Introduction

Statement of the Problem

The proposed research activity is the result of the researcher's search for an appropriate training manual to use when teaching the CorelDRAW vector illustration software package in the community college classroom. The researcher reviewed several manuals from various sources and found none that met the needs presented in the community college environment.

The development of commercial CorelDRAW training manuals has been done with little or no research on how the program is used. As a result, a bias toward a particular type of output, for example, desktop publishing, technical drawing, or commercial illustration, is present in the Corel approved curriculums. In the continuing education classroom or the community college setting this can result in inadequate training for some students.

The Corel Corporation certifies training manuals for its products and requires these texts be used in authorized training centers. In spring of 2000, six companies are certified as vendors for CorelDRAW training manuals (Corel Corp. 2000). In reviewing these recommended manuals, the researcher found a subtle bias in each text. For example, "Cookin' with CorelDRAW 7" from Instrux Inc. gives two chapters to technical illustration and only one chapter to text (Yokom, 1996). Technology and Communications manuals stress the illustration features of CorelDRAW with three chapters on advanced effects, two partial chapters on text handling, two on technical illustration, and three on utilities included with the program (Paulson, 1995). The New Horizons Computer Learning Centers manual offers three chapters on aspects of technical drawing with one on text (New Horizons, 1999). The Anazi manual series for DRAW 9, on the other hand, offers four chapters on text and two on aspects of technical drawing (Anazi, 1999). In discussions with Corel Corporation (D. Zutrauen, Electronic Communication, April 2000) and with various publishers of training manuals (V. Yokom, Personal Communication, 1998; E. Paulson, Personal Communication 1996), the researcher found that

usage surveys and needs assessment relating to the software have not been done. Publishers excuse the lack of research by citing the frequent release of new software versions and their personal knowledge of the software. In other words, they know how the software is used from their personal experience therefore they do not need to do any research (V. Yokom, Personal Communication, 1997).

While all manuals cover the basic tools well, the researcher was unable to find a manual that suits the continuing education classroom. Software training in the continuing education environment presents special problems for the trainer. The continuing education program cannot discriminate in any way therefore is precluded from prescreening or requiring prerequisites of enrollees (J. Haba, Personal Communications, 1999). Because of the subtle bias found in the certified training manuals, use of these manuals presents the danger that an enrollee will not receive information necessary for the output they will create from CorelDRAW. As the goal of software training is the skill enhancement of the enrollee, using a biased training manual endangers the success of the course (J. Haba, Personal Communications, 1999).

The CorelDRAW vector illustration software is highly versatile. Case studies collected by Corel Corporation show a wide variety of uses for the software package (Corel Corp., 2000). The annual Corel World Design Contest publications demonstrate the wide range of output from the software (Corel Corp., 1998). Because of this versatility and the limitations on enrollment monitoring in continuing education, the researcher believes that the curriculum used in this environment must be as unbiased in emphasis as possible. This research was undertaken to either prove or disprove that belief.

Need for Research Activity.

"When we first introduced this software, I never imagined it would be used to produce so many different and beautiful things" said Dr. Michael Cowpland, former President and founder of Corel Corporation at the CorelDRAW Gala in October 1997. He expressed his continued amazement at the entries to the Corel World Design Contest. (M. Cowpland, Speech, 1997).

No one imagined in 1986 that the add-on to Ventura Publisher, Headline, would evolve into the leading graphics illustration package on the PC platform (Laver, 1998). Headline began as a text manipulation utility within the Corel Desktop Publishing package, a hardware and software bundle. Its popularity spread by word of mouth throughout the extensive Ventura Publisher software user base. The Ventura users requested it be sold as a stand-alone product. When it was finally offered, its popularity and high profit return alerted company owner Cowpland that producing software rather than hardware had a higher return on investment (Laver, 1998).

Over the next three years, programmers listened to users and began developing a program to follow Headline. It was named, after much often-acrimonious discussion, CorelDRAW! complete with the expressive punctuation. Marketed as a do-all graphics program for the PC, it soon captured the market. Sales the first year topped one million units (Laver, 1998). In the more than ten years since its introduction, the program has continued to dominate the industry. Today, more than 60% of all computer users surveyed by CNET news reported using CorelDRAW as their illustration package of choice (CNET, 1999).

While the program itself is correctly promoted as being easy to learn, it is difficult to master due to its multitude of features (R. Altman, Personal Communication, 1999). Users often develop bad habits and inefficient ways of working due to self-training (G. Priester, Personal Communication, 1998). Cowpland's avowed approach to software marketing dictates as much in the box and as much on the feature list as the customer wants or could possibly dream of using (Laver, 1998). As a result, the

author attempting to write a CorelDRAW training manual must make some often-painful decision as to what to include or exclude from a publication (V. Yokom, Personal Communication, 1997). In the publishing of training manuals for computer software, the development time is extremely short as compared to development of traditional textbooks (J. Gibson, Personal Communication, 1998). Given the short time span between releases of computer software upgrades, publishers develop training manuals with little if any needs assessment. Training manual writers tend to base their curriculum on what they are familiar with through personal experience and the interests of their students (V. Yokom, Personal Communication, 1997).

Introduced as a text and graphic manipulation utility, CorelDRAW's original intended market was the desktop publisher working on the PC platform (Laver, 1998). As it developed into a fully functional illustration package, users found more and more applications for the many tools and features. Corel Corporation has attempted to identify some of the uses with a series of Case Studies on their web site. In addition, they publish the entries into their annual competition in a large, full color book. (Corel Corporation, 2000). Neither attempt is comprehensive or scientific.

The lack of information about the many uses of CorelDRAW has led to the mismatch of training manuals and trainees. This research project attempts to address that lack with a needs assessment to identify the main uses of the program. Expert CorelDRAW users were interviewed. They identified the most common output from the program based on their observations of users. Using this information, the researcher developed a survey listing these output types. This needs assessment will provide information so that training manuals for the general market can be revised to reflect the predominant use once that use is found.

Conclusions and Recommendations

Presentation and Analysis of Data

The researcher collected data on the following control variables: gender, age, software version, country of residence and the research variable of software usage or type of output. Options under gender were female and male while the age variable had the choices of age ranges. The ranges were Under 18, 18 – 29, 30 – 39, 40 – 49, 50 – 64, and Over 64. Survey respondents indicated all the versions of the program they currently use. The Survey Solutions software used to author the HTML survey provided a drop down menu of over 250 countries from which the respondents could choose. The researcher wished to determine if there were differences in how men and women used the program as well as if age made a difference. In addition, by determining the software version and comparing it to the country of residency, the researcher hoped to determine if users in economically disadvantaged countries upgraded at the same rate as those in economically sound countries. The research variable was divided into 32 separate output which were to be rated on a three point Likert scale, Primary Output, Occasional Output, and Never Output.

The survey respondents were 32.4% female and 64.5% male as shown in Table 1. Respondents indicated ages within all ranges with the largest group, 143, or 35.35%, in the 40 to 49 age group. The 30 to 39 age group was the next largest with 94 or 21.27% of the respondents. 71% of the respondents were between the ages of 18 and 49. Total figures and percentages are shown in Table 1.

The data shows that the 72.5% of those responding used the latest version of the software, Version 9. (Version 10 was released during the survey.) Table 1 gives the frequency of use by version. The total number of responses in this variable is 562, 120 more than the total actual survey responses. Respondents were asked to identify all the versions they currently were using. Many CorelDRAW users

keep more than one version of the program on their machine due to changes in the program from one version to another.

Table 1
Description of Population by Gender, Age, and Software Version Used

Variable	Frequency	Percent
Gender:		
Female	157.00	35.52
Male	285.00	64.48
Age:		
Under 18	6.00	1.36
18-29	79.00	17.87
30-39	94.00	21.27
40-49	143.00	32.35
50-64	11.00	24.89
Over 64	10.00	2.26
*Software Version:		
Ver. 3 or earlier	3.00	0.68
Version 4	7.00	1.58
Version 5	18.00	4.07
Version 6	13.00	2.94
Version 7	54.00	12.22
Version 8	142.00	32.13
Version 9	325.00	72.53

*Some users use more than one version of the program.

Table 2
Description of Population by Country of Residency

Variable	Frequency	Percent
Country:		
USA	270.00	61.09
Canada	47.00	10.63
Australia	13.00	2.94
Netherlands	12.00	2.71
Great Britain	10.00	2.26
Brazil	8.00	1.81
Czech Rep.	6.00	1.36
Mexico	6.00	1.36
Russia	5.00	1.13
New Zealand	5.00	1.13
Philippines	5.00	1.13
Belgium	4.00	0.90
Finland	4.00	0.90
Argentina	3.00	0.68
Germany	3.00	0.68
India	3.00	0.80
South Africa	3.00	0.68
Poland	3.00	0.68
Puerto Rico	2.00	0.45
Honduras	2.00	0.45
Austria	2.00	0.45
Chile	2.00	0.45
China	2.00	0.45
Turkey	2.00	0.45
Algeria	1.00	0.23
Am. Samoa	1.00	0.23
Denmark	1.00	0.23
Estonia	1.00	0.23
Georgia	1.00	0.23
Greece	1.00	0.23
Guam	1.00	0.23
Japan	1.00	0.23
Luxembourg	1.00	0.23
Norway	1.00	0.23
Tunisia	1.00	0.23
Ukraine	1.00	0.23
Uruguay	1.00	0.23

The variable of country of residency indicates that this program has a worldwide user base. While 61% of the survey responses came from the United States, a total of 37 countries were represented in the responses. See Table 2 for a description of the respondent population by country of residency.

The worldwide usage of the program as compared to the versions used also indicated that the software is upgraded by residents of all countries irrespective of economic conditions within that country. This, however, does not preclude that the software is pirated rather than purchased. The researcher must also point out that as a Canadian product, CorelDRAW would be less expensive for residents of Europe and Asia than its nearest competitor, Adobe Illustrator an American product.

The frequency of usage/output by females and males was uniform as shown in Table 3. The survey assigned the value 3 to the Never Output, 2 to Occasional Output, and 1 to Primary Output. In other words, the lower the mean score, the more frequent that output is primary. Scores ranged from a low mean of 1.56 for females producing flyers, invitations, and miscellaneous desktop publishing to a mean of 1.72 males producing the same output. To confirm this data, a *t*-test comparing usage by females and males indicated there was no significant difference in usage based on gender. This analysis is shown in Table 4.

Table 3
Description of Software Usage by Gender

Variable	Female		Male	
	Mean	SD	Mean	SD
1. Advertising/Packaging	2.41	0.72	2.23	0.73
2. Advertising/Print/Newspapers and Magazine	2.18	0.77	2.11	0.77
3. Architectural Design s	2.79	0.48	2.74	0.53
4. Cartooning	2.73	0.55	2.62	0.59
5. Charts and Graphs	2.24	0.69	2.36	0.64
6. Clothing Design	2.85	0.47	2.83	0.47
7. Commercial Art/Illustration	2.24	0.80	1.93	0.79
8. Crime Reporting	2.96	0.27	2.96	0.23
9. Desktop Publishing – Flyers, Invitation, Misc	1.56	0.69	1.72	0.77
10. Desktop Publishing – Four-color Process	2.22	0.78	2.12	0.85
11. Desktop Publishing – Single Color or Copy	1.96	0.79	2.03	0.80
12. Desktop Publishing – Spot Color	2.27	0.81	2.29	0.83
13. Desktop Publishing – Long Documents	2.44	0.73	2.59	0.66
14. Engraving Metals and Stone	2.90	0.36	2.85	0.47
15. Engraving Plastics and Composites	2.89	0.36	2.80	0.53
16. Engraving Wood and Natural Materials	2.90	0.34	2.81	0.51
17. Fine Art Frescoes and Murals	2.92	0.35	2.88	0.42
18. Fine Art Prints	2.84	0.47	2.71	0.61
19. Glass Patterns/Cutting	2.90	0.37	2.87	0.44
20. Landscape Design	2.87	0.39	2.80	0.48
21. Laser Cutting	2.92	0.36	2.85	0.45
22. Laser Engraving	2.88	0.43	2.85	0.45
23. Maps and Cartography	2.61	0.63	2.64	0.57
24. Novelty and Gifts	2.51	0.68	2.70	0.56
25. Presentation Graphics	2.04	0.77	1.98	0.78
26. Sign making/Engraving	2.72	0.60	2.66	0.68
27. Sign making/Vinyl Cutting	2.69	0.64	2.59	0.71
28. Screen Printing Stencils	2.72	0.62	2.61	0.70
29. Technical Drawing	2.44	0.75	2.21	0.79
30. Textiles and/or Fabric Design	2.88	0.41	2.80	0.54
31. Web Graphics	2.03	0.77	1.91	0.81
32. Web Page Design	2.27	0.73	2.27	0.78
Totals	2.56	0.36	2.51	0.36

Table 4

T-Test for Gender Differences

Group	N	Mean	SD	t	p
Female	151.00	2.55	0.28	1.31	0.08
Male	278.00	2.51	0.32		

The survey respondents represented all age ranges. A *t*-test showed there was a significant difference in how certain combinations of age groupings used the program. Table 5 displays these groupings and their statistical differences. Comparisons of the over 64 group and the under 18 group, while showing statistical significance, can be ignored due to the small number of respondents in those groups. Given the numbers within the groups, the statistical significance when the 18 to 29 group is compared to the 40 to 49 is substantial. (See Table 5) The 18 to 29 age group also uses the program differently than the other large group, the 50 to 64. While the reason for this significance cannot be discerned from this data, the researcher can speculate that the difference might be due to by the predominance of printing professionals in the older age ranges and the inclination of younger users is to concentrate on graphics for the Internet.

Respondents were asked to indicate which versions of the program they were currently using. The first choice was Version 3 or earlier. It is interesting to note that 3 people indicated they were still using an early version. Table 6 shows the frequency of usage on each version or combination of versions. The researcher notes that some non-native English-speaking respondents may have interpreted the question to mean all the versions the user had ever used rather than what was currently in use. Because of this possible misunderstanding, valid conclusions cannot be drawn on this data.

Table 5

T-Test for Age Differences

Groups Compared	N	Mean	SD	t	p
Under 18	6.00	2.54	0.12	-2.68	0.090
Over 64	10.00	2.80	0.26		
18 - 29	74.00	2.42	0.44	-2.31	0.012
40 - 49	140.00	2.55	0.25		
18 - 29	74.00	2.42	0.44	-2.49	0.007
50 - 64	108.00	2.55	0.24		
18 - 29	74.00	2.42	0.44	-3.90	0.005
Over 64	10.00	2.80	0.26		
30 - 39	91.00	2.50	0.30	-3.25	0.0035
Over 64	10.00	2.80	0.26		
40 - 49	140.00	2.54	0.25	-2.95	0.007
Over 64	10.00	2.80	0.26		
50 - 64	108.00	2.56	0.24	-2.78	0.0095
Over 64	10.00	2.80	0.26		

The version usage also showed interesting patterns in the combinations of older programs retained by users. Within the user community, the popular perception is that even numbered version had serious programming problems while odd numbered versions were usually stable from the first release. This is not supported in the patterns of usage. While more odd numbered versions are used, the patterns

of use are more an even and an odd such as the 6.3% who use versions 8 and 9 as contrasted to 1.8% who use versions 7 and 9. 58.6% of the respondents use the latest version at the time of the survey, version 9.

Table 6
Description of Version Usage by Frequency

Version (s) Used	Frequency	Percentage
Version 9	259.00	58.60
Version 8	85.00	19.20
Versions 8 & 9	28.00	6.30
Version 7	20.00	4.50
Versions 7, 8, & 9	14.00	3.20
Versions7 & 9	8.00	1.80
Versions 5, 6, 7, 8, & 9	3.00	0.70
Versions 7 & 8	2.00	0.50
Versions 5 & 9	2.00	0.50
Versions 5, 7, & 9	2.00	0.50
Versions 5, 8, & 9	2.00	0.50
Versions 4, 5, 6, 7, 8, & 9	2.00	0.50
Not used	2.00	0.50
Version 3 or earlier	1.00	0.20
Version 4	1.00	0.20
Version 5	1.00	0.20
Version 6	1.00	0.20
Versions 3, 5, 6, & 9	1.00	0.20
Versions 3, 4, 6& 9	1.00	0.20
Versions 4, 6, & 9	1.00	0.20
Versions 4 ,5, 6, & 8	1.00	0.20
Versions 4, 5, 8, & 9	1.00	0.20
Versions 5 & 6	1.00	0.20
Versions 5 & 8	1.00	0.20
Versions 6 & 8	1.00	0.20
Versions 6, 7, & 8	1.00	0.20

Table 7 shows the Primary output from four most common version combinations. This data corresponds to the overall frequencies data shown in Table 9. There is a consistent pattern of primary usage from the most common version.

Table 7
Frequency of Primary Usage by Version

Variable	Ver 9	Ver 8	Ver 8 and 9	Ver 7, 8, and 9	Ver 7
1. Advertising/Packaging	45.00	11.00	4.00	2.00	1.00
2. Advertising/Print/Newspapers and Magazines	65.00	18.00	8.00	0.00	6.00
3. Architectural Design	14.00	1.0	0.00	0.00	1.00
4. Cartooning	12.00	4.00	2.00	1.00	1.00
5. Charts and Graphs	31.00	10.00	1.00	0.00	3.00
6. Clothing Design	12.00	2.00	0.00	1.00	0.00
7. Commercial Art/Illustration	78.00	24.00	10.00	4.00	3.00
8. Crime Reporting	3.00	1.00	0.00	0.00	0.00
9. Desktop Publishing – Flyers, Invitation, Misc.	141.00	33.00	17.00	7.00	8.00
10. Desktop Publishing – Four-color Process	76.00	18.00	9.00	3.00	3.00
11. Desktop Publishing – Single Color or Copy	78.00	26.00	10.00	5.00	7.00
12. Desktop Publishing – Spot Color	64.00	17.00	7.00	2.00	5.00
13. Desktop Publishing – Long Documents	32.00	4.00	4.00	3.00	2.00
14. Engraving Metals and Stone	9.00	1.00	1.00	1.00	1.00
15. Engraving Plastics and Composites	13.00	2.00	1.00	0.00	1.00
16. Engraving Wood and Natural Materials	10.00	2.00	1.00	1.00	1.00
17. Fine Art Frescoes and Murals	9.00	2.00	2.00	0.00	0.00
18. Fine Art Prints	18.00	4.00	2.00	1.00	0.00
19. Glass Patterns/Cutting	9.00	3.00	0.00	0.00	1.00
20. Landscape Design	11.00	0.00	0.00	0.00	0.00
21. Laser Cutting	11.00	1.00	1.00	0.00	0.00
22. Laser Engraving	10.00	3.00	1.00	2.00	0.00
23. Maps and Cartography	14.00	1.00	1.00	4.00	1.00
24. Novelty and Gifts	20.00	3.00	1.00	3.00	1.00
25. Presentation Graphics	83.00	16.00	11.00	5.00	5.00
26. Sign making/Engraving	28.00	6.00	4.00	1.00	1.00
27. Sign making/Vinyl Cutting	33.00	10.00	3.00	1.00	0.00
28. Screen Printing Stencils	33.00	8.00	0.00	2.00	2.00
29. Technical Drawing	55.00	18.00	4.00	2.00	3.00
30. Textiles and/or Fabric Design	16.00	3.00	1.00	1.00	0.00
31. Web Graphics	91.00	19.00	10.00	5.00	8.00
32. Web Page Design	52.00	14.00	2.00	3.00	3.00

The researcher divided the software usage variable into 32 separate output/usage. These elements were determined by collecting output examples from the Corel Corporation web site, their publications, and the researcher's knowledge of student usage. The list was then validated by a several internationally know CorelDRAW experts. Survey respondents were asked to rate them on a three

point Likert scale of Primary Output, Occasional Output, and Never Output. The Survey Solutions software used to code the web-based survey assigned the value of 1 to Primary, 2 to Occasional, and 3 to Never.

The survey listed the output in alphabetical order to avoid influencing the respondents. Respondents were not limited to only one choice in the Primary output because many graphics professional have wide ranging responsibilities. Table 8 describes the frequency and percentage of usage in the order the output appeared on the survey. Table 9 displays the rank order of the Primary Use responses.

The data shows that respondents came from the entire suggested user base. Each output was chosen as Primary or Occasional. No output received only Never used. This ranged from 221 indicating miscellaneous desktop publishing (Question 9) as primary to 5 respondents whose primary use is illustrating crime scene reports (Question 8).

When the ten top ranked responses are considered, four of those are types of desktop publishing while three, Advertising/Packaging, Advertising/Print/Newspapers and Magazine and Commercial Art/Illustration, are also within the printing industry. Two are Internet oriented, Web Graphics and Web Page Design.

Table 8
Description of CorelDRAW Usage in alphabetical order as they appeared on the survey

Variable	Primary Use		Occasional Use		Never Used	
	Frequency	%	Frequency	%	Frequency	%
1. Advertising/Packaging	71.00	16.06	171.00	38.69	200.00	45.25
2. Advertising/Print/Newspapers and Magazines	106.00	23.98	170.00	38.46	166.00	37.56
3. Architectural Design	18.00	4.07	72.00	16.29	352.00	79.64
4. Cartooning	24.00	5.43	101.00	22.85	317.00	71.72
5. Charts and Graphs	49.00	11.09	202.00	45.70	191.00	43.21
6. Clothing Design	18.00	4.07	36.00	8.14	388.00	87.78
7. Commercial Art/Illustration	136.00	30.77	153.00	34.82	153.00	34.62
8. Crime Reporting	5.00	1.13	7.00	1.58	430.00	97.29
9. Desktop Publishing – Flyers, Invitation, Misc.	221.00	50.00	148.00	33.48	73.00	16.52
10. Desktop Publishing – Four-color Process	121.00	27.38	133.00	30.09	188.00	42.53
11. Desktop Publishing – Single Color or Copy	139.00	31.45	162.00	36.65	141.00	31.90
12. Desktop Publishing – Spot Color	105.00	23.76	107.00	24.21	230.00	52.04
13. Desktop Publishing – Long Documents	49.00	11.09	106.00	23.98	287.00	64.93
14. Engraving Metals and Stone	16.00	3.62	28.00	6.33	398.00	90.05
15. Engraving Plastics and Composites	19.00	4.30	36.00	8.14	387.00	87.56
16. Engraving Wood and Natural Materials	17.00	3.85	35.00	7.92	390.00	88.24
17. Fine Art Frescoes and Murals	14.00	3.17	19.00	4.30	409.00	92.53
18. Fine Art Prints	30.00	6.79	48.00	10.86	364.00	82.35
19. Glass Patterns/Cutting	15.00	3.39	23.00	5.20	404.00	91.40
20. Landscape Design	13.00	2.94	52.00	11.76	377.00	85.29
21. Laser Cutting	15.00	3.39	25.00	5.66	402.00	90.95
22. Laser Engraving	17.00	3.85	28.00	6.33	397.00	89.82
23. Maps and Cartography	26.00	5.88	112.00	25.34	304.00	68.78
24. Novelty and Gifts	30.00	6.79	103.00	23.30	309.00	69.91
25. Presentation Graphics	133.00	30.09	177.00	40.05	132.00	29.86
26. Sign making/Engraving	45.00	10.18	51.00	11.54	346.00	78.28
27. Sign making/Vinyl Cutting	52.00	11.76	61.00	13.80	329.00	74.43
28. Screen Printing Stencils	50.00	11.31	55.00	12.44	337.00	76.24
29. Technical Drawing	91.00	20.59	132.00	29.86	219.00	49.55
30. Textiles and/or Fabric Design	24.00	5.43	27.00	6.11	391.00	88.46
31. Web Graphics	150.00	33.94	163.00	36.88	129.00	29.19
32. Web Page Design	85.00	19.23	152.00	34.39	205.00	46.38

Table 9
Rank Order of CorelDRAW Usage

Variable	*Mean	SD	Rank
9. Desktop Publishing – Flyers, Invitation, Misc.	1.67	0.74	1.00
31. Web Graphics	1.95	0.79	2.00
11. Desktop Publishing – Single Color or Copy	2.00	0.80	3.50
25. Presentation Graphics	2.00	0.78	3.50
7. Commercial Art/Illustration	2.04	0.81	5.00
2. Advertising/Print/Newspapers and Magazines	2.14	0.77	6.00
10. Desktop Publishing – Four-color Process	2.15	0.82	7.00
32. Web Page Design	2.27	0.76	8.00
12. Desktop Publishing – Spot Color	2.28	0.82	9.00
1. Advertising/Packaging	2.29	0.73	10.50
29. Technical Drawing	2.29	0.79	10.50
5. Charts and Graphs	2.32	0.66	12.00
13. Desktop Publishing – Long Documents	2.54	0.69	13.00
23. Maps and Cartography	2.63	0.59	15.00
24. Novelty and Gifts	2.63	0.61	15.00
27. Sign making/Vinyl Cutting	2.63	0.69	15.00
28. Screen Printing Stencils	2.65	0.67	17.00
4. Cartooning	2.66	0.58	18.00
26. Sign making/Engraving	2.68	0.65	19.00
3. Architectural Design	2.76	0.52	20.50
18. Fine Art Prints	2.76	0.57	20.50
20. Landscape Design	2.82	0.45	22.00
15. Engraving Plastics and Composites	2.83	0.48	23.50
30. Textiles and/or Fabric Design	2.83	0.50	23.50
6. Clothing Design	2.84	0.47	25.50
16. Engraving Wood and Natural Materials	2.84	0.46	25.50
14. Engraving Metals and Stone	2.86	0.44	27.50
22. Laser Engraving	2.86	0.44	27.50
19. Glass Patterns/Cutting	2.88	0.42	29.50
21. Laser Cutting	2.88	0.42	29.50
17. Fine Art Frescoes and Murals	2.89	0.40	31.00
8. Crime Reporting	2.96	0.24	32.00

* 1=Primary Output, 2=Occassional Output, 3=Never Output

Conclusions

The data warranted the following conclusions:

1. The most frequent output generated by this sample of CorelDRAW users is Desktop Publishing – Flyers, Invitations, Miscellaneous followed by Web Graphics, and Desktop Publishing – Single Color or Photocopy.
2. There is no significant difference in how the program is used due to gender.
3. Two groupings of ages show statistical differences in how they use the program. The age group 18 to 29 uses the program differently from the age groups 40 to 49 and 50 to 64. Other statistical differences must be ignored due to the small sample sizes.
4. Due to cell and sample size, no conclusions can be drawn on the control variables of software version or country of residency.

Recommendations

The conclusions of this study cannot be generalized. Any recommendations made by the researcher would only apply to this sample. CorelDRAW has a user base of well over a million therefore a response of 442 is insufficient to warrant generalization of the conclusions. To obtain data that could be generalized to the entire CorelDRAW community, the researcher recommends that this survey be repeated using the Corel Corporation database of registered CorelDRAW users over a period of several months. This would provide an accurate analysis of which output is most common among the CorelDRAW users worldwide.

Further, no conclusions can be drawn on the variables of age, software version, or nationality. In each case, the cell size precluded valid analysis. While some conclusions can be conjectured, they cannot be supported by the data gathered.

The researcher, however, has concluded that were this a representative sample, using a training manual with a slight bias toward desktop publishing would be appropriate for the community college classroom. Desktop publishing seems to be a primary use and giving more emphasis to this usage would be useful for those taking the class. Further, the researcher's choice to write a non-biased manual is supported by the fact that respondents indicated every one of the 32 output categories as a Primary output.

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