

SWOT ANALYSIS OF LITERACY AND NUMERACY DRIVE: A CASE STUDY OF PUBLIC PRIMARY SCHOOLS IN DISTRICT CHINIOT

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Received: 05 September, 2023 Revised: 26 October, 2023 Accepted: 06 November, 2023 Published: 13 November, 2023

ABSTRACT

In the third-grade level, Literacy and Numeracy Drive (LND) was launched to manage Punjab's tablet-based testing. By this initiative, 300,000 students are examined each month to gauge their improvement in fundamental skills in Urdu, English, and Mathematics. The ability of kids to "Literacy and Numeracy" may be considerably improved. As intended learning objectives for this initiative, fundamental abilities in the fields of Urdu, English, and Arithmetic (Grades I and II) were addressed. This research sought to determine the effectiveness of "Literacy and Numeracy Dive" in Punjab in helping children in grade III achieve fundamental abilities including reading, writing, and informational comprehension. The LND (Literacy and Numeracy Drive) is a crucial component of basic education in Pakistani institutions. This situation demands high attention for LND. The aim of this study was to explore SWOT (strength, weakness, opportunity and threat) of LND in the primary schools of tehsil Lallian district Chiniot. For this purpose, a survey was conducted with primary school teachers of tehsil Lallian. As per SIS (School Information System), there were a total of 180 primary schools in the tehsil Lallian with a total of 834 teachers. To conduct survey, out of 180 schools, Researcher only selected 30 female primary schools with a total of 180 teachers, which considered as my target population. Sample size of 123 teachers had been drawn by using www.surveysystem.com with a confidence interval of 5% and a confidence level 95%. These 123 teachers were surveyed across 30 primary schools through a simple random sampling technique. The data had been collected through a questionnaire which will be design by keeping in view of the objectives of this study. Collected data was analyzed by using Statistical Package for Social Sciences (SSPS)

INTRODUCTION

Quality education is closely correlated with literacy and numeracy abilities. These abilities must be acquired early on in one's scholastic journey. A thorough evaluation of literacy and numeracy levels reveals the state of a high standard of education. In Pakistani schools, there is a dire need to study the impacts of LND on the performance of students. This study will reveal how the students are being taught English and Mathematics by their teachers. It will also influence the students' performance by understanding it. LND is necessary for spreading new information, knowledge, and ideas in Pakistan. Many social, economic, and cultural ideals and

understandings have influenced how literacy and numeracy are defined throughout time (Kahan *et al.*, 2012). Children's initial ages (from birth to 8 years) are acknowledged as a dynamic phase in their physical, verbal, rational, and expressive development. Early childhood education (ECE) delivers the basis for expanding life-long abilities and successive knowledge (Yousafzai, 2019).

In Pakistan, there are two stages in elementary level education, one is primary, and the other is elementary. On behalf of these stages' teachers' designations are categorized into PST and Elementary School Teacher. At the primary level,

different evaluation systems are found, such as the Punjab Examination Commission (PEC), Mentoring by Assistant Education Officers (AEO), and Monitoring by Assistant Monitoring and Evaluation Assistants (Khattak, 2012). Each month, MEA visits are altered, preventing MEA from developing personal relationships with school staff in any particular field (Kashif *et al.*, 2019).

OBJECTIVES

To identify the demographic characteristics of respondents.

To find out perceived strengths of LND on the performance of teachers.

To identify the weaknesses of LND on the performance of teachers.

To find out the opportunities of the LND on the performance of teachers.

To find out the perceived threats of the LND on the performance of teachers.

To suggest some recommendations for effective use of LND in classrooms.

REVIEW OF LITERATURE

Ishaq et al., (2019) suggested that the impact of literacy and numeracy deficiency (LND) on pupils' success. The MEA picks 6-7 pupils at random from each school that has been assigned by the authorities. Many questions in the areas of English, Mathematics, and Urdu were asked of the students. The findings indicated that LND did not demonstrate an impact since there are no resources in homes, institutions, content languages, or evaluations. Ishaq et al., (2020) expressed those students who participated in reading and numeracy activities performed better academically than their peers who did not. The research also discovered that preschool activities helped pupils' reading and arithmetic abilities. Ghani (2021) explained that adult readers may independently construct meanings from a range of texts. These definitions place a strong emphasis on literacy as a collaborative reading comprehension process. Haider et al., (2021) declared that LND evaluations are linked to a dynamic address bank, and each address is named using the appropriate (Approximately SLOs LND, 2019). observational data is also used to prepare aggregate positioning, which establishes the weighting for the many elements inside the monthly checking and then

sets up the PMIU for the performance rating of this local perceptual data. Ghani (2021) conducted research on teachers' opinions on LND's discussion of the Rawalpindi area. In-depth qualitative interviews were done to analysis attitudes about the public education system. Thematic analysis methods showed that students' reading and numeracy skills had improved, but that their creative writing and critical thinking skills had deteriorated. The only emphasis was on getting kids ready for examinations that would only benefit the classroom. Bilal et al., (2021) examined that the goal of the research was to assess the success of the Punjab province of Pakistan's Literacy and Numeracy Drive (LND) project. The study's applicability is due to the LND program's implementation, which aims to raise primary school education standards. A quantitative, descriptive survey method was used for this investigation. The LND programmed was shown to have considerably raised student ability levels and reading and math test scores at the school level. The students' performance has significantly improved since the LND programmed was implemented. Study of the district of Chiniot's student accomplishment under the LND programmed implementation. A survey with a five-point Likert scale was created. Analysis has shown that the LND programmed significantly improved students' abilities and their reading and numeracy results at school.

FINDINGS Research Question 1

Identify the demographic characteristics of respondents.

respondents. Distribution of the respondents according to their academic							
qualification							
Academic qualification Frequency Percent							
B.A/B.Sc. /B. S (H)	42	34.15					
M.A/M.Sc.	79	64.22					
M. Phil.	2	1.63					
Total	123	100					
Distribution of the respondents according to their professional							
qı	ıalification						
Professional qualification	Frequency	Percent					
B.Ed.	72	58.5					
M.Ed.	51	41.5					
Total	123	100.0					
Distribution of the respon	dents according	to their subject of					
teaching							
Subject of teaching	Frequency	Percent					
English	33	26.83					
Urdu	47	38.21					
Oluu							

Total 123 100.0						
Distribution of the respondents according to their Employment						
status						
Employment status Frequency Percent						
Contract	23	18.70				
Permanent	100	81.30				
Total	123	100.0				
Distribution of the respondents according to their Teaching						
Experience in years	_	_				
Teaching Experience	Frequency	Percent (%)				
	(f)					
Less than 5 years	11	8.94				
5 to 13 years	112	91.06				
Total	123	100.0				

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In above table, 34.15 % of the respondents were belonging to B.A/B.Sc. /B. S (H). 63.41 % of the respondents were belonging to M.A/M.Sc. 1.63 % of the respondents were belonging to M. Phil. 0.81 % of the respondents were belonging to Ph.D. while 58.5 % of the respondents were belonging to B.Ed. 41.5 % of the respondents were belonging to M.Ed. and 26.83% of the respondents were belonging to English. 38.21 % of the respondents were belonging to Urdu and 34.96 % of the respondents were belonging to Mathematics.18.7 % of the respondents was belonging to Contract. 81.3 % of the respondents were belonging to Permanent. According to responses, 8.94 % of the respondents were belonging to Less than 5 years and 91.06 % of the respondents were belonging to 5 to 13 years.

Research Question 2

How do perceived strengths of LND on the performance of teachers in tehsil Lalian, district Chiniot?

(Scale: 1=Low 2=Medium 3=High)

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Sr.	Strength of LND on the			Remarks
	performance of teachers	Mean	S.D	
1.	Improve skills of audio learners.	2.28	1.24	Medium
2.	It is more appealing as compared to traditional way of teaching.	2.24	1.13	Medium
3.	Motivate students to read and listen.	2.2	0.95	Medium
4.	It is source of knowledge for students.	2.19	1.16	Medium
5.	Students can be more active by writing exercises in LND contents.	2.16	1.31	Medium
6.	It provides opportunity of sharing information among students.	2.13	1.4	Medium
7.	Students can pay attention easily and follow the learning process.	2.12	1.15	Medium
8.	Learning becomes interesting.	2.11	0.92	Medium
9.	Practicing writing skills is a great way for learning English language.	2.11	2.19	Medium
10.	It helps the students to learn the language more feasibly.	2.07	1.95	Medium
11.	Learning gets easy as it is done in the native language.	2.06	1.96	Medium
12.	It makes the concept clearer to students.	2.02	1.96	Medium

13.	Makes student actively participate in the class activities.	2	1.92	Medium
14.	It delivers detail information.	1.98	1.62	Medium
15.	It develops sense of understanding by listening others.	1.89	1.40	Medium
16.	It helps students to practice what they've learned.	1.79	0.92	Medium

DISCUSSION

"Improve skills of audio learners" is rank ordered on 1st position and it shows that the responses fall between to Medium to high, but it is tending towards to Medium with mean value 2.28. At the 2nd ranked number respondents said about "It is more appealing as compared to traditional way of teaching" and it is tending to Medium with mean value 2.24. "Motivate students to read and listen" is rank ordered on 3rd position and it shows that the responses fall between to Medium to high, but it is tending towards to Medium with mean value 2.2.

Research Ouestion 3:

How do you perceived about the weaknesses of LND on the performance of teachers?

(Scale: 1=strongly Disagree 2=disagree 3=neutral 4=agree5=strongly agree)

Sr.	Weaknesses of LND on the			
	performance of teachers	Mean	S.D	Remarks
nal of Cont	Students' lacking motivation and negative attitude towards learning.	3.54	1.22	Agree
2.	It does not allow the instructor maximum control of learning process.	3.50	1.15	Agree
3.	It cannot be used with large audiences.	3.21	1.06	Neutral
4.	It cannot help students' process information rather than simply receive it.	3.2	0.81	Neutral
5.	It cannot present large amounts of information to the students.	3.17	0.85	Neutral
6.	LND cannot develop students' listening skills.	3.03	1.37	Neutral
7.	Engaging crowded students in learning is very difficult.	3.01	1.01	Neutral
8.	Teachers lacking communication skills for teaching LND.	2.99	0.38	Neutral
9.	It cannot encourage students to learn from one another and to articulate course content in own words.	2.91	0.92	Neutral
10.	The learning resources are not frequently available.	2.89	0.57	Neutral
11.	It cannot transmit conceptual knowledge to students.	2.84	0.8	Neutral
12.	Absenteeism of Learners while teaching LND.	2.8	0.62	Neutral
13.	Use of wrong methodologies for LND.	2.67	0.78	Neutral
14.	It cannot help students' to practice thinking about the course material.	2.62	0.97	Neutral

DISCUSSION

"Students' lacking motivation and negative attitude towards learning" is rank ordered on 1st position and it shows that the responses fall between Neutral to agree, but it is tending towards to agree with mean value 3.4. At the 2nd ranked number respondents said about "It does not allow the instructor maximum control of learning process" and it is tending to agree with mean value 3.33. "It cannot be used with large audiences" is rank ordered on 3rd position and it shows that the responses fall between Neutral to agree, but it is tending towards to agree with mean value 3.21.

Research Question 4

How do you perceived the opportunities of the LND on the performance of teachers?

(Scale: 1=strongly Disagree 2=disagree 3=neutral 4=agree5=strongly agree)

3-lieutiai 4-agree3-strollgry agree <u>1</u>				
Sr.	Opportunities of the LND on the performance of teachers	Mean	S.D	Remarks
1.	Management should conduct proper training for teachers for LND.	3.54	0.76	Agree
2.	Class size manageable for LND.	3.51	0.86	Agree
3.	Teachers' communication supportive for learning process.	3.22	0.95	Neutral
4.	Teachers utilize cooperative learning activity.	3.2	0.9	Neutral
5.	Teachers' behavior friendly and supportive for learning.	3.18	1.01	Neutral
6.	Teachers focus on student engagement in the class.	3.07	0.91	Neutral
7.	Learning resources (Tab/Booklet) available for teaching.	3.05	0.98	Neutral
8.	The students can be more active by utilizing LND activity.	2.88	0.95	Neutral
9.	Teachers use effective methods for teaching LND.	2.85	0.6	Neutral
10.	Teachers motivated and mentally prepared for teaching.	2.82	0.82	Neutral
11.	Teachers focus on student- centered teaching.	2.82	0.66	Neutral

DISCUSSION

"Management should conduct proper training for teachers for LND" is rank ordered on 1st position and it shows that the responses fall between Neutral to agree, but it is tending towards to agree with mean value 3.41. At the 2nd ranked number respondents said about "Class size manageable for LND and it is tending to agree with mean value 3.28. "Teachers' communication supportive for learning process" is rank ordered on 3rd position and it shows that the responses fall between Neutral to agree, but it is tending towards to agree with mean value 3.22.

Research Question 5

How do you perceived threats of the LND on the performance of teachers?

(Scale: 1=strongly Disagree 2=disagree

	3=neutral 4=agr	ee5=strongly agree)		
Sr.	Perceived threats of the LND on			
	the performance of teachers	Mean	S.D	Remarks
1.	It promotes the skills of reading	3.52	0.77	Agree
2.	and writing effectively.			
۷.	Learning by doing is best practice for LND, which cannot be used.	3.51	0.53	Agree
3.	LND is a less source of effecting			
J.	teaching.	3.15	0.79	Neutral
4.	There is a sense of achievement	3.1	1.22	Neutral
	among students.	3.1	1.22	Neutrai
5.	Promotes activity learning.	3.07	0.86	Neutral
6.	Students cannot learn effectively	3.07	0.88	Neutral
	by using LND.	3.07	0.00	ricultur
7.	Use of LND to memorize lesson is	3.02	0.69	Neutral
8.	a difficult task for teachers. Decreases the cooperation ability			
0.	of students.	3.01	0.64	Neutral
9.	Increase stress in teachers.	2.88	0.63	Neutral
10.	Increase the failure rate of	2.83	0.69	Neutral
	students in LND class.			
11.	It reduces the confidence level of	2.82	0.63	Neutral
	students.			
12.	It helps in constructing proper	2.72	1.19	Neutral
13.	sentence structure. Encourages constructive learning.	2.72	1.29	Neutral
	Make them disturbed.			Neutral
14.		2.71	0.75	Neutral
15.	Students make sense of the word while reading aloud.	2.69	0.89	Neutral
16.	Decrease the professional	2.69	0.93	Neutral
	problem.	2.09	0.55	11000101
17.	Deteriorate the communicative	2.63	0.89	Neutral
ursal of Contr	skill.			
18.	Reduce the speaking skill of	2.62	0.74	Neutral
10	students.	2.55	0.72	37 . 1
19.	Increases student's interest.	2.57	0.73	Neutral
20.	LND requires IT skill for teaching.	2.55	0.97	Neutral
21.	It promotes student achievement	2.53	0.9	Neutral
	through the authenticity of the learning.			
22.	The learning and the results of the	2.49	1.06	Disagree
	learning are directed to audiences.		1.00	2.005.00
23.	It helps to understand practical	2.38	1.18	Disagree
	aspects of LND.			
24.	Low self-esteem in students.	2.31	1.09	Disagree

DISCUSSION

"It promotes the skills of reading and writing effectively." is rank ordered on 1st position and it shows that the responses fall between Neutral to agree, but it is tending towards to agree with mean value 3.2. At the 2nd ranked number respondents said about "Learning by doing is best practice for LND, which cannot be used." and it is tending to agree with mean value 3.18. "LND is a less source of effecting teaching" is rank ordered on 3rd position and it shows that the responses fall between Neutral to agree, but it is tending towards to agree with mean value 3.15.

Research Question 6

compile suggestions on the basis of research and findings for future studies.

(Scale: 1=strongly Disagree 2=disagree

3=neutral 4=agree5=strongly agree)

C				
Sr.	Suggestion to improve teaching for LND	Mean	S.D	Remarks
1.	Students should create curiosity for learning LND.	3.56	0.53	Agree
2.	Teachers should use Audio visual aids for clear elaborate to LND.	3.51	1.17	Agree
3.	Teachers should strive to create an environment for organizing effective classroom for the students.	3.50	0.74	Agree
4.	Students should pay attention to the maximum learning.	3.03	0.67	Neutral
5.	Teachers should give equal chance to all students.	3.02	0.2	Neutral
6.	Provide proper materials according to LND requirement	2.89	0.57	Neutral
7.	Students should effectively solve LND.	2.85	0.63	Neutral
8.	Proper training for LND is compulsory.	2.85	0.48	Neutral
9.	For providing right instruction, teachers should have to control the behavior of the students in LND class.	2.85	1.11	Neutral
10.	Students should focus on skepticism.	2.76	0.62	Neutral
11.	Students should develop teaching strategy for LND.	2.66	1.05	Neutral
12.	School infrastructure should supportive for LND learning	2.6	0.72	Neutral
13.	Students should pay particular attention to LND.	2.58	0.83	Neutral
14.	Students should read the syllabus firstly and clearly.	2.44	0.98	Disagree

DISCUSSION

"Students should create curiosity for learning LND" is rank ordered on 1st position and it shows that the responses fall between Neutral to agree, but it is tending towards to agree with mean value 3.16. At the 2nd ranked number respondents said about "Teachers should use Audio visual aids for clear elaborate to LND" and it is tending to agree with mean value 3.1.

"Teachers should strive to create an environment for organizing effective classroom for the students" is rank ordered on 3rd position and it shows that the responses fall between Neutral to agree, but it is tending towards to agree with mean value 3.05.

CONCLUSION

The SWOT analysis of a literacy and numeracy drive in primary schools provides a comprehensive understanding of the initiative's potential and challenges. It underscores the importance of addressing resource constraints, accommodating diverse student abilities, and managing time effectively within the existing curriculum. By leveraging strengths such as enhanced educational

outcomes, early intervention, and collaborative teacher training, the drive can create a strong foundation for student success. Moreover, the analysis identifies opportunities for technology integration, community involvement, and datadriven instruction, which can further enhance the drive's effectiveness and impact. Engaging parents, local organizations, and the community in the initiative can generate additional support and resources, while technology can offer engaging and personalized learning experiences. Data-driven instruction can enable targeted interventions and tailor teaching methods to meet individual student needs. However, the analysis also acknowledges potential threats, including resistance to change, lack of sustained support, and the pressure of standardized testing. Overcoming these challenges requires stakeholder buy-in, ongoing support from education authorities, and a balanced approach that prioritizes holistic skill development. In conclusion, the SWOT analysis highlights the importance of a well-planned and carefully implemented literacy and numeracy drive in primary schools. By capitalizing on strengths, leveraging opportunities, addressing weaknesses, and mitigating threats, educators and policymakers can design and execute initiatives that make a significant impact on improving literacy and numeracy skills among primary school students. Ultimately, a strong foundation in these fundamental skills will empower students to excel academically and pave the way for their future success.

It is also stated that quality enhancement literacy and numeracy drive program at primary level in district Chiniot. It is demonstrated by many researches that a solid foundation in literacy and mathematics is necessary for primary school children, Pakistan is a developing country and the importance to make its education system effective and efficient becomes more prominent for the overall development of the country. The research focused on a selected group of teachers who formed the sample, in order to provide data related to their experiences in the program which was initiated at Punjab level in 2015. Many important insights were revealed from the data which was acquired from respondents through questionnaire. Incorporating the concept of literacy and numeracy to quality education in the study to analyze the LND provisions helps understand the needs and requirements of school education in the

district. It was found that the education provided to the primary level students under LND program helps students to develop knowledge and skills unless to improve the quality of school education system. The students got benefit themselves completely from such LND and progress in to society as effective citizens. The teachers also improved their skills by LND program. After all The LND program made a promising effort to improve school education quality at primary level. There are some issues and problems on the part of teaching and management which cause hindrance in achieving the required level of output in literacy and numeracy through LND program. There is need of some extra efforts to make this program more effective in acquiring the international level quality in education sector

RECOMMENDATIONS

Allocate Sufficient Resources:

Address the resource constraints by allocating adequate funding and educational materials to support the literacy and numeracy drive. This includes providing teachers with necessary teaching resources, such as textbooks, workbooks, and manipulatives to enhance instruction.

Differentiate Instruction:

Recognize the diverse abilities and learning styles of students and implement differentiated instruction strategies. This can involve grouping students based on their skill levels, providing individualized support, and offering enrichment opportunities for advanced learners.

Integration of Technology:

Embrace educational technology tools and resources to supplement classroom instruction and engage students in interactive learning experiences. This could include educational apps, online platforms, and multimedia resources that reinforce literacy and numeracy skills.

Professional Development for Teachers:

Offer ongoing professional development opportunities for teachers to enhance their instructional strategies and knowledge of effective literacy and numeracy instruction. This can include workshops, training sessions, and collaboration with experts in the field.

Foster Parent and Community Involvement:

Actively engage parents, local organizations, and community members in the literacy and numeracy drive. Encourage parental involvement through workshops, informational sessions, and home-based activities that reinforce learning. Seek partnerships with community organizations to provide additional resources, mentoring programs, and volunteer support.

Continuous Assessment and Data Analysis:

Implement regular assessments to monitor student progress and identify areas that require intervention or additional support. Analyze the collected data to inform instructional decisions, track student growth, and adjust teaching strategies accordingly.

Long-term Support and Sustainability:

Seek sustained support from education authorities, policymakers, and the community to ensure the longevity and effectiveness of the drive. Advocate for the integration of literacy and numeracy initiatives within educational policies and frameworks.

Balance Curriculum Demands:

Work collaboratively with curriculum planners to strike a balance between the literacy and numeracy drive and other subjects within the curriculum. Ensure that sufficient time is allocated for focused instruction while integrating cross-curricular connections where applicable.

Promote Joyful Learning:

Foster a positive and joyful learning environment that nurtures students' love for reading, writing, and mathematics. Incorporate creative and interactive teaching methods, gamification, and hands-on activities to make learning enjoyable and engaging.

Continuous Monitoring and Evaluation:

Establish a system for ongoing monitoring and evaluation of the literacy and numeracy drive. Collect feedback from teachers, students, and parents to gauge effectiveness and make necessary adjustments for improvement.

REFERENCES

- Yousafzai, M.S. 2019. Childhood education in Pakistan. Paper presented at the International Conference on Future of Teaching and Education, Prague, Czech Republic.
- Bilal, M.Q., A.M. Qamar, H.A. Nadeem, W. Kanwal and N. Naseer. 2021. Students' Achievement under Literacy and Numeracy Drive (LND) Program: A Case study of Faisalabad District. Webology 31:221–298.
- Kahan, D.M., E. Peters, M. Wittlin, P. Slovic, L.L.
 Ouellette, D. Braman and G. Mandel. 2012.
 The polarizing impact of science literacy and numeracy on perceived climate change risks.
 Nat. Clim. Chang. 2:732–735.
- Khattak, S. G. 2012. Assessment in schools in Pakistan (2nd ed). London: Middlesex University School of Arts and Education.
- Ishaq, K., N. Azan, F. Rosdi, A. Abid and Q. Ali. 2020. Usefulness of mobile assisted language learning in primary education. Int. J. Adv. Comput. Sci. Appl. 11:383–395.
- Ishaq, K., N.A.M. Zin, F. Rosdi, A. Abid and U. Farooq. 2019. Effectiveness of Literacy & Numeracy Drive (LND): A Students' Perspective. 2019 International Conference on Innovative Computing (ICIC). IEEE. 2:11–17.
- Ghani, M.A. 2021. The impact of literacy and numeracy drive on writing skills of primary grade students' of Punjab, Pakistan. J. Educ. Res. 4:32–68.
- Haider, S.Z., U. Munawar and M.S. ur Rehman. 2021. Investigating the ground realities of literacy and numeracy drive assessment system in government sector schools. 31:331–238.
- Wains, S. I., & Mahmood, W. (2008, October). Integrating m-learning with e-learning. In *Proceedings of the 9th ACM SIGITE Conference on Information Technology Education* (pp. 31-38).
- WHO. (2020). Coronavirus disease (COVID-19) pandemic. World Health Organization. https://www.who.int/emergencies/ diseases/novel-coronavirus-2019

- Zhang, W., Wang, Y., Yang, L., & Wang, C. (2020).

 Suspending classes without stopping learning: China's education emergency management policy in the COVID-19 outbreak: Multidisciplinary digital publishing institute.
 - Zhao, J., Awais-E-Yazdan, M., Mushtaque, I., & Deng, L. (2022). The Impact of Technology Adaptation on Academic Engagement: A Moderating Role of Perceived Argumentation Strength and School Support. *Frontiers in Psychology*, 13. https://doi.org/10.3389/fpsyg.2022.962081