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ABSTRACT

Applications are now available that allow teachers to create presentations and programs tailored to the exact needs of their students. This paper examines tools that may be used for presentations. Programming environments that may be used to develop computer aided instructional programs are also compared and contrasted. The availability of programs in Microsoft (MS) Windows for the IBM compatible is given. The presentation design options compared include the following: (1) paper and pencil; (2) Aldus Persuasion; (3) MS PowerPoint; (4) HyperCard; (5) Course of Action (Authorware); (6) MS Word; and (7) MacDraw Pro. Features that are compared are learning curve, ability to create outlines, presentation package generation, graphics capabilities, color, speed, performance, availability, options supported, personal preference, and cost. An overall preference is expressed for Authorware for its ease and speed of use. Six figures compare program features. (SLD)

Author Your Own!! Friendlier Software for Your Instructional Power

• Erica M. Brownstein, Hyosoon Kim, Peter Rillero

• NSTA April 3, 1993, Kansas City, Missouri

Classroom teachers know the curriculum and the needs of their students better than anyone. In the past, teachers would try to find software, slides or overhead transparencies that follows their curriculum and is appropriate for their students educational needs. However, the match is often far from perfect. Applications now available allow teachers to create presentations and programs tailored to the exact needs of their students. These programming environments enable teachers with little computer experience to create their own applications.

In this paper, we examine tools that may be used for presentations. We also compare and contrast programming environments that may be used to develop computer aided instruction programs. The expertise of the authors is with the Macintosh™ computer, however, availability of these programs in Microsoft Windows™ for the IBM™ compatible will be given. In order to make the comparisons, the authors interviewed various Macintosh users as well as professional programmers.

Presentations

A presentation program enables the teacher to set up a program that moves from one point to another in a linear fashion. Typically, these programs are used to present information. The presentation designing options compared in this paper include paper and pencil, Aldus Persuasion™, MS PowerPoint™, HyperCard™, Course of Action (Authorware)™, MS Word™, and MacDraw Pro™. We compared the following features: learning curve, ability to create outlines, presentation package generation, graphics capabilities, supports color, speed/performance, availability on Windows, animation support, video support, sound support, personal preference, and cost.

As you can see from diagram 1, the old favorite paper and pencil is clearly the easiest to learn. When making presentations using paper, we can make an outline for our presentation, but it is extra work. There is no automatic

presentation package generation and in order to produce graphics, we must have some artistic ability and draw them ourselves. We can use color pencils and the speed/performance is strictly up to the individual user. Paper has no animation, video, nor sound support. While paper has no special features, it is the most affordable method and the easiest learning curve.

Aldus Persuasion and MS PowerPoint are specially designed for presentations. They are relatively easy to learn due to their pull down menus and the documentation that comes with the programs. When designing slides for your presentation, an outline is automatically formed. The presentation package features enables handouts and notes to be easily generated. Graphs and charts can be made within the program and other graphics can be cut and pasted into any slide. Both programs support color, have excellent speed and performance, and are similar in price. Only MS PowerPoint is available on Windows. Neither program supports animation, video, nor sound. We prefer Aldus Persuasion because we feel it is a little easier to use and has a greater number of enhanced features.

HyperCard and Authorware may be used for presentations. When comparing the learning curve to the other programs listed, HyperCard and Authorware are more difficult. Neither provides an outliner nor a presentation package. They do have good graphics support and excellent speed and performance. Only the newest version of HyperCard supports color, whereas only Authorware is available on Windows. While HyperCard supports animation, video and sound; Authorware is a superior product for these features. Authorware, however, is a very expensive at $1500 and HyperCard is the least expensive computer tool discussed at $149 (pricing is variable). We prefer Authorware because it is slightly easier to use than HyperCard and offers outstanding animation support.

MS Word is a word processing program and MacDraw Pro is a drawing program. MS Word is relatively easy to learn and does provide an outliner, although not as simple a feature as in Aldus Persuasion and MS PowerPoint. MacDraw Pro is more difficult to learn and has no outliner feature. Neither program produces a presentation package. The graphics capabilities for MS Word are limited, whereas MacDraw Pro has the best graphics capabilities. Many times, items are drawn using MacDraw Pro and then are cut and pasted into another program. MS Word and MacDraw Pro support color. The speed and performance for MS Word is good, while it is a little slow for MacDraw Pro. MS Word is available on Windows. The new version of MS Word has some animation and video support and MS Word has sound support. MS Word is slightly more expensive, $319 to MacDraw Pro's $264. We preferred to not use these programs when designing presentations.

Overall, when designing presentations, we prefer to use Aldus Persuasion. Because it is specifically designed for presentations, it is easier to use in this manner. When designing interactive programs for students, the following programs are considered.

Computer Aided Learning Programs

Many times a teacher would like to design a program that meet the needs of their own students. Using these programming environments, an instructor can decide what they would like to be included in a program and then choose the most appropriate program. In diagram 2 we have shown a rating of the programming environments which include: HyperCard, SuperCard™, Authorware, Macromind Director™, Serius™, and Pascal and C. These were rated using the same categories used in the presentation program comparison: learning curve, built in commands, graphics capabilities, supports color,

speed/performance, available on Windows, animation support, video support, sound support, personal preference, and cost.

When teachers think of computer programming, they often think of languages such as Pascal. The language C has made inroads in program writing. However, the power of new programming tools and applications such as HyperCard, SuperCard, Authorware, Macromind Director, and Serius, make Pascal and C seem like dead languages.

For teachers interested in educational programming there are clear advantages to using HyperCard. This essentially free program has a wide network of support from user's groups, books, and companies. However, there are disadvantages to this tool such as a lack of animation and complex linkages. Nevertheless, the power of HyperCard and its affordability make this the standard by which we judge other software.

The learning curve for HyperCard and SuperCard is somewhat challenging when compared to other tools. HyperCard and SuperCard have some built in commands that simplify their use. Both have graphics capabilities, support sound and support color. Neither is available on Windows. The animation and video support are available, but take awhile to learn. We prefer to use HyperCard because it is less expensive ($149 vs. $205) and has a larger variety of resources.

Authorware is easy to learn, has excellent built in commands and is available on Windows. It has nice graphics capabilities, speed and performance. Color and sound are easy to use. The video support is acceptable, but only the newest version supports Quicktime. This means that video can be directly integrated into a program. The animation is a highlight when using Authorware. It is easy to integrate into programs. Authorware is very expensive at $1700. We prefer to use Authorware when designing computer aided instruction programs

because it has many features that are easy to use and can easily be run on Windows.

Serius is an environment similar to Authorware, but it is less easy to use, has fewer built in commands, and does not support animation as easily. Serius supports Quicktime, which makes the video support very good. Serius does require the purchase of other support programs; for example, if one would like to use the video option, it is necessary to purchase that feature separately. The price of the basic program is less than Authorware ($395+). This program is a nice environment in which to program.

Macromind Director is designed for use by programmers. It is designed for graphics, animation, and video use and therefore is superior is these areas. Macromind Director is not available on Windows. It does have a few built in commands, but it is extremely difficult to learn to use. Even the professional Macintosh programmers interviewed found the program difficult to use. Macromind Director is very expensive at $1195.

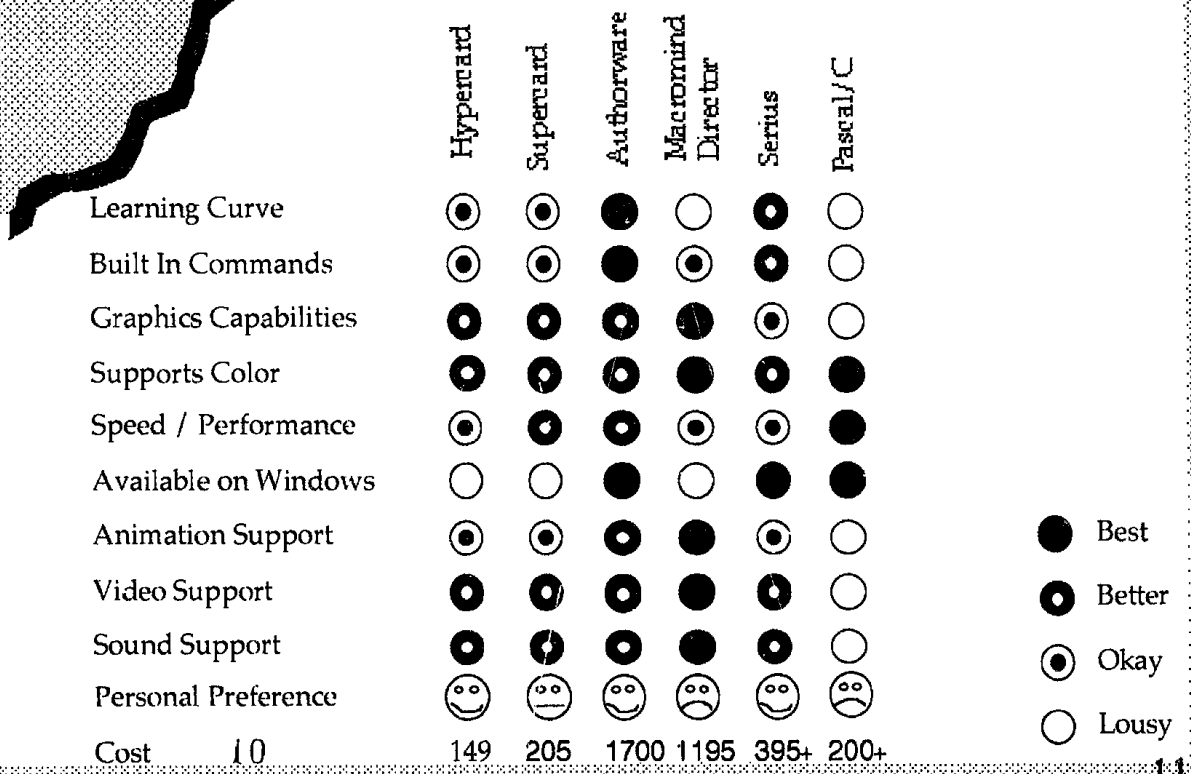
Pascal and C are programming languages that have been around for a long time. Each of the above programming environments were written in another language, usually C. This is why these have better performance and speed At the same time, they are time consuming to learn and are a difficult environment to design for an interactive instructional program. If a teacher is considering selling their program, then languages such as Pascal and C do not require royalties.

Overall, when designing our own computer aided instructional programs, we prefer to use Authorware. It is the easiest to use and one can design programs in a short period of time. An example of a picture using Authorware is shown in diagram 3. However, when cost is included, HyperCard is the best

choice. One can have high quality programs with slightly more work. An example of a review question using HyperCard is shown in diagram 4.

New software, such as Aldus Persuasion, can have teachers creating exciting visuals for presentations in a matter of hours. Using newly available programming tools, a beginner can create programs for computer assisted instruction in days. Teachers designing their own educational software now have powerful tools to create programs to match their curriculum and the needs of their students.

Programming Environments



From: Douglas A Lapp <dlapp@magnus.acs.ohio-state.edu>
Subject: Planetary Info
To: hyokim@magnus.acs.ohio-state.edu (Hyosoon Kim)
Date: Thu, 14 Jan 93 22:22:00 EST
X-Mailer: ELM [version 2.3 PL11]

Soon,
Here is the information on the planets. It is given in the following order:
Surface; Distance from Sun x10^8 km; Diameter x10^4 km; Mass x10^24 kg.

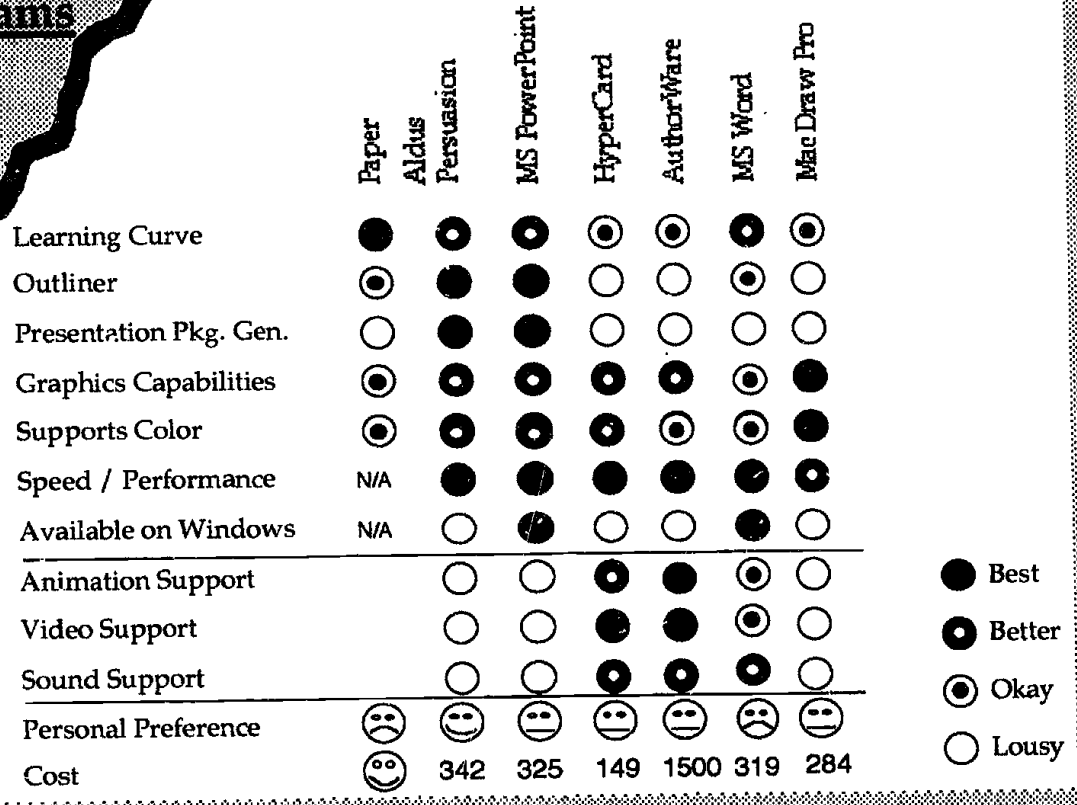
Sun Plasma; 0; 139; 1990000
Mercury Solid; .58; .49; .33
Venus Solid; 1.08; 1.21; 4.82
Earth Solid; 1.49; 1.28; 5.98
Moon Solid;~1.49; .348; .074
Mars Solid; 2.28; .680; .634
Jupiter Gaseous; 7.78; 14.3; 1880
Saturn Gaseous; 14.3; 12.1; 563
Uranus Gaseous; 28.7; 5.20; 86.1
Neptune Gaseous; 44.9; 4.86; 99.9
Pluto Solid; 59.0; < .6; .5

If you have any questions, call me. Home 442-8609 Office 292-7047

See you later.

Doug

Presentation Programs



Performance Report

For Student

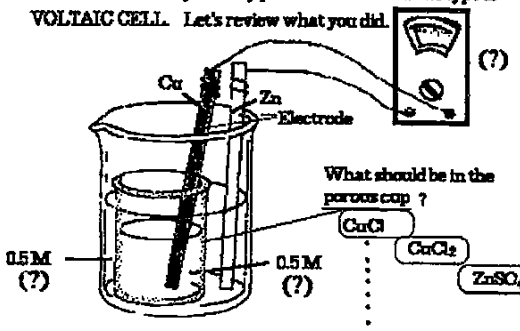
For teacher

Building a Voltaic Cell
- FLOWCHART -

Help | Quit | Test | Glossary | To Teacher

Welcome back !!

In the last laboratory activity you built and tested one type of VOLTAIC CELL. Let's review what you did.



What should be in the porous cup ?

CuCl | $CuCl_2$ | $ZnSO_4$ | Zn_2SO_4

Wrong

Help | Quit | Test | Glossary | Periodic Table

Look at the periodic table and try to find the oxidation number for the ions of copper and chloride.

- In most cases, ionic form of Cu has + 2 charge
- Cl is one of halogen elements which always has - 1 charge

Therefore, which one can be the chemical formula for copper chloride?

CuCl | $CuCl_2$ | Cu_2Cl | $CuCl_3$

Wrong | Right

Help | Quit | Test | Glossary | To Teacher

The algebraic sum of the charges in a compound should be ZERO.

Number of ions		Charge on each ion		Total charge
Cu ; ?	x	2+	=	2+
Cl ; ?	x	1-	=	2-
				0

Now you can see that one positive ion and two negative ions are are needed to get totals that balance.

Try Again

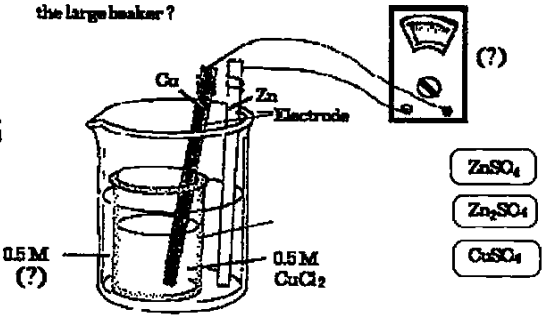
If you still don't understand, please read textbook, pp. 123 - 125 or see ME.

Right

Help | Quit | Test | Glossary | Periodic Table

GOOD !

What is the name of the solution in the large beaker ?



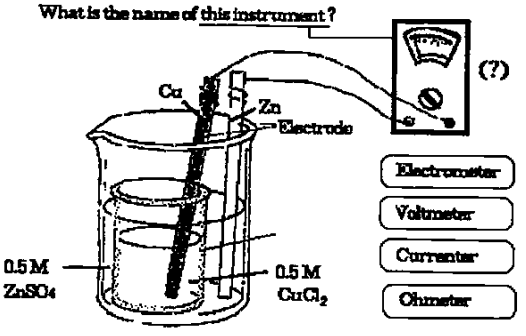
$ZnSO_4$ | Zn_2SO_4 | $CuSO_4$

Right

Right

VERY GOOD !

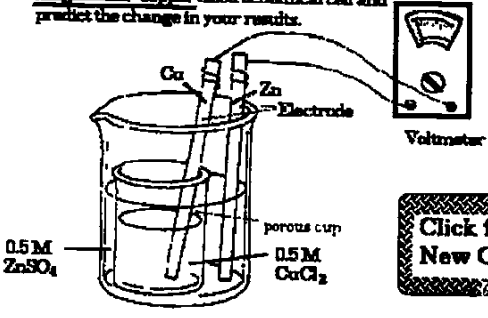
What is the name of this instrument ?



Electrometer | Voltmeter | Currenter | Ohmeter

Right

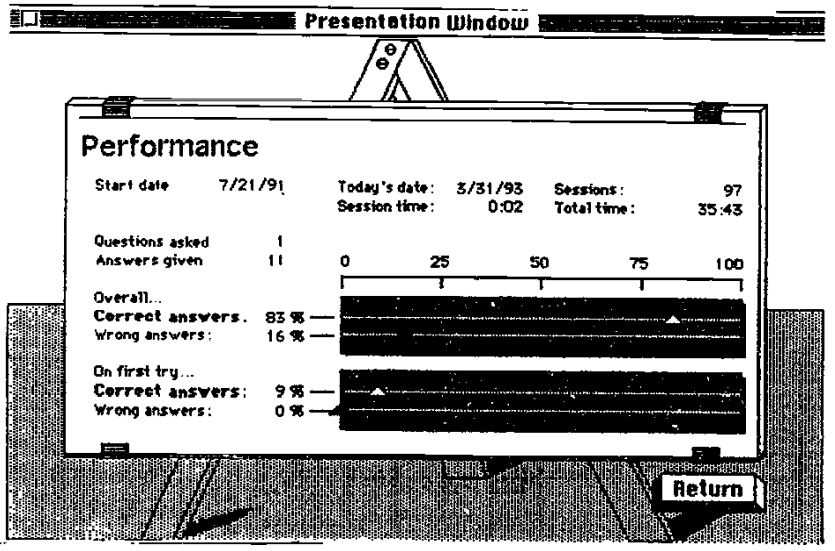
All Right ! This is a complete diagram of the zinc-copper electrochemical cell. Refer to the activity try to build a magnesium-copper electrochemical cell and predict the change in your results.



Click for New Cell

Performance Report Card

For Student -->



File Edit Formula Format Data Options Macro Window

A1 | Student:

Summary Performance Record

	A	B	C	D	E
1	Student:	Chris		Start:	9/7/87
2	Teacher:	Mrs. Green		Time on course	8:06
3					
4	Mastery:	Objective	Status	Criterion	
5	9/7/87	1	mastered	pretest	
6	9/7/87	2	mastered	pretest	
7	9/7/87	3	mastered	pretest	
8	9/11/87	4	mastered	1st post test	
9	9/11/87	5	mastered	pretest	
10	9/16/87	6	mastered	2nd post test	
11	9/21/87	7	mastered	2nd post test	
12	9/25/87	8	mastered	3rd post test	
13	9/30/87	9	mastered	2nd post test	
14		10	in progress	pretest score:	61%

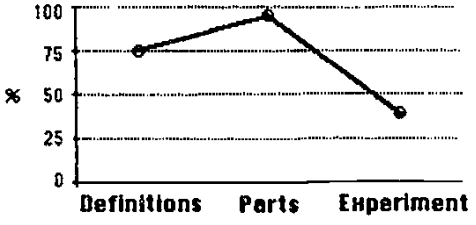
<-- For Teacher

File Edit Variables Models Font Style Try it

Performance Report

Student: Hyosoon Kim 10/25/92

Section	Score	Mastery
Definitions	75	no
Identify the Parts	95	yes
Experiment	37	no



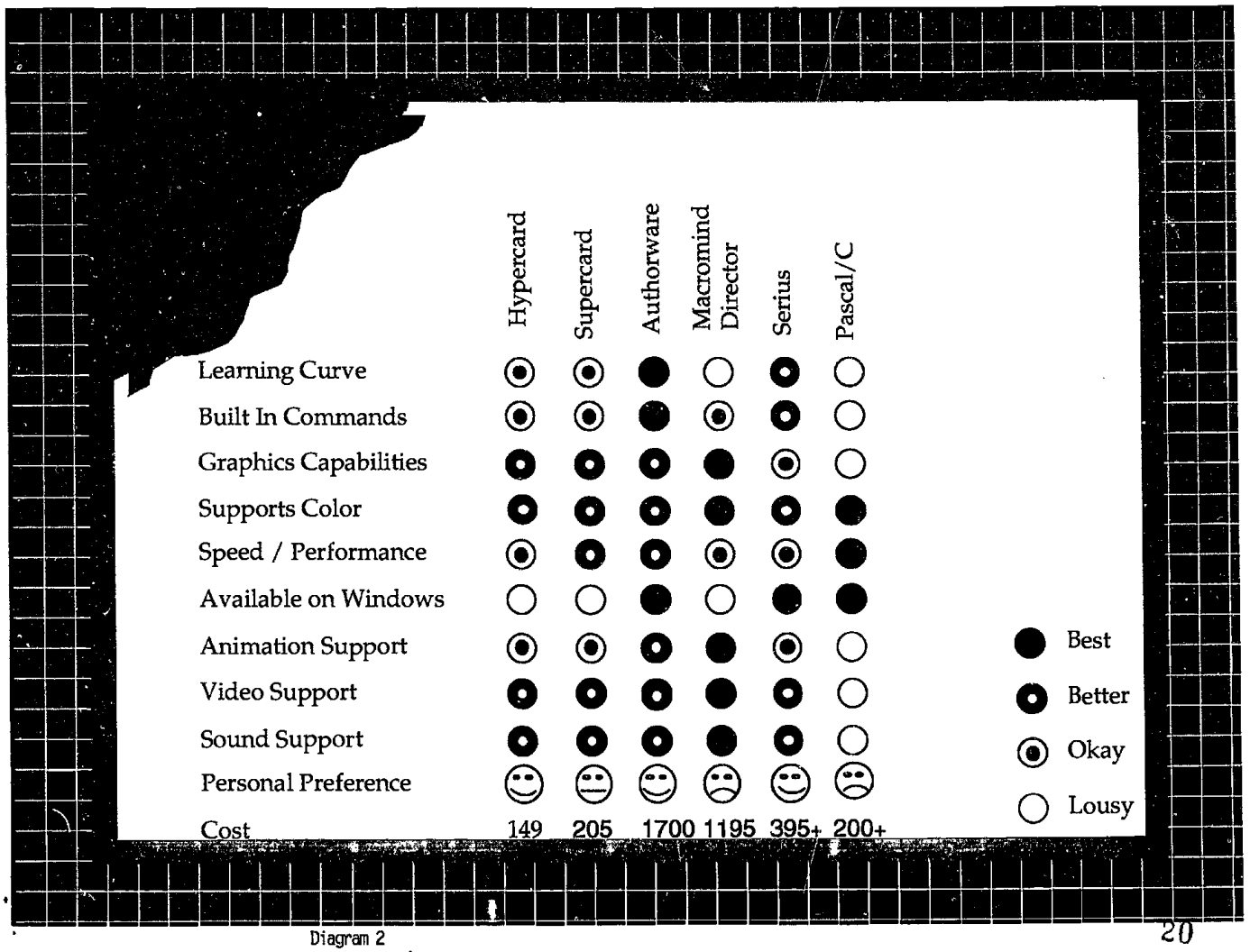
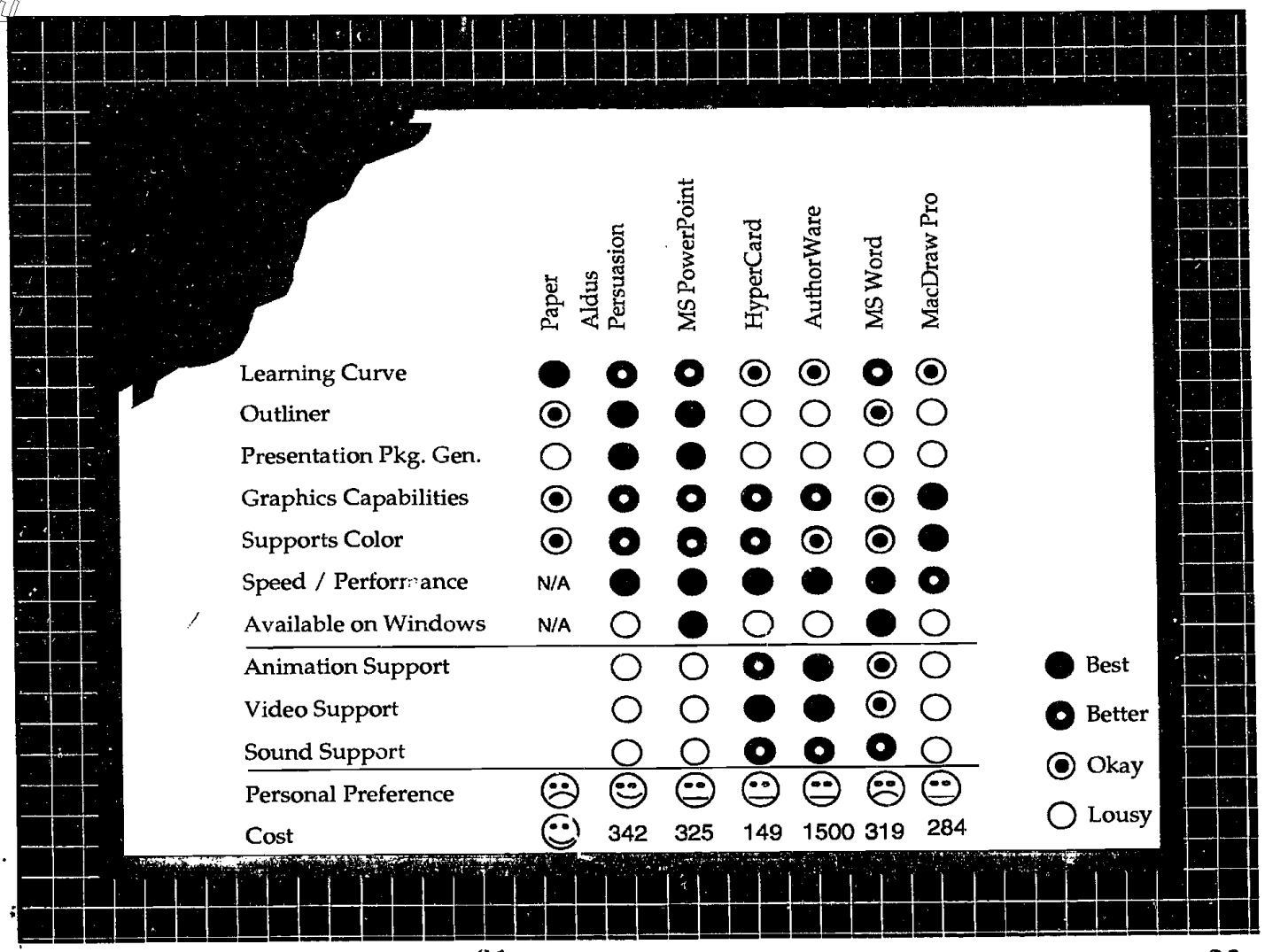

Hypercard
Supercard
Authorware
Macromind Director
Serius
Pascal/C
Learning Curve
Built In Commands
Graphics Capabilities
Supports Color
Speed / Performance
Available on Windows
Animation Support
Video Support
Sound Support
Personal Preference
Cost
149
205
1700
1195
395+
200+
Best
Better
Okay
Lousy

Diagram 2


Paper
Aldus Persuasion
MS PowerPoint
HyperCard
AuthorWare
MS Word
MacDraw Pro
Learning Curve
Outliner
Presentation Pkg. Gen.
Graphics Capabilities
Supports Color
Speed / Performance
Available on Windows
Animation Support
Video Support
Sound Support
Personal Preference
Cost
N/A
N/A
342
325
149
1500
319
284
Best
Better
Okay
Lousy