

**Windows 3.1 versus Windows 95**  
**Quantification of Learning Time and Productivity**

Usability Sciences Corporation  
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## **Overview**

Usability Sciences Corporation was retained by Microsoft to quantify the learning time and productivity of users in the migration from the Microsoft® Windows® operating system version 3.1 to Microsoft Windows 95. The study's objectives were to:

- Analyze the transition from Windows® 3.1 to Windows 95
- Evaluate users' productivity with Windows 95

To achieve the objectives, Usability Sciences recruited 75 current users of Windows 3.1 from the general business population of Dallas/Fort Worth, Texas as participants. These users were tested as they worked with both Windows 3.1 and Windows 95. The tasks used in the testing required users to work with various functions of each operating system including:

- Finding and opening files and programs
- Copying and moving files
- Switching between active programs
- Finding lost and deleted files on the hard disk

During the testing, data was collected on the time it took to complete each task, task completion success rate, user satisfaction, and user operating system preference.

Overall, users were substantially more productive with Windows 95 than with Windows 3.1. After using Windows 95 for 1.5 hours:

- Users finished the same tasks in Windows 95 in almost half the time it took them in Windows 3.1, making them 91 percent more productive.
- Users completed 94 percent of the tasks with Windows 95 versus 86 percent with Windows 3.1.
- Users were more satisfied with Windows 95 in 20 of the 21 categories surveyed.
- 97 percent of the users said they would migrate to Windows 95.

## **Background of the Study**

There has been a great deal of speculation about the impact of Windows 95 on the current population of Windows 3.1 users. Microsoft wanted to create an objective study that would quantify the learning curve of Windows 95. Usability Sciences was retained as an independent, third-party usability testing organization with extensive experience in comparing various PC software programs and quantifying their relative effectiveness with users.

Microsoft and Usability Sciences established the following objectives for the study:

- Quantify the learning curve of Windows 95 for current Windows 3.1 users that will migrate to the new operating system
- Quantify the effectiveness and productivity of users with Windows 95 in their first experience with the new operating system.

To meet the objectives, Usability Sciences conducted controlled usability tests of Windows 3.1 and Windows 95 in a way that allowed the operating systems to be directly compared. It was essential that the testing population be large and diverse so that the results would be projectable to the general business population of Windows users. All testing was done in Usability Sciences lab facilities in Dallas.

## **Process**

### ***Test Participants***

To ensure the projectability of the study results, 75 people were recruited to participate in the testing. All participants were recruited from the general business population of Dallas/Fort Worth. All participants were employees of corporations ranging in size from a minimum of 50 employees to over 10,000. No more than 3 individuals were tested from the same company and 43 different companies were represented in the study. One third of the test pool was advanced, one third intermediate, and one third was beginner users of Windows 3.1.

It was essential in the recruiting process to establish the skills of the users ranging from beginner to advanced. To do so, Usability Sciences developed a screening questionnaire that asked users to evaluate their skills. This screener was used to classify users as follows:

**Beginner** Uses one or two applications in Windows and rarely performs any functions or operations outside these applications.

**Intermediate** Uses more than two Windows-based applications and also uses some facilities of the operating system such as File Manager or Control Panel.

**Advanced** Uses many Windows applications at an advanced level and has in-depth knowledge of most features of the operating system.

In four cases it was determined by Usability Sciences testing personnel that users had misrepresented their knowledge of Windows. In these cases the users were reclassified so that the final sample was evenly divided between beginner, intermediate, and advanced level users.

### ***Task Selection***

To establish the work patterns and experiences of the current Windows 3.1 user population, Microsoft commissioned a telephone market research study of over 200 corporate users. This research was conducted by Market Decisions Corporation, an independent market research company in Portland, Oregon.

Based on the results of the market research, Microsoft proposed a set of tasks that closely mirrored operating system usage by beginner through advanced users. The tasks were divided into three sections, A through C for each operating system. Sections A and B were designed to reflect those procedures commonly encountered in day-to-day computer use. Section C was designed to reflect common advanced tasks.

Usability Sciences developed a new task set that was used for the study itself. The new task set consisted of Sections 1 through 4 for each operating system. Sections 1 through 3 were completed by beginner and intermediate users; advanced users were asked also to complete section 4 during the testing.

### ***Testing Procedures***

When users arrived for the testing, they were escorted to one of Usability Sciences' lab test rooms. A briefing sheet was read to each participant so they understood the purpose of the testing and the test procedures. Users were then given the Windows 3.1 task set and asked to complete it to the best of their ability. Upon completing the Windows 3.1 tasks, users were given exactly 20 minutes to familiarize themselves with Windows 95. They were asked to take the Windows 95 computer-based tutorial (included with Windows 95) and then explore on their own for the remainder of the familiarization time. At the end of the 20 minutes, users were given three task sets to complete for Windows 95. The task sets were isomorphic (similar in function but not identical in program use and filename).

Users were observed and videotaped as they worked with the operating systems to perform the tasks. Users were not given assistance from the observers if they had difficulty. Users had the availability of the online Help and Users Guide documentation for each system. A maximum time limit of 5 minutes per task was enforced. If a user exceeded 5 minutes in a given task they were asked to move on to the next task. Users completed a 21 question satisfaction survey after using Windows 3.1 and completed the same survey after using Windows 95. Users were interviewed at the completion of the test to gather their thoughts on the ease of use and learning of each operating system.

The testing was conducted on identical 486/33 Compaq® computers with 8 MB of RAM. Each user was provided with two machines: one with Windows 3.1 installed and one with Windows 95 installed. Each operating system was set up in its default state with no non-default programs resident. Windows 95 M 6.4 beta software was used for the testing.

### ***Data Collection***

Data was collected on the following:

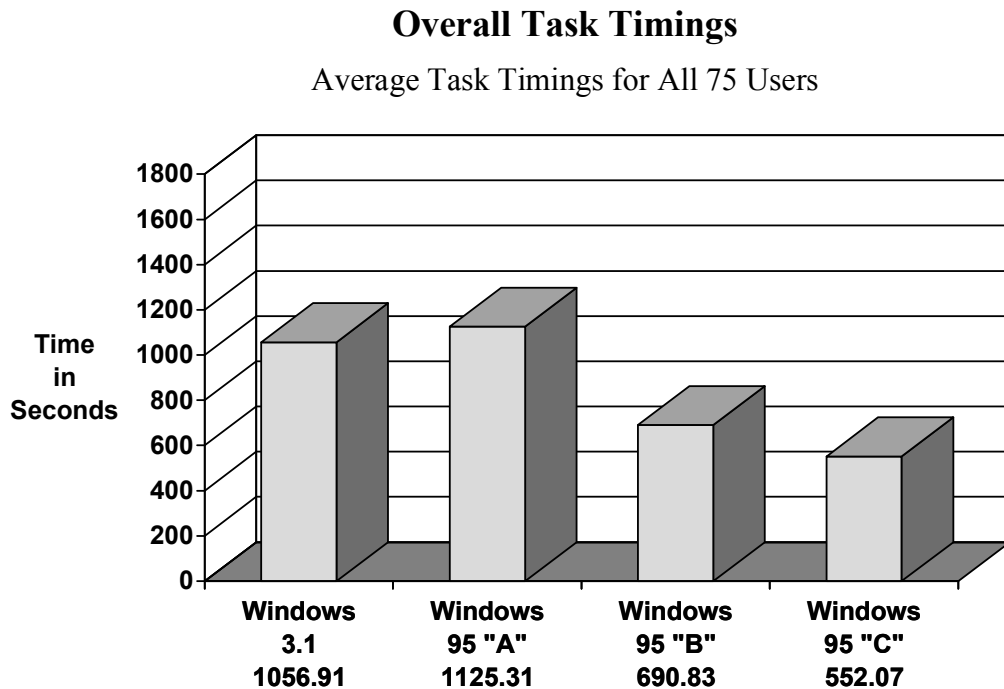
- Task completion time
- Task success rate
- User satisfaction
- User product preference from post test interviews

Usability Sciences utilized its data logging software TestLogr® to capture task completion times and success rates. When users were unsuccessful in task completion it was noted that they either exceeded the 5 minute time limit, performed the task incorrectly, or gave up. In the post test interviews, users were asked a series of questions to gauge their level of comfort, satisfaction, and productivity with each operating system. Users were also asked whether or not they would upgrade to Windows 95 from Windows 3.1. The user satisfaction survey measured 21 items on a scale of 7 (Very Satisfied) to 1 (Very Dissatisfied).

## **Results**

### ***Task Completion Time***

The users were timed for each task and an overall timing was taken for each system. The timings in seconds (shown in the following chart) are the raw timings and do not show whether or not the users completed the task successfully, gave up, or performed it incorrectly. The Task Success Rate reflects the rate at which the users successfully completed the tasks, and is outlined in the next section of this summary.



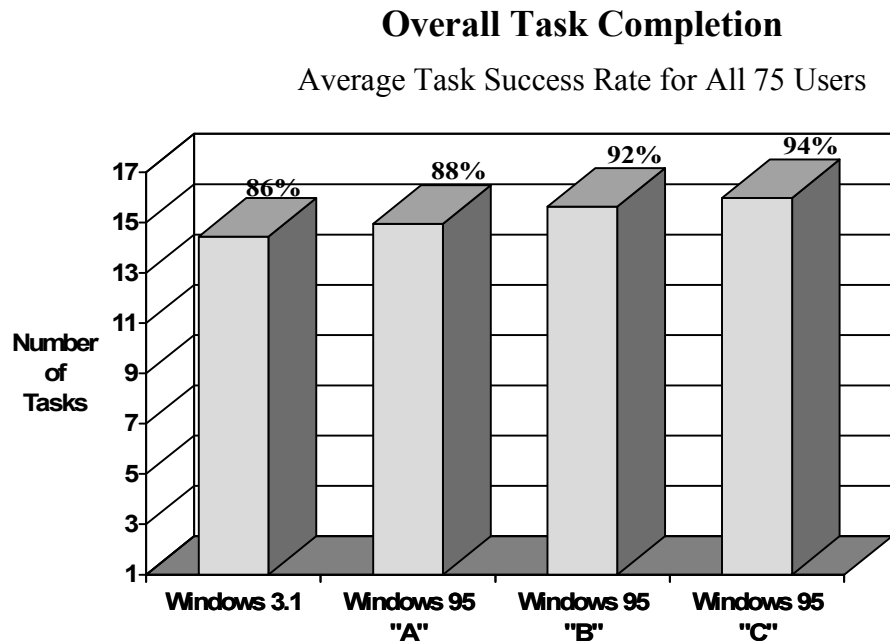
Overall, current Windows 3.1 users took longer to complete the tasks in the first round of Windows 95 testing. However, the users' productivity drastically increased for the second round of Windows 95, and by the third round of Windows 95 testing, the users were 91 percent more productive than they were with Windows 3.1.

There was a notable difference in task timings for the beginner users versus the intermediate and advanced users. The beginner users actually completed the tasks faster in Windows 95 in their first time to work with it. The beginners finished the tasks more than 1.5 minutes faster and still completed more tasks correctly than in Windows 3.1. The beginners were not only more productive when they first used Windows 95, they also got more of their work done correctly than in Windows 3.1.

All three categories of users were more productive with Windows 95 and they completed more tasks correctly in Windows 95 in less time. Even in the first round of Windows 95, users completed more tasks correctly.

### ***Task Success Rate***

The Task Success Rate shows how many tasks each user attempted and successfully completed within the time constraint of 5 minutes. A list of 17 tasks for each system were given to the users to complete. If a user exceeded the 5-minute time limit for a task, incorrectly completed the task, or gave up on the task, the task was considered missed and not counted towards the total number of tasks completed. The graph below illustrates the rate at which the tasks were successfully completed for each system.



In the first round of Windows 95 testing, the users completed more tasks than in Windows 3.1. The task completion rate consistently increased the more the users worked with Windows 95. By the third round with Windows 95, the users completed on average 1.5 more tasks out of 17 total tasks than in Windows 3.1.

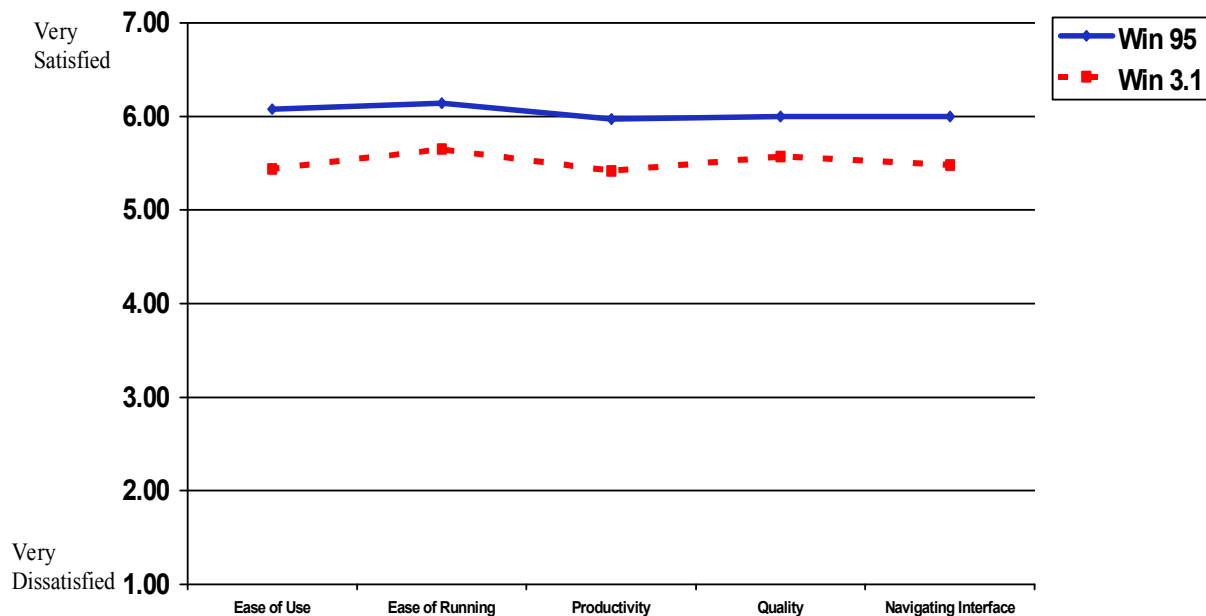
### ***User Satisfaction from Surveys***

After testing each system, users ranked the system across 21 different factors that are important to users of operating systems. Factor scores were on a scale of 7 (Very Satisfied) to 1 (Very Dissatisfied). In addition, users were asked to rank the importance of each of these factors as high, medium, or low. Based on Usability Sciences' experience with user product ratings, a 0.5 difference in ratings between two products on the 7-point scale shows a distinct preference for a product. A margin in ratings larger than 0.5 is considered significant.

The graph below illustrates the users' preferences for Windows 95 over Windows 3.1 for the 5 factors they rated as most important in their evaluation of the operating systems.

## User Satisfaction Survey Results

### Windows 95 versus Windows 3.1



Overall, users were significantly more satisfied with Windows 95. This can be determined from the high ratings given to Windows 95 versus Windows 3.1. In addition, when breaking down the survey into the 21 separate categories, Windows 95 was ranked higher in 15 of the categories by more than 0.5, which shows that users notably preferred Windows 95 to Windows 3.1.

The areas of Windows 95 that users especially preferred over Windows 3.1 (with a difference in ratings of 0.85 or more) were the overall ease of learning of Windows 95, ease of locating applications in Windows 95, the terminology used in the menus and dialog boxes, and the new online Help system.

Users also ranked the areas in which they felt were most important for an operating system to perform well. In the 16 most important aspects of an operating system as ranked by the users, the users consistently preferred Windows 95 over Windows 3.1.

On the survey's 7-point scale, the average of all 75 users' ratings for Windows 95 was extremely high, and the difference in ratings for Windows 95 and Windows 3.1 was significant, with each area being ranked an average of 0.53 points higher.

### *User Preferences from Post-test Interviews*

The users were interviewed at the end of the test to capture their opinions and overall preferences for each operating system. The questions were designed to obtain the users' preferences for each system in the areas of ease of use, productivity, and overall preference. The following table illustrates the results of the post-test interview sessions comparing Windows 3.1 and Windows 95.

### User Post-Test Interview Results

## Windows 95 versus Windows 3.1

Interview Question	Number of Responses for <b>Windows 95</b>	Number of Responses for <b>Windows 3.1</b>	Number of Responses for <b>Both</b>
Which operating system was easier to use?	51 <b>68 percent</b>	24 <b>32 percent</b>	0
Which operating system were you more comfortable with?	25 <b>33 percent</b>	48 <b>64 percent</b>	2 <b>3 percent</b>
Which operating system were you more satisfied with?	61 <b>81 percent</b>	10 <b>13 percent</b>	4 <b>5 percent</b>
Which operating system allowed you to complete your tasks most effectively and quickly?	63 <b>84 percent</b>	5 <b>7 percent</b>	7 <b>9 percent</b>
Which operating system do you prefer?	64 <b>85 percent</b>	9 <b>12 percent</b>	2 <b>3 percent</b>
Would you upgrade to Windows 95?	73 <b>97 percent yes</b>	2 <b>3 percent no</b>	0

The interview results showed that the users generally preferred Windows 95 over Windows 3.1 across several areas. Of the six questions asked, Windows 3.1 was preferred over Windows 95 in only one area—how comfortable they felt using the operating system. This is understandable, and was expected, since all 75 users currently use Windows 3.1 on a regular basis.

In general, the users felt Windows 95 was easier to use and allowed them to complete their tasks most effectively and quickly. An overwhelming majority, 73 of the 75 Windows 3.1 users (97 percent), said they would definitely upgrade to Windows 95.

## **Conclusions**

Overall, in analyzing the transition from Windows 3.1 to Windows 95 and evaluating the users' productivity after training, Windows 95 was the superior operating system. Windows 95 not only far exceeded Windows 3.1 in the areas of satisfaction and productivity, but the current Windows 3.1 users that tested the two operating systems preferred Windows 95 and said they would definitely upgrade from Windows 3.1 to Windows 95.

### ***The Transition from Windows 3.1 to Windows 95***

In this study, users were allowed 20 minutes to explore Windows 95. This time period included a 10-minute computer-based training session. Combining this time and actual test time, the users worked on Windows 95 an average of one hour. One of the compelling results of this study was, in the period of one hour using Windows 95, users achieved a higher rating of task completion and were more satisfied with Windows 95. People also enjoyed working with the new operating system more than with Windows 3.1.

Discoverability played a key role in easing the transition between operating systems. With Windows 95 there are a number of ways to perform the same tasks. Users took advantage of this ability using their own learned experiences and logic even in the confines of this study.

Some of the new features that also directly impacted easing the users' transition to the new operating system were: the Task Bar, the new online Help system, the My Computer approach to disk and file management, the fuzzy search capabilities, the Start Button, and the ease of finding their applications. The users also liked the 'Open With...' and the Recycle Bin features in Windows 95. These new features made Windows 95 more appealing and more exciting to the users.

Users perceived Windows 95 to be far better than Windows 3.1 in most of the areas surveyed.

- Ease of use
- Ease of learning
- Ease of locating applications within the operating system
- Better terminology in the menus and dialog boxes
- Easier and faster online Help system

Further experience with Windows 95 will likely lead to increased comfort and productivity that should far exceed current levels with Windows 3.1. Users will need some training to grasp the new concepts of Windows 95, but we do not perceive lengthy classroom training will be needed to effectively make the transition.

### ***Productivity Benefits***

Based on the data gathered in this study, we feel that users will be considerably more productive with Windows 95. The users in this study achieved a 91 percent productivity increase after working with Windows 95 for less than one hour. Key contributors to this productivity are the new operating features: the Task Bar, the new online Help system, and the application menuing system.

Because Windows 95 offers users many different ways of performing the same task, the users found ways to complete their tasks more often in Windows 95 than in Windows 3.1. The beginner level users were more productive with Windows 95 in their first experience using it, and completed their first set of tasks with Windows 95 faster and with more success than with Windows 3.1, the operating system they currently use everyday. We also found that many advanced users enjoyed trying to discover new ways of performing their tasks in Windows 95 and took extra time to explore its possibilities.

Users perceived Windows 95 as having a better user interface than Windows 3.1. We observed that as users experienced more success in completing their tasks, they were more confident in the system and more likely to try new things. In our experience, this tends to encourage users to explore and discover additional features and functionality within the system. As one user stated after working with Windows 95, "In Windows 95 you are just a click away from anything."

Based on the objective data gathered in this study, as well as the subjective observations of users' attitudes towards Windows 95, we feel comfortable in strongly endorsing the new operating system. Migrators to Windows 95 will be more satisfied, more productive and feel better about using their computer.

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