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Original Research Article

The impact of Video Assisted learning (VAL) on slow learners

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Abstract

Background: Every medical graduate after completion of his course is posted in the emergency room where he/she faces many chest emergencies. In some chest emergencies a small intervention can be life-saving. In view of evidence based clinical practice every medical graduate should be confident to diagnose chest emergencies (e.g. Tension pneumothorax, massive pleural effusion, periodical effusion etc.) on radiographs, where an immediate intervention is necessary. Video Assisted learning (VAL) improves the performance of learners as it addresses a variety of learning styles. Video can be as good as an instructor in communicating facts or demonstrating procedures to assist in mastery learning where a student can view complex clinical or mechanical procedures as many times as they need to. In this study the advantages of video assisted learning would be used to enhance the academic output of learners.
Method: 60 medical students of 6th semester were exposed to video assisted learning after traditional didactic lecture teaching on chest emergencies in the discipline of Radiology. Pretest OSCE was conducted in the form of interpretation of chest radiographs and post test OSCE was conducted after the intervention (VAL)
Results: The average pretest score was 25.2 (31.5%) and average post test score was 48.15(60.18%). Based on the pretest scores, students were divided into three groups, i.e. Top one-third students, Middle one-third students and Bottom one-third students (i.e. slow learners). The pretest and post test results were compared as mean scores of the groups, with Paired t test. The difference in the scores was found to be statistically significant in all the groups (p value less than 0.001). The students perceived VAL as a good instructor which improves the understanding of complex case scenarios.
Conclusion: Video assisted learning is an effective medium for teaching – learning in graduate medical education.
Keywords: Video assisted learning, Slow learners, medical education, TL method.

1. Introduction

Teaching makes acquisition of knowledge and skills possible through systematic interaction between teachers and learners. It happens every day and involves interaction of teacher, learner, methodology and materials. Part of these materials is known as instructional resources. The use of instructional materials in teaching process provides the basis for improved teaching and learning of a subject. They are designed, produced and used to achieve specific instructional goal. Ayinde et al[1] opined that an intelligent use of audio-visual aids will save time and stimulate students interest. It increases the retention of knowledge and stimulates understanding and attitude. They help students to recognize a problem, provide solution and summarize discussion. More so, they facilitate independent study, aid communication teaching techniques and successful learning. They assist students to enjoy and understand lessons easily, especially when they are attached with appropriate methodology. Video is a very important example of instructional materials. Oguntuase et al[2] defined it as a record on any medium through which a moving image may by any means be produced. They are derivative works which are usually based on original literacy, dramatic, musical and artistic works. Teachers are now expected to make use of video for mass media teaching or learning. A good instrument towards achieving this is television which possess seeing and hearing qualities

thatmakes more effective teaching and learning. According to Alaku et al [3] video play vital role in teaching and learning. When used effectively, it stimulates interest among the pupils and induces longer retention of factual ideas as the children come into contact with what is being taught. Kindler (2006) as quoted by Fakunle et al[4] declared that people generally remember 10% of what they read, 20% of what they hear, 30% of what they see, 50% of what they hear and see, 70% of what they say and 90% of what they say as they do a thing. Also, National Teacher Institute [5] stated that Chinese concluded that: I hear; I forget, I see; I remember I do; I understand. Hence from the illustration above, since video has to do with hearing and seeing it could be suggested that it is a vital tool of learning and teaching. However, for video to be effective, it must be available, easy to use, well maintained, adequately funded and experts must be available.

Every medical graduate after completion of his course is posted in emergency where he/she faces many chest emergencies. It is essential to identify on the chest radiograph life threatening conditions such as pneumothorax, hemothorax, abnormal mediastinum (possibly indicating aortic or other great vessel injury), and thoracic spine fracture, as well as mal-positioned lifesupport devices. The technical limitations of a chest radiograph should be declared when it isdifficult or impossible to exclude a life-threatening injury, and alternative imaging studies should be suggested [6]. For example tension pneumothorax is one of the most common life threatening intra-thoracic injures caused by blunt trauma [7]. The diagnosis in most cases is made from clinical signs and symptoms. Radiographic findings suggestive of tension pneumothorax include increased lucency of the affected hemi-thorax with contralateral displacement of the mediastinum and trachea and flattening or even inversion of the ipsi-lateral hemidiaphragm[8].

In such chest emergencies a small intervention can be lifesaving. In view of evidence based clinical practice every medical graduate should be confident to diagnose chest emergencies (e.g. tension pneumothorax, massive pleural effusion, pericardial effusion etc) on radiographs, where an immediate intervention is necessary. It is alarming to note that virtually all lecturers or teacher does not make use of instructional materials to deliver lectures. It is in light of this, that this study investigated the effect of video in teaching undergraduates, the interpretation of chest radiographs with the aim to improve the performance of slow learning undergraduate medical students and to assess the effectiveness of Video assisted learning (VAL) in slow learners.

2. Methods

After approval and suggestions by Ethics Committee of MGIMS, Sewagram, this study Prospective Interventional educational research was carried out in the Dept. of Radiodiagnosis of the institute.60 undergraduate medical students of 6th semester (final M.B.B.S.) participated in the study after due consent. All were exposed to traditional methods of teaching (i.e. 2 didactic Lectures of one hour each). The pretest was conducted for all 60 students after seven days. Intervention in the form of Video assisted training was carried out for all students. Two Video sessions of 1 hour duration each were done with discussion for two days. Post test was conducted for all students. Perception of the study participants was taken with feedback questionnaire.

2.1 Analysis

Based on the pretest scores, students were divided into three groups, i.e. top one-third students, middle one-third students and bottom one-third students (i.e. slow learners).

The pretest and post test results were compared as mean scores of the groups, with Paired t test. Perceptions about video assisted training were analyzed using Likert‟s scale.

3. Results

There were 60 participants in the study. Out of 80 marks average pretest score was 25.2 (31.5%) and average post test score was 48.15(60.18%).Based on the pretest scores, students were divided into three groups, i.e. Top one-third students, Middle one-third students and Bottom one-third students (i.e. slow learners). The pretest and posttest results were compared as mean scores of the groups, with Paired t test. There was significant increase in scores after of VAL intervention in all groups, p value is<0.0001 (Table 1). The students gave a positive feedback about video assisted learning (Table 2 & 3). Few suggestions for improvement of training were also made by students (Table 3).

Table 1: Change in average scores of Pretest and Posttest of VAL intervention

Participants	Pre-test Score	Post-test Score	Increase in Score	Paired T test (P value)
All students	25.2	48.2	23.0	< 0.0001
Top one third students	39.5	56.8	17.3	< 0.0001
Middle one third students	22.0	48.5	26.5	< 0.0001
Bottom one third students	15.0	39.6	26.4	< 0.0001

Figure 1: Change in average scores of Pretest and Posttest of VAL intervention

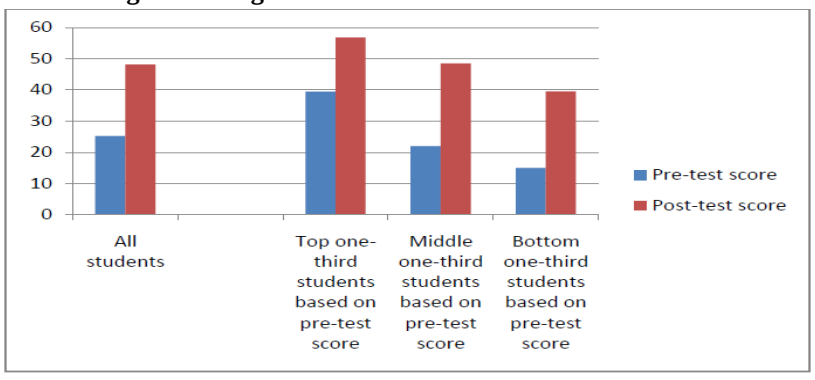

Table 2: Students' Feedback based on close-ended questions in Likert's scale

S. No.	Responses of students	Strongly Disagree	Disagree	Not sure	Agree	Strongly agree
1	Video assisted learning clears the concepts related to clinical scenarios	0 (0%)	2(3.3%)	3(5%)	42(70%)	13(21.6%)
2	Video Assisted learning (VAL)improves the performance of learners as it addresses a variety of learning styles	0 (0%)	2(3.3%)	3(5%)	46(76.6%)	9(15%)
3	VAL improves visual clues, assists memory process, and the recall of new knowledge	0 (0%)	0 (0%)	7(11.7%)	39(65%)	14(23.3%)
4	VAL is good as an instructor in communicating facts or demonstrating procedures to assist in mastery learning	0 (0%)	1(1.7%)	7(11.7%)	27(45%)	25(41.6%)
5	The method of training prepared me to face a real life situation	0 (0%)	0 (0%)	8(13.4%)	32(53.4%)	20(33.3%)
6	I was comfortable throughout the process of training compared to the traditional exams	0 (0%)	1(1.7%)	6(10%)	32 (53.4%)	21(35%)
7	I feel this system of training is more interactive compared to traditional teaching	0 (0%)	1(1.7%)	7(11.7%)	38(63.4%)	14(23.3%)
8	The teaching environment was nonthreatening	0(0%)	0(0%)	4(6.7%)	27(45%)	29(48.3%)
9	The logistics of VAL arrangement was satisfactory	1(1.7%)	2(3.3%)	4(6.7%)	33(55%)	20(33.3%)

Figure 2: Students Feedback on Likert scale

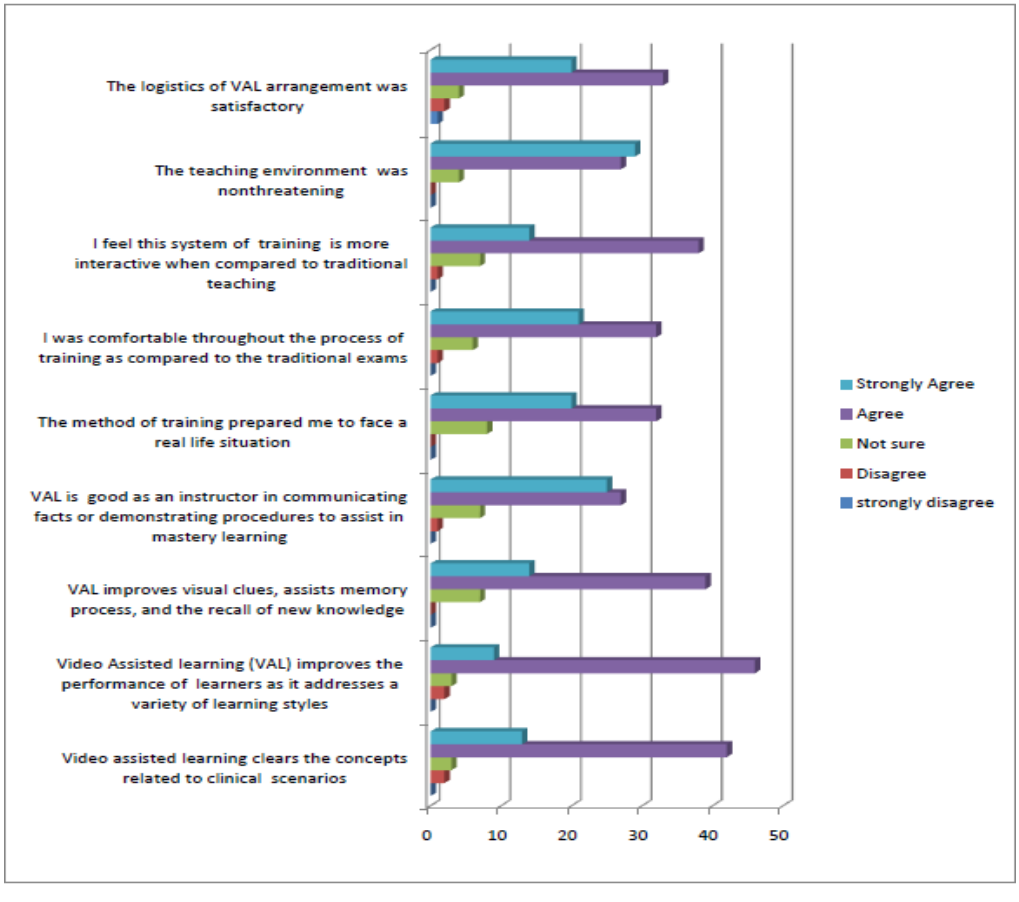

Table 3: Students' Feedback based scale open-ended questions

What they liked about the training	
1	I liked the feedback component of training
2	The action plan about how to report the radiograph chest was very helpful
3	The VAL was good and like the involvement of most of the teaching staff of department of Radio-diagnosis
4	VAL is a good source of information, which demands intense focus and understanding
5	There was systematic explanation about principles of clinical skills while interpreting radiographs of chest
6	Visual aspect cleared many doubts and had an unforgettable impact and improved the skills
7	As an undergraduate, I was benefited a lot, as all things were nicely explained to me
Suggestions for improvement of the training	
1	Video assisted learning is very helpful and should be continued in other subjects
2	Such training programs should be a continued routinely

4. Discussion

Video assisted is a competent tool for teaching learning and helps to clear the concepts of students and increases their learning power. Audiovisual material provides a rich medium for teaching and learning. Video can effectively communicate complex information to a student and, if used creatively, can become a powerful expressive tool. Similar findings have been reported by other authors. There are many benefits to using video in education as shown in several decades of research. Salman Khan in 'Let's use video to reinvent education' describes the transformative way video can impact on teaching and learning and encourages teachers to consider the flipped classroom model where learners can digest lecture content at their pace and explore content more deeply during class time[1]. Shepard et al [9] and Mayer et al[10] made the connection between visual clues, the memory process, and the recall of new knowledge. Allam[11] observed that the creative challenge of using moving images and sound to communicate a topic indeed engaging and insightful, but adds that it also enables students to acquire a range of transferable skills to learners. These include research skills, collaborative working, problem solving, technology, and organizational skills.

In some cases, video can be as good as an instructor in communicating facts or demonstrating procedures to assist in mastery learning where a student can view complex clinical or mechanical procedures as many times as they need to. Furthermore, the interactive features of modern web-based media players can be used to promote "active viewing" approaches with students [12]. More recently, Willmot et al[13] show that there is strong evidence that digital video reporting can inspire and engage students when incorporated into student-centered learning activities through: increased student motivation, enhanced learning experience, higher marks, development potential for deeper learning of the subject ,development of learner autonomy, enhanced team working and communication skills, learning resources for future cohorts to use and opportunities for staff development .

The work of Kearney and colleagues show the benefits of using video to produce authentic learning opportunities for students [14,15] and how videos encourage academic rigor from an advocacy, research based perspective. There are an endless number of ways to exploit video in order to create motivating, memorable and inclusive learning experiences. However, watching a video can also be a passive experience and so teaching methods must be used which instead turn it into a springboard for student action and interaction. Schwerdtfeger et al [16] studied the effect of VAL on 312 medical students for learning the principles of the acute treatment of trauma patients in their multidiscipline course on emergency and intensive care medicine. The OSCE results were excellent in both groups and did not differ significantly (control group: median 9, inter quintile range (IQR) 8–9, study group: median 9, IQR 8–9; $p = 0.29$). The global performance was rated significantly better for the VAL group (median 1, IQR 1–2 vs. median 2, IQR 1–3; $p < 0.01$). The relative knowledge increase, stated by the students in their evaluation after the course, was greater in the study group (85% vs. 80%).He concluded that it is possible to employ video assistance in the classical 4-stage approach with comparable objective test results in an OSCE. The global performance was significantly improved with use of video assistance.

Johnston et al[17] used video-assisted learning to teach Glide Scope video-laryngoscopy and found that procedural performance after exploration-based learning and VAL, measured as time to successful intubation, was shorter for digital laryngoscope than for glide scope for neonatal and child airways at the 0.05 significance level. Thus he concluded that a brief video alone may. Not be useful to teach new technology. Blended learning will be needed for mastery and proficiency. Akpabio et al [18] viewed video as a potential window that can expose the minds and heart of many to modern practices and environmental concepts, far more than what the traditional classroom teaching can achieve. He stated further that youths and children are so enthralled with home video films that they are described as video crazy. This interest can be exploited in the formal school system for teaching / learning in vivid and entertaining manner. Fatunmbi[19] stated that studies have shown that there is improvement in

teaching – learning process through the use of video. According to him, video can be used to provide real experiences in almost all field of learning. It can be made to repeat information and demonstration as many times as possible, thereby, learning is made easier, realistic and concrete for learners. It allows for self-instruction. It provides a cheap and fast way of disseminating educational information and practical skills.

Beshnizen et al [20] declared that video can help the teacher to work more closely with the learner and reduce the need for repeated explanation. It has the capacity to motivate learners and difficult skills are better viewed especially with the slow motion. Cuban et al [21] expressed that video lectures are feasible through the use of personal computer. They are not recording of classroom lectures but cover lecture material as screen displays of content files with audio narrative are added. They can be produced before a course begins or developed as it progresses.

Dunn [22] found that video lectures make available instructor – quality lectures that students can view and study as much as needed to meet their individual learning needs. They are detailed step-by-step explanation of materials used in classroom lectures and are presented at a delivery pace that is significantly slower than what can be accomplished in the limited time available in the classroom. They can be paused and repeated and thus can be studied by students at their own learning pace. Additionally, video lectures are more focused learning experiences than the traditional study of a textbook.

Sarker et al[23] declared that for video lecture to be effective, they must be accepted and used by students. They must provide an enjoyable or at least satisfactory learning experience, be perceived by students as providing a time-efficient study resource and / or be perceived as improving understanding and grade performance. Brecht et al [24] who worked on video lecture and teaching strategy found that, students who used the video were 73% of the respondents. The high use rate suggests that students broadly accept and use video lectures as a form of computer-based instruction and as an enhancement of traditional classroom courses. Moreover, 31.5% viewed the video in advance of classroom lectures, 72.2% used it to do homework, 72.4% used it to prepare for examination, 63% agreed that video is good for tutoring help and 38.9% believed that it helped to raise their course grade. Whatley et al[25] stated that, for video lectures to be most effectively used by students, they should appeal to their learning style preferences. Video lecture appeals are as follows (a) their content is 100% relevant to course performance requirements and it is presented at a more detailed pace than classroom lectures, (b) videos can be replayed and enable students to repeat the instructor's explanation (c) they can be viewed at a time, location and under environmental conditions of a student's choice (d) their portability enables listening and study without the competing distractions that often accompany classroom lecture. Isiaka et al [26] who researched on the effectiveness of video as a media found that video group performed better than the group without instructional media. The video group did significantly better than the chart group. He concluded that video was an effective medium for teaching / learning in schools. Deveaney [27] discovered that all his respondents were favorable to video tutorial. 75% reported that the tutorials were enjoyable and interesting, 84.6% indicated that, it met their needs, 100% reported that they were straight forward and easy to understand, 92.4% agreed that the length of the tutorial were appropriate and 90.8% believed that viewing gave them better understanding than textbooks and guide sheets. He concluded that video is a viable tutorial tool for online courses.

5. Conclusion

The ability to combine digital video seamlessly with other tools offers an opportunity to move the concept of video as a purely presentational tool to video as a focus for student activity and communication. However there is little research and evaluation in the area to inform teaching staff and practitioners that envision using video streaming with their students. There is a need to construct the lexicon to describe the pedagogic value and use of video as well as to develop frameworks and tools to help on the pedagogical and technical design. Pedagogy and technology are so interrelated that is difficult to separate them out; in fact learning design is a dialogue between the two. This paper explores in depth the added value of video itself for education purposes. This ultimately would lead us to better ways of evaluating media rich learning environments and the student's learning experience. In Medical Education Video assisted learning is a strong tool and teachers should incorporate it to explain complex procedures and ideas to students.

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