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Effectiveness of learning through online mode, pre-recorded video and traditional mode among 1st year B.Sc. Nursing students of Sikkim Manipal College of Nursing, Gangtok, Sikkim.

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Chapter 1

1. Introduction

"I believe that education is all about being excited about something. Seeing passion and enthusiasm helps push an educational message."

– Steve Irwin

1.1 Background of the study

Nursing education is undergoing significant changes in response to society's continuously changing demands. A good education system is essential for any country's and nation's progress.[1]

Teachers can employ more effective and efficient approaches in planning and implementing new training courses if they are aware of new teaching methods and can compare their outcomes.[2]

Campus-based lectures are an important aspect of nursing education's learning activities. A campus-based lecture style can take root in a teaching culture and spread throughout an organization or subject, causing resistance to new and emerging practices and technologies.[3]

Nurse and their employers, according to the American Nurses Association, are jointly accountable for fostering an atmosphere in which competent nurses may achieve quality outcomes.[4]

Providing interesting, relevant, and cost-effective continuing nursing education programs is a problem for healthcare organizations. The proliferation of available nursing information, as well as the growing demand for nursing competence from regulatory agencies, has added to the problems of continuing education.[4]

To support staff nurses in retaining professional competence, effective institutional-based continuing education programs are vital. Until now, the traditional lecture has been the most common educational format in continuing nursing education.[5]

Although the lecture format can be an excellent approach to present information to a large group of nurses, it has a number of pedagogical drawbacks. Didactic lectures do not cater to a wide range of learning styles, lack learner participation tactics, necessitate extensive educator preparation, and are expensive.[5]

The use of online technology in continuing nursing education, also known as eLearning, is one alternative to the traditional lecture format. The use of online education has revolutionized educators' ability to facilitate professional nursing competence. The use of eLearning in the context of staff development has only lately been investigated.[4]

The use of distance education using digital tools in higher education has increased over the last decade, particularly during the COVID-19 pandemic. The nursing course underwent a transition from campus-based education to distance learning using digital tools because of the COVID-19 pandemic.[3]

The teachers working in a medical college set-up has to fulfill multiple roles, namely teaching, research, patient care, mentor as well as a learner. It is quite important to measure the effectiveness of the faculty members in discharging these roles, as it not only gives insights about the quality of teaching, but also provides us evidence about the professional growth.[6]

To prevent the spread of infections in all healthcare settings, hand hygiene must be routinely practiced. Appropriate hand hygiene techniques can go a long way in reducing nosocomial infections, cross-transmission of microorganisms and the risk of occupational exposure to infectious diseases. World Health Organization (WHO) has taken an incredible approach called “My Five Moments for Hand Hygiene" which defines the key moments when health-care workers should perform hand hygiene.[7]

Hand hygiene practices used correctly can help to reduce microorganism cross-transmission, nosocomial infections, and the danger of occupational exposure to infectious illnesses. Some of the organisms that are likely to be detected on healthcare professionals' hands are Staphylococcus aureus, Clostridium difficile, Methicillin-resistant Staphylococcus aureus, and gram-negative bacteria. Direct patient contact, however, is not the only way for pathogens to spread. Bacteria can also be acquired on the hands of healthcare personnel by coming into contact with contaminated surfaces in the patient surroundings.[7]

Thus, the importance for the knowledge of handwashing is very important for every individual and most importantly to the healthcare workers as they are the ones who are susceptible to infections.

1.2 Need of the Study

The nursing course underwent a transition from campus-based education to distance learning using digital tools because of the COVID-19 pandemic. The year 2019-2020 was finished via online classes. Educators started finding the new ways to make the students understand what they are teaching. Like, practicing different lighting and sound setups so the students can get the most out of videos, having online hours to speak with students and many more. Thus, the purpose for finding out the effective methods for teaching came into play which serves as a need of this study.

Thenmozhi et.al[8] 2019 conducted a study to evaluate the efficiency of video assisted education regarding child abuse among school-aged children in Coimbatore's selected schools. For this study, a quantitative research approach was applied. According to the findings, 66.7 percent of school-aged children had insufficient understanding, while 33.3 percent had moderate knowledge. Following the intervention, the degree of knowledge improved. 56.7 percent of school-aged children had adequate understanding, while 43.3 percent had moderate knowledge. Because the estimated paired "t" test value 26 exceeded the table value, the study hypothesis was accepted. It was interfered that video assisted teaching was effective in improving the knowledge regarding child abuse.

Barkha Devi et.al[9] 2019 Sikkim Manipal College of Nursing, Gangtok, Sikkim A comparison of the effectiveness of a video-assisted teaching method to a traditional presentation on nursing students learning obstetrical palpation abilities was undertaken. The goal of this study was to see how video-assisted teaching and traditional demonstration affected nursing students developing obstetrical palpation abilities. A quasi-experimental research project with pretest, posttest, and control group design in which 60 third-year Bachelor of Science in Nursing students were randomly assigned to an experimental group (video-assisted teaching programme) and a control group (traditional demonstration) regarding obstetrical palpation using the lottery method. The data were collected through a self-designed rating scale. The results showed a significant difference between the pretest and posttest skill scores of students who were exposed to video-assisted teaching programme and traditional demonstration ($t = 18.35$, $p < 0.001$). Although both techniques were similarly efficient in improving skill, when posttest skills were compared, traditional demonstration performed significantly better than the video-assisted training programme ($t = 36.40$, $p = 0.001$)

Parvathy Chandran et.al[10] 2020 Amrita College of Nursing, conducted a study on Effectiveness of Video Assisted Teaching on Knowledge Regarding Home Care Management among Patients Diagnosed with Acute Coronary Syndrome and find the association between pre-test knowledge scores with socio demographic variables. Methodology used was Quasi experimental pre-test, post-test research was selected with Quantitative research approach. Purposive Sampling was used. 60 Sample Size was taken, 30 in both experimental and control group. Pre-test was conducted for both groups on first day, followed by VAT program and on the seventh day post-test were

conducted. The VAT program was provided only for experimental group, with 40 minutes duration, routine care was given for control group. Findings showed a statistically difference in post-test knowledge score of experimental groups regarding home care management among patients diagnosed with ACS after VAT. Present study suggests the need for VAT program is to improve the knowledge level regarding home care management of patients diagnosed with ACS.

V. Radhika Devi et.al[11] 2020 Department of Science and Humanities Hyderabad, T.S., India conducted a study on Blended Learning. Exploring New Models for Effective Teaching and learning. The study aimed to examine the impact of the paradigm shift in teaching methodologies empowering the faculty with pedagogical methods and analyses the impact of their implementation. In particular the active learning strategies that were implemented by 80% of the faculty showed an impact on the improvement of student interest in the subject by 50%. Blending by use of multiple types of instructional methodologies by incorporating technology has transformed students from learners to leaders.

Falih M. et.al[12] 2021 College of Business, Bowie State University, conducted a study on Traditional Versus Online Learning in Institutions of Higher Education: Minority Business Students' Perceptions. Descriptive resear ch was chosen as a methodological approach for this study The research instrument for this study was an online questionnaire, which consisted of 30 questions designed to elicit information about students' demographics such as age, gender, and study discipline during fall 2014. The questionnaire was also intended to learn about students' experience with online learning and face-to-face education, skills gained, difficulties encountered, and their perceptions (i.e., opinions) about the two platforms of study. The SPSS software was used to analyze the data. Convenience sampling was used for the study. The sample in this study included 147 graduate and undergraduate students taking business courses during the fall 2014 semester. This group included African-American, Hispanic/Latino and Middle Eastern students. Students were not given any monetary compensation for participation. The majority of the participants (52.4%) in this survey were graduate students, female (57.8%), in the age group between 18 and 30 years old (77.5%), and employed either full time or part time (73.5%). The data further indicated that respondents had previously enrolled in at least one online course. On the basis of available information, it could be argued that the perception expressed by the participants about online versus face-to-face learning was dependable, informative, and valuable.

This study aims to find which out of the three learning methods i.e., learning through live online mode, recorded video and traditional mode which will be more effective so that conclusion can be drawn out and strategies can be adopted for facilitating the effective learning method in nursing education the same. Similar studies have not been conducted in the state Sikkim.

1.3 Problem Statement

Effectiveness of learning through online mode, pre-recorded video and traditional mode among 1st year B.Sc. Nursing students of Sikkim Manipal College of Nursing, Gangtok, Sikkim.

1.4 Objectives:

1.4.1 To develop and validate the tools to be used for online, pre-recorded video and traditional mode

1.4.2 To assess the baseline knowledge among all three group of 1st year B.Sc. Nursing students before exposure to learning

1.4.3 To assess the effectiveness of online mode learning among group I of 1st year B.Sc. Nursing students

1.4.4 To assess the effectiveness of pre-recorded video learning among group II of 1st year B.Sc. Nursing students

1.4.5 To assess the effectiveness of traditional mode learning among group III of 1st year B.Sc. Nursing students

1.4.6 To compare the post-test knowledge score among all three group of 1st year B.Sc. Nursing students

1.5 Variables:

Research variables:

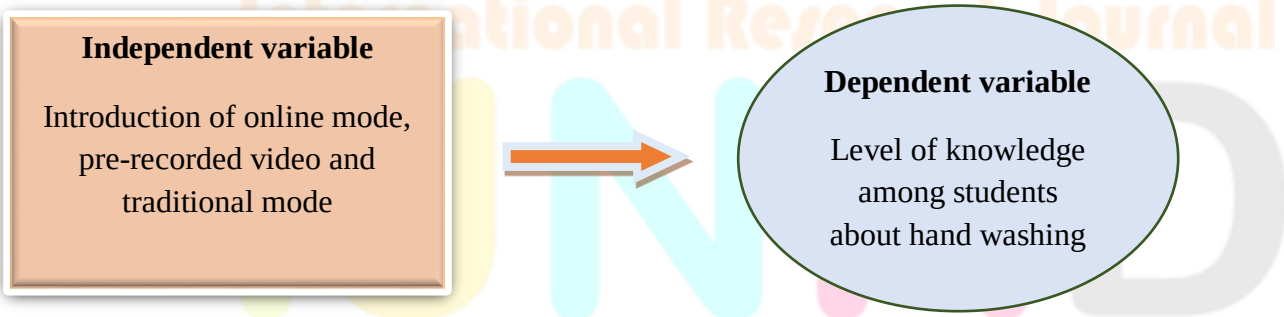


Figure 1.1. Schematic representation of variables under study

1.6 Operational Definitions:

1.6.1 **Effectiveness:** In this study, effectiveness is the result of learning through online mode, pre-recorded video and traditional mode, which leads to increase in knowledge on hand washing and higher performance in the post-test among students.

1.6.2 **Learning**: In this study, learning is defined as the knowledge that is acquired through the implementation of teaching through online mode, pre-recorded video and traditional mode.

1.6.3 **Hand washing:** In this study, hand washing is defined as the medical and surgical ways of washing of hands with soap and water for purpose of removing dirt and micro-organisms by following seven steps of hand washing techniques.

1.6.4 **Students:** In this study, the students are the 1st year B.Sc. Nursing students from Sikkim Manipal College of Nursing.

1.6.5 **Traditional learning:** In this study, it refers to the style of education through face-to-face learning about hand washing that happens in a classroom setting with one teacher and a group of students.

1.6.6 **Pre-recorded video learning:** In this study, it refers to the style of education which, will be provided through the recorded video about hand washing among the students.

1.6.7 **Online mode:** In this study, it refers to the style of education which, is learning through online session about hand washing among the students.

1.7. Research Hypothesis:

All hypotheses were tested at 0.05 level of significance.

H_1: There is a significant difference between pre-test and post-test level of knowledge in all three group among the students.

H_2: There is a significant difference between online, pre-recorded video and traditional mode of learning among all 3 group of the students.

1.8.Delimitations

This study is delimited to the students who are:

- Available at the time of data collection.
- Willing to participate in the study.

1.9.Conceptual Framework

Conceptual framework is interrelated concepts or abstractions that are assembled together in some rational schemes by virtue of their relevance to a common theme. A conceptual framework is an analytical tool with several variations and contexts. It is used to make conceptual distinctions and organize ideas. The conceptual framework makes research findings more meaningful and generalizable. Conceptual models help to stimulate research and the extension of knowledge by providing both direction and impetus.[14] The Conceptual framework is a theoretical structure of assumptions, principles and rules that holds together the ideas comprising the broad concept.

- The present study aims at evaluating the effectiveness of learning through online mode, pre-recorded video and traditional mode among 1st year B.Sc. Nursing students of Sikkim Manipal college of Nursing Gangtok, Sikkim.

- A conceptual framework facilitates communication and provides systematic approach to nursing research, educational status and practice. The conceptual framework selected for this study is based on the JW Kenney's Open System Model.[13] This system theory is concerned with changes done in interaction between various factors in a situation.

- The concept of JW Kenney's model is input, throughput and feedback. Input refers to matters and information, which are continuously processed through the system and released as output. After processing the input, the system returns the output (matter and information) to the environment in an altered state, affecting the environment for information to guide in operation. This feedback information of environment responses to the system output is used by the system in adjustment correction and accommodation to environment. Feedback maybe positive, negative or neutral. In this study the concepts have been presented as follows:

- Assessment: It is the continuous process of collecting data about demographic variables, age in years, marital status, religion, type of family, family income, knowledge about hand washing if any.

- Intervention: This study has a specific purpose or goal and uses a process to achieve the goal and system activity can be resolved into an aggregation feedback circuit such as:

    - ✓ Input: It refers to any form of information, energy or matter that enters into the system through its boundary. In this study, input refers to assessing the knowledge about hand washing techniques among the students.

- ✓ Throughput: It refers to the process whereby the system transforms, create and organizes input. In this study, throughput refers to the process of providing learning through online, pre-recorded video and traditional mode to the students.
- ✓ Output: It refers to energy, information or matter that is transferred to the environment. In this study, it refers to the improvement or an increase in knowledge on hand hygiene and higher performance among students.
- ✓ Feedback: In this study the feedback is considered as evaluation of the level of knowledge in post-test on hand-washing.

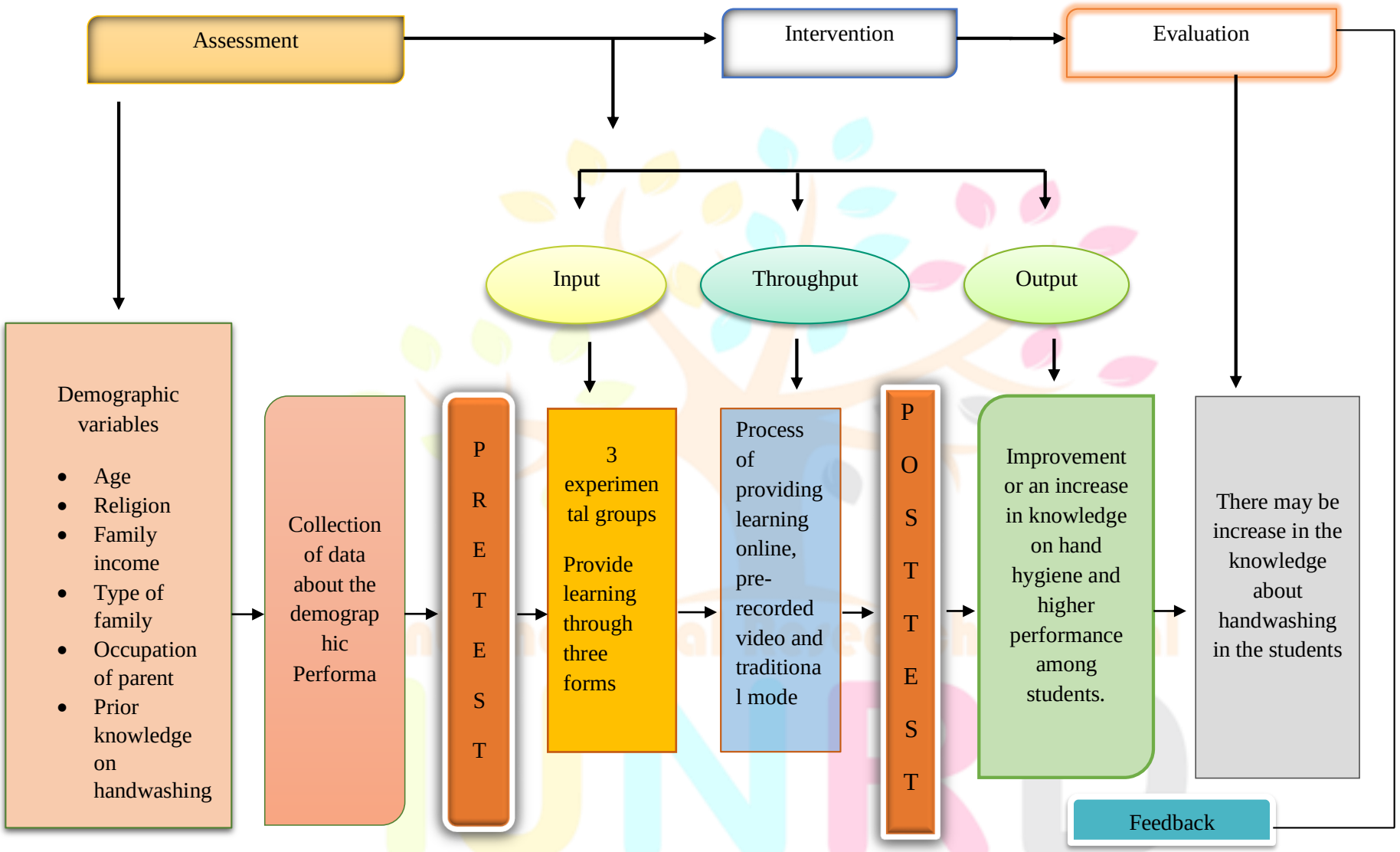


Fig1.2. Conceptual framework based on JW Kenney's Open System Model (1990)[13]

Chapter 2

2. Literature Review

The review of literature is an integral part of an entire research process. Literature review shows what has been done in the research field and how the intended study relates to earlier research. Literature review consists of research findings as well as propositions and opinions of researchers in the field. Literature review delimits the study, relates the methods used by other researchers, recommendations of earlier works and provides the basis for the intended research task. Review of literature is a comprehensive study and interpretation of literature that addresses a specific topic.[14]

It serves as an evidence and essential background for any research. It includes the current knowledge including substantive findings, as well as theoretical and methodological contributions to a particular topic. It helps the researcher to formulate and clarify the research problems.

The review of literature for the study has been organised under the following section:

- **Section I:** Literature related to traditional mode of learning
- **Section II:** Literature related to video recorded learning
- **Section III:** Literature related to online mode of learning

Section1: Literature related to traditional mode of learning

Hosein Habibzadeh et.al[15] conduced quasi-experimental research with pre-test and post-test design. Sixty nursing students in the seventh semester from schools of nursing in Urmia and Khoy cities were randomly assigned to two virtual and traditional education groups. Students' knowledge was measured by a researcher-made 30-item test. Result showed the mean and standard deviation of the students' scores in the traditional education group was 11.20 ± 4.41 and 14.40 ± 4.62 and in the virtual group was 11.30 ± 2.74 and 18.43 ± 4.68, pre- and post-training, respectively. Paired t-test showed a significant difference between the mean score of pre-test and post-test in both types of training ($P < 0.001$). According to the results of independent sample t-test, there were no significant differences between the two groups before the training ($P > 0.05$). However, in the post training period, there were significant differences

between traditional and virtual education groups (P < 0.001). Considering the results of this study, which shows the positive effects of virtual education method on nursing students' knowledge about cardiac dysrhythmia, this method can be used as an alternative or complementary method to the traditional education.

Sailaxmi Gandhi et.al[1] Department of Nursing, College of Nursing, Department of Psychiatric Social Work, conducted a study on Nursing Students Perceptions about Traditional and Innovative Teaching Strategies. The study was aimed to evaluate the student learning perception about traditional and modern teaching strategies among under graduate nursing students (N=44). Posttest only design was used to compare the learning perception of students about traditional and innovative teaching strategies (brain storming, concept mapping &problem-based learning). One group was exposed to traditional teaching strategy and the other group was exposed to innovative teaching strategy about mental health assessment and therapeutic communication. Findings indicated a statistically significant increase (p<0.006) in the learning perception among students exposed to innovative teaching strategies than those exposed to the lecture method at the end of 4 weeks. The results of this study indicate that students perceive innovative teaching strategies in a better way compared to the traditional teaching method as it enhances their motivation for learning, learner control, and self - directed learning abilities.

Gulbir Singh et. al[16] conducted a study on Exploration of e-learning vs traditional learning in India. The purpose of the study was to carry out the comparison of traditional learning and e-learning with reference to university education. In the present study researcher used a holistic approach by using a comparative analysis method. The population of the study was all the content published in prints /online books, research papers, magazines, etc. The convenient purposive sampling techniques were used in selecting content. The research data was collected by various sources internet, previous research studies published in the Journal, universities which offer different technical and nontechnical programs and further analyzed by in-depth understanding approach. The outcome of this study showed the effect of e-learning in the current era. As they have compared e-learning with traditional learning and the result showed that e-learning has filled the gap between the universities and the real-life industries' demands.

Section 2: Literature related to video recorded learning

Ann George et.al[17] conducted a study on Comparison of video demonstrations and bedside tutorials for teaching pediatric clinical skills to large groups of medical students in resource-constrained settings. The mixed methods design combined qualitative and quantitative

methods to answer different research questions. the mean scores for the assessment of the students' clinical examination performance, by group. The mean scores for all measures assessed in the clinical examination, except for Professionalism, were lower for the video group, with wider variability. The difference between the means for the video and bedside groups was highest for the Efficiency domain (− 4.33%) followed by the Physical Examination domain (− 2.20%) and Professionalism (− 1.17%). The difference in the Overall Grade between the video and bedside groups was − 2.6% [one-sided 95% CI: − 6.2 – − 2.6]. A subtle difference emerged between videos being more 'systematic' than bedside teaching and video demonstrations offering 'standardized' teaching.

Michael Carmichael et.al[18] conducted a study on assessing the Impact of Educational Video on Student Engagement, Critical Thinking and Learning: The Current State of Play. The experiment employed a 2 x 2 mixed design (graphics condition: graphics or no graphics and video: Sharing or Policy). Each student viewed one video in one graphics condition and then viewed the other video in the other graphics condition (e.g., a student might view the Sharing video with graphics and then the Policy video without graphics). The order of videos and order of graphics conditions were fully counterbalanced across subjects, creating four counterbalancing orders. Twenty-five students were randomly assigned to each counterbalancing order, i.e. 4 x groups of 25 = 100 students in total. The results showed that the prevalence of the use of video in higher education has increased exponentially over the past decade, and this trend is likely to continue in the future.

Barkha Devi et.al[19] Sikkim Manipal College of Nursing conducted a study on Blended Learning - A Global Solution in the Age of COVID-19. During COVID 19, a minireview was conducted to identify teaching practices, adoption of technology in higher education during COVID 19, learning and teaching pedagogy throughout COVID 19, digital learning during the lockdown, online teaching during a pandemic, and application of blended learning during Covid19 and post-Covid implication. The chosen analysis papers came from all over the world, including the United States, the United Kingdom, India, China, South East Asia, and Europe, in order to gain a national and international perspective on the subject. The main themes identified and discussed included online teaching practices during COVID-19 and blended mode of teaching in higher education and its implications in the post-Covid-19 period. More government support and investment are needed to ensure blended learning is widely used in post-pandemic times in developing societies, according to the results of the various database searches. Digital learning, coaching, education, and student support, including lessons using a

variety of teaching and learning tools and methods, are provided on a daily basis to help students, teachers, and faculty members improve their knowledge and understanding of various aspects of blended learning.

Shabana Azmi Malik[20] conducted a comparative study to evaluate the effectiveness of simulation versus video film as a method of teaching. This study was conducted in a selected college of nursing, Dehradun, Uttarakhand. Total 60 samples were taken i.e., 30 for simulation and 30 for video film by random sampling technique. Before exposing the groups to simulation and another group to video film, a pretest (simulation-based demonstration demonstration) was taken and samples were observed with the help of structured observation checklist. After pre-test One group was exposed to simulation-based demonstration and another group was exposed to video film on the same topic and steps. Post - test was conducted after one week by taking return demonstration. The mean post –test was significantly higher in both the teaching individually, but when Comparison was made among both the teaching methods. The post-test mean score of simulation was (24.40) post -test mean score for video was (24.00) which was found statistically non-significant. This indicates that both the methods have its own benefits in teaching. We can learn in both the ways. Some can learn by simulation and some after video film exposure. It depends how we perceive it.

Section 3: Literature related to online mode of learning

Ulrica Langegard et.al[3] conducted a study on nursing students' experiences of a pedagogical transition from campus learning to distance learning using digital tools on 19 January 2021. This pedagogical transition in teaching was evaluated using both quantitative and qualitative data analysis. Focus group interviews (n = 9) were analyzed using qualitative content analysis to explore students' experiences of the pedagogical transition and to construct a web-based questionnaire. The questionnaire was delivered to all course participants and responses were obtained from 96 of 132 students (73%). Questionnaire data were analysed using descriptive statistics and comments from the open-ended questions were used as quotes to highlight the quantitative data which showed majority of students preferred campus-based education and experienced deterioration in all investigated dimensions after the pedagogical transition. However, one-third of the students appeared to prefer distance learning using digital tools. The main finding was that the pedagogical transition to distance education reduced the possibility for students' social interactions in their learning process. This negatively affected several aspects of their experience of distance learning using digital tools, such as reduced motivation. However, the heterogeneity in the responses suggested that a blended learning

approach may offer pedagogical benefits while maintaining an advantageous level of social interaction.

Felix Bast[21] conducted Perception of Online Learning Among Students from India Set Against the Pandemic An online self-report survey (n = 1,318) was conducted to assess students' perception of online learning in this changed situation in comparison with traditional classroom learning. The study analyzed eight independent variables on student's perception towards online learning, with each of the variables forming respective research hypotheses. Students from urban settlements (57.4%) were significantly higher to be receptive about online learning compared with those from the rural settlement (49.7%). The study also revealed an inverse trend of educational level and online learning receptivity; school children were more receptive than college students, and finally university students. Reasons for this paradoxical trend remain elusive, as the direction was in opposite to that observed for age. Perhaps adolescent (school) and teenage (college) students might feel good to spend time at their home during COVID-19 lockdown.

Dr. Pramesh Chettri et.al[22] Assistant Professor, Department of Humanities and Social Sciences, Sikkim Manipal University, Gangtok, Sikkim, India conducted the study to to investigate and identify the challenges and prospects of e-learning amongst the students of Sikkim. The structured questionnaire for the purpose of the study was composed of five sections. A total of 230 set of questionnaires were sent to the students for the collection of the data during COVID-19 Pandemic period (May-June 2020). The students of each institute, one faculty member of each institute was assigned for the said purpose. The response rate of the respondents was high because the survey was conducted in a Google form. Among 230 sets of the questionnaires, 200 sets were found to be valid and suitable for analysis and interpretation of the data, where no missing values and no inconsistent answers were found. The study found that e-learning has a complementary effect on overall learning. Further, it is acclimatized that e-learning will promote distance learning if a. The study found that e-learning has a complementary effect on overall learning. Further, it is acclimatized that e-learning will promote distance learning if adequately utilized.

Ram Gopalet.al[23] conducted research on Impact of online classes on the satisfaction and performance of students during the pandemic period of COVID 19. In this cross-sectional study, the data were collected from 544 respondents who were studying the management (B.B.A or M.B.A) and hotel management courses. The purposive sampling technique was used to collect the data. Descriptive statistics shows that 48.35% of the respondents were either MBA or BBA and rests of the respondents were hotel management students. The research instrument consisted of two sections. The first section was related to demographical variables such as discipline, gender, age group, and education level (undergraduate or post-graduate). The second section measured the six factors viz. instructor's quality, course design, prompt feedback, student expectations, satisfaction, and performance. The "students' performance" was measured through the scale developed by Wilson et al. (1997). These variables were accessed on a five-point Likert scale, ranging from 1(strongly disagree) to 5(strongly agree). Results of the exploratory analysis rendered six distinct factors. These six factors explained 67.784% of the total variance. To validate the factors extracted through EFA, the researcher performed confirmatory factor analysis (CFA) through AMOS.

Pooja Basumatary[24] conducted a Descriptive Method of research study aimed to study the attitude of senior secondary school students towards e-learning. In order to achieve this objective, a sample of 400 students studying in XI classes comprising 200 boys and 200 girls belonging to arts and science stream was drawn from eight government senior secondary schools and eight private senior secondary schools situated in East district of Sikkim. An Attitude Scale towards e-Learning developed and standardized by Dimpal Rani was administered to the selected sample in order to collect the requisite data. Findings showed Male and Female senior secondary school students differ significantly with respect to their attitude towards e-Learning. Arts and Science senior secondary school students do not differ significantly with respect to their attitude towards e-Learning. Government and Private senior secondary school students do not differ significantly with respect to their attitude towards e-Learning. Rural and Urban senior secondary school students differ significantly with respect to their attitude towards e-Learning.

Chapter 3

3. Methodology

This chapter deals with the methodology of the study and it includes research approach, research design, setting, sample, sampling technique, data collection tools, technique used, validity, reliability, pilot study, procedure for data collection and plan for data analysis.[14]

The purpose of this study is to evaluate the effectiveness of learning through online mode, pre-recorded video and traditional mode among 1st year B.Sc. Nursing students of Sikkim Manipal College of Nursing, Gangtok, Sikkim.

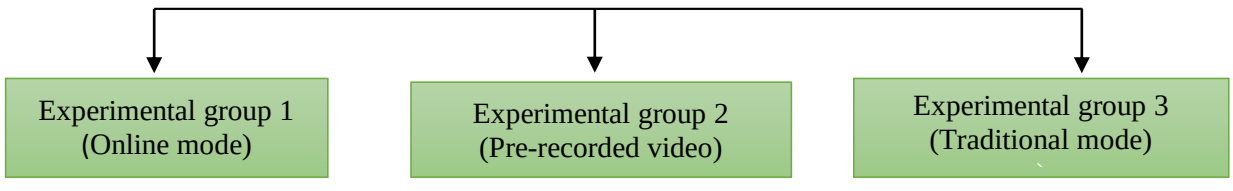
3.1. Research Approach

An experimental quantitative approach was considered to be appropriate for the study.

3.2. Research Design

The research design selected for the study is Pre-test post-test study design.

Group 1 **Group 2** **Group 3**



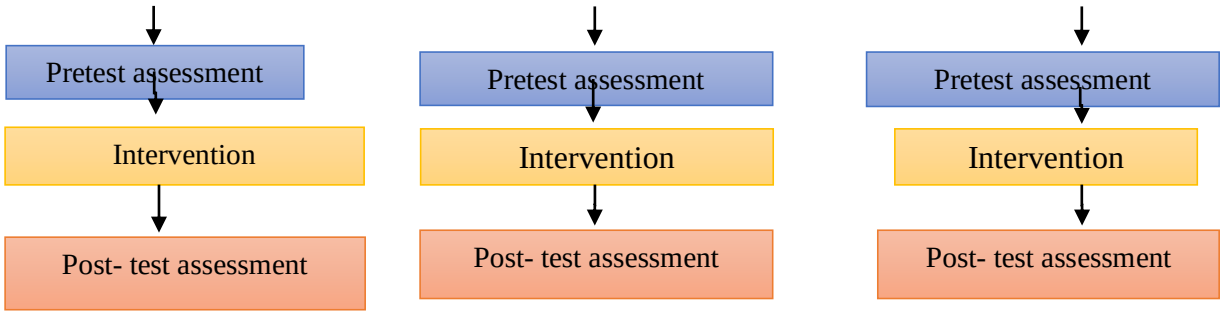


Figure 3.1. Schematic representation of pre-test post-test design

3.3. Variables under study:

Independent variable: Introduction of online mode, recorded video and traditional mode

Dependent variable: Level of knowledge among students about hand washing.

3.4. Research Setting:

The study was conducted at Sikkim Manipal College of Nursing.

3.5. Population

In this study, the population consists of B.Sc. nursing students from Gangtok Sikkim.

3.5.1 Target population:

In this research, the target population is the B.Sc. nursing students of Sikkim Manipal college of Nursing.

3.5.2 Accessible population:

In this research, the accessible population is 1st year B.Sc. nursing students of Sikkim Manipal college of Nursing who is available at the time of data collection.

3.6. Sample, sample size & sampling technique

3.6.1 Sample: 1st year B.Sc. nursing students of Sikkim Manipal college of Nursing

3.6.2 Sample size: 93 Students (31 each in all three experimental groups)

Sample Size calculation:

$$n = \frac{2\,(Z_{1-\alpha/2} + Z_{1-\beta})^2}{\Delta^2}$$

Where,

$Z_{1-\alpha/2}$ = level of significance which is considered as 0.05 for two trials.

Z 0.95 = 1.96 and 0.01

Z 0.99 = 2.84

$Z_{1-\beta}$ = the power the researcher considers for detecting the difference

i.e. 80% to 90%

Z 0.80 = 0.84

Z 0.90 = 1.28 from Gaussian table

Δ = effect of mean difference of two group / Standard deviation we assume tjat the study will have.

Large effect = 0.8

Moderate effect = 0.05

Low effect = 0.1

$$n = \frac{2\,(Z_{1-\alpha/2} + Z_{1-\beta})^2}{\Delta^2}$$

$$n = \frac{2\,(1.96 + 0.84)^2}{(0.8)^2}$$

$$= \frac{2\,(2.8)^2}{0.64}$$

$$= \frac{2 \times 7.84}{0.64}$$

$$= \frac{15.68}{0.64}$$

$$= 25$$

So, there will be 25 students in each group

Taking 10% extra sample,

25+6

= 31 is the sample size

So, final size = 31 for each group.

31 3 = 93

3.6.3. Sampling technique:

Sampling is the process by which a relatively small number of individuals or measures of individuals, objects or events is selected and analyzed in order to find out something about the entire population from which it was selected.[14]

Sampling technique in this study is Non probability purposive sampling technique to select the students.

Sampling Criteria:

Inclusion Criteria

- 1st year B.Sc. Nursing students from Sikkim Manipal college of Nursing available during the data collection period.

Exclusion Criteria

- Students not willing to participate in the study
- 2nd, 3rd and 4th year BSc Nursing students.

3.7. Data collection tools and technique

The most important and crucial aspect of any investigation is the collection of appropriate information, which provides necessary data for the study. According to Polit and Back, a good deal of information can be gathered by interviewing. The structured closed ended items are efficient and easy to administer and analyze, as well as unstructured instrument with open ended items gives depth information.[14]

Based on the objectives of the study, the following tools were selected:

Table 3.1 Table representing the data collection tools and techniques

Sl no	Tools	Variables	Components	Technique
1.	Tool 1: Section: A Demographic proforma	Demographic data	Age, religion, occupation of parent, family type, family income	Self-report
2.	Tool 2: Section A: Pre-test and post-test Structured knowledge questionnaire	Questions regarding knowledge about hand hygiene	What is hand washing? What is the purpose of hand washing? How many types of hand washing are there?	Self-report
	Section B: PowerPoint slides and demonstration on handwashing for learning through online mode	Online mode learning	Techniques of handwashing	Explanation and demonstration

	Section C: Pre-recorded video on handwashing for learning through pre-recorded video	Pre-recorded video learning	Techniques of handwashing	Video recorded Demonstration
	Section D: Lesson plan on handwashing for learning through traditional mode	Traditional mode learning	Techniques of handwashing	Lecture and demonstration

Scoring:

Scores	Level of knowledge
0-5	Poor
6-11	Average
12-16	Good

3.8. Development and Description of Tools

The tool for the study was developed after an extensive review of literature, referring books, journals and discussions with the research guides. The investigator has developed the following tools to assess the Socio demographic profile and Structured knowledge questionnaire.

Following steps were taken to develop tool:

- Review of literature which provides adequate information.
- Consultation, discussion, taking opinion and suggestion from the guides experts.
- Finalizing the topic and tools for the study.

The steps involved in development and description of tool were:

- Step I. Planning of the tool.
- Step II: Development of the first draft.
- Step III: Establishment of validity of the tools.
- Step IV: Development of second draft.
- Step V: Pre-testing of the tools.
- Step VI: Establishment of reliability of the tools.
- Step VII: Development of final draft.

3.8.1. Step I: Planning of the tool

Questionnaires for Socio demographic profile and regarding knowledge about hand hygiene were done after an extensive review of literature and suggestions from experts.

a) Tool -I: Section A: Demographic Proforma
   - Questionnaire on personal profile and knowledge of handwashing after an extensive review of literature and suggestions from experts.

b) Tool- II: Section A: Structured knowledge questionnaire on handwashing
   - Structured knowledge questionnaire on handwashing were outlined after an extensive review of literature and suggestions from experts.

3.8.2. Step II: Development of first draft

a) **Tool I: Section A:** Socio- demographic Profile

Questionnaires for Socio demographic profile, were done after an extensive review of literature and suggestions from experts.

- The questionnaires comprised of 8 questions related to age, religion, percentage aggregate in high school, occupation of parent, family type, family income.

b) **Tool II: Section A:** Structured knowledge questionnaire.

- Pre-test and post-test structured knowledge questionnaire questionnaires comprising of16 questions/ items regarding knowledge about hand hygiene like, what is hand washing, the purpose of hand washing, types of hand washing etc.
- The questionnaire was such that it could assess the pre-test knowledge as well as the effectiveness after the intervention or the post- test knowledge.
- The same questions were used to assess the pre-test as well as post-test level of knowledge of the samples.

3.8.3. Step III: Establishment of content validity of the tool

The tools were given to 7 experts:

- Dr. Sudip Dutta, H.O.D. Department of pediatrics, C.R.H.
- Dr. Shrawan Sharma, Orthodontist, Smile Dental solutions, Tadong.
- Mrs. Hishey Lhamu Bhutia, Principal, SPCON.
- Ms. Lalita Rai,Assistant Professor, SGCON
- Mrs. Lhamit Lepcha, Assistant Professor, SGCON
- Mrs. M. ThoibiDevi, Associate Professor, SMCON
- Mrs. W. Ashalata Devi, Associate Professor, SMCON

The experts were chosen based on their clinical experience, expertise and interest in the problem area. They partially agreed on the content and organization of structured demographic questions and fully agreed on structured knowledge questionnaire tools. Among the items of all possible questions, Tool-I Section A,100 % agreed and in Tool-II Section B,96% agreed Agreement of 86% above was taken as valid. Modification of certain items of tool was done based on the suggestions of the experts.

3.8.4. Step IV: Development of second draft

The second draft of Socio demographic Profile and structured knowledge questionnairewas prepared on the basis of expert's suggestions after necessary corrections, additions and changes in question wording and sequences to eliminate the imperfections.

3.8.5 Step V: Pretesting of the tool

Pretesting was conducted to check the clarity of the items and ambiguity of the language of the tools. Pretesting of the tool was done among 9students of 1st year BSc nursing in Sikkim Government college of nursing on07/12/21 after seeking the administrative permission from the concerned department. The language was clear to them. Average time taken by each sample to complete the questionnaire was 19 minutes.

3.8.6 Step VI: Establishment of reliability

To establish the reliability of the tool, it was administered to 9students of 1st year B.Sc. nursing in Sikkim Government College of nursing on 08/12/21 after seeking the administrative permission from concerned department.

Reliability of knowledge questionnaire using Karl Pearson's product – moment co-relation coefficient was done with Intra-rater reliability where percentage of agreement was calculated to establish the correlation coefficient of equivalence where r= 1.

3.8.7. Development of final draft

The final draft of tool which is structured knowledge questionnaire was prepared after incorporating the suggestions of experts.

Tool I: Section A: Demographic Performa with 8 questions and

Tool II: Section A: Structured knowledge questionnaire was developed with 16 questions based on the knowledge of handwashing for which the scores were given 1 for each answer, which has points ranging from 1 to 16 for which, 0-5 indicates poor knowledge, 6-11 indicates moderate knowledge, 12-16 indicates adequate knowledge.

As there was no suggestion from the experts so the final draft was prepared based on the face validity of the tool.

3.9. Pilot study

The pilot study was conducted in Sikkim Professional college of nursing with 10% of the total sample size which was 9 students of 1st year B.Sc. nursing out of which 3 participants were in the online mode learning group, 3 participants were in the pre- recorded video learning group and 3 participants were in the traditional mode learning group.

The pre- test and post -test was done. The data collection duration was one week and it was done from 13/12/21 to 18/12/21.

The collected data was organized, analyzed and interpreted using descriptive and inferential statistics as per the objectives of the study. The study was found to be feasible and acceptable.

3.9. Pilot study data analysis

The data analysis was done by using descriptive and inferential statistics. The data were analyzed by using both descriptive and inferential statistics.

Descriptive Statistics:

- The frequency & percentage distribution, mean, median and standard deviation of the Socio-demographic profile, of participants were calculated

- The study was found to be feasible and acceptable.

3.10. Final Study

The final data collection was conducted at Sikkim Manipal College of Nursing, Tadong, Gangtok, East Sikkim among 95 students from 1st year B.Sc. Nursing on 5th March 2022.

According to the calculated sample size, the total number of samples were 93. After the noted suggestions of the respected experts and after careful considerations the researcher was advised to take the total number of students in the selected classroom as the sample size.

Since, the total number of students in 1st year B.Sc. nursing was 97 and two students were not present at the time of data collection, the final sample size was 95. The sample was divided into two groups: 68 students who were hostelers and 27 students who were day scholars.

The researcher was asked not to mix the hostelers and day scholars and were kept in two different classes priorly due to COVID -19 restrictions. So, in order not to mix the hostelers with day scholars 27 students was selected for online mode learning and 34 each student was selected for pre-recorded video and traditional learning respectively.

3.11.Data collection procedure

The data was collected on 05.03.22 among 95 students of 1st year BSc Nursing from Sikkim Manipal college of Nursing Tadong, Gangtok, Sikkim.

- Administrative permission was taken from the Principal, Sikkim Manipal college of Nursing.
- Informed written consent was taken from the sample under study.
- Tool was administered and data was collected by self-reporting method from the participants.

3.12.Plan for Data analysis

- The data was entered into a master data sheet and analyzed using descriptive and inferential statistics and hypothesis were tested at 0.05 level of significance. Frequency and Percentage Distribution of Demographic Variables was donePaired t test was used for calculation to assess the effectiveness of three forms of learning.
- To compare the post-test knowledge score on hand washing among all three group of 1st year BSc Nursing students was using (ANOVA) test.

Chapter 4

4. Analysis of the data, result and discussion

This chapter presents the analysis and interpretation of the data obtained using knowledge questionnaire. The data collected were analyzed using both descriptive and inferential statistics. Analysis is the process of organizing and synthesizing data in such a way that research questions can be answered. Interpreting the findings is the most challenging and least structured step in the research finding which requires the investigator to be creative. Hence, in order to interpret the data in an intelligible form, the data was analyzed based on the objectives of the study using descriptive statistics.

4.1. Organization and presentation of study findings

The data is analyzed under the following headings:

Section I: Frequency and Percentage Distribution of Demographic Variables.

Section II: Distribution of pre-test knowledge on hand washing on knowledge of hand washing among all 3 groups.

Section III: Distribution of post-test knowledge on hand washing on knowledge of hand washing among all 3 groups.

Section IV: Effectiveness of all three-mode of learning on knowledge of hand washing among 1st year B.Sc. Nursing students.

Section V: Compare the post-test knowledge of all 3 groups on hand washing among 1st year B.Sc. Nursing students.

4.2. SECTION – I

Table 4.1: Frequency and Percentage Distribution of Demographic Variables.

[N=95]

S. No	Demographic Variables	Online (n=27)		Video (n=34)		Traditional (n=34)	
		f	%	f	%	f	%
1	Age in years						
	a. 17-19 years	23	**85**	26	**76.4**	24	**70.6**
	b. 20-22 years	4	15	7	21.6	10	29.4
	c. 23-25 years	0	0	1	2.9	0	0
	d. 25 and above	0	0	0	0	0	0
2	Religion						
	a. Hinduism	15	**55.6**	22	**64.6**	26	**76.5**
	b. Christianity	4	14.8	5	14.8	0	0
	c. Buddhism	8	29.6	6	17.6	8	23.5
3	Percentage aggregate in high school						
	a. 75 percentage and above	10	37	23	**67.7**	20	**58.9**
	b. 66-75 percentage	14	**51.9**	11	32.3	9	26.5
	c. 56-65 percentage	3	11.1	0	0	6	17.6
	d. 54 percentage and below	0	0	0	0	0	0
4	Occupation of parent						
	a. Profession	12	**44.4**	28	**82.3**	23	**67.6**
	b. Skilled worker	7	26	5	14.7	11	32.4
	c. Unskilled	8	29.6	1	3	0	0
	d. Unemployed	0	0	0	0	0	0
5	Family income per month						
	a. < Rs 10,000	3	11.1	2	5.9	2	5.9
	b. Rs 10,001-20,000	9	**33.3**	10	29.5	8	23.6
	c. Rs 20,001-30,000	8	29.6	11	**32.3**	15	**44.1**
	d. > Rs 30,001	7	26	11	**32.3**	9	26.4
6	Type of family						

	a. Nuclear family	17	**63**	29	**85.3**	22	**64.7**
	b. Joint family	10	37	5	14.7	12	35.3
	c. Extended family	0	0	0	0	0	0
7	Do you have any knowledge about proper washing of hands						
	a. Yes	27	**100**	34	**100**	34	**100**
	b. No	0	0	0	0	0	0
8	Have you practiced proper hand washing ever before						
	a. Yes	20	**74**	30	**88.2**	31	**91.2**
	b. No	7	26	4	11.8	3	8.9

Table 4.1 depicts that in online learning group Majority 23(85%) of nursing students were in 17-10 years of age. In pre-recorded video learning group majority 26 (76.4%) of nursing students were in 17-19 years of age. In traditional learning group majority 24(70.6%) of nursing students were in 17-19years of age.

In online learning group majority 15(55.6%) of nursing students were Hindu. In pre-recorded video learning group majority 22(64.6%) of nursing students were Hindu. In traditional learning group majority 26(76.5%) of nursing students were Hindu.

In online learning group majority 4(51.9%) of nursing students had 66 -75 percentage in high school. In pre-recorded video learning group majority 23(67.7%) of nursing students had 75 percentage and above in high school. In traditional learning group 20(58.9%) of nursing students had 75 percentage and above in high school.

In online learning group majority 12(44.4%) of nursing students' occupation of parents were professionals. In pre-recorded video learning group majority 28(82.3%) of nursing students' occupation of parents were professionals. In traditional learning group majority 23(67.6%) of nursing students' occupation of parents were professionals.

In online learning group majority 933.3%) of nursing students family income was between Rs 10,001-20,000 per month. In pre-recorded video learning group majority 11(32.3%) of nursing students family income was between RS 20,001-30,000 per month majority, 11(32.3%) had above Rs 30,001 per month. In traditional learning group 15(44.1%) of nursing students family income was between RS 20,001-30,000 per month.

In online learning group majority 17 (63%) of nursing students lives in nuclear family. In pre-recorded video learning group majority 29(85.3%) of nursing students lives in nuclear family In traditional learning group majority 22(64.7%) of nursing students lives in nuclear family.

In online learning group all the nursing students 27(100%) had previous knowledge about proper washing of hands. In pre-recorded video learning group 34(100%) had previous knowledge about proper washing of hands. In traditional learning group 34(100%) had previous knowledge about proper washing of hands.

In online learning group majority 20(74%) of nursing students had practiced proper hand washing before. In pre-recorded video learning group majority 30(88.2%) of nursing students had practiced proper hand washing before. In traditional learning group majority 31(91.2%) of nursing students had practiced proper hand washing before.

4.3. SECTION – II

Table 4.2: Distribution of pre-test knowledge on hand washing among all 3 groups.

[N=95]

Pre-test level of knowledge	**Online (n=27)**		**Video (n=34)**		**Traditional (n-34)**	
	f	**%**	**f**	**%**	**f**	**%**
Poor	0	0	0	0	0	0
Average	26	96.3	33	97.1	33	97.1
Good	1	3.7	1	2.9	1	2.9

Table 4.2 depicts that the pre-test findings show majority26(96.3%), 33(97.1%) and 33(97.1%) have average knowledge on handwashing among online, pre-recorded video, and traditional group respectively.

4.4. SECTION - III

Table 4.3: Distribution of post-test knowledge on hand washing among all 3 groups.

[N=95]

Post-test level of knowledge	**Online (n=27)**		**Video (n=34)**		**Traditional (n-34)**	
	f	**%**	**f**	**%**	**f**	**%**
Poor	0	0	0	0	0	0
Average	9	33.3	2	5.9	8	23.5
Good	18	**66.7**	32	**94.1**	26	**76.5**

Table 4.3 depicts that during post-test majority 18(66.7%), 32(94.1%) 26(76.5%) of nursing students had good knowledge on hand washing in online, pre-recorded video, and traditional group respectively.

4.5. SECTION – IV

Table 4.4: Effectiveness of online mode learning on knowledge of hand washing among 1st year B.Sc. Nursing students.

[N=27]

Online mode Group	**Mean**	**SD**	**Mean Difference**	**t value**	**df**	**P value**
Pre-test	10.26	0.944	1.74	8.537	26	**0.001***
Post-test	12.00	1.000				

***p<0.05 level of significance**

Table 4.4 illustrates that in online mode group mean post-test knowledge score was 12.00±1.000 was higher than mean pre-test knowledge score was 10.25±0.944 with mean difference of 1.74 with calculated t value (t=8.537 at df=26) was statistically significant at

p<0.05 level. Findings indicate online mode of learning was effective in improving the knowledge on hand washing among 1st year B.Sc. nursing students.

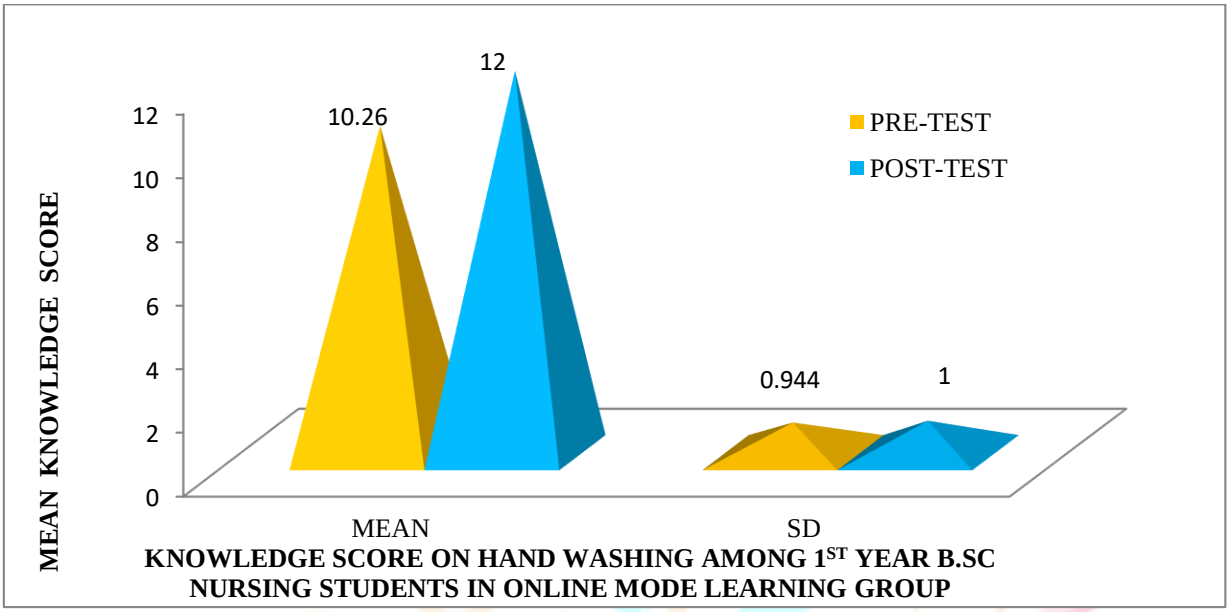


Fig 4.1: Distribution of mean and SD of knowledge score in online mode learning group

Table 4.5: Effectiveness of Pre-recorded video mode learning on knowledge of hand washing among 1st year B.Sc. Nursing students.

[N=34]

Pre-recorded video mode Group	Mean	SD	Mean Difference	t value	df	P value
Pre-test	10.09	0.900	3.76	16.26	33	**0.001***
Post-test	13.85	1.438				

***p<0.05 level of significance**

Table 4.5 illustrates that in prerecorded video mode group mean post-test knowledge score was 13.85±1.438 was higher than mean pre-test knowledge score was 10.09±0.900 with mean difference of 3.76 with calculated t value (t=16.26 at df=33) was statistically significant at p<0.05 level. Findings indicate pre-recorded video mode of learning was effective in improving the knowledge on hand washing among 1st year B.Sc. nursing students.

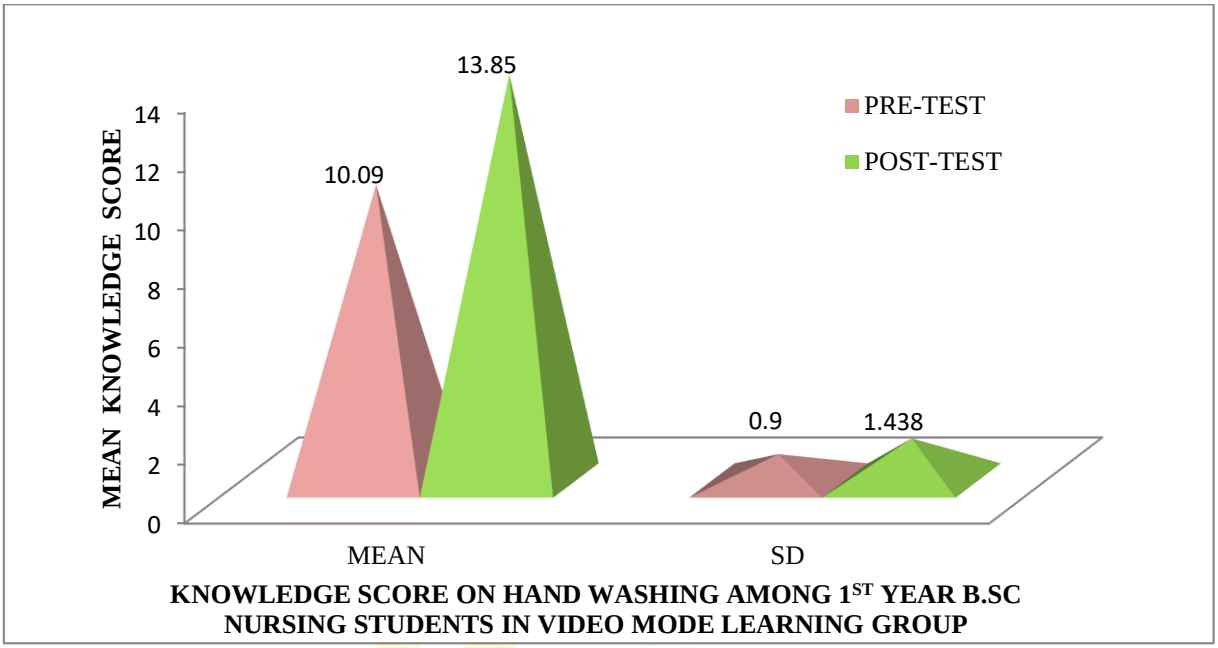


Fig 4.2: Distribution of mean and SD of knowledge score on in prerecorded video mode learning group

Table 4.6: Effectiveness of traditional mode learning on knowledge of hand washing among 1st year B.Sc. Nursing students.

[N=34]

Traditional mode Group	**Mean**	**SD**	**Mean Difference**	**t value**	**df**	**P value**
Pre-test	10.03	1.029	1.94	12.31	33	**0.001***
Post-test	11.97	0.758				

***p<0.05 level of significance**

Table 4.6 illustrates that in traditional mode group mean post-test knowledge score was 11.97±0.758 was higher than mean pre-test knowledge score was 10.03±1.029 with mean difference of 1.94 with calculated t value (t=12.31 at df=33) was statistically significant at p<0.05 level. Findings indicate traditional mode of learning was effective in improving the knowledge on hand washing among 1st year B.Sc. nursing students.

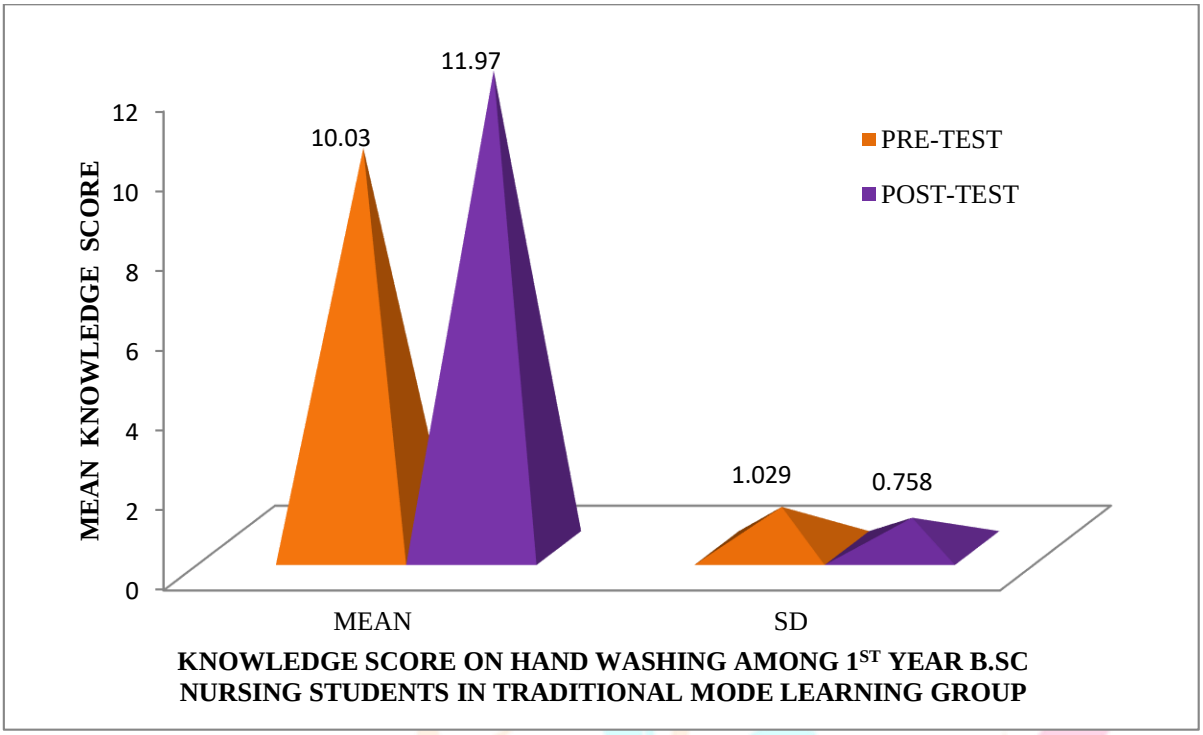


Fig 4.3: Distribution of mean and SD of knowledge score in traditional mode learning group

4.6. SECTION – V

Table 4.7: Compare the post-test knowledge on hand washing among 1st year B.Sc. Nursing students in online, prerecorded video and traditional group.

[N=95]

Comparison Mode of learning	N	Mean	SD	Sum of squares	Mean Square	F value	P value
Online	27	12.00	1.000	76.30	38.15	30.99	**0.001***
Video	34	13.85	1.438				
Traditional	34	11.97	0.758				

***p<0.05 level of significance**

Table 4.7 illustrates that mean post-test knowledge score in online mode learning group was 12.00±1.000, prerecorded video learning group was 13.85±1.438 and traditional mode learning group was 11.97±0.758 with sum of squares 76.30 and mean square was 38.15 with calculated ANOVA value (F=30.99 at df=2) was statistically significant at $p<0.05$ level of significance. Findings concluded that there is significant difference in online mode, prerecorded video mode and traditional mode of learning on hand washing among 1st year B.Sc. nursing students.

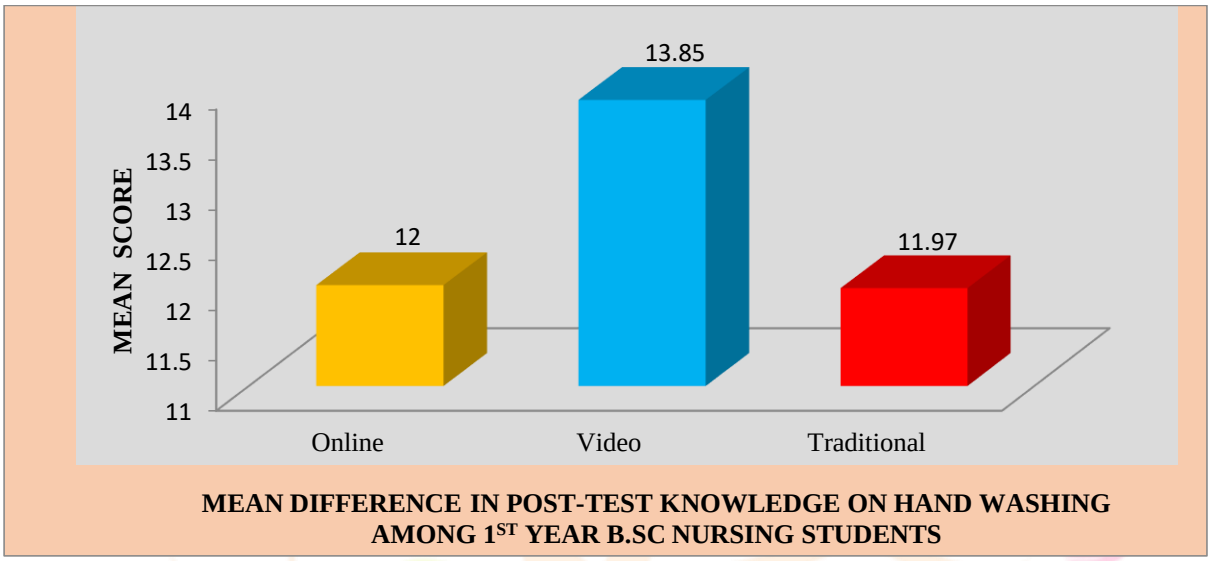


Fig 4.4: Comparison of mean score of post-test knowledge in online, prerecorded video and traditional group.

4.7. Discussion in relation to other studies

In this section, major findings have been discussed with the reference to the results obtained by the investigators.

Also, findings of the present study shows that there is a significance difference between the pre and post test scores. Mean post-test knowledge score in online mode learning group was 12.00±1.000, pre-recorded video learning group was 13.85±1.438 and traditional mode learning group was 11.97±0.758 with sum of squares 76.30 and mean square was 38.15 with calculated ANOVA value (F=30.99 at df=2) was statistically significant at $p<0.05$ level of significance.

4.7.1. Discussion in relation to traditional learning

Similar study was conducted by Lodhiya Kaushik K et.al.[25] on Effectiveness of Collaborative Versus Traditional Teaching Methods in a Teaching Hospital in Gujarat. The study aimed to compare the effectiveness and students' preference for CL and TL methodology for small groups learning's in community medicine. This was a crossed over experimental study

design with students being taught two separate topics using collaborative and TL methods. Pre- and Post-test scores and students' reflections were recorded. The mean pre-test scores of participants were comparable and post-test scores for collaborative method were significantly higher. The effect size for control group was 0.26 and for intervention group was 0.49.

4.7.2. Discussion in relation to video learning

The study conducted by Shabana Azmi Malik[19] in a selected college of nursing, Dehradun; Uttarakhand where total 60 samples were taken i.e., 30 for simulation and 30 for video film by random sampling technique. Before exposing the groups to simulation and another group to video film, a pre-test (simulation-based demonstration demonstration) was taken and samples were observed with the help of structured observation checklist. After pre-test one group was exposed to simulation-based demonstration and another group was exposed to video film on the same topic and steps. Post - test was conducted after one week by taking return demonstration. The mean post –test was significantly higher in both the teaching individually, but when Comparison was made among both the teaching methods. The post-test mean score of simulation was (24.40) post -test mean score for video was (24.00) which was found statistically non-significant. This indicates that both the methods have its own benefits in teaching. We can learn in both the ways. Some can learn by simulation and some after video film exposure. It depends how we perceive it.

The study was conducted by Ilker Kosterelioglu[26] in Educational Psychology classes at Amasya University Faculty of Education. The study was implemented on students in the Classroom Teaching and Information Technologies Teaching programs (n=120). Data was collected with the help of a form composed of semi-structured questions. Descriptive analysis method was used in data analysis. According to the findings, students emphasized the positive effects of using video clips as arousing interest in the class (11,9%), concentrating during class (8,9%), improving memory in learning (27%) and providing intelligibility of the topic (7,9%). Students also provided suggestions for increased effectiveness of using video clips, such as: using videos for short periods of time, using videos related to the goals of the class and using a limited number of videos.

4.7.3. Discussion in relation to online learning

The study conducted by Edwige Simon[27] which aimed to explore how online learning is changing both teachers and the teaching profession in higher education. Three types of qualitative data were collected in this study interviews, face-to-face and virtual class observations, document and audio-visual material. Open e-mail invitation to participate or recommend potential candidates through listservs and Special Interest Groups announcements

(Virtual Worlds, Gaming, Telepresence, Merlot and Sloan-C). Scanning of conferences programs and scholarly journals to identify potential candidates who can be contacted directly. Identification of higher education faculty who received online teaching awards since 2005. A one-way ANOVA was used to test the impact of professional engagement with the field of online learning on current levels of skepticism. There appears to be a significant negative correlation between teachers' engagement with the literature and their level of skepticism about online teaching, $F(3, 207) = 9.46$, $p < .05$.

In the study conducted by T. Muthuprasad[28] focus on understanding Agricultural Student's perception and preference towards the online learning through an online survey of 307 students, also explored the student's preferences for various attributes of online classes, which will be helpful to design effective online learning environment. The results indicated that majority of the respondents (70%) are ready to opt for online classes to manage the curriculum during this pandemic. Majority of the students preferred to use smart phone for online learning. Using content analysis, we found that students prefer recorded classes with quiz at the end of each class to improve the effectiveness of learning. The students opined that flexibility and convenience of online classes makes it attractive option, whereas broadband connectivity issues in rural areas makes it a challenge for students to make use of online learning initiatives. However, in agricultural education system where many courses are practical oriented, shifting completely to online mode may not be possible and need to device a hybrid mode, the insights from this article can be helpful in designing the curriculum for the new normal.

4.8. Limitations

1. The study was confined to only 1st year BSc Nursing students of Sikkim Manipal college of Nursing limiting the generalization of the findings.

2. The study was conducted with the purposive sampling technique hence the generalization of the findings was limited. The study did not include other colleges of the institute.

Chapter 5

5. Conclusion, implications and recommendation

The chapter deals with the summary of the study findings, conclusion and implication of the study in the field of nursing practice, community health nursing, nursing education,

administration, and research. The limitations of the study have been stated and the Recommendations for the future research in different aspects have been presented.

5.1. Major Findings of the study

5.1.1 Findings related to demographic variables

- Majority 85% of the population fall under age 17-19 years.
- Majority 76.5% of the population were Hindu.
- Majority 67.7% of the population secured 75% and above in high school.
- Majority 82.3% of the parents of the population were professionals.
- Majority 44.1% of the population family income per month was 20,000- 30,000.
- Majority 85.3% of the population belonged from nuclear family.
- Majority 88.2% of the population had prior knowledge of handwashing.

5.1.2. Findings related to knowledge of pre-test knowledge on hand washing.

- During pre-test in online mode group 26(96.3%) of nursing students had average knowledge and 1(3.7%) had good knowledge on hand washing. In prerecorded video mode group 33(97.1%) of nursing students had average knowledge and 1(2.9%) had good knowledge on hand washing. In traditional mode group 33(97.1%) of nursing students had average knowledge and 1(2.9%) had good knowledge on hand washing.

5.1.3. Findings related to knowledge of post-test knowledge on hand washing.

- During post-test in online mode group 18(66.7%) of nursing students had good knowledge and 9(33.3%) had average knowledge on hand washing. In pre-recorded video mode group 32(94.1%) of nursing students had good knowledge and 2(5.9%) had average knowledge on hand washing. In traditional mode group 26(76.5%) of nursing students had good knowledge and 8(23.5%) had average knowledge on hand washing.

5.1.4. Findings related to effectiveness of online mode learning on knowledge of hand washing.

- In online mode group mean post-test knowledge score was 12.00±1.000 was higher than mean pre-test knowledge score was 10.25±0.944 with mean difference of 1.74 with calculated t value (t=8.537 at df=26) was statistically significant at p<0.05 level. Findings indicate online mode of learning was effective in improving the knowledge on hand washing among 1st year B.Sc. nursing students.

5.1.5.Findings related effectiveness of Pre-recorded video mode learning on knowledge of hand washing.

- In pre-recorded video mode group mean post-test knowledge score was 13.85±1.438 was higher than mean pre-test knowledge score was 10.09±0.900 with mean difference of 3.76 with calculated t value (t=16.26 at df=33) was statistically significant at p<0.05 level. Findings indicate pre-recorded video mode of learning was effective in improving the knowledge on hand washing among 1st year B.Sc. nursing students.

5.1.6. Findings related effectiveness of online mode learning on knowledge of hand washing.

- In traditional mode group mean post-test knowledge score was 11.97±0.758 was higher than mean pre-test knowledge score was 10.03±1.029 with mean difference of 1.94 with calculated t value (t=12.31 at df=33) was statistically significant at p<0.05 level. Findings indicate traditional mode of learning was effective in improving the knowledge on hand washing among 1st year B.Sc. nursing students.

5.1.7. Findings related to comparison the post-test knowledge on hand washing.

- Mean post-test knowledge score in online mode learning group was 12.00±1.000, pre-recorded video learning group was 13.85±1.438 and traditional mode learning group was 11.97±0.758 with sum of squares 76.30 and mean square was 38.15 with calculated ANOVA value (F=30.99 at df=2) was statistically significant at p<0.05 level of significance. Findings concluded that there is significant difference in online mode, pre-recorded video mode and traditional mode of learning on hand washing among 1st year B.Sc. nursing students.

5.2. Conclusion

The present study attempts to find out the best learning method which is, learning through online mode, pre-recorded video and traditional mode which among the three-learning method

is more effective. On the basis of the findings of the study the following conclusion were derived:

- Out of the three methods of learning all three methods i.e., learning through online, prerecorded video and traditional mode showed effectiveness.
- When compared, more effectiveness was shown in prerecorded video.

5.3. Recommendations

Based on findings of the present study, the following recommendations have been made:

- A comparative study can be done to assess the effectiveness of learning through different modes in a larger population to find out the more effective learning method.
- More newer and innovative approaches of learning can be included in the studies.
- The study can be replicated on a larger sample of the students in different areas of Sikkim.

5.4. Implications

The findings of this study can be implicated in different areas such as Nursing Practice, Nursing Education, Nursing Administration, Nursing Research, and community.

5.4.1. Nursing Practice / Clinical Practice

Nursing Practice indicates the need for adopting the newer and more productive way of teaching and learning regarding any illness by staff nurses, student nurses both in the hospital and the community area. Awareness about and implication of the best teaching and learning method is important to understand the illness, its treatment measures and rehabilitation for illness which will lead to development towards good learning process. In the clinical practice video-based learning can be adopted as a measure to teach different procedures to the staff nurses like neonatal resuscitation.

5.4.2. Nursing Education

The task of nursing education is to apply newer methods of learning for the students to promote participation and understanding in the various service to stimulation of efforts towards better education system where they can learn and perform well in the clinicals. Video assisted learning can be adopted as a measure to teach by the teachers. Videos can create the retention in the knowledge.

5.4.3 Nursing Research

In the present scenario the nurses are actively doing research., publishing and applying research in practice to improve the patient care and evidence based in nursing. The nurses and nurse educators can be advised to use the video assisted learning for imparting the knowledge and improve the practice.

5.4.4. Nursing Administration

Training for the nurses like CNE should adopt the innovative teaching technique which will raise alertness and enthusiasm to learn among the nurses.

5.4.5 Community

In the community level the ASHA and the aganwadi workers can be educated using the newer techniques which facilitates proper understanding of the concerned areas.

REFERENCE

1. Gandhi S, Mythili D, Thirumoorthy A. Nursing students' perceptions about traditional and innovative teaching strategies– A pilot study. J Krishna Inst Med Sci Univ. 2015;4(1):123–9.
2. Shirani Bidabadi N, Nasr Isfahani A, Rouhollahi A, Khalili R. Effective Teaching Methods in Higher Education: Requirements and Barriers. J Adv Med Educ Prof [Internet]. 2016;4(4):170–8. Available from: http://www.ncbi.nlm.nih.gov/pubmed/27795967%0Ahttp://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=PMC5065908
3. Langegård U, Kiani K, Nielsen SJ, Svensson PA. Nursing students' experiences of a pedagogical transition from campus learning to distance learning using digital tools. BMC Nurs. 2021;20(1):1–10.
4. Gerkin KL, Taylor TH, Weatherby FM. The perception of learning and satisfaction of nurses in the online environment. J Nurses Staff Dev. 2009;25(1):E8–13.
5. Griscti O, Jacono J. Effectiveness of continuing education programmes in nursing: Literature review. J Adv Nurs. 2006;55(4):449–56.

6. Shrivastava SR, Shrivastava PS. Introducing Teaching Portfolio in Medical Colleges: Scope and Components. South-East Asian J Med Educ. 2020;14(2):147.
7. Modi PD, Kumar P, Solanki R, Modi J, Chandramani S, Gill N. Hand Hygiene Practices Among Indian Medical Undergraduates: A Questionnaire-Based Survey. Cureus. 2017;(August).
8. Assistant P, College RM, Principal V, College t. international journal of scientific research a study to evaluate the effectiveness of video assisted teaching onthe knowledge regarding child abuse among school age Anil Kumar M . Sc (N) II Year , Texcity College of Nursing , Coimbatore * Corresponding . 2019;20(3):7–8.
9. Devi B, Khandelwal B, Das M. Comparison of the effectiveness of video-assisted teaching program and traditional demonstration on nursing students learning skills of performing obstetrical palpation. Iran J Nurse Midwifery Res. 2019;24(2):118–23.
10. Parvathy Chandran 2020 Amrita College of Nursing, Amrita Viswa Vidyapeetham, conducted a study on Effectiveness of Video Assisted Teaching on Knowledge Regarding Home Care Management among Patients Diagnosed with Acute Coronary Syndrome.
11. Student MT. Efficient Discovery of Malevolent Users In Complex Social Networks. 2018;(6):8775–7.
12. Alsaaty FM, Carter E, Abrahams D, Alshameri F. Traditional Versus Online Learning in Institutions of Higher Education: Minority Business Students' Perceptions. Bus Manag Res. 2016;5(2).
13. Article in International Journal of Development Research · December 2019 Received, 2019. Available online at http://www.journalijdr.com Received 03rd September, 2019
14. Suresh K Sharma Nursing Research and statistics second edition Elsevier, 100 - 245
15. Sebastian J V. A Study To Assess The Effectiveness Of Self Instructional Module On Knowledge Regarding Life Style Modification Of Patient With Heart Failure Among Staff Nurses In Select .... Open Access A Study To Assess The Effectiveness Of Self Instructional Module On. 2022;(December 2019).

16. Singh G, Bhatnagar V, Gupta R, Kumar G. Exploration of E-Learning Vs Traditional Learning in India. Humanit Soc Sci Rev. 2020;8(2):69–76.
17. George A, Blaauw D, Green-Thompson L, Hajinicolaou C, Lala N, Parbhoo K, et al. Comparison of video demonstrations and bedside tutorials for teaching paediatric clinical skills to large groups of medical students in resource-constrained settings. Int J Educ Technol High Educ. 2019;16(1).
18. Carmichael M, Reid A-K, Karpicke JD, Bradley J V. www.sagepublishing.com The Current State of Play. A SAGE White Pap | [Internet]. 2018; Available from: https://us.sagepub.com/sites/default/files/hevideolearning.pdf
19. Devi B, Sharma C, Lepcha N. Blended Learning - A Global Solution in the Age of COVID-19. J Pharm Res Int. 2021;(August):125–36.
20. Malik SA. Simulation versus Video Film as a Method of Teaching. IOSR J Nurs Heal Sci. 2014;3(4):09–14.
21. Bast F. Perception of Online Learning Among Students From India Set Against the Pandemic. Front Educ. 2021;6(August):1–8.
22. Indexed S, Mahapatra SS, Campus T. Covid-19 Pandemic : Challenges AND. 2020;11(8):837–49.
23. Gopal R, Singh V, Aggarwal A. Impact of online classes on the satisfaction and performance of students during the pandemic period of COVID 19. Educ Inf Technol [Internet]. 2021;26(6):6923–47. Available from: https://doi.org/10.1007/s10639-021-10523-1
24. Submitted Ad. Attitude Of Senior Secondary E-Learning In Sikkim A Dissertation Submitted To In Partial Fulfilment of the Requirement for the Degree of Master of Philosophy By Pooja Basumatary Department of Education School of Professional Studies. 2018;(January).
25. Lodhiya K Kaushik Effectiveness of Collaborative Versus Traditional Teaching Methods in a Teaching Hospital in Gujarat PMID: 31602112PMCID: PMC6776944DOI: 10.4103/ijcm.IJCM_378_18

26. Kostereliogl u Ilker Student Views on Learning Environments Enriched by Video Clips Department of Educational Studies, Faculty of Education, Amasya University, Turkey Universal Journal of Educational Research 4(2): 359-369, 2016 http://www.hrpub.org DOI: 10.13189/ujer.2016.040207
27. Simon Edwige the impact of online teaching on higher education faculty's professional identity and the role of technology: the coming of age of the virtual teacher UMI Number: 3508146
28. T. Muthuprasad Students' perception and preference for online education in India during COVID -19 pandemic Division of Agricultural Economics, ICAR- Indian Agricultural Research Institute, New Delhi, 11001, India
29. McCurry MK, Martins DC. Teaching undergraduate nursing research: A comparison of traditional and innovative approaches for success with millennial learners. Journal of Nursing Education 2010; 49(5):276-279.
30. O Asikhia,. Students and Teachers' Perception of the Causes of Poor Academic Performance in Ogun State Secondary Schools Nigeria: Implications for Counseling for National Development. European Journal of Social Science 2010; 13(2):229.
31. Mahendru, Mandeep and Kaur, Manjit. Students Perception about the Modern Educational Techniques - A Case of North India. (May 17, 2011). Social Science Research Network SSRN http://ssrn.com/ abstract=1844304

APPENDIX- I

Letter seeking expert opinion for content validity of the tool

To,

_____

Sub: <u>Request for the opinion and suggestion to establish the content validity of the tools</u>

Respected Sir/ Madam

I Ms Divya Chapagain M.Sc Nursing 2nd year student of Sikkim Manipal College of Nursing have selected the research project on "Effectiveness of learning through online mode, pre-recorded video and traditional mode among 1st year BSc Nursing students of Sikkim Manipal College of Nursing, Gangtok, Sikkim." as a part of partial fulfillment of M.Sc. Nursing Programme.

Objectives of the study are:

1. To develop and validate the tools to be used for online, pre-recorded video and traditional mode
2. To assess the baseline knowledge among all three group of 1st year BSc Nursing students before exposure to learning
3. To assess the effectiveness of online mode learning among group I of 1st year BSc Nursing students
4. To assess the effectiveness of pre-recorded video learning among group II of 1st year BSc Nursing students
5. To assess the effectiveness of traditional mode learning among group III of 1st year BSc Nursing students
6. To compare the post-test knowledge score among all three group of 1st year BSc Nursing students

For this purpose, I have developed four tools, Tool-1 consist of demographic Proforma of health care professionals Tool- 2 consist of structured knowledge questionnaire based on content of handwashing Tool- 3 consist of video on hand washing Tool- 4 consist of power point on handwashing.

I would like to request you to kindly go through the tools and give your valuable suggestions and opinion on each item of the tool and also kindly advise whether any modification is needed or not for content validity of Tool 1, Tool 2, Tool 3 and Tool 4.

Here with, I have enclosed a validation criteria checklist, tools and letter of certification

Thanking you

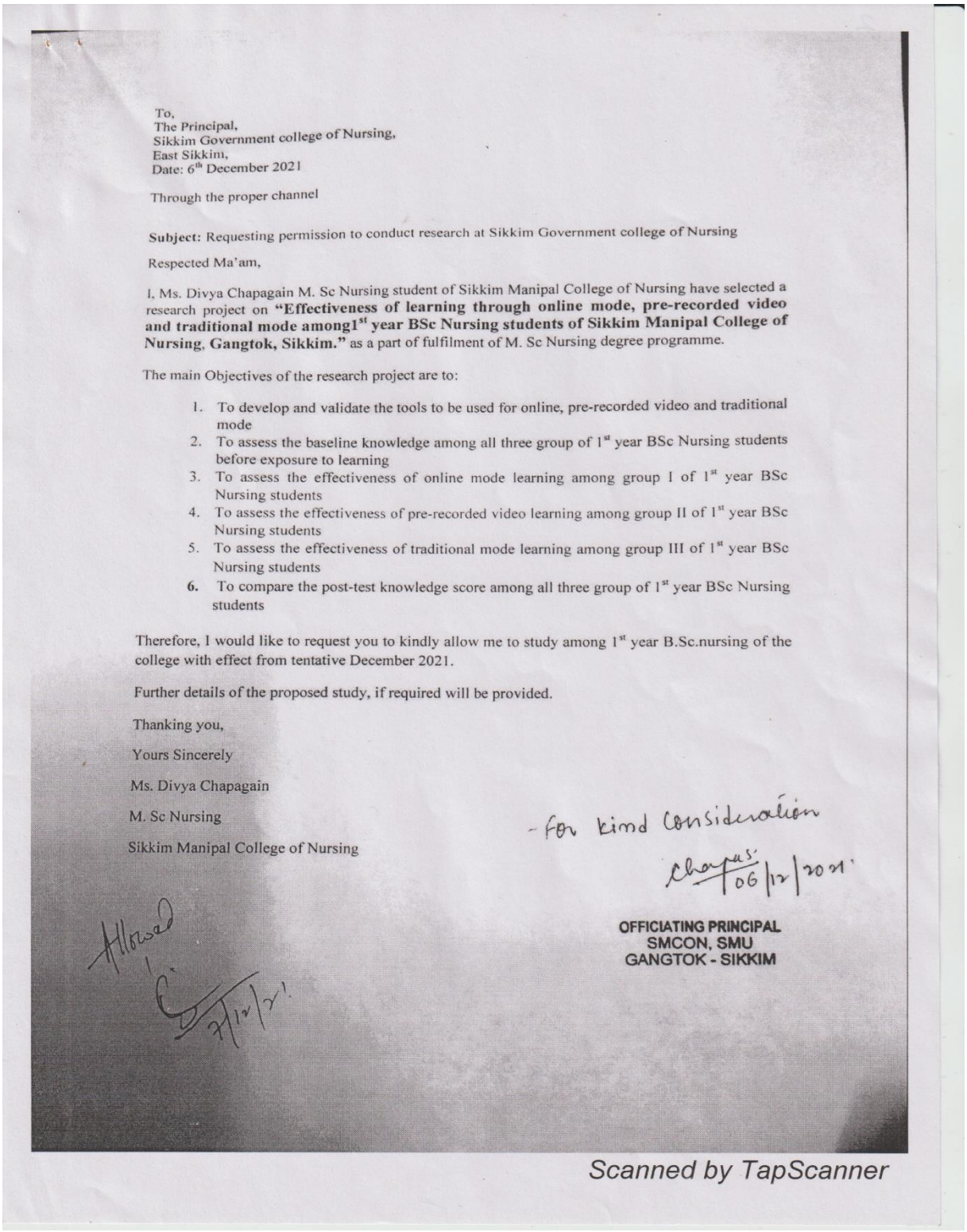
Yours sincerely,

Ms. Divya Chapagain

M.Sc. Nursing 2nd year Student (SMCON)

APPENDIX- II

Letter granting administrative permission to conduct the pretesting and reliability



To,
The Principal,
Sikkim Government college of Nursing,
East Sikkim,
Date: 6th December 2021

Through the proper channel

Subject: Requesting permission to conduct research at Sikkim Government college of Nursing

Respected Ma'am,

I, Ms. Divya Chapagain M. Sc Nursing student of Sikkim Manipal College of Nursing have selected a research project on **"Effectiveness of learning through online mode, pre-recorded video and traditional mode among1st year BSc Nursing students of Sikkim Manipal College of Nursing, Gangtok, Sikkim."** as a part of fulfilment of M. Sc Nursing degree programme.

The main Objectives of the research project are to:

1. To develop and validate the tools to be used for online, pre-recorded video and traditional mode
2. To assess the baseline knowledge among all three group of 1st year BSc Nursing students before exposure to learning
3. To assess the effectiveness of online mode learning among group I of 1st year BSc Nursing students
4. To assess the effectiveness of pre-recorded video learning among group II of 1st year BSc Nursing students
5. To assess the effectiveness of traditional mode learning among group III of 1st year BSc Nursing students
6. To compare the post-test knowledge score among all three group of 1st year BSc Nursing students

Therefore, I would like to request you to kindly allow me to study among 1st year B.Sc.nursing of the college with effect from tentative December 2021.

Further details of the proposed study, if required will be provided.

Thanking you,

Yours Sincerely

Ms. Divya Chapagain

M. Sc Nursing

Sikkim Manipal College of Nursing

- for kind consideration
Chapagain 06/12/2021

OFFICIATING PRINCIPAL
SMCON, SMU
GANGTOK - SIKKIM

Allowed
7/12/21

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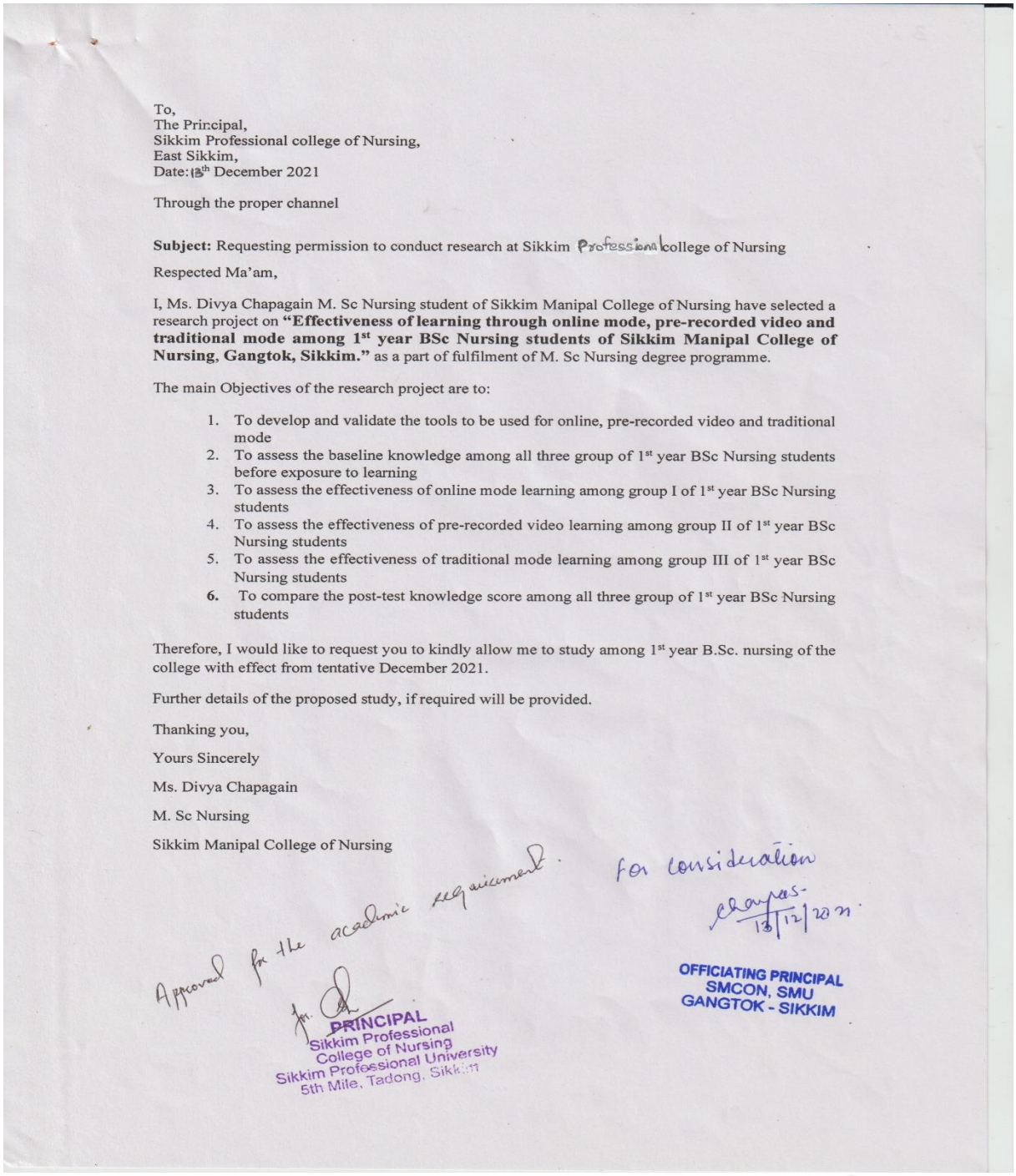
APPENDIX- III

Letter granting administrative permission to conduct the pilot study



To,
The Principal,
Sikkim Professional college of Nursing,
East Sikkim,
Date: 13th December 2021

Through the proper channel

Subject: Requesting permission to conduct research at Sikkim Professional college of Nursing

Respected Ma'am,

I, Ms. Divya Chapagain M. Sc Nursing student of Sikkim Manipal College of Nursing have selected a research project on **"Effectiveness of learning through online mode, pre-recorded video and traditional mode among 1st year BSc Nursing students of Sikkim Manipal College of Nursing, Gangtok, Sikkim."** as a part of fulfilment of M. Sc Nursing degree programme.

The main Objectives of the research project are to:

1. To develop and validate the tools to be used for online, pre-recorded video and traditional mode
2. To assess the baseline knowledge among all three group of 1st year BSc Nursing students before exposure to learning
3. To assess the effectiveness of online mode learning among group I of 1st year BSc Nursing students
4. To assess the effectiveness of pre-recorded video learning among group II of 1st year BSc Nursing students
5. To assess the effectiveness of traditional mode learning among group III of 1st year BSc Nursing students
6. To compare the post-test knowledge score among all three group of 1st year BSc Nursing students

Therefore, I would like to request you to kindly allow me to study among 1st year B.Sc. nursing of the college with effect from tentative December 2021.

Further details of the proposed study, if required will be provided.

Thanking you,

Yours Sincerely

Ms. Divya Chapagain

M. Sc Nursing

Sikkim Manipal College of Nursing

Approved for the academic requirement.

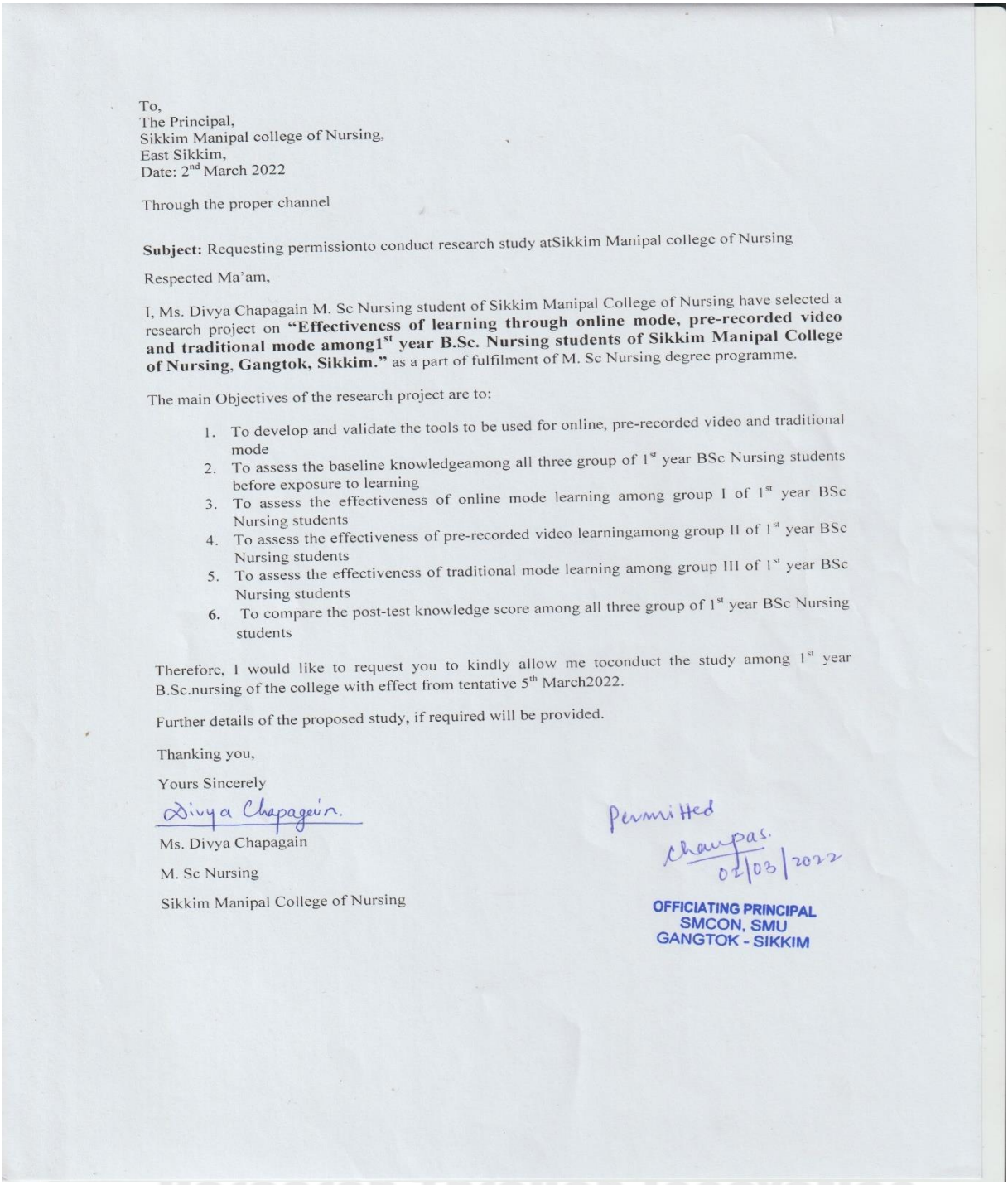
PRINCIPAL
Sikkim Professional
College of Nursing
Sikkim Professional University
5th Mile, Tadong, Sikkim

for consideration
Chapagain
13/12/2021

OFFICIATING PRINCIPAL
SMCON, SMU
GANGTOK - SIKKIM

APPENDIX- IV

Letter granting permission to conduct final study



To,
The Principal,
Sikkim Manipal college of Nursing,
East Sikkim,
Date: 2nd March 2022

Through the proper channel

Subject: Requesting permissionto conduct research study atSikkim Manipal college of Nursing

Respected Ma'am,

I, Ms. Divya Chapagain M. Sc Nursing student of Sikkim Manipal College of Nursing have selected a research project on **"Effectiveness of learning through online mode, pre-recorded video and traditional mode among1st year B.Sc. Nursing students of Sikkim Manipal College of Nursing, Gangtok, Sikkim."** as a part of fulfilment of M. Sc Nursing degree programme.

The main Objectives of the research project are to:

1. To develop and validate the tools to be used for online, pre-recorded video and traditional mode
2. To assess the baseline knowledgeamong all three group of 1st year BSc Nursing students before exposure to learning
3. To assess the effectiveness of online mode learning among group I of 1st year BSc Nursing students
4. To assess the effectiveness of pre-recorded video learningamong group II of 1st year BSc Nursing students
5. To assess the effectiveness of traditional mode learning among group III of 1st year BSc Nursing students
6. To compare the post-test knowledge score among all three group of 1st year BSc Nursing students

Therefore, I would like to request you to kindly allow me toconduct the study among 1st year B.Sc.nursing of the college with effect from tentative 5th March2022.

Further details of the proposed study, if required will be provided.

Thanking you,

Yours Sincerely

Divya Chapagain.

Ms. Divya Chapagain

M. Sc Nursing

Sikkim Manipal College of Nursing

Permitted
Champas.
02/03/2022

OFFICIATING PRINCIPAL
SMCON, SMU
GANGTOK - SIKKIM

APPENDIX- V

List of experts for validating the tools

The tools were given to 7 experts:

- Dr. Sudip Dutta, H.O.D. Department of pediatrics, C.R.H.
- Dr. Shrawan Sharma, Orthodontist, Smile Dental solutions, Tadong.
- Mrs. Hishey Lhamu Bhutia, Principal, SPCON.
- Ms. Lalita Rai,Assistant Professor, O.B.G Nursing, SGCON
- Mrs. Lhamit Lepcha, Assistant Professor, Child Health Nursing, SGCON
- Mrs. M. Thoibi Devi, Associate Professor, SMCON
- Mrs. W. Ashalata Devi, Associate Professor, SMCON

The experts were chosen based on their clinical experience, expertise and interest in the problem area.

APPENDIX- VI

Letter seeking permission for English language appropriateness

Dr. Abrona Lee Pandi Aden

Assistant Professor

Department of English

Sikkim University

Sir/Madam

I, Ms. Divya Chapagain, MSc Nursing. Sikkim Manipal College of Nursing have selected a research thesis on **"Effectiveness of learning through online mode, pre-recorded video and traditional mode among 1st year BSc Nursing students of Sikkim Manipal College of Nursing, Gangtok, Sikkim."** for the fulfilment of M Sc degree in Child Health Nursing.

In this regard. I request you to kindly check and edit the research thesis for English language, I shall be grateful for any valuable remarks and suggestion.

Thanking you

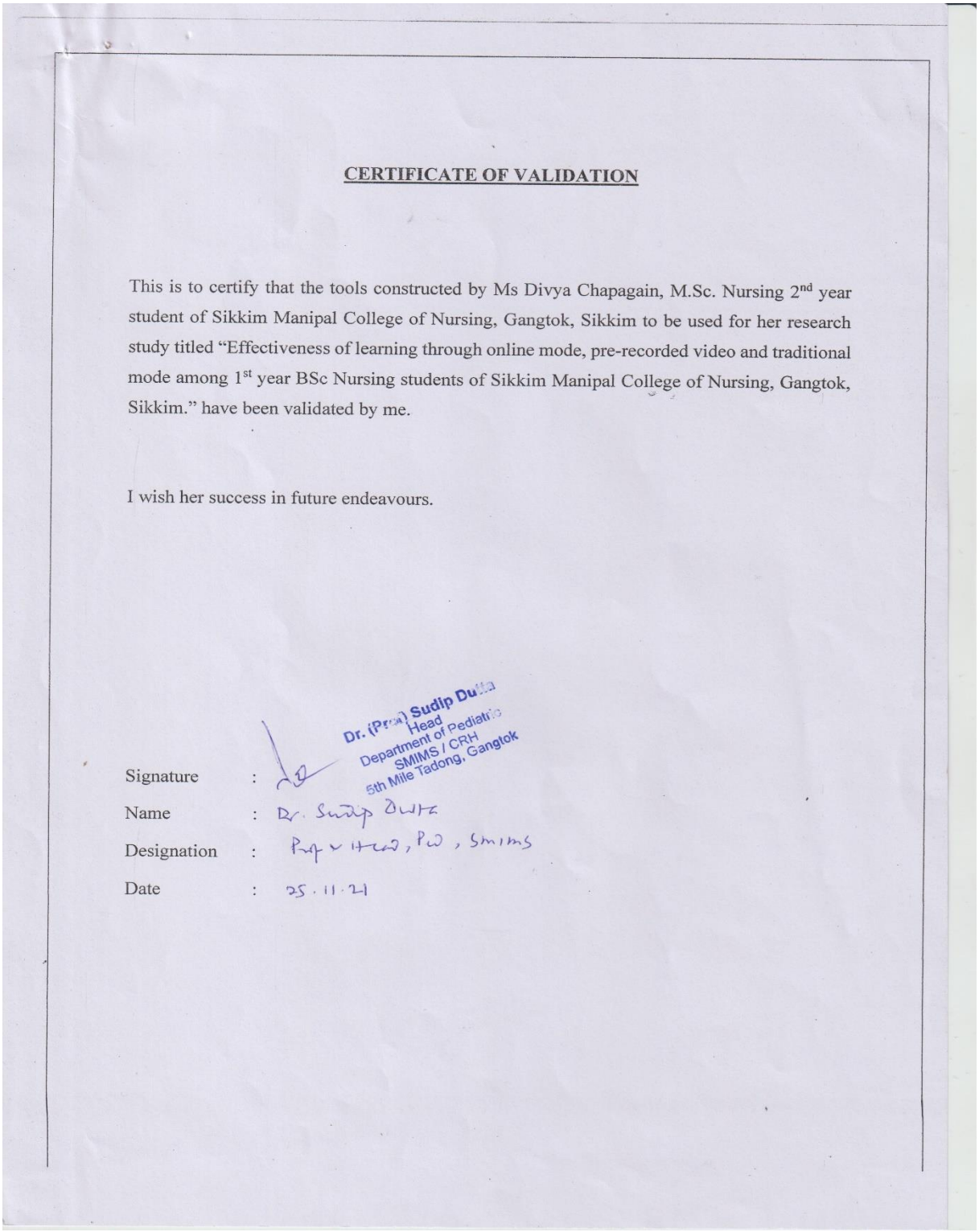
Yours sincerely

Ms. Divya Chapagain

M.Sc. Nursing

APPENDIX- VII

Certificate of validation



CERTIFICATE OF VALIDATION

This is to certify that the tools constructed by Ms Divya Chapagain, M.Sc. Nursing 2nd year student of Sikkim Manipal College of Nursing, Gangtok, Sikkim to be used for her research study titled "Effectiveness of learning through online mode, pre-recorded video and traditional mode among 1st year BSc Nursing students of Sikkim Manipal College of Nursing, Gangtok, Sikkim." have been validated by me.

I wish her success in future endeavours.

Dr. (Prof.) Sudip Dutta
Head
Department of Pediatrics
SMIMS / CRH
5th Mile Tadong, Gangtok

Signature :
Name : Dr. Sudip Dutta
Designation : Prof & Head, PD, SMIMS
Date : 25.11.21

CERTIFICATE OF VALIDATION

This is to certify that the tools constructed by Ms Divya Chapagain, M.Sc. Nursing 2nd year student of Sikkim Manipal College of Nursing, Gangtok, Sikkim to be used for her research study titled "Effectiveness of learning through online mode, pre-recorded video and traditional mode among 1st year BSc Nursing students of Sikkim Manipal College of Nursing, Gangtok, Sikkim." have been validated by me.

I wish her success in future endeavours.

Signature :

Name : Ms. Hisky L. Bhutia

Designation : Assoc. Prof. & Principal I/C

Date : 29/11/21

CERTIFICATE OF VALIDATION

This is to certify that the tools constructed by Ms Divya Chapagain, M.Sc. Nursing 2nd year student of Sikkim Manipal College of Nursing, Gangtok, Sikkim to be used for her research study titled "Effectiveness of learning through online mode, pre-recorded video and traditional mode among 1st year BSc Nursing students of Sikkim Manipal College of Nursing, Gangtok, Sikkim." have been validated by me.

I wish her success in future endeavours.

Signature :

Name : Dr. Shrawan Kr. Sharma

Designation : MDS Orthodontist

Date : 10/12/2021

Dr. Shrawan Kr. Sharma
BDS, MDS, Orthodontist
Smile Dental Solutions
Tadong, Gangtok-Sikkim

CERTIFICATE OF VALIDATION

This is to certify that the tools constructed by Ms Divya Chapagain, M.Sc. Nursing 2nd year student of Sikkim Manipal College of Nursing, Gangtok, Sikkim to be used for her research study titled "Effectiveness of learning through online mode, pre-recorded video and traditional mode among 1st year BSc Nursing students of Sikkim Manipal College of Nursing, Gangtok, Sikkim." have been validated by me.

I wish her success in future endeavours.

Signature : 25/4/21
Name : Mrs. Thoibi Devi
Designation : Asso. Prof.
Date : 25/4/21

CERTIFICATE OF VALIDATION

This is to certify that the tools constructed by Ms Divya Chapagain, M.Sc. Nursing 2nd year student of Sikkim Manipal College of Nursing, Gangtok, Sikkim to be used for her research study titled "Effectiveness of learning through online mode, pre-recorded video and traditional mode among 1st year BSc Nursing students of Sikkim Manipal College of Nursing, Gangtok, Sikkim." have been validated by me.

I wish her success in future endeavours.

Signature : Ashalata

Name : W. Ashalata Devi.

Designation : Associate prof.

Date : 22/11/21

CERTIFICATE OF VALIDATION

This is to certify that the tools constructed by Ms Divya Chapagain, M.Sc. Nursing 2nd year student of Sikkim Manipal College of Nursing, Gangtok, Sikkim to be used for her research study titled "Effectiveness of learning through online mode, pre-recorded video and traditional mode among 1st year BSc Nursing students of Sikkim Manipal College of Nursing, Gangtok, Sikkim." have been validated by me.

I wish her success in future endeavours.

Signature : Rai

Name : LALITA RAI

Designation : ASSIST. PROFESSOR

Date : 15.11.21

CERTIFICATE OF VALIDATION

This is to certify that the tools constructed by Ms Divya Chapagain, M.Sc. Nursing 2nd year student of Sikkim Manipal College of Nursing, Gangtok, Sikkim to be used for her research study titled "Effectiveness of learning through online mode, pre-recorded video and traditional mode among 1st year BSc Nursing students of Sikkim Manipal College of Nursing, Gangtok, Sikkim." have been validated by me.

I wish her success in future endeavours.

Signature :

Name : LHAMIT CEPCHA

Designation : Assistant Professor

Date : 07/12/21

APPENDIX- VIII

Certificate of English language appropriateness

Certificate for English language appropriateness

To,

Ms. Divya Chapagain

MSc Nursing

Sikkim Manipal college of Nursing

5th mile, Tadong Gangtok

TO WHOM IT MAY CONCERN

This is to certify that Ms. Divya Chapagain, M.Sc. nursing, batch (2020-2022), in her Research thesis entitled "Effectiveness of learning through online mode, pre-recorded video and traditional mode among 1st year BSc Nursing students of Sikkim Manipal College of Nursing, Gangtok, Sikkim." has made proper usage of English language in thesis, using appropriate words and expressions required for the writing. The few typological errors have been pointed and subsequently rectified. Her English language is satisfactory.

Date: 11.06.2022

Signature:

Dr Abrona Lee Pandi Aden
Assistant Professor
Department of English
Sikkim University

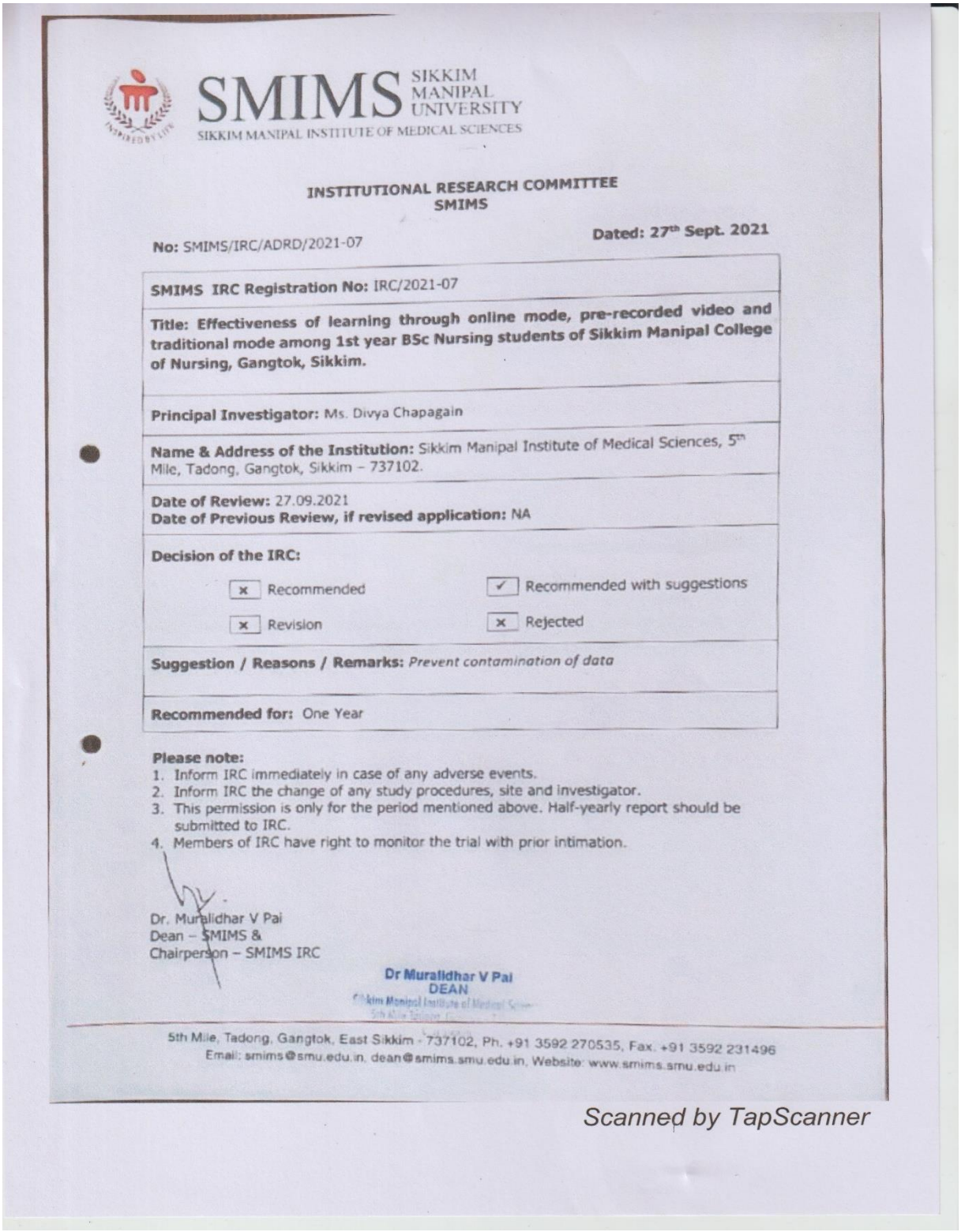
Name: Dr Abrona Lee Pandi Aden

Qualification: PhD

Designation: Assistant Professor

APPENDIX- IX

RPEC committee clearance



SMIMS SIKKIM MANIPAL UNIVERSITY
SIKKIM MANIPAL INSTITUTE OF MEDICAL SCIENCES

INSTITUTIONAL RESEARCH COMMITTEE
SMIMS

No: SMIMS/IRC/ADRD/2021-07 **Dated: 27th Sept. 2021**

SMIMS IRC Registration No: IRC/2021-07

Title: Effectiveness of learning through online mode, pre-recorded video and traditional mode among 1st year BSc Nursing students of Sikkim Manipal College of Nursing, Gangtok, Sikkim.

Principal Investigator: Ms. Divya Chapagain

Name & Address of the Institution: Sikkim Manipal Institute of Medical Sciences, 5th Mile, Tadong, Gangtok, Sikkim – 737102.

Date of Review: 27.09.2021
Date of Previous Review, if revised application: NA

Decision of the IRC:

[x] Recommended [✓] Recommended with suggestions
[x] Revision [x] Rejected

Suggestion / Reasons / Remarks: *Prevent contamination of data*

Recommended for: One Year

Please note:
1. Inform IRC immediately in case of any adverse events.
2. Inform IRC the change of any study procedures, site and investigator.
3. This permission is only for the period mentioned above. Half-yearly report should be submitted to IRC.
4. Members of IRC have right to monitor the trial with prior intimation.

Dr. Muralidhar V Pai
Dean – SMIMS &
Chairperson – SMIMS IRC

Dr Muralidhar V Pai
DEAN
Sikkim Manipal Institute of Medical Sciences
5th Mile, Tadong

5th Mile, Tadong, Gangtok, East Sikkim - 737102, Ph. +91 3592 270535, Fax. +91 3592 231496
Email: smims@smu.edu.in, dean@smims.smu.edu.in, Website: www.smims.smu.edu.in

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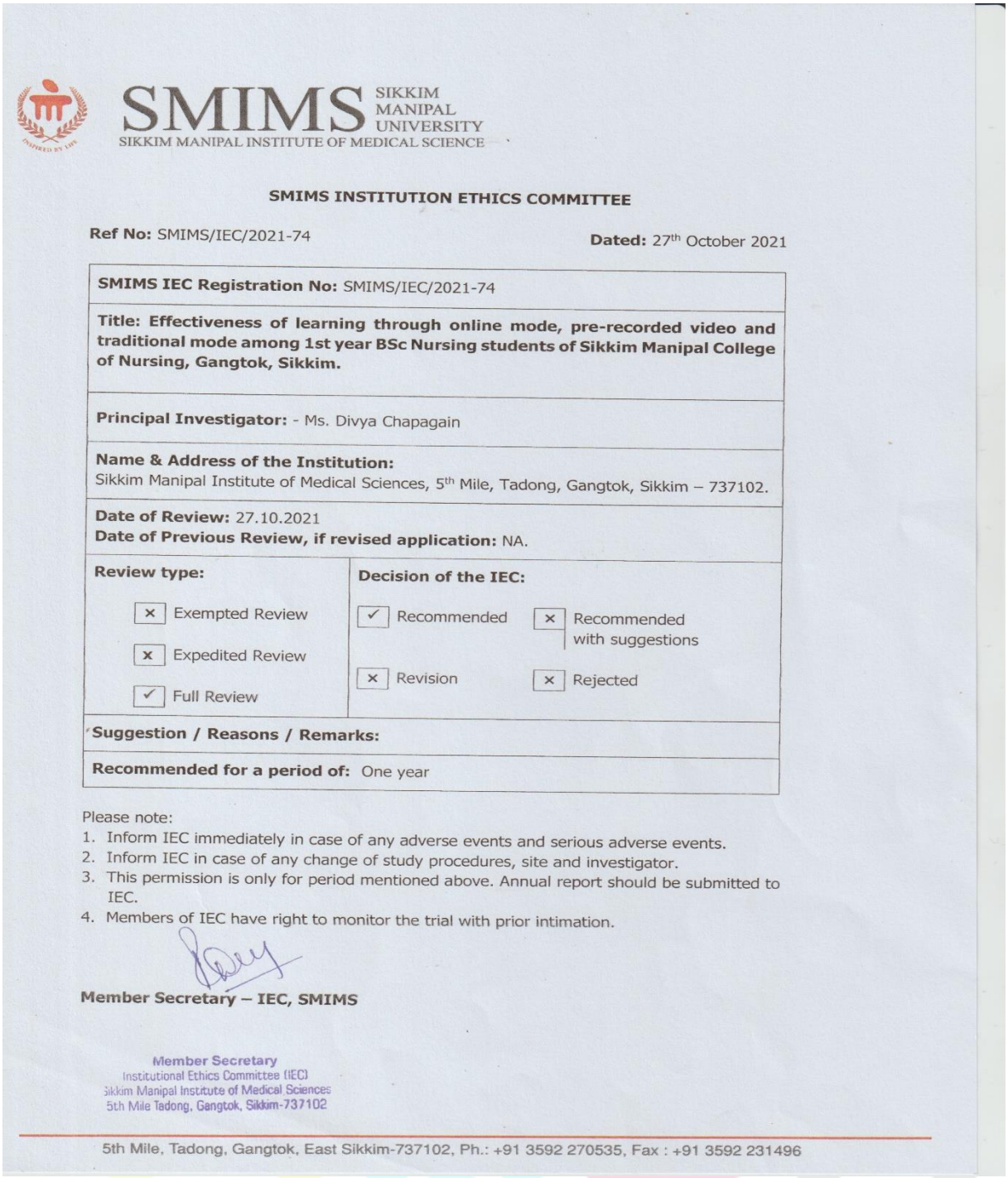
APPENDIX- X

Ethical committee clearance



SMIMS SIKKIM MANIPAL UNIVERSITY
SIKKIM MANIPAL INSTITUTE OF MEDICAL SCIENCE

SMIMS INSTITUTION ETHICS COMMITTEE

Ref No: SMIMS/IEC/2021-74 **Dated:** 27th October 2021

SMIMS IEC Registration No: SMIMS/IEC/2021-74
Title: Effectiveness of learning through online mode, pre-recorded video and traditional mode among 1st year BSc Nursing students of Sikkim Manipal College of Nursing, Gangtok, Sikkim.
Principal Investigator: - Ms. Divya Chapagain
Name & Address of the Institution: Sikkim Manipal Institute of Medical Sciences, 5th Mile, Tadong, Gangtok, Sikkim – 737102.
Date of Review: 27.10.2021 **Date of Previous Review, if revised application:** NA.

Review type:	**Decision of the IEC:**
[x] Exempted Review	[✓] Recommended [x] Recommended with suggestions
[x] Expedited Review	[x] Revision [x] Rejected
[✓] Full Review	

Suggestion / Reasons / Remarks:
Recommended for a period of: One year

Please note:
1. Inform IEC immediately in case of any adverse events and serious adverse events.
2. Inform IEC in case of any change of study procedures, site and investigator.
3. This permission is only for period mentioned above. Annual report should be submitted to IEC.
4. Members of IEC have right to monitor the trial with prior intimation.

Member Secretary – IEC, SMIMS

Member Secretary
Institutional Ethics Committee (IEC)
Sikkim Manipal Institute of Medical Sciences
5th Mile Tadong, Gangtok, Sikkim-737102

5th Mile, Tadong, Gangtok, East Sikkim-737102, Ph.: +91 3592 270535, Fax : +91 3592 231496

APPENDIX XI

Criteria checklist for validation of tool

Instruction:

The expert is requested to go through the following criteria checklist prepared for evaluation of questions pertaining to Demographic Proformaof 1st year BSc nursing students, Structured

Knowledge questionnaire. In the criteria check list there are response and remark columns. Kindly put tick mark at most appropriate column and facilitate your remarks in the remark column.

Tool: 1

Demographic Proforma:

Items	Agree	Disagree	Remarks/ Any Modification
Q.1 a)			
b)			
c)			
d)			
Q.2 a)			
b)			
c)			
d)			
Q.3 a)			
b)			
c)			
d)			
Q.4 a)			
b)			
c)			
d)			
Q.5 a)			
b)			
c)			
d)			
Q.6 a)			
b)			
c)			
d)			
Q.7 a)			
b)			
Q.8 a)			

b)			

Tool: 2

Structured knowledge questionnaire based on hand washing content:

Items	Agree	Disagree	Remarks/ Any Modification
Q.1 a)			
b)			
c)			
d)			
Q.2 a)			
b)			
c)			
d)			
Q.3 a)			
b)			
c)			
d)			
Q.4 a)			
b)			
c)			
d)			
Q.5 a)			
b)			
c)			
d)			
Q.6 a)			
b)			
c)			
d)			
Q.7.a)			
b)			
c)			
d)			
Q.8 a)			

b)			
c)			
d)			
Q.9 a)			
b)			
c)			
d)			
Q.10 a)			
b)			
c)			
d)			
Q.11a)			
b)			
c)			
d)			
Q.12a)			
b)			
c)			
d)			
Q.13a)			
b)			
c)			
d)			
Q.14a)			
b)			
c)			
d)			
Q.15a)			
b)			
c)			
d)			
Q.16a)			
b)			
c)			
d)			

Suggestion/comment if any

_____

_____

Date: Signature of expert

Time: Name:

Designation:

APPENDIX- XII

Content outline

CONTENT ON HANDWASHING

Hand Hygiene means cleaning your hands by using either handwashing (washing hands with soap and water), antiseptic hand wash, antiseptic hand rub (i.e. alcohol-based hand sanitizer including foam or gel), or surgical hand antisepsis.

Purpose of cleaning hands:

- The spread of potentially deadly germs to patients
- The risk of healthcare provider colonization or infection caused by germs acquired from the patient
- To remove transient and resident bacteria from fingers, hands and forearms.
- To reduce the risk of infectious organisms to oneself.
- To prevent cross infection to the clients.

Equipment's / Articles required:

Articles	**Rationale**
Soap in a soap dish	Soap contains antibacterial agents and has a lasting bacteria static effect.
Nail brush	To clean nails
Running water	To rinse soap and thoroughly wash hands

Towel	To dry hands

Steps of procedure:

Steps	**Rationale**	**Scientific principle**	**Nursing principle**
File the nails short. Ensure the nails are free from nail polish.	Short nails are less likely to harbor resident and transient micro-organisms.	Microbiology	Safety
Remove all jewellery and wrist watch.	Micro-organisms can be inside the settings of jewellery and under rings. Removal facilitates proper cleaning of hands and arms.	-do-	-do-
Turn on the waterto adjust the flow so that the water islukewarm.	Warm water removes less of the protective oil of the skin than hot water.	Physics	Comfort and safety
a) Medical asepsis: wet the hands lower than the elbows so that water flows from arms to finger tips.	It allows water to flow from the least contaminated area (elbow) to the most contaminated area (hands).	Microbiology	Safety
b) Surgical hand washing.	Water run by gravity from finger tips to elbows. Keeping hands	Physics	Safety

Wet hands and forearms liberally, keeping arms and hands above elbow level during the entire procedure.	elevated allows water to flow from least to the most contaminated area.		
Apply liberal amounts of soap into hands and lather and arms using hand brushes.	Soap emulsifies the oil and lowers the surface tension of water, facilitates the removal of micro-organisms, dust and oils. Brushes are used to enhance mechanical friction during hand washing.	Physics and chemistry.	Safety Therapeutic effectiveness
Thoroughly wash and rinse the hand using firm rubbing and circular movements to wash the palm, back and wrist of each hand. Inter lace the fingers during handwashing.	The circular action helps to remove micro-organisms mechanically. Running water and friction used in cleaning are the mechanical action of cleaning.	Physics	Safety
Dry arms and hands thoroughly from fingers to wrists and forearms. Discard the towel in a proper container.	Drying helps in removing moisture, prevents chapping and roughening of skin. Drying from cleaner to least clean area prevents contamination.	Microbiology Anatomy and Physiology	Safety
Turn off the water tap using a paper towel or using an elbow.	Hand is contaminated. Use of a paper towel or an elbow prevents contamination of washed hands.	Microbiology	Safety

Steps of effective hand washing

Step 1: Wash palms and fingers

Step 2: Wash back of hands

Step 3: Wash fingers and knuckles.

Step 4: Wash thumbs.

Step 5: Wash finger tips.

Step 6: Interlocking of hands.

Step 7: Wash wrists.

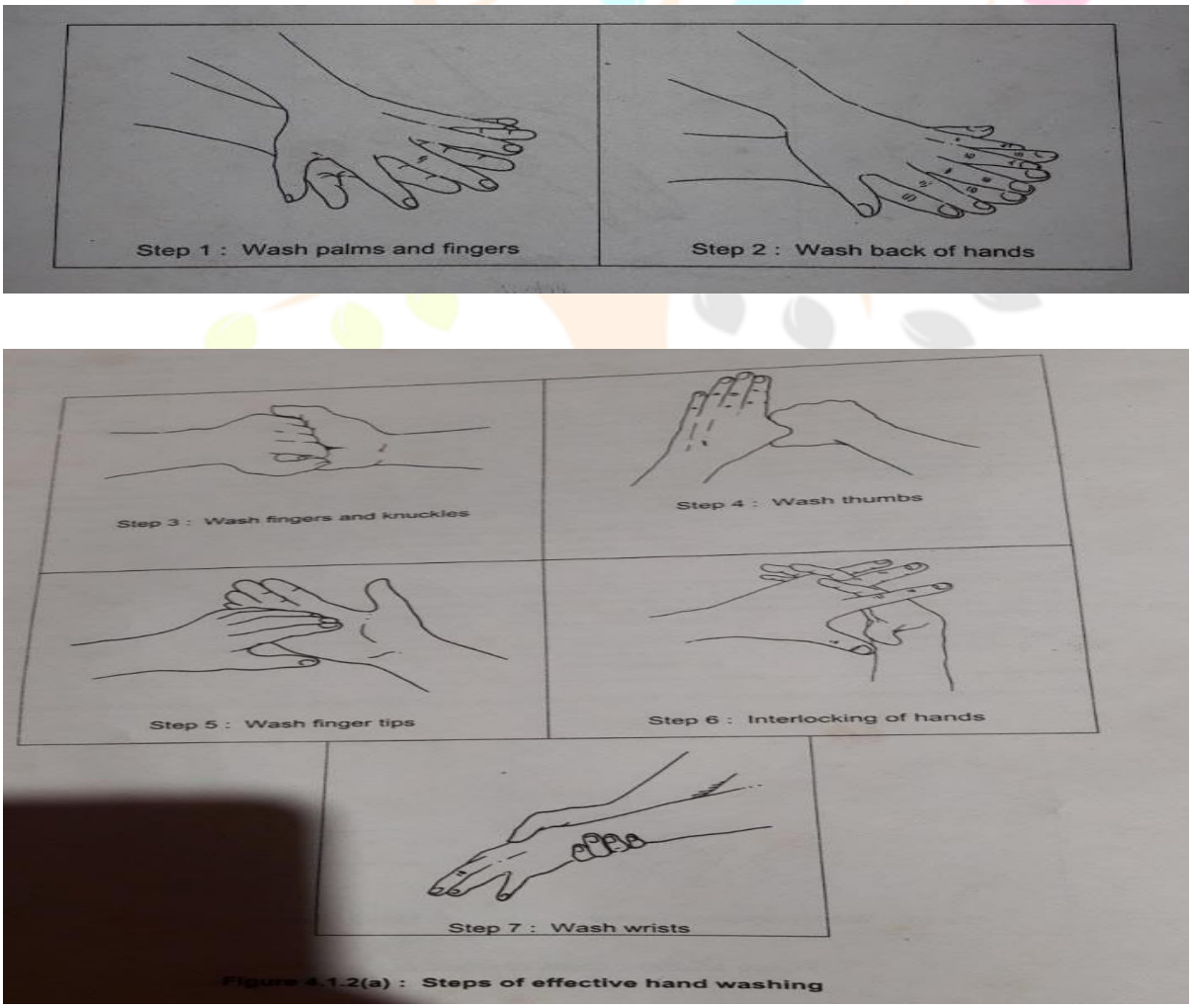


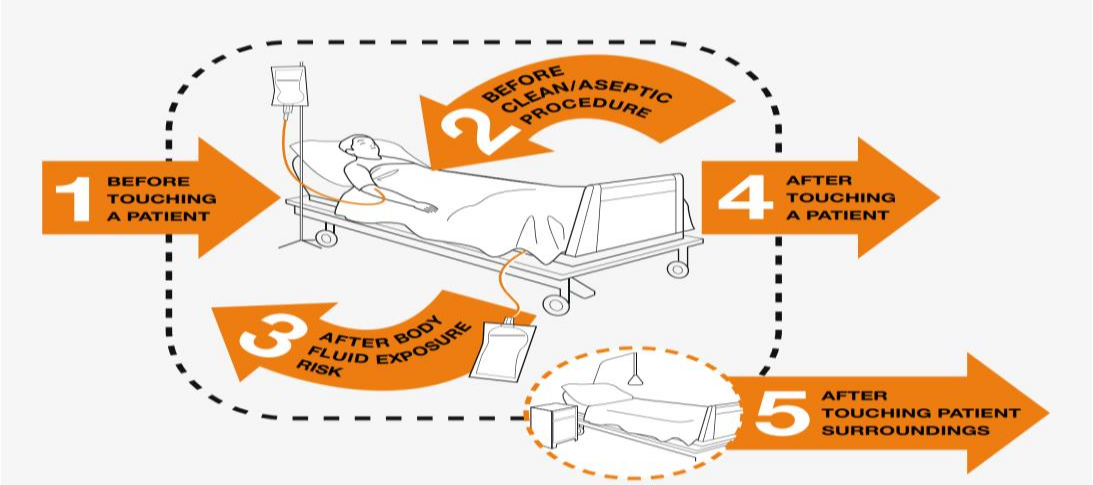
Figure 4.1.2(a) : Steps of effective hand washing

Multiple opportunities for hand hygiene may occur during a single care episode. Following are the clinical indications for hand hygiene:

When and How to Perform Hand Hygiene?

Wash with Soap and Water

- Immediately before touching a patient
- When hands are visibly soiled
- Before performing an aseptic task (e.g., placing an indwelling device) or handling invasive medical devices
- After caring for a person with known or suspected infectious diarrhea
- Before moving from work on a soiled body site to a clean body site on the same patient
- After known or suspected exposure to spores (e.g. *B. anthracis, C difficile* outbreaks)
- After touching a patient or the patient's immediate environment
- After contact with blood, body fluids or contaminated surfaces



The five moments of hand hygiene

The CDC Guideline for Hand Hygiene in Healthcare Settings recommends:

- When cleaning your hands with soap and water, wet your hands first with water, apply the amount of product recommended by the manufacturer to your hands, and rub your hands together vigorously for at least 15 seconds, covering all surfaces of the hands and fingers.
- Rinse your hands with water and use disposable towels to dry. Use towel to turn off the faucet.

- Avoid using hot water, to prevent drying of skin.
- Other entities have recommended that cleaning your hands with soap and water should take around 20 seconds.
- Either time is acceptable. The focus should be on cleaning your hands at the right times.

Indications for hand hygiene:

A. Wash hands with soap and water when visibly dirty or visibly soiled with blood or other body fluids or after using the toilet.

B. If exposure to potential spore-forming pathogens is strongly suspected or proven, including outbreaks of any diseases, hand washing with soap and water is the preferred means.

C. Use an alcohol-based handrub as the preferred means for routine hand antisepsis in all other clinical situations described in items. If alcohol-based handrub is not obtainable, wash hands with soap and water

D. Perform hand hygiene:

a) before and after touching the patient

b) before handling an invasive device for patient care, regardless of whether or not gloves are used

c) after contact with body fluids or excretions, mucous membranes, non-intact skin, or wound dressings.

Hand hygiene technique:

A. Apply a palmful of alcohol-based hand rub and cover all surfaces of the hands. Rub hands until dry.

B. When washing hands with soap and water, wet hands with water and apply the amount of product necessary to cover all surfaces. Rinse hands with water and dry thoroughly with a single-use towel. Use clean, running water whenever possible. Avoid using hot water, as repeated exposure to hot water may increase the risk of dermatitis. Use a towel to turn off tap/faucet. Dry hands thoroughly using a method that does not recontaminate hands. Make sure towels are not used multiple times or by multiple people.

C. Liquid, bar, leaf or powdered forms of soap are acceptable. When bar soap is used, small bars of soap in racks that facilitate drainage should be used to allow the bars to dry.

REFERANCE

1. https://www.cdc.gov/handhygiene/pdfs/cdc_handhygiene_brochure.pdf
2. who_guidelines-handhygiene_summary.pdf
3. Fundamentals of Nursing A procedure manual by The Trained Nurses Association of India publication by Chandu press, Shakhapur Delhi page no- 88-91.

APPENDIX- XIII

Subject information sheet

1. Statement that the study involves research and explanation of the purpose of the research.

   I, Ms. Divya Chapagain M.Sc. Nursing student studying in Sikkim Manipal College of Nursing is undertaking research on "Effectiveness of learning through online mode, pre-recorded video and traditional mode among 1st year BSc Nursing students of Sikkim Manipal College of Nursing, Gangtok, Sikkim." for the M.Sc. Degree in Child Health Nursing with the following objectives:

   1. To develop and validate the tools to be used for online, pre-recorded video and traditional mode
   2. To assess the baseline knowledge among all three group of 1st year B.Sc. Nursing students before exposure to learning
   3. To assess the effectiveness of online mode learning among group I of 1st year B.Sc. Nursing students

4. To assess the effectiveness of pre-recorded video learning among group II of 1st year B.Sc. Nursing students
5. To assess the effectiveness of traditional mode learning among group III of 1st year B.Sc. Nursing students
6. To compare the post-test knowledge score among all three group of 1st year B.Sc. Nursing students

2. Expected duration of the Subject's participation - The total duration of data collection is 1 month and the study duration is 2 years.

3. Description of the procedures to be followed, including all invasive procedures and – the study consists of non-invasive procedure.

4. The study will evaluate the Effectiveness of learning through online mode, pre-recorded video and traditional mode among 1st year BSc Nursing students of Sikkim Manipal College of Nursing, Gangtok, Sikkim, which will be identified and the Quantitative data will be gathered.

5. Description of any reasonably foreseeable risks or discomforts to the Subject – Not required

6. Description of any benefits to the Subject or others reasonably expected from research. If no benefit is expected Subject should be made aware of this-
   The study will help to find out the best method of learning in the nursing students and eventually helps in contributing help to the nursing profession by identifying the best way of learning.
7. Disclosure of specific appropriate alternative procedures or therapies available to the Subject- Not applicable.
8. Statement describing the extent to which confidentiality of records identifying the Subject will be maintained and who will have access to Subject's medical records- Informed consent will be obtained, prior information of the study and purpose will be informed to all participants.
9. Trial treatment schedule(s) and the probability for Non-random assignment to each treatment
10. The study will be conducted in a quantitative approach using Pretest post-test study design. Purposive sampling technique will be used for the selection of the subject.
11. Compensation and/or treatment(s) available to the Subject in the event of a trial related injury- Not required
12. An explanation about whom to contact for trial related queries, rights of Subjects and in the event of any injury- Not required
13. The anticipated prorated payment, if any, to the Subject for participating in the trial- Not required
14. Subject's responsibilities on participation in the trial- Your contribution in the study will be helpful in focusing on evaluating the best possible method to use for learning in the nursing students.
15. Statement that participation is voluntary, that the subject can withdraw from the study at any time and that refusal to participate will not involve any penalty or loss of benefits to

which the Subject is otherwise entitled. - This study will not hamper your work in any case. You are free to withdraw from this study at any time.

16. Any other pertinent information – Nil

I request you to participate in this study. If you have any questions, you may ask me now or later in the following contact number.
Contact number: 8388039561

Thank you
Ms. Divya Chapagain
M.Sc. Nursing
Sikkim Manipal College of Nursing

APPENDIX- XIV

Informed consent form

Study Title: "Effectiveness of learning through online mode, pre-recorded video and traditional mode among 1st year BSc Nursing students of Sikkim Manipal College of Nursing, Gangtok, Sikkim."

Subject's Initial: _____ Subject's Name: _____

Date of Birth/ Age: _____

Please put tick in the box given below

i. I confirm that I have read and understood the information sheet dated for the above study and have the opportunity to ask questions. [ ]

ii. I understand that my participation in the study is voluntary and that I am free to withdraw at any time without giving any reasons, legal rights being affected. [ ]

iii. I agree not to restrict the use of any data or results that may arise from this study provided such as use is only for scientific purpose(s). [ ]

iv. I agree to take part in the above study. [ ]

Signature (or Thumb impression) of the subject: _____

Date: ____/_____/_____

Signatory's Name: _____

Investigator's Signature: _____

Date: ___/_____/_____

Investigator Name: _____

APPENDIX- XV

Tools used for data collection

Tool -I

Section A

Demographic Proforma

Purpose: The tool is developed to collect data about Demographic characteristics of the students of 1st year BSc Nursing of Sikkim Manipal college of Nursing.

Instruction: Kindly go through the following statement and put a tick (√) mark against each appropriate answer. Information provided by you will be kept confidential.

Code No: _____Date: __/___/_____

1. Age (in years):

a) 17-19 [ ]
b) 20-22 [ ]
c) 23-25 [ ]
d) 25 and above [ ]

2. Religion:

a) Hinduism [ ]
b) Christianity [ ]
c) Buddhism [ ]
d) If other please specify …….

3. Percentage aggregate in high school:

a) 75 percentage and above [ ]
b) 66-75 percentage [ ]
c) 56-65 percentage [ ]
d) 54 percentage and below [ ]

4. Occupation of parent:

a) Profession [ ]
b) Skilled worker [ ]
c) Unskilled [ ]
d) Unemployed [ ]

5. Family income per month in Rs

a) <10000 [ ]
b) 10001-20000 [ ]
c) 20,001-30000 [ ]
d) >31001 [ ]

6. Type of family

a) Nuclear family [ ]
b) Joint family [ ]
c) Extended family [ ]
d) If other, please specify _____

7. Do you have any knowledge about proper washing of hands?

a) Yes [ ]
b) No [ ]

If yes, please specify _____

8. Have you practiced proper hand washing ever before?

a) Yes [ ]
b) No [ ]

If yes specify how _____

TOOL -II

Section - A

Structured knowledge Questionnaire

Instruction: The participants are requested to put (√) mark on answer from options given below. Answer according to your own convictions.

Code no._____ **Date: ____/___/____**

1. What is hand washing?

a) Washing the hands and elbow [ ]
b) Washing the face and and rinsing [ ]
c) Washing of hands following proper steps [ ]
d) Washing the palms and fingers with running water [ ]

2. How many steps of handwashing are there?

a) Nine steps [ ]
b) Twelve steps [ ]
c) Seven steps [ ]
d) Five steps [ ]

3. Which of the following is the main route of cross-transmission of potentially harmful germs between patients in a health-care facility?

a) Health-care workers' hands when not clean [ ]
b) Air circulating in the hospital [ ]
c) Patient's exposure to IVcannula [ ]
d) Sharing non-invasive objects [ ]

4. What is the purpose of hand washing?

a) To reduce the risk of infections to oneself and patient. [ ]

b) Enhance good hospital environment [ ]

c) Promotion of health of the patient [ ]

d) Promote proper protection against flies

5. How many types of hand washing are there?

a) Seven types [ ]

b) Four types [ ]

c) Three types [ ]

d) Two types. [ ]

6. What does medical handwashing do?

a) It allows the water to flow from the least contaminated area (elbow) to the most contaminated area (hands) [ ]

b) It allows the water to flow from the most contaminated area (elbow) to the least contaminated area (hands) [ ]

c) It allows the water to flow from the least contaminated area (hands) to the most contaminated area (elbow) [ ]

d) It allows the water to flow from the) most contaminated area (hands) to the least contaminated area (elbow) [ ]

7. Which of the following is the correct sequential order of the steps of hand washing?

a) Palm to palm, back of hands, fingers and knuckles, thumbs, finger tips, interlocking, wrists [ ]

b) Finger tips, back of hands, fingers and knuckels, thumbs, palm to palm, wrist [ ]

c) Thumbs, palm to palm, wrist, Finger tips, back of hands, fingers and knuckels, interlocking [ ]

d) Fingers and knuckles, thumbs, finger tips, interlocking, wrists, palm to palm, back of hands [ ]

8. What does surgical handwashing do?

a) Water run by gravity from finger tips to elbows, keeping hands elevated allows water to flow from least to the most contaminated area [ ]
b) Water run from elbows till finger tips, not elevating the hands allows water to flow from least to the most contaminated area [ ]
c) Water run by from finger tips to elbows, keeping hands elevated allows water to drain properly [ ]
d) Water run by gravity from elbows to finger tips, keeping hands elevated allows water to flow from least to the most contaminated area [ ]

9. What are the five moments of hand hygiene?

a) Before food, after food, after using rest room, after exposure to contaminated air, before sleeping [ ]
b) Before touching a patient, before clean /aseptic procedure, after body fluid exposure risk, after touching a patient, after touching patient surroundings [ ]
c) Before the drug therapy, before food, after the surgery, after the cleaning of wound, after food. [ ]
d) Before using rest room, after using rest room, before using medications, after using medications, before wound care [ ]

10. Duration of medical hand washing is?

a) 20-50 seconds [ ]
b) 30-40 seconds [ ]
c) 40-60 seconds [ ]
d) 50-60seconds [ ]

11. Hand washing reduces ?

a) Iatrogenic infection [ ]
b) Surgical wound [ ]
c) Cross infection [ ]
d) Preventing contamination [ ]

12. What is the purpose of removing wrist watch and jewellery before hand washing?

a) To facilitate proper cleaning of hands and arms and to remove the micro-organisms [ ]
b) Reduces healthcare related infection action on the hands [ ]
c) To prevent water in the rings to leak after handwashing [ ]
d) To make washing of hands more easy [ ]

13. Duration of surgical handwashing is?

a) 40-60 seconds [ ]
b) 1-2 minutes [ ]
c) 2-3 minutes [ ]
d) 2-5 minutes [ ]

14. Drying of hands after handwashing follows the principle of ?

a) Physics [ ]
b) Physics and chemistry [ ]
c) Microbiology and anatomy physiology [ ]
d) Anatomy [ ]

15. While handwashing we use?

a) Cold water [ ]
b) Hot water [ ]
c) Ice cold water [ ]
d) Lukewarm water [ ]

16. We use towel to close the tap because….

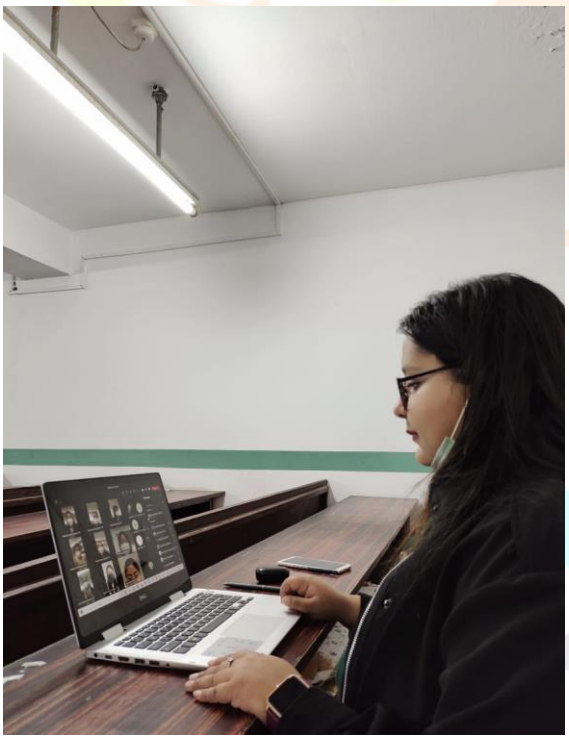
a) To avoid recontamination of hands [ ]
b) To ensure hands are clean [ ]
c) To decontaminate the hands [ ]

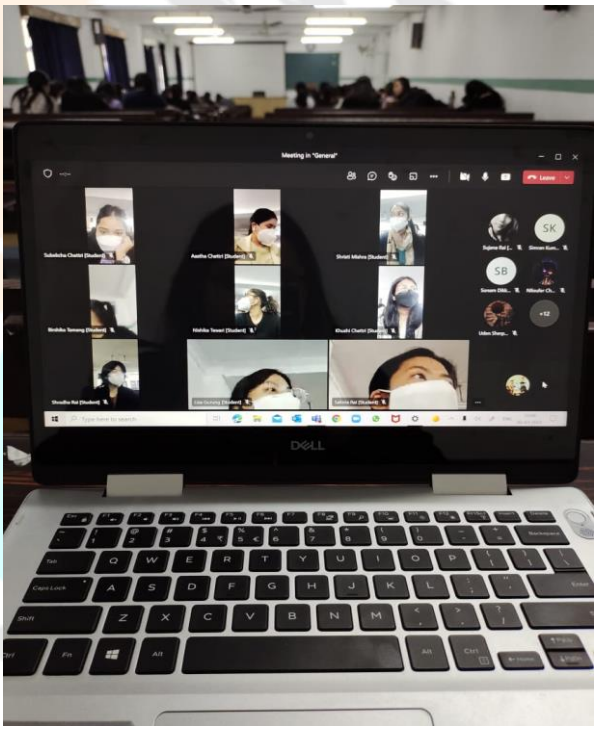
d) To avoid spilling of water [ ]

APPENDIX- XVI

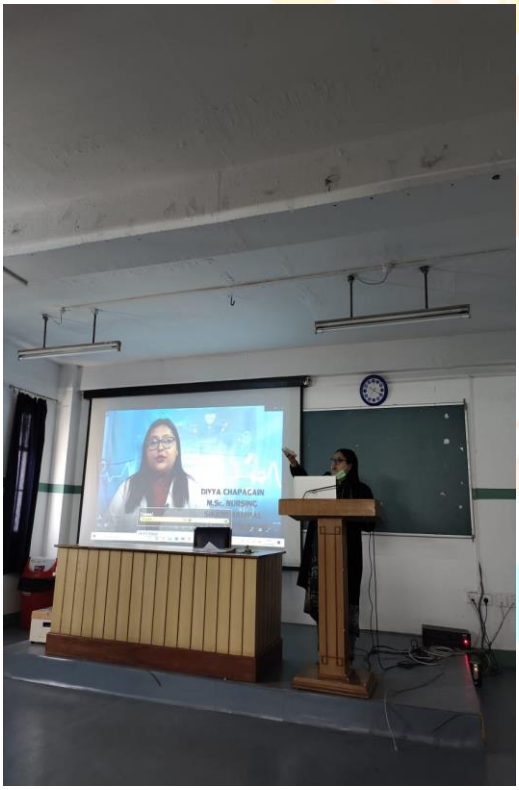
Data collection pictures

(Online group)





(Prerecorded video group)



(Traditional group)

APPENDIX- XVII

Master sheet used for data analysis

Online mode

Demographic Proforma	Frequency	Percentage
1. Age (in years):		
a) 17-19	23	85%
b) 20-22	4	14.81%
c) 23-25	-	-
d) 25 and above	-	-
		Total= 100%
2. Religion:		
a) Hinduism	15	55.56%
b) Christianity	4	14.81%
c) Buddhism	8	29.63%

d) If other please specify ……	-	-
		Total= 100%
3. Percentage aggregate in high school:		
a) 75 percentage and above	10	37.04%
b) 66-75 percentage	14	51.85%
c) 56-65 percentage	3	11.11%
d) 54 percentage and below		
		Total= 100%
4. Occupation of parent:		
a) Profession	12	44.44%
b) Skilled worker	7	25.93%
c) Unskilled	8	29.63%
d) Unemployed	-	-
		Total= 100%
5. Family income per month in Rs		
a) <10000	3	11.11%
b) 10001-20000	9	33.33%
c) 20,001-30000	8	29.63%
d) >31001	7	25.93%
		Total=100 %
6. Type of family		
a) Nuclear family	17	62.96%
b) Joint family	10	37.04%
c) Extended family	-	-
d) If other, please specify _____	-	-
		Total= 100%
7. Do you have any knowledge about proper washing of hands?		
a) Yes	27	100%
b) No		-

If yes, please specify _____		Total= 100%
8. Have you practiced proper hand washing ever before?		
a) Yes	20	74.07%
b) No	7	25.93%
If yes specify how _____		Total= 100%

Pre-recorded video

Demographic Proforma	Frequency	Percentage
1. Age (in years):		
a) 17-19	26	76%
b) 20-22	7	20.59%
c) 23-25	1	2.94%
d) 25 and above	-	-
		Total= 100%
2. Religion:		
a) Hinduism	22	64.71%
b) Christianity	6	17.65%
c) Buddhism	5	14.71%
d) If other please specify ……	-	-
		Total= 100%
3. Percentage aggregate in high school:		
a) 75 percentage and above	23	67.65%
b) 66-75 percentage	11	32.35%
c) 56-65 percentage		
d) 54 percentage and below		
		Total= 100%
4. Occupation of parent:		
a) Profession	28	82.35%
b) Skilled worker	5	14.71%

c) Unskilled	1	2.94%
d) Unemployed	-	-
		Total= 100%
5. Family income per month in Rs		
a) <10000	2	5.88%
b) 10001-20000	10	29.41%
c) 20,001-30000	11	32.35%
d) >31001	11	32.35%
		Total=100 %
6. Type of family		
a) Nuclear family	29	85.29%
b) Joint family	5	14.71%
c) Extended family	-	-
d) If other, please specify _____	-	-
		Total= 100%
7. Do you have any knowledge about proper washing of hands?		
a) Yes	34	100%
b) No		-
If yes, please specify _____		Total= 100%
8. Have you practiced proper hand washing ever before?		
a) Yes	30	88.24%
b) No	4	11.76%
If yes specify how _____		Total= 100%

Traditional mode

Demographic Proforma	Frequency	Percentage
1. Age (in years):		
a) 17-19	24	71%
b) 20-22	10	29.41%
c) 23-25		
d) 25 and above	-	-
		Total= 100%
2. Religion:		
a) Hinduism	26	64.71%
b) Christianity		
c) Buddhism	8	23.53%
d) If other please specify ……	-	-
		Total= 100%
3. Percentage aggregate in high school:		
a) 75 percentage and above	20	58.82%
b) 66-75 percentage	9	26.47%
c) 56-65 percentage	6	17.65%
d) 54 percentage and below		
		Total= 100%
4. Occupation of parent:		
a) Profession	23	67.65%
b) Skilled worker	11	32.35%
c) Unskilled		
d) Unemployed	-	-
		Total= 100%
5. Family income per month in Rs		
a) <10000	2	5882.00%
b) 10001-20000	8	23.53%
c) 20,001-30000	15	44.12%
d) >31001	9	26.47%

		Total=100 %
6. Type of family		
a) Nuclear family	22	64.71%
b) Joint family	12	35.29%
c) Extended family	-	-
d) If other, please specify _____	-	-
		Total= 100%
7. Do you have any knowledge about proper washing of hands?		
a) Yes	34	100%
b) No		-
If yes, please specify _____		Total= 100%
8. Have you practiced proper hand washing ever before?		
a) Yes	31	91.18%
b) No	3	8.82%
If yes specify how _____		Total= 100%

Online

Code	pre-test	post-test
code 1	11	13
code 2	12	14
code 3	9	13
code 4	9	12
code 5	11	12
code 6	10	10
code 7	10	11
code 8	11	12
code 9	11	14
code 10	10	13

code 11	9	11
code 12	11	12
code 13	11	13
code 14	8	11
code 15	9	12
code 16	10	11
code 17	11	11
code 18	10	11
code 19	11	12
code 20	9	11
code 21	11	12
code 22	10	13
code 23	11	12
code 24	10	13
code 25	11	12
code 26	11	12
code 27	10	11

Code	**pre-test**	**post-test**
code 1	10	14
code 2	9	15
code 3	9	15
code 4	9	16
code 5	11	14
code 6	11	15
code 7	10	13
code 8	11	16
code 9	11	15
code 10	12	14
code 11	11	15
code 12	11	14
code 13	11	14
code 14	11	13
code 15	11	15

Pre-	code 16	10	15
	code 17	9	13
	code 18	9	13
	code 19	9	10
	code 20	10	11
	code 21	9	13
	code 22	11	14
	code 23	9	12
	code 24	10	14
	code 25	10	13
	code 26	10	15
	code 27	10	13
	code 28	10	12
	code 29	9	12
	code 30	9	13
	code 31	11	16
	code 32	11	16
	code 33	10	14
	code 34	9	14

recorded video

Traditional mode

Code	pre-test	post-test
code 1	11	12
code 2	11	13
code 3	11	12
code 4	10	12
code 5	9	12
code 6	10	11
code 7	9	12
code 8	9	12
code 9	9	11
code 10	7	11
code 11	9	12
code 12	10	11
code 13	10	11
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code 27	10	11
code 28	12	13
code 29	11	12
code 30	11	12
code 31	9	12
code 32	9	11
code 33	11	12
code 34	9	10