

Journal of Law and Economics

(An open access peer reviewed Journal)



SIR PUBLISHERS
www.sirpublishers.com

ARTICLES:

| | |
|---|----|
| COPYRIGHT@IJMPR EFFECT OF INTRAVENOUS MIDAZOLAM AS ANXIOLYTIC IN PATIENTS UNDERGOING CATARACT SURGERY UNDER PERIBULBAR BLOCK | 3 |
| S. Sunand, Caroline Liz Nebu, B M Mamata, Praveen S | |
| THE ROLE OF PHYSICAL THERAPY IN THE MANAGEMENT OF LOW-BACK PAIN: CURRENT EVIDENCE AND BEST PRACTICES | 7 |
| Asghar Abbas | |
| ECONOMICS OF LAND IN DUMKA DISTRICT OF JHARKHAND INDIA | 10 |
| Nitesh Raj | |
| BIOTECHNOLOGICAL TECHNIQUES TO ENGINEER DISEASE FREE PLANTS | 20 |
| Shivani Vohra, Pracheta Salunkhe, Moksh Mahajan, Sagar Dhama, Pradeep B | |
| COPYRIGHT@IJMPR IMPACT OF SOME PERSONAL VARIABLES ON SELECTIVE COMPONENTS OF E-LEARNING & FACE TO FACE LEARNING STRATEGIES FOR NURSING STUDENTS | 25 |
| Rumi Sen, Dr. Ratna Chhaya Singh | |
| PENGELOLAAN LABORATORIUM KOMPUTER DALAM MENDUKUNG PROSES PEMBELAJARAN DI MADRASAH TSANAWIYAH (MTS) NIHAYATUL AMAL PURWASARI KARAWANG | 30 |
| Muhamad Aditya Khafid , Ilham Fahmi | |

**COPYRIGHT@IJMPR EFFECT OF INTRAVENOUS MIDAZOLAM AS ANXIOLYTIC IN PATIENTS
UNDERGOING CATARACT SURGERY UNDER PERIBULBAR BLOCK**

Dr S. Sunand*¹, Dr Caroline Liz Nebu¹, Dr B M Mamata¹, Dr Praveen S²

¹ Post Graduate, Department of Anaesthesiology, Shimoga Institute of Medical Sciences Shivamogga

² Assistant Professor, Department of Anaesthesiology, Shimoga Institute of Medical Sciences
Shivamogga

ABSTRACT:

Introduction: Anxiety in patients undergoing cataract surgery may lead to increased discomfort and suboptimal surgical outcomes. This study aimed to evaluate the effectiveness of intravenous midazolam as an anxiolytic in patients undergoing cataract surgery under peribulbar block.

Methods: In this double-blind, randomized study, 52 patients were assigned to receive either intravenous midazolam (0.02 mg/kg) or saline as a control. Patient and surgeon satisfaction scores, as well as hemodynamic parameters, were assessed and compared between the two groups.

Results: Patients in the midazolam group showed significantly higher satisfaction scores (4.6 ± 0.5) than those in the saline group (3.5 ± 0.8) ($p < 0.05$). Surgeon satisfaction scores were also significantly higher in the midazolam group (4.8 ± 0.4) compared to the saline group (3.2 ± 0.6) ($p < 0.05$). Hemodynamic parameters, including systolic and diastolic blood pressures, heart rate, and oxygen saturation, were more stable in the midazolam group than in the saline group at various time points throughout the surgery ($p < 0.05$).

Conclusion: Intravenous midazolam administration as an anxiolytic in patients undergoing cataract surgery under peribulbar block led to increased patient and surgeon satisfaction and a more stable hemodynamic profile. These findings support the use of midazolam as an effective and safe adjunct to anesthesia in cataract surgery.

KEY WORDS:

Cataract surgery, midazolam, anxiolytic, peribulbar block, patient satisfaction, surgeon satisfaction, hemodynamic stability

INTRODUCTION

Cataract surgery is one of the most commonly performed ophthalmic procedures worldwide, with over 20 million cataract surgeries being carried out each year [1]. It involves the removal of the clouded natural lens and its replacement with an artificial intraocular lens to improve visual acuity [2]. The success of cataract surgery is contingent on the patient's cooperation, as the procedure is often performed under local anesthesia [3]. Peribulbar block is a widely used anesthetic technique for cataract surgery that provides sufficient anesthesia and akinesia while minimizing the risk of complications associated with other techniques, such as retrobulbar block [4].

Anxiety is a common preoperative concern for patients undergoing cataract surgery, as it can lead to increased discomfort and adverse effects on surgical outcomes [5]. To ensure the comfort of patients and facilitate the surgical process, anxiolytics are often administered as a premedication. Intravenous midazolam, a short-acting benzodiazepine, is a widely accepted anxiolytic used to provide sedation, anxiolysis, and amnesia in various medical settings, including preoperative care [6]. Midazolam has shown efficacy in alleviating anxiety and enhancing patient satisfaction in several surgical procedures [7].

Despite the well-documented benefits of midazolam as an anxiolytic, there is limited evidence on the specific impact of intravenous midazolam on patients undergoing cataract surgery under peribulbar block. Several studies have examined the effects of midazolam in ophthalmic surgeries, but the findings have been inconsistent [8, 9]. It is essential to understand the efficacy and safety of intravenous midazolam in this population to optimize perioperative care and improve patient outcomes.

In this preoperative evaluation, we aim to assess the existing literature on the effect of intravenous midazolam as an anxiolytic in patients undergoing cataract surgery under peribulbar block. We will explore the impact of midazolam on patient anxiety, satisfaction, intraoperative cooperation, and postoperative recovery. Additionally, we will consider the safety profile of intravenous midazolam, including its potential side effects, to ensure that its administration is appropriate and beneficial for this patient population.

Objectives of the study

Primary objective: To compare the effect of midazolam and placebo on the patient's anxiety level

Secondary objective: To evaluate the patient and surgeon satisfaction post cataract surgery and the occurrence of any adverse events in the postoperative period before discharge.

MATERIALS AND METHODS

Sample size: A total of 52 participants were included in this study, divided into two groups with 26 participants in each group. The sample size was calculated based on previous study [10].

Study design: This was a randomized double-blind study.

Duration: The study was conducted over a period of two months.

Methodology: Preoperative evaluation of the patients was done a day before surgery. After explaining the procedure clearly in their language, written and informed consent was obtained from each patient enrolled in the study. Patients were advised to fast overnight and were premedicated with tablet Ranitidine 150mg and Tablet Alprazolam 0.5 mg per oral on the night before the surgery.

All the patients were divided into two groups of 30 each, group-1 and group-2, based on randomization. Upon arrival in the operating room, a 20G intravenous line was secured on the non-dominant hand, and maintenance fluid ringer lactate was started. Standard ASA monitors were connected, and immediate preoperative vitals were recorded.

Group-1 patients were administered with inj. Midazolam 0.02mg/kg diluted in 10ml NS, and group-2 patients were administered with 10ml NS. All the patients were connected to an oxygen source of 5lit/min. An experienced ophthalmic surgeon administered the retrobulbar block with 2% lignocaine local anesthetic, and cataract surgery was started. All the patients were monitored throughout the surgical procedure for intraoperative anxiety levels. After completion of the procedure, all the patients were shifted to recovery and monitored for anxiety. Surgeons were questioned about the satisfaction scale on a score of 5, with 1 being very bad and 5 being excellent.

Hemodynamic monitoring:

- Blood pressure:
- Pulse rate:
- Respiratory rate:
- Temp:
- SPO2:

INCLUSION CRITERIA:

- Patients who are undergoing cataract surgery in Mc Gann hospital
- Patients in ASA PS I to ASA III categories undergoing cataract surgery,
- Patients in the age group of 40 to 75 years and
- Patients who are willing to give informed and written consent for the study were included in the study.

EXCLUSION CRITERIA

- patients in the age group beyond 75 years,
- patients with any heart disease, severe pulmonary disease, sleep apnea, poor cognitive ability and
- patients' refusal to the study
- patients with an anticipated difficult airway, burns contractures
- patients requiring post-operative ventilation

Investigations:

- complete blood count,
- random blood sugar levels,
- renal and liver function tests,

- ECG

Data Analysis

The data analysis plan consisted of first calculating descriptive statistics for relevant variables, including patient demographics, preoperative vitals, and anxiety levels. Subsequently, baseline characteristics of the two groups were compared using appropriate statistical tests to ensure no significant differences existed between them before administering the intervention.

RESULTS

The findings of this study reveal that there were no significant differences in demographic characteristics between the saline and midazolam treatment groups (Table 1). The mean age for the saline group was 62.3 ± 8.5 years, while for the midazolam group, it was 61.9 ± 7.6 years. The sex distribution was similar, with 46.15% males and 53.85% females in the saline group, and 50% males and 50% females in the midazolam group. The distribution of ASA status between the groups was also comparable, with 61.54% ASA I and 38.46% ASA II in the saline group and 57.69% ASA I and 42.31% ASA II in the midazolam group. P-values for age, sex, and ASA status comparisons were all greater than 0.05, indicating no significant difference.

THE ROLE OF PHYSICAL THERAPY IN THE MANAGEMENT OF LOW-BACK PAIN: CURRENT EVIDENCE AND BEST PRACTICES

Asghar Abbas

ABSTRACT:

This paper examines the role of physical therapy in the management of low-back pain (LBP) by reviewing current evidence and discussing best practices. It explores the various physical therapy interventions, including exercise therapy, manual therapy, education, and behavioral approaches, and their effectiveness in reducing pain, improving function, and promoting long-term recovery. The paper also highlights the importance of individualized treatment plans, multidisciplinary collaboration, and patient engagement in optimizing the outcomes of physical therapy interventions for LBP.

KEYWORDS:

low-back pain, physical therapy, exercise therapy, manual therapy, education, behavioral approaches, multidisciplinary collaboration, patient engagement

Introduction:

The introduction provides an overview of the prevalence and impact of LBP, emphasizing the need for effective management strategies. It highlights the central role of physical therapy in the comprehensive management of LBP and sets the stage for discussing evidence-based interventions and best practices.

Etiology and Pathophysiology of LBP:

The paper explores the etiology and pathophysiology of LBP, including musculoskeletal, neurological, and psychosocial factors.

It discusses the importance of a thorough assessment and accurate diagnosis to inform targeted physical therapy interventions.

The review may highlight the interplay between physical, psychological, and social factors in the development and persistence of LBP.

Exercise Therapy:

The paper discusses the role of exercise therapy in the management of LBP, including strengthening, stretching, and cardiovascular exercises.

It explores the principles of exercise prescription, dosage, and progression for individuals with LBP.

The review may address the effectiveness of different exercise modalities, such as core stabilization exercises, Pilates, yoga, and aerobic exercises, in reducing pain and improving functional outcomes.

Manual Therapy:

The paper examines the use of manual therapy techniques, such as joint mobilization, manipulation, and soft tissue mobilization, in the treatment of LBP.

It discusses the underlying mechanisms of action and indications for manual therapy interventions.

The review may explore the evidence supporting the effectiveness of manual therapy in reducing pain, improving spinal mobility, and enhancing patient-reported outcomes in individuals with LBP.

Education and Self-Management:

The paper emphasizes the importance of patient education and self-management strategies in empowering individuals with LBP to actively participate in their recovery. It discusses the provision of evidence-based information about LBP, its natural course, and strategies for pain management, activity modification, and ergonomic principles. The review may address the effectiveness of educational interventions, including multimedia resources, group sessions, and shared decision-making approaches, in improving self-efficacy and promoting self-care behaviors.

Behavioral Approaches:

The paper explores the role of behavioral approaches, such as cognitive-behavioral therapy and mindfulness-based interventions, in the management of LBP.

It discusses the integration of psychological strategies, including pain coping skills, relaxation techniques, and stress management, into physical therapy practice.

The review may highlight the potential benefits of multidisciplinary collaboration between physical therapists and mental health professionals in optimizing the outcomes of behavioral interventions.

Multidisciplinary Collaboration:

The paper emphasizes the importance of multidisciplinary collaboration in the management of LBP, including the involvement of physical therapists, physicians, psychologists, and other healthcare professionals.

It discusses the benefits of a team-based approach in tailoring treatment plans, addressing complex cases, and providing comprehensive care.

The review may explore strategies for effective communication, care coordination, and shared decision-making among healthcare providers to ensure patient-centered LBP management.

Patient Engagement and Adherence:

The paper highlights the crucial role of patient engagement and adherence in achieving optimal outcomes in physical therapy for LBP.

It discusses strategies to enhance patient motivation, active participation, and adherence to treatment plans.

The review may address the use of technology, goal-setting techniques, and patient education materials to promote engagement and long-term adherence to physical therapy interventions.

Outcome Measures and Assessment Tools:

The paper discusses the importance of using standardized outcome measures and assessment tools in evaluating the effectiveness of physical therapy interventions for LBP. It explores commonly used measures, such as the Oswestry Disability Index, Roland-Morris Disability Questionnaire, and Visual Analog Scale for pain, in capturing pain intensity, functional limitations, and patient-reported outcomes. The review may discuss the psychometric properties of these measures and their applicability in clinical practice and research settings.

Special Populations:

The paper addresses the unique considerations for specific populations, such as pregnant women, older adults, and athletes, in the management of LBP through physical therapy. It discusses the potential modifications to exercise programs, manual therapy techniques, and patient education strategies to accommodate the specific needs and physiological changes in these populations. The review may highlight the existing evidence and guidelines for physical therapy management of LBP in special populations.

Prevention and Maintenance Programs:

The paper explores the role of physical therapy in preventive interventions and maintenance programs for individuals at risk of recurrent or chronic LBP. It discusses strategies for promoting proper body mechanics, ergonomic principles, and lifestyle modifications to reduce the risk of LBP recurrence. The review may address the effectiveness of maintenance exercise programs and self-management strategies in sustaining long-term benefits and preventing future episodes of LBP.

ECONOMICS OF LAND IN DUMKA DISTRICT OF JHARKHAND INDIA

Dr. Nitesh Raj

Assistant Professor, University Department of Economics, Ranchi University, Ranchi.

ABSTRACT:

Economics of land is distinguished in nature because land has an important place for the individual and the community. The dispute arises only when the land is encroached illegally. The sentiments of individual with land give value to land. The emotional attachment with land becomes hurdle for the development. Companies do not care these sentiments. For them sentiments are good but for establishment of the industries land must be acquired by the companies. Value of land depends on its location, need and use. Dumka is a semi urban city of Jharkhand, India and here the value of land is directly correlated with the sentiments of people. Land is non-salable and many of the agitation has been taken place only for the possession of land. That is why the external investment is very low in Dumka. The paper tries to find out the answer of the question that how value is the product of specific social relations and examines how places are created, valued, commoditized, and co-opted in the development process. Timely resolution of land disputes is not only essential for socio-economic development but will also help to solve a number of law and order problems.

INTRODUCTION:

Companies consider the land as just a factor of production. The owner of the land receives rent on it. Land and its value are interdependent. The value of land is not only determined by price of the land but also to the sentiments attached with the land and its location in which it is situated. Dumka is a small town of Jharkhand with a blend of tribal culture and emotions. Here land is not just a factor of production but it has intricate value of sentiments for the tribal people. If it is taken out arbitrary this creates conflict and unrest among the people.

Land is always been a matter of dispute. Many of the war have been done only for land. In ancient times and even in modern time also if you have more land then you will be recognized richer. Possession of land is always being a matter of pride and strength. The value of land depends on various factors like price of the land, size of the land, location of the land and its social, religious, political and economic importance. This paper tries to find out the solution of the problem of commoditization of land in Dumka district of Jharkhand, India.

1. Research Methodology

In the Santhal Pargana region of Jharkhand State there are 06 districts. Dumka district is selected for the analysis and study purpose. Total population of Dumka district is 1,321,442. It is not feasible to consider all of them for the study. Therefore Dumka, Gopikandar, Jama, Jarmundi, Kathikund and Masaliyathe six blocks have been selected for primary data and also the documents of block and

panchayat offices, published data of Government of Jharkhand and Government of India have been explored for the detailed analysis of the different land dispute problems.

i. Samples selection

There are ten blocks places in Dumka district. The district is divided in urban and rural areas. For the present study six blocks have been selected randomly. The ST population of Dumka district is 5,71,077. Out of these 0.25 per cent sample respondents were selected on simple random selection technique. Total sample population for the study is 725 respondents from ST category from Dumka district. The detailed list of selection of samples provided as under:

Table - 1

| Location code number | Block | Area in Sq. Km. | Number of household | Total population |
|--|------------|-----------------|---------------------|------------------|
| (Including institutional and houseless population) | | | | |
| Person | Male | Female | | |
| 0179 | Dumka | 375.45 | 33,751 | 163,201 |
| | | | 82,585 | 80,616 |
| 0175 | Gopikandar | 220.67 | 9,272 | 42,063 |
| | | | 20,999 | 21,064 |
| 0180 | Jama | 391.46 | 28,187 | 137,963 |
| | | | 69,621 | 68,342 |
| 0173 | Jarmundi | 393.57 | 33,712 | 168,163 |
| | | | 85,341 | 82,822 |
| 0176 | Kathikund | 306.20 | 14,973 | 71,458 |
| | | | 35,598 | 35,860 |
| 0181 | Masalia | 459.97 | 26,837 | 124,554 |
| | | | 62,828 | 61,726 |

ii. Collection of Data

Both primary as well as secondary data, relevant to the study are collected. Primary data is collected through detailed and comprehensive questionnaires where as secondary data are collected through, Government bulletins, gazettes, District statistics survey report, Journals, Magazines, published books and web sites.

iii. Statistical Tools

The collected data is classified and tabulated using different statistics, tables, charts and graphs. Similarly for analysis interpretation and relationship amongst data values percentages, averages, etc. techniques are applied.

2. Objectives of the Study

1. To make the detailed study of the legal provisions as regards to the land possession in Dumka district.
2. To study the social and economical conditions with respect to land dispute.
3. To investigate the role of Govt. to settle down the land dispute and its economic consequences.
4. To study the severity of the problems related to land dispute and value of land for scheduled tribes in study area.

3. Hypothesis Formulated

The following hypotheses were formulated for study.

1. The people are satisfied from the legal provisions for the development of scheduled tribes.
2. The socio-economic condition for scheduled tribes has been improved after settlement of land dispute.

4. Review of Literature

According to Keshav (2015) land is an essential part of tribal life that reflects in their culture and religion. According to Mishra and Suhag (2017) Tenancy law has protected the inheritance right of tribal people. Chaudhury (1965) explains how in the Santhal pargana region a balance exist between the inheritance right of people and development. According to Singh and Kumar (2016) land is a part of tribal life and also it creates the revenue for Government. They also elaborate the causes of tribal agitation in Santhal Pargana region. Agarwal (1994) discusses about the gender and land rights in South Asia. Consulting Engineering Services (India) (1991) explains about post facto evaluation studies of completed irrigation projects with respect to Mayurakshi Irrigation Project and says that how it has affected the life of tribal people. While in final report for water Resources Department, Government of Bihar, New Delhi also explains about settlement operations in the district of Santhal Parganas. McPherson, H (1909) has done a very remarkable work in the final report on the survey and settlement operations in the District of Santhal Parganas between the period of 1898-1907. Again Prasad (1997) writes in Santal Parganas Tenancy Manual that rights of tribal must be protected. Rao (2003) gives an explanatory note on vision 2010: chasing mirages with respect to Tribal migrations.

5. Demographic Feature of Dumka District

Dumka is a small town of Jharkhand State. It has very rich tribal tradition and culture. People of Dumka district are very emotional with their land. They fought against the Zamindars, Englishmen and Government from almost 200 years. And in the year 1949 the Santhal Pargana Tenancy (SPT) Act was brought to protect their rights on land. Santhal Pargana comprises six districts in the north-eastern part of Jharkhand: Dumka, Deoghar, Godda, Pakur, Sahibganj and Jamtara. Dumka is also the sub-capital of the State with beautiful natural scene and sceneries with 2925 Villages. The language of Dumka district is Hindi and Santhali. In 2006, the Indian government named Dumka one of the country's 250 most backward districts (out of a total of 640). It is one of the 21 districts in Jharkhand currently receiving funds from the Backward Regions Grant Fund Programme (BRGF) (Ministry of Panchayati Raj (September 8, 2009). "A Note on the Backward Regions Grant Fund Programme" (PDF). National Institute of Rural Development. Archived from the original (PDF) on April 5, 2012. Retrieved September 27, 2011).

Table- 2

| Description | 2001 | 2011 |
|-------------|-----------|-----------|
| Population | 1,106,521 | 1,321,442 |
| Male | 668,514 | 563,850 |
| Female | 652,928 | 542,671 |

| | | |
|------------------------------------|--------|--------|
| Population Growth | 19.42% | 16.37% |
| Area Sq. Km | 3,761 | 3,761 |
| Density/km ² | 351 | 251 |
| Proportion to Jharkhand Population | 4.01% | 4.11% |
| Sex Ratio (Per 1000) | 977 | 962 |
| Child Sex Ratio (0-6 Age) | 966 | 975 |
| Average Literacy | 61.02 | 47.94 |
| Male Literacy | 72.96 | 62.86 |
| Female Literacy | 48.82 | 32.35 |

Sources: <https://www.census2011.co.in/census/district/97-dumka.htm>

6. Religion wise distribution of population

Table - 3

| Description | Total | Percentage |
|-------------|-----------|------------|
| Hindu | 1,044,726 | 79.06 % |
| Muslims | 106,865 | 8.09 % |
| Christian | 86,404 | 6.54 % |
| Sikh | 234 | 0.02 % |
| Buddhist | 267 | 0.02 % |
| Jain | 162 | 0.01 % |
| Others | 78,622 | 5.95 % |
| Not Stated | 4,162 | 0.31 % |

Sources: <https://www.census2011.co.in/census/district/97-dumka.htm>

7. Rural and urban population distribution

Table - 4

| Description | Rural | Urban |
|------------------|-----------|--------|
| Population (%) | 93.18 % | 6.82 % |
| Total Population | 1,231,264 | 90,178 |
| Male Population | 620,928 | 47,586 |

Female Population 610,336 42,592

Sex Ratio 983 895

Sources: <https://www.census2011.co.in/census/district/97-dumka.htm>

8. Industrial Area

Table - 5

| Name of Industrial Area | Land acquired (in hectares) | Land developed (in hectares) | Prevailing Rate Per sq. ft. (in Rs) | No. of plots | No. of allotted plots | No. of vacant plots | No. of units in production |
|-------------------------|-----------------------------|------------------------------|-------------------------------------|--------------|-----------------------|---------------------|----------------------------|
| Industrial Area Dumka | 6.088 | 6.088 | 19.00 | 13 | 13 | 03 | 10 |

Sources: <https://en.wikipedia.org/wiki/Dumka>

9. Industry at Glance

Table - 6

| Sl. No. | Head | Unit | Particulars | No. |
|---------|---|------|-------------|-----|
| 1 | Registered Industrial Unit | No. | 2241 | |
| 2 | Total Industrial Unit | No. | 2241 | |
| 3 | Registered Medium & Large Unit | No. | NIL | |
| 4 | Estimated Avg. No. of daily Worker Employed in small scale industries | No. | 38 | |
| 5 | Employment in large and medium Industries | No. | NIL | |
| 6 | No of Industrial Area | No. | 1 | |

Sources: <https://en.wikipedia.org/wiki/Dumka>

10. Caste-wise Population - Dumka district

Schedule Caste (SC) constitutes 6% while Schedule Tribe (ST) were 43.2% of total population in Dumka district of Jharkhand.

Table - 8

| Total | Male | Female |
|----------------|---------|---------|
| Schedule Caste | 79,614 | 40,802 |
| Schedule Tribe | 571,077 | 282,125 |
| | | 288,952 |

Sources: <https://www.censusindia.co.in/district/dumka-district-jharkhand-362>

11. Scheduled Caste and Scheduled Tribes:-

The list of SCs and STs applicable in the State/UT is given hereunder:-

1. Scheduled Castes: 1. Bantar 2. Bauri 3. Bhogta 4. Bhuiya 5. Chamar, Mochi 6. Chaupal 7. Dabgar 8. Dhobi 9. Dom, Dhanger 10. Dusadh, Dhari, Dharhi 11. Ghasi 12. Halalkhor 13. Hari, Mehtar, Bhangi 14. Kanjar 15. Kurariyar 16. Lalbegi 17. Musahar 18. Nat 19. Pan, Swasi 20. Pasi 21. Rajwar 22. Turi.

2. Scheduled Tribes : 1. Asur, Agaria 2. Baiga 3. Banjara 4. Bathudi 5. Bedia 6. Binjhia 7. Birhor 8. Birjia 9. Chero 10. ChikBaraik 11. Gond 12. Gorait 13. Ho 14. Karmali 16 15. Kharia 16. Kharwar 17. Khond 18. Kisan, Nagesia 19. Kora, Mudi-Kora 20. Korwa 21. Lohra 22. Mahli 23. Mal Paharia, KumarbhagPaharia 24. Munda, Patar 25. Oraon, Dhangar (Oraon) 26. Parhaiya 27. Santal 28. SauriaPaharia 29. Savar 30. Bhumij 31. Kawar 32. Kol.(<https://cdn.s3waas.gov.in/s363538fe6ef330c13a05a3ed7e599d5f7/uploads/2018/04/2018042385.pdf>)

12. Santhal

Santhal lived their lives in harmony with nature and practiced shifting agriculture and hunting. They lived in the hilly regions of Birbhum, Barabhum, Manbhum, Palamau and Chhotanagpur. For the very first time Santhal life was disturbed by the Zamindari system established during English rule. The local landlords snatched the Santhal lands and exploited them. Santhal become landless bonded labourers in their own village. The Permanent Settlement Act of 1793 created a new class of zamindars. In this period lands were seized because of non-payment of the rent. The Santhals with no option had to serve these landlords, who would snatch a substantial chunk of their agricultural areas, leaving them with nothing in the hand. To withstand themselves, the community borrowed from money lenders, who would give at overpriced rates to an already susceptible and needy group. The tribals engaged in commercial activity by the barter system. When currency was introduced because of the colonial intervention, they began to rely on the moneylenders. These moneylenders exploited them and reduced them to abject poverty. They were forced into labour and for years, cultivated land to meet the demands of the subjugators. Many had to work in railway constructions or indigo plantations that the British started.

They were weighed down by heavy debts which kept mounting amidst the poverty and the humiliation of being landless in what was traditionally their turf. On 30th June 1855, two years before the Great Revolt of 1857, two Santhal brothers Sidhu and Kanhu Murmu organised 10,000 Santhals and proclaimed a rebellion against the British. The tribals took an oath to drive away from the British from their homeland. The Murmu brothers' brothers Chand and Bhairav and sisters Phulo and Jhano also played an active part in the rebellion. This history of economic exploitation was the reason why the SPT Act has come.

The British codified Santhal customs like the rights of 'Gharjamai' (groom living with the bride's family when the bride's family does not have a male heir); rights and duties of the village headmen; community rights over grazing land, trees, wasteland, and river bodies/channels; and rights of the tenant against alienation; and occupancy rights. The then Deputy Commissioner of Santhal Parganas R. Prasad passed a standing order delineating duties of the SDO in all of Santhal Parganas. Through this order, cases under sections 20 and 42 of the Act were delegated to all SDOs of the district (later the division). The Supreme Court of India defined adverse possession in Amrendra Pratap Singh vs. Tej Bahadur Prajapati & others as follows: "A person, though having no right to enter into possession of

the property of someone else, does so and continues in possession setting up title in himself and adversely to the title of the owner, commences prescribing title into himself and such prescription having continued for a period of 12 years, he acquires title not on his own but on account of the default or inaction on part of the real owner, which stretched over a period of 12 years results into extinguishing of the latter's title.”

13. Land dispute

The land revenue administration and problem of land dispute was very peculiar in Dumka district. It is the matter of rightful ownership of land. Land disputes mainly arise out of differing perceptions of possession and rights over a pocket. For accurate solution of any land dispute, up-to-date, and accessible land records are essential. Till 1980s, Santhal Parganas was a single district with Dumka as the head quarter. Under normal circumstances, bona fide land disputes are settled by civil courts. Some limited questions relating to possession for immediate avoidance of nuisance can be raised with the SDO under section 145 of the Code of Criminal Procedure (Cr PC).

There are also some systemic problems complicated the resolution of land disputes in the region. (1)there is poor storing of land records with the actual position on the ground. The Santhal Parganas' rent settlement operations were last published in 1932. The Bihar Tenants' Holdings (Maintenance of Records) Act, 1973 envisages the maintenance of a continuous Khatiyan (record of rights and duties of tenants) and a Tenants' Ledger Register; the purpose of these two records is to capture changes in land holdings that take place on ground. Since landholdings were non-transferable unless via inheritance in Dumka district, most residents did not feel the need to register changes in the ownership/possession of land. Consequently, almost nine decades after the survey and settlement of Santhal Parganas in 1932, there is no authentic record of who is currently in possession of the land. In case of land disputes, the standard procedure is to look up the record of rights of 1932 and deduce through the genealogy of the original tenant who the rightful possessor is today. It is a big challenge because of the insufficiency of documentary evidence on succession.(2)forces of demand and supply have led to the creation of an illegal market for land transfers and these cannot be legitimately recorded. In many cases, the promise of transaction is kept for one generation or two but successors thereafter start claiming their right over transferred land.(3)submitting the forged documents becomes a problem because government records are not updated enough. Revenue courts cannot question the validity of a deed and this creates a huge roadblock in deciding cases since both parties produce seemingly legitimate deeds for the same piece of land in areas where transfers are allowed.(4)there are problems with the process of data generation. Despite extensive digitization, land records still mirror only a tiny proportion of the actual landholdings because paper of land ownership or possession is just not available.

The land records depends on first the record of rights, and second on village maps. It is challenging job because of the change in nature of land use and basis of extant conditions of rent rolls. To reduce confusion in public mind and making coordination and monitoring simpler at the level of the state revenue department it is essential to coordination between conventional authority and the court with well-maintained land records with regular updating.

14. Land Reform:

Dumka district has a problem of distribution of surplus land, both “bhoodan” (land-gifts, collected under the Land Ceiling Act) and those classified as government wastelands (“gairmazaruakhas”, now “anabad”), to those who do not have land. If we review the land distribution in Dumka then we find that land distribution is absent in the largely tribal areas. It is important to give preference to landless SCs and STs in distribution programmes. Government initiative in terms of redistribution does not seem to have touched women. There is a widespread problem of land alienation in villages. Lacking resources time and money and difficulties of dealing with court procedures, the poor tribal who have lost their land are unable to make their claims successfully.

The Santhal Pargana Tenancy Act, 1949, forms the basis for governing land relations and transactions in Dumka. But due to ignorance the tribal are being deprived from their land. The new industrial policy and vision 2010 has encouraged many of the industries to establish their plant in Dumka. But the policy makers must care that more than 80 per cent of the population of the Dumka is tribal and are dependent on land and agriculture as their primary source of livelihood. Development policies therefore need to analysis the land and natural resource-based sectors of development that have the potential to benefit the majority.

15. Value of land

Value of land is defined as the emotional attachment of a person with the land. In economics it is the market price of land which is created, valued, commoditized, and co-opted in the development process. Land is abused because it is regarded as a commodity belonging to people. But when it is taken as a community to which people belong, then love and respect arises for the land. People are fighting with each other because they are greedy. People need land because the expansion of tourism sector and hike in price of real estate for developmental purpose. So the location of land becomes important. But this generates high levels of socio-economic inequality, displacement dispossessed by rising land values and costs of living. Similar patterns of rapid growth and displacement have occurred in other destinations throughout Ranchi, Dhanbad, Bokaro, Jamshedpur and Dumka. For years the Dumka has remained relatively undeveloped and sparsely populated. Today, real estate and tourism development pressures are slowly changing the face of this “remote” part of the Jharkhand. The rate of land in Dumka district was approximately Rs. 500 per decimal in the year 1970s while the rate of land increased by Rs. 3 to 5 Lakhs per decimal in the year 2020.

16. Rate of land in Dumka district

Table - 10

| Year | Price of land per decimal (in Rs.) | Kuttcha House | |
|--------|------------------------------------|---------------|----|
| (in %) | Pucca House | | |
| (in %) | | | |
| 1970 | 500 | 96 | 04 |
| 1980 | 2,000 | 70 | 30 |
| 1990 | 10,000 | 65 | 35 |

| | | | |
|------|----------|----|----|
| 2000 | 30,000 | 55 | 45 |
| 2010 | 2,00,000 | 40 | 60 |
| 2020 | 5,00,000 | 30 | 70 |

Sources: Primary data

17. Economic Indicator of Dumka district

Table - 11

| | | | |
|-----------------------------------|------|----|--|
| Indicator | 1970 | | |
| (Out of 100%) | 2020 | | |
| (Out of 100%) | | | |
| Investment | 10 | 40 | |
| Land Dispute | 30 | 70 | |
| Income | 10 | 60 | |
| MPS (Marginal Propensity to save) | 10 | 25 | |
| Acceptance for economic change | 2 | 20 | |

Sources: Primary data

Land values in Dumka appear to be natural and intrinsic to the landscape itself like the exchange-values. And is the result of radically changing socio-cultural relationships set within global processes of land commoditization. Land values are produced within a given set of conditions.

18. Suggestions

Land values and its economics in Dumka district can be rectified by taking following steps:-

1. Sentiments of land owner must be considered effectively.
2. Land owner should be given a big part of profit for use of land.
3. Industrial development and pollution must be efficiently balanced.
4. The lease of the land must be for a long time.
5. Documents related to land must be updated and kept it digitally.
6. Land dispute should be settled efficiently.
7. The socio-cultural relationships of land must be maintained.
8. The Santhal Pargana Tenancy Act, 1949 must be reviewed according to present need.

19. Conclusion

The paper tries to find out the answer of the question that how value is the product of specific social relations and examines how places are created, valued, commoditized, and co-opted in the development process. The actual process of co-optation, however, is highly contingent on the development of infrastructure, particularly roads, which play a vital yet ambivalent role in shaping how different people not only access but also value the Dumka. We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect. This is one of the many reasons the Dumka is poised for excellent development growth and investment return in recent time. Today, small communities along the Dumka are increasingly recognized as valuable place. This is now develop to be a place of

investment, development, conservation and exploitation of resources. This change of heart was undoubtedly influenced by the Dumka's beauty, ecological diversity, and uniqueness. But this broad shift is also connected to wider social actions and changes that have taken place at various intersecting scales. The reconfiguration of the Dumka as a renewed place of value, worthy of effort and attention, has also resulted in a broad conceptual shift.

REFERENCES:

1. Government of Jharkhand (1911), Vibhagiya Pustak Bikri Avam Prakashan (The Santal Parganas Manual).
2. Keshav, A (2015), Land and Tenancy Law of Santal Parganas, Malhotra Book Agency.
3. Mishra, P and R Suhag (2017), 'Land Records and Titles in India', Ideas for India, 20 November.
4. Roy Chaudhury, PC (1965), Santal Parganas, Superintendent Secretariat Press, Bihar.
5. Singh, Sunil Kumar (2016), Compendium of Revenue Circulars, Malhotra Bros.
6. Agarwal, B (1994): A Field of One's Own: Gender and Land Rights in South Asia, Cambridge University Press, Cambridge.
7. Consulting Engineering Services (India) (1991): 'Post Facto Evaluation Studies of Completed Irrigation Projects, Bihar: Mayurakshi Irrigation Project',
8. Final Report for Water Resources Department, Government of Bihar, New Delhi. McPherson, H (1909): Final Report on the Survey and Settlement Operations in the District of Santhal Parganas, 1898-1907, Bengal Secretariat Book Depot, Calcutta.
9. Prasad, B M (1997): Santal Parganas Tenancy Manual, Malhotra Bros, Patna. Rao, N (2003): 'Vision 2010: Chasing Mirages', Economic and Political Weekly, 38, 18, pp 1755-58.
10. <https://rlarrdc.org.in/images/Displacement%20from%20Land.pdf>.

BIOTECHNOLOGICAL TECHNIQUES TO ENGINEER DISEASE FREE PLANTS

*Shivani Vohra, **Pracheta Salunkhe, ***Moksh Mahajan, ****Sagar Dhama, *****Pradeep B,

ABSTRACT:

Plants are prone to various infections and diseases caused by viruses and microbes which adversely affects plants productivity, yield and global food security. Since ages disease free plants were produced using conventional breeding methods, but these approaches are mainly labor extensive and expensive. Thus, various advance technologies have been developed which helps to fight against disease causing pathogens. Techniques like plant tissue culture, use of plantibodies and genetic engineering has helped to gain or to modulate the desired traits in crop varieties. Improvements in Tissue culture techniques like Micropropagation, Meristem Culture and Somaclonal Variation have led to the production of disease and virus free plants. Genetic engineering is also a promising technique as it involves modification and engineering of genes having essential role in providing plant immunity against pathogens. Agrobacterium mediated transformation is associated with plant defense mechanism to produce genetically modified plants. Also nowadays plantibodies is a transgenic approach of introducing antibody specific against a target on pathogen as a transgene in the plant and has helped in making plants pathogens' resistant endogenously. Subcellular expression of which will attack the specific antigen on invading pathogen. All these methods help to obtain disease free plants which will be safe for human consumptions and other applications.

KEYWORDS:

Agrobacterium, Disease, Pathogen, Plantibodies, Resistance, Transgenics

1. INTRODUCTION

The world's eighty per cent of population relies on plant derived components for their health. Plants are considered to be safe and are used to treat and prevent specific ailments and diseases in humans [1]. Most of the plants escaped the infection by activating its innate immunity components [2] while some sometimes the plants are exposed to a wide-range of pests and pathogens like bacteria, fungi, oomycetes, viruses, nematodes, and insects. The diseases caused by these organisms in plants represent an important and persistent threat to food supplies worldwide and can affect the plant health and yield and reducing its productivity These pathogens, are responsible for the major losses in crops that amounts to hundreds of billions of dollars every year, with an average of twenty six percent of worldwide crop production lost each year due to pre-harvest pests and pathogens [3].

Increased human populations, loss of agricultural land because of climate change, erosion and water scarcity requires the reduction of production losses those caused by pathogens [4]. Plant diseases can affect the crops despite the best efforts of skilled farmers who are supported by the plant breeders

and the global agrochemical industry. Thus, one of the great challenges for food security in the twenty first century is to improve yield by production of disease-resistant crops.

Since ages several traditional and conventional methods which includes chemical-based pesticides, insecticides, and various breeding practices to develop pathogen resistance. The modern agriculture food production heavily relies on chemical control of pathogens and, breeding resistant plant cultivars. Despite their effectiveness, the control of pathogens chemically is expensive, ineffective, cumbersome and have detrimental environmental consequences, building up in the soil and appearing in water leaching from fields creating risks to the wider environment. Conventional breeding approach has drawbacks as it is usually a lengthy and labor-intensive process for the growing and examining large populations of crops over multiple generations. lack of genetic variability which leads to its failure and has scarcity of resistant germ plasm in nature [5-9]. Thus, its necessary to save them from pathogens by providing strong immunity.

Nowadays one of the primary focus of crop improvement programs is to generate resistance in plants towards these biotic agents. The dependence of food production on chemical control has to be reduced and alternatives to classical and chemical crop protection methods are required for controlling pathogens in the field and development of long-lasting and broad-spectrum disease resistant crops. Thus, its necessary to increase our understanding of the plant immune system in order to develop transgenic crops with enhance resistance to microbial infections and increased yields [10,11] which can be done by altering the genetic composition of plants. Plant biotechnology has become a source of agricultural innovation providing new solutions to age old problems and has helped in the contribution of new plant biotechnological tools to advanced crop breeding [12]. Plant biotechnology will facilitate the farming of crops with multiple durable resistance to pests and diseases, particularly in the absence of pesticides. Hence, crops should be engineered to meet the demands and needs of consumers. Various methods to enhance plant immunity includes combination of novel molecular tools, screening technologies, development of plant transformation and regeneration technologies, and understanding the molecular mechanism of host pathogen interactions have provided alternative methods to control pathogens through genetic engineering of crop plants [13] (Table 1). Several biotechnological approaches and in vitro techniques are useful for the production of disease-free plants (Table 1), rapid multiplication of rare and endangered plant species and economically important crops which have been resistance to many pathogens, and also biosafe to the environment and consumers [14-16]. Some of these have been discussed in this paper.

2.Plant Tissue culture

One of the biotechnological tools such as Plant tissue culture techniques are used for application-based purposes which helps in plant breeding and crop improvement, conservation of germ plasm, plant genome transformation, and production of plant-derived metabolites of important commercial value which are of great importance in pharmaceutical industries. [14,15,31]. The tissue culture technology has been widely used for the propagation and improvement of important agricultural crops as well as endangered native species. It can be extensively applied to increase crop production

and providing plants needed to meet the ever-increasing world demand [32,33]. Plant tissue culture has important role and made significant contributions in agricultural development and productivity. They constitute an indispensable tool in modern agriculture [34]. It helps in the production and propagation of genetically homogeneous plants through micropropagation methodology [35]. Another technique like Meristem culture and somaclonal variation are also utilized for production of disease resistant plants.

Table 1: List of some of the biotechnological techniques used to generate disease free or disease tolerant plants

2.1 Micropropagation

At present micropropagation is the widest use of plant tissue culture technology in crops where sexual reproduction is problematic or impractical. Micropropagation is an invitro means of vegetative propagation of economical important plants which are difficult to propagate through conventional methods such as seeds and cuttings. Micropropagation has become a commercial method and provides marked advantages over conventional propagation practices by facilitating the production of large numbers of homogenous plants year-round, the generation of disease-free propagules and a substantial increase in multiplication rates [14]. Micropropagation is presently used as an advanced technique for the production of identical plants for agriculture and forestry [36]. Micropropagation can be explained in four stages. First stage is initiation of cultures, second stage is multiplication, third stage is shoot elongation and rooting and Fourth stage is transplantation and acclimatization. [37]. Nowadays the technique is used routinely to generate a large number of high-quality clonal agricultural plants, including ornamental and vegetable species, plantation crops, fruits and vegetable species. The main advantages of micropropagation are short time span to mass produce plants from a single plantlet which is of aseptic nature, faster growth rate due to nutrient media manipulation, it is approachable throughout the year, virus and microorganism free plantlets, plants can be genetically manipulated for the desirable traits. This technique is independent of seasonal variation because it is grown in controlled conditions and one can easily obtain disease free plantlet. [38]. Some of the plants where micropropagation technique has been applied are: *Stevia rebaudiana* Bert [39], *Commiphora wightii* [40], *Agave salmiana* [41], *Morus indica* [42], *Agathosma betulina* [43], *Punica granatum* 'Bhagwa' [44], *Rheum webbianum* [45], *Hippeastrum goianum* [46], *Ribes grossularia* [47], *Blumea lacera* (Burm. f.) DC [48].

2.2 Meristem Culture

A method in which apical meristem is used to produce disease free plants is meristem culture. Apical meristem is a dome of tissue located at the extreme tip of a shoot. The apical meristem along with the young leaf primordia constitutes the shoot apex. Anatomically apical meristem is divided into two parts. One is pro-meristems and other one is peripheral meristems. Peripheral meristem consists of protoderm, procambium and ground meristem. There is a lack of vascular tissue formation which is the main reason for disease free propagation. Apical meristems cells are genetically stable. When used as an explant source these plants have highest potential of generating plants which have similar genotypic and phenotypic composition. [49]. The dark-green "island" areas of the growing point

(meristem) are either free of virus or to contain virus only low concentrations. Meristem or shoot tip is been isolated from a stem by a V-shaped cut. The small portion of the apical meristem is cut off from the infected plant body as the apical meristem is virus free and placed in agar medium and a healthy virus free plant is obtained from the infected plant [50]. Meristem culture has made important contributions to the crop improvement program. Meristem culture has been applied to Dahlia, carnation and white potato by several researchers and has been succeeded in the elimination of virus in those plant (50). Meristem culture has been done in various plant species like: *Medicago truncatula* [51], Strawberry (*Fragaria x ananassa*) [52], *Allium tuncelianum* [53], *Solanum tuberosum*.L [54], *Gentiana Kurroo Royle* [55], *Manihot esculenta* [56], *Fragaria chiloensis* (L.) Duch [57], Black pepper [58], Commercial Fig cultivars 'Sabz' and 'Jaami-e-Kan' [59], *Hosta capitata* [60].

2.3 Somaclonal variation

In vitro regenerated plants can show some modifications (somaclonal variation) as a result of the mutagenic effect of the culture or the chimeric nature of the cultured tissue. Somaclonal variations (soma means vegetative and clone means identical copy) are genetic and epigenetic changes observed in plants which are regenerated from cultured somatic cells [37]. Somaclonal variations is a technique under plant tissue culture in which plant itself generate variations via genetic or epigenetic changes [5] which are very similar to the divergence caused by physical and chemical mutagens [61]. Variants having genetic changes are also termed as mutations as they are heritable and genetically stable [62] while epigenetic variants are restricted to somatic cells making them non heritable, temporary and reversible [63]. Heritable variants are the results of point mutations, methylation of DNA sequences, changes in chromosome number and structure, recombination and transposition in nuclear, chloroplast or mitochondrial genome [64, 65] leading to the stable changes, which can be sexually transmitted to the offspring's [66]. Thus, genetic variations based somaclonal variants are of greater importance for obtaining disease resistance crops. Thus, providing a tool in which natural tendency of plant is used for crop improvement. There are two broad methods in context of somaclonal variations for obtaining plants with desired traits [67]. The traditional and bulky method involves in field screening of large population of in vitro raised plants. While another technique is more specific and convenient in which callus is in-vitro raised on selection media which contains culture filtrate of pathogens or fungal toxins. In this case selection media containing phytopathotoxins, components from pathogen cell wall acts as the pressure agent [68] and result in the generation of disease resistant callus from which resistant plants are obtained. In these selection systems can either be stepwise/gradual/long term culture in which culture are exposed in step-wise manner to increasing levels of selecting agent [62, 69] or shock treatment/short term culture in which cultures are straight away subjected to a shock of high concentration of selection agent, only those which could tolerate that will survive [70]. Then after every passage of three to four weeks on stress media culture are monitored on the basis of various growth parameters. The cultures showing best performance are selected as putative resistant variety. After selection cultures are further screened for the stability of variation by sub culturing them on media devoid of pressure agent and then again

culturing on selection media. Those which survived are the disease resistant. There are various advantages of this technique which make

it this much popular in comparison to others. It is easy to perform, simple and relatively inexpensive, no knowledge of the gene responsible for trait is required as it is due to the random changes during in-vitro cultures, it can be performed for vegetatively propagating, species having long reproductive cycle or sterile species [66].

Somaclonal variation has been a valuable tool in plant breeding; wherein variation in tissue culture regenerated plants from somatic cells can be used to develop crops with desirable traits. Characteristics for which somaclonal mutants can be improved during in vitro culture includes resistance to disease, herbicides and tolerance to environmental or chemical stress, as well as for increased production of secondary metabolites. Selection is done by employing a stress-causing agent in tissue culture containing dividing cells [71]. Somaclonal variant based selection has been proved to be the efficient and successful method examples of those are tabulated in Table 2.

COPYRIGHT@IJMPR IMPACT OF SOME PERSONAL VARIABLES ON SELECTIVE COMPONENTS OF E-LEARNING & FACE TO FACE LEARNING STRATEGIES FOR NURSING STUDENTS

Rumi Sen¹, Dr. Ratna Chhaya Singh²

¹Research Scholar, Department of Nursing, Mansarovar Global University, Bhopal, and Associate Professor, Department of Nursing, Aliah University, Kolkata

²Dean Nursing, Mansarovar Global University, Bhopal

ABSTRACT:

In the current scenario when globally there is digital advancement, Nurse Educators are required to upgrade themselves with the use of technology, preparing e- modules, e-lessons and their evaluations, and the students' needs to have computer literacy and required supporting infrastructure to access the e-learning and administrators needs to make sure that adequate online resources are mobilized to meet the educational needs of their students. Hence it is a crucial area of research area.

This study aims to investigate the Impact of some personal variables such as parental educational, occupation and income variation on selective Components of E-learning & Face to Face learning strategies for Nursing students.

Convenient sampling method was used to select 300 nursing students studying in different nursing colleges of Kolkata. A 5 point likert scale questionnaire was used.

Result shows that there exist significant difference between the use of selective component of E-learning strategies i.e. P.P.T., You-Tube, Live class (Google meet, Zoom), Sharing of Text sheet of nursing students in relation to parental education, occupation and income variation as obtained "t" values are > tabular value at 0.05 levels 1.98 and at 0.01 level 2.63

There exist significant difference between the use of selective component of Face to Face learning strategies i.e. Lecture method, Interaction session, Note dictation & Demonstration of nursing students in relation to parental education, occupation and income variation as obtained "t" values are > tabular value at 0.05 levels 1.98 and at 0.01 level 2.63

It is concluded that parental education, occupation and income have significance relation with E-learning and Face to Face learning strategies for Nursing students.

KEY WORDS:

Personal Variables, Selective Component, e-Learning, Face-To-Face Learning, Nursing Students.

INTRODUCTION

As technology is rapidly-developing, there is fast change in the lifestyles of new generation. To combat with this transformation many teaching institution are offering more "flexible" learning environments. For over a decade there is rapid expansion in the provision of online or e-learning experiences particularly in the higher education sector. Therefore today e-learning is an important part of the student experience in most of the teaching institutes.

Due to the rise of e-learning students are encouraged to take on more responsibility for acquiring knowledge by their own whereas traditional method of teaching was teacher-centered model of teaching, where the teacher transmits knowledge to students, and student had very little input. Therefore E-learning provides greater opportunity for student -centered learning than traditional face to face learning. As student learns from their own interest and curiosities they not only tend gain in-depth knowledge and improve the quality of learning but also tend to have wider student participation and more cost-effectiveness of education.

Thus E-learning has become an important component in all teaching institutions all around the world. So to keep with the current trend, even nursing institution have started to adopt the digital world very swiftly. Traditional face-to-face instructions is gradually shifting into online instruction. Institutions and faculties are getting equipped for virtual class room sessions, and therefore parents are forced to provide the needed technical devices and internet services to the students to attend the online classes. Hence education system is striving to invest in the faculty development and equipping the institutions to impart the best learning process, irrespective of time of learning, geographical area, and other privileges. The main aim of this change is to transform the learners capabilities as per the global demands. Hence currently it is a subject of crucial issue for research.

The overall attitude of nursing students about the use of e-learning was negative. Moreover, the nursing students' responses about different dimension of obstacles of e-learning indicated that nursing students perceived the technical and management support, infrastructure and technology and instructors' characteristics as the most important obstacles of e-learning[1].

It is true that as individuals we all don't respond to one teaching method in the same way- some learn visually and others learn with repetition or writing. E-learning responds to those different needs with use of different types of material, whether that is audiovisual or interactive sessions, there is plethora of options to cater to the needs of each and every learner. In the coming days there will be full individual personalization of content and pedagogy enabled by cutting edge technology, multiple ways of using technology, facial expression or neutral signal response clubbed with hands on training too. In a world where shocking natural emergencies occur, we cannot afford to compromise on molding of younger generation. So education system must be or will be prepare to empower the humanity to withstand and survive in this world happily, effectively and productively. So as nurses and nurse educators let us ignite the nightingale's lamp with the modern technology, so that we can stay as relevant and needed professionals in the constantly changing society[2].

SIGNIFICANCE OF THE STUDY

In the current scenario when globally there is digital advancement, Nurse Educators are required to upgrade themselves with the use of technology, preparing e-modules, e-lessons and their evaluations,

and the students' needs to have computer literacy and required supporting infrastructure to access the e-learning and administrators needs to make sure that adequate online resources are mobilized to meet the educational needs of their students. Still there are challenges of online education and there is need to explore different ways to combat those obstacles and hence enhance the use of e-learning as an essential educational tool .

In this regard, it is very important to know students views regarding e-learning. Studies done previously have thrown its light on evaluating and identifying students' perceptions and attitudes towards e-learning during the COVID-19 pandemic. Almost all the studies related to nursing students found are from out of India. As per the investigators knowledge, this study is a new approach in India particularly in the eastern zone.

Present study was conducted to assess the Impact of some personal variables on certain components of E-learning & Face to Face learning strategies for Nursing students. The study is quite relevant in India because before the pandemic, for nursing students e-learning was never been practiced on such a large scale. Therefore it is expected that this study would provide fresh light into a field that has traditionally been dominated by face to face learning within real-life situation in class room, labs and wards and provided hands-on training to groom nursing students with knowledge and skills.

STATEMENT OF THE PROBLEM

In the context of present situation both E-learning & Face to Face learning played very important role considering the personal variable of the nursing student of Kolkata in the present context of parental educational qualification (literate/illiterate), employment of parents (service/non service) and income of family (below poverty line/above poverty line), hence the investigator stated her problem for study as mentioned below.

“Impact of some personal variables on selective Components of E-learning & Face to Face learning strategies for Nursing students”

OBJECTIVES OF THE STUDY

1. To find out use of E-learning and Face to Face learning strategies for Nursing students in relation to their parental educational.
2. To find out use of E-learning and Face to Face learning strategies for Nursing students in relation to their parental occupation .
3. To find out use of E-learning and Face to Face learning strategies for Nursing students in relation to their parental income.

HYPOTHESIS OF THE STUDY

Ho1 The scores of the E-learning and Face to Face strategy for Nursing students are not normally distributed in total and due to their intra variations/ intra variables wise.

Ho2 There does not exist any significant difference of the mean scores of E-learning strategy of Nursing students due to their parental educational variations.

Ho3 There does not exist any significant difference of the mean scores of E-learning strategy of Nursing students due to their parental occupation variations.

Ho4 There does not exist any significant difference of the mean scores of E-learning strategy of Nursing students due to their parental income variations.

Ho5 There does not exist any significant difference of the mean scores of Face to Face learning strategy of Nursing students due to their parental educational variations.

Ho6 There does not exist any significant difference of the mean scores of Face to Face learning strategy of Nursing students due to their parental occupation variations.

Ho7 There does not exist any significant difference of the mean scores of Face to Face learning strategy of Nursing students due to their parental income variations.

Operational Definition

Personal variables- It implies to Nursing students parental educational variation, occupational variation and income variation.

Selective component- It implies to P.P.T., You-Tube, Live class (Google meet, Zoom), Sharing of Text sheet of E-learning strategies and Lecture method, Interaction session, Note dictation & Demonstration of Face to Face learning strategies.

METHODOLOGY OF THE STUDY

The Design of the Study

The present research work is a mixed type of research work, where, Normative and correlational, survey type research design was used and it is a non experimental survey design adopted to accomplish the objectives of the study.

The Population and Sample of the Study

The study Population comprises of B.Sc. Nursing students, 300 students were taken by Non-probability convenience sampling technique from selected Nursing Institutes of Kolkata

The Tools Used

One Demographic structured questioner and two (five points likert scale) self made questioner's were prepared and used after validation by experts and reliability test .

THE RESULTS AND DISCUSSION

This is done in accordance with the objectives and hypotheses formulated.

PENGELOLAAN LABORATORIUM KOMPUTER DALAM MENDUKUNG PROSES PEMBELAJARAN DI MADRASAH TSANAWIYAH (MTS) NIHAYATUL AMAL PURWASARI KARAWANG

Muhamad Aditya Khafid¹, Ilham Fahmi²

^{1,2,3}Fakultas Agama Islam, Universitas Singaperbangsa Karawang

ABSTRACT:

This research refers to the management of computer laboratories in supporting the learning process. Computer laboratory management can support the learning process of students for the better. On that basis, there are tasks and management of computer laboratories as stated in the Decree of the Minister of National Education Number 40 of 2008 concerning Standards for Facilities and Infrastructure of SMK/MAK containing minimum standards for Labkom Room: (1) minimum area of computer room; (2) the minimum ratio of students; (3) the capacity of the computer room; (4) the area of storage space and infrastructure; (5) computer room furniture; (6) educational equipment; (7) educational media in the laboratory room; and (8) other supporters in the laboratory room. This study aims to describe the management, the learning process, and is there any influence on the management of the computer laboratory at MTs Nihayatul Amal Purwasari Karawang.

KEYWORDS:

Management, computer laboratory, learning process

INTRODUCTION

Laboratorium adalah unit kerja yang memiliki sumber daya manusia (SDM) sekurang-kurangnya seorang kepala laboratorium atau koordinator laboratorium, teknisi laboratorium dan laboran, ruang atau tempat khusus, dan media belajar pendukung lainnya. Dalam hal ini laboratorium diharapkan mampu meningkatkan minat dan semangat mengajar guru dan belajar siswa. Namun saat ini laboratorium komputer yang ada disekolah cukup dimanfaatkan secara optimal, hanya saja kurangnya pengguna dalam pemanfaatan sumber daya yang ada di laboratorium komputer tersebut. Untuk memanfaatkan laboratorium sebagai sarana pendukung proses belajar mengajar di sekolah seharusnya dapat dikelola dengan baik.

Dengan adanya pengelolaan yang baik maka akan tercipta pelayanan yang baik pula bagi berlangsungnya proses belajar mengajar secara tidak langsung maka akan menghasilkan mutu proses belajar mengajar dan kualitas belajar baik pula. Pengelolaan layanan laboratorium komputer pada umumnya merupakan tanggung jawab dari kepala sekolah selaku pemimpin pada tingkat satuan pendidikan/sekolah, oleh karena dalam suatu organisasi ada namanya struktur tugas yang langsung bertanggung jawab terhadap pengelolaan.

Peraturan Pemerintah No: 19 Tahun 2005 pada bab VII pasal 42 ayat 2 mencantumkan bahwa:

"Setiap satuan pendidikan wajib memiliki prasarana yang meliputi lahan ruang kelas, ruang pimpinan satuan pendidikan, ruang pendidik, ruang tata usaha, ruang perpustakaan, ruang laboratorium, ruang

bengkel kerja tempat berolahraga, tempat beribadah, tempat bermain, tempat berkreasi dan ruang/tempat lain yang diperlukan untuk menunjang proses pembelajaran yang teratur dan berkelanjutan.”

Salah satu sarana dan prasarana dalam penyelenggaraan pendidikan di Sekolah adalah Laboratorium komputer yang selanjutnya disingkat Labkom. Labkom berfungsi sebagai tempat berlangsungnya kegiatan pembelajaran. Pembelajaran kompetensi keahlian berkaitan dengan penggunaan komputer sebagai peralatan dalam melakukan kegiatan praktik pembelajaran. Pemanfaatan lab secara efektif merupakan salah satu syarat dalam pembelajaran praktikum, oleh karena itu diperlukan adanya sistem pengelolaan atau manajemen labkom yang baik.

Dari pembahasan di atas terdapat hubungan antara hasil dan manfaat dari kegiatan praktikum dengan ayat al-Qur'an yang berbunyi:

*أَمْ مَنْ هُوَ قَانِتٌ آنَاءَ اللَّيْلِ سَاجِدًا وَقَائِمًا يَحْذَرُ الْآخِرَةَ وَيَرْجُوا رَحْمَةَ رَبِّهِ قُلْ هَلْ يَسْتَوِي الَّذِينَ يَعْلَمُونَ وَالَّذِينَ لَا يَعْلَمُونَ إِنَّهَا يَتَذَكَّرُ أُولُوا
الْأَلْبَابِ*

(Apakah kamu orang musyrik yang lebih beruntung) ataukah orang yang beribadah pada waktu malam dengan sujud dan berdiri, karena takut kepada (azab) akhirat dan mengharapkan rahmat Tuhannya? Katakanlah, “Apakah sama orang-orang yang mengetahui dengan orang-orang yang tidak mengetahui?” Sebenarnya hanya orang yang berakal sehat yang dapat menerima pelajaran. (Q.S. Az-Zumar: 9)

Dari uraian tersebut jelas bahwa kegiatan praktikum dilaboratorium sangat penting dan secara langsung dapat meningkatkan pemahaman-pemahaman konsep pembelajaran yang baik, serta dapat mengembangkan keterampilan proses belajar dan keaktifan peserta didik sehingga dalam kehidupan sehari-hari dapat menjelajahi dan memahami pembelajaran tersebut.

Menurut Arikunto (2008, p.307) Pengelolaan prasarana ruang lab meliputi; perencanaan ruang lab, organisasi prasarana ruang lab, koordinasi prasarana ruang lab, pelaksanaan prasarana ruang lab dan pengendalian prasarana ruang lab. Sementara itu, pengelolaan secara umum terdiri atas empat aspek, yaitu: perencanaan, pengorganisasian, pelaksanaan, dan pengawasan.

Implementasi pengelolaan laboratorium yang baik mengikuti prinsip manajemen secara umum, agar kegiatan lab sesuai dengan tujuan pembelajaran. Pengelolaan labkom yang dimaksud adalah aktivitas yang berkaitan dengan proses perencanaan, pengorganisasian, pelaksanaan, dan pengawasan terhadap kegiatan labkom.

Rumusan Masalah 1) Bagaimanakah pengelolaan laboratorium komputer di MTs Nihayatul Amal Purwasari Karawang? 2) Bagaimana proses pembelajaran di MTs Nihayatul Amal Purwasari Karawang? 3) Adakah pengaruh pengelolaan laboratorium komputer dalam mendukung proses pembelajaran di MTs Nihayatul Amal Purwasari Karawang ?

Penelitian ini bertujuan untuk mendeskripsikan pengelolaan, proses pembelajaran, dan adakah pengaruh pengelolaan laboratorium komputer dalam mendukung proses pembelajaran di MTs Nihayatul Amal Purwasari Karawang.

METHODS

Penelitian ini menggunakan jenis metode kuantitatif dengan sumber data primer melalui penyebaran angket dan data sekunder berupa observasi dan dokumentasi yang berlokasi di MTs Nihayaul Amal Purwasari Karawang. Sampel pada penelitian ini sebanyak 78 Peserta Didik dari populasi 360 Peserta Didik. Teknik analisis data dilakukan dengan analisis deskriptif, pengujian hipotesis dan penarikan kesimpulan.

penelitian kuantitatif dapat dijabarkan sebagai metode penelitian yang bertujuan untuk memverifikasi suatu teori atau kebenaran, membangun [fakta](#), menunjukkan deskripsi statistik, serta menganalisa hasilnya dengan prosedur yang sistematis dengan data berupa numerikal, angka, atau grafik.

Adapun Prosedur pengumpulan data dilakukan melalui prosedur yang sistematis dan secara efisien dapat dilakukan untuk memperoleh data yang akurat dan realistis. Adapun prosedur yang dimaksud adalah sebagai berikut: 1) Studi Kepustakaan, Pengambilan data diperoleh dengan membaca dan mempelajari literatur yang ada kaitanya dan mampu mendukung penelitian ini. 2) Kuesioner, Menurut Sugiyono (2012:162) kuesioner adalah teknik pengumpulan data yang dilakukan dengan cara memberi seperangkat pertanyaan atau pertanyaan tertulis kepada responden untuk dijawab. Kuesioner merupakan teknik pengumpulan data yang efisien jika penulis tahu dengan pasti variabel yang akan diukur dan tahu apa yang tidak bisa diharapkan dari responden.

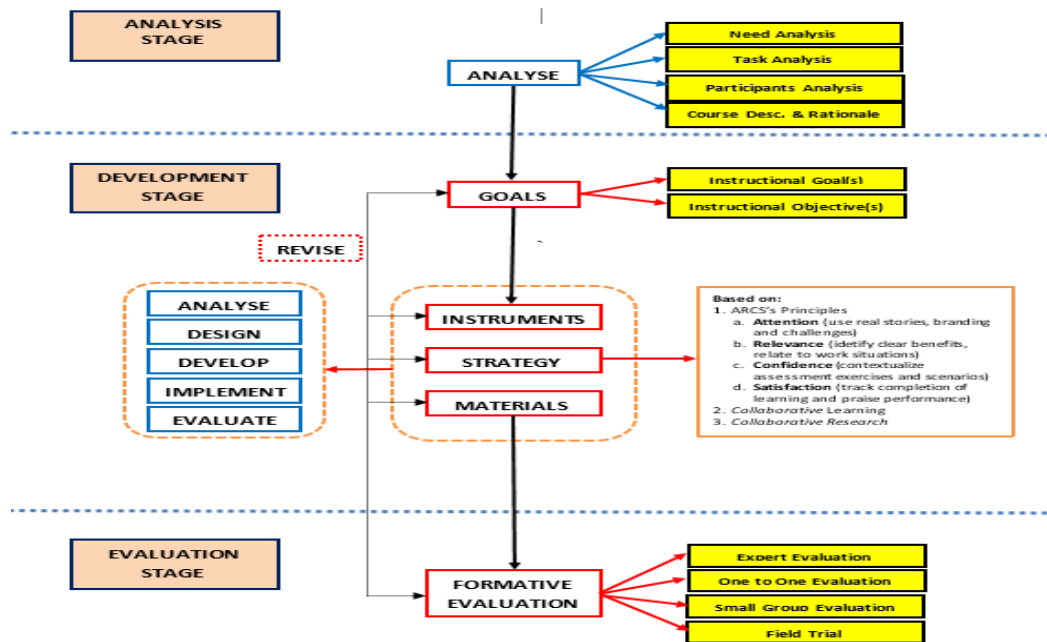


Figure 1. Modified Development Model

RESULTS & DISCUSSION

Penelitian ini bersifat kuantitatif dimana data yang dihasilkan akan berbentuk angka. Dari data yang didapat dilakukan analisis dengan menggunakan software SPSS. Penelitian ini dilakukan di MTS Nihayatul Amal Purwasari Karawang. Penelitian ini dilakukan untuk mengetahui sejauhmana

pengelolaan laboratorium komputer dalam mendukung proses pembelajaran di MTS Nihayatul Amal Purwasari Karawang. Dengan tujuan yang didasarkan, data dikumpulkan dengan menggunakan kuesioner sebanyak 78 responden yang menggunakan media pembelajaran komputer yang target penyebaran kuesioner adalah siswa/siswi MTS Nihayatul Amal Purwasari Karawang. Penyebaran kuesioner dilakukan secara tertutup dengan menggunakan skala likert 1- 4. Setelah data terkumpul, selanjutnya dianalisis menggunakan analisis deskriptif dengan menggunakan pengujian hipotesis untuk menemukan deskripsi dan statistik inferensi untuk setiap variabel.

1. **Bagaimanakah pengelolaan laboratorium komputer di MTs Nihayatul Amal Purwasari Karawang?**

Beberapa langkah yang harus diperhatikan dalam pengelolaan laboratorium komputer meliputi kegiatan perencanaan, pengorganisasian, pelaksanaan, dan pengawasan.

a) **Perencanaan Laboratorium Komputer**

Beberapa hal yang perlu direncanakan adalah, tata ruang lab, peralatan yang dibutuhkan, dan program kerja.

- **Tata Ruang** : ruang laboratorium komputer harus dapat menampung setidaknya 15 orang siswa, minimal luas ruang 30 meter dan lebar 5 meter. Selain itu, ruang lab juga harus didesain sedemikian rupa. Ada dua pilihan desain, yaitu desain klasik dan desain alternatif.
- **Peralatan** : peralatan yang dibutuhkan meliputi komputer, meja komputer, LCD proyektor, Papan tulis, printer, scanner, pendingin ruangan, jaringan internet, jam dinding, dan lainnya.
- **Program Kerja** : laboratorium komputer harus memiliki program kerja yang terstruktur. Laboratorium yang baik tidak hanya digunakan untuk kegiatan praktikum siswa, namun juga perlu dioptimalkan untuk kegiatan-kegiatan lainnya, seperti pelatihan ICT guru, dan lain-lain.

b) **Pengorganisasian Laboratorium Komputer**

Laboratorium komputer idealnya memiliki kepala laboratorium, teknisi laboratorium, dan laboran. Untuk kepala laboratorium minimal sarjana, memiliki sertifikat kepala laboratorium, dan berpengalaman. Teknisi laboratorium minimal D1 dan memiliki sertifikat laboran.

c) **Pelaksanaan Laboratorium Komputer**

Pelaksanaan atau yang dikenal dengan *actuating* merupakan hal yang paling utama dari seluruh rangkaian proses manajemen. Pelaksanaan adalah upaya-upaya penggerakan anggota kelompok agar mereka dapat bekerja sesuai dengan tugas yang diembannya.

d) **Pengawasan Laboratorium Komputer**

Dalam proses manajemen, pengawasan sangat penting dilakukan. Melalui pengawasan yang dilakukan, kepala sekolah dapat mengetahui apakah kegiatan yang dilakukan telah sesuai dengan perencanaan atau belum. Jika belum sesuai, apa kendala dan hambatannya sehingga untuk ke depan bisa diperbaiki.

Terkait dengan pengawasan laboratorium komputer, kepala sekolah dapat terjun langsung ke ruangan laboratorium komputer, atau meminta laporan dari kepala laboratorium komputer.

Beberapa hal yang perlu dilakukan pengawasan meliputi fasilitas lab dan kegiatan yang dilaksanakan di lab.

Berdasarkan hasil analisis pengelolaan laboratorium komputer, dengan sampel 78 peserta didik, 20 atau 26% responden tergolong rendah, 44 atau 56% sedang, dan 14 atau 18% termasuk kategori tinggi. Ini berarti, pengelolaan laboratorium komputer dan Program yang dilaksanakan kepada peserta didik di MTS Nihayatul Amal Purwasari Karawang tertuju pada kategori sedang yaitu 56%. Dan mengindikasikan bahwa program dan pengelolaan laboratorium komputer berjalan dengan **baik**.

2. **Bagaimana proses pembelajaran di MTs Nihayatul Amal Purwasari Karawang**

Pembelajaran merupakan proses kegiatan belajar mengajar yang juga berperan dalam menentukan keberhasilan belajar siswa. Dari proses pembelajaran itu akan terjadi sebuah kegiatan timbal balik antara guru dengan siswa untuk menuju tujuan yang lebih baik.

Proses pembelajaran adalah segala upaya bersama antara guru dan siswa untuk berbagi dan mengolah informasi, dengan harapan pengetahuan yang diberikan bermanfaat dalam diri siswa dan menjadi landasan belajar yang berkelanjutan, serta diharapkan adanya perubahan-perubahan yang lebih baik untuk mencapai suatu peningkatan yang positif yang ditandai dengan perubahan tingkah laku individu demi terciptanya proses belajar mengajar yang efektif dan efisien.

Berdasarkan hasil analisis Proses Pembelajaran Yang Baik, dengan sampel 78 peserta didik, 12 atau 15% responden tergolong rendah, 56 atau 72% sedang, dan 10 atau 13% termasuk kategori tinggi. Dari hasil perhitungan tersebut menunjukkan bahwa dinamika yang dihadapi oleh pengelolaan laboratorium komputer dalam mendukung proses pembelajaran tertuju pada kategori sedang yaitu 72%. Ini berarti, dinamika yang dihadapi oleh Pengelolaan Laboratorium Komputer dalam mendukung Proses Pembelajaran di MTS Nihayatul Amal Purwasari Karawang adalah **BAIK**.

3. **Adakah pengaruh pengelolaan laboratorium komputer dalam mendukung proses pembelajaran di MTs Nihayatul Amal Purwasari Karawang ?**

Dari hasil perhitungan, $t\text{-hitung}=7,051$ dan $t\text{-tabel}=1,292$ untuk tingkat signifikansi 5%. Karena $t\text{-hitung}$ lebih besar dari $t\text{-tabel}$ maka dapat disimpulkan bahwa **H_0 ditolak dan H_a diterima**. Oleh karena itu, pengelolaan laboratorium komputer dalam mendukung proses pembelajaran di MTS Nihayatul Amal Purwasari Karawang. Ada pengaruh signifikan antara pengelolaan laboratorium komputer dalam mendukung proses pembelajaran di MTS Nihayatul Amal Purwasari Karawang. Oleh karena itu, dapat dilihat dari kesimpulan judul penelitian bahwa salah satu faktor pendukung proses pembelajaran yang baik adalah pengelolaan laboratorium komputer yang baik pula, yang menerima dan menjadi solusi bagi peserta didik. Bekerja sesuai tugasnya untuk mendukung proses pembelajaran dan mencapai tujuan pendidikan yang memuaskan.

CONCLUSION

Berdasarkan analisis data dan pembahasan hasil penelitian, maka penelitian ini dapat disimpulkan sebagai berikut:

1. Hasil analisis deskriptif pengelolaan laboratorium komputer yang dilaksanakan kepada peserta didik di MTS Nihayatul Amal Purwasari Karawang tertuju pada kategori sedang yaitu 56%. Dan mengindikasikan bahwa pengelolaan laboratorium komputer berjalan dengan **baik**.
2. Hasil analisis deskriptif Proses Pembelajaran menunjukkan bahwa dinamika yang dihadapi oleh proses pembelajaran tertuju pada kategori sedang yaitu 72%. Ini berarti, dinamika yang dihadapi oleh Proses Pembelajaran di MTS Nihayatul Amal Purwasari Karawang adalah **baik**.
3. Pengaruh signifikan antara pengelolaan laboratorium komputer dalam mendukung proses pembelajaran di MTS Nihayatul Amal Purwasari Karawang. Hal ini di tunjukan dengan nilai t-hitung sebesar 7,051 lebih besar daripada t-tabel sebesar 1,292. Karena t-hitung lebih besar dari t-tabel maka dapat disimpulkan bahwa **Ho ditolak dan Ha diterima**. Dapat dilihat dari kesimpulan judul penelitian bahwa salah satu faktor pendukung proses pembelajaran yang baik adalah pengelolaan laboratorium komputer yang baik pula, yang menerima dan menjadi solusi bagi peserta didik.

REFERENCES:

- Pramesthi, G. A. D. (2014). Pengaruh Penggunaan Laboratorium Komputer Sebagai Pendukung Pembelajaran Dan Motivasi Belajar Terhadap Kemandirian Belajar Siswa Di SD Negeri Wuluhadeg. *Universitas Negeri Yogyakarta*.
- Muntholib, H. Hidayat, & Rika Ariyani (2018). Manajemen Laboratorium Komputer: *Aplikasi Keterampilan Teknologi Informasi* from <https://www.rikaariyani.com/2021/02/buku-manajemen-laboratorium-komputer.html?m=1>
- Ananto, S. D., & Mardiyah, S. U. K. (2017). Manajemen Laboratorium Komputer Di SMK Muhammadiyah 2 Moyudan. *Universitas Negeri Yogyakarta*.
- Ariyanto. (2003). Pengelolaan Sarana dan Prasarana Belajar Dalam Meningkatkan Minat Belajar Peserta Didik di Madrasah Tsanawiyah Alkhairaat Tomini Kecamatan Tomini Kabupaten Parigi Moutong. (Palu: Perpustakaan IAIN Palu, 2017).
- Mursalin. (2006). Peranan Manajemen Sumber Daya Manusia Dalam Meningkatkan Mutu Pembelajaran di Madrasah Aliyah Al-Khairaat Sinu Kecamatan Siniu Kabupaten Parigi Moutong. (Palu: Perpustakaan IAIN Palu, 2017).
- Putro, A. R. T. S., & Triyono, M. B. (2016). Pengelolaan labkom di sekolah menengah kejuruan. *Jurnal Pendidikan Vokasi*, 6(2), 143-153.
- Barlian, E. (2018). Metodologi penelitian kualitatif & kuantitatif.
- Fathoni, A. (2015). Konsep Manajemen Pendidikan Islam Perspektif Al-Qur'an. *Al-Idarah: Jurnal Kependidikan Islam*, 5(2).
- Pratama, R. B. (2019). *Realisasi Penerimaan Pajak Pertambahan Nilai Yang Dipengaruhi Oleh Pencairan Tunggakan Pajak Atas Penagihan Pajak Dan Jumlah Pengusaha Kena Pajak (Studi Kasus Pada Kantor Pelayanan Pajak Pratama Bandung Cibeunying Tahun 2014-2017)* (Doctoral dissertation, Universitas Komputer Indonesia).
- Nomor, L. P. M. P. N. (24). Tahun 2007 Tanggal 28 Juni 2007 Standar Sarana Dan Prasarana Sekolah. *Madrasah Pendidikan Umum*.

INDONESIA, P. R. Peraturan Pemerintah Nomor 19 tahun 2005 tentang Standar Nasional Pendidikan.
Wibowo, B., & Nurohman, S. (2018). Pengaruh Pembelajaran Ipa Menggunakan Phet Interactive Simulation Terhadap Motivasi Belajar Dan Penguasaan Konsep Sains Siswa. *Jurnal TPACK IPA*, 7(7), 368-372.