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Comparison of Paper Cases Verses Video Cases for Case-Based Learning in Physiotherapy Students: A Cross Over Study

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Abstract

Case-based learning (CBL) is a pedagogical method linking theory with practice, typically using developed or real-life patient cases. This study aimed to compare the effectiveness of paper versus video cases for CBL in physiotherapy students' performance of a clinical reasoning exercise and students' evaluations of each method. A crossover design study was used. Twenty-nine first-year physiotherapy students were allocated to two groups. Two case scenarios were used: group one assigned the paper case for case one, group two the video case, and then the groups crossed over CBL formats. Paired t-tests were used to compare the clinical reasoning exercise scores between the paper and video cases for each group. Descriptive statistics were used for quantitative measures of students' evaluations of each method, and thematic analyses were performed to assess qualitative measures of Students' perceptions of the CBL formats. There were no significant differences in total score of the clinical reasoning exercise between the two formats for each group ($p>0.05$), and inconsistent findings in the individual questions. Quantitatively and qualitatively the students evaluated that the video case format was better for authenticity, and the paper cases provided more accessible and comprehensive information. This study found that paper and video cases are beneficial in different respects for learning and developing the assessment and clinical reasoning process in first-year physiotherapy students. Teachers should use both methods for CBL but consider the strengths and weaknesses of each method when choosing which format to use.

Keywords: case-based learning, clinical reasoning, education, paper cases, video cases

Introduction

Case-based learning (CBL) is an established pedagogical method linking theory with practice (Rodríguez-Bailón et al., 2021). In health care professions education, classroom-based CBL sessions often involve

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working through patient cases using a structured approach (Murphy & Radloff, 2019; Thistlethwaite et al., 2012). Case-based learning helps develop clinical reasoning to enable students to develop clinical problem-solving and decision-making (Trommelen et al., 2017; Thistlethwaite et al., 2012). Case-based learning also aids in motivating students as the learning activities are closely linked to authentic clinical scenarios, providing students with a glimpse into their professional future (Rodríguez-Bailón et al., 2021; Thistlethwaite et al., 2012).

Paper cases and video cases are CBL formats used in a classroom setting in health care professions programmes (Murphy & Radloff, 2019; Thistlethwaite et al., 2012). There are advantages and disadvantages of both methods. Paper cases are beneficial in providing a detailed patient assessment for students to use in their learning and decision making (Nunohara et al., 2020; Murphy & Radloff, 2019). However, these are less authentic learning formats than video cases (Rodríguez-Bailón et al., 2021; Murphy & Radloff, 2019). Video cases provide a more realistic presentation of the scenarios (Rodríguez-Bailón et al., 2021; Murphy & Radloff, 2019), which enables learning to be more memorable than paper cases (De Leng et al, 2007). Despite this, video cases may not be comprehensive enough (Nunohara et al., 2020), and the information can be more challenging to use for clinical reasoning compared to paper cases (Rodríguez-Bailón et al., 2021).

Clinical reasoning is an essential skill and is the foundation of effective physiotherapy practice (Trommelen et al., 2017; Sole et al., 2019). Clinical reasoning is a complex process and involves the ability to integrate knowledge and interpret a large amount of information (Trommelen et al., 2017; Furze et al., 2015). It requires evaluating evidence and critical thinking to help guide clinical decision making (Furze et al., 2015; Modi et al., 2015). Developing students' clinical reasoning abilities is an important objective in physiotherapy education (Sole et al., 2019; Furze et al., 2015). Embedding clinical reasoning in the early stages of a curriculum is important to start developing these skills and should be progressed throughout the programme (Hendrick et al., 2009). Teaching clinical reasoning in a physiotherapy programme is a challenging task (Hendrick et al., 2009) and using CBL is a practical method of developing these skills in the classroom.

Whilst paper and video cases are popular and practical CBL formats used in health care profession education, there is limited evidence investigating which method is most effective in developing clinical reasoning skills and enhancing learning in physiotherapy students. One study directly compared both formats in first- and second-year Occupational Therapy students and found that students, experienced greater motivation with the video cases as they were more aimed at practice (Rodríguez-Bailón et al., 2021). Although the clinical reasoning skills were found to be similar between the two formats, students felt the video cases were less structured and consequently, found it difficult to find relevant information to help with the clinical reasoning of the case (Rodríguez-Bailón et al., 2021). Considering the differences between health care profession roles and thus education curriculums, it is important to assess the effectiveness of CBL specific to each profession. Thus, the aim of this study was to compare the effectiveness of paper versus video cases for CBL in physiotherapy students. Effectiveness was measured by a student's performance on a clinical reasoning exercise and the students' evaluations of each method.

Methods

Participants

First-year physiotherapy students enrolled in a four-year integrated Master's in Physiotherapy programme were approached to participate in the study. The principal investigators and authors of this paper presented an oral presentation providing an overview of the study to the students. Students who were willing to participate in the study were randomly allocated to two groups: group one and group two.

Study Design

This was a randomised crossover design study comparing paper and video cases CBL methods. The randomised cross-over design was selected to investigate differences between the two CBL formats in the same group of students (Prunuske et al., 2016). Two case scenarios were used. Group one was randomly

assigned the paper case for case one, and group two the video case. For case two, the groups swapped the CBL format.

Case Scenarios

The two scenarios were musculoskeletal in nature and were developed by the principal investigators. Case one involved an upper limb condition, and case two involved a lower limb condition. The cases were chosen and developed as these were common musculoskeletal conditions (Rupani & GwIlym, 2025; Chia et al., 2022) and had been taught to the students as part of a musculoskeletal module.

The paper cases were provided to students on a typical patient case form, which was completed with the relevant case information. The video cases were reproduced from the paper cases. The principal investigators and a staff member from the physiotherapy programme were involved in the recorded videos and played the roles of therapist and patient using prepared scripts.

Clinical Reasoning Exercise

The clinical reasoning exercise for each case was developed by the principal investigators and consisted of 20 questions exploring the student's interpretation of both the subjective and objective components of the cases (Appendix 1). The questions were developed based on clinical reasoning forms used in CBL teaching sessions which the students were familiar with. The clinical reasoning forms were developed using the hypothetico-deductive clinical reasoning model, which involves systematically gathering and evaluating information from the patient to generate and test working hypotheses to inform management (Hage et al., 2023; May et al., 2010). This clinical reasoning model is a suitable framework to use in teaching clinical reasoning to undergraduate physiotherapy students (Hage et al., 2023; Sole et al., 2019).

The clinical reasoning exercise consisted of two sessions with a 30-minute break in between. There was no set time limit, but each session lasted approximately 45 minutes and ended when all students had completed the exercise. Students were instructed not to converse with each other during the sessions. Students using the paper cases read and worked through the questions, only having access to the subjective assessment for questions one to 14. Once they had completed question 14, they were given the objective assessment and continued the exercise. Students using the video cases all watched the scenario together. Once the subjective assessment was finished, the video was paused, and students answered questions one to 14. After this, the objective assessment was played, and students completed the remaining questions.

Both the clinical reasoning exercise and case scenarios were peer-reviewed by colleagues, and fourth-year physiotherapy students performed the exercise. Feedback from colleagues and students was used to refine the scenarios and clinical reasoning questions. This was to ensure that the scenarios were equal in level of difficulty and that the reasoning exercise was understandable.

Student Evaluation

To evaluate the students' perceptions of the paper and video cases, 10 questions using a Likert scale, six open-ended questions, and a final evaluation question were used (Appendix 2). These questions were developed based on the strengths and limitations of previous studies comparing paper and video cases (Rodríguez-Bailón et al., 2021; Nunohara et al., 2020; Murphy & Radloff, 2019), to evaluate the format for developing clinical reasoning skills (Sole et al., 2019; Furze et al., 2015), and to answer the aims of the study. Students completed the evaluation immediately after the second clinical reasoning exercise.

The Likert scale consisted of five sections with two questions in each section. Students rated their evaluation as 1, strongly disagree to 5, strongly agree. The first question in each section was asking about paper cases, and the second question was asking about video cases. The five sections consisted of questions regarding their perceptions about whether the CBL method helped their understanding of a subjective and objective assessment, helped their development of clinical reasoning skills, helped with understanding of assessment in 'real-world' clinical practice, and was the method helpful for learning and development. The short answer questions explored the students' perception of the strengths and

weaknesses of each CBL method, and which teaching method they found most effective for their learning and development.

Ethical Considerations

This study was approved by the University's Research Ethics Committee (REC Project Reference 0727). All participants read and signed a consent form before the study. Participation in the study was voluntary, and students were informed that the results would not affect their grades.

Data Analysis

Clinical Reasoning Exercise

Marks for each question and the total score were given for each student. The normality of test scores was assessed, and Shapiro-Wilko tests indicated that the results of the clinical reasoning exercises were normally distributed ($p>0.05$). Paired t-tests were performed for parametric data to compare the results of the clinical reasoning exercise for each question and the total score for case one and case two for each group. Performing separate paired t-tests for case one and two for each group reduces the chance of an order influencing the results and is an appropriate statistical method for crossover design studies (Dwan et al., 2019). Statistical analyses were carried out using IBM Statistical Package for Social Sciences Statistics software (version 29.0.1.0). Significant level was set at $p<0.05$.

Student Evaluation – Quantitative and Qualitative Analysis

Quantitative analysis was performed for the 10 Likert scale questions and the final evaluation question. The five sections for analysis were named subjective, objective, clinical reasoning, authenticity, and learning and development. Descriptive statistics were used to analyse the results of the Likert scale and final evaluation questions. Frequencies and percentages for each level of the scale were calculated for each of the 10 Likert questions and the final evaluation question.

Qualitative analysis of the open-ended questions was performed through thematic analysis by the principal investigators. Thematic analysis consists of six phases and is a flexible method that attempts to identify patterns in qualitative data for understanding experiences and thoughts across the collected data (Kiger & Vapiro, 2020; Braun & Clarke, 2012). In the first and second phase, the investigators independently familiarised themselves with the data and generated initial codes based on the questions. These questions asked students about the strengths and weaknesses of the paper and video cases, and suggestions for improvement of each method. During the third phase, the investigators identified themes under each initial code and placed the quotes from the answers into the appropriate theme. In the fourth phase, the themes and data were reviewed and scrutinised independently, and in the fifth phase, further analysis and discussion between the investigators finalised the themes. The sixth phase was the final analysis and extraction of quotes for reporting that equivocally encapsulated each theme. During the process, any differences between the investigators were resolved by discussion.

Results

Twenty-nine students volunteered to participate. Thirteen students were allocated to group one and 16 students allocated to group two. All students completed the clinical reasoning exercise for cases one and two.

Clinical Reasoning Exercise

Table 1:

Comparison of group one and group two scores for the clinical reasoning exercise for cases one and two. Mean and standard deviations (SD)

	Group One			Group Two		
Questions	**Case One (Paper)**	**Case Two (Video)**		**Case One (Video)**	**Case Two (Paper)**	
	Mean (SD)	**Mean (SD)**	**P-value**	**Mean (SD)**	**Mean (SD)**	**P-value**
1	0.38 (0.51)	0.00 (0.00)	0.018*	0.77 (0.44)	0.85 (0.38)	0.673
2	0.69 (1.03)	0.00 (0.00)	0.032*	1.00 (1.13)	2.00 (1.13)	0.026*
3	0.38 (0.51)	0.62 (0.51)	0.082	0.58 (0.52)	0.42 (0.52)	0.438
4	0.83 (1.19)	1.00 (1.28)	0.674	1.00 (0.95)	0.67 (1.07)	0.474
5	0.00 (0.41)	0.15 (0.38)	0.436	2.75 (1.14)	2.08 (0.67)	0.151
6	0.38 (0.51)	0.62 (0.51)	0.337	0.83 (0.39)	0.17 (0.39)	0.013*
7	0.92 (0.29)	1.00 (0.00)	0.339	0.92 (0.29)	1.00 (0.00)	0.339
8	0.92 (0.28)	1.00 (0.00)	0.337	0.92 (0.29)	1.00 (0.00)	0.339
9	0.31 (0.48)	0.31 (0.48)	1.000	0.45 (0.52)	0.55 (0.52)	0.588
10	0.38 (0.65)	0.62 (1.04)	0.273	0.50 (0.52)	0.50 (0.52)	1.000
11	0.77 (0.44)	0.92 (0.28)	0.336	1.00 (0.00)	1.00 (0.00)	-
12	2.15 (1.46)	2.15 (1.14)	1.000	2.67 (1.37)	2.17 (1.03)	0.256
13	1.00 (1.08)	0.15 (0.80)	0.059	3.00 (2.15)	1.64 (1.29)	0.124
14	1.58 (1.08)	1.00 (1.21)	0.223	1.55 (1.51)	0.64 (1.12)	0.167
15	6.69 (1.18)	6.15 (0.90)	0.252	7.54 (2.18)	8.54 (2.40)	0.309
16	0.38 (0.51)	0.85 (0.38)	0.008*	1.00 (0.00)	0.92 (0.29)	0.339
17	0.85 (1.35)	1.62 (1.61)	0.217	2.67 (1.67)	2.08 (1.08)	0.317
18	3.77 (0.73)	3.38 (1.39)	0.406	3.46 (1.05)	3.31 (0.95)	0.673
19	3.09 (1.14)	2.64 (0.92)	0.242	2.50 (1.09)	1.83 (0.58)	0.104
20	2.58 (1.38)	1.75 (1.06)	0.085	1.92 (1.00)	1.75 (0.45)	0.658
Total score	27.92 (5.38)	25.85 (5.34)	0.278	36.36 (4.59)	31.38 (8.04)	0.072

*p<0.05. Note - for case two, the t statistic could not be computed for question 11, because the SDs of both groups were 0, and thus no value for this question was given.

Group one scored significantly higher for question 1, $t(12)=2.739$, $p=0.018$, question 2, $t(12)=2.420$, $p<0.032$, in case one (paper case) compared to case two (video case) (Table 1). For

question 16, t(12)=-3.207, p=0.008, group one scored significantly higher for case two (video case) compared to case one (paper case).

Group two scored significantly higher for question 2, t(11)=2.569, p = 0.026, in case two (paper case) compared to case one (video case), and scored significantly higher for question 6, t(11)=-2.966, p=0.013, for case one (video case) compared to the case two (paper case) (Table 1).

Student Evaluations

Quantitative Analysis

Twenty-seven students completed the study evaluation. Thirteen from group one and 14 students from group two. Two students from group two did not complete the evaluation.

Figure 1:

Student evaluations of the paper and video case formats using the Likert scale.

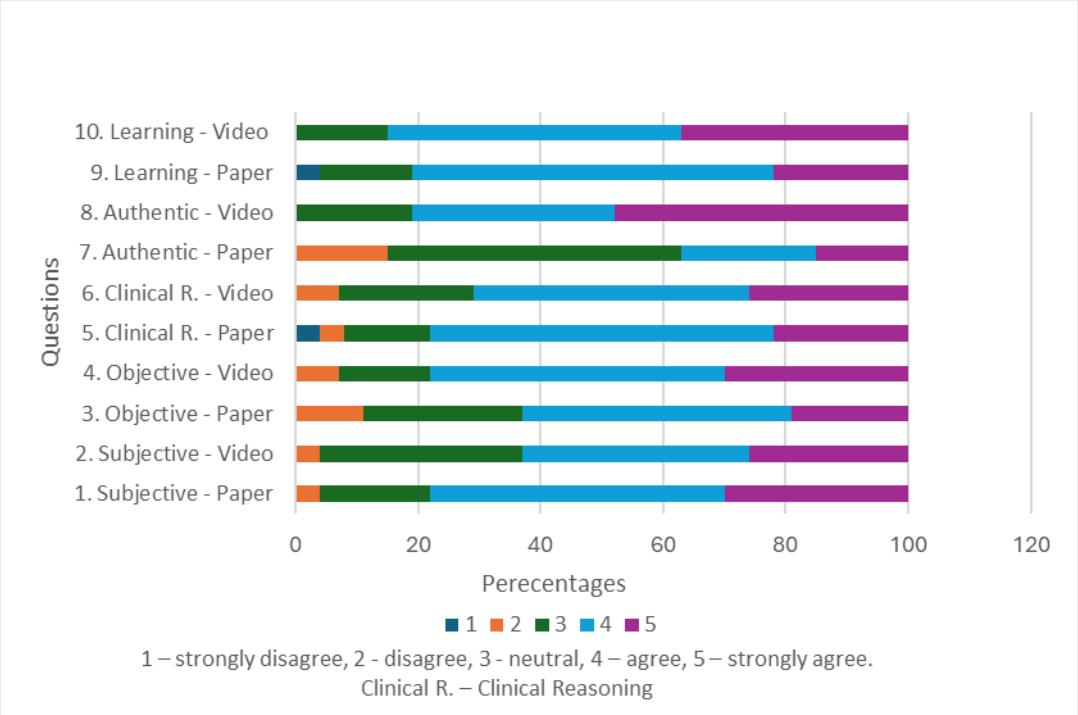

Figure 1 presents the results of the five sections of the Likert scale evaluations, subjective, objective, clinical reasoning, authenticity or 'real-world' clinical practice, and learning and development, for paper and video case formats. 78% of students either agreed or strongly agreed that the paper cases helped them with understanding a subjective assessment, compared to 63% for the video cases. 78% of students either agreed or strongly agreed that the video cases helped them with understanding an objective assessment, compared to 63% for the paper cases. 78% of students either agreed or strongly agreed that the paper cases helped with clinical reasoning, and 71% for the video cases. 81% of students either agreed or strongly agreed that the video cases helped them understand of a patient assessment in 'real-world' clinical practice. Only 37% of students either agreed or strongly agreed that the paper cases were authentic practice, and 48% were neutral. 85% of students either agreed or strongly agreed that the video cases helped with learning and development, compared to 78% for the paper cases.

48% of students thought that the paper and video cases were equally effective for learning and development for patient assessment and clinical reasoning. 33% thought paper cases were most effective, and 22% of students thought video cases were most effective.

Qualitative Analysis

Three main themes were identified related to the paper and video case formats: 1) Factors related to presentation of the method, 2) Learner control, and 3) Real-world setting (Table 2).

Factors related to the presentation of the method

Paper Cases

Students thought the strengths of the paper cases were that relevant information was clearly and logically presented. Student 10 wrote, "*The information was in front of me in an organised way".* The weaknesses of the paper cases were that they did not show the patient assessment process. Participants' comments included: "*They don't allow you to see the process of an assessment",* and *"It did not show me how to actually talk to the patient from the information. I would not know how to ask those questions like I would in the video case".*

Students also felt that it was harder to understand the objective assessment information of the paper cases. Student 18 commented "*The objective was not in depth enough and harder to analyse as you are just reading about it".* Suggestions for improvement included a transcript to go with the paper cases, including images and a better explanation of the tests:

Video Cases

Students thought the video cases allowed the practice of taking notes and gave a better appreciation of the structure and method of subjective and objective assessments. Student 25 and student 11 commented it "*Allowed us to practice taking notes for an assessment and see how they are done in practice",* and *" Seeing how the physiotherapist actually conducts the assessment and learning how to structure it".*

The weaknesses of the video cases included participants found it challenging to hear all the answers from the patient and could not see all objective assessments. Comments to support this included: "*I could not understand the audio at times and missed information that was important"* (Student 10), and *"When the video showed the objective assessment, it was hard to see what was happening to the affected arm due to the angle of the camera"* (Student 8). Suggestions for improvement included better description and explanation of tests, use of subtitles, better audio quality, and use different camera angles to observe the objective assessment better.

Table 2:

Categories and Themes of the Qualitative Analysis of Student Evaluation

Themes	Categories					
	Paper			Video		
	Strengths	**Weaknesses**	**Improvement suggestions**	**Strengths**	**Weaknesses**	**Improvement suggestions**
Factors related to presentation of the method	Clear layout of relevant information presented. Information was logically ordered.	Does not show the patient assessment process. Harder to understand objective assessment information	Include a transcript of questions asked. Include images. Explanation of tests performed.	Allowed practice of taking notes during subjective and objective assessments. Better appreciation of structure and method of subjective assessment. Better understanding of how objective assessment tests are performed.	Challenging to hear all answers from the patient. Could not see all objective assessment due to camera position.	Better description and explanation of tests. Use subtitles. Better audio quality. Different camera angles to visualise objective assessment better.
Learner control	Can go through information at own pace. Have access to all information and can review notes.				Too quick to make notes. Struggled to pick up all information.	Slowing down and pause and playback function.
Real-world setting / Authenticity		Not applicable to real life settings. Not based on real-time.		Close to real-life scenario. Realistic to a clinical environment.		

Learner control

Paper Cases

The strengths of the paper cases were that students could go through information at their own pace and have access to all information to review notes. Student 28 stated that *"It allowed me to get a clear understanding of the case and develop my knowledge and work at my own pace".*

Video Cases

Weaknesses of the video cases were that it was too quick to make notes, and students struggled to pick up all the information. Suggestions for improvement were slowing down, providing more explanation throughout, and have a pause and playback function.

Real-world setting / Authenticity

Paper Cases

The limitations of the paper cases were that they were not applicable to real life settings and not based on real-time. Participant comments included: "Not close to real life setting" (Student 23), and "It is not based on real-time and a real appointment" (Student 28).

Video Cases

The benefits of the video cases were that they resembled a real-life scenario and were realistic to a clinical environment. Student 26 comment that supported other student's' views was "It is close to a real-life situation, so the student can imagine exactly how it would be in a real assessment".

Discussion

The aim of this study was to compare CBL formats of paper and video cases on performance of a clinical reasoning exercise and the evaluation of each method by first-year physiotherapy students. The clinical reasoning exercise scores were similar and inconclusive as to which method resulted in better clinical reasoning performance. Student evaluation revealed distinct and opposing strengths and weaknesses between the cases. The paper cases were beneficial for the students to see all the information and be able to refer to the case notes, while the video cases were more authentic enabling them to observe and understand the assessment process better. Despite these differences, most students reported that both methods were effective for their learning and development of clinical reasoning and patient assessment skills.

Student Evaluation

Students reported that the paper cases provided detailed, structured, and accessible information, allowing them to develop an understanding of the case, and was easy to refer to the notes throughout the exercise. This is in line with previous studies where students reported that paper cases provided the most relevant and specific information compared to other CBL formats (Rodríguez-Bailón et al., 2021; Murphy & Radloff, 2019). The paper case layout presents information in an available and sequential format, allowing students the ability to analyse and evaluate the information (Rodríguez-Bailón et al., 2021; Nunohara et al., 2020). Despite these positives, students reported that the objective assessment was more challenging to understand and analyse the findings through just reading it. Students suggested that providing a transcript or a list

of questions asked, more details and explanations of the objective tests, and providing images would be helpful.

Paper cases have been reported to lack authenticity and are not a realistic presentation of a clinical case in health care profession courses (Rodríguez-Bailón et al., 2021; Murphy & Radloff, 2019). Qualitatively and quantitatively students in this study concurred with students reporting that the paper cases were not applicable to clinical settings, they could not observe it happen in real-life and were not based on real-time. Consequently, students reported video cases provided a greater understanding of a patient assessment and resembled a real-life scenario that was realistic to a clinical environment. They also expressed that the video cases allowed them to practice note taking which can aid in understanding and comprehension of information (Ozcakmak, 2019). However, watching a video in real-time can be challenging for students to write down all the notes and include and comprehend all the information. Allowing the student to have more control over the video and be able to stop and replay the video will mitigate this limitation, as well as having good audio and video quality. Students also suggested that having better explanations and findings of the tests in the videos would help with their note taking and understanding of the assessment and findings.

Clinical Reasoning Exercise

Clinical reasoning is a critical skill in physiotherapy practice, and thus it is important to determine an effective format for facilitating the development of this skill. The findings of this study did not determine which format was the most effective for developing clinical reasoning skills. While the participants reported that the paper cases were beneficial to have all the information at hand to refer to, this did not result in overall higher scores in the clinical reasoning exercise. There were some significant differences between the cases for each group, but these were not consistent between the two formats and thus no conclusions can be drawn from these results.

Despite no conclusive differences between the formats for the clinical reasoning exercises, the results of the student evaluations indicate that both methods have a place in a physiotherapy programme. This is especially applicable in the early years of a programme, where students need to begin developing their assessment and reasoning skills, and may have fewer authentic practice experience opportunities.

Limitations

Our study has several limitations. The clinical reasoning exercise was developed by the investigators, and the questions were similar to those used in teaching sessions. There was no validation of the clinical reasoning exercise performed; however, the case scenario exercises were peer reviewed by colleagues, and fourth-year physiotherapy students performed the clinical reasoning exercise, and the feedback provided was used for the final product used in the study. Further, the clinical reasoning exercise was based on the hypothetico-deductive clinical reasoning model, which is a highly rated framework and appropriate for undergraduate physiotherapy students (Sole et al., 2019).

The video cases were recorded using a stationary single camera on a tripod. Limitations of this method meant that only one side of the body was clearly in view, and the side furthest away had limited views. Also, only one view range was used, and utilising different camera angles and zoom in and out functions would provide students with a clearer view of the objective assessment. The quality of the audio was substandard at times, and students could not hear what the physiotherapist or patient was saying in the video. This made the understanding and interpretation

of the cases more challenging, and the audio quality needs to be improved when used in CBL sessions.

Conclusion

This study found that first-year physiotherapy students thought that both paper and video cases were beneficial for their learning and the development of the assessment and clinical reasoning process but evaluated quite different strengths and weaknesses of each CBL method. The paper cases allowed students to have more control over pace of the task, and the information was more comprehensive, however lacked authenticity. On the other hand, the video cases enabled students to observe a real-time and real-life scenario for applicability, but the quality of the video and speed were challenging to obtain and comprehend the information. Teachers should use a combination of paper and video cases in a first-year physiotherapy programme to enhance students' learning and understanding of patient assessment but should understand the different strengths and weaknesses of each method.

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Ethical approval

This study was approved by Keele University's Research Ethics Committee (REC Project Reference 0727).

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Appendix 1

Clinical Reasoning Exercise Questions

Question No.	Question
1	Considering SIN. What is the severity of the case?
2	Severity reasons – List up to three reasons for your answer for the severity of the case.
3	Considering SIN. What is the irritability of the case?
4	Irritability reasons - List up to three reasons for your answer for the irritability of the case
5	Considering SIN. What is the nature of the injury/condition?
6	What stage is this condition in?
7	Are there any red flags?
8	If yes, list the red flags?
9	Are there any yellow flags?
10	If yes, list the yellow flags?
11	From the list, select the condition that is the **provisional/primary** diagnosis from the subjective assessment.
12	List what supports your **provisional/primary diagnoses** from the subjective assessment?
13	From the list, pick the conditions that are **appropriate (reasoned) for differential/alternative diagnoses** from the subjective assessment.
14	List what supports your differential/alternative diagnoses from the subjective assessment?
15	Using the information from your subjective (including SIN) and your differential diagnoses, tick the tests you would perform **today** for an objective assessment.
16	Which is your diagnosis now? Pick one.
17	What parts of your objective assessment support this diagnosis?
18	List your prioritised problem list. Can list up to five and number from 1 (most important) to 5 (least important)
19	Give one short term goal for this patient. Make it SMART (Specific, Measurable, Achievable, Relevant, Timely).
20	Give one **long term** goal for this patient. Make it SMART (Specific, Measurable, Achievable, Relevant, Timely).

Appendix 2

Student Evaluations
Quantitative Evaluation
Five sections and questions using the Likert scale

Section	Question No.	Questions
Subjective	1	Did the paper case teaching method help you understand a subjective assessment and reasons for asking the questions?
	2	Did the video case teaching method help you understand a subjective assessment and reasons for asking the questions?
Objective	3	Did the paper case teaching method help you understand and plan an objective assessment?
	4	Did the video case teaching method help you understand and plan an objective assessment?
Clinical Reasoning	5	Did the paper case teaching method help you develop your clinical reasoning skills, i.e., understanding findings from subjective and objective assessments and developing differential diagnosis and problem lists?
	6	Did the video case teaching method help you develop your clinical reasoning skills, i.e., understanding findings from subjective and objective assessments and developing differential diagnosis and problem lists?
Authenticity	7	Did the paper case teaching method provide you with a greater understanding of a patient assessment in 'real-world' clinical practice?
	8	Did the video case teaching method provide you with a greater understanding of a patient assessment in 'real-world' clinical practice?
Learning and Development	9	Did you find the paper case teaching method helpful for your learning and development?
	10	Did you find the video case teaching method helpful for your learning and development?

Qualitative Evaluation – Open-ended Questions

1. What did you like most about the paper case teaching method, i.e. what were the strengths of the method?
2. What did you like least about the paper case teaching method, i.e. what were the weaknesses of the method?
3. How could the paper case teaching method be improved?
4. What did you like most about the video case teaching method, i.e. what were the strengths of the method?
5. What did you like least about the video case teaching method, i.e. what were the weaknesses of the method?
6. How could the video case teaching method be improved?

Quantitative Analysis - Final Evaluation Question

Overall, which teaching method did you find effective for your learning and development for assessment and clinical reasoning of a patient?

1. Paper Cases
2. Video Cases
3. Both equally effective