Using the Waterford Early Reading Program to

Improve Reading Scores of English Language Learners in

Second Grade at McKinley Elementary School,

Yakima, Washington

_____

A Special Project

Presented to

Dr. Jack McPherson

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_____

In Partial Fulfillment of the Requirements

for the Degree of Master of Education

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Celia Castilla

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FACULTY APPROVAL

Using The Waterford Early Reading Program to

Improve Reading Scores of English Language Learners

in Second Grade at McKinley Elementary School, Yakima, WA

Approved for the Faculty

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ABSTRACT

The purpose of this descriptive research project was to determine whether the adoption of WERP improved reading scores of second grade students at McKinley Elementary School (MES) as measured by the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) assessment. To accomplish this purpose, a review of selective literature was conducted, baseline data were obtained and analyzed and related conclusions and recommendations were formulated.

In the present study, no significant differences were found between reading scores of students who received or did not receive instruction using the Waterford Early Reading Program (WERP). Significance was determined for $p \leq$ at .05, .01 and .001 levels.

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CHAPTER 1

Introduction

<u>Background for the Project</u>

In her recently published Learns Report, Washington State Governor Christine Gregoire cited five broad initiatives, one of which focused on the importance of early learning.   The initiative included implementing   strategies to bolster learning.   In an article published in the Yakima Herald Republic by Joyce, Gregoire explained, "the report calls for an education system that helps Washington be more competitive in the global economy, including making better use of technology in the classroom" (Joyce, 2006, p.10A).

Ben Soria, Yakima Public School District Superintendent, expressed in the Yakima Herald Republic, that poverty issues

associated with students who were learning English were not

mentioned in the Washington Learns Report.   Mr. Soria considered

those issues of importance because it impacted student achievement

outcomes.   Ben Soria also stated:

> Yakima schools are on a relentless mission to ensure all
>
> students will continue to achieve at high levels of learning.   In
>
> Yakima, all does mean all!   It means each student will be
>
> engaged in a rigorous, standards-based curriculum and
>
> educated in an environment that provides the necessary social
>
> supports for learning   ("WASL's Just One Measure," 2007,
>
> p. 7B).

As stated by Ricardo Sanchez, Chairman of the Latino/a

Educational Achievement Project, in an article published in the

Yakima Herald Republic by Joyce,   "poor children can learn, but the

odds are stacked against them"   (Joyce, 2007, p. 3C).   Mr.

Sanchez strongly believed that policy makers needed to address the

academic and cultural challenges of Hispanic students.   These

students with adequate education would be able to be more

productive citizens.

<u>Statement of the Problem</u>

Second grade students at McKinley Elementary School (MES) in Yakima, WA, who did not receive instruction using the Waterford Early Reading Program(WERP) during 2006-2007 did not perform well in reading as well as 2005-2006 students who were instructed, using WERP.

The question which represented the focus of the present study may be stated as follows: Did adoption of WERP improve reading scores of second grade students at MES as measured by the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) Assessment?

<u>Purpose of the Project</u>

The purpose of this descriptive research project was to determine whether the adoption of WERP improved reading scores of second grade students at MES as measured by the DIBELS assessment.   To accomplish this purpose, a review of selective literature was conducted, baseline data were obtained and analyzed,

and related conclusions and recommendations were formulated.

Delimitations

The writer (Celia Castilla) conducted an experimental study at MES throughout 2005-2007. This study involved 16 of 409 students who attended MES. Of these 409 students, 83% qualified for the federal free and reduced lunch program. The study consisted of two second grade classrooms composed of students who ranged in age from seven to eight years. The researcher used a control and a treatment group. The treatment group consisted of eight students who received instruction using WERP during the 2005-2006 school year. Eight students in the control group did not receive the benefit of WERP instruction in the second grade during 2006-2007.

The software-based WERP curriculum was used to help students in reading comprehension, phonics, vocabulary, and writing skills. WERP provided three levels of reading instruction. Students were grouped according to how they performed on the DIBELS assessment. Students were continuously challenged as they moved to a higher level.

The treatment group received one hour of WERP instruction, four days a week.   The control group did not receive WERP instruction.

Assumptions

The assumption was made that MES students in the second grade classroom understood how to use WERP and had basic knowledge of the keyboard. Students had prior experience in kindergarten and first grade using the same program.   The assumption was also made that instruction utilizing WERP would improve second grade reading scores as measured by the DIBELS assessment.

Hypothesis or Research Question

Reading scores of second grade students who received WERP instruction will be higher than students who did not receive this instruction as measured by the DIBELS assessment.

Null Hypothesis

There will be no significant difference between reading scores of students who received or did not receive instruction using WERP.

Significance was determined for p$\leq$ at .05, .01 and .001 levels.

Significance of the Project

The project was important to the investigator (Celia Castilla) and to the educators in the Yakima School District. A reading intervention such as WERP was potentially vital to the early years for students struggling in reading. As stated by Governor Christine Gregoire, in an article published in the Yakima Herald Republic by Ammons, "if we did a good job in those early years, we would identify potential problems earlier and we would take steps that could bring about dramatic improvement" (Ammons, 2006, p.1C).

Procedure

Procedures employed in the present study evolved in several stages. Initially, the investigator sought and obtained permission from former MES principal, Richard Pryor, to undertake the study. During the 2005-2007 school years, the investigator conducted a review of selected literature concerned with the importance of reading, and obtained and analyzed related baseline data.

Specifically, the researcher gathered data from the DIBELS

assessment. Post-test raw scores from 2006 and 2007 were compared using a *t*-test for independent samples. Following computer analysis of all raw scores from the treatment and control group, a *t* Value and Degrees of Freedom (DF) were determined to test both the hypothesis and null hypothesis.

Definition of Terms

Significant terms used in the context of the present study have been defined as follows:

Benchmark. The word benchmark was defined as a particular goal.

Control group. The group in a research study that either receives a different treatment than the experimental group or is treated as usual. Experimental research. Research in which at least one independent variable is manipulated, other relevant variables are controlled, and the effect on one or more dependent variables is observed.

Intervention. An intervention was a certain set of circumstances or certain things that one does to reach a

particular goal.

Treatment group.   In the present study, the treatment group received instruction using WERP.

t- test.   Inferential statistics technique used to determine whether the means of two data groups are significantly different from one   another.

*t-*test for independent samples.   A parametric test of significance used to determine whether there is a significant difference between the means of two independent samples at a selected probability level.

Acronyms

CALP.   Cognitive Academic Language Proficiency

DIBELS.   Dynamic Indicators of Basic Early Literacy Skills

DF.   Degree of Freedom

ELL.   English Language Learners

MES.   McKinley Elementary School

WERP.   Waterford Early Reading Program

CHAPTER 2

Review of Selected Literature

Introduction

The review of selected literature indicated in Chapter 2 was

organized to address the following research topics:

1. Impact of Technology on Education

2. Waterford Early Reading Program (WERP)

3. Technology Support for English Language Learners (ELL)

4. Summary

The preponderance of research cited in Chapter 2 was current

within the past 10 years.   Resources most utilized included the

Education Resources Information Center (ERIC), the Internet and

ProQuest.   A hand-search of related materials was also conducted.

Impact of Technology on Education

Due to many recent changes in American society,   new

technology was seen as a different approach to learning.

According to Echevarria & Graves (2007), computer programs that

connect to students' prior knowledge and/or personal experiences,

and subject matter help build links and connections to new learning.

For example, timelines have been used for teaching history.

Students were introduced timelines by first charting their own lives

and then used to teach time periods taught in history lessons. The

use of interactive maps on the Internet also helped enhance

students' learning. Students explored areas of origins and other

worldwide locations. Contextual clues such as pictures and sounds

made it more interesting and comprehensible for students. Hill et al.

(2006) confirmed, "students use their personal experiences and

content knowledge to learn new information by organizing it into a

visual format" (p. 54).

Technology was also used to assess student content learning.

Students represented material through graphical organizers or

PowerPoint presentations. Created written products showed more

reliable results than traditional testing, because it was more accurate

in how students processed instructional context. Said Jones et al.

(1994), "the best performance-based assessment has a seamless

connection to curriculum and instruction so that it is ongoing" (p.1).

Meyer & Rose (2000), explained how teachers have been viewed more as coaches, facilitators, or mentors. As stated by these authorities, "further responsibility for learning has become shared as students engage in mentoring, reflection, and self-evaluation" (p. 9). An example has been observed in a Language Arts classroom. A checklist of tasks was given to students to be completed. Students then worked at their own pace, stopping periodically to self reflect. Students were provided appropriate time to complete each task and were given flexibility as to which of the tasks to complete. Therefore, students developed a better understanding of the ideas and concepts when they were actively involved in the learning process (Butler-Pascoe & Wiburg, 2003).

Van Dusen & Worthen (1994), cautioned there were disadvantages in having learning programs which used technology in schools. If teachers were not monitoring and adjusting the curriculum according to students' progress, the program had no real impact on student achievement. Research conducted by Marlow

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(1997) confirmed little training existed in some schools with computers.   Teachers without computer training lacked guidance and therefore were unable to provide assistance for students. Teachers needed to receive workshop training to advance their computer skills.   As stated by Butler-Pascoe et al., "teachers must receive sufficient training in planning learning experiences that integrate technology in ways that support students' cognitive, affective, linguistic, and academic development" (p. 19).

Tracey (2006) explained how continued use of technology had an impact on students' academic achievement.   Said Tracey, "the research pertaining to the use of new digital technologies in literacy instruction is by any measure broad and shallow rather than focused and deep" (p.4).   Tracey underscored the need for such research as a way to justify (or discourage) the large expenditures that are currently being allocated by thousands of school districts for the purchase of computer systems.   According to Singhal (1998), a well developed multimedia computer program can help students apply what they learn in meaningful learning activities that meet individual

needs, stimulate interest, and increase motivation.

Waterford Early Reading Program (WERP)

Literacy software instruction has become increasingly important for continued practice in literacy skills. Students in need of reading skill development now use computers that emphasize reading comprehension. Meyer & Rose described one important aspect of traditional literacy technology as follows:

Computers should and will play a major role in the reading classroom but will almost certainly not replace books or teachers. They will influence and perhaps even redefine traditional books, literacy, and the role of teachers, but all three will survive and thrive (p.9).

Tracey emphasized the importance of attaining early literacy skills necessary for educational success. Research conducted by this authority confirmed that not one particular literacy program provided the answer to all students' needs. However, programs were available that contained effective instructional strategies designed to help struggling students in reading. According to the

National Institute of Child Health and Human Development, as cited

by Tracey, "meaningful practice in the areas of phonics, phonemic

awareness, vocabulary, fluency and comprehension had been found

to be central in effective early literacy programs" (p. 4).

The Waterford Early Reading Program (WERP) was created

by the Waterford Institute, a nonprofit educational research

organization established in 1976. The program was distributed by

Pierson Digital Learning, a K-12 publisher of educational materials.

In the past, WERP had been used by many schools. According to

Tracey, 2,700 schools, 12,570 classrooms, and approximately

326,000 children nationwide were using WERP. The

software-based WERP curriculum provided three levels of early

literacy instruction, described as follows:

> From level one for emergent readers through level three for
>
> developing fluency, Waterford Early Program incorporates
>
> skills like letter mastery, reading and listening development,
>
> controlled and natural language stories, complex spelling,
>
> basic writing skills, and comprehension strategies (Pearson

Digital Learning, 2006, p.1).

WERP was intended for individual use with children working at their own pace. The child's progress was monitored and recorded according to the child's success and difficulties. Teachers were able to retrieve and use these data to better assist the child's academic needs. A year long report was compiled using WERP, Level 1. The study included 265 kindergarten children from an urban school district experiencing academic challenges. Results indicated the treatment group performed better in reading after receiving instruction using WERP. In fact, significant results favoring students in treatment group classrooms were found after using the Test of Early Reading Ability-2 (TERA 2) and the Waterford Reading Inventory. TERA 2 showed significant results because the test contained elements similar to WERP. Both WERP and TERA 2 provided assessment measures which were more closely linked to students' difficulty level and which revealed significant academic advantages for children in the intervention classrooms. Accordingly, Tracy's research confirmed that academically struggling children

showed significant gains in reading when using WERP than those who did not.

English Language Learners (ELL)

The use of technology has assisted literacy development of English Language Learners (ELL). Since ELL's need additional time and support in cognitive academic language proficiency (CALP) skills, maximum exposure to subject matter, vocabulary, schema, and concepts was critical. Computers provided a rich environment that supported concept learning. As explained by Butler-Pascoe et al.:

> The computer, with its Internet and hypermedia capabilities, is a powerful addition to second language teachers' resources. Computers utilize a multisensory collection of text, sound, pictures, video, animation, and hypermedia to provide meaningful context to facilitate comprehension (p. 7).

ELL's have related better to new learning when social and cultural backgrounds were addressed. According to Collier (1995), " . . . we need to create a supportive classroom environment that

values each student and the individual strengths and resources he or she brings to the learning process" (p. 26).   Effective teachers have used many different instructional approaches to meet the needs of diverse learners.   For example, ELL's were asked to share newspapers, magazines and Internet ads found in their native languages and to compare and contrast these with American advertising styles.   The learners' academic strengths in their native language were thereby transplanted to the second language.

According to Hill et al., drill and practice software can be programmed to accommodate language proficiency levels of students, providing corrective advice and pace needed for practice in grammar and vocabulary development.   For example, learned words become more effective when practiced through repetition of one text or used in a variety of other texts.   This authority explained how word recognition, reading rate and comprehension from one text may be transferred to other passages not familiar to the reader. Further, choral reading and reading aloud passages have provided support for students during reading.   Literacy software instruction

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has thus become increasingly important in order for ELL's to hear the same ideas expressed in more than one way.   Said Hill et al., "repetition allows the ELL to move the content she hears from short-term comprehension to long-term acquisition" (p. 56).

Interactive approaches to teaching have developed students' higher order thinking skills.   The scaffolding technique has been used to encourage students to use meaningful language, formulate and express their thoughts.   Using this approach, students believed teachers held genuine interest in their ideas and opinions. Computers were seen as excellent resources for continued practice in furthering students' higher level cognitive skills.   Students have used telecommunication activities and simulation programs of real-life experiences to foster critical thinking and problem solving skills.   Butler Pascoe et al. claimed, "as students perform diverse tasks with the computer, they broaden their repertoire of metacognitive, cognitive, and affective learning" (p.7).

Cooperative learning was seen as a good instructional strategy.   Collier stressed the need for ELL's to interact with other

students.   This approach provided many opportunities for ELL's to use their second language and to build self confidence while expanding their speaking ability.   Hill et al., proclaimed cooperative learning groups should be combined with other methods of classroom instruction.   For example, in a third grade class, students were allowed to choose reading materials which held special interest to them.   First, students visited different learning centers to learn about their topic of choice.   Related resources and information were provided at each learning center.   Students then watched a video and also researched about their particular topic on a Web page located on the Internet.   Finally, students returned to small groups and orally presented what they had learned.   Stated Butler-Pasco et al., " . . . learning occurs in a social context and that children learn best when they are allowed to construct meaning through challenging individual and group work"
(p. 10).

Summary

The review of selected literature presented in Chapter 2 supported the following research themes:

1. The use of computers in the classroom was a strong supplement to teacher instruction.

2. WERP was considered an effective software system for helping develop reading skills in young children.

3. ELL's need the support of technology to address their different learning styles and cultural differences.

CHAPTER 3

Methodology and Treatment of Data

Introduction

 The purpose of this experimental research project was to
determine whether WERP at MES improved students' reading
scores as measured by the DIBELS assessment.   To accomplish
this purpose, a review of selective literature was conducted, baseline
data were obtained and analyzed, and related conclusions and
recommendations were formulated.

 Chapter 3 contains a description of the methodology used in
the study.   Additionally, the writer (Celia Castilla) included details
concerning participants, instruments, design, procedure, treatment of
the data, and summary.

Methodology

 The researcher applied a t-test for independent samples to
determine whether using WERP improved students' reading scores
as measured by the DIBELS assessment.   This parametric test
allowed the researcher to determine whether, at a selected
probability level, significant difference existed between students who

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received WERP (treatment group), with the students who did not receive WERP (control group).

<u>Participants</u>

Participants included in the experiment were second grade students enrolled at McKinley Elementary School from 2005-2007. The classrooms consisted of monolingual English and bilingual students who scored at intensive and strategic levels on the DIBELS assessment. Treatment and control groups were organized as follows:

Treatment Group (X): A total of eight male and female English and bilingual students who received one hour of WERP instruction, four days a week in 2005-2006.

Control Group (Y): A total of eight male and female English and bilingual students who did not receive WERP instruction in 2006-2007.

<u>Instruments</u>

The DIBELS assessment was used to measure student reading performance.   The test was used to determine whether

students met benchmark in the area of fluency.   The DIBELS

assessment was administered in the fall, winter and spring. Students

who received a score below 44 words per minute in the fall in fluency

did not reach benchmark.   During winter, students should be

reading at 68 words per minute; in the spring they should be reading

at 90 words per minute.

Design

A *t*-test for independent samples was used to determine

whether WERP made a significant difference in DIBELS assessment

scores between treatment and control groups.   The design utilized

two independent groups:

Group X: The treatment group received one hour of WERP

instruction, four days a week.

Group Y: The control group did not receive WERP instruction.

Procedure

Procedures employed in the present study evolved as follows:

1. In September 2005, the researcher sought and obtained

permission from former MES principal,

Richard Pryor to undertake the study.

2. Throughout 2005-2007, the researcher obtained DIBELS assessment data from the building's reading coach, Sharon Maras.

3. During 2007, the researcher conducted the review of selected literature detailed in Chapter 2. The literature review focused on how the use of technology impacted students learning and how WERP intervention improved students literacy skills. The literature review also confirmed that ELL's gained language skill development through the use of different ELL teaching strategies.

4. During the summer of 2007, the researcher analyzed DIBELS assessment scores while completing studies for the M. Ed at Heritage University.

Treatment of the Data

A *t*-test for independent samples was used in connection with

the STATPAK statistical software that accompanied the textbook

Educational Research Competencies for Analysis and Applications

(2003) by Gay & Airasian.   This permitted the researcher to

determine any significant difference between treatment and control

group.   Significance was determined for $p \leq$ at .05, .01 and .001

levels.   The following formula was used to calculate the t-test for

independent samples:

Summary

Chapter 3 provided a description of the research methodology

employed in the study, participants, instruments used, research

design, and procedure utilized.   Details concerning treatment of the

data obtained and analyzed were also presented.

CHAPTER 4

Analysis of the Data

<u>Introduction</u>

The present study sought to determine whether adoption of WERP at MES improved reading scores of participating second grade students as measured by the DIBELS assessment.

Chapter 4 has been organized to include the following: Description of the environment, hypothesis, null hypothesis, results of the study, findings, discussion and summary.

<u>Description of the Environment</u>

The study was conducted in the Yakima School District at MES, during 2005-2007.   The study included both treatment and control groups.   The treatment group (Group X) had a total of eight male and female monolingual English and bilingual students who received one hour of WERP instruction, four days a week in 2005-2006.   The control group (Group Y) consisted of eight male and female monolingual English and bilingual students who did not receive WERP instruction in 2006-2007.

<u>Hypothesis</u>

Reading scores of second grade students who received WERP instruction will be higher than students who did not receive this instruction as measured by the DIBELS assessment.

<u>Null Hypothesis</u>

There will be no significant difference between reading scores of students who received or did not receive instruction using WERP. Significance was determined for $p \leq$ at .05, .01 and .001 levels.

<u>Results of the Study</u>

A *t*-test for independent samples was calculated to determine the level of significance between the control and treatment group. Table 1 disclosed the results of the *t*-test and Table 2 showed the distribution of *t* with 14 degrees of freedom.   Significance was determined for p$\geq$ at 0.05, 0.01 and 0.001 levels.

Table 1

Summary of *t*-test for Independent Samples

Group X (Treatment) and Group Y (Control) data included eight scores for each group, totaling sixteen scores.

As shown in Table 1, the mean of group X was 64.63, whereas the mean of group Y was 69.75. Table 2 indicated the degrees of freedom was 14. The values used to determine the significance were published in the textbook <u>Educational Research: Competencies and Applications</u> (Gay & Airasian, 2003, p. 561).

Table 2. Distribution of *t* with 14 Degrees of Freedom

	Distribution of t with 14 Degrees of Freedom
df	0.05
0.01	0.001
14	2.145
2.977	4.140

Findings

Data used for purposes of analysis compared eight second grade students who received WERP instruction during 2005-2006 with eight second grade students in 2006-2007 who did not receive WERP instruction.   The findings did not indicate an increase in mean scores for those students who obtained WERP instruction. Through statistical analysis, no significant differences were found between control and treatment groups at 0.05, 0.01 and 0.001 levels. Accordingly, the hypothesis was rejected, and the null hypothesis was accepted at all levels: 0.05 (2.145); 0.01 (2.977); and 0.001 (4.140).

Discussion

The analysis of data presented above supported the null
hypothesis   (i.e., no significant differences were found between
reading scores of students who received or did not receive
instruction using WERP.   Significance was determined for $p\leq$ at .05,
.01 and .001 levels).

Summary

Chapter 4 included a description of the environment,
hypothesis, null hypothesis, results of the study, findings and
discussion.   Data analyzed indicated:

1.   The hypothesis was not supported (i.e., students who
received   WERP instruction did not perform better
on the DIBELS   assessment than those
students who did not receive WERP
instruction).

2.   The null hypothesis was accepted (i.e., no significant
differences were found between reading
scores of students who   received or did not receive

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instruction using WERP.

Significance was determined for $p \leq$ at .05, .01 and .001

levels).

3. The question which represented the focus of the present

study   produced a negative answer.   Data

analysis indicated that second   grade students did not

gain higher DIBELS reading scores using   WERP in

2005-2006 when compared to the students in 2006-

   2007 who did not receive WERP instruction.

CHAPTER 5

Summary, Conclusions and Recommendations

<u>Summary</u>

The purpose of this experimental research was to determine whether second grade students had higher DIBELS scores when using WERP than those who did not have any WERP instruction.   A review of selected literature was used, related baseline data were obtained and analyzed, conclusions and recommendations were also devised.

<u>Conclusions</u>

From the review of selected literature presented in Chapter 2,

and from the analysis of data presented in Chapter 4, the following

conclusions were reached:

1. The use of computers in the classroom was a strong
    supplement   to teacher instruction.

2. WERP was considered an effective software system for
    helping   develop reading skills in young children.

3.   ELL's need the support of technology to address their
    different   learning styles and cultural differences.

4. The hypothesis was not supported (i.e., students who
received   WERP instruction did not perform
better on the DIBELS   assessment
than students who did not receive WERP instruction).

5. The null hypothesis was accepted (i.e., no significant
differences   were found between reading scores
of students who received or   did not receive
instruction using WERP.   Significance was
    determined for $p \leq$ at .05, .01 and .001 levels).

6. The question which represented the focus of the present

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study   produced a negative answer.   Data

analysis indicated that second   grade students did

not gain higher DIBELS reading scores using

WERP in 2005-2006 when compared to the students in 2006-

              2007 who did not receive WERP instruction.

Recommendations

       Based upon the conclusions cited above, the following

recommendations have been suggested:

       1.   The use of computers in the classroom was a strong

supplement   to teacher instruction.

       2.   WERP was considered an effective software system for

       helping   develop reading skills in young children.

       3.   ELL's need the support of technology to address their

                      different learning styles and cultural

differences.

       4.   The fact that reading scores of students who received

       WERP   instruction in the present study did not

       improve should not, in an   of itself, be cause for

rejecting the use of this reading program.

Accordingly, this investigation recommends that other

researchers   seeking to explore the effectiveness of

WERP may wish to focus   on other factors impacting

student literacy skills

(e.g., environmental factors of race, poverty, language,

family   socio-economic differences, etc).

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