Advances in Medical Education and Practice

Dovepress

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ORIGINAL RESEARCH

Teaching Style Preferences and Online Teaching Practices of Optometry Teachers During COVID-19: A Preliminary Study

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Purpose: Although research on teaching style preferences is available in the literature, there is limited information on the preferences of optometry teachers. The Coronavirus disease 2019 pandemic has impacted educational practices in all sectors. This study focuses on the teaching style preferences and online teaching practices of optometry teachers during the COVID-19 pandemic.

Patients and Methods: The study used a case study research design and a self-administered online questionnaire and follow-up semi-structured interview for data collection. The Grasha-Riechmann teaching style inventory was used to explore the teaching style preferences (Expert, Formal Authority, Demonstrator, Facilitator and Delegator). Quantitative and qualitative data were analyzed using descriptive statistics and thematic content analysis respectively.

Results: The optometry teachers were aged between 29 and 51 years (median = 45 years) and had between 3 and 25 years of teaching experience (median = 5 years). All teachers scored high in the Expert teaching style and most had scores categorized as high for the Delegator, Facilitator and Formal Authority teaching styles. The teachers reported that the initial adaptation to online teaching was difficult and challenging as they were not prepared for the rapid transition to online learning. They used various resources and materials but felt that student participation and engagement was lower in online teaching. Teachers noted that more time was needed to prepare materials for online teaching than for face-to-face teaching.

Conclusion: Optometry teachers adopted a multidimensional approach preferring the different teaching styles to varying degrees. Teachers noted challenges with the initial transition and adaptation to online teaching and used a combination of resources to support student learning.

Keywords: teaching style, online teaching practices, Grasha-Riechmann teaching style inventory, teaching and learning, optometry teachers

Introduction

Teaching styles preferences encompass the different strategies, behaviours, beliefs and principles that teachers use to support student learning.[1,2] Research focused on teaching style preferences is important as teachers bring their own diversity and experiences to the student-teacher interactions.[3] Thus, an enhanced understanding of teaching style preferences can help create more effective and efficient student-teacher interactions within a curriculum.[1,2] Even though research on teaching style preferences is available in the literature, there is limited information on the preferences of optometry teachers. Some studies have reported on the materials and methods used by optometry teachers for teaching and learning activities involving specific practical or theoretical aspects within a curriculum.[3–5]

The global Coronavirus disease 2019 (COVID-19) pandemic drastically impacted educational practices in all sectors and forced many institutions to implement alternate strategies to continue with educational activities.[6,7] Higher education institutions that traditionally used face-to-face teaching had to rapidly change to online teaching as was the case for many institutions in South Africa.[8] While online teaching enables student-teacher interactions, there are notable differences for

Received: 19 August 2023
Accepted: 3 November 2023
Published: 3 January 2024

communication, assessments and delivery of content when compared with face-to-face teaching.[9] Although online methods for teaching and learning have been described as flexible, student-centered, cost-effective and more accessible,[10] there are critical factors that influence the efficient implementation of online teaching including technology, digital literacy, teacher readiness and pedagogical approaches.[7,9]

Considering the widespread changes in optometry educational practices over the last three years,[11,12] there is a need to evaluate and better plan for optometry education in the post COVID-19 era.[13] In the South African context, all educational practices in higher education institutions adhere to the regulations outlined by the Department of Higher Education and Training and the Council of Higher Education. In March 2020 during alert level 5 of the COVID-19 national lockdown in South Africa, face-to-face teaching was immediately suspended in all higher education institutions and they were mandated to adopt emergency remote teaching and learning to save the 2020 academic year. This shift in educational practices from face-to-face teaching to online teaching was planned for a duration of three months although it lasted for more than 18 months for courses that had theory components. In the same way, courses that had practical/clinical teaching components were also impacted as these components remained suspended and only resumed in September 2020 with safety precautions (social distancing and wearing of facial masks) when South Africa was at adjusted alert level 1 of the national lockdown. The Bachelor of Optometry programme in South Africa consists of basic science, preclinical and clinical courses that have theory and/or practical components in different subject areas including ophthalmic optics, visual science and clinical optometry. Both student-centered and teacher-centered teaching approaches are used where methods of teaching include lectures, practicals, simulations, seminars, small group work, experiential learning and self-directed/homework tasks. An enhanced understanding of the teaching style preferences and online teaching practices of optometry teachers may provide useful information to inform curriculum evaluation and strengthening initiatives. Consequently, the aim of this preliminary study is to explore the teaching style preferences and online teaching practices of undergraduate optometry teachers during COVID-19.

Methods

The study used a case study research design as this allowed for an in-depth investigation using different data collection techniques within a real-life setting.[14] The population comprised all teachers that were actively involved in teaching and supervision activities for the 2021 academic year in the Discipline of Optometry at the University of KwaZulu-Natal (UKZN). At the time of data collection, there were 12 eligible optometry teachers and an email containing study information and invitation to participate was sent to the teachers. The study was approved by the UKZN Humanities and Social Sciences Research Ethics Committee (HSSREC/00002846/2021) and adhered to the tenets of the Declaration of Helsinki. Purposive sampling was used to recruit study participants and informed consent was obtained from all participants prior to participating in the study.

Data collection consisted of a self-administered anonymous online questionnaire and a follow-up online interview. The questionnaire was created through Google forms and available for eight weeks (14 August to 10 October 2021). The link for the questionnaire was included in the email sent to the teachers. The online questionnaire took approximately 15 to 20 minutes to complete and consisted of three sections wherein section one had study information and probed for informed consent, section two contained questions related to demographic information and teaching experience while section three contained questions in the Grasha-Riechmann teaching style inventory used to assess the teaching style preferences.[2,15] The last question in the questionnaire probed if participants would be available for a follow-up interview about their online teaching practices. Participants who responded positively were contacted after the online questionnaire ended to confirm their response and an interview was scheduled based on their availability. The online interview was scheduled with the Zoom meeting application and took approximately 10 to 20 minutes to complete. All participants provided verbal consent for participation and audio recording of the interviews.

The Grasha-Riechmann teaching style inventory consists of 40 statements that participants rated using a seven-point Likert scale (1 - strongly disagree, 2 - disagree, 3 - somewhat disagree, 4 - neither disagree or agree, 5 – somewhat agree, 6 - agree and 7 - strongly agree) based on how applicable the statements were to the courses they taught.[2,15] The statements in the Grasha-Riechmann teaching style inventory relate to five teaching styles including the Expert, Formal Authority, Demonstrator, Facilitator and Delegator with eight statements each per teaching style.[15] The Facilitator and

Delegator teaching styles align with a student-centered teaching approach while the Expert, Formal Authority and Demonstrator styles align with a teacher-centered teaching approach.[2,15]

Characteristics of the Expert style include that the teacher possess knowledge, is a subject expert and serves as an information provider.[2,15] Characteristics of the Formal Authority style include that the teacher acts as a manager and provides students with structure for their learning including setting learning goals and outlining expected behaviours and rules.[2,15] Characteristics of the Demonstrator style include that the teacher acts as a role model and portrays a learning approach that is perceived as effective based on their personal experiences and beliefs.[2,15] Characteristics of the Facilitator style include that the teacher guides and supports students by asking probing questions, using group discussions, peer learning and encouraging students to become independent and responsible for their learning.[2,15] Characteristics of the Delegator style include that the teacher allows students to work independently but provides guidance when requested and therefore is primarily concerned with students autonomy for their learning.[2,15] Despite the various teaching styles and characteristics therein, it is acknowledged that teachers possess the different styles to varying degrees and often use a combination of teaching styles during their teaching and learning activities.[1,2,15] This implies that although there may be a dominant style reflective in their behaviours and beliefs, teachers often adopt a multidimensional approach to ensure that optimal learning takes place and that the desired learning outcomes are achieved.[1,2,16]

The Grasha-Riechmann teaching style inventory has been used in other studies[1,16–18] to assess teaching style preferences. Furthermore, this teaching style inventory is a valid and reliable instrument as the statements in the questionnaire showed high internal consistency (Cronbach alpha values between 0.73 and 0.82).[1,18] The scores for each teaching style were computed by determining the average of the scores for the eight statements pertaining to that style as outlined in the scoring key for the Grasha-Riechmann teaching style inventory.[15] The computed scores were compared with and categorized (low, moderate and high) based on the normal values outlined for each teaching style in the scoring key.[15] Scores that fall within the high category imply a preference for that teaching style.[17] Furthermore, it is possible for more than one teaching style to have scores that fall in the high category for an individual teacher.[17]

A semi-structured online interview was used to explore participants' online teaching practices. Semi-structured interviews were preferred as this data collection technique allows for clarification and probing of participants responses to better understand the phenomenon of interest[19] which in this study was their online teaching practices. The interviews were performed with an interview schedule containing open-ended and probe questions based on a literature search related to teaching practices, remote teaching and online teaching and learning. Two researchers, who were trained in interviews, performed the interviews together with individual participants. The interviews were transcribed and checked against the audio recording for accuracy in the transcription process. Prior to data collection, a pilot study was conducted to assess suitability of the study procedure and data collection instruments involving two optometry teachers not included in the preliminary study. Minor modifications to a few of the probe questions were made in the interview guide after the pilot study to improve the relevance of these questions to the study aim. Study data from the online questionnaire were captured on Microsoft Excel and exported to the Statistical Package for Social Sciences (SPSS) version 27 for analysis. Quantitative data were analysed with descriptive statistics and are presented as means, standard deviations, frequency counts, percentages, ranges and medians. Qualitative data from the online follow-up interviews were analyzed with thematic content analysis.

Results

Characteristics of the Sample

Seven teachers completed the online questionnaire yielding a response rate of 58%. This included two professors and five lecturers comprising six females and one male. The ages of the teachers ranged from 29 to 51 years (median = 45 years). All teachers had completed postgraduate degrees at masters level or higher and had between three and 25 years of teaching experience (median = 5 years). Six teachers taught in courses that had a theory component combined with practical/clinical components. The remaining teacher taught a course with a theory component only.

Teaching Style Preferences Using the Grasha-Riechmann Teaching Style Inventory

Table 1 shows the optometry teachers scores for the different teaching styles. Except for the Delegator teaching style, the group mean scores for all teaching styles were greater than 5.00. When the individual scores for the seven teachers were

Table 1 Optometry Teachers (n = 7) Scores for the Different Teaching Styles

Teaching Style	Group Scores		Individual Scores	
	Mean	SD	Mean	Category
Expert	5.59	0.71	P1 = 5.63	High
			P2 = 5.00	High
			P3 = 5.00	High
			P4 = 5.38	High
			P5 = 6.75	High
			P6 = 5.00	High
			P7 = 6.38	High
Formal authority	5.79	0.28	P1 = 5.38	Moderate
			P2 = 5.75	High
			P3 = 6.13	High
			P4 = 6.00	High
			P5 = 6.00	High
			P6 = 5.50	High
			P7 = 5.75	High
Demonstrator	5.57	0.82	P1 = 4.25	Low
			P2 = 5.25	Moderate
			P3 = 5.75	High
			P4 = 5.38	Moderate
			P5 = 6.63	High
			P6 = 5.25	Moderate
			P7 = 6.50	High
Facilitator	5.36	0.56	P1 = 4.75	Moderate
			P2 = 6.00	High
			P3 = 5.50	High
			P4 = 5.25	Moderate
			P5 = 5.75	High
			P6 = 4.50	Moderate
			P7 = 5.75	High

(*Continued*)

Table 1 (Continued).

Teaching Style	Group Scores		Individual Scores	
	Mean	SD	Mean	Category
Delegator	4.73	0.65	P1 = 4.38	High
			P2 = 5.25	High
			P3 = 5.50	High
			P4 = 4.88	High
			P5 = 5.13	High
			P6 = 3.63	Moderate
			P7 = 4.38	High

Abbreviations: SD, Standard deviation; P1, Participant1; P2, Participant 2; P3, Participant 3; P4, Participant 4; P5, Participant 5; P6, Participant 6; P7, Participant 7.

considered, all teachers showed mean scores that were categorized as high for the Expert teaching style (Table 1). Similarly, more than half of the teachers had individual scores categorized as high for the Formal Authority, Facilitator and Delegator teaching styles. Three teachers (Participant 3, Participant 5 and Participant 7) had mean scores that were categorized as high for all five teaching styles. The remaining teachers achieved mean scores for the different teaching styles that were mostly in the high and moderate categories with only Participant 1 achieving a low score in the Demonstrator teaching style (Table 1).

Online Teaching Practices

Of the seven teachers that responded to the online questionnaire, four were willing to participate in the follow-up interviews. At the time of data collection, South Africa was at adjusted alert level 1 of the COVID-19 national lockdown and teaching and learning activities had resumed at higher education institutions. At UKZN, teachers were undertaking online teaching for the theory components and in-person teaching for the practical/clinical components in courses. The themes that emerged from the interviews on online teaching practices are presented below.

Theme 1: Adaptation to Online Teaching

Participants reported that the initial adaptation to online teaching was difficult and that there were operational aspects that were challenging. For example, a participant expressed that

> Online teaching has been very difficult and challenging but I've (I have) had to adapt. (Participant 4, female, lecturer)

Another participant expressed that the adaptation to online teaching is

> Still an ongoing process and it is more of a trial-and-error method. (Participant 3, female, lecturer)

All participants reported that they needed to adapt to the change of environment in which the teaching and learning activities were conducted. They reported that when working from home, factors such as ambient noise, presence of family members in shared spaces, loadshedding (planned interruption in the supply of electricity) and household responsibilities made online teaching challenging. Participants reported that discussion forums on the learning management system and social networking groups blurred the boundaries between working hours and after-hours. Participants also felt that these methods of communication with students made it difficult for them to switch off after working hours and was intrusive to their personal time. For example, a participant stated that

> WhatsApp groups did not work well because there is no distinction with time and (it) took my personal time. (Participant 3, female, lecturer)

All participants noted that the lack of face-to-face interaction and inability to observe nonverbal behaviours made online teaching very difficult. In this way, participants reported that online teaching can at times be impersonal as the

> Lack of facial cues makes it difficult to gauge student understanding. (Participant 2, male, professor)

Another participant stated that

> I don't (do not) get to see if students are understanding the concept, and I don't (do not) get any follow up questions from students making it difficult to know who is following and understanding and who is not. (Participant 3 female, lecturer)

Even though all participants preferred face-to-face teaching, they acknowledged that online teaching is an important aspect of the future of higher education. A participant expressed that

> Personally, I still prefer face-to-face teaching because of (the) students' physical presence and their reaction and engagement however this (online teaching and learning) will be the future and I think I am just old school. (Participant 2, male, professor)

Theme 2: The Quick and Unexpected Transition to Online Teaching

All participants reported that they were not ready for the transition to online teaching when it happened. A participant expressed that the transition to online teaching occurred

> At a time where we were all overwhelmed with our own issues, and this made the move to online (teaching) very difficult. (Participant 4, female, lecturer)

Another participant stated that network and internet connectivity also played a significant role in making the transition to online teaching challenging as she reported that

> The house was not set up for online (teaching) when it occurred. The Wi-Fi was running out halfway through the month and we couldn't (could not) change it until the lockdown eased. This made the transition to online teaching frustrating for teachers as the university was trying to resolve students' issues while staff were also experiencing difficulties. (Participant 1, female, lecturer)

All four participants reported that at the inception of online teaching, it was difficult to learn how to navigate the online learning management system (Moodle) and Zoom meeting application. For example, a participant stated that

> I had to learn how to record and compress videos, something I had never done before. (Participant 4, female, lecturer)

Participants indicated that although training sessions outlining how to use the online resources and learning management system were useful, they did not always have time to attend these training sessions. This is illustrated by the comment of one participant

> I did not have time to attend the training as I had preparations to do for online (teaching and learning) so it's (it has) been difficult. (Participant 4, female, lecturer)

Theme 3: Methods Used for Online Teaching

All participants used a combination of resources for online teaching including pre-recorded lectures, powerpoint presentations, recommended readings, online discussion forums and social networking groups, self-directed/homework tasks, internet links and Zoom meetings. Two participants preferred to use pre-recorded lecture videos and live lectures via the Zoom meeting application as the latter allowed for interaction with the students. Another participant stated that

> When doing a powerpoint (presentation), I use animations and key points to pass on the take home message. (Participant 3, female, lecturer)

This participant also reported that she provided

> Extra readings, additional articles and prescribed textbooks for an in-depth understanding. (Participant 3, female, lecturer)

Apart from the different methods used, participants also noted using different materials to accommodate the diverse learning styles of students. For example, a participant stated that

> Within my teaching (I) put a picture for my visual learners and words for my read-write learners as well as speaking for my auditory learners. (Participant 1, female, lecturer)

All participants indicated that it was the teacher's responsibility to provide relevant teaching and learning opportunities to help students develop the necessary competencies (knowledge, skills and attitudes). A participant mentioned that

> It is important to bring real life examples to merge with the theory work so that they have an understanding of the concept. (Participant 3, female, lecturer).

All participants indicated that it was very demotivating when students did not participate in online teaching activities and therefore used different activities to encourage student participation. Some of the activities used included break up rooms in the Zoom meeting application for small group discussions and directing questions to individual students during synchronous Zoom lecture sessions. Despite this, all participants reported that student participation and engagement in online teaching was lower than in traditional face-to-face teaching.

Theme 4: Preparing Teaching and Assessment Materials for Online Teaching

All participants found that preparing materials for online teaching and assessment was more time-consuming when compared with material preparation for face-to-face teaching. A participant stated that

> It took me three days to sort out a test that I would set in a day. (Participant 1, female, lecturer)

Another participant noted that

> It is taking more preparation time when setting assessments and making online content. (Participant 3, female, lecturer)

Furthermore, there was a difference noted in the preparation time needed depending on the type of course and the nature of its content. Participants noted that preparing teaching and assessment materials for theory courses without diagrams and calculations required lesser time. However, for courses with practical/clinical components, participants reported that this was different and more challenging. For example, one participant said

> You have to show videos on how the practical techniques are done. But once students get hands-on experience, it becomes different. (Participant 2, male, professor)

This relates to the practical/clinical aspects being more affected in online teaching as without appropriate simulation and real patient engagement, practical techniques using learning management systems in online platforms are more difficult to teach.

Discussion

Overall, the teaching style preferences of the optometry teachers can be described as multidimensional as majority had scores that were categorized as high for the different teaching styles (Expert, Formal Authority, Facilitator and Delegator). This implies that the optometry teachers are likely to use the five styles, which are outlined in Grasha's conceptual model of teaching styles,[15] in combination and to varying degrees during their student-teacher interactions. These findings may be attributed to the multiple roles that teachers in health-related disciplines, such as optometry, often assume in their student-teacher interactions such as information provider, role model, facilitator, assessor, curriculum planner and resource developer.[20] For the Expert teaching style, all participants had individual scores that were categorized as high implying a preference for this teaching style as observed in previous studies.[16–18] Teachers that use the Expert teaching style possess subject knowledge and expertise and therefore strive to share this with students to improve their knowledge and understanding.[2] Consequently it is not surprising that teachers, particularly those with higher academic ranks such as professors, prefer the Expert teaching style.[1] This finding may also be because teachers at higher education institutions often engage in postgraduate degrees and/or research activities and in the process become

subject experts. In the present study, the optometry teachers preferences for the Facilitator and Delegator teaching styles are encouraging as these align with student-centered teaching approaches.[1,15] Moreover, other studies[1,18] have reported that teachers in health-related disciplines prefer the Expert and Delegator teaching styles as noted in the present study. This implies that teachers may be using different teaching strategies because of their multidimensional teaching preferences to create educational activities and environments that optimize student learning.[18,21]

In the current study, teachers reported that the initial adaptation to online teaching was difficult as they were not ready or prepared for the rapid transition to online teaching. This finding is similar to a study conducted in Indonesia where teachers who taught in face-to-face lectures also reported being less prepared for the transition to online teaching because of inadequate skills to effectively use the learning management system, less time to prepare for online teaching and challenges with internet connectivity and time management.[9] Some of the barriers to successful implementation of online teaching include information communication and technology challenges, limited peer and administrative support and interaction, inadequate student engagement and personal factors such as stress and self-management.[7,9,22] As some of these barriers are operational factors, enhanced support from curriculum planners to develop high-quality online teaching resources and from administrative and support staff, particularly those with information communication and technology skills, should be sought to better design and implement online teaching.[22] This would be important as online methods of teaching and learning is a critical aspect of the future in higher education and therefore institutions and its teachers should be adequately prepared.

All teachers used a combination of resources for their online teaching and tried to accommodate students with different preferred learning styles as noted in previous studies.[9,22] For example, Zalat et al[7] reported that teachers used a combination of synchronous (using Zoom and Microsoft Teams) and asynchronous (pre-recorded lecture videos and additional reading) online teaching resources to better support student learning. Junus et al[9] noted that teachers implemented new, creative and effective styles of teaching to help students with different learning styles better understand the content being taught. In the present study, all teachers felt demotivated by the lower levels of student participation and feedback during online teaching. Other studies[6,9,22] have also reported similar challenges with student engagement during online teaching. As such there have been concerns about the learning process during online methods of teaching and learning.[9] Teachers also reported that preparing materials for online teaching was more time-consuming compared with preparations for face-to-face teaching. Other teachers have also reported similar challenges with time management and preparations and suggested that the familiarity with face-to-face teaching and its requirements may be the reason for this discrepancy.[9,22]

Strengths of this study included the use of a case study research design, pilot study and two different data collection instruments. Furthermore, a validated questionnaire was used to assess teaching style preferences that has been used previously[1,17,18] and the interviews were performed and analysed by trained researchers. The small sample of teachers (seven for the questionnaire and four for the interviews) limits the generalisability of the study findings to other optometry teachers in South Africa. However, this preliminary study was undertaken to better understand the preferred teaching styles and online teaching practices so that teachers in the optometry programme at UKZN can use this information to better design and implement online teaching and learning activities for more effective student-teacher interactions. The study may further serve as the impetus for the Education and Training Committee within the Health Professions Council of South Africa to undertake a national study focused on teaching styles and practices involving optometry teachers in the different higher education institutions that offer the Bachelor of Optometry training programme.

Conclusion

This study presents findings of the teaching style preferences and online teaching practices of optometry teachers during COVID-19 in an undergraduate programme. The optometry teachers showed a multidimensional approach as they preferred the different teaching styles to varying degrees. In terms of their online teaching practices, they noted challenges with the initial adaptation, were unprepared for the rapid transition and used a combination of resources to support student learning. This information may be useful for curriculum appraisal initiatives aimed at identifying gaps and strengthening the optometry programme at UKZN to improve the quality of optometry education.

Data Sharing Statement

The datasets generated and/or analysed during the study are available from the corresponding author on reasonable request.

Acknowledgments

The authors acknowledge Dr Z Dessi for assistance with the statistical analysis.

Funding

No funding was received for this study.

Disclosure

The authors report no conflicts of interest in this work.

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