



# PERSONALIZED INSTRUCTIONAL VIDEOS AS INTERVENTION MATERIALS IN GRADE 8 ON THE LEAST LEARNED COMPETENCIES IN ALGEBRA

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## ABSTRACT

*This study entitled “Personalized Instructional Videos as Intervention Materials in Grade 8 on the Least Learned Competencies in Algebra” attempted to answer the questions: (1) What is the level of Personalized Instructional Videos in terms of: Objectives, Content, Presentation, Evaluation? (2) What is the level of students’ performance in Mathematics 8 on least learned competencies in Algebra in terms of: Pre-Test and Post-Test? (3) Is there significant difference between the students’ performance in Mathematics 8 on least learned competencies in Algebra in terms of Pre-Test and Post-Test? (4) Is there a significant effect of the personalized instructional videos on the students’ performance in Mathematics 8 on the least learned competencies in Algebra in terms of Post-Test?*

*The research designs used were the Descriptive method to determine the effectiveness of the personalized instructional videos on the students’ performance in the least learned competencies in Algebra. The non-probability sampling technique specifically purposive sampling technique was used to determine the respondents in this study. The Grade 8 students composed of 398 population and only 30 students were selected as the experimental group based on their availability of gadgets and their accessibility in Internet.*

*The mean, standard deviation, frequency, and percentage are used to determine the level of personalized instructional videos to identify the level on the students’ performance in the least learned competencies. T-Test was used as statistical treatment to determine the significant difference on the pre-test and post-test scores and Multiple Regression for the significant effect of personalized instructional videos on the students’ performance in the least learned competencies.*

*Findings revealed in this study: (1) The level of personalized instructional videos implied Very High; (2) The level of personalized instructional videos in students’ performance in the least learned competencies showed that there was improvement from low mastery to average mastery; (3) The difference between the students’ performance in terms of pre-test and post-test that there are significant; (4) The effect of the personalized instructional videos revealed that there was no significant effect on the students’ performance.*

*Based on the results and conclusions, the following recommendations were highlighted: Teachers want to make their own instructional videos may use the familiar medium of instruction and shows mastery of content using different platforms in delivering; The students may use the instructional videos in conducive learning environment with availability of gadgets and accessibility of internet that most of use nowadays even in modular distance learning; The administration, the teaching-learning Mathematics in this time of pandemic may help the learners within blended learning; The future researcher, the personalized instructional videos may be localized and suitable for the learners and presentable to the way more facilitating, stimulating and exciting for the learners to be enthusiastic and eager to learn; Similar studies on the use of the learning material as intervention not just only in Mathematics but also in other subject areas may be conducted and the use of other variables aside from those considered in the study.*

**KEYWORDS:** *Personalized instructional videos, intervention materials, least learned competencies in Algebra*



## INTRODUCTION

Amidst the current situation of the society due to the existence of the pandemic CoViD-19 affecting not only the Philippines but all the countries around the world learning delivery system has become an issue that should be addressed as we move towards fighting the pandemic. Every institution adopts different learning modalities such as e-Learning, modular and blended distance learning to bridge the education for every learner. Though these learning modalities have been slowly becoming part of the medium of instruction in the Philippine education, challenges have been evident on the use of these modalities especially in Mathematics areas.

Each institution may decide what modalities and suitable in their areas, depending on the capabilities and availabilities of learners, and especially the modalities to be chosen. In the modular learning delivery, learners study through printed materials and teachers communicate to them through messaging. There would be uncertain misconceptions in the content. Anxieties and fears arise to not motivate the learners. Math teachers might fail in developing the students toward the twin goals of the K-12 Math – critical thinking and problem solving. Thus, the DepEd gives instruction to conduct intervention to cope with these problems.

From this reason, the researcher decided to use the Personalized

Instructional Videos as an intervention material on the least learned competencies in Algebra Mathematics 8 with the topic of Linear Inequality and the System of Linear Inequality in two variables as learned in the researchers' collected data from learner's test. The researcher wanted to remediate that situation through personalized instructional videos to help the learners cope with Mathematics and develop their skills in the subjects through guiding them in content-based and procedural way with personal instruction.

## RESEARCH METHODOLOGY

The study is about the use of personalized instructional videos as intervention materials in Grade 8 on the least learned competencies in Algebra. The Grade 8 students composed of 398 population and only 30 students were selected as the experimental group were used the researcher made materials and assess the materials.

### Sampling Techniques

The researcher has used the non-probability sampling technique specifically purposive sampling technique was used to determine the respondents in this study based on their availability of gadgets and their accessibility in Internet.

### Data Gathering Procedure

A letter of request will be submitted to the Schools Division Superintendent, through the Division Education Program Secondary to seek permission to conduct the study. Immediately after the approval, with permission of School Principals, schedules in conducting remediation used the researcher made materials which is the personalized instructional videos as intervention materials in the least learned competencies in algebra, then the post-test assessment and questionnaires to the acceptability of the materials. Data are going to tabulate, analyze and compute applying the needed statistical treatment.

### Research Procedure

A permit is secured from the office of the Schools Division Superintendent and School Principal of chosen school before the conduct of the study. The proponent will undergo the difficult stages and then monitored the development until the completion of the study.

### Research Instrument

The data for the study are going to gather by means of a conducting the Mathematical test and questionnaire. A researcher-made Mathematical test and questionnaire is also employed as a part of the instrument in gathering the data.

The Mathematical test aims to determine difference from pre-test and post-test results and effectiveness of the personalized instructional videos in the least learned competencies in algebra.

The questionnaire aims to determine the level of acceptability of researcher made materials which the personalized instructional videos. It composed of the parts of intervention materials in terms of objectives, content, presentation and evaluation.

**RANGES OF STATISTICAL TREATMENT****Table 1. presents various ranges in the statistical treatment.**

	Range	Remark	Verbal Interpretation
5	4.21-5.00	Very Evident	Very High
4	3.41-4.20	Evident	High
3	2.61-3.40	Moderately Evident	Moderately High
2	1.81-2.60	Less Evident	Low
1	1.00-1.80	Least Evident	Very Low

**Table 2. presents various frequency distribution in the statistical treatment.**

Score	Verbal Interpretation
16-20	Mastered
11-15	Approaching to Mastery
6-10	Average Mastery
1-5	Low Mastery

**Validation**

In the process, the Mathematical test undergoes the process of validation to determine the difference from pre-test and post-test result and its effectiveness and questionnaire to the acceptability of the materials which set of survey instrument accurately measure what it should intend to measure as well as its capability to achieve the specific objectives of the study.

Content validity is the measure that going to undertake. It is the analysis of the extent to which set of variables/concepts expressed in each item is going to make. Consultation with experts and adviser will going to undertake to assure that no items will overlap and that all items reflect the sub topic with much clarity and understanding.

**Statistical Treatment**

Once the measuring instruments have been retrieved, the researcher processed the raw data into quantitative forms. Data processing involves input, this involves the responses to the measuring instrument of the subjects of the study.

To reveal the level of Personalized Instructional Videos in terms of: Objectives, Content, Presentation, Evaluation the mean and standard deviation was used.

To reveal the level of students' performance in Mathematics 8 on least learned competencies in Algebra in terms of: Pre-Test and Post-Test the frequency distribution and percentage used.

To reveal the significant difference between the students' performance in Mathematics 8 on least learned competencies in Algebra in terms of Pre-Test and Post-Test the t-test one tailed.

To reveal the significant effect of the personalized instructional videos on the students' performance in Mathematics 8 on the least learned competencies in Algebra in terms of Post-Test the Multiple Regression was used.

**RESULTS AND DISCUSSIONS**

The researcher utilized the mean and standard deviation, frequency, and percentage are used to determine the level of personalized instructional videos to identify the level on the students' performance in the least learned competencies. A five-point Likert scale was employed to verbally interpret the computed mean and standard deviation. A frequency distribution in its scores was employed to verbally interpret the percentage obtained by the respondents.

On the other hand, to determine its difference and effects, the researcher has utilized T-test one-tailed and Multiple Regression as treatment.

**Supplemental Material on Operation on Integers****Table 1. Level of Personalized Instructional Videos in Terms of Objectives**

Statement	Mean	Standard Deviation	Remarks
1. Each lesson in the video presentation is accompanied by specific objectives	4.37	0.490	Very Evident
2. The aims and objectives of the video presentation are attainable and measurable.	4.17	0.699	Evident
3. The objectives are stated in behavioral terms.	4.03	0.850	Evident
4. The words used in objectives are clear and easily understood.	4.50	0.777	Very Evident
5. The objectives are in line with the competencies set by the DepEd under in the pandemic situation.	4.37	0.490	Very Evident
Overall Mean/ SD	4.29	0.686	<b>Very High</b>

**Legend:**

Point	Range	Remark	Verbal Interpretation
5	4.20-5.00	Very Evident	Very High
4	3.60-4.19	Evident	High
3	2.40-3.59	Moderately Evident	Moderately High
2	1.80-2.39	Less Evident	Low
1	1.00-1.79	Least Evident	Very Low

The (OM=4.29 SD=0.686), which was verbally interpreted as Very High, indicated level of personalized instructional materials in terms of objectives. This implied that the respondents noticed that the objectives of the personalized instructional videos were attainable and in line with the competencies set by the DepEd under the pandemic situation achieved the results of (M=4.37, SD=0.490), (M=4.17, SD=0.699), (M=4.03, SD=0.850), (M=4.50, SD=0.777) and (M=4.37, SD=0.490), respectively.

Kirubhakaran (2021) mentioned writing effective learning objectives is a necessary skill in academic medicine. Learning objectives are clearly written, specific statements of observable learner behavior or action that can be measured upon completion of educational activity. They are the foundation for instructional alignment whereby the learning objectives, assessment tools, and instructional methods mutually support the desired learning outcome. In addition, any materials should align with those goals to help to reach the desired learning outcome.

**Table 2. Level of Personalized Instructional Videos in Terms of Content**

Statement	Mean	Standard Deviation	Remarks
1. Lesson content was consistent with the lesson objectives (MELCS).	4.50	0.509	Very Evident
2. The content arranged in a clear, logical and orderly manner.	4.23	0.679	Very Evident
3. The content is suitable to the level of the learners.	4.03	0.850	Evident
4. The video presentation contents are complete to cover the whole course.	4.67	0.479	Very Evident
5. The video presentation's content was intellectually stimulating.	4.03	0.890	High
Overall Mean/SD	4.29	0.735	<b>Very High</b>

**Legend:**

Point	Range	Remark	Verbal Interpretation
5	4.20-5.00	Very Evident	Very High
4	3.60-4.19	Evident	High
3	2.40-3.59	Moderately Evident	Moderately High
2	1.80-2.39	Less Evident	Low
1	1.00-1.79	Least Evident	Very Low



Based on the result (OM=4.29 SD=0.735), which was verbally interpreted as Very High, indicated on level of personalized instructional materials in terms of content. This inferred that the respondents noticed that the content of the personalized instructional videos was aligned with the objectives and organized in a stimulating way to deliver the instruction achieved the results of (M=4.50, SD=0.509), (M=4.23, SD=0.679), (M=4.03, SD=0.850), (M=4.67, SD=0.479) and (M=4.03, SD=0.890), respectively.

According to Abunda (2020) who cited the work of Koehler and Mishra (2006), "Quality teaching requires developing a nuanced understanding of the complex relationship between technology, content, and pedagogy, and using this

understanding to develop appropriate, context-specific strategies and representations". According to C. S. Chai, J. H. L. Koh, C-C. Tsai (2010), a teacher who aims to achieve a successful technology integration in the teaching—and learning process needs to consider all these interrelated components other than just a sole subject matter, pedagogy, or technology expert. Preparing preservice teachers for ICT-based classroom instruction attracts more attention for many teacher educations institutes. As 21st century educators' education amidst of phenomenal situations of education, it proven that those skills should be possessed by the teachers to pursue quality in teaching under challenging circumstances.

**Table 3. Level of Personalized Instructional Videos in Terms of Presentation.**

Statement	Mean	Standard Deviation <sup>4</sup>	Remarks
1. I am satisfied with the quality of the video presentation.	4.83	0.379	Very Evident
2. The explanations of concepts (i.e. strategies) used in the video presentation facilitate learning.	4.20	0.714	Very Evident
3. The video presentation design is simple and uncluttered.	4.20	0.714	Very Evident
4. The question examples used in the video presentation facilitate learning.	4.17	0.913	Evident
5. The lectures in this video presentation are stimulating.	4.37	0.765	Very Evident
Overall Mean/ SD	4.35	0.750	<b>Very High</b>

**Legend:**

Point	Range	Remark	Verbal Interpretation
5	4.20-5.00	Very Evident	Very High
4	3.60-4.19	Evident	High
3	2.40-3.59	Moderately Evident	Moderately High
2	1.80-2.39	Less Evident	Low
1	1.00-1.79	Least Evident	Very Low

As shown in table 3, the respondents agreed that the presentation of the instructional videos present simple and presentable attained from the results (M=4.83, SD=0.379), (M=4.20, SD=0.714), (M=4.20, SD=0.714), (M=4.17, SD=0.913) and (M=4.37, SD=0.765), respectively.

The (OM=4.35 SD=0.750), which was verbally interpreted as Very High, indicated level of personalized instructional materials in terms of presentation. This indicated that the respondents noticed that the presentation of the personalized instructional videos was satisfying and stimulating in terms of the quality of the videos.

According to the online article written by Sharma (2018), effective presentation skills is a part

of communication. Communication and presentation skills are a part of each other. To be effective in communication you need presentation skills. Presentation skills help you to communicate more effectively and professionally with your audience. While presentation skills are not only about the knowledge of Microsoft powerpoint application, SlideShare and google slides etc. You need effective presentation skills to present your ideas, projects, plans, strategies and products in front of the audience. That is why presentation skills, presentation applications, images, text, videos and example, and introductory effects and appearance help to build the interests in the audience.

**Table 4. Level of Personalized Instructional Videos in terms of Evaluation.**

Statement	Mean	Standard Deviation <sup>4</sup>	Remarks
1. The video presentation improve the general analytic skills of the learners.	4.70	0.466	Very Evident
2. The teaching on this video presentation is sufficient to enhance the student's knowledge.	4.03	0.850	Evident
3. The lectures in this video presentation are in general informative.	4.50	0.777	Very Evident
4. The academic expectations on this video presentation are appropriate with the desired learners.	4.37	0.765	Very Evident
5. The learning outcomes for this video presentation were made clear and attainable.	4.33	0.758	Very Evident
Overall Mean/ SD	4.39	0.755	<b>Very High</b>

**Legend:**

Point	Range	Remark	Verbal Interpretation
5	4.20-5.00	Very Evident	Very High
4	3.60-4.19	Evident	High
3	2.40-3.59	Moderately Evident	Moderately High
2	1.80-2.39	Less Evident	Low
1	1.00-1.79	Least Evident	Very Low

The data above reveal that the personalized instructional videos the learning outcomes were attainable and informative garnered the result of (M=4.70, SD=0.466), (M=4.03, SD=0.850), (M=4.50, SD=0.777), (M=4.37, SD=0.765) and (M=4.33, SD=0.758), respectively.

The (OM=4.39 SD=0.755) with a verbal interpretation of Very High indicated level of personalized instructional materials in terms of evaluation. This showed that the respondents noticed that the evaluation of the personalized instructional videos were used to improve the analytical skills and provide general information sufficient in the learners' knowledge.

According to the works of Rao and Ramesh (2021), Test Items or Assessment Items are used to **Level of Students' Performance in Mathematics 8 in the Least Learned Competencies in Algebra**

assess the student's acquisition of the competencies. Test Items or Assessment Items identify both at the competency and at sub-competency levels. They can be either written test items (such as quizzes and problems) or performance test items (such as projects and group discussions). These are tagged with the competency/sub-competency they address, the type (written or performance), maximum marks, answer key wherever possible, duration of answering, etc. As stated earlier, the test items must pedagogically aligned with the competency they address. Therefore, test items must be tagged with the competency, which they address. This is what evaluation means, materials used to gather information intend to measure if those competencies are attained after the instruction.

**Table 5. Level of Students' Performance in Mathematics 8 on the Least Learned Competencies in Algebra in terms of Pre-Test.**

Score	Frequency (f)	Percentage (%)	Verbal Interpretation
16-20	0	0%	Mastered
11-15	0	0%	Approaching to Mastery
6-10	9	30.00%	Average Mastery
1-5	21	70.00%	Low Mastery
<b>Total</b>	<b>30</b>	<b>100%</b>	
	M = 4.67	SD = 2.02	



Table 5 showed the level of students' performance in Mathematics 8 in the least learned competencies in Algebra. In this study, referred to the pre-test which got ( $M=4.67$   $SD= 2.02$ ), the percentage that got 1-5 scores was 70 % which was verbally interpreted as Low Mastery. The percentage

that got 6-10 scores is 30% which was verbally interpreted as Average Mastery. And the percentage for the scores of 11-15 was 0% which verbally was interpreted as Approaching to Mastery and got the score of 16-20 was 0% which verbally interpreted as Mastered.

**Table 6. Level of Students' Performance in Mathematics 8 on the Least Learned Competencies in Algebra in terms of Post-Test.**

Score	Posttest Frequency	Percentage	Verbal Interpretation
16-20	0	0%	Mastered
11-15	5	16.67%	Approaching to Mastery
6-10	24	80.00%	Average Mastery
1-5	1	3.33%	Low Mastery
<b>Total</b>	<b>30</b>	<b>100%</b>	
	$M = 8.7$	$SD = 1.64$	

Table 6 showed the level of students' performance in Mathematics 8 in the least learned competencies in Algebra. In this study it referred to the post- test that got ( $M=8.7$   $SD= 1.64$ ), the percentage that got 1-5 scores was 3.33 % which was verbally interpreted as *Low Mastery*. The percentage that got 6-10 scores was 80% which was verbally interpreted as *Average Mastery*. The percentage that got 11-15 scores was 16.67 %, which was verbally interpreted as *Approaching Mastery* and the percentage that got 16-20 scores was 0% which was interpreted as *Mastered*.

According to Virginia Department of Education (2011), cited the Executive Director of Research and Strategic Planning, the purpose of

Virginia's focus on teacher evaluation is to improve student achievement with a particular focus on high-poverty and/or persistently low- performing schools (Jonas, 2011, personal communication). According to Jonas (2011, personal communication), in terms of the Standards (2011), the rationale underpinning teacher evaluation is that the performance of students is likely to show strong and measurable learning gains (the seventh standard) if students are taught by teachers whose practice exemplifies the first six standards (professional knowledge, instructional planning, instructional delivery, assessment of and for learning, learning environment, and professionalism).

### Significant Difference between the Students' Performance in Mathematics 8 in the Least Learned competencies in Algebra in terms of Pre-Test and Post-Test

**Table 7. Significant difference between the Students' Performance in Mathematics 8 on the Least Learned competencies in algebra in terms of Pre-Test and Post-Test**

Students' Performance in Mathematics 8 on the Least Learned Competencies in Algebra	Mean	SD	Mean Difference	t-value	p-value	Verbal Interpretation
Pre Test	4.67	2.02	4.03	1.699	0.000	Significant
Post Test	8.7	1.64				

As could be seen in table 7, it indicates that the pre-test ( $M=4.67$ ,  $SD=2.02$ ) and post-test ( $M=8.70$ ,  $SD=1.64$ ). The Mean difference is 4.03, while the conditions of t-value as  $t=1.669$  and the p-value as  $p=0.000$  respectively. This implied that there is a significant difference in the students' performance in Mathematics 8 in the Least Learned

competencies in Algebra in terms of pre-test and post-test.

According to the study of González Gómez et al.'s (2016), it is the adoption of a flipped classroom model of blended learning in a general science course that results in higher grades among teacher training students when compared with those achieved by



students following a traditional classroom setting. Though Israel (2015) or Potter (2015) mentions no specific predictor, the former still observes modest positive impacts on students' learning outcome resulting from the adoption of the blended format. As

adaptation of the researcher, the aim study of instructional videos intervention is to increase the student performance from the modular distance learning.

### Significant Effect of the Personalized Instructional Videos in the Students' Performance in Mathematics 8 on the Least Learned Competencies in Algebra in terms of Post-Test

**Table 8. Significant Effect of the Personalized Instructional Videos in the Students' Performance in Mathematics 8 on the Least Learned Competencies in Algebra in terms of Post-Test**

Personalized Instructional Videos in the Students' Performance in Mathematics 8 on the Least Learned Competencies in Algebra	Coefficient	t-value	p-value	Verbal Interpretation
Objectives	0.1713	0.7649	0.4507	Not Significant
Content	0.3475	1.2462	0.223	Not Significant
Presentation	0.2524	1.3838	0.1773	Not Significant
Evaluation	0.3191	1.6110	0.1184	Not Significant

In table 8 showed the result of the analysis that there is a significant effect of the Personalized Instructional Videos in terms of Objectives; Content; Presentation; and Evaluation on the Students' Performance in Mathematics 8 on Least Learned Competencies in Algebra in terms of Post-Test, with coefficient of 0.1713, 0.3475, -0.2524, and 0.3191 with t-value of 0.7649, 1.2462, 1.3838, and 1.6110 respectively.

This indicated that there was not significant of the personalized instructional videos in the students' performance in Mathematics 8 on the Least Learned competencies in Algebra in terms of Post-Test.

To support this study the researcher cited the study of Obagah and Brisibe (2017), entitled "The Effectiveness of Instructional Videos in Enhancing Learning Experience of Architecture Students in Design and Drawing Courses: A Case Study of Rivers State University, Port-Harcourt", the effectiveness of the use of instructional video in design and drawing courses is very evident. While, the effect of the use of instructional videos and projector assisted teaching of design and drawing was also a welcome experience by the students based on their response to the test instrument. This result agrees with the findings of earlier studies by Brecht, et al. (2008) also noting that students use the video lectures to (a) understand concepts and problems presented in the classroom lectures, (b) do homework, (c) prepare for weekly exams, and (d) receive instructor-quality tutoring assistance. In the survey, it stated that the number of students using and help by the videos for these purposes was statistically significant in all cases. It concluded that video

lectures are substantially appealing to many students and perceived as effective for learning.

### FINDINGS

Based on the results of the study, the following conclusions hereby presented:

1. The level of personalized instructional videos in terms of objectives, content, presentation and evaluation the respondents implied Very High.
2. The level of personalized instructional videos in students' performance in the least learned competencies in Algebra showed that there was improvement from low mastery to average mastery.
3. The difference between the students' performance in Mathematics 8 in the least learned competencies in Algebra there are significant
4. The effect of the personalized instructional videos in terms of objectives; content; presentation; and evaluation on the students' performance in Mathematics 8 in least learned competencies in Algebra revealed that there was no significant effect on the students' performance.

### CONCLUSIONS

Based on the results of the study, the following conclusions hereby presented:

The difference between the students' performance in mathematics 8 on the least learned competencies in algebra in terms of pre-test and post-test was Significant. Therefore, it indicate that there is significant difference between the students'





performance in mathematics 8 on the least learned competencies in terms of pre-test and post-test.

The effect of the personalized instructional videos in terms of objectives; content; presentation; and evaluation on the students' performance in mathematics 8 on least learned competencies in algebra in terms of post-test was Not Significant. Therefore, the null hypothesis indicating that there is a significant effect of the personalized instructional videos in the students' performance in Mathematics 8 on the least learned competencies in Algebra hereby rejected. Rejected of the null hypothesis shows that there were no significant effect of the personalized instructional videos in the students' performance in Mathematics 8 on the least learned competencies in Algebra.

### RECOMMENDATIONS

The following were the recommendations based on the above findings.

1. Teachers want to make their own instructional videos and improve the objectives, contents, presentations and evaluations may use the familiar medium in delivering the instruction and keep the students to practice their reading and comprehension skills, Higher Order Thinking Skills (HOTS) questions, and lastly show the mastery of content and its pedagogical approach even in digital form of teaching to attain the twin goals in Math were student be critical thinker and problem solver.
2. The students may use the instructional videos in appropriate time, schedule and activities that allotted in conducting the lesson proper, in conducive learning environment and the availability of gadgets and stable internet connection to be more effective in their studies and improve their performance in Math.
3. For administration, the teaching-learning mathematics in this time of pandemic or phenomenal situation may help the learners within blended learning associates with available printed materials. Also, allocate the period of the lesson proper in its suitable span of teaching and learning of students.
4. For future researcher, the personalized instructional videos the objectives, contents, presentations and evaluations may be localized and suitable for the learners and presentable to the way more facilitating, stimulating and exciting for the learners to be enthusiastic and eager to learn, and may use Higher Order Thinking Skills (HOTS)

questions to aim the twin goals in Math: Critical thinker and Problem Solver.

5. Similar studies on the use of the learning material as intervention not just only in Mathematics but also in other subject areas may be conducted and the use of other variables aside from those considered in the study.

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