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August 2010
eReview

Center Spotlight



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Print in the Mix

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Skill Sets Needed to Design for Variable Data

Variable data printing (VDP) is a key technology in the production of unique and personalized products. Derived from digital printing, the three key components in a successful VDP workflow are the creative aspect, the database management, and the print production. A designer needs to be familiar with all three in order to obtain the skills needed to design for VDP. However, VDP's trend for growth is not as rapid as the industry had projected.

This month's research summary is taken from an RIT School of Print Media graduate thesis entitled *Designing for Digital: Skill Sets Needed to Design for Variable Data*, authored by Jessica Jordan. This research examined how a variable data workflow was set up in a print production environment. The production workflow and the skills needed to properly design documents for VDP were the focal points of the research. Two designers, two advertising agencies, and five print companies participated in this research study. Additionally, graphic design and graphic communication undergraduate programs were examined across many institutions to see which of them offered instruction in VDP.

Methodology

The purpose of this research was to find bottlenecks and limitations in VDP design, in the industry, and in education so as to make improvements and suggestions on how to best design for VDP. Therefore, nine interviews and a study of several educational institutions were conducted in a two-part investigation. First, an educational analysis between 10 art schools and 30 print schools was conducted to see which were teaching how to design for VDP. Secondly, these concepts were further investigated through nine interviews among designers/professors, advertising agencies, and print professionals. These interviews also served in developing a

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clearer understanding of how a variable data workflow is implemented in a print production environment. Several questions during the nine interviews were tailored to address the issues of skill sets needed to design for variable data. The two-part investigation assisted in an attempt to bridge the gap between designing a document and producing a printed variable data piece.

Study Limitations

Limitations of the research study include a small sample size of only nine interviewed participants, variability of what is considered to be VDP, and the limitation of geographic area, since all of the companies interviewed were from the Northeastern region. Further limitations include the results being qualitative; thus, it has no statistical inference.

Educational Analysis

Many studies in the past have examined the differences between what is being taught in design education versus what is taught in print. These studies show that guidelines and methods of process control are hardly ever taught in design programs. Even when access to references and instrumentation was available, little emphasis was put on what happens to a piece past the aspect of ingenious creation. Knowing this to be generally true for design programs, it was assumed that this same lack of education or knowledge of printing is contributing to the gap between designers and printers in VDP. Therefore, further research was done to confirm that these assumptions were correct.

Ten art schools were identified to see if VDP was being taught in any aspect of the disciplines they offer. All of the art schools that responded (a 70% response rate) offered no training in VDP or database-assisted design of any kind. Additionally, many of the schools were unaware not only of how to teach VDP but what variable data in design was in general.

Twenty-six print schools were also identified and questioned to see if VDP was being taught at their institutions. Of the 25 targeted schools, 15 schools responded. Five of the schools offer no type of VDP course or training at this time, nine do offer some type of course or training, and two are developing some type of course or training within the next year. Figure 1 shows a visual breakdown of the educational analysis of the responsive sample.

Figure 1: Visual Breakdown of Educational Analysis's Responsive Sample

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Visual Breakdown of Education Sample

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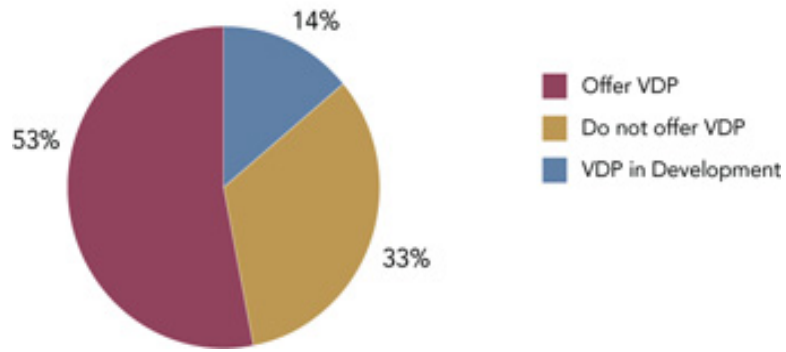
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Visual Breakdown of Education Sample



Interview Analysis

Interviews were conducted with two designers, two advertising agencies, and five print companies. The collective data analysis from these interviews is shown below in tabular format. Designations are as follows: D1 and D2 for the designers/educators, AA1 and AA2 for the advertising agencies, and P1 – P5 for the print companies.

Table 1: Collective Demographics

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Demographic	D1	D2	AA1	AA2	P1	P2	P3	P4	P5
Established	1998	2005	1988	1971	1960	1926	--	1951	1948
Total Employees	1	9	73	75	40	94	21	78	54
VDP Employees	1	1	8	7	5-6	7	2	0	7
Revenue (\$M)	>\$5	>\$5	\$20+	\$20+	\$10	\$10-15	>\$5	\$20+	\$5-10
Started working w/ VDP	2002	2005	1981	1984	2004	--	2007	1985	2004
# VDP pieces monthly	--	0.33	8-10	--	35	--	0.25	--	--

Table 2: Collective Tools and Workflow Used

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Workflow	D1	D2	AA1	AA2	P1	P2	P3	P4	P5
Layout Software	Quark/InDesign	Quark/InDesign	--	--	--	--	--	--	--
VDP Software	None	None	XML/ps	XML/ps	XML/ps	Print Fusion	XML/ps	None	XML/ps
Templates/Image & Data Management	Templates	Templates	Both	Both	Both	Templates	Templates	Templates	Both
Workflow	Client Dependent	Client Dependent	Centered around team	Client Dependent	Dependent on agency or parent company	Fully functional data implementation in house	Fully functional data implementation in house	Works solely w/ outsourcing	Fully functional data implementation in house
Outsource to	Printers/Mail houses	Printers/Mail houses	Printers/Mail houses	Printers/Mail houses	--	--	--	--	--

Table 3: Collective Data Management

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Data Management	D1	D2	AA1	AA2	P1	P2	P3	P4	P5
Data Source	Client Controlled	Client Dependent/Third Party	Client Dependent	Client Dependent/Third Party	Client/Agency/Third Party	Client/Third Party	Client/Third Party	Client/Third Party	Client/Agency/Third Party
Data Storage	None	None	None	None	Parent	None	None	None	Internal
Data Implementation	Printer Dependent	Printer Dependent/Third Party	Printer Dependent	Internal/Occasionally Outsourced	Client/Agency/Parent	Internal	Internal	Client/Agency	Internal/Client/Agency
Data Cleansing	None	None	None	Internal	Parent/Partner	Third Party	None	None	Internal
Preferred Data File Format	N/A	N/A	Excel	PDF	Excel or PDF	Excel	Excel or Comma Delimited	Excel	VPS or PDF

Table 4: Comparison of Desired Skill Sets for a VDP Designer

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About the Center

Dedicated to the study of major business environment influences in the printing industry precipitated by new technologies and societal changes, the Printing Industry Center at RIT addresses the concerns of the printing industry through educational outreach and research initiatives.

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Company Type	Skill Sets Desired
D1	Values design knowledge over technical skill
D2	Values design knowledge over technical skill/Does not hire exclusively for VDP
AA1	Values design knowledge over technical skill
AA2	Values design knowledge over technical skill/Does not hire exclusively for VDP
P1	Values design knowledge over technical skill/Does not hire exclusively for VDP
P2	Look for employees with cross-disciplinary skills
P3	Look for employees with cross-disciplinary skills in multiple types of media
P4	Values design knowledge over technical skill/Does not hire exclusively for VDP
P5	Values design knowledge over technical skill/Does not hire exclusively for VDP

Summary and Conclusions

After in-depth primary research and a review of the literature, the following conclusions were made:

1. VDP workflow is complex and contributes greatly to its lack of growth.
2. A large gap exists between VDP knowledge and implementation.
3. A lack of instruction exists in VDP at the collegiate level.
4. Many skill sets are needed to design for VDP.

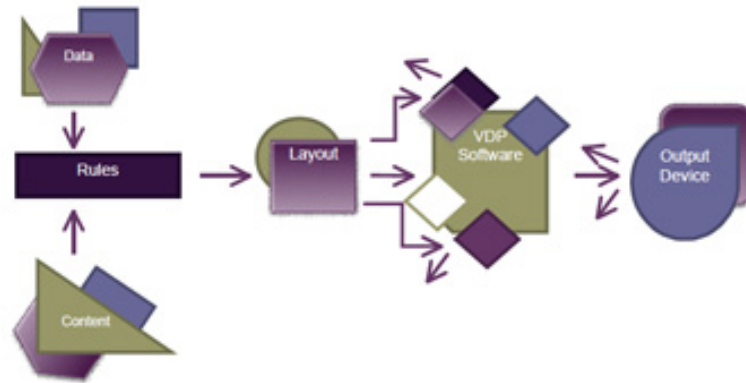
VDP Workflow

After reviewing the literature, it was apparent to this researcher that VDP is a very complex process requiring sophisticated tools and skill levels. The number of tools and the level of education needed to operate those tools contribute to the complexity and inconsistency of a VDP workflow. Additionally, it can be expensive and time consuming to successfully establish a VDP workflow due to the cost of the investments, human capital, and training. Aside from the cost and time invested to establish a VDP workflow, proper implementation must also occur for it to be successful. This includes understanding how to use variable data effectively, how to manage the data, how to properly implement the data, and finally, how to determine good data from inadequate data. From the interviews conducted in this study, the companies that know their customers well and that have horizontal databases that continue to develop valuable data are the most successful with VDP workflows.

It was also discovered that the problem of system compatibility as defined by Romano back in 2002 still exists. As seen from the companies interviewed in this research, variation in file formations and device output processing contribute to the complications of creating an effective workflow. Figure 2 demonstrates the complexity of VDP workflow that still exists today. More research to further identify the bottlenecks in VPD workflows is suggested.

Figure 2: Example of a Complex VDP Workflow

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Bridging the Knowledge Gap

The literature also demonstrates that there is still a considerable gap between declarative and actual knowledge in implementing VDP. Although an awareness of the necessity to have the skills in the creative, IT, and production areas has been made, a bridge among them has not. This gap is inevitable, due to a number of tools that handle data and VDP solutions. The abundance of tools leads to inconsistencies in workflows, and though progress has been made with standard file formats, a generalized workflow standard has not yet been established.

It seems that the only way to bridge this gap is by matching skill sets. In short, successful VDP service providers need to integrate print expertise with database knowledge, graphic design skills, and print knowledge. As the printing industry advances with VDP, it will have to learn and apply the skills needed for design, programming, and print methods. Front-end operations will have to adapt to new approaches to VDP printing, and new skills will have to be adopted by designers and print personnel.

Lack of Educational Instruction

Previous studies have found that there are large differences between what is being taught in design versus what is taught in printing. This background research was the foundation for analyzing design schools and print schools on their education and knowledge of VDP. In this research, the same results were found. Large differences exist in what is being taught in design programs versus print programs. It was seen that art schools whose focus was solely on design programs have little to no knowledge of VDP, with no formal education on the subject at all. Print schools have a greater knowledge of VDP concepts, yet only about a third of the schools targeted had any formal teaching of VDP concepts. This lack of education seems to be one factor that contributes to the gap between designers and printers in VDP. The schools that did offer education in VDP were among those highly known for their printing programs.

Skill Sets

Finally, it was made apparent through this research that designers with VDP skills are appreciated but not currently sought after when hiring for design. Human capital was predicted to be the distinguishing competitive factor between VDP solution providers in the near future, but the research conducted showed little effort being made to transition to a staff where designers do more than design. The reason behind the hesitation of seeking employees with new skill sets is still unknown. However, the interest in having a designer who was more than a creative mastermind was still prevalent.

Eventually, designers will need to be familiar with the skills of a marketer, programmer, database analyst, and printer. The following list of skill sets for designers of VDP has been identified through this research.

- Information, knowledge, and experience in VDP
- Networking and system integration skills
- Business and marketing awareness
- Image, color management, and asset management skills
- Text manipulation and process skills
- Knowledge of programming skills
- Database administration
- Proper preparation and data-mining skills
- General design skills
- Proper layout for addressing VDP pieces
- Proper coding being placed along mailing address
- USPS rules and mailing penalties
- Cross-media development skills

In summary, it was determined from this research that one possible reason for the delay in growth for VDP is that designers do not have the adequate training or skills needed for VDP. This was reinforced by the lack of instruction on the subject at the college level, particularity in the discipline of graphic design. Many limitations exist with VDP, but a prominent one was the lack of efficient data needed to create a successful variable data piece. Other limitations stemmed from difficulties in workflow in the areas of design, data management, and printer/file limitations. For designers to adequately design for VDP, a new skill set, as well as a basic understanding of the limitations, is necessary.

References

Romano, F. (2002). *Designing for Digital*. Alexandria, VA: Digital Print Council.

Research Publications

To read about this research in detail, download the thesis from:
<https://ritdml.rit.edu/handle/1850/10895>

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