 14 percent employ more than five.

Training Providers

By type

Training providers that responded to the questionnaire are evenly distributed by type: 38 percent represent private trainers, 35 percent secondary schools and 28 percent post-secondary schools.

By province

The greatest percentage of training providers surveyed—20 percent—offer training in each of Ontario and Quebec. Fifteen percent of respondents offer training in Manitoba, 13 percent offer training in each of Alberta and British Columbia, eight percent in Nova Scotia, and three percent in both Saskatchewan and Newfoundland and Labrador. Ten percent of respondents offer training in more than one province.

Validation Sessions

Responses from a wide range of employers and training providers—and the conclusions that have been drawn from those responses—constitute the heart of this report. CPISC also organized three national validation sessions. Representatives from throughout Canada's printing and graphic communications industry attended the sessions to consider and endorse preliminary results of the gap analysis studies (see section four of this report), provide input with respect to the industry's training-delivery model (see section five of this report) and validate research undertaken to develop the model.

WHAT WE FOUND

PREPRESS

Responses from employers and training providers to their respective questionnaires have enabled CPIISC to uncover key findings related to the current levels of skills possessed by three key types of workers in prepress (prepress operators, output specialists and colour specialists), and to reveal whether or not training is available to enable these workers to equip themselves with needed skills, based on the national skills standards, in these three occupations.

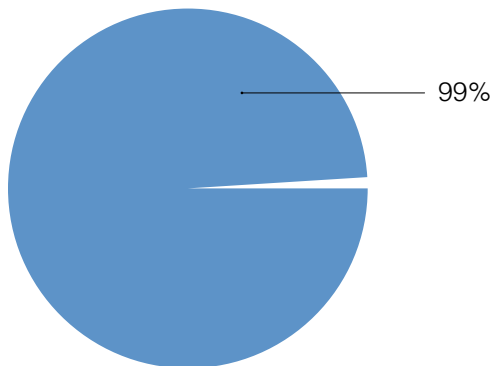
Graph percentages may not equal 100% due to rounding during analysis.

Prepress Operators

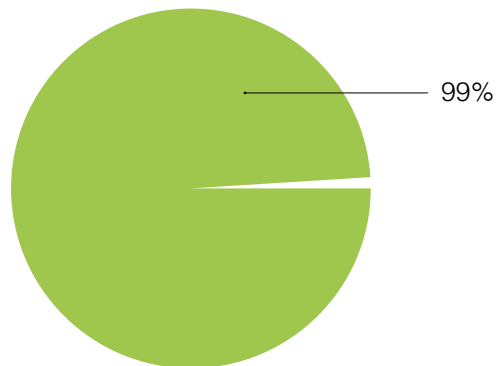
As mentioned in the previous section, virtually all—99 percent—employers employ prepress operators. All training providers offer training for these workers.

FIGURE 1 | PREPRESS OPERATOR EMPLOYMENT AND TRAINING

Employers Have

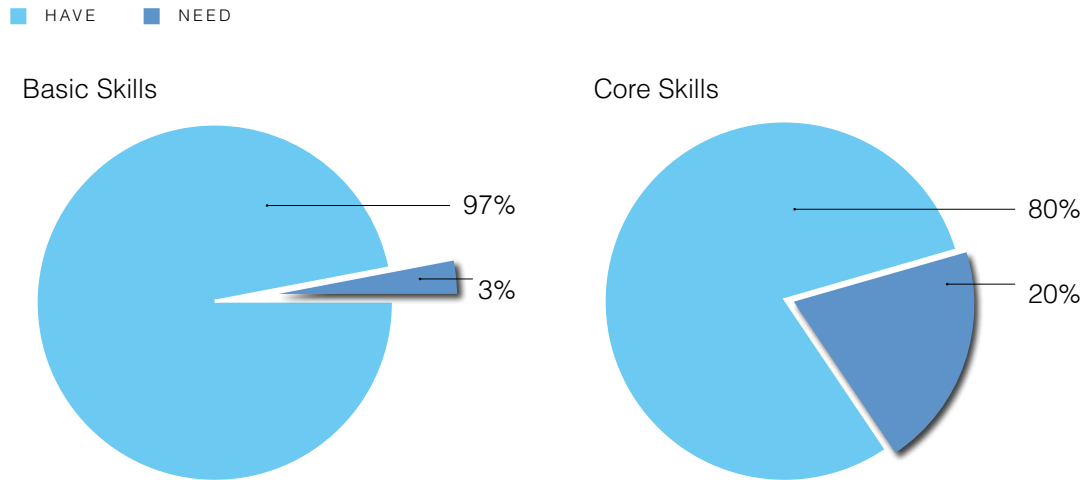


Institutions provide training



Ninety-seven percent of employers report that their prepress operators possess basic skills, while 80 percent indicate that these workers are equipped with core skills.

FIGURE 2 | BASIC AND CORE SKILLS – PREPRESS OPERATORS



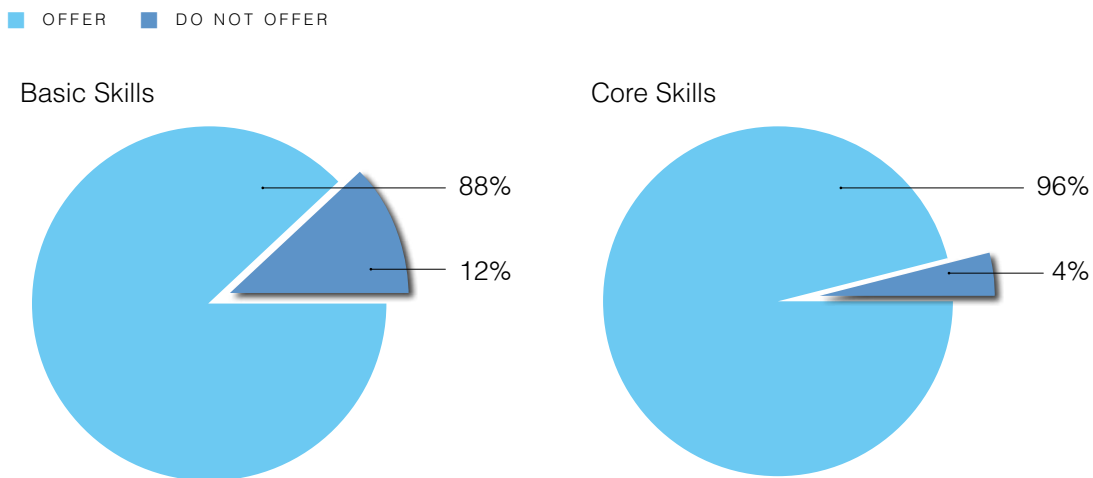
NOTE: N-SIZES RANGE FROM 147 TO 149. DATA DERIVED FROM EMPLOYER SURVEY.

These figures suggest no gap exists in basic skills. The current workforce of prepress operators was recruited with or has subsequently acquired basic skills for their occupation. Fifty-two percent of respondents state that these skills were acquired via secondary school; 49 percent at college; 40 percent through company training; 29 percent from peers and mentors; 19 percent at university; 16 percent from suppliers and manufacturers; and 10 percent via private trainers.

However, training in core skills may be required for 20 percent of these workers. Core skills—teamwork, quality assurance, client service, printing processes, health and safety, and workflow processes and control—are crucial in an industry that features increasing levels of automation and integration in its equipment and work processes. As such, companies must find ways to bolster the core skills of employees if these workers are to achieve professional success and firms are to thrive and prosper.

Eighty-eight percent of training providers say they offer training in basic skills. Even more—96 percent—offer core-skills training. Training providers, therefore, are capable of delivering programs to address the basic and core skills requirements of industry firms.

FIGURE 3 | TRAINING OFFERED FOR BASIC AND CORE SKILLS – PREPRESS OPERATORS



NOTE: DATA DERIVED FROM TRAINING PROVIDER SURVEY.

Operating skills are the sets of related work activities organized either in chronological or operational order. Prepress operators must possess the following operating skills:

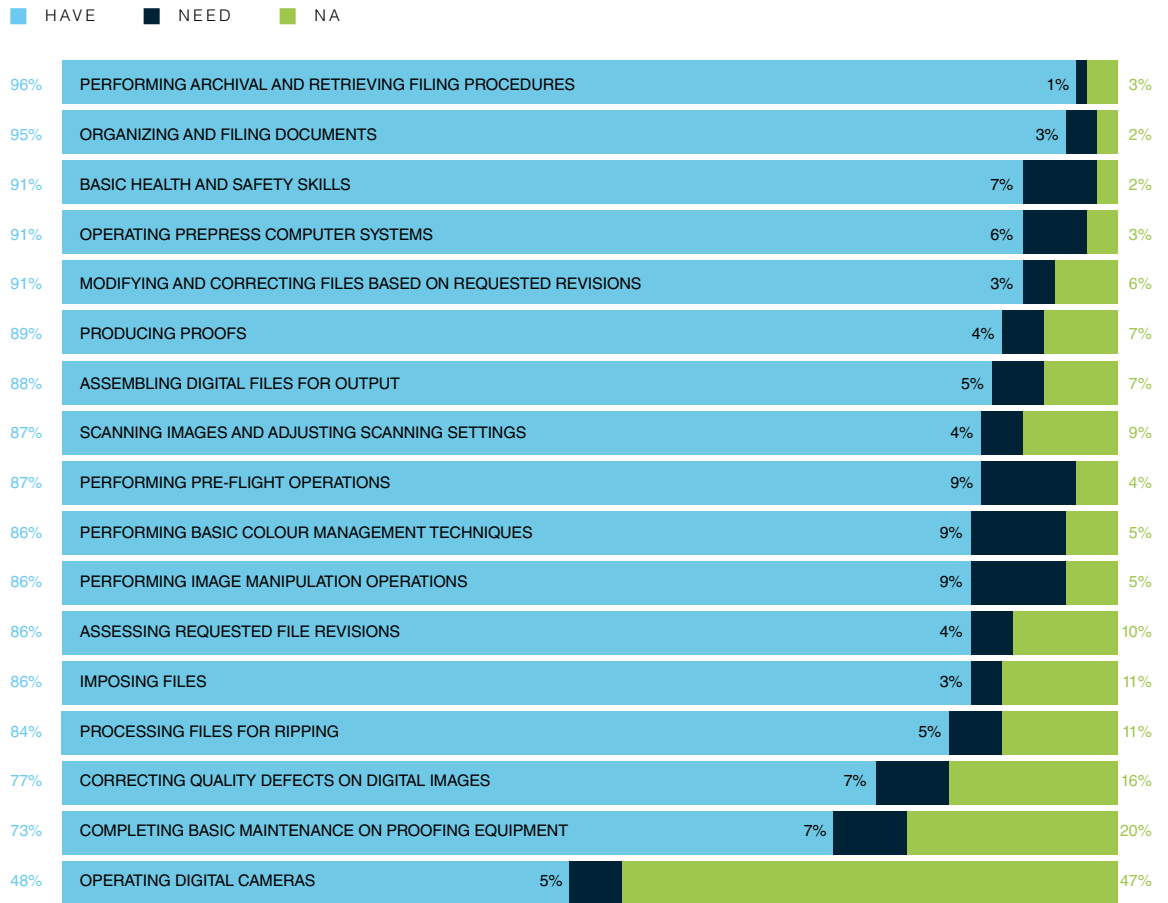
- performing archival and retrieval filing procedures;
- organizing and filing documents;
- basic health and safety skills;
- operating prepress computer systems;
- modifying and correcting files based on requested revisions;
- producing proofs;
- assembling digital files for output;
- scanning images and adjusting scanning settings;
- performing pre-flight operations;
- performing basic colour management techniques;
- performing image manipulation operations;
- assessing requested file revisions;
- imposing files;
- processing files for RIPing;
- correcting quality defects on digital images;
- completing basic maintenance on proofing equipment; and
- operating digital cameras.

Results suggest that the majority of prepress operators possess the required operating skills. However, nine percent of respondents state that prepress operators lack the skills necessary to perform pre-flight operations. Pre-flight operations is another way of saying prepress operators confirm that digital files required for printing projects are all present, valid, correctly formatted and of the desired type.

Results from employer questionnaires also indicate that nine percent of prepress operators lack skills to perform basic tasks related to colour management. Seven percent of respondents point out that prepress operators lack skills related to health and safety, maintaining proofing equipment and correcting quality defects on digital images.

As a result of these findings, prepress operators must take steps to enhance their skills related to pre-flight operations and colour management.

FIGURE 4 | OPERATING SKILLS – PREPRESS OPERATORS

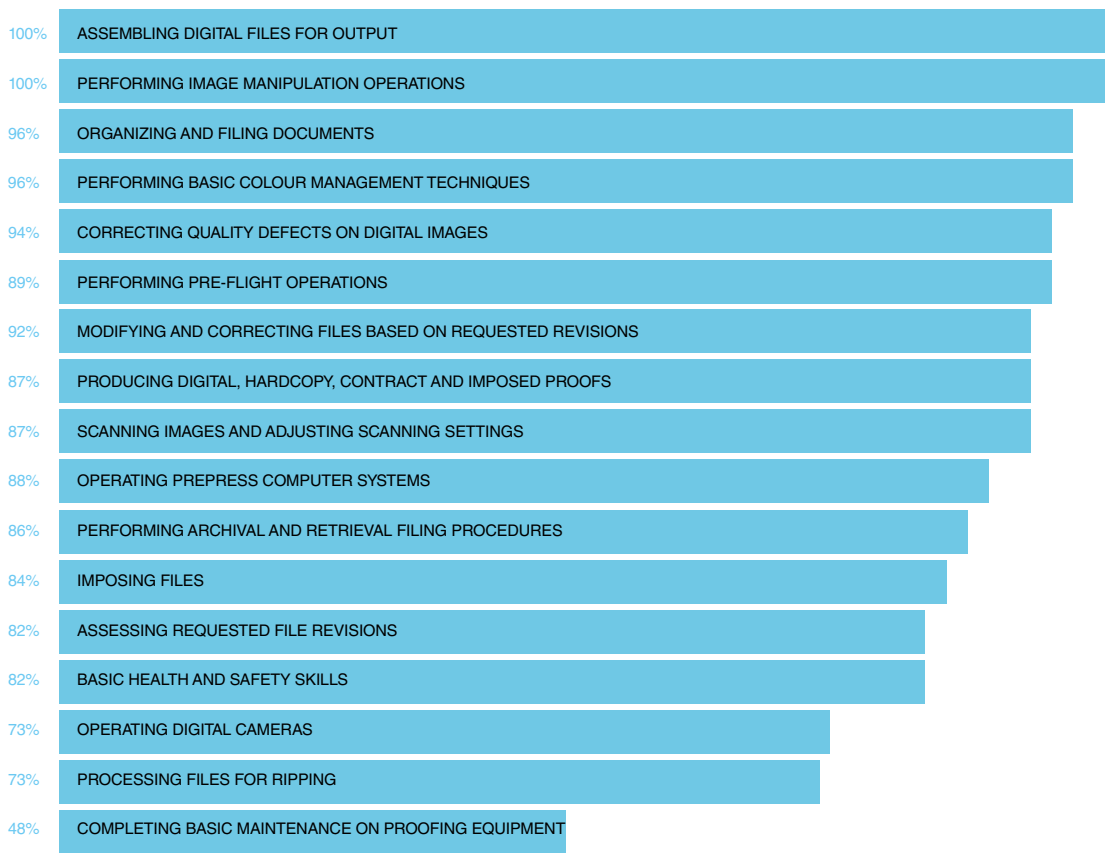


NOTE: N-SIZES RANGE FROM 147 TO 149. DATA DERIVED FROM EMPLOYER SURVEY.

A vast majority of training providers offer training to help prepress operators acquire these vital skills. Nearly all surveyed—more than 94 percent—offer training to enable prepress operators to manage colour, perform pre-flight operations and correct quality defects on digital images. And 82 percent supply training to help workers acquire basic health and safety skills.

However, only 72 percent of training providers surveyed offer training to enable prepress operators to use RIPPING software. This figure is surprisingly low, given that using RIPPING software is considered such an important operating skill for prepress operators.

FIGURE 5 | OPERATING SKILLS TRAINING – PREPRESS OPERATORS



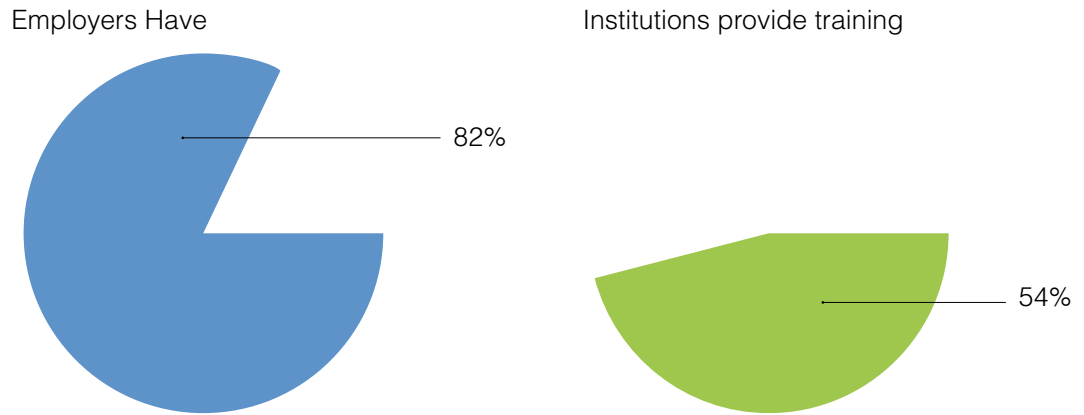
NOTE: DATA DERIVED FROM TRAINING PROVIDER SURVEY.

Seventy percent of training providers offer training for all operating skills for prepress operators except performing basic maintenance on proofing equipment. Only 48 percent of respondents indicate that they train workers to carry out basic maintenance on proofing equipment. However, many employers who responded to the survey point out that they hire maintenance professionals to maintain and repair machines, and neither rely on nor expect prepress operators to perform this task. As such, training in this skill is not a priority.

Output Specialists

Eighty-two percent of employers surveyed employ output specialists, while 54 percent of training providers offer training for these workers.

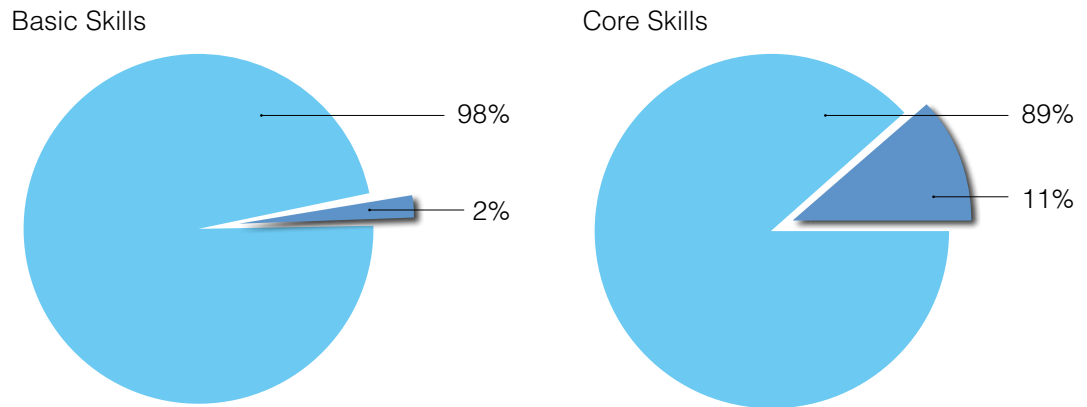
FIGURE 6 | OUTPUT SPECIALIST EMPLOYMENT AND TRAINING



Almost all employers who completed questionnaires—98 percent—indicate that their output specialists possess basic skills. Eighty-nine percent of respondents state that these workers are equipped with core skills.

FIGURE 7 | BASIC AND CORE SKILLS – OUTPUT SPECIALISTS

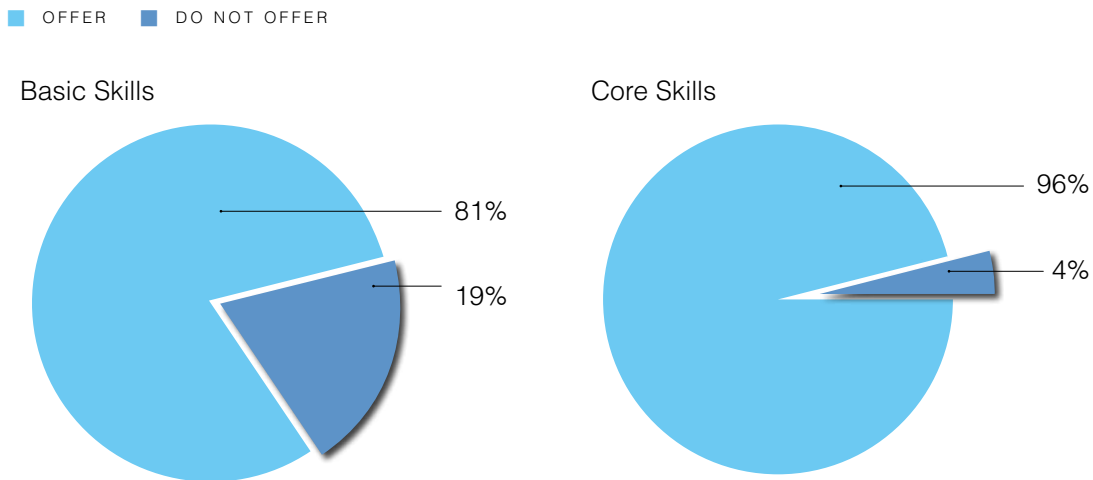
■ HAVE ■ NEED



NOTE: N = 123. DATA DERIVED FROM EMPLOYER SURVEY.

Of the training providers who completed questionnaires, 81 percent offer training for basic skills and 96 percent supply training for core skills.

FIGURE 8 | TRAINING OFFERED FOR BASIC AND CORE SKILLS – OUTPUT SPECIALIST



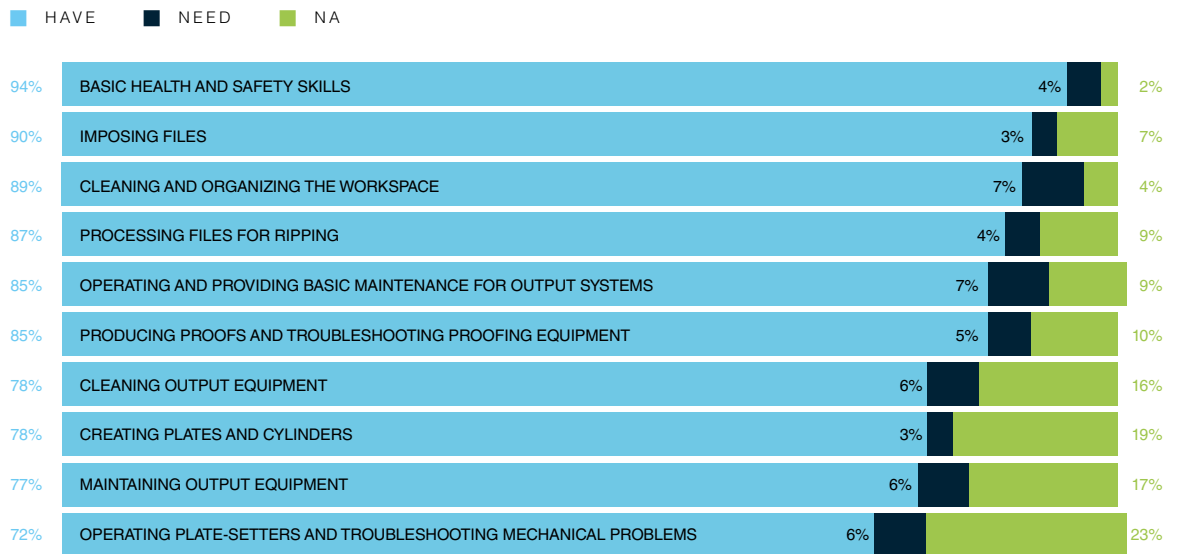
NOTE: N = 123. DATA DERIVED FROM EMPLOYER SURVEY.

Expert output specialists must be equipped with the operating skills listed in Figure 9:

- basic health and safety skills;
- imposing files;
- cleaning and organizing the workspace;
- processing files for RIPing;
- operating and providing basic maintenance for output systems;
- producing proofs and troubleshooting proofing equipment;
- cleaning output equipment;
- creating plates and cylinders;
- maintaining output equipment; and
- operating plate-setters and troubleshooting mechanical problems.

Employers who completed questionnaires state that output specialists possess these operating skills; however, seven percent of employers surveyed indicate that output specialists cannot clean and organize workspaces, and cannot operate output systems and perform basic maintenance on these systems. Yet this last finding should not be considered a cause for concern: between 16 and 23 percent of employers surveyed point out that they do not rely on output specialists to maintain, clean and troubleshoot equipment. Many employers outsource these tasks to other professionals.

FIGURE 9 | OPERATING SKILLS – OUTPUT SPECIALISTS



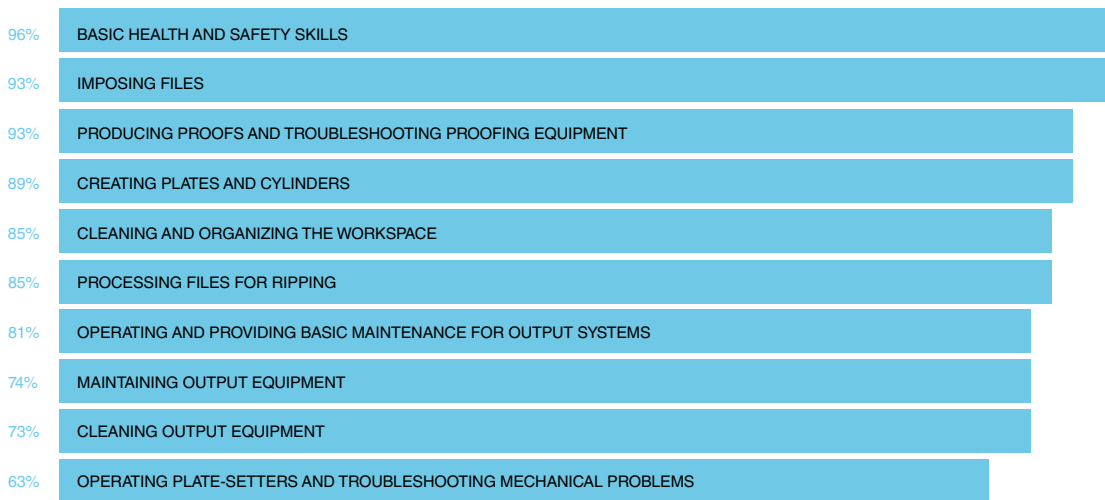
NOTE: N-SIZES RANGE FROM 122 TO 123. DATA DERIVED FROM EMPLOYER SURVEY.

Nineteen percent of surveyed employers state that creating plates and cylinders is not a skill required by output specialists—a surprising figure since this skill lies at the heart of their duties. Three reasons may explain this percentage:

- Employers may not fully understand the role of output specialists.
- Employers may have interpreted this skill to be defined as having the ability to create both plates and cylinders. Few employers in Canada produce cylinders.
- Employers may consider the duties of output specialists as being limited to preparing files and documents, while another employee in the press process area creates the actual plates.

At least 70 percent of training providers offer training in all operating skills except operating plate-setters and troubleshooting mechanical problems. Sixty-three percent of training providers supply training in these two areas. The relatively low level of training offered for these skills may be due to the fact that this kind of training requires plate-setters. Not all training institutions have or enjoy access to such equipment.

FIGURE 10 | OPERATING SKILLS TRAINING – OUTPUT SPECIALISTS

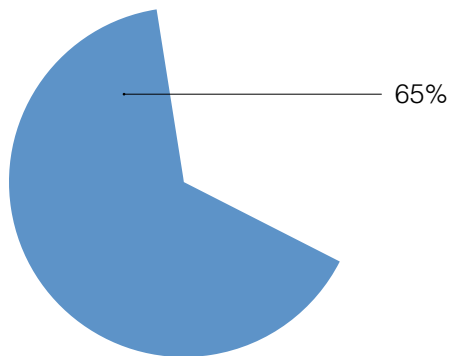


Colour Specialists

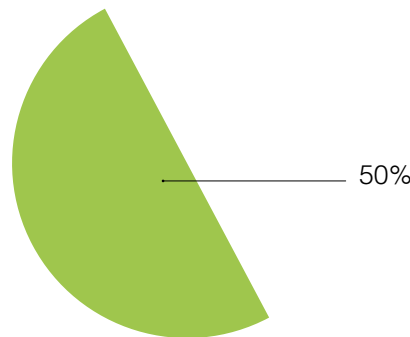
Sixty percent of employers who completed questionnaires employ colour specialists; 50 percent of training providers supply training for these professionals. These results reflect the fact that fewer colour specialists exist in Canada when compared to other occupations in the industry. Large companies employ most of these workers. In small businesses, prepress operators fulfil the duties of colour specialists.

FIGURE 11 | COLOUR SPECIALIST EMPLOYMENT AND TRAINING

Employers Have



Institutions provide training

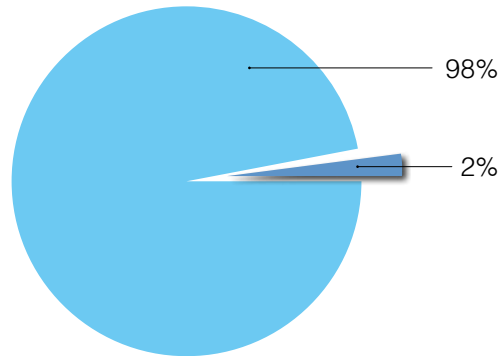


Nearly all employers who employ colour specialists—98 percent—report that these professionals possess basic skills; 92 percent of respondents state that these workers have the required core skills.

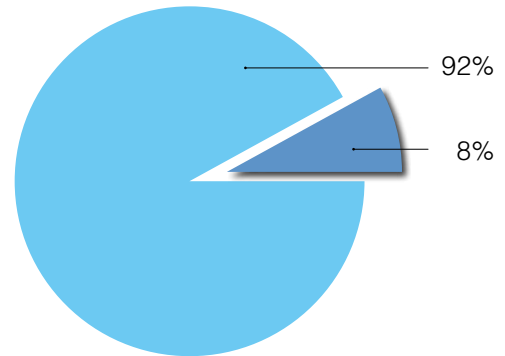
FIGURE 12 | BASIC AND CORE SKILLS – COLOUR SPECIALISTS

■ HAVE ■ NEED

Basic Skills



Core Skills



NOTE: N=97. DATA DERIVED FROM EMPLOYER SURVEY.

The current workforce of colour specialists was recruited with or has subsequently acquired basic skills for their occupation. Forty-eight percent of respondents state that these skills were acquired via secondary school; 40 percent both at college and through company training; 28 percent from peers and mentors; 18 percent from suppliers and manufacturers; 14 percent at university; and nine percent via private trainers.

Only half of those training providers surveyed offer training to colour specialists in basic and core skills. Of these, 79 percent provide training in basic skills, while 84 percent offer training in core skills. However, results vary widely across different types of training providers. For instance, 69 percent of all company training includes training in core skills. The figure drops to 33 percent of all university training programs, 20 percent at all secondary schools, 11 percent for all colleges and seven percent for all private trainers.

Colour specialists must be equipped with the operating skills listed in Figure 13:

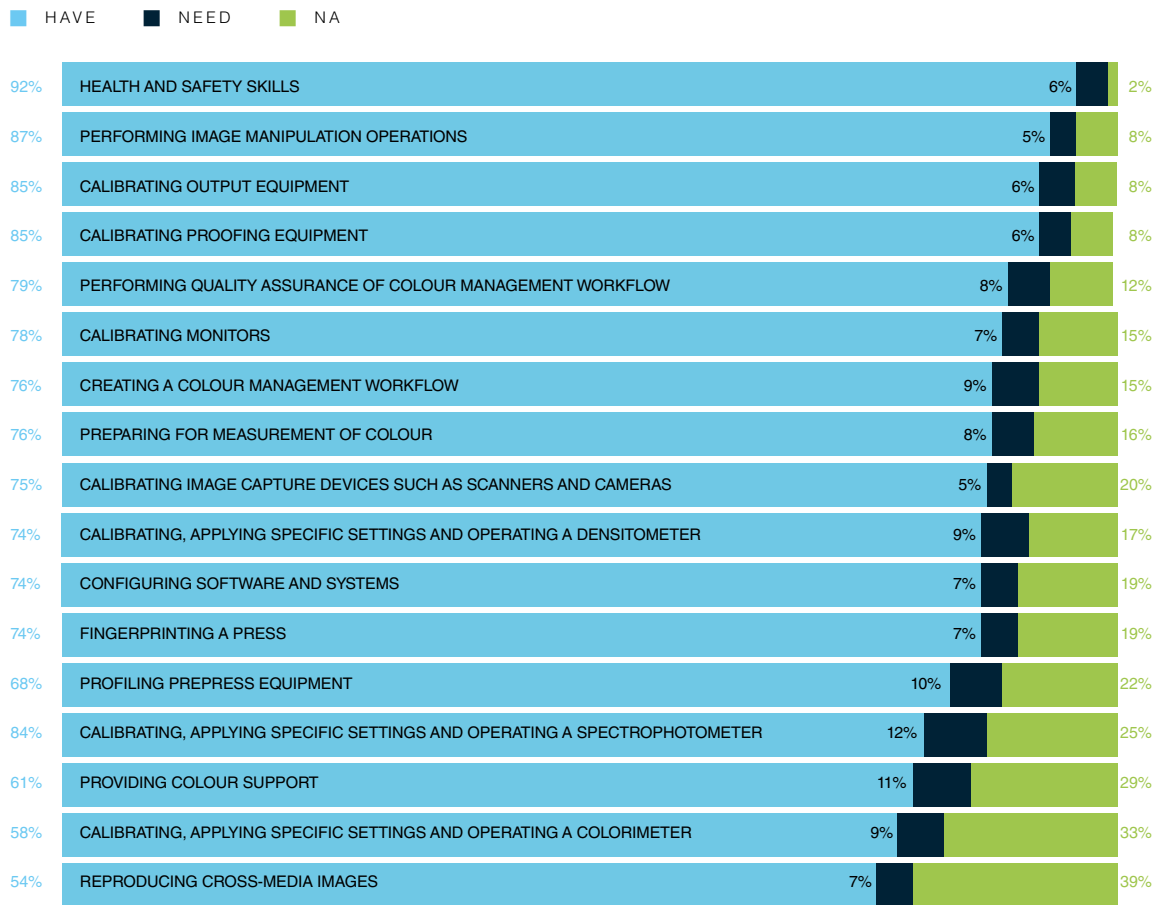
- basic health and safety skills;
- performing image manipulation operations;
- calibrating output equipment;
- calibrating proofing equipment;
- performing quality assurance of colour management workflow;
- calibrating monitors;
- creating a colour management workflow;
- preparing for measurement of colour;
- calibrating image capture devices such as scanners and cameras;
- calibrating, applying specific settings and operating a densitometer;
- configuring software and systems;
- fingerprinting a press;
- profiling prepress equipment;
- calibrating, applying specific settings and operating a spectrophotometer;
- providing colour support;
- calibrating, applying specific settings and operating a colorimeter; and
- reproducing cross-media images.

Most employers who responded to questionnaires indicate that colour specialists possess these required skills. Twelve percent of respondents, however, state that these workers do not have the ability to calibrate, apply specific settings and operate a spectrophotometer. Eleven percent cannot provide colour support, and ten percent cannot profile prepress equipment. Nine percent of colour specialists do not have the skills needed to calibrate, apply specific settings and operate a colorimeter; calibrate, apply specific settings and operate a densitometer; and create a colour management workflow.

As a result of these findings, colour specialists should develop their skills in four areas: profiling prepress equipment, providing colour support, calibrating and applying specific settings and operating a spectrophotometer, and calibrating, applying specific settings and operating a colorimeter.



FIGURE 13 | OPERATING SKILLS – COLOUR SPECIALISTS



NOTE: N-SIZES RANGE FROM 90 TO 97. DATA DERIVED FROM EMPLOYER SURVEY.

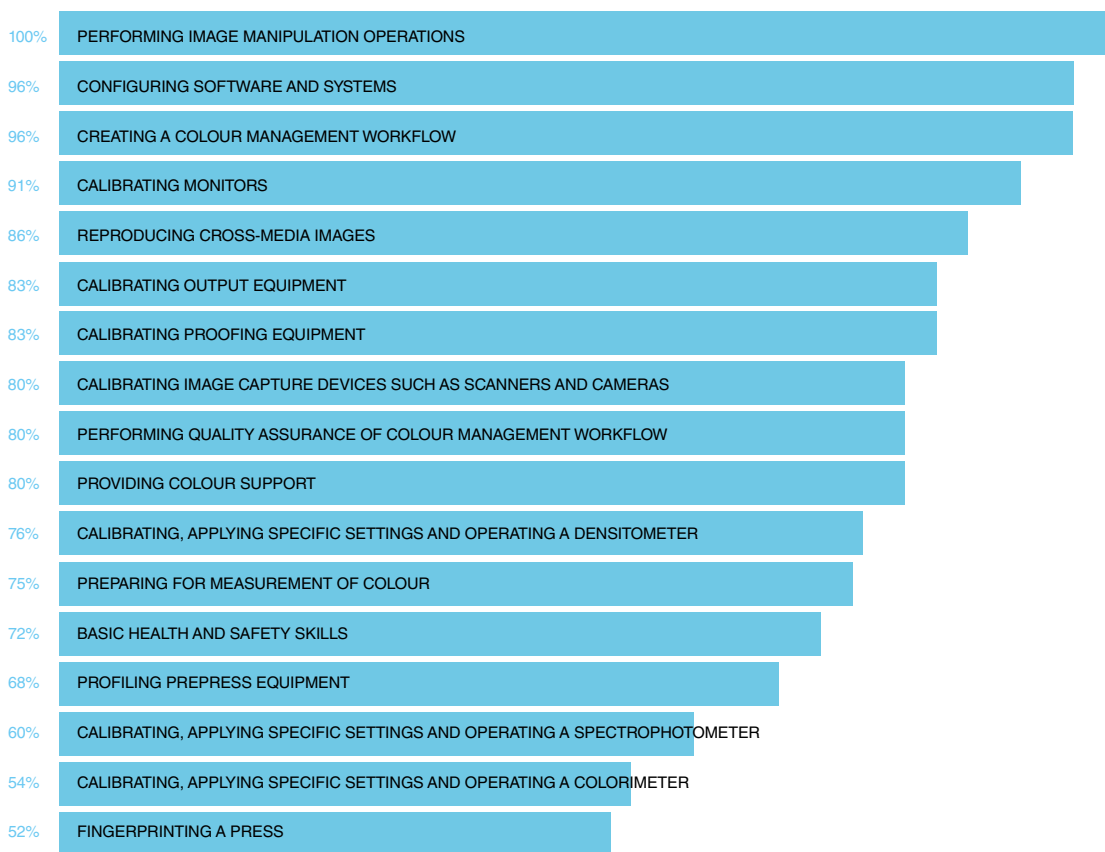
The vast majority of training providers offer training for each of the operating skills listed above. In fact, nearly all training providers also offer training in the following areas:

- performing image manipulation operations (100 percent);
- configuring software and systems (96 percent);
- creating a colour-management workflow (96 percent); and
- calibrating monitors (91 percent).

Only 72 percent of training providers, however, supply training in basic health and safety skills. And yet, 92 percent of employers indicate that colour specialists possess these skills—a circumstance likely due to the fact that the provinces mandate this kind of training and therefore employers provide it to their workers.

Other shortcomings in training include the following: 52 percent of training providers supply training to fingerprint a press, and 54 percent offer training to calibrate, apply specific settings and operate a colorimeter.

FIGURE 14 | OPERATING SKILLS TRAINING – COLOUR SPECIALISTS



NOTE: N-SIZES RANGE FROM 22 TO 25. DATA DERIVED FROM TRAINING PROVIDER SURVEY.

PRESS

Responses from employers to their questionnaires have enabled CPISC to uncover key findings related to the current levels of skills possessed by key types of press workers: lithographic web offset press operators, lithographic sheet-fed offset press operators, flexographic press operators and digital press operators. Findings related to these four occupations are presented together, unless findings related to a specific type of press operator are noteworthy. Responses from training providers to their questionnaires reveal whether or not training is available to enable these workers to equip themselves with needed skills.

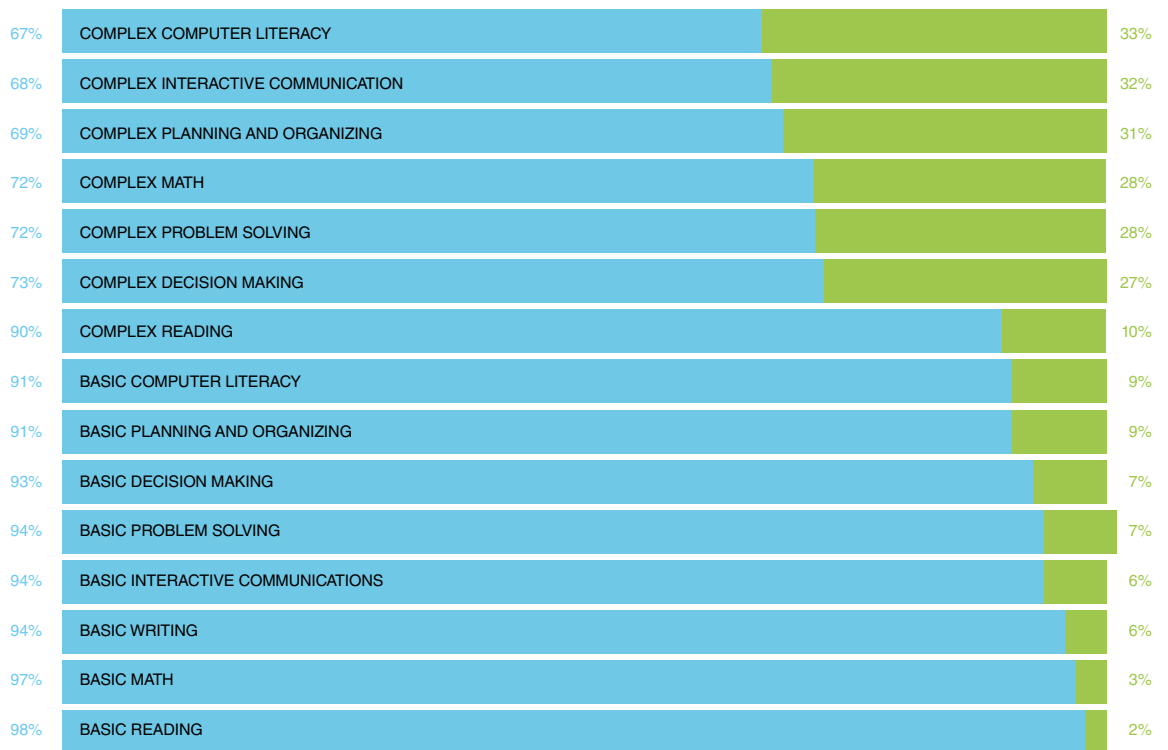
With respect to basic skills, responses from employers indicate that 33 percent of digital press operators do not have complex computer literacy skills. Complex computer literacy skills are those skills sufficient enough to enable workers to operate one or more software programs and support the computer literacy skills of others in the workplace. However, web offset, sheet-fed offset and flexographic press operators, who are only required to know how to use computerized equipment and use a limited number of software programs on a routine basis, have computer literacy skills.

Survey results also reveal that:

- 32 percent of press operators lack interactive communications skills such as paraphrasing, encouraging two-way communication and interpreting non-verbal behaviours;
- 31 percent of press operators lack planning and organizing skills such as monitoring the progress and use of various resources and managing the planning and organizing activities of others in the workplace;
- 28 percent of press operators lack mathematical skills such as performing complicated calculations, using formulas and applying statistical methods;
- 28 percent of press operators lack problem-solving skills such as identifying and solving problems where pre-defined criteria exists, and evaluating outcomes; and
- 27 percent of press operators lack decision-making skills such as making decisions by interpreting rules and procedures, and weighing several factors.

Graph percentages may not equal 100% due to rounding during analysis.

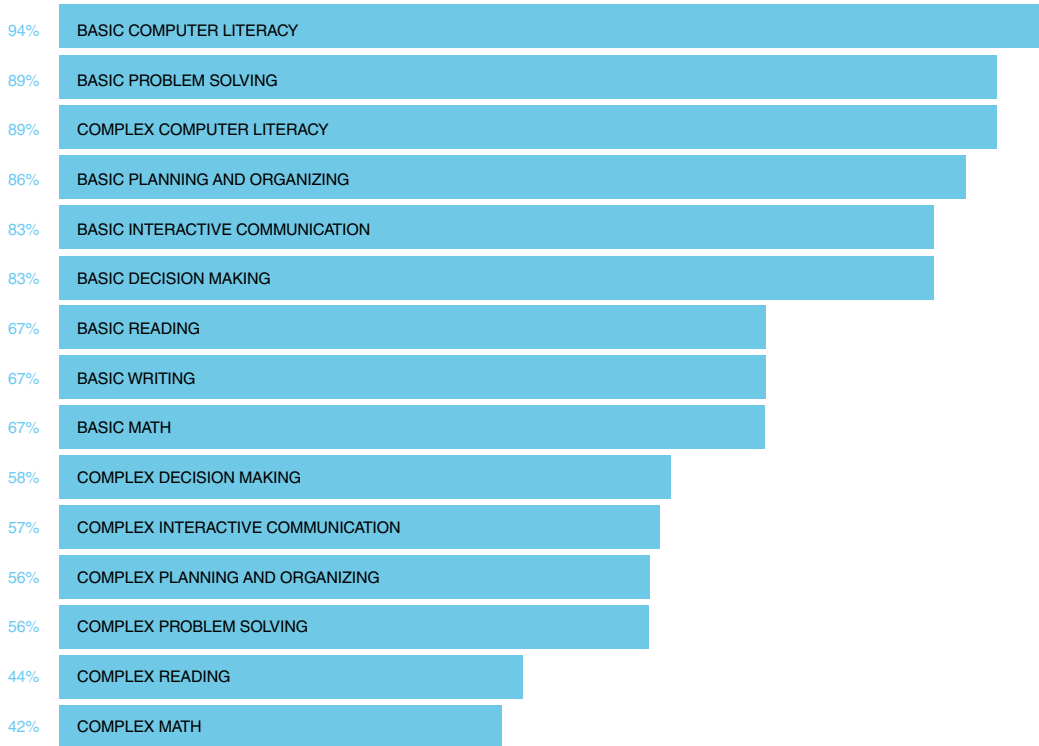
FIGURE 15 | BASIC SKILLS



NOTE: DATA DERIVED FROM EMPLOYER SURVEY.

The majority of training providers supply training related to all requirements of basic skills except for training to read lengthy and complex text to extract and interpret information (only 44 percent of training providers surveyed), and training to perform complicated calculations, use formulas and apply statistical methods (only 42 percent of training providers surveyed).

FIGURE 16 | TRAINING OFFERED FOR BASIC SKILLS



NOTE: N=36. DATA DERIVED FROM TRAINING PROVIDER SURVEY.

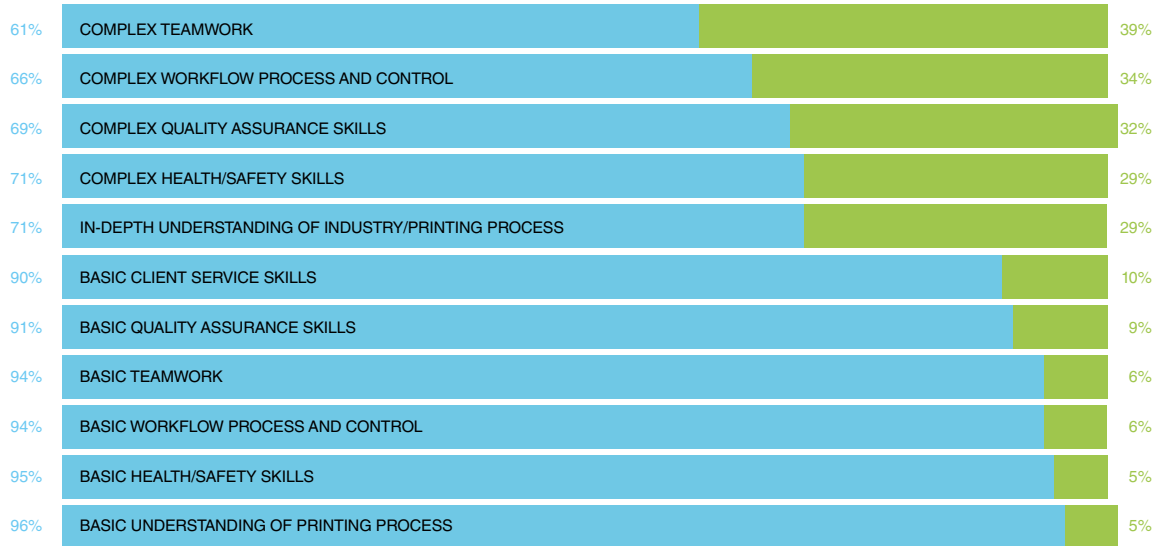
With respect to core skills, responses from employers indicate the following:

- Thirty-nine percent of web offset press operators are not equipped with teamwork skills that enable them to take on leadership roles with teams and promote teamwork within an organization. However, sheet-fed offset, flexographic and digital press operators, who are only required to know how to collaborate with others and show consideration and respect for others, have teamwork skills.
- Thirty-four percent of digital press operators are not equipped with workflow process and control skills that enable them to apply scheduling principles, and analyze and interpret production performance. However, web offset, sheet-fed offset and flexographic press operators, who are only required to know how to follow production schedules and complete production reports, have workflow process and control skills.
- Thirty-two percent of press operators are not equipped with quality assurance skills such as encouraging a culture of quality improvement, and directing and maintaining quality-control systems, programs and policies.
- Twenty-nine percent of web offset, sheet-fed offset and flexographic press operators are not equipped with health and safety skills that enable them to monitor, promote, enforce and contribute improvements to workplace health and safety. However, digital press operators, who are only required to know how to follow safety practices and procedures to maintain a healthy and safe workplace, have health and safety skills.
- Twenty-nine percent of web offset and digital press operators are not equipped with an in-depth understanding of industry and printing processes that can be used to educate

and inform others. However, the other two kinds of press operators—sheet-fed offset and flexographic press operators—who are only required to know how to demonstrate a basic understanding of the steps involved in the printing process, have an in-depth understanding of industry and printing processes.

- Ten percent of press operators are not equipped with client service skills such as responding to internal and external client needs.

FIGURE 17 | CORE SKILLS



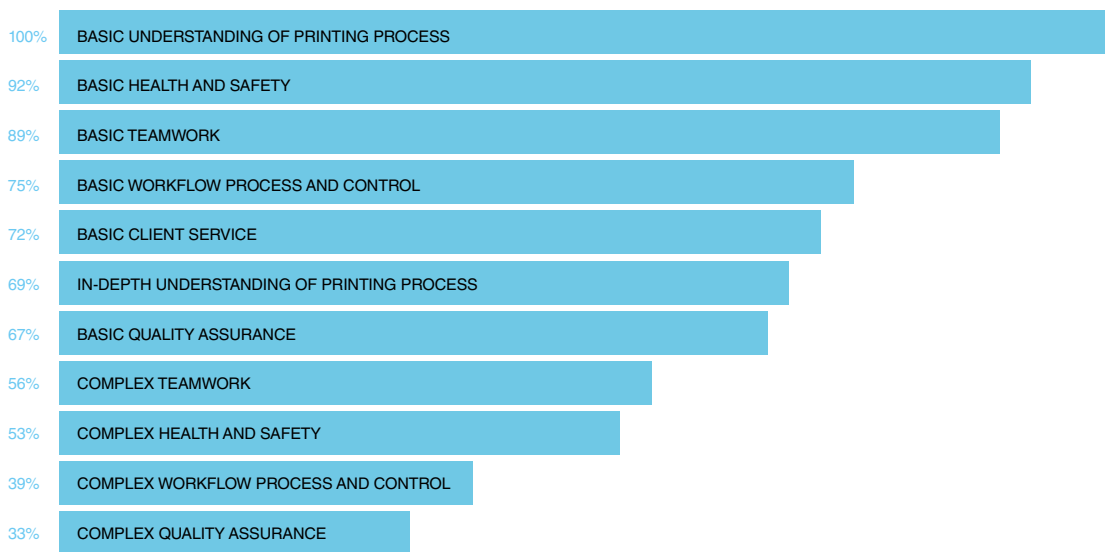
NOTE: DATA DERIVED FROM EMPLOYER SURVEY.

According to responses from training providers, the majority of them supply training to address the fundamental core skills requirements of press operators. For instance, 72 percent of training providers offer training to equip press operators with client service skills such as responding to internal and external client needs.

In terms of the other skills noted above, the following findings were uncovered:

- Sixty-nine percent of training providers supply training to equip web offset and digital press operators with an in-depth understanding of industry and printing processes that can be used to educate and inform others.
- Fifty-six percent of training providers supply training to equip web offset press operators with teamwork skills that enable them to take on leadership roles with teams and promote teamwork within an organization.
- Fifty-three percent of training providers supply training to equip web offset, sheet-fed offset and flexographic press operators with health and safety skills that enable them to monitor, promote, enforce and contribute improvements to workplace health and safety.
- Thirty-nine percent of training providers supply training to equip digital press operators with workflow process and control skills that enable them to apply scheduling principles and analyze and interpret production performance.
- Thirty-three percent of training providers supply training to equip all kinds of press operators with quality assurance skills such as encouraging a culture of quality improvement and directing and maintaining quality-control systems, programs and policies.

FIGURE 18 | TRAINING OFFERED FOR CORE SKILLS



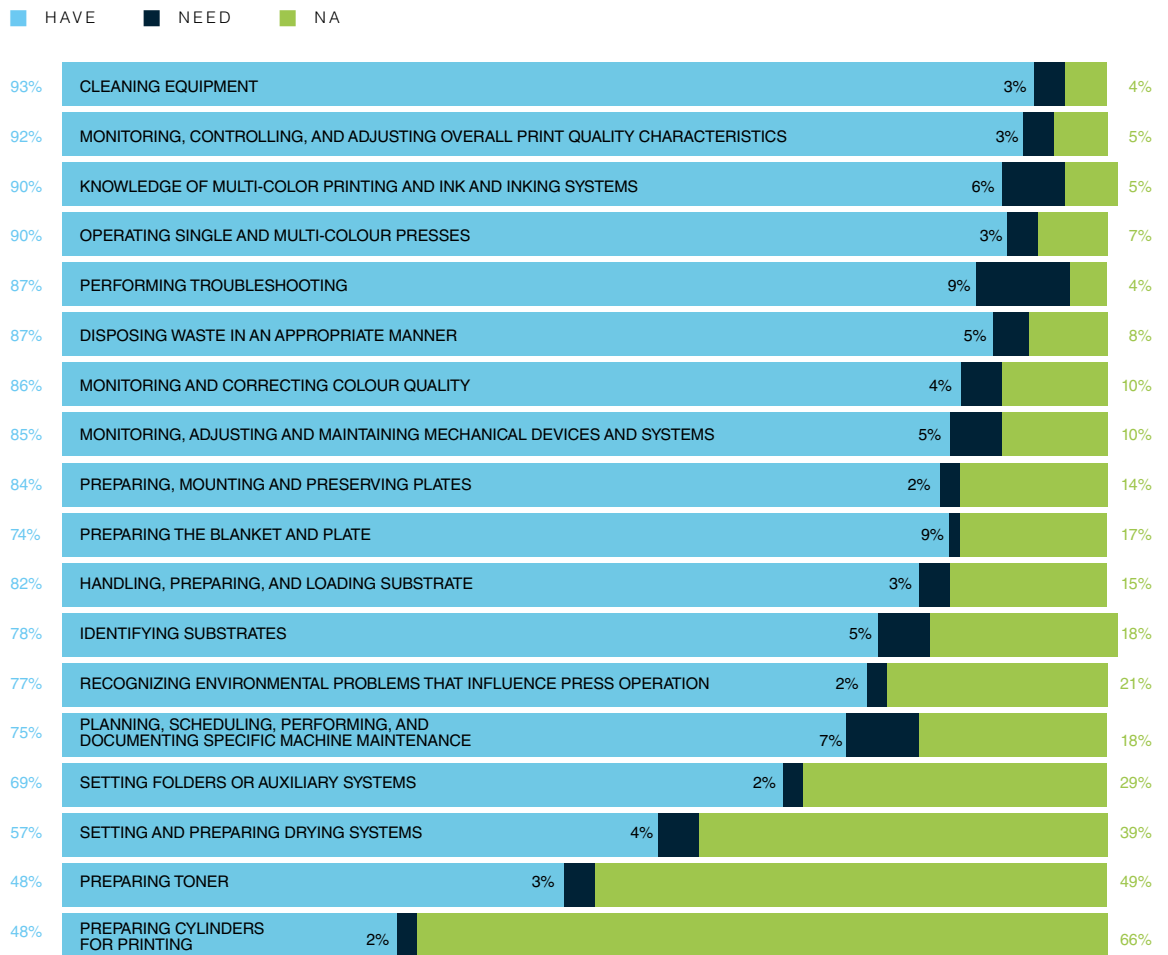
NOTE: N=36. DATA DERIVED FROM TRAINING PROVIDER SURVEY.

Press operators must be equipped with the following operating skills:

- cleaning equipment;
- monitoring, controlling and adjusting overall print quality characteristics;
- knowledge of multi-colour printing and ink and inking systems;
- operating single and multi-colour presses;
- performing troubleshooting;
- disposing waste in an appropriate manner;
- monitoring and correcting colour quality;
- monitoring, adjusting and maintaining mechanical devices and systems;
- preparing, mounting and preserving plates;
- preparing the blanket and plate;
- handling, preparing and loading substrate;
- identifying substrate;
- recognizing environmental problems that influence press operation;
- following a make-ready checklist;
- preparing the dampening system for operation;
- planning, scheduling, performing and documenting machine maintenance;
- setting folders or auxiliary systems;
- preparing toner (specifically for digital press operators); and
- preparing cylinders for printing (specifically for web offset and flexographic press operators).

Surveyed employers indicate that the vast majority of press operators possess required operating skills. Nine percent of employers, however, point out that press operators cannot recognize environmental problems that influence press operations; nine percent do not have skills related to troubleshooting; and seven percent do not possess skills related planning, scheduling, performing and documenting specific machine maintenance.

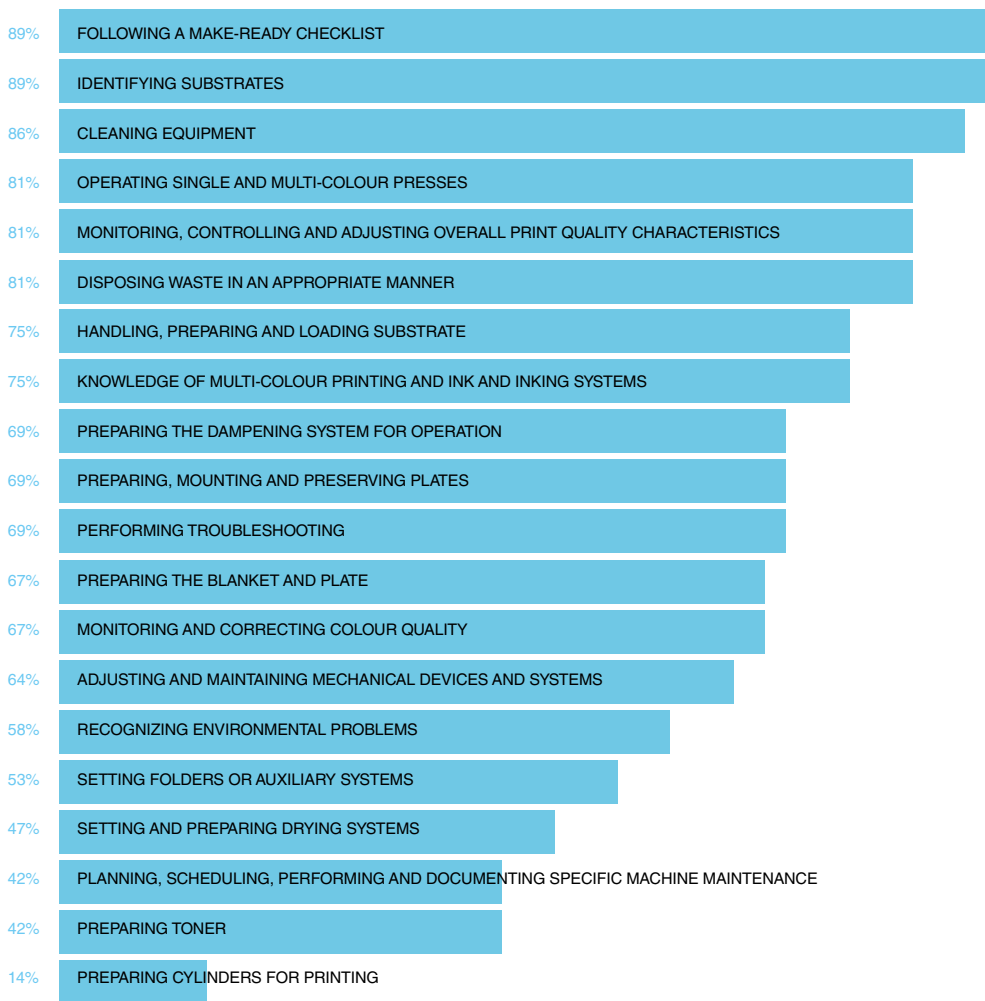
FIGURE 19 | OPERATING SKILLS – COLOUR SPECIALISTS



NOTE: DATA DERIVED FROM EMPLOYER SURVEY.

A majority of training providers surveyed offer training in 16 operating skills—from following make-ready checklists (89 percent of respondents) to setting folders or auxiliary systems (53 percent of respondents). In terms of those skills that employers indicated their press operators lacked, 58 percent of training providers supply training to enable press operators to recognize environmental problems that influence press operations; 69 percent offer training to equip press operators with troubleshooting skills; and 42 percent provide training that enables these workers to plan, schedule, perform and document specific machine maintenance.

FIGURE 20 | TRAINING OFFERED FOR OPERATING SKILLS



NOTE: DATA DERIVED FROM TRAINING PROVIDER SURVEY.

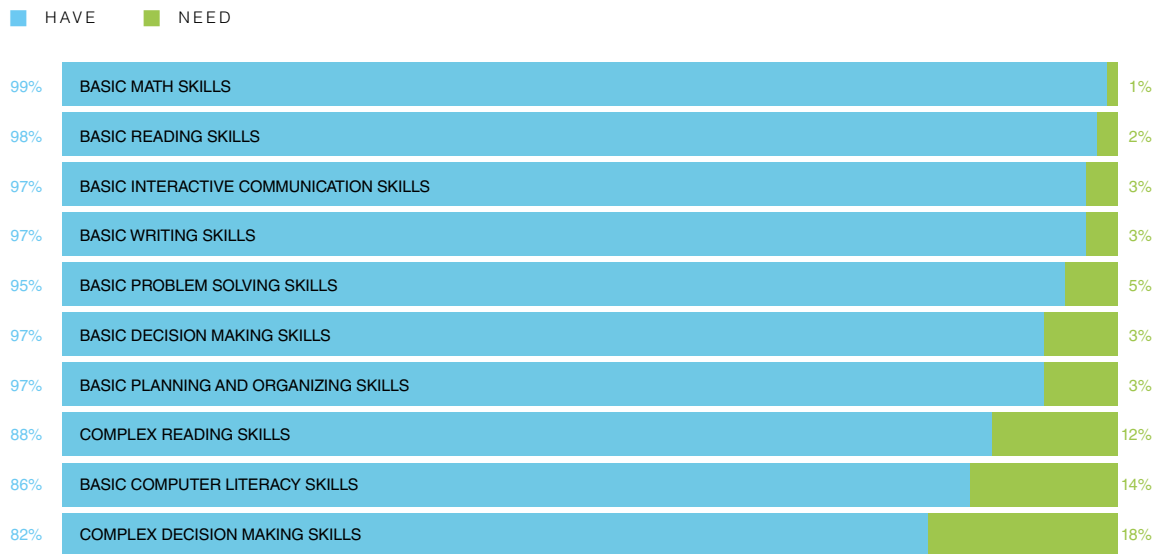
FINISHING AND BINDERY

Responses from employers and training providers to their respective questionnaires have enabled CPISC to uncover key findings related to the current levels of skills possessed by finishing operators and bindery operators, and to reveal whether or not training is available to enable these workers to equip themselves with needed skills.

Employers who completed questionnaires indicate that the vast majority of finishing operators and bindery operators possess the required basic skills. Of note, surveyed employers state that 18 percent of these workers require decision-making skills where decisions are made by interpreting rules and procedures, and weighing several factors; 14 percent require computer literacy skills such as using computerized equipment or using a limited number of software programs on a routine basis; and 12 percent require reading skills to read lengthy and complex texts to extract and interpret information.

Graph percentages may not equal 100% due to rounding during analysis.

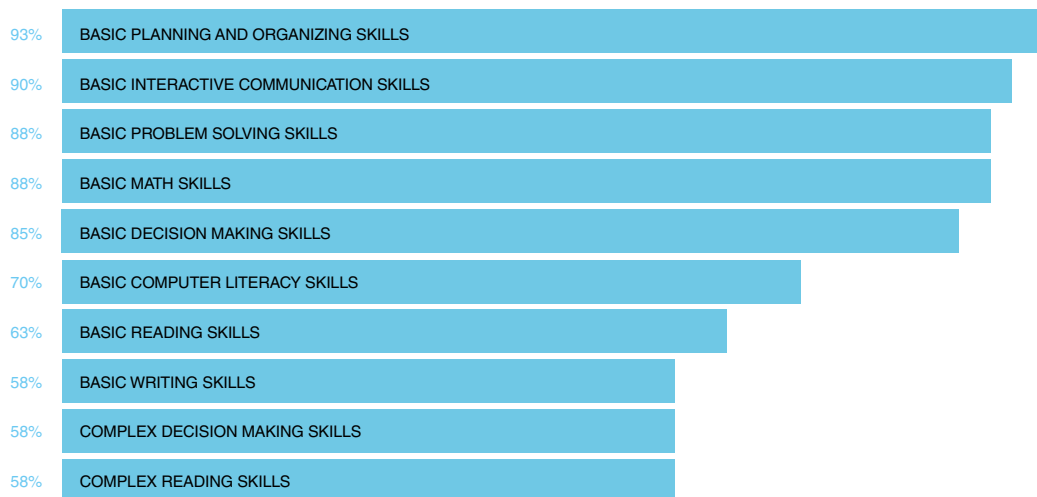
FIGURE 21 | BASIC SKILLS



NOTE: DATA DERIVED FROM EMPLOYER SURVEY.

More than half of training providers surveyed point out that they supply training for all basic skills. Fifty-eight percent offer training in decision-making skills where decisions are made by interpreting rules and procedures, and weighing several factors; 70 percent in computer literacy skills such as using computerized equipment or using a limited number of software programs on a routine basis; and 58 percent in reading skills to read lengthy and complex texts to extract and interpret information.

FIGURE 22 | TRAINING OFFERED FOR BASIC SKILLS



NOTE: DATA DERIVED FROM TRAINING PROVIDER SURVEY.

More than 90 percent of employers report that their finishing operators and bindery operators possess all but one core skill. The exception is quality assurance skills to encourage a culture of quality improvement, and directing and maintaining quality-control systems, programs and policies: 21 percent of employers who participated in the survey say that finishing operators and bindery operators require this skill. Eight percent indicate that these workers lack more fundamental quality assurance skills such as measuring the quality of materials, sample product and equipment output. Nine percent of respondents point out that these workers need to acquire a basic understanding of the steps involved in the printing process.

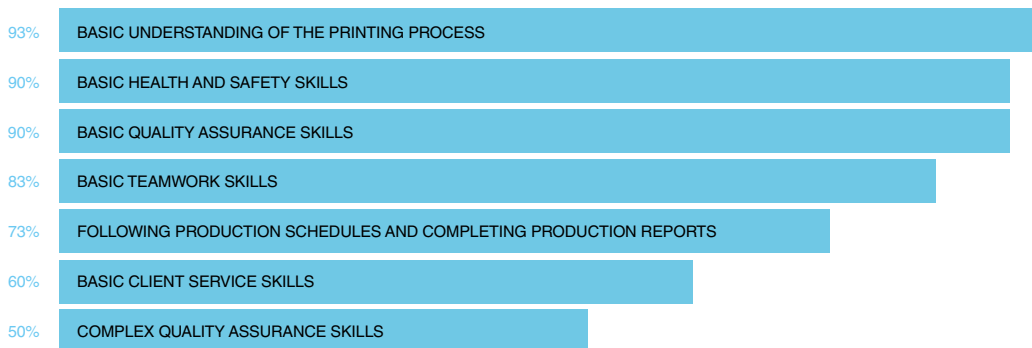
FIGURE 23 | CORE SKILLS



NOTE: DATA DERIVED FROM EMPLOYER SURVEY.

Survey results indicate that only 50 percent of training providers offer training to finishing operators and bindery operators to encourage a culture of quality improvement in the workplace, and to direct and maintain quality-control systems, programs and policies; and only 58 percent supply training to finishing operators and bindery operators to read lengthy or complex text to extract and interpret meaning, and make decisions where decisions are made by interpreting rules and procedures, and weighing several factors.

FIGURE 24 | TRAINING OFFERED FOR CORE SKILLS



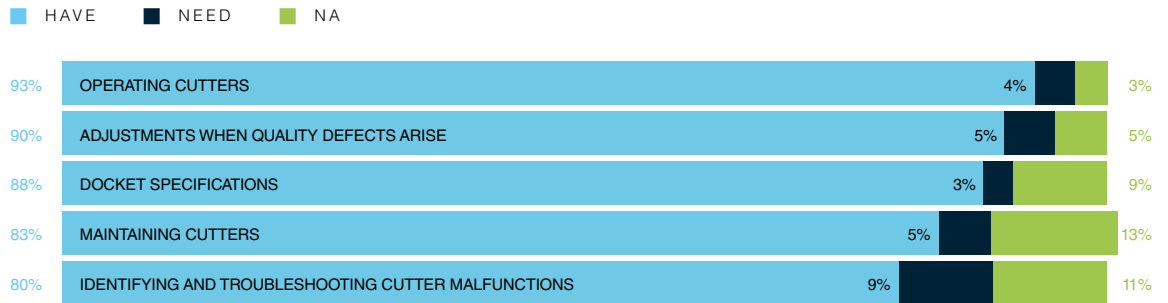
NOTE: DATA DERIVED FROM TRAINING PROVIDER SURVEY.

Operating Skills of Finishing Operators

Operating skills for finishing operators are cutting, folding, laminating, die cutting, embossing and foiling. Results from questionnaires completed by employers indicate that the majority of finishing operators possess these operating skills.

To be precise, employers state that 93 percent of these workers can operate cutters, while only nine percent of finishing operators lack the ability to identify and troubleshoot malfunctions in cutting equipment.

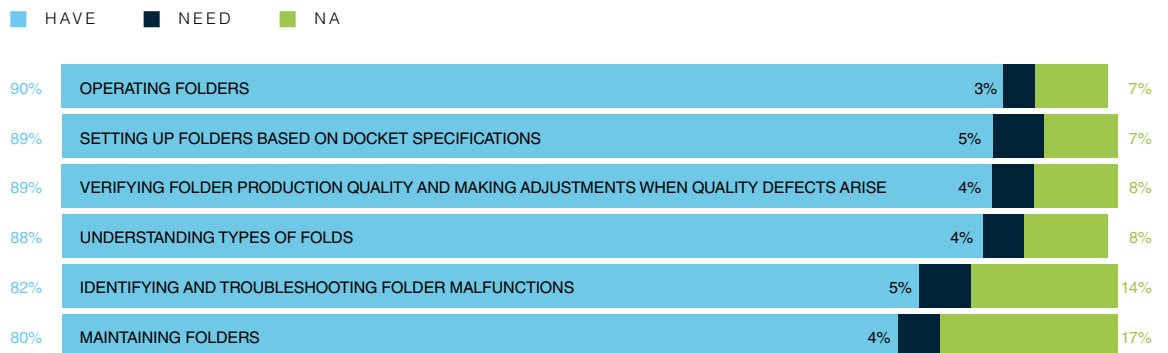
FIGURE 25 | OPERATING SKILLS – CUTTERS



NOTE: DATA DERIVED FROM EMPLOYER SURVEY.

Ninety percent of these workers can operate folders. Only five percent do not know how to set up folders based on docket specifications, and identify and troubleshoot malfunctions in folders.

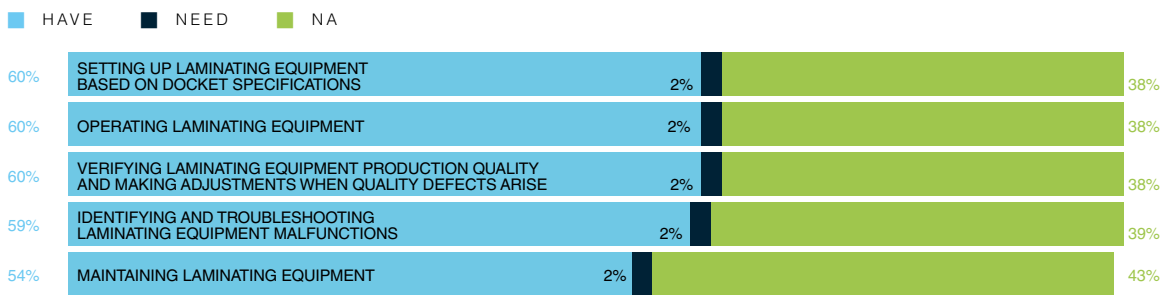
FIGURE 26 | OPERATING SKILLS – FOLDERS



NOTE: DATA DERIVED FROM EMPLOYER SURVEY..

Sixty percent can operate laminating equipment. Thirty-eight percent of employers state that their finishing workers do not require this skill. In fact, results show that no more than two percent do not possess operating skills related to laminating equipment. These results are in keeping with a trend toward outsourcing maintenance on increasingly complex equipment, negating the requirement for certain skills in some workplaces. This trend may change with shifts in technology and work processes that can and probably will require employees to be more adaptive and knowledgeable about the entire printing process.

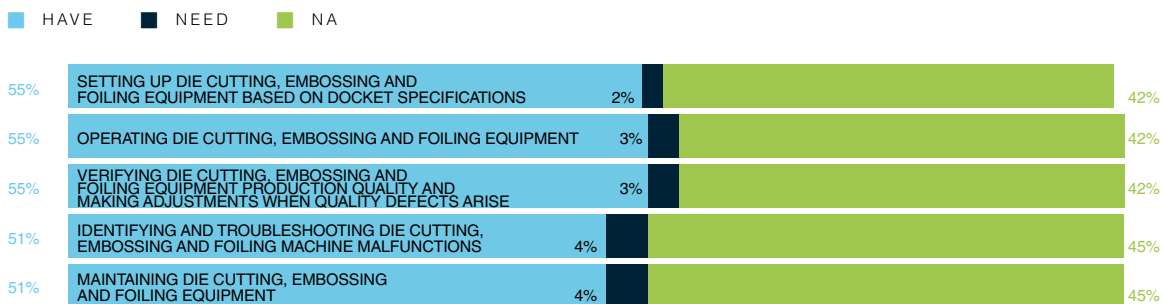
FIGURE 27 | OPERATING SKILLS – LAMINATING EQUIPMENT



NOTE: DATA DERIVED FROM EMPLOYER SURVEY.

Fifty-five percent can operate die cutting, embossing and folding equipment. Forty-two percent of employers state that their finishing workers do not require this skill. Results show that only four percent do not know how to maintain equipment, or identify and troubleshoot malfunctions in die cutting, embossing and foiling machines.

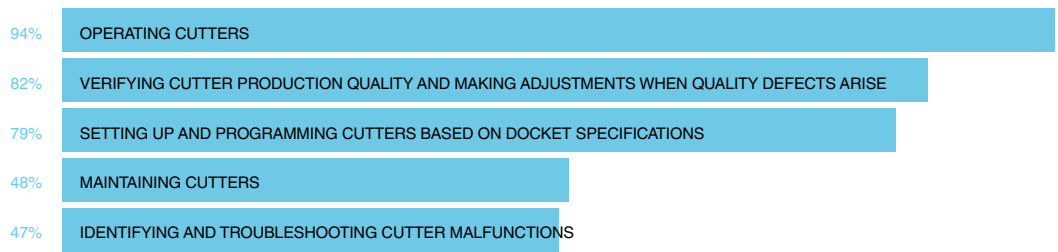
FIGURE 28 | OPERATING SKILLS – DIE CUTTING, EMBOSSING AND FOILING EQUIPMENT



NOTE: DATA DERIVED FROM EMPLOYER SURVEY.

Skills training available to finishing operators tends to mirror the importance of that skill to employers. For instance, nearly all training providers—94 percent—offer training to operate cutters. Only three percent of employers indicate that this skill is not applicable to their workplaces. At the same time, maintenance and troubleshooting skills are the least-taught of the skills; however, given that employees have demonstrated proficiency in these skills and a lower percentage of employers have identified them as being needed, this is not a significant gap. Again, this finding is likely due to the fact that employers have outsourced their maintenance and repair functions.

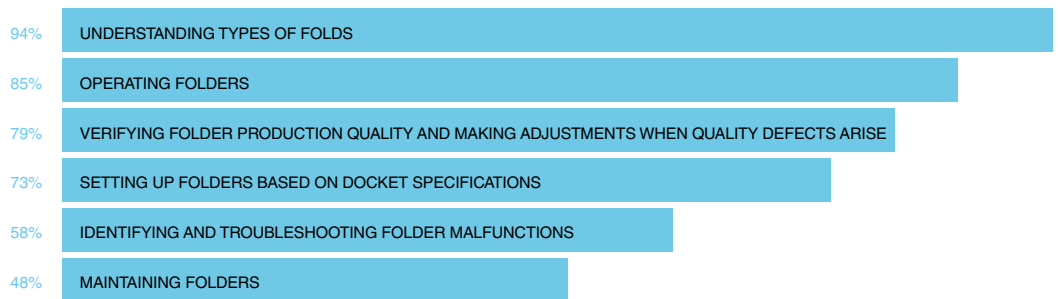
FIGURE 29 | OPERATING SKILLS – CUTTERS



NOTE: DATA DERIVED FROM TRAINING PROVIDER SURVEY.

The same relationship holds true for training to operate folders. Eighty-five percent of training providers supply training to operate folders. Only seven percent of employers indicate that this skill is not applicable to their workplaces.

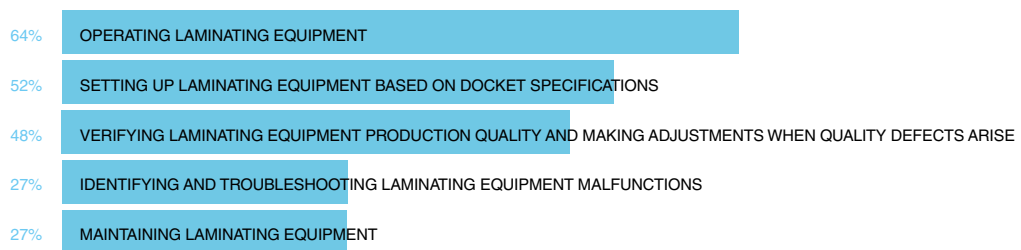
FIGURE 30 | OPERATING SKILLS – FOLDERS



NOTE: DATA DERIVED FROM TRAINING PROVIDER SURVEY.

Sixty-four percent of training providers offer training to operate laminating equipment. The relatively low level of training for this skill may be a result of the fact that 38 percent of employers state that their finishing operators do not require this skill.

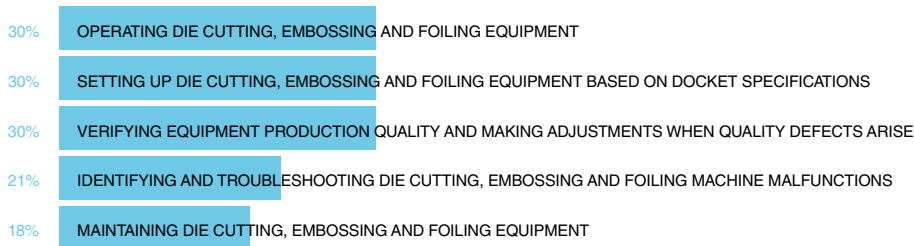
FIGURE 31 | OPERATING SKILLS – LAMINATING EQUIPMENT



NOTE: DATA DERIVED FROM TRAINING PROVIDER SURVEY.

Likewise, only 30 percent of training providers supply training to operate die cutting, embossing and foiling equipment. Again, the lack of training for this skill may be due to the fact that 42 percent of employers state that their finishing operators do not require this skill.

FIGURE 32 | OPERATING SKILLS – DIE CUTTING, EMBOSSING AND FOILING EQUIPMENT

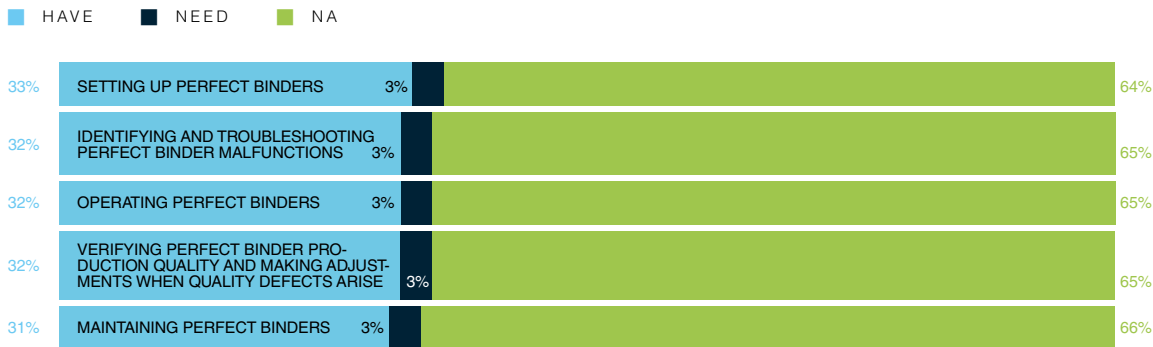


NOTE: DATA DERIVED FROM TRAINING PROVIDER SURVEY.

Operating Skills of Bindery Operators

Operating skills for bindery operators are collating, cutting, folding, mechanical binding, perfect binding, and stitching and trimming. Results from questionnaires completed by employers indicate that the majority of bindery operators possess five of these required operating skills. The exception is perfect binding. Respondents claim that only 32 percent of bindery operators can perform perfect binding; however, the majority of surveyed employers—65 percent—indicate that this skill is not applicable to bindery operators.

FIGURE 33 | OPERATING SKILLS – PERFECT BINDERS

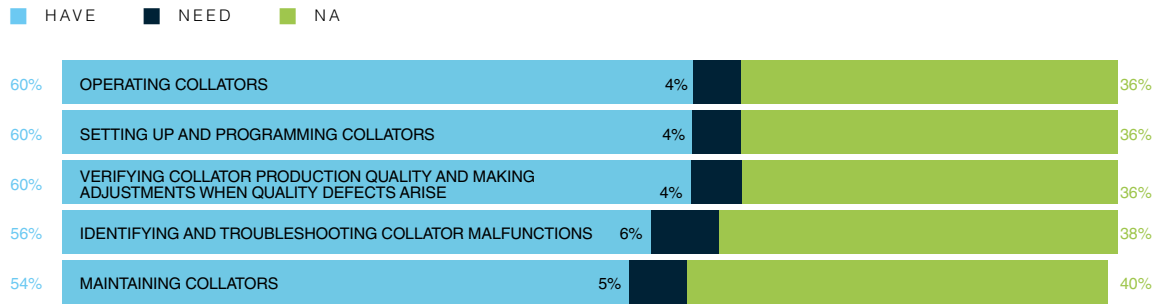


NOTE: DATA DERIVED FROM EMPLOYER SURVEY.

Detailed results for the other five operating skills are as follows:

Employers point out that 60 percent of bindery operators can operate collators, while only four percent cannot. Thirty-six percent of employers state that their bindery workers do not require this skill.

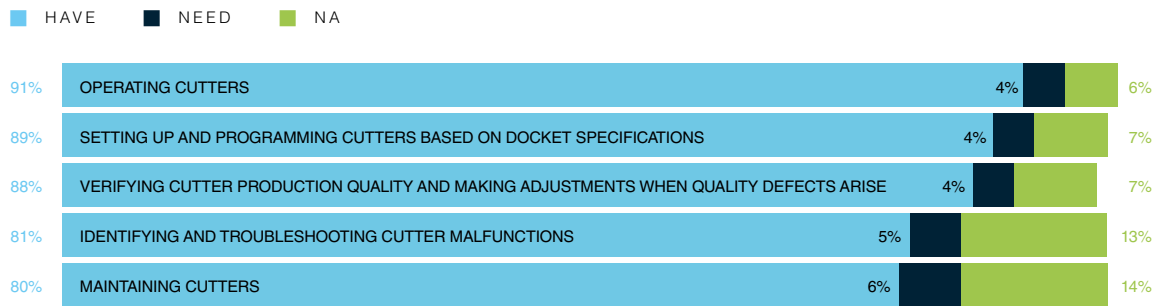
FIGURE 34 | OPERATING SKILLS – COLLATORS



NOTE: DATA DERIVED FROM EMPLOYER SURVEY.

Ninety-one percent of respondents reveal that bindery operators can operate cutters. Only four percent cannot.

FIGURE 35 | OPERATING SKILLS – CUTTERS



NOTE: DATA DERIVED FROM EMPLOYER SURVEY.

Eighty-eight percent of respondents indicate that bindery operators can operate folders. Only four percent cannot.

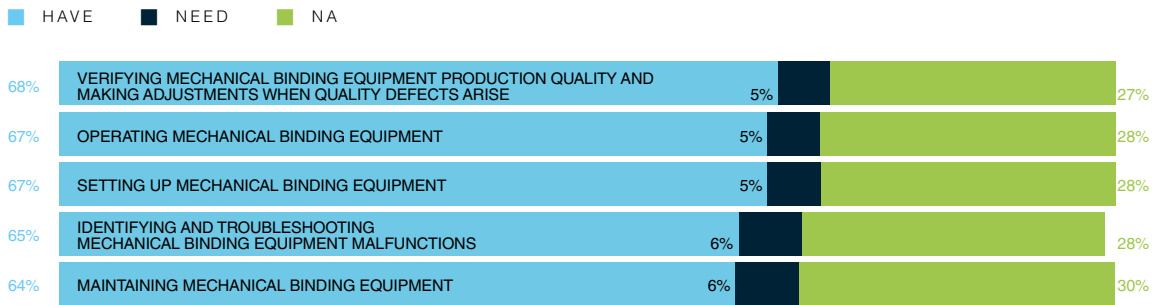
FIGURE 36 | OPERATING SKILLS – FOLDERS



NOTE: DATA DERIVED FROM EMPLOYER SURVEY.

Sixty-seven percent of respondents point out that bindery operators can operate mechanical binding equipment. Only five percent cannot. Twenty-eight percent of employers state that their bindery workers do not require this skill. Employers tend to outsource specialized processes such as mechanical binding. This trend, however, will change with shifts in technology and work processes that can and probably will require employees to be more adaptive and knowledgeable about the entire printing process.

FIGURE 37 | OPERATING SKILLS – MECHANICAL BINDING EQUIPMENT



NOTE: DATA DERIVED FROM EMPLOYER SURVEY.

Seventy-seven percent of respondents state that bindery operators can operate stitchers and trimmers. Only five percent cannot. Eighteen percent of employers indicate that their bindery workers do not require this skill.

FIGURE 38 | OPERATING SKILLS – STITCHERS AND TRIMMERS



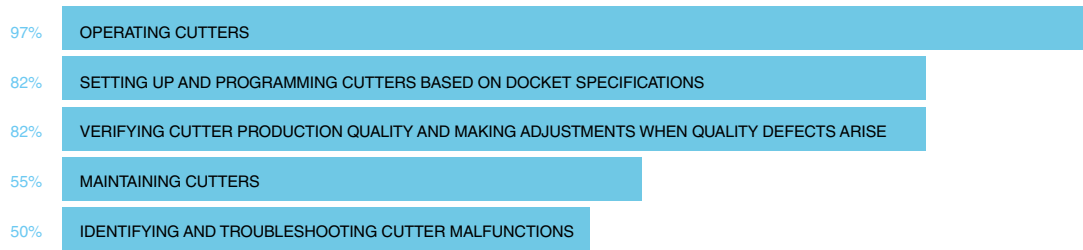
NOTE: DATA DERIVED FROM EMPLOYER SURVEY.

These results suggest that bindery operators possess most required operating skills to support current operations. At the same time, results indicate employers tend to outsource specialized processes such as mechanical binding, collating and perfect binding, as well as maintenance on increasingly complex equipment. This trend would appear to eliminate the need for many employers to have full-time workers who possess these skills.

With respect to training available to bindery operators, results show that training is widely available for four key operating skills.

Ninety-seven percent of training providers offer training to operate cutters.

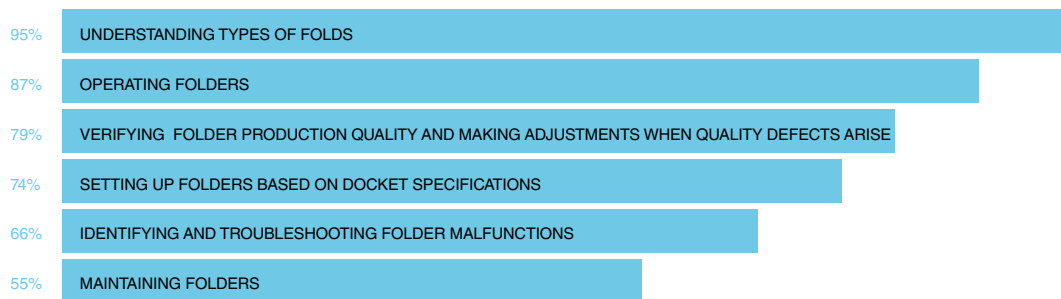
FIGURE 39 | OPERATING SKILLS – CUTTERS



NOTE: DATA DERIVED FROM EMPLOYER SURVEY.

Eighty-seven percent supply training to operate folders.

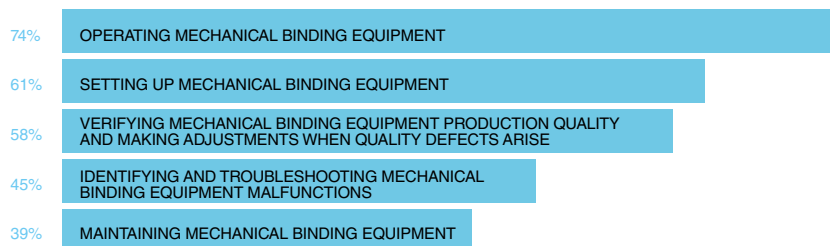
FIGURE 40 | OPERATING SKILLS – FOLDERS



NOTE: DATA DERIVED FROM EMPLOYER SURVEY.

Seventy-four percent provide training to operate mechanical binding equipment.

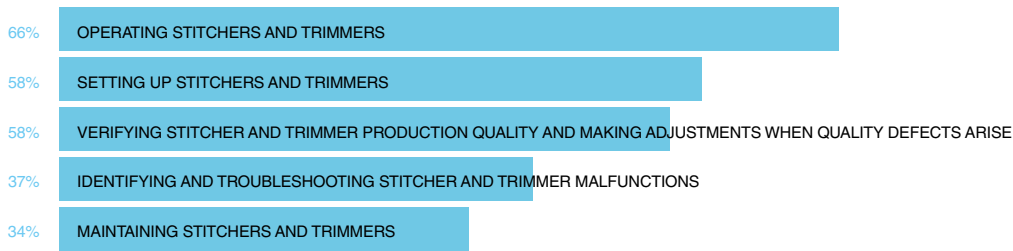
FIGURE 41 | OPERATING SKILLS – MECHANICAL BINDING EQUIPMENT



NOTE: DATA DERIVED FROM EMPLOYER SURVEY.

Sixty-six percent supply training to operate stitchers and trimmers.

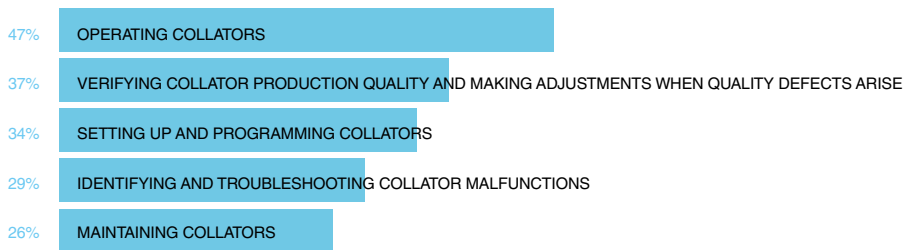
FIGURE 42 | OPERATING SKILLS – STITCHERS AND TRIMMERS



NOTE: DATA DERIVED FROM EMPLOYER SURVEY.

On the other hand, only 47 percent of training providers surveyed supply training to operate collators. The apparent lack of training for this skill may be a result of the fact that 36 percent of employers state that their bindery operators do not require this skill.

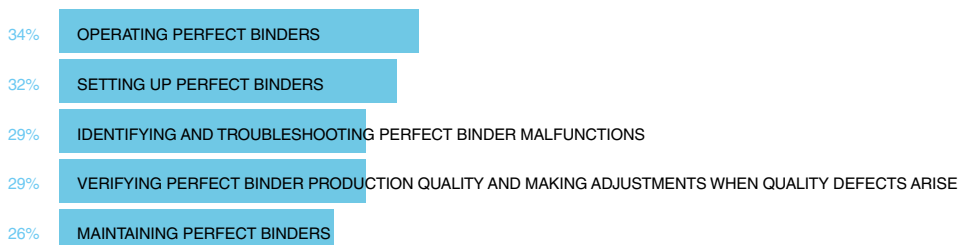
FIGURE 43 | OPERATING SKILLS – COLLATORS



NOTE: DATA DERIVED FROM EMPLOYER SURVEY.

Thirty-four percent offer training to operate perfect binders. Echoing earlier findings, the apparent lack of training for this skill may be due to the fact that a majority of surveyed employers—65 percent—indicate that this skill is not applicable to bindery operators.

FIGURE 44 | OPERATING SKILLS – PERFECT BINDERS



NOTE: DATA DERIVED FROM EMPLOYER SURVEY.

Other skills for which fewer than 50 percent of training providers offer training are:

- identifying and troubleshooting malfunctions in mechanical binding equipment (45 percent),
- maintaining mechanical binding equipment (39 percent),
- identifying and troubleshooting malfunctions in stitchers and trimmers (37 percent), and
- maintaining stitchers and trimmers (34 percent).

These results indicate that employers tend to outsource maintenance and repair of specialized equipment. This trend would appear to eliminate the need for many bindery operators to train to acquire these skills.

As a result of survey findings, CPISC can draw several conclusions with respect to gaps that exist between the required and existing skills of the industry's prepress, press, and finishing and bindery workers.



WHAT GAPS EXIST BETWEEN REQUIRED AND EXISTING SKILLS

PREPRESS

Few meaningful gaps exist in basic skills of prepress workers

Results from questionnaires suggest that few meaningful gaps exist between the levels of basic skills that are required by those working in the prepress process area and their current level of those skills.

Twenty percent of prepress operators lack core skills

Although few meaningful gaps exist in basic skills of prepress workers, gaps are present between required and existing core skills of the industry's prepress workers. To be precise, results demonstrate that 20 percent of prepress operators are not equipped with core skills.

Gaps in operating skills identified for prepress operators and colour specialists

No significant gaps in operating skills were uncovered for output specialists. Prepress operators, however, must enhance their skills related to pre-flight operations and colour management. And colour specialists should develop their skills in profiling prepress equipment, providing colour support, calibrating and applying specific settings and operating a spectrophotometer, and calibrating, applying specific settings and operating a colorimeter.

Insufficient training offered to prepress operators to use RIPing software

Only 72 percent of training providers surveyed offer training to enable prepress operators to use RIPing software. Bridging this gap is vitally important because all new workers must know how to use RIPing software. This skill serves a key building block for all other skills that prepress operators must possess.

Industry must find ways to address anticipated training needs

The printing and graphic communications industry must bridge these gaps. At the same time, the industry must anticipate other gaps and put in place training that responds to these expected gaps. For instance, managing variable data and performing cross-media reproduction are considered by many in the industry to be two skills that workers will require to cope with advances in technology and the advent of new equipment.

PRESS

Minor gaps evident in five basic skills for all press operators

Results from questionnaires suggest that gaps exist between current and required skills of all press operators for five basic skills:

- interactive communication,
- planning and organizing,
- mathematics,
- problem solving, and
- decision-making.

Although these gaps exist, they are not dramatic enough that the industry must take steps to bridge them immediately.

Many digital press operators lack required computer literacy

One-third of digital press operators do not possess complex computer literacy skills. Complex computer literacy skills are those skills sufficient enough to enable workers to operate one or more software programs and support the computer literacy skills of others in the workplace.

Not enough training available to press operators to acquire advanced reading and math skills

Survey results indicate that training providers do not offer sufficient training for press operators to acquire skills to read lengthy and complex text to extract and interpret information. Only 44 percent of training providers surveyed provide training in this skill. Ten percent of press operators require this skill.



Survey results also reveal that training providers do not offer sufficient training for press operators to acquire skills to perform complicated calculations, use formulas and apply statistical methods. Only 42 percent of training providers surveyed provide training in this skill. Twenty-eight percent of press operators require this skill.

Gaps exist in core skills of press operators

Results from questionnaires reveal gaps between current and required skills of press operators for five core skills:

- Thirty-nine percent of web offset press operators are not equipped with **teamwork skills** that enable them to take on leadership roles with teams and promote teamwork within an organization.
- Thirty-four percent of digital press operators are not equipped with **workflow process and control skills** that enable them to apply scheduling principles and analyze and interpret production performance.
- Thirty-two percent of all press operators are not equipped with **quality assurance skills** such as encouraging a culture of quality improvement and directing and maintaining quality-control systems, programs and policies.
- Twenty-nine percent of web offset, sheet-fed offset and flexographic press operators are not equipped with **health and safety skills** that enable them to monitor, promote, enforce and contribute improvements to workplace health and safety.
- Twenty-nine percent of web offset and digital press operators are not equipped with an **in-depth understanding of industry and printing processes** that can be used to educate and inform others.

FINISHING AND BINDERY

Gaps evident in basic skills of finishing and bindery operators

Survey results suggest that gaps exist between current and required reading and decision-making skills of finishing operators and bindery operators.

Workers lack core skills in quality assurance

Responses to questionnaires reveal that finishing operators and bindery operators need quality-assurance skills, and a more comprehensive knowledge of industry and printing processes.

No gaps exist in operating skills

Although results from questionnaires completed by employers indicate that only 32 percent of bindery operators can perform perfect binding, the majority of surveyed employers—65 percent—indicate that this skill is not applicable to bindery operators. Employers tend to outsource specialized processes such as perfect binding. This trend, however, will change with shifts in technology and work processes that can and probably will require employees to be more adaptive and knowledgeable about the entire printing process.

HOW WE'RE GOING TO BRIDGE THE GAPS

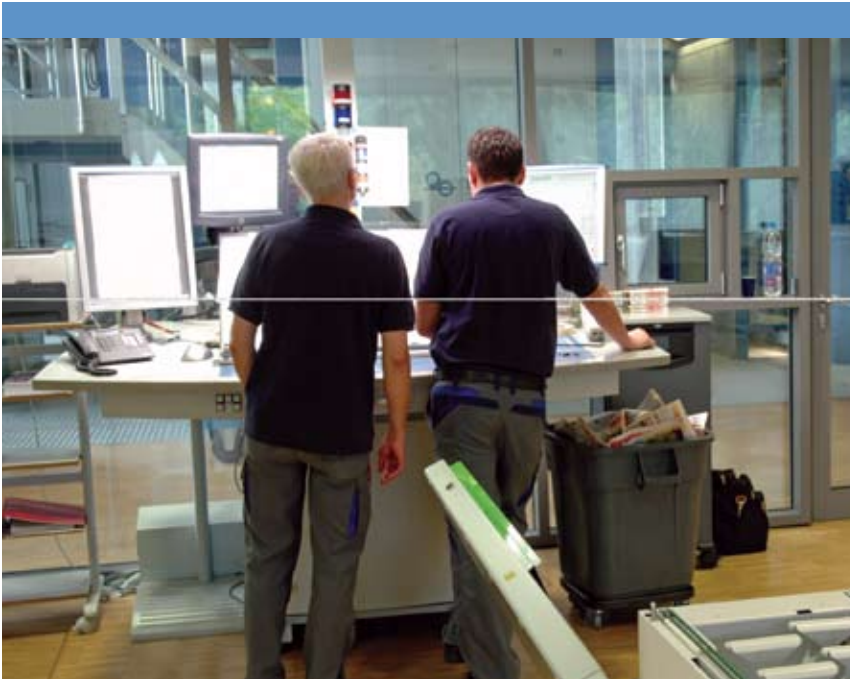
CPISC—together with a working group that represents all players in the industry—has developed a training-delivery model that shows how industry workers can get the training they need to bridge the gaps identified in section four. In fact, a comprehensive training-delivery model provides a clear roadmap for the industry to follow that enables employers to train new employees, address current skills shortages and ensure the workforce keeps up with the rapid pace of industry change.

Other benefits of an industry-specific training-delivery model include the following: The model provides employees with training options that will give them the skills to excel in a changing industry. The model identifies ways employers can provide training to their employees and thereby create a more highly skilled and adaptable workforce that will result in more efficient production and increased competitiveness. The model connects training providers to all other industry stakeholders, enabling training providers to develop and supply training that meets the specific needs of the industry.

Although a training-delivery model must always be tailored to the precise needs of an industry, CPISC appreciates that successful training models should also meet some basic criteria. According to a recent study on employment-based training, effective training-delivery models share the following traits: They are based on proven instructional methodologies; they enable employees to develop quality skills; they generate positive outcomes for employees and businesses; they function effectively; and they remain sustainable over time.

In fact, CPISC has examined the experiences and approaches of other sector councils in Canada to gain insights and uncover best practices that the printing and graphic communications industry can consider in developing its training-delivery model. At the same time, CPISC—in its role as a facilitator to provide industry stakeholders with information on training needs and as a forum for employers to further define these needs—has spearheaded a number of projects connected to a proposed training-delivery model, including:

- **a national certification program** for occupations within the printing and graphic communications industry;
- **accreditation programs** that ensure training institutions across the country teach to the national skill standards;
- **skills-development guides** that industry stakeholders can follow to adopt the skill standards within their organizations; and
- **revised sets of basic and core skills** that will be more relevant to senior and line managers within printing and graphic communications organizations.



Equipped with its knowledge of successful models and using its record of achievement as a springboard, CPISC took five steps to develop a training-delivery model for the industry:

- First, CPISC undertook a comprehensive assessment of the training requirements of workers to determine the skills required by workers in key occupations within the industry.
- Second, CPISC carried out a study to identify gaps that exist between the existing and required skills of industry workers. This gaps analysis—results of which are presented in sections three and four of this report—equips the industry with a clear understanding of the pressing training needs of industry workers.
- Third, CPISC determined what industry-specific requirements the training-delivery model must address.
- Fourth, CPISC performed additional research, including analyzing training-delivery models used by other industries to identify the best features and practices of those models.
- Fifth, CPISC developed a training-delivery model for the printing and graphic communications industry that bridges identified gaps in basic, core and operating skills by focusing on learners and involving all industry players in workers' training and skills development.

Determining industry-specific requirements of a training-delivery model

With completion of the assessment of training requirements and the gaps analysis (points one and two above), CPISC moved to determine the requirements of a training-delivery model. CPISC started by realizing that a 'one-size-fits-all' training-delivery model would not address the diverse training requirements of an industry made up of companies that differ in size, are spread across the country, and carry out a number of complex tasks and processes. Given the dramatic differences and specific needs of businesses operating throughout the industry, printing and graphic communications companies enjoy access to different kinds of training resources; skills required by workers vary greatly by process area; and the training needs of new employees differ from the needs of experienced employees who are

adapting to new technologies and processes. At the same time, the internet and advanced communications and printing and graphic communications technologies are changing the nature of the industry, shifting the profile of the average customer, opening up new markets and increasing competition.

Current training, however, is largely one-dimensional. Despite the complexity of the industry, the speed of its transformation and the variety of skills its workers require, training is largely informal teaching that is performed on the job and restricted to tasks within specific process areas. As a result, the outcomes of this kind of training vary widely based on the knowledge and skills of particular mentors, the capacity and experience of learners, and the availability of formal and informal training resources within companies that provide training.

Instead of the current approach, printing and graphic communications companies require a range of training-delivery options that suit the profiles and needs of these enterprises.

Accordingly, CPISC determined that an industry training-delivery model must:

- bridge current skills gaps in the industry's workforce;
- address current—and meet evolving and future—work-process requirements;
- recognize the differing training needs of small, medium-sized and large firms;
- deliver cost-effective training to workers in all parts of the country;
- anticipate the expanding nature of the industry;
- leverage available resources and new technologies to achieve industry learning goals; and
- appreciate the fact that most training will continue to take place at or near workplaces.



Undertaking comprehensive research into training delivery

Armed with this clear understanding of the core and industry-specific requirements the training-delivery model must address, CPISC researched formal education programs, using the organization's "Training and Education Programs and Providers" report as a base. CPISC then examined training-delivery models of other Canadian sector councils, and training-delivery models throughout the world. CPISC also asked industry employers what they consider to be the best training-delivery methods. (Detailed results of employers' surveys can be found at www.cpisc-csic.ca.)

As a result of this comprehensive research, CPISC uncovered a number of key findings, including several best practices used in industries similar to the printing and graphic communications industry:

Other industries rely on e-learning and detailed lists

The work of Canada's sector councils provides insights into how the printing and graphic communications industry could develop a training-delivery model. The councils use a wide variety of methods to transfer skills beyond formal education programs. Two such ways are e-learning programs and detailed lists of training institutes across Canada:

- Many sector councils compile and then promote these lists to employers, workers and students. Equipped with accurate and comprehensive information makes it possible for them all to make the best decisions possible concerning their learning and training needs.
- As for e-learning, ECO Canada's e-learning program is a prime example of the work being done by sector councils to improve training. The council partnered with Royal Roads University to create an online distance-learning centre that offers credible training that is responsive to the industry. Another example is the Canadian Automotive Repair and Service Council's online training tool OnDemand, which provides 30 technical, business and safety training programs to workers in numerous occupations in the automotive aftermarket industry.

e-learning and simulators are increasing in popularity

In fact, e-learning is one of two technology-based training methods that is increasing in popularity across Canada and throughout the world. e-learning is growing as a training and curriculum-delivery tool because it enables users to access training from any location and work at their own pace. Due to the nature of the interface, e-learning also helps users build essential computer-based skills.

At the same time, the increasing popularity of this learning platform is a result of increased Internet usage. Results of the 2009 Canadian Internet Use Survey have not yet been published but estimates from other sources indicate that 84 percent of Canadian households enjoy internet access and nearly two thirds of those homes have high-speed connections.

e-learning models have kept pace with demand. Notable examples include the Canadian Automotive Repair and Service Council's online training curriculum. CARS OnDemand offers more than 200 technical and business programs in collisions, mentoring and coaching, customer service management, and safety and environment.

Simulator software for press operators is the second kind of training that is gaining in popularity internationally among training providers and employers. Based on a generic press and teaching skills common to all manufacturer brands, the software enables trainees to experience problems encountered in the operation of presses without incurring any real cost to a company.

The software, however, does teach trainees the relationship between actions and costs by keeping a running tally of the theoretical costs to a company as trainees troubleshoot problems. The software is also customizable, making it possible for trainers to create new troubleshooting scenarios, and documents trainees' progress and mistakes that can be referenced by trainees and training supervisors.

One creator of simulators provides a computer simulation that mimics sheet-fed operations, from the feeder through delivery, while the company's heat-set web simulator recreates the operational aspects of a heat-set web press, from the reel-stand to folder. Simulator software runs on a standard PC platform. Multiple licenses and memory sticks can be purchased to accommodate more than one user simultaneously.

Some schools and educational programs are creating training alternatives

Colleges, universities and other learning institutions offer a wide variety of industry-specific training programs targeted at people interested or already working in the printing and graphic communications industry. Three major problems, however, exist with these programs: first, a four-year program is far too time-consuming for prospective workers; second, this lengthy program is cost-prohibitive for employers unable to make such large investments in their employees; and third, if students decide to pursue this kind of program, they will learn techniques that likely will soon be outdated. As such, one- and two-year programs are more logical. So too are internships and hands-on activities that prepare students for work in the printing and graphic communications industry.

Apprenticeship programs are also available in some schools. Apprenticeship programs offer many advantages. They are a relatively inexpensive form of training (much less than a multiple-year college or university program); apprentices become proficient in the skills required by their employers; and employers gain inexpensive employees trained according to their business requirements. Apprenticeships also transfer knowledge between experienced and younger workers—a valuable process in the aging Canadian workforce.

But these programs can have drawbacks. Innovations in basic work techniques, such as the increased use of computers, has led some experts to question whether it is better to include training for those new skills within apprenticeship programs or if this training is best provided in other forms, such as college programs. This problem also affects the education system. Since it is difficult for people in the industry to predict how quickly new technologies will be adopted by the industry, new skills are often taught to students five to ten years after their introduction. As such, students pass through the education system without ever acquiring these particular skills.

Some educational and training institutions have recognized the need for alternatives to long programs, and have begun offering short training programs, opportunities for workers to upgrade skills, and one-, two- and three-day seminars and workshops. The breakthrough programs of the following institutions merit specific mention:

- Algonquin College offers a compressed diploma program in print media. Although diploma programs usually take two years to finish, students complete this program in 45 weeks, enabling them to move more quickly into industry jobs and ensuring the techniques they learn at school are still being used in the workplace.
- British Columbia Institute of Technology offers three one-year associate certificates (graphic design, prepress for printers, and process management), and a diploma in graphic communications technology. If students opt for the two-year program, they are provided with two job placements. Associate certificates are available part-time, allowing current industry employees to advance their skills and knowledge.

- Glenn Biech Graphic Arts Training Institute of British Columbia supplies courses targeted at workers in prepress, offset press, bindery and web press. Two of these courses are offered online: bindery operations and web press operations. The institute also partners with employers to offer apprenticeship programs.
- NorQuest College provides summer camps for young people by advertising careers in print media to creative adolescents. The school also offers a full-time program through SAIT Polytechnic, and some part-time courses in Adobe.

Small and large employers have widely divergent training needs and methods

Although industry employers operate all sizes of businesses, the majority of employers are small businesses. As such, the industry must weigh the benefits of training programs and methods against the costs of these programs and methods.

Small businesses neither have extensive training budgets nor the luxury to allow employees to be paid while undergoing formal training. In fact, many employers have no budget to pay for worker training, forcing many workers to attend training programs in their spare time. As such, employers with 10 or fewer employees cite high schools, colleges and universities as ideal sources of training.

Alternatively, employers with more than 50 employees are likely to pay the entire cost of training their employees; however, these employers usually provide training in the workplace. (Detailed results of employers' surveys can be found at www.cpisc-csic.ca.)



Identifying best practices of training-delivery models

Based on this research, CPISC has been able to identify several features and practices to incorporate into the printing and graphic communications industry's training-delivery model:

Training must offer students frequent entry dates

Students should be able to begin and complete training programs and courses as their individual schedules permit.

Training must demonstrate a return on investment to employers

Training budgets are the first to be cut when employers look for ways to reduce costs. As such, any training-delivery model must demonstrate that training produces a tangible return on investment.

Training must be available part-time

Training programs must be available part-time to accommodate employees working in the industry. If online formats are chosen for programs, students should also be able to choose how many courses they take at one time.

Training must create awareness among prospective workers

Given that the industry faces a looming shortage of skilled workers, any training model should not only be designed to train new workers, but also spark the interest of young people and students about careers in the industry.

Training must be available online

e-learning is a popular option to deliver training programs because it gives users access to training from virtually any location, features self-directed modules that make it possible for students to learn at their own pace, and helps students build essential computer-based skills.



Training must link employees and employers to training providers

The industry training-delivery model should foster strong links to training providers. One way of achieving this goal would be to develop new training materials or adapt existing materials based on partnerships between the industry and colleges, universities and other training facilities. Partnerships would also increase the visibility of training programs and strengthen the legitimacy of training.

Training must be based on frequently updated materials

One of the prime challenges faced by leaders of industry training programs is maintaining the currency of teaching materials. Programs have not kept pace with the rapid pace of technological change in the industry, preventing new workers from gaining the up-to-date knowledge and skills they require. As such, training must be able to quickly and seamlessly incorporate new learning materials as advanced technologies are introduced and implemented in workplaces.

Training must strengthen industry ties to employers

Training programs should be structured so that they create links to employers. Not only does employer support of training programs encourage enrolments, but employers will also need to be engaged in these programs as training material is updated, technologies change and opportunities emerge to supplement these programs with on-the-job training. These strengthened ties will also encourage employers to recruit and hire workers who have completed this kind of training.

Training must award successful students with certificates that demonstrate achievement

Rewarding successful students with training certificates produces four key benefits.

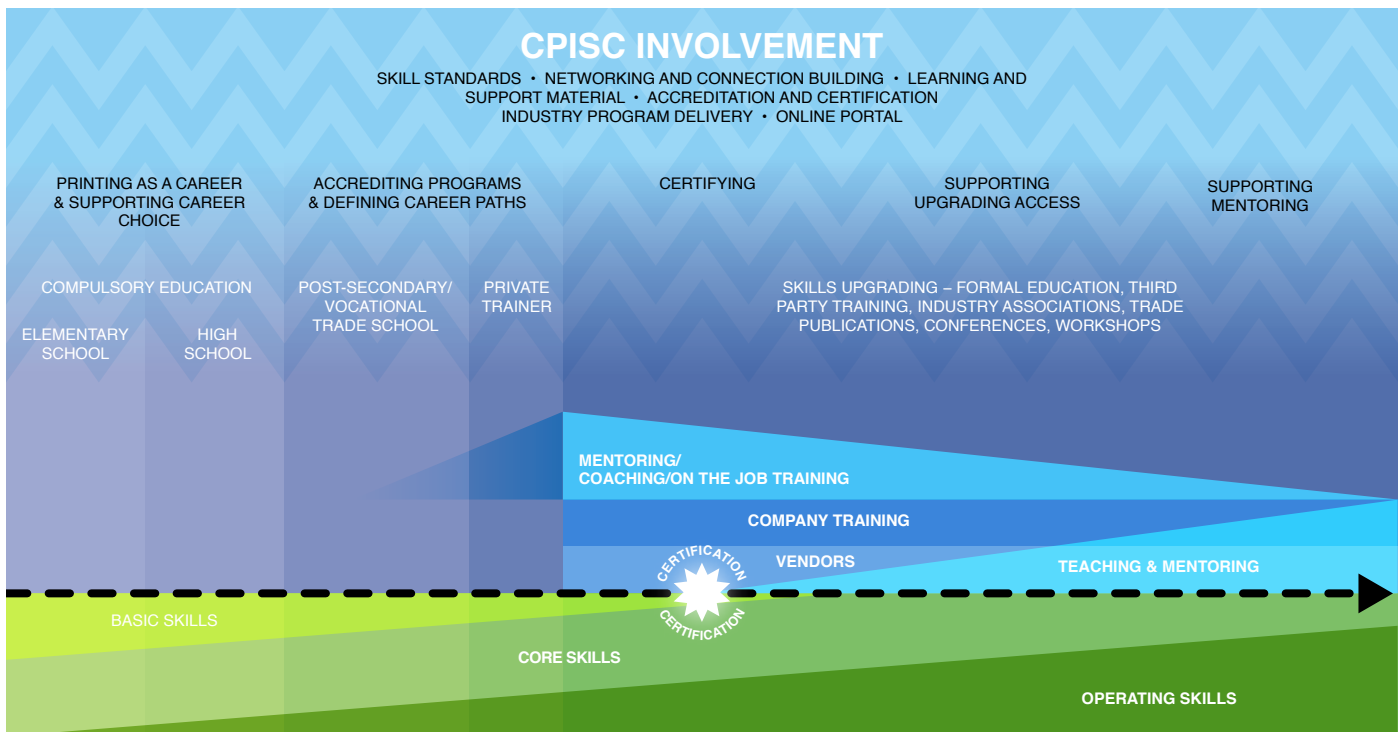
Certificates:

- strengthen and formalize ties between the industry, training institutions and workers;
- motivate students to complete multiple courses;
- show that students possess a wide range of basic, core and operating skills; and
- provide students with tangible proof that they have adaptable, portable skills that they can bring to workplaces throughout the country.

A Training-Delivery Model for the Industry

The Canadian printing and graphic communications industry has used these best practices to create a training-delivery model that makes it possible for workers to:

- get the training they need to bridge the gaps between existing and required skills;
- ensure new workers can access the training they need;
- enable experienced workers to keep up with the skills requirements associated with advances in technology and equipment;
- help employers nurture an adaptable, highly skilled workforce that will fuel increased productivity, competitiveness and prosperity throughout the industry; and
- support training providers as they develop and supply programs and services that meet the precise needs of the industry.



Deconstructing the model

The best way to gain a complete perspective of the industry's training-delivery model is to examine the five pillars of the model:

1. All training will be focused on learners

One of the best practices of the delivery of training and education is that programs should always be focused on learners. The industry's training-delivery model incorporates this view by following the learning path of employees as they move throughout their careers in the industry. This path can be seen starting with compulsory education at the left-hand side of the model and ending with teaching and mentoring at the right-hand side of the model. Indeed, the model presented in the graphic above demonstrates that learning is a continual process. While some other models emphasize a static process to acquire skills, the industry's model focuses on learners who are continually applying knowledge from the past and looking forward to acquiring new skills in the future.

There are also a number of characteristics of the industry that make the focus on the learner particularly relevant:

- Work in the industry is comprised of many roles and there are few discrete, easily identifiable occupations. Focusing on learners follows workers as they progress through their careers, which may encompass a number of different occupations and roles over their lifetime.
- Particularly in small and medium-sized organizations, formal learning programs may not exist. As such, workers have considerable responsibility for their own development by acquiring the help and resources necessary for them to succeed.
- Given that the industry is comprised of organizations of various sizes that are located in most communities in Canada, the learning paths of workers differ. Prepress operators in Vancouver have access to more diverse learning resources than bindery operators in Iqaluit. Accordingly, one prescribed model organized by occupation, organization type, process area and organization size does not cover all employees in the industry effectively.

2. Skills will be the foundation of all learning

Skill standards provide a clear picture of the current skills required of employees working in specific roles within the industry. As such, they are the foundation for all learning. These standards provide employees with an indication of the skills required to perform their jobs, as well as those skills they have yet to acquire and will need to acquire through some form of training and development. The three types of skills identified in the skill standards (basic, core and operational) are the foundation on which the training-delivery model is built.

As a result, the shape of the skills section of the model (as illustrated in the green bars along the bottom of the model as depicted in the graph) shows which skills are acquired and at what point in workers' careers: basic skills are important at the outset of careers and are acquired mostly at the start of careers; core skills are constantly taught throughout workers' careers; and operating skills are strengthening continually throughout workers' careers.

3. Training will be delivered through various proven methods

Workers develop their skills through many different means. At the far left of the model, columns delineate the first few stages of learning before work as employees gain their basic, core and some operating skills to prepare them for work. Passing through compulsory education, workers gain not only skills, but also a perspective on printing and graphic communications as a career option to pursue. Workers may also pursue some form of post-secondary education or receive training from a trainer before entering the industry.

Operating skills become more important and may need more than formal education to build the skills necessary for work. The delivery methods illustrated in blue in the model graphic show how learning changes on-the-job. Three delivery methods lie at the heart of the model:

- **Mentorship** (also described as non-formal learning) is the most important learning method in the industry.
- **Manufacturers and suppliers** provide additional non-formal training to many workers within the industry when machinery is upgraded or changed.
- **Company training** provides important learning opportunities to employees; however, the availability of company training often depends on organizational size, as smaller organizations tend to offer less formalized training outside of health and safety training in favour of on-the-job training provided by more experienced employees.

The training-delivery model also highlights the importance of opportunities for workers to gain more skills and knowledge throughout their careers. In fact, all industry stakeholders play key roles in continuous learning and contributing to employees' success. Industry associations provide workshops and networking opportunities, formal education providers supply courses to upgrade workers' skills and trade publications provide new information that affects workers.

4. Certification will formally recognize workers' skills and knowledge

Certification formally recognizes the skills and knowledge that experienced employees have gained at work. Accordingly, certification is depicted by a white star at a key point along the training continuum, indicating how important it is for proven workers not only to be recognized for their expertise, but also to be in a position to share their knowledge and skills with others through teaching and mentoring.

5. Teaching and mentoring will enable skilled workers to pass on their knowledge

When workers learn, they are in a position to share what they have learned with others. As such, the blue area on the right-hand side of the graphic for the industry's training-delivery model emphasizes the role of experienced employees in imparting their learning to others through formal workplace mentorship opportunities.

How CPISC will lead the industry to develop and sustain the model

The training-delivery model also shows how CPISC will be directly involved in promoting a highly skilled industry workforce. The black text along the middle of the graphic depicting the model shows the career progression of workers based on CPISC's initiatives to support industry workers:

- **Printing and graphic communications as a career and supporting career choice:** CPISC will serve as an information resource for young students, informing them about potential careers in the industry and training opportunities available to them. Parents will also be a target audience, as they play key roles in the career decisions of their children.
- **Accrediting programs and defining career paths:** CPISC will work with training providers to accredit training programs that demonstrate that they teach to the national skill standards. When a system of accreditation is in place, students—beginning in high school—will be aware of the industry's skills requirements. At the same time, CPISC will lay out a number of career paths to show students that continuous learning is essential to successful printing and graphic communications careers.
- **Certifying:** CPISC will develop a certification program through which the skills and knowledge of experienced workers will be recognized and celebrated.
- **Supporting upgrading access:** CPISC will work on ways to provide experienced workers with training resources and information to help them continue to develop their skills.
- **Supporting mentoring:** CPISC will develop and provide resources to support mentors and learners through this learning process.

The black text at the top of the model shows the initiatives CPISC is carrying out to support skills-development in the industry. At the same time, CPISC has used the best practices uncovered through research, analysis of training-delivery models of other sectors, and skills and training gaps identified via questionnaires completed by employers and training providers to put in place the following action plan to support implementation of the industry's proposed training-delivery model.



ACTIVITY	DESCRIPTION
ALL YEARS	
Create, administer and maintain feedback mechanisms	To ensure that the following recommendations have been implemented correctly by continuing to meet the needs of all stakeholders, feedback mechanisms need to be created to gather information from all stakeholders on the successes or failures of each of the initiatives. Feedback mechanisms should also be created for stakeholders to provide information to each other to determine if the connections between them are functioning correctly. These tools may build on those being created in the Skills Implementation Guide or HR Toolkit projects.
Market CPISC and its initiatives	For the recommendations in this report to be effective, they need to be used by industry. As such, CPISC should continue to market its tools, resources, projects and initiatives to the industry.
YEAR ONE	
Develop industry orientation (Print 101) materials to enhance and broaden the knowledge of industry workers	All stakeholders can use these materials to assist all workers in gaining more knowledge about the entire printing process. The standardized materials developed by CPISC would provide employees with a greater understanding of the industry and training on the core skills. Not only does this training address certain core skills gaps, but it also makes the workforce more adaptable as they are aware of printing functions outside of their own process area. These training materials would be particularly relevant for use in high schools to give young students their first exposure to the printing and graphic communications industry, and with suppliers and manufacturers to integrate with their training or to orient their new employees on the dynamic nature of the industry.
Development of updated industry promotional materials that could be distributed to formal educational institutions, students and potential applicants for industry firms	Although the occupational profiles provided by CPISC are a great starting point for documents that can help the industry recruit new employees, additional documents could be published that outline the quality career paths, job stability and challenging work that the industry provides. Materials should be targeted at young people, parents, career changers and new Canadians. These documents might be in a printed form, or available to training institutions to download and print themselves.
Continue advocacy with formal education providers to better focus and adjust their programs, delivery options and curricula on the entry and continuing skill requirements	Excellent work is already underway to bring more educational institutions on board to adopt the skill standards into their curricula. Projects such as the national education advisory committee and the accreditation project will continue to bring more institutions into the fold. However, there is less involvement on behalf of trainers from equipment and supply vendors.

YEAR ONE (CONTINUED)

Recruit vendors

Given that the industry relies heavily on these suppliers for training, it is important to recruit them for these initiatives. These suppliers play a key role in training for the basic and core skills, as well as the operating skills since the former enable the operating skills. Additional advocacy will also support the accreditation initiative by recruiting additional institutions that would be willing to have their programs accredited to meet the needs of industry.

Establish website to facilitate exchange of information on linking existing training programs and materials to the skill standards

Discussions are currently underway on this initiative; however, a further description for the purposes of this report is required. CPISC should establish an online clearinghouse of information on training and education programs. Currently, the listing of programs is available online; however, it is not easily searchable by program, nor is each program connected to the skill standards. As such, if a learner in Bathurst, New Brunswick would like to know the easiest way to bridge her gaps in Image Manipulation, there is no easy way to locate programs to address this issue. Such a website could easily connect trainers to learners through a simple online skill standards self-assessment.

Determine priority needs for online training to support training efforts within industry to address existing and emerging skill gaps for the current workforce

It cannot be ignored that online training and development is a medium for learning that is emerging strongly throughout all sectors. Traditionally, the industry has been reticent to adopt this training medium due to the fact that many employees do not have access to computer terminals and they may not have the required level of computer literacy in order to navigate an online course. As new employees enter the industry and as processes become more computerized, these barriers will decrease sharply. Especially given that a number of printing and graphic communications organizations operate outside of major urban centres where formal training programs are provided, online learning may be the only medium in the future that will assist these more remote learners in keeping up to date with industry skill requirements.

Thus, as a first step to delivering online learning, an initial feasibility study to determine how practical and deployable online learning would be today in addressing the skills gaps identified in the skills gap analysis reports will be conducted. An important component of this study will help to determine how feasible it will be to implement online learning in the industry, especially in process areas other than prepress which is much more computerized. Also for analysis is how online learning can or should be supplemented with classroom or on-the-job learning.

YEAR TWO

<p>Acquire access to existing online programs and materials to address existing and emerging skill gaps for the current workforce</p>	<p>One potential means of delivering online training is to offer a subscription to an online training portal that contains programs delivered by multiple organizations. As a facilitator of this online tool, CPISC can sign-up online training providers to deliver courses online through their site. Members such as small and medium-sized employers who may not have the funding to purchase individual courses can have access to a plethora of online courses as cost is reduced through purchasing economies of scale. In addition to courses, training and education providers might be able to provide links to their in-class learning opportunities, as well as make available training materials that could be delivered at a worksite. The ultimate goal of the portal is to make training and education opportunities easier to access for employees and employers.</p>
<p>Continue to develop the online portal</p>	<p>In addition to adding in training resources, the online portal can be expanded to include a wide range of tools and resources that can be used by all training stakeholders. Some examples of the tools include blogs, message boards with the ability to add comments, and a frequently asked questions section. Project working group members have indicated that these tools could be monitored by educators working for accredited organizations.</p> <p>One larger component of the online portal that should be developed is an online tool that would assist employers in calculating the benefits and returns on investing in training (or in using the resources in the online portal). This calculator would assist employers in tracking the results of their training initiatives.</p>
<p>Develop train-the-trainer materials for workplaces to support on-the-job coaching</p>	<p>Most process areas also rely strongly on the delivery of on-the-job training to bridge skills gaps. Some training is offered by skilled trainers but most comes in the form of coaching by more experienced employees. In this initiative, CPISC would develop train-the-trainer materials for coaches to support them in their delivery of training that meets the needs of workplaces while integrating the skill standards. This training also standardizes the delivery of on-the-job training since this method of training is highly variable and based on the abilities of the experienced workers to share knowledge.</p>
<p>Develop a Print Awareness Week</p>	<p>As a way to promote careers in printing and graphic communications, CPISC should facilitate a Print Awareness Week. Part of the week would include one-week job shadowing opportunities and plant tours for students of secondary and post-secondary schools. Although many companies are already engaged in these initiatives, one coordinated week brings more of a presence to print awareness at a national level.</p>
<p>Ongoing advocacy with formal education providers to better focus and adjust their programs, delivery options and curricula on the entry and continuing skill requirements</p>	<p>Getting training and education providers onside in the adoption of skill standards is a first step in bridging skills gaps; however, additional work can be completed with these institutions to offer more standardized learning experiences across the country. Acting again as a facilitator, CPISC can bring training and education providers together to share best practices for the delivery of learning and development across the country. Such opportunities may come in the form of conferences or simply online town halls where education and training can come together with employers to constantly stay aware of what is required and how the industry is changing.</p>

YEAR THREE

Support development of industry-specific online training to supplement existing online and formal training programs	Once an online presence has been established, CPISC should take the initiative to develop training materials that are currently being addressed by existing training providers or that they are in a better position to develop. Such materials will complement and supplement the materials already offered by training and education providers. As the facilitator to this point, CPISC will have gained significant knowledge of the existing skills requirements that are not being met by industry and would be in an excellent position to develop online courses.
Develop a collaborative process	CPISC will develop a committee, working group or other mechanism to determine which training programs and courses should be developed.
Provide training advice and advisory services to employers, trainers and employees of member firms	CPISC will continue to seek out opportunities to help employers deliver training and education programs to their employees. This work could involve developing additional training materials, resources and programs, and connecting learning advisors and training institutions with employers. Such a service is most important when assisting small and medium-sized organizations that may not have access to these services in smaller communities or may not be able to afford these services if they were not procured using economies of scale.

A final word

Bridging the Gaps has carefully outlined research undertaken by Canada's printing and graphic communications industry to identify gaps between existing and required skills of industry workers. The industry has used and leveraged those findings to carry out further research.

Equipped with all survey and research results, the industry has identified a proven, reliable way to deliver training that not only bridges skills gaps, but also gives all workers opportunities to improve their skills, expand their knowledge and enjoy rewarding, meaningful careers in the printing and graphic communications industry.

Yet the industry's work is not done. Now industry players must use the model to create a comprehensive network of training programs, tools and resources that make sure workers get the training they need and deserve. Let's get to work.



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