

# Interactive Video Technology as A Mode of Teaching: A Qualitative Analysis of Nursing Students' Experiences at A Higher Education Institution in Namibia

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## Abstract

Interactive video technology (IVT) remains one of the common modes of teaching utilised by various higher education institutions (HEIs) across the globe with an aim of catering to ever-increasing educational demands. The objectives of this study were to explore and describe the experiences of nursing students on the use of IVT as a mode of teaching General Nursing Science with a view to describing the aspects that affect their learning. The study was conducted at one of the satellite campuses of an HEI located in north-eastern Namibia. In this study, a qualitative, exploratory and descriptive design was used. A total of fifteen nursing students from the Faculty of Health Sciences in the School of Nursing, purposively selected from the population of fourth-year nursing students who were taught via IVT, participated in the study. Data were collected using semi-structured interviews and analysed by means of content analysis. Three main themes subsequently emerged: nursing students experienced the IVT as a beneficial mode of teaching; the use of IVT as a mode of teaching resulted in certain negative experiences for nursing students; and the presence of certain strategies that strengthen IVT as a teaching mode. The study identified both positive and negative student experiences resulting from the use of IVT as a mode of teaching. It was therefore concluded that the School of Nursing should continue to use IVT as a mode of teaching, but should put certain interventions in place to strengthen it and to make the learning environment more favourable for students.

**Keywords:** experience, nursing students, interactive video technology, teaching mode, higher education institution

## 1. Introduction

Interactive video remains one of the most common modes of teaching utilised by HEIs across the globe, having the aim of catering to the ever-increasing educational demands. The literature defines this mode of teaching in various ways, with some referring to it as a digital video that supports a rich diversification of customers' interaction via gestures, voice, touch and clicks (Sharon, 2017). Kolås (2015) alludes to four categories of interactive video, including interactive video with links/link-chains, video with interactive 3D-objects and video with interactive maps. Additionally, Mullen (2015) highlights three approaches to video which include linear static video, linear dynamic video and interactive video. All these various interactive videos can be implemented using different commercial platforms to provide a unique set of interactive options (Kleftodimos, Lappas, & Evangelidis, 2020). However, the choice of which interactive video format to use at a specific educational institution is limited by the affordability, network reliance and availability of the equipment needed.

IVT is believed to be a rich model that is similar to a real-world environment and can thus be used in training numerous users simultaneously (Herault, Lincke, Milrad, Forsgårde, & Elmqvist 2018). The use of videos as instructional material has various effects with regard to the cognitive benefits (learning, memorising), psychological benefits (motivation, learning attitude) and the visualisation of knowledge (Whitton & Maclure, 2017). In addition, on teaching-learning platforms, the use of video is considered to be a pedagogical device with the ability to merge theory and application (Nacak, Bağlama, & Demir, 2020). Christ, Arya, and Chiu (2017) further state that the use of IVT is ideal because not only does it enhance persistency in learning and support individual differences among students, but its replicability, cost-effectiveness, time saving and easy distribution in the educational sector are also worth noting.

However, the effectiveness of IVT increases considerably when the teaching approach is merged with classroom teaching which is referred to as a blended teaching mode (Lalima & Dangwal, 2017).

IVT does, however, pose various challenges to students which could be as a result of technical difficulties or the limited IT orientation of individuals. As a result, this mode of teaching can be time-consuming, especially for inexperienced beginners, and in addition the media richness related to face-to-face communication decreases (Aditya & Babia, 2017). In addition, some nurse educators are unable to operate a computer to teach owing to a lack of skills which could be secondary to a lack of resources (Simataa, 2016).

Nacak et al. (2020) highlighted lack of eye contact, poor concentration, inability or limited chances to ask questions while watching to be some of the challenges associated with interactive videos. Furthermore, since it is expensive and involves sophisticated technology, there may be audio and visual difficulties, which cannot be solved by academics (Brady, 2013). Generally, the use of technology in teaching and learning requires users to possess adequate skills for teaching and learning are to be successful (Harerimana & Matshali, 2019).

Despite being a developing nation, Namibia is one of the countries in the world with a remarkable determination to incorporate computer technology and ICT (at a broader perspective) in its education sector (Shilamba, Dlodlo, & Osakwe, 2017). To ensure successful ICT integration, the government of the Republic of Namibia developed an ICT Policy for Education in 2005, following worldwide case studies on ICT integration that recognised the importance of an extensive national policy on ICT in education as a driving force for ICT incorporation and training (Ministry of Education (MoE), 2005). This policy articulates six goals which have a practical emphasis on the pedagogical utilisation of ICT as an instrument for teaching and learning at all levels of education (MoE, 2005). The University of Namibia has decentralised its IVT services across its 12 satellite campuses in the country. In the Department of General Nursing Science at the University, the development of clinical competencies, in both a practical and a theoretical component, plays a vital role in the delivery of safe and dignified patient care, as well as in the fulfilment of the registration requirements for healthcare practitioners (Nursing Act No. 8 of 2004). In fulfilling this undertaking, IVT is used to teach Nursing modules to fourth-year nursing students at a specific HEI campus as a temporary measure that seeks to address the shortage of lecturers in the department.

Despite the common use of IVT at the campus, little if nothing is known about the effectiveness or ineffectiveness of this mode of teaching in terms of both communication and in the areas of teaching and learning of students. Similarly, lecturers can only deliver a theoretical component of the module via this teaching platform and are unable to demonstrate certain procedures. Consequently, to have a complete picture of the usefulness of IVT for nursing modules, the researchers felt it was vital to conduct this study in order to investigate the effects that IVT had on students' learning, focusing on other nursing modules and not limited to human anatomy. It is, however, not explicitly known how nursing students at this HEI experience IVT as a teaching mode. Many studies have focused on teaching and training in general and not on nursing education per se. Consequently, the experiences narrated in these studies differ due to the nature of the professions, and therefore cannot be generalised to nursing students. The focus of this article is thus on exploring and describing how nursing students at this specific HEI have experienced IVT as a teaching mode.

Accordingly, the following research questions were addressed:

- What are the experiences of nursing students in the use IVT as a mode of teaching General Nursing Science at a Higher Education Institution?
- What recommendations can be made to improve the use of IVT as a mode of teaching General Nursing Science at a Higher Education Institution?

## 2. Research Design and Methods

This study followed a qualitative methodology, using an explorative and descriptive research design. The study was located within a critical realist paradigm. Critical realism embraces a complex view of reality and is aware of the influence of agency and structural factors prevalent in human behaviour (Clark, 2008). Ontologically critical realism assumes reality to exist but “only imperfectly apprehend able because of basically flawed human intellectual mechanisms and the fundamentally intractable nature of phenomena” (Guba and Lincoln, 1994, p. 110). Epistemologically, critical realism has been referred to as modified objectivist (Christie et al., 2000). The kind of knowledge produced to some extent is dependent upon the questions we ask in relation to the world around us and unavoidably a reflection from the researcher's own perspective (Danermark et al., 2005; Maxwell, 2012). This design was deemed suitable as it focuses on individuals who have experience of the phenomenon under study (Maree, 2016).

## 2.1 Context of the Study

This study took place at one of the public university campuses located in north-eastern Namibia. The School of Nursing at this campus only offers a four-year undergraduate bachelor honours degree programme, which was introduced in 2017 when the school also received an intake of second and third level students from other campuses. During this period, there was only one full-time lecturer who was teaching face to face. The rest of the modules were taught via IVT while the recruitment processes were underway. The IVT was also used with the fourth-year students who were relocated from another campus, although IVT was only used to teach theoretical aspects of the nursing modules. The practical component was always covered by lecturers from the main campus who came to do block teaching.

## 2.2 Participants and Sampling

A sample of purposive was adopted to recruit of participants in this study. In 2018 academic year, there were 30 (N = 15) students at level four of their training, and participants were purposively selected from this group. A sample size of seven (n = 15) nursing students was obtained, as determined by data saturation. According to Creswell, Klassen, Plano Clark & Smith (2018) indicate that qualitative research can range between 3 – 15 people. No participant withdrew from the study. Fourth-year nursing students were the only nursing students who were taught General Nursing Science via IVT and thus they were the population targeted for this study.

## 2.3 Data Collection Procedures

After ethical clearance was granted, the researcher met potential participants and solicited their participation in the study. The researcher further provided participants with an information sheet stating the aim of the study and what was required from participants. Consent was obtained from the participants by signing a consent form. In October 2018, data were collected at campus lecture halls, specifically from fourth-year nursing students, using face-to-face semi-structured interviews which were conducted in accordance with an interview guide. The interviews were conducted in English since all the interviewees could understand and speak English fluently. The interview questions comprised open-ended questions which gave the participants an opportunity to express their experiences of IVT as teaching mode. The following two questions were posed: 1. how did you experience the use of IVT as a mode for teaching General Nursing Science? 2. What recommendations may be made to improve the use of IVT as a mode for teaching General Nursing Science? The interview lasted for 40–50 minutes and the duration was determined by the participants' responses.

## 2.4 Data Analysis

Data analysis was done in accordance with De Vos, Strydom, Fouche, and Delport (2011), who indicated that data analysis is a process used to generate categories and to code the data. In this study, content analysis was used to analyse the data since it is the most reliable strategy used in qualitative research and it gives the researcher a chance to organise the information obtained into themes and subthemes. After initial data analysis by the researcher, the audio recordings and field notes were given to an independent coder to code the data. The independent coder was a senior lecturer with experience in qualitative research. Thereafter, the researcher and independent coder met to reach consensus on the established themes and sub-themes that emerged as a result of the study.

## 2.5 Quality Measures

In this study, the trustworthiness of the results was ensured by meeting the following suggested four criteria: credibility, dependability, transferability and conformability (Lincoln & Guba, 1985). *Credibility* was ensured by checking the reliability of coding with a qualified researcher who analysed the data and checked for patterns. Prior to interviewing participants, the interview guide was tested using four students who were not part of the main study. Subsequently, no major changes were made to the interview guide. In addition, *dependability* was ensured by offering a solid description of the research methods and also ensuring the appropriateness of the methodological applications. The researcher then validated the transcripts and subsequently generated thick descriptions of the research setting, data collection process, data analysis methods and the results to ensure *transferability*. In addition, existing literature was used to either confirm or dismiss experiences, whilst a dense description of results was provided to enhance comparisons with other similar settings. Finally, *conformability* was ensured by means of an inquiry audit during which the themes and sub-themes that had been identified were scrutinised by an experienced independent coder.

## 2.6 Ethical Considerations

The main ethical principles that govern research that involves human subjects include respect, confidentiality, beneficence, and justice. Ethical approval for the study was obtained from the University of Namibia Research Ethics Committee (SoNREC 07/2018). Confidentiality was maintained by storing the information collected on a computer

encrypted with a password known only to the researcher. Anonymity was also well maintained throughout the entire study process as no participant was required to give their names. In addition, informed consent was obtained from individual participants prior to their participation in the study; participation was entirely voluntary and participants were free to withdraw from the study at any given time.

### 3. Findings

#### 3.1 Description of Participants

All 15 participants who participated in the study were from the Faculty of Health Sciences and were all in their fourth year. In addition, ten were female and five were male. The majority of participants fell into the age range of 21 to 25 year age group, two into the 31 to 35 year age group and only one participant was between the ages of 26 and 30.

#### 3.2 Presentation of the Findings

The themes and subthemes from the data analysis are indicated in table below.

Table 1. Themes and subthemes obtained from the data analysis

Themes	Sub-Themes
1. Positive experiences of the use of IVT as a mode of teaching	<ul style="list-style-type: none"> <li>• Equal access between campuses</li> <li>• Effective technological way of teaching and learning</li> <li>• Effective method for saving money and time</li> </ul>
2. Challenges experienced in the use of IVT as a mode of teaching	<ul style="list-style-type: none"> <li>• Unreliable internet connections</li> <li>• Poor sound system</li> <li>• Inadequately equipped venues for IVT lessons</li> </ul>
3. Recommendations pertaining to the use of IVT in the School of Nursing	<ul style="list-style-type: none"> <li>• Supervision in the IVT classroom</li> <li>• Appointment of fulltime lecturer, training on the use of IVT and more technicians</li> <li>• Relooking at the issue of internet connection</li> <li>• Purchasing of quality sound system</li> </ul>

A detailed description of the themes and categories in this study is provided below:

#### 3.3 Theme 1: Positive Experiences of the Use of IVT as a Mode of Teaching

Interactive video-teaching (IVT) allows teaching interaction between lecturer and students from various campuses since it provides connection between two sites (campus to campus). This study revealed that there are various good experiences regarding the use of IVT namely: Equal access between campuses; effective technological way of teaching and learning, as well as good mode of saving money and time.

##### 3.3.1 Equal Access between Campuses

Participants revealed that they were amused by the fact that they were taught with other students from other campuses by the same lecturer at the same time and covering the same content, despite not being in the same geographical space.

*“Using interactive video technology can be very excellent in the sense that different people in different towns are engaging together at the same time through IVT.”* [P2]

*“My experience was good because we covered most of the content that was supposed to be covered within the provided time frame ... It was very nice and supportive.”* [P15]

##### 3.3.2 Effective Technological Way of Teaching and Learning

Some participants indicated that the use of IVT has proven favourable in both teaching and learning for various reasons. Participants made the following remarks on the issue:

*“Yeah, my experience with IVT is the fact that it was a technological method, it was quite interesting and exciting.”* [9]

*“What I have experience is that the IVT mmh it’s a good method the fact that one is able to view a lecturer that is giving you a module through a screening.”* [P1]

*“... because this video technology or web conference is actually a way of improvising so we don’t lose out and the*

*interactive video technology was an effort for us to be on track with the content that needed to be covered” [P4]*

### 3.3.3 Good Mode of Saving Money and Time

Some students revealed that the use of IVT is an effective method for saving money and time on the part of the lecturers. The following quote reflects this view:

*“Another benefit is that, it saves time and money in case of one lecturer, the lecturer does not need to travel to every campus to teach this can be done via IVT where all the students are taught at the same time from different campus.” [P13]*

### 3.4 Theme 2: Challenges Experienced in the Use of IVT as Mode of Teaching

Apart from the benefits brought in by the use of IVT as a mode of teaching, this study revealed that there are also some challenges experienced by the students while attending lessons via IVT. Some challenges identified were: unreliable internet connections; poor sound system, and inadequately equipped venues for IVT lesson.

#### 3.4.1 Unreliable Internet Connections

An unreliable internet connection was one of the major technical challenges experienced during the use of IVT. Participants indicated that it was sometimes unfeasible to link up with the lecturer owing to a poor connection.

*“So we couldn’t have classes at some points because the internet was bad.” [P3]*

*“Sometimes we were faced with technical error, whereby there will be poor connections and it takes most of the time for the thing to work and by the time things are sorted out we’re tired (and our mind has already switched off). It was really frustrating. [P11]*

#### 3.4.2 Poor Sound System

Participants indicated that sometimes the sound was poor and students could hardly hear the lecturer, especially those who were not seated close to the screen. Two participants made the following comments:

*“The sound was poor we could not hear clearly at some point. We had to ask the presenter from the other campus to repeat because we could not hear which was not good at all.” [P4]*

*“So we had to constantly remind the lecturer to keep the microphone close to him so we can hear properly.” [P8]*

#### 3.4.3 Inadequately Equipped Venues for IVT Lesson

The study revealed that there were times when lectures clashed with those for other students, since there was only one venue equipped to host online classes on campus. This has potentially led to the cancellation or rescheduling of lectures

*“Okay, sometime when we have a class via IVT the technician may not be available to set the computer and link us to the campus where the lecturer is teaching from and by the time he arrives the lecturer on the other side had already started teaching and we had to miss some content. So it was a challenge!” [P7]*

### 3.5 Theme 3: Recommendations Pertaining to the Use of IVT to the School of Nursing

This theme focuses on the recommendations and suggestions made by the participants on how the use of IVT could be improved for better learning to take place. Participants’ views were clustered and discussed under relevant subheadings below.

#### 3.5.1 Supervision in the IVT Classroom–

Participant P1 commented as follows regarding supervision in the IVT venue:

*“I think there was supposed to be a lecturer or technician who would just be supervising the students when they are having their lesson via IVT.” [P1]*

#### 3.5.2 Appointment of Fulltime Lecturer, Training on the Use of IVT and More Technicians

Participants demonstrated preference for physical lectures over IVT and suggested that the university should appoint enough lecturers. In addition, participants suggested a few lecturers should be trained on the basics of IVT to be able to take charge in case the technician is not available and also to consider the appointment of more technicians.

*“I would recommend that the university make provision to recruit or appoint enough lecturers for all faculties.” [P10]*

*“The institution must appoint two technician at least for three or four faculties; in case one is busy somewhere we can always reach the other one; and also to make provision for more classrooms for IVT.” [P8]*

*“Maybe they must train the class representative to avoid running to the technician since it’s not difficult just how to*

*switch on the PC, camera and speakers.” [P5]*

### 3.5.3 Relooking at the Issue of Internet Connection

The participants recommended that the internet connection should be relooked at by the institution’s management. The participant’s remark below underscores this:

*“I just want to recommend that they should look at the issue of network connection in the campus. I think they should really improve that network connection.” [P12]*

### 3.5.4 Purchasing of a Quality Sound System

To address the issue of poor sound, participants suggested that the university should purchase big screens and a better sound system so that students would be able to see and hear properly during the IVT session.

*“... They must also maybe buy a bigger flat screen television so that people that are at the back can see the content of the module being taught clearly.” [14]*

*“They really need to purchase quality speakers because some of the students could not hear what the lecturer is teaching.” [P6]*

## 4. Discussion of Findings

The purpose of this study was to understand the experiences of nursing students of the use IVT as a teaching mode in a nursing programme. This section presents a discussion of the findings in accordance with the themes that emerged from the study, namely, positive experiences pertaining to the use of IVT as a mode of teaching and the challenges experienced in the use of IVT as teaching mode.

### 4.1 Positive Experiences of the Use of IVT as a Mode of Teaching

Participants in this study praised this technological teaching mode for enabling students to engage with lecturers and students on different campuses. Participants believed that it was a vital experience as it helped to exposed them to a new way of learning. These findings align with those of Archibald, Ambagtsheer, Casey and Lawless (2019), who indicate that IVT enables smooth communication between multiple groups of individuals residing in different geographically dispersed areas in contexts with limited resources. These results also tally with those of Stone, Cooke, and Mitchell (2020) and Hurst (2016) who argue that video technology provides an accommodative lecturing option for contemporary student populations and also fosters the acquisition of clinical skills (Lee et al., 2016). It also emerged from the themes of this study that IVT was viewed by participants as an ideal mode of teaching and learning that can save both capital and time. Similar observations were made by Archibald et al. (2019), whose participants indicated that they believed IVT to be cost-effective and time conserving, since commuting expenses were reduced and no unnecessary travelling or up-front setup costs were required when using IVT.

### 4.2 Challenges Experienced in the Use of IVT as a Mode of Teaching

The results of this study showed that IVT has a significant impact on students’ teaching and learning. Lee et al. (2016) observed a significant increase in the level of knowledge and skills among participants following the use of video technology. This mode of teaching enables an extensive dialogue between students and the lecturer which promotes better learning engagement (Holland et al., 2013).

Participants in this study strongly alluded to the challenge of poor internet connection and further emphasised that a good internet connection is needed for them to be able link up with the lecturer at any given time. Herault et al. (2018) highlighted high speed internet connection to be a prerequisite for the effective use of IVT. These findings are consistent with those of Ghavifekr and Rosy (2015), who discovered that technical difficulties have posed a great challenge to users which later resulted in frustration on the part of students and lecturers owing to the interruption of their teaching and learning process. Similarly, Kivistö (2017) highlighted those technical difficulties such as internet connections and the fact that devices have structural downsides including small screen size and small font. Participants in this study pointed to the poor sound system as another challenge they faced during their use of IVT. Participants further indicated that at some point they could hardly hear the lecturer owing to poor sound and the noisy environment and therefore had to remind the presenter constantly to get closer to the microphone. These results speak to those of Nonthamand (2020) who emphasises the importance of considering background noise during video conference to ease learning. Similarly, Buket and Semra (2016) discovered poor academic performance following the introduction of IVT as students could not hear the lecturer clearly due to poor sound. In addition, poor sound and audio echo posed auditory challenges to students following the introduction of a digital web conference learning tool (Hart, Bird, & Farmer, 2019).

Montayre and Sparks (2018) praise online video for its ready accessibility to students since they are able to access it anywhere at any time. The findings do, however, contradict those of Kleftodimos et al. (2020), where participants made a positive evaluation of interactive video and raised no learning environment-related complaints. In this study, students pointed out that the computer technician was not always available to start the classes by linking up the students, resulting in lessons being delayed or cancelled altogether. In addition, proper classroom management and monitoring of students during IVT is vital to enhance their learning (Abushammala, 2019). Similarly, Lee et al. (2016) suggest that it is vital that technical support be offered to students in future to improve learning. It also emerged from the themes that poor computer skills can be a challenge to users in the absence of proper guidance and support (Emeka & Nyeche, 2016).

### **5. Strength and Limitations**

The strength of this current study is that nursing students views are considered from an emic perspective. This study focused on the experiences of nursing students at a university campus located in north-eastern Namibia. Consequently, their experiences of IVT as a mode of teaching may differ from nursing students who are enrolled at other campuses because the IT facilities at various campuses and institutions differ. This limits generalisation.

### **6. Recommendations**

According to findings, students felt that lessons (classes) had to be rescheduled owing to the unfixed timetable. To address this issue, the study recommends that a fixed timetable should be made available students to prevent the rescheduling of classes and clashing of classes. The study recommends that internet connections on the campus need to be made stronger to prevent the recurrent problem with network connectivity. One person (supervisor) should be appointed to supervise the students during their IVT lessons. The study also recommends that there is a need for the institution to procure better quality speakers and to purchase a large flat screen. Moreover, there is a need for technicians to be always available in case there are poor connections as well as to link students to the campuses from which the lecturer is teaching.

### **7. Conclusions**

This study contributes to the body of knowledge by revealing nursing students' experiences of the use of IVT as a mode of teaching. It can be concluded that nursing students at the campus have both positive and negative experiences regarding the use of IVT. Participants expressed positive experiences by stating that IVT has a positive benefit in that it enables cross campus teaching. Benefits experienced by students include equal access across campuses, while the challenges faced by the students were poor internet connections and the poor sound system. Participants in this study recommended certain strategies that HEIs can use to strengthen the effectiveness of IVT in nursing education.

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Medusalem Hangula Joel, Daniel Opotamutale Ashipala and Esther Kamenye were involved in the conceptualisation, literature review, data collection, analysis, writing of the manuscript in this study. Both authors wrote the original manuscript and approved the final manuscript for publication.

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## Note

P1 refers to participant and number allocated.

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