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Student video production within health professions education: A scoping review

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ABSTRACT

Background: Recent technological developments have influenced a shift in the use of videos in Health Professions Education (HPE). Rather than casting students in the role of observers of videos, educators have been asking students to produce videos as a learning activity. The assumption is that video production is often an active and collaborative exercise, therefore could engage students and enhance learning. However, applications of this emerging pedagogical approach vary, and there has not been a knowledge synthesis to guide future research and practice.

Methods: With a view to mapping existing knowledge, identifying avenues for further research, and informing practice, we conducted a scoping review to establish current understanding of video production in HPE. We undertook a literature search of seven databases and identified thirty-six studies.

Results: The findings showed considerable variation in purposes and implementation approaches, consequences and challenges associated with video production. In particular, the assumption that creating a video automatically promotes student engagement was not well supported, especially when the intended learning was not made apparent to students.

Conclusion: Overall, the review suggests that despite the increasing adoption of video production in HPE, the purposes are often unclear; pedagogical considerations underlying project design are limited, which risks undermining the intended learning. To optimise educational benefits, future video production projects should be explicit in their intention and approach, draw upon pedagogical theories, anticipate and address implementation issues, and be robust in their formative and summative assessment processes. Future research should more explicitly show the relationship between the intended learning and the underlying pedagogy and thoroughly evaluate the effectiveness and feasibility of video production projects.

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Introduction

Videos are important learning resources in Health Professions Education (HPE). They have been found to promote student reflection and attitudinal change [1], facilitate the development of clinical skills [2], and can be used to assess students' clinical performance [3]. Recent development of digital technologies and mobile devices have made video production accessible to non-specialists [4], affording the possibility of user-generated videos in addition to videos that are professionally made. Health professions educators have also been exploring the educational benefits of user-generated videos: Rather than providing videos as learning resources to students, they initiated projects where students create videos as part of their learning [5]. Such a pedagogical approach to video production seems promising: it is inherently active, which enables learners to construct knowledge through doing and participating rather than passively listening and observing, and often social, by which learners collaborate with each other in knowledge creation [6].

Those that advocate this approach claim that video production develops important graduate capabilities [7], extends learning beyond the classroom [8], and improves formative assessment and feedback [9]. However, the impact of video production on promoting learning has been largely unclear, neither has there been well-informed common good practice in terms of implementing video production projects to facilitate student learning. This is evident in the growing body of literature on video production in HPE. Some studies indicated that video production projects achieved intended learning outcomes [10]; some reported that the projects were not superior to other pedagogical approaches [11]; and other studies identified significant challenges in the implementation process [12]. Therefore, a synthesis of current evidence would help elucidate how video production

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projects have been used in HPE and whether they influence student learning.

Such a synthesis would also serve as a timely guide for health professions educators who are exploring alternative pedagogical practices. The novel coronavirus disease (COVID-19) has reshaped the landscape of HPE [13]. With learning in the clinical environment being disrupted, students reported reduced confidence and feelings of being underprepared [14]. Educators are trialling alternative ways of teaching, learning and assessment to help students make up for the loss of clinical exposure and for the reduced contact with educators and peers. A timely knowledge synthesis would help educators explore video production as a pedagogical approach in response to COVID-19 disruption.

To summarise, video production has become increasingly accessible to students, and health professions educators are integrating it in their pedagogical practice. However, it remains unclear if, when and how video production can be usefully deployed in HPE, which risks students being engaged in time consuming efforts that may not lead to meaningful learning. This paper seeks to synthesise the current evidence on student video production in HPE, identify the knowledge gaps, and provide recommendations to future research and practice.

Methods

We used a scoping review method, because this method focuses on mapping existing evidence, exposing knowledge gaps and informing complex interventions [15]. It is a particularly useful evidence synthesis approach to emerging literature where the body of literature is small and the specific research questions that can be addressed by a more precise systematic review are unclear [16]. We followed the 6 review steps advocated by Arksey and O'Malley [17] and Levac, Colquhoun and O'Brien [18]. The steps are used as headings to organise the paragraphs below. In addition, we used a PRISMA flowchart to record the review process [19] and used PRISMA-ScR Checklist as reporting guideline [20].

Identifying the research question

Scoping reviews address broad research questions in relation to the literature [16]. The overarching question that guided this review was: What is known about student video production in HPE? In the iterative review process, we further specified 4 research questions (RQs) that the review could address.

RQ1: What are the pedagogical purposes of implementing video production projects?

RQ2: What are the approaches to implementing video production projects?

RQ3: What are the consequences of implementing video production projects?

RQ4: What are the challenges in implementing video production projects?

Identifying relevant studies

We targeted published empirical research reporting video production as a means of learning within HPE. QL consulted an experienced health sciences librarian and piloted the search strategies in major health science databases in August 2019. Drawing on the results of the pilot search, we developed a review protocol.

We searched 7 databases, including MEDLINE via Ovid, EMBASE vid Ovid, CINAHL via EBSCO, Scopus, AMED via Ovid, PsychInfo via Ovid and PubMed on 8 October 2019. The search strategies are available in Appendix 1. We limited the search to articles written in English and published in academic journals after 2000. Our choice of time period was supported by a previous review on video production projects in school and higher education settings, in which no eligible studies were identified before 2000 [4]. The search was updated on 31 January 2021(limited to 9 October 2019–31 January 2021) with screening and data extraction processes replicated.

Selecting the studies to be included in the review

The identified article entries were exported to EndNote and duplicates removed. The article dataset was imported into Rayyan, a free web-based tool for researchers working on knowledge synthesis projects [21], for title and abstract screening. QL screened the whole dataset, and RG and TG each screened half of the dataset independently. Next, given the small number of articles included from title and abstract screening, QL assessed the articles in full-text and discussed the result with the research team. QL then performed backward and forward reference searching of articles included in full-text assessment to identify additional relevant articles. In cases where there was disagreement regarding article eligibility, the reviewers discussed to reach consensus.

Inclusion criteria were studies:

(1) in HPE;
(2) where students created videos as part of their learning experience;
(3) that were published in peer-reviewed academic journals; and
(4) that reported primary data.

Exclusion criteria were studies:

(1) where students observed videos without having to create or edit the videos themselves; or
(2) that were non-empirical (conceptual, opinion, or review articles).

Charting the data

The data-charting spreadsheet was developed by QL after trialling on 5 manuscripts, then reviewed by RG, TG and SG, and further refined iteratively during data-charting process. QL charted the data, and RG, TG and SG each charted 3 randomly selected articles to validate the data extraction. All inconsistencies were minor, and agreement was reached after brief discussion.

Collating, summarizing and reporting the results

We used descriptive statistics to summarise the literature, and thematic analysis to synthesize data at the semantic level. We first created descriptive codes based on data extracted from individual articles. For example, '*time intensive for students and staff*' [22] and '*time consuming with limited educational value*' [23] were created as two descriptive codes. The descriptive codes were then merged into themes in relation to the RQs. In the case above, the first code was merged to the theme '*timing*' under RQ4, and the second code was merged to the themes '*timing*' and '*relevance to learning*' under RQ4.

Undertaking consultations

An optional step with scoping review is consultation with a limited number of stakeholders to peer review preliminary findings and increase the usefulness of the review [18]. We felt that stakeholders' comments on the alignment between our interpretive work based on the analysis and their own extensive practical and often tacit knowledge would enhance the validity of the review. We therefore opted to implement this additional step through consultations with 3 senior health professions educators: Professor Tim Wilkinson, Professor Wendy Hu, and Associate Professor Andy Wearn; and 1 media production expert, Odette Murdoch. Our stakeholders have diverse areas of expertise in teaching, student learning, curriculum and institutional leadership in HPE contexts and are therefore able to help us establish the practical relevance the review.

Results

In this section, we first describe the result of article selection based on the PRISMA diagram. We then describe the overall characteristics of included articles and then explain the results in relation to each of the RQs.

Article selection

The database search in 2019 returned 1108 article entries and, after the removal of duplicates, 873 entered title and abstract screening. The screening identified 37 articles for full-text assessment and 23 were included for review. Backward and forward searching of the 23 articles further identified 8 articles that met the inclusion criteria. The updated database search in 2021 identified 5 additional articles. In total, 36 articles were reviewed. Figure 1 shows the process of article selection.

Overall characteristics

The included articles (n = 36) covered 29 academic journals, with more than half (20/36) based on studies in the USA. Most studies took place during primary learning in HPE (31/36), mainly within medical (9/31) and nursing (12/31) education. Five studies were at graduate level.

In terms of research design, 9 articles did not explicitly report an approach to collection or evaluation of data, although some form of evidence (e.g., student quotes or teacher reflections) was reported. We categorized these articles as case descriptions. The remaining 27 studies reported data collection and analysis methods, including 12 mixed-methods, 11 quantitative, and 4 qualitative studies. Data collection methods included interviews, focus groups, observations, course-related documents, test scores, questionnaires designed to evaluate project impact, and course evaluation forms. The most common data analysis methods were descriptive statistics and thematic analysis. Nineteen studies were cross-sectional, 6 included pre- and post-implementation data, and 2 followed a longitudinal design. Table 1 shows the research design for each study.

Purposes (RQ1)

We identified 5 categories of purposes that drove the implementation of video production (Table 2). The categories were not mutually exclusive; some studies reported multiple purposes. We classified these studies according to the identified primary purpose.

Developing knowledge and skills (n = 14)

Most commonly, video production projects were implemented by staff with the intention to help students develop knowledge and skills. These projects explicitly identified knowledge components, skillsets, or competencies that students were expected to obtain through video creation and included discipline-specific skills, such as psychomotor skills [22], physical examination [24], and self-care [25]; and

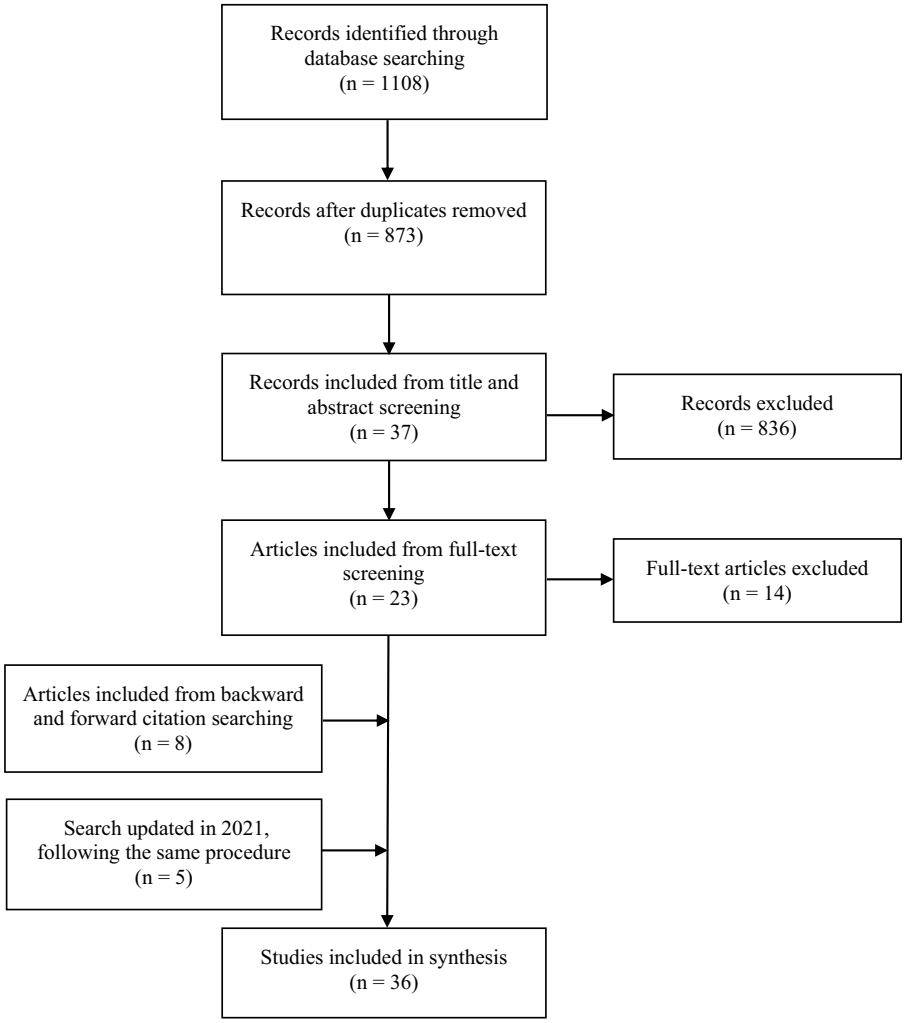

Figure 1. PRISMA flow diagram of the steps and results of article selection.

generic skills, including knowledge synthesis, research and communication skills [26,27]. The emphasis here was on learning, by giving students multiple opportunities to use the knowledge and practise the skills [28], allowing for learning from peer feedback [22] or self-reflection [29]. Six studies identified pedagogical theories that guided project design. The notion of deliberate practice, that is, repeated application accompanied by ongoing feedback with the aim of improving performance [30], was used to support students' psychomotor skills development [22,31]. Constructivist theories were cited as justification for group work, peer review, and collaborative learning [25,32,33].

Bridging to patients and communities (n = 7)

Staff also implemented video production projects with the aim of connecting students with patients and communities, exposing them to real-world healthcare services. These projects sought to help students gain contextualized understanding of healthcare practice, including the role of health professions [5] and the experience of patients living with health conditions [12,34]; and the opportunity for students to solve authentic problems [35] or disseminate their learning to influence communities [36]. Three studies reported the use of problem-based learning theories to guide project design [5,23,37].

Engaging students (n = 5)

Although all projects addressed some form of disciplinary or generic knowledge or skills, this was not invariably their main purpose. Five studies used video production primarily to engage students in learning, using the novelty of video production to motivate students [10,38], or stimulating student initiative and enhancing creativity [39]. The motivational orientation was also evident in 2 articles that identified educational theories: one used the concept of social presence to engage online learners [11] and the other referred to active learning strategies to engage students in performing tasks [40].

Assisting with course delivery (n = 6)

Video production projects were sometimes driven by course delivery issues and the need to provide for learning in a resource-constrained environment. For instance, 3 studies reported implementing video

Table 1. Details of research design of included studies.

First author and year	Research site	Study level and specialty	Research design	Data collection	Data analysis	Sample size
Baharav, 2008	US	Graduate, language disorder	Case description	Unknown	Unknown	Unknown
Bilge, 2017	Turkey	Primary health professional education, nursing	Qualitative, pre-post design	Interview; Observation; Video documents	Content analysis	n_{video} = 25; Interviews (size unknown)
De Gagne, 2018	US	Graduate, health professions	Mixed-methods, longitudinal	Questionnaire (weekly)	Descriptives withT-test; Thematic analysis	$n_{experiment}$ = 52; $n_{control}$ = 36
DeBourgh, 2016	US	Primary health professional education, nursing	Mixed-methods, longitudinal	Questionnaire (twice)	Descriptives; Thematic analysis	n = 102
Decloedt, 2019	South Africa	Primary health professional education, medical	Qualitative, cross-sectional	Questionnaire	Thematic analysis	n = 57
Epstein, 2019	Canada	Primary health professional education, nursing	Mixed-methods, cross-sectional	Questionnaire; Focus group	Descriptives; Deductive analysis	$n_{questionnaire}$ = 26; $n_{focus\ group}$ = 7
Frenzel, 2013	US	Primary health professional education, pharmacy	Quantitative, pre-post design	Pre/post tests; Exam; Questionnaire	Discriptives with Fisher's exact test	n_{exam} = 82; n_{tests} = 69
Gill, 2010	Canada	Primary health professional education, medical	Case description	Unknown	Unknown	Unknown
Green, 2010	US	Primary health professional education, nursing	Case description	Questionnaire	Unknown	n = 127
Green, 2016	US	Primary health professional education, medical	Quantitative, pre-post design	Questionnaire	Descriptives with T-test	n = 11
Green, 2018	US	Primary health professional education, medical	Mixed-methods, cross-sectional	Questionnaire	Descriptives; Thematic analysis	n = 50
Haines, 2010	US	Primary health professional education, pharmacy	Quantitative, pre-post design	Questionnaire	Descriptives	n_{group1} = 18; n_{group2} = 32; n_{group3} = 93; n_{group4} = 66
Hinck, 2013	US	Primary health professional education, chiropractic	Mixed-methods, cross-sectional	Questionnaire	Descriptives	n = 77
Jorm, 2016	Australia	Primary health professional education, interprofessional education	Mixed-methods, cross-sectional	Questionnaire	Descriptives; Thematic analysis	n = 328
Krull, 2013	US	Graduate, population health	Case description	Unknown	Unknown	n = 10
Kwan, 2011	Canada	Primary health professional education, medical	Mixed-methods, cross-sectional	Questionnaire	Descriptives; Unknown re qualitative analysis	n = 8
Lockeman, 2017	US	Primary health professional education, interprofessional education	Mixed-methods, cross-sectional	Questionnaire; assessment data	Descriptives; Constant comparative analysis	$n_{self\text{-}assess}$ = 388; $n_{peer\text{-}assess}$ = 421; n_{video} = 25
Maloney, 2013	Australia	Primary health professional education, physiotherapy	Mixed-methods, cross-sectional	Questionnaire: System-recorded data	Descriptives; Thematic analysis	n = 60
McIntosh, 2018	New Zealand	Primary health professional education, midwifery	Mixed-methods, cross-sectional	Questionnaire	Descriptives; qualitative method unknown	n = 39
Nascimento, 2020	Brazil	Graduate, pharmacy	Quantitative, pre-post design	Questionnaire; Pre/post tests; Exam	Wilcoxon's test, Mann-Whitney test and Fisher's test	n = 50
Omar, 2013	Malaysia	Primary health professional education, dental	Quantitative, cross-sectional	Questionnaire	Descriptives	n = 43
Pereira,2014	Spain	Primary health professional education, nursing	Quantitative, cross-sectional	Questionnaire; Assessment data; Exam	Descriptives Kappa statistical analysis	n = 29
Ramos-Rincon, 2017	Spain	Primary health professional education, medical	Quantitative, cross-sectional	System-recorded data	Descriptives	n_{video} = 4

(*Continued*)

Table 1. (Continued).

First author and year	Research site	Study level and specialty	Research design	Data collection	Data analysis	Sample size
Rodriguez-Almagro, 2021	Spain	Primary health professional education, nursing	Quantitative, Cross-sectional	Questionnaire	Descriptives	n = 90
Rosenkoetter, 2014	US	Primary health professional education, nursing	Quantitative, cross-sectional	Questionnaire; Discussion with staff; Pre/post tests;	Unknown	Unknown
Sarabi, 2019	Iran	Primary health professional education, nursing	Qualitative, cross-sectional	Interview (unstructured)	Conventional content analysis	n = 40
Shapiro,2009	US	Primary health professional education, medical	Mixed-methods, pre-post design	Questionnaires (by students and video viewers); Pre/post tests	Descriptives with T-test; Thematic analysis	n = 32
Smallheer, 2017	US	Primary health professional education, nursing	Qualitative, cross-sectional	Open-ended questionnaire	Unknown	n = 14
Sorenson, 2005	US	Graduate, nursing	Case description	Questionnaire; Staff observation; Test	Unknown	Unknown
Steinhardt, 2017	US	Primary health professional education, pharmacy	Case description	Questionnaire; Assessment data Exam	Unknown	Unknown
Sterling-Fox, 2020	US	Primary health professional education, nursing	Case description	Unknown	Unknown	n = 15
Terregino, 2010	US	Primary health professional education, medical	Case description	Unknown	Unknown	n = 1 (taped documentary)
Unterseher, 2019	US	Primary health professional education, nursing	Mixed-methods, cross-sectional	Questionnaire	Descriptives; Thematic analysis	n = 152 (over two years)
Wallace, 2019	US	Primary health professional education, public health	Quantitative, cross-sectional	Questionnaire	Descriptives	n = 15
Weathers, 2021	Bahrain	Primary health professional education, nursing	Case description	Unknown	Unknown	Unknown
Wever, 2020	South Africa	Primary health professional education, medical	Quantitative, cross-sectional	System-recorded data	Descriptives	n_{video} = 83

production to save cost and time [24,41,42]. The remaining 3 reported implementing video production for students in distance education programs [43,44] or in distributed teaching sites [45]. Only one of these studies articulated an underpinning pedagogical theory, social learning theory [41].

Creating learning resources for others (n = 4)

In 4 studies, students were asked to create videos that captured competencies related to intended learning outcomes to add to a resource repository that was accessible to other students or staff [46–49]. These projects focused on the creation and accumulation of learning resources. Students were implicitly viewed as assistants, developing new learning resources for future use by others [46]. Neither the intended learning for students, nor the role of pedagogical theory in the project design, was reported.

Implementation approaches (RQ2)

Irrespective of pedagogical purposes, we found commonalities in the approaches to implementing video production projects (Table 2). We organize the data into pre-production, production and post-production phases to unpack the described video production process. The pre-production phase captured the preparation work that led to video creation. The production phase only captured the support available during video production because of the dispersed nature of video production and inconsistency in reporting. The post-production phase addressed how videos were used after production.

Pre-production stage

We identified 3 types of preparation work from included studies: content, technical, and team preparation. Eleven studies reported content knowledge preparation including staff lecturing, tutoring, and instructions [5,23,28,31,33–35,42,46,50,51]. Nine studies reported providing learning resources in the form of exemplar videos or readings [22,29,39–44,52]. Ten studies reported student self-exploration of the topic with minimum staff input [10,12,32,36–38,45,48,53,54].

Twelve articles detailed technical preparation, achieved mainly through training [10,12,38,42,45], provision of guidance documents [5,39,49,51,53], or

technical support [22,28], supporting students' use of technologies and devices for video production.

Most studies (27/36) implemented video production in groups of 2 to 6. Of these, 7 studies reported preparation for group work, in the form of predetermining group members, providing collaboration instructions, allocating roles to group members or including team building exercises [5,22,25,39,48,50,53]; another 7 studies took a hands-off approach, letting students organize the group themselves [10,23,31,33,34,37,54]; and 13 studies did not report information on facilitating group collaboration.

Production stage

Twelve studies reported the availability of support during video production, 7 studies reported that students self-managed the production process [29,33,35,39,44,51,54], and 17 studies did not provide relevant information. The support provided included quality checks at project milestones, for instance in the form of reviewing of video scripts [5,12,25,34,47,48,50], guided practice [22], and regular mentoring [12,28,37,53].

Post-production stage

Videos produced by students were commonly used for presentation, dissemination, assessment, or in combination. Presentation (n = 8) involved presenting the videos to the whole class, sometimes followed by having peers vote the best video project [34]. Dissemination (n = 11), on the other hand, involved sharing videos with other staff, students or wider communities; typically, by storing videos on platforms accessible to others. Assessment (n = 17) referred to videos being formally assessed and evaluated. Eight studies reported more than one type of use [25,33,35,37,38,41,42,49].

We recorded 4 assessment practices: student self-assessment (n = 11), peer assessment and evaluation (n = 13), teacher assessment (n = 22), and exams (n = 3). These were not mutually exclusive and some studies adopted more than one assessment strategy. Self-assessment often required students to review the video they produced, either individually or as a group; and evaluate the video using marking criteria and rubric [43]; or write self-reflections on video production [51]. Peer assessment involved peers assessing the video content, in some cases with the use of rubrics [39], while peer evaluation required peers to evaluate group members' contribution to the project [37]. Teacher assessment meant teachers marked video projects. Here, the use of rubrics was evident in some studies (n = 12) but not all, as was the provision of teacher feedback. Finally, for some studies, video content was connected to curricular level assessment, for instance, exams [25,37].

The consequences (RQ3)

The consequences of video production can be clustered into learning gains from the video production project and experiences during the project (Table 3). Learning gain refers to a change in knowledge, skills, beliefs, values, work-readiness and personal development, and enhancement of specific practices and outcomes in defined disciplinary and institutional contexts [55]. Experiences, on the other hand, relate to satisfaction with video production projects.

Learning gain in disciplinary-specific knowledge and skills (n = 20)

Teacher observation and student self-reported data were the main source for reporting disciplinary-specific learning gain, although 7 studies included additional assessment data (e.g., exam scores or pre- and post-test results) in gauging learning gain [25,32,33,35,40,44,45]. Overall, student self-reported data supported disciplinary-specific learning gain as the improvement in knowledge and confidence, and in situated understanding focusing on applying disciplinary knowledge or skills in real healthcare environments. However, assessment data showed that implementing video production projects does not necessarily lead to disciplinary-specific learning gain. Two studies showed that an increase in knowledge was only observed in certain concepts [25,45]. Another study using teacher assessment revealed that only 4% of videos produced by students reflected an enhancement in situated understanding [35]. The literature remains unclear regarding causes of variations in learning gain across different knowledge and skill components.

Learning gain in generic skills (n = 11)

Most of the data used to report learning gain in generic skills were self-reported by students, with 2 exceptions where the teacher assessed student creativity [35], and communication and problem-solving [53]. The self-reported data indicated that video production led to learning gains in teamwork, communication, technical skills, problem-solving and leadership skills [5,10,32]. The development of student creativity, however, was neither supported by self-reported data [32] nor by assessment data [35].

Experiences with video production (n = 30)

Overall, studies showed self-reported satisfaction with video production by both students and staff [44]. Video production was regarded as enabling students to actively apply knowledge in authentic contexts [11], allowing them to self-reflect [52] and receive

Table 2. Purpose, preparation, guidance, and use of video by included studies.

First author and year	Purpose[a]	Types of preparation[b]	Guidance during production	Video use after production
Baharav, 2008	Resource creation	*Content*: teaching; *Technical*: unknown; *Group*: not relevant, individual work	Unknown	Presentation
Bilge, 2017	Bridge to patients and communities	*Content*: teaching; *Technical*: unknown; *Group*: self-organise (n = 10)	Video scripts review	Presentation
De Gagne, 2018	Engage students (social presence)	*Content*: unknown; *Technical*: unknown; *Group*: unknown (n = 4–5)	Unknown	Presentation
DeBourgh, 2016	Develop knowledge and skills (deliberate practice)	*Content*: learning resource; *Technical*: support available; *Group*: pre-determined (n = 3)	Guided practice via mandatory skills clinics	Self assessment; Teacher assessment
Decloedt, 2019	Bridge to patients and communities (problem-based learning)	*Content*: teaching; *Technical*: unknown; *Group*: self-organise (n = 6)	Unknown	Peer assessment; Teacher assessment[c]
Epstein, 2019	Develop knowledge and skills	*Content*: readings; *Technical*: unknown; *Group*: unknown (n = 2–3)	Unknown	Self assessment; Peer assessment; Teacher assessment
Frenzel, 2013	Develop knowledge and skills (constructivist approach)	*Content*: unknown; *Technical*: unknown; *Group*: pre-determined (n = 5–6)	Outcome from preproduction evaluated, feedback provided	Presentation; Dissemination; Peer-evaluation; Teacher assessment[c]; Assessed in exam
Gill, 2010	Resource creation	*Content*: unknown; *Technical*: unknown; *Group*: not sure whether group or individual work	Content review	Dissemination
Green, 2010	Develop knowledge and skills	*Content*: *unknown*; *Technical*: unknown; *Group*: unknown (size unknown)	Unknown	Dissemination
Green, 2016	Course delivery	*Content*: teaching and videos; *Technical*: 3-hour training; *Group*: not relevant, individual work	Unknown	Presentation; Teacher feedback
Green, 2018	Course delivery (deliberate practice)	*Content*: videos; *Technical*: unknown; *Group*: not relevant, individual work	Unknown	Presentation; Self-assessment; Peer-assessment; Teacher assessment with overall feedback
Haines, 2010	Bridge to patients and communities (problem-based learning)	*Content*: self-explore; *Technical*: unknown; *Group*: self-organise (n_1 = 4–5; n_2 = 5–6)	Scheduled mentoring	Dissemination; Peer assessment and evaluation[c]; Teacher assessment; Assessed in exam
Hinck, 2013	Develop knowledge and skills	*Content*: videos; *Technical*: unknown; *Group*: not relevant, individual work	No guidance	Self-assessment[cd]; Teacher assessment of self-reflection
Jorm, 2016	Engage students	*Content*: readings; *Technical*: resource sheet; *Group*: pre-determined and team building (n = 5–6)	No guidance	Peer-assessment[c]; Teacher assessment[c]
Krull, 2013	Engage students	*Content*: self-explore; *Technical*: training; *Group*: unknown (n = 2, with two individual work)	Unknown	Dissemination; Self-assessment[d]
Kwan, 2011	Engage students	*Content*: self-explore; *Technical*: training; *Group*: self-organise (n = 2–3)	Mentoring	Dissemination
Lockeman, 2017	Bridge to patients and community	*Content*: teaching; *Technical*: unknown; *Group*: unknown (n = 5–6)	No guidance	Dissemination; Self-assessment; Peer-assessment; Teacher assessment with overall feedback
Maloney, 2013	Develop knowledge and skills	*Content*: teaching; *Technical*: resource sheet; *Group*: not relevant, individual work	No guidance	Self-assessment[d]; Peer assessment; Teacher overall feedback
McIntosh, 2018	Course delivery	*Content*: learning resources; *Technical*: unknown; *Group*: unknown (size unknown)	Unknown	Self-assessment[c]; Teacher assessment
Nascimento, 2020	Develop knowledge and skills (active learning)	*Content*: teaching; *Technical*: unknown; *Group*: self-organise (n = 5)	No guidance	Presentation Teacher assessment Assessed in exam
Omar, 2013	Bridge to patients and communities (problem-based learning)	*Content*: teaching; *Technical*: resource sheet; *Group*: pre-determined (n = 3)	Video scripts review	Presentation

(*Continued*)

Table 2. (Continued).

First author and year	Purpose[a]	Types of preparation[b]	Guidance during production	Video use after production
Pereira,2014	Develop knowledge and skills (constructivist approach)	*Content*: self-explore; *Technical*: unknown; *Group*: unknown (size unknown)	Unknown	Self-assessment[c]; Peer assessment[c]; Teacher assessment[c]
Ramos-Rincon, 2017	Resource creation	*Content*: self-explore; *Technical*: collaborate with media production students; *Group*: pre-determined (n = 2)	Video scripts review	Dissemination
Rodriguez-Almagro, 2021	Develop knowledge and skills	*Content*: teaching; *Technical*: unknown; *Group*: pre-determined (n = 11–12)	Content review	Dissemination
Rosenkoetter, 2014	Course delivery	*Content*: self-explore; *Technical*: training; *Group*: not relevant, individual work	Unknown	Self-assessment[c]; Teacher assessment and feedback
Sarabi, 2019	Course delivery	*Content*: unknown; *Technical*: unknown; *Group*: unknown (size unknown)	Unknown	Peer assessment
Shapiro,2009	Bridge to patients and communities	*Content*: self-explore; *Technical*: training; *Group*: unknown (n = 2–3)	Recording review and editing assistance; Ongoing mentoring	Dissemination
Smallheer, 2017	Develop knowledge and skills	*Content*: teaching; *Technical*: support available; *Group*: unknown (n = 6)	Ongoing support	Self-assessment; Peer assessment; Teacher assessment of student performance
Sorenson, 2005	Course delivery	*Content*: learning resources; *Technical*: unknown; *Group*: not relevant, individual work	No guidance	Self-assessment; Teacher assessment and feedback with subsequent student revision
Steinhardt, 2017	Engage students (active learning)	*Content*: videos; *Technical*: unknown; *Group*: unknown (n = 5–10)	Unknown	Teacher assessment[c]
Sterling-Fox, 2020	Develop knowledge and skills (deliberate practice)	*Content*: teaching; *Technical*: unknown; *Group: self-organise*, designed as individual work but students collaborated in groups (n = 2–3)	Unknown	Self-assessment; Peer-assessment; Teacher assessment[c].
Terregino, 2010	Develop knowledge and skills	*Content*: unknown; *Technical*: unknown; *Group*: not sure if group or individual work	Unknown	Unknown
Unterseher, 2019	Bridge to patients and communities	*Content*: self-explore; *Technical*: unknown; *Group*: unknown (n = 3–4)	Unknown	Teacher assessment
Wallace, 2019	Develop knowledge and skills	*Content*: self-explore; *Technical*: exemplar videos; *Group*: pre-determined *(n = 3–4)*	Ongoing feedback	Self-assessment; Peer-assessment; Teacher assessment[c] and feedback
Weathers, 2021	Develop knowledge and skills	*Content*: self-explore; *Technical*: unknown; *Group*: self-organise (n = 4–5)	No guidance	Presentation
Wever, 2020	Resource creation	*Content*: unknown; *Technical*: guidelines; *Group*: unknown (n = 3)	Unknown	Dissemination; Teacher assessment[c]

Note: [A] Information provided in brackets in this column refers to the pedagogical theories identified by the study; [b] Information provided in brackets in this column refers to group size; [c] refers to reported use of rubric; [d] refers to reported use of written reflection.

feedback from others [32,51]. Only one study indicated ease-of-use of technology, while others reported video editing being enjoyable but difficult [12], or video-making being the least positive aspect of the project [11,39]. One study that compared student engagement between written and video assignments, reported no differences between the two [11].

The challenges (RQ4)

The literature highlighted project timing, logistic planning, relevance to learning, technical difficulties and group collaboration as common challenges in implementation (Table 3).

Timing (n = 14)

Video production projects are time-consuming. Students reported lack of time for video creation or self-reflection [11], and staff reported projects requiring more time than expected [22]. The lack of time for meaningful collaboration was also noted in group projects [35]. Only one study recorded adequate time allocation, in which video production was implemented in small groups of three, broken into several

Table 3. Learning gains from, experiences during and challenges associated with video production by included studies.

First author and year	Learning gains	Experiences	Challenges
Baharav, 2008	Unknown	Students satisfaction	Unknown
Bilge, 2017	*Disciplinary*: situated understanding, self-reported (+)	Unknown	Unknown
De Gagne, 2018	Unknown	No difference between video and written assignments in terms of engagement	No time for reflection
DeBourgh, 2016	*Disciplinary*: confidence, self-reported (+) *Generic*: teamwork, self-reported (+)	Students satisfaction – small to moderate effect size	Group conflicts re time; Device and space; Time demanding
Decloedt, 2019	*Disciplinary*: situated understanding, self-reported (+)	Students satisfaction	Some found it time consuming; Relevance to learning
Epstein, 2019	*Disciplinary*: confidence, self-reported (+) situated understanding, self-reported (+)	Student satisfaction re self-review and feedback	35% had technical challenges; Teamwork challenges; Time demanding
Frenzel, 2013	*Disciplinary*: knowledge, assessed (+ for some) knowledge, self-reported (+)	Unknown	Unknown
Gill, 2010	Unknown	Unknown	Unknown
Green, 2010	*Generic*: knowledge, self-reported (+)	Students satisfaction	Privacy; Copyright
Green, 2016	Unknown	Unknown	Unknown
Green, 2018	Unknown	Students satisfaction re deliberate practice, feedback, social learning, reflection and easy-to-use	Unknown
Haines, 2010	*Disciplinary*: knowledge, self-reported (+) confidence, self-reported (+)	Students satisfaction	Unknown
Hinck, 2013	Unknown	Students satisfaction	Equipment and device; Privacy
Jorm, 2016	*Generic*: teamwork, self-reported (+ for senior students)	Students least satisfied with video assignment	Teamwork challenges; Technical challenges; Relevance to learning; Time demanding
Krull, 2013	Unknown	Students satisfaction	Relevance to learning
Kwan, 2011	*Generic*: leadership, self-reported (+) technical skills, self-reported (+)	Students satisfaction re the authentic learning experience	Unknown
Lockeman, 2017	*Disciplinary*: situated understanding, self-reported (+) situated understanding, assessed (-) *Generic*: creativity, assessed (-) teamwork, self-reported (-)	Unknown	Time demanding
Maloney, 2013	Unknown	Students satisfaction re feedback	Technical challenges; Time demanding
McIntosh, 2018	*Disciplinary*: confidence, self-reported (+) *Generic*: communication, self-reported (+)	Students satisfaction re self-assessment	Self-recording is challenging; Technical challenges; Group conflicts re time
Nascimento, 2020	*Disciplinary*: knowledge, assessed (+) confidence, self-reported (+)	Student satisfaction	Unknown
Omar, 2013	*Disciplinary*: situated understanding, self-reported (+) *Generic*: communication, self-reported (+) project management, self-reported (+) analytical skills, self-reported (+) problem solving, self-reported (+)	Students satisfaction; Time allocation is adequate	Unknown

(*Continued*)

Table 3. (Continued).

First author and year	Learning gains	Experiences	Challenges
Pereira,2014	*Disciplinary*: knowledge, self-reported (+) knowledge, assessed (+) *Generic*: technical skills, self-reported (+) creativity, self-reported (?)	Students satisfaction re teamwork, self-assessment and peer-assessment	Time demanding; Technical challenges
Ramos-Rincon, 2017	Unknown	Unknown	Unknown
Rodriguez-Almagro, 2021	*Disciplinary*: Knowledge, self-reported (+) Confidence, self-reported (+)	Students satisfaction	Unknown
Rosenkoetter, 2014	*Disciplinary*: knowledge, assessed (+ only for some)	Students satisfaction Staff satisfaction Clients satisfaction	Technical challenges
Sarabi, 2019	*Disciplinary*: knowledge, self-reported (+) *Generic*: teamwork, self-reported (+)	Unknown	Time conflict; Technical challenges; Teamwork challenges
Shapiro,2009	*Disciplinary*: situated understanding, self-reported (+) knowledge, self-reported (+)	Student satisfaction with video editing but also reported it being the most difficult	Relevance to learning; Technical challenges; Time demanding; Teamwork challenges
Smallheer, 2017	Unknown	Unknown	Peer-assessment lacks expert confirmation; Time demanding; Technical challenges; Space lacks privacy
Sorenson, 2005	*Disciplinary*: knowledge, assessed (+)	Staff satisfaction	Unknown
Steinhardt, 2017	*Disciplinary*: knowledge, assessed (+)	Student engagement	Technical challenges; Students required guidance; Time demanding
Sterling-Fox, 2020	*Disciplinary*: confidence, self-reported (+)	Student satisfaction	Technical challenges; Time demanding
Terregino, 2010	*Generic*: communication, self-reported (+) teamwork, self-reported (+)	Students satisfaction; Staff satisfaction	Unknown
Unterseher, 2019	*Disciplinary*: knowledge, self-reported (+) confidence, self-reported (+) situated understanding, self-reported (+) *Generic*: communication, self-reported (+) teamwork, self-reported (+)	Student engagement	Unknown
Wallace, 2019	*Disciplinary*: knowledge, self-reported (+) *Generic*: communication: assessed (+) problem-solving: assessed (+)	Student satisfaction	Relevance to learning; Time demanding; Collaboration challenges
Weathers, 2021	Unknown	Student engagement	Time demanding
Wever, 2020	Unknown	Unknown	Unknown

Note: + indicates that SCVs facilitated learning gain in the knowledge and skills domain; – indicates the SCVs did not facilitate learning gain in the knowledge and skills domain; ? indicates that the learning gain is uncertain in the knowledge and skills domain.

phases with in-class preparation and extended clinical exposure, explicit learning outcomes, facilitation of group collaboration, and guidance [5].

Logistic planning (n = 6)

Video production projects were also dependent on careful planning by staff. Arranging the use of devices, space and timetabling were reported as challenging [22,29,43], along with addressing privacy and copy-right issues and obtaining consent from participants [12,26].

Relevance to learning (n = 5)

For some students, video production had little relevance to learning. In a project where students were tasked with interviewing a patient who needed chronic care in their home, students questioned whether filmmaking was necessary [12]. Other studies similarly reported students not seeing the value of video production [23], or questioning whether video production was of relevance to health science students [39].

Technological difficulties (n = 11)

Experience of technical difficulties was widespread [51,52], and resolving technical errors tended to delay projects [12,32,45]. Students recognized their lack of technical skills [24] and demanded more technical support [40]. At times, self-recording was reported as uncomfortable [32], and distracted students from learning [43]. The experience of technical challenge seemed to be associated with the issue of video production being time demanding: out of the 11 studies that reported technical challenges, 8 also reported a lack of time for the project [12,28,31,32,39,40,51,52].

Group collaboration (n = 6)

Collaboration was identified as a challenge when video production was implemented as group projects. This was attributed to group members being unable to find suitable time for collaboration [24,39,52], or unable to collaborate effectively due to within-group dispute [24] or conflict that led to resignations [12].

Comments from experts

The experts indicated that they trusted the rigor of our search and while some additional references on video pedagogy were offered none met the eligibility criteria. The experts confirmed our analysis was appropriate and our descriptive findings were congruent with our key recommendations. Finally, the experts agreed that our recommendations are reasonable. One expert drew our attention to recent calls for reporting standards for educational interventions [56], which we have now included in our recommendations. Another expert commented that video production using smartphones may not necessarily be time-consuming. While we agree with this statement, the literature describes video production being time-consuming not only in the technical aspect but also in project preparation, collaboration, and production.

Discussion

This scoping review identified video production as an important and emerging pedagogy that has not been supported by adequate reviews and knowledge syntheses. Considering the review as a whole, we note that 29 studies have not been previously reviewed. The remaining 7 studies [5,10,12,25,32,35,37] were captured by a previous review [4] which focused on video production in education in general but not exclusively in HPE. Therefore, by identifying a new and HPE-focused research base, our review provides a contextualized account for video production. In addition, our review was the first that unpacked the implementation process and considered the impact of video production on learning, which will allow educators who seek to adopt video production to make informed decisions regarding whether and how they would incorporate this pedagogy. In the paragraphs below, we first discuss the current state of research. Then, we summarise the main findings and discuss synergies and contradictions between them. Finally, we provide implications for video production projects and future research.

The characteristics of study design highlighted in Table 1 clearly portray video production as an nascent research topic. Nearly a third of studies did not describe research design. This implies that video production may have been viewed as innovative practice, reported for the purpose of updating the HPE community about a potential pedagogy. For studies that reported on research design, longitudinal studies were scarce, so was the application of statistical inferences analysis and theory-informed analysis. This suggests that the current research was primarily of value in evaluating the immediate effect of particular video production tasks at a single point in time. Explanations of the long-term impact and the implementation process have not been fully enabled by methods adopted. Taken together, current research has been opportunistic small-scale project evaluations rather than adopting more rigorous methods to investigate specific aspects of video production. Despite the methodological limitations, the research base does allow for a cautious discussion of the scope of current understanding.

The review identified 5 different purposes of video production. Among them, 21 studies reported a purpose of developing knowledge and skills or applying knowledge and skills in healthcare contexts. However, generic capabilities did not seem to drive the use of video production. Only two studies focused on generic skills [26,27]. The rest viewed generic capabilities as a by-product, mostly captured in project evaluation data. No studies identified the development of video production skills as a primary purpose, rather it was the content of the videos that were to capture the intended learning. Interestingly, video-editing and production were identified as a source of frustration and workload. This might suggest that attention should be devoted to minimizing technical requirements and sophistication. Using videos to simply record important clinical knowledge or behaviours might be more successful in terms of satisfaction and impact than projects which require students to produce well-edited videos. That is, if used improperly, a potentially valuable pedagogy might be getting in the way of motivation and learning.

In addition, video production was also used as an aide to course delivery or resource creation. We were unable to gather data on the extent of this utility or teachers' perspectives on the ethics of using student

time to further the learning of other students or facilitate teaching.

One of the challenges was that students questioned the relevance of video production to learning. This issue highlights the importance of having a sound pedagogical intent: Students not seeing the relevance could be interpreted not as problems inherent to video production but to students not being persuaded of the value of the pedagogy and to being more comfortable with traditional learning approaches.

We note that only a third of studies mentioned pedagogical theory, but even within these studies descriptions of how the theory informed the educational design was minimum. This suggests that pedagogical considerations may not always underpin or inform video production projects. Clandinin [57] suggests that, while teachers may not be able to articulate the pedagogical theory they use, they will however have an implicit notion of how learning happens or a theory-in-use. Both the explicit statements and the implied theory-in-use shared by the studies seems to be that active and collaborative learning are superior to passive learning. Such notions would not necessarily lead to the design of video production projects, given that they apply equally to other learning tasks including, for example, team presentations, photography projects, or design of webpages. We contend that video production projects may stimulate superior learning than other group projects when, for example, complex clinical behaviours are to be practiced, reflected on, refined and captured. However, this level of reasoning was missing from the accounts reviewed and data analysed.

The review was the first that sought to capture how video production projects were implemented through an analysis of the work occurring before, during and after video production. This task proved challenging as implementation processes were not always described in detail. We have therefore reviewed practices as reported rather than as executed. We would like to draw future research to recent developments in reporting standards for educational interventions [56,58], which will ensure additional insights into why and how video production can lead to meaningful learning.

Despite the challenges, two preliminary findings can be drawn. First, it was clear that the work before, during and after video production was concentrated more on disciplinary knowledge and less on technical and collaboration skills. This was probably the source of some observed disquiet regarding the time taken to implement project. The data were consistent with evidence that if skills are required to adopt a pedagogy then support in the development of these skills is essential. Otherwise the cognitive load is likely to be excessive and learning negatively impacted [59]. Secondly, the data revealed that, although videos were used in various ways, not all projects were linked to assessment. Video production tended to be implemented as stand-alone projects, and the videos might not be used to enable further peer learning or inform subsequent assessment activities. The importance of curriculum alignment is well established [60]; thus, it is likely that the sample of projects reviewed may offer a lower indication of satisfaction than might be the case if the projects were thoroughly assessed and tied to course outcomes.

The sections above suggest that shortcomings in the identification of learning outcomes and in task and assessment design may have negatively affected the impact of video production. This is consistent with results relating to project experiences and learning gains. While students described the overall project experience as satisfactory and reported development in knowledge and skills, assessment data showed that this development did not always occur. Taken together, the literature suggests that video production has the potential in facilitating learning because students reported satisfactory experiences. It also confirms the well-established finding [61] that satisfactory experience may not be a proxy measure of learning gain.

The review identified five challenges associated with video production. The challenges indicate that video production requires additional time and effort from staff for designing the project, establishing pedagogical relevance and preparing students with both disciplinary and generic skills. However, it should be noted that these indications were derived from qualitative comments captured during project evaluation, where implementation might not be a focus, and therefore, limited insights in terms of origins of the challenges can be gained.

Limitations

One reviewer conducted full-text assessment and discussed the result with the review team. The same reviewer charted the data with the other reviewers independently charting three articles each. Given that data-charting results were similar, we did not chart the rest articles independently.

We limited the scope of review to journal articles and to those written in English. The review may have missed projects that had yet to be evaluated and published in peer-reviewed journals in English.

With regard to establishing the practical validity, we undertook limited key stakeholder consultation. The outcome of this exercise was very positive but it is possible that more extensive collaborations with staff, students, curriculum leaders and technical and learning support could have enhanced the practical utility of our findings.

Implications for video production projects and for future research

To realise the potential of video production, we provide five recommendations for implementing video production projects. First, given that relevance is an important source of motivation [62], future projects should explicitly establish project relevance to make learning worthwhile. Second, video production is time consuming. It should be used when there are clearly identified and important learning outcomes that can be met by this method. Third, there needs to be an alignment between the desired learning and the pedagogical approach. Ideally, this would involve evidence-based decisions informed by pedagogical theories. Fourth, video production projects should prepare students with technical and collaboration skills in order for them to focus on intended learning and minimise non-relevant technical challenges. Fifth, given the importance of assessment in focusing student efforts [63], assessment and feedback should be intentially embedded to enable further learning.

To advance future research, we provide three recommendations based on the current status of research. First, studies should report in greater details the project design and implementation process, following reporting standards for educational interventions. Second, longitudinal design with measures of learning gains that are not self-reported is likely to advance the current understanding of the impact of video production. Third, there have not been enough studies that focused on the implementation process. Studies of this kind would better prepare educators to reap the benefits of video production.

Conclusions

Video production has gained increasing popularity as an emerging pedagogy, but there is a lack of understanding of how video production projects are implemented, why they are implemented and whether they are beneficial to student learning. We conducted a scoping review to synthesise the current knowledge. Results show that video production has been used primarily for disciplinary learning and has been implemented as stand-alone projects. In addition, while there is potential to use video production to facilitate learning, the impact of video production on learning is unclear. As a nascient research field and an emerging practice, strong statements regarding impact would be premature and depend firstly on designing projects that comply with best practices in collaborative and active learning design and secondly complying with current standards of educational research design and reporting. However, based on the above review we are confident in recommending that educators who intend to adopt this pedagogy should consider timing, pedagogical alignment, relevance to professional learning, development of generic capabilities and integration with other learning and assessment activities. Researchers who seek to advance scholarly knowledge are encouraged to examine the impact of video production on learning and the implementation process that leads to such an impact.

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Authors' contributions

QL contributed to the conception and design of the work, acquisition analysis and interpretation of data, and manuscript draft and revision. SG, TG and RG contributed to the conception and design of the work, analysis and interpretation of data, and manuscript revision. All authors read and approved the final manuscript.

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Data availability statement

Data generated in this study are included in this article.

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Table A1. Search strategies used for each database.

1. **MEDLINE via Ovid (n = 47)**

No.	Searches
1	exp education, continuing/ or exp education, dental/ or exp education, medical/ or exp education, nursing/ or exp education, pharmacy/ or exp education, public health professional/
2	exp Students, Dental/ or exp Students, Nursing/ or exp Students, Medical/ or exp Students, Public Health/ or exp Students, Health Occupations/ or exp Students, Pharmacy/
3	((video* adj3 (film* or edit* or creat* or make or making or made or direct* or generate)) or (film* adj3 (edit* or creat* or make or making or made or direct* or generate))).mp. [mp = abstract, heading words, title]
4	1 and 2 and 3
5	limit 4 to (english language and yr = '2000–2020')

2. **EMBASE via Ovid (n = 170)**

No.	Searches
1	education, dental, continuing/ or education, medical, continuing/ or education, nursing, continuing/ or education, pharmacy, continuing/ or education, dental/ or exp education, graduate/ or exp education, medical/ or exp education, nursing/ or exp education, pharmacy/ or education, public health professional/
2	exp public health student/ or exp dietetics student/ or exp medical student/ or exp midwifery student/ or exp dental hygiene student/ or exp audiology student/ or exp allied health student/ or exp physician assistant student/ or exp paramedical student/ or exp health student/ or exp occupational therapy student/ or exp dental student/ or exp nursing student/ or exp physical therapy student/ or exp chiropractic student/ or exp middle school student/ or exp graduate nursing student/ or exp respiratory therapy student/ or exp pharmacy student/ or exp baccalaureate nursing student/ or exp male nursing student/
3	((video* adj3 (film* or edit* or creat* or make or making or made or direct* or generate)) or (film* adj3 (edit* or creat* or make or making or made or direct* or generate))).mp. [mp = abstract, heading words, title]
4	1 and 2 and 3
5	limit 4 to (english language and yr = '2000–2020')

3. **CINAHL via EBSCO (n = 124)**

No.	Searches
1	(MH 'Education, Emergency Medical Services') OR (MH 'Education, Medical, Continuing') OR (MH 'Education, Medical') OR 'medical education' OR (MH 'Education, Audiology') OR (MH 'Education, Dental Hygiene') OR (MH 'Education, Cardiovascular Technology') OR (MH 'Education, Allied Health+') OR (MH 'Education, Health Sciences+')
2	(MH 'Students, Allied Health+') OR (MH 'Students, Health Occupations+')
3	TI (film* or edit* or creat* or make or making or made or direct* or generate) OR AB (film* or edit* or creat* or make or making or made or direct* or generate)
4	TI (video* or film*) OR AB (video* or film*)
5	1 AND 2 AND 3 AND 4
6	Limiters – Published Date: 20,000,101–20,201,231; English Language; Publication Type: Journal Article

4. **Scopus (n = 178)**

No.	Searches
1	(TITLE-ABS-KEY ((video* OR film*)) AND TITLE-ABS-KEY (student* W/3 (film* OR edit* OR creat* OR make OR making OR made OR direct* OR generat*)) AND TITLE-ABS-KEY (medical OR health OR medicine OR dental OR dentistry OR nurs* OR pharmacy)) AND (LIMIT-TO (PUBYEAR, 2020) OR LIMIT-TO (PUBYEAR, 2019) OR LIMIT-TO (PUBYEAR, 2018) OR LIMIT-TO (PUBYEAR, 2017) OR LIMIT-TO (PUBYEAR, 2016) OR LIMIT-TO (PUBYEAR, 2015) OR LIMIT-TO (PUBYEAR, 2014) OR LIMIT-TO (PUBYEAR, 2013) OR LIMIT-TO (PUBYEAR, 2012) OR LIMIT-TO (PUBYEAR, 2011) OR LIMIT-TO (PUBYEAR, 2010) OR LIMIT-TO (PUBYEAR, 2009) OR LIMIT-TO (PUBYEAR, 2008) OR LIMIT-TO (PUBYEAR, 2007) OR LIMIT-TO (PUBYEAR, 2006) OR LIMIT-TO (PUBYEAR, 2005) OR LIMIT-TO (PUBYEAR, 2004) OR LIMIT-TO (PUBYEAR, 2003) OR LIMIT-TO (PUBYEAR, 2002) OR LIMIT-TO (PUBYEAR, 2001) OR LIMIT-TO (PUBYEAR, 2000)) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (LANGUAGE, "English"))

5. **AMED via Ovid (n = 15)**

No.	Searches
1	education/ or education continuing/ or education medical/ or education nursing/
2	exp Students/
3	((video* and (film* or edit* or creat* or make or making or made or direct* or generate)) or (film* and (edit* or creat* or make or making or made or direct* or generate))).mp. [mp = abstract, heading words, title]
4	1 AND 2 AND 3
5	limit 4 to (journal article and english and yr = '2000 -Current')

6. PsycInfo via Ovid (n = 81)

No.	Searches
1	exp Medical Education/ or exp Psychology Education/ or exp Rehabilitation Education/ or exp Nursing Education/ or exp Dental Education/
2	exp Dental Students/ or exp Nursery School Students/ or exp Nursing Students/ or exp Medical Students/
3	((video* and (film* or edit* or creat* or make or making or made or direct* or generate)) or (film* and (edit* or creat* or make or making or made or direct* or generate))).mp. [mp = abstract, heading words, title]
4	1 and 2 and 3
5	limit 4 to (english language and journal article and yr = '2000 -Current')

7. **PubMed (n = 489)**

No.	Searches
1	(((student*[Title/Abstract]) AND (creat*[Title/Abstract] OR edit* OR make[Title/Abstract] OR making[Title/Abstract] OR made[Title/Abstract] OR direct*[Title/Abstract] OR generate[Title/Abstract] OR produce[Title/Abstract])) AND (video*[Title/Abstract] OR film*[Title/Abstract])) AND (medical[Title/Abstract] OR dental[Title/Abstract] OR dentistry[Title/Abstract] OR nurs*[Title/Abstract] OR pharmacy[Title/Abstract] OR public health[Title/Abstract] OR medicine[Title/Abstract]) Limit to full text, from 2000 to 2019, english, journal article