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Evaluating the effectiveness of an online faculty development programme for nurse educators about remote teaching during COVID-19



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المخلص

أهداف البحث: يمثل إشراك المتعلمين أثناء جائحة كوفيد-19 تحدياً كبيراً للمعلمين. وقد تغلب الوضع الوبائي على الحواجز في تعزيز التعلم عبر الإنترنت. وتعتبر الفصول الدراسية لجوجل الاختيار الأول للمؤسسات التعليمية لإشراك الطلاب عن بعد خلال هذه الجائحة. تهدف هذه الدراسة لتقييم تأثير برنامج تطوير أعضاء هيئة التدريس عبر الإنترنت على الكفاءة الملموسة لمعلمي التمريض في إنشاء وتقديم المحتويات الإلكترونية باستخدام الفصول الدراسية لجوجل والأدوات الرقمية الأخرى المتاحة مجاناً.

طرق البحث: تم اعتماد تصميم قبل التجربة. تم عمل دورة لتطوير أعضاء هيئة التدريس عبر الإنترنت تكونت من ست وحدات لمدة ثمانية أيام لعدد 24 من معلمي التمريض لكلية تمريض تابعة. ثم عقدت جلسة استخلاص المعلومات بعد الانتهاء من الدورة بتسعة أيام. طور أحد الباحثين مقياس تصنيف مكون من 10 عناصر، تم استخدامه لتقييم الكفاءة الملموسة للمشاركين في استخدام الفصول الدراسية لجوجل والأدوات الرقمية الأخرى للتدريس عبر الإنترنت قبل وبعد دورة تطوير أعضاء هيئة التدريس.

النتائج: أنهى 18 من بين 24 مشاركاً مدرباً، التقييم اللاحق لمقياس التصنيف بمعدل استجابة 75%. في مرحلة ما بعد التقييم، لوحظ ارتفاع مستوى الكفاءة لعدد 83.3% من المشاركين لإنشاء الفصول الدراسية لجوجل، و66.7% لإنشاء

محاضرات بالفيديو وباستخدام دفتر التقديرات عبر الإنترنت. وتمت ملاحظة فروقات ذات دلالات إحصائية بين ما قبل وما بعد تقييمات الدورة.

الاستنتاجات: أظهرت هذه الدراسة أن برنامج تطوير أعضاء هيئة التدريس عبر الإنترنت عزز من المهارات الملموسة لأعضاء هيئة التدريس في تقديم التدريس عبر الإنترنت بشكل فاعل باستخدام مختلف الأدوات الرقمية خلال الجائحة.

الكلمات المفتاحية: جائحة كوفيد-19؛ برنامج تطوير أعضاء هيئة التدريس؛ الفصول الدراسية لجوجل؛ معلمي التمريض؛ الدروس على الإنترنت؛ الأدوات الرقمية

Abstract

Objective: Engaging learners during the COVID-19 pandemic is a significant challenge for educators. The pandemic has propelled the popularity of online learning, with Google Classroom being widely used by educational institutions as a remote learning platform. This study aimed to evaluate the impact of an online faculty development programme on nurse educators' perceived competency in creating and delivering e-content using Google Classroom and other freely available digital tools.

Methods: A pre-experimental design was adopted for the research. A six-module online faculty development course was conducted for 24 nurse educators of an affiliated nursing college, over a period of eight days. A debriefing session was held on ninth day after the completion of the course. A 10-item rating scale was used to assess the participants' perceptions of their competency in using Google Classroom and other digital tools for online

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teaching before and after the online faculty development course.

Results: Out of 24 trained participants, 18 completed the post-evaluation rating scale, giving a response rate of 75%. In the post-evaluation phase, a high level of competency was perceived by 83.3% of participants for using Google Classroom and 66.7% for creating video lectures and using an online grade book. A statistically significant difference ($p < 0.001$) between pre- and post-course evaluations was observed.

Conclusion: This study shows that the online faculty development programme enhanced the perceived skills of faculty members in effectively delivering online teaching using various digital tools during the pandemic.

Keywords: COVID-19 pandemic; Digital tools; Faculty development programme; Google classroom; Nurse educators; Online classes

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Introduction

Increased access to the Internet and the advancements in digital technology have enhanced online learning significantly. Online content delivery provides an opportunity for flexibility in learning and allows educators to reach learners remotely.¹ Online learning caters to the learning needs of slow learners, enabling them to review teaching materials at their own pace. Realising the need for adopting digital technology in higher education, the Ministry of Human Resource Department of the Government of India began introducing digital technology in higher education by launching various digital initiatives. However, online learning in Indian Higher Education is in its initial stages, especially in health professional education.

Online learning methods are used extensively for nursing education in developed countries. Entry-level graduate nursing training has adopted online training for the past several years. Online learning is more flexible for students than traditional methods and encourages active learning.² The implementation of lockdown to control the spread of COVID-19 has hindered face-to-face teaching practices,³ and higher education institutes are compelled to adopt online teaching methods to keep learners engaged. However, teaching online is a challenging task for faculty members due to their lack of experience and technological support. For most health professional educators, it is their first time teaching from home.⁴

Engaging learners during this pandemic is a significant challenge for teachers since they have had no formal training in online teaching. Creating online courses, having a stable technological infrastructure, and receiving adequate institutional support are the cornerstones of online learning.⁵

However, affiliated institutes find it difficult to implement sophisticated learning management systems due to the large financial and technical implications. Here, the current COVID-19 pandemic has created opportunities for higher education institutes to embark on online teaching.

Google Classroom is free for individual teachers and educational institutions and is available as part of G-suite currently identified as Google workspace.⁶ The platform's easy-to-adopt design and learners' familiarity with it makes this platform the first choice for teachers and students to connect remotely.⁷ Many higher education institutes use Google Classroom during this pandemic to engage their learners.

Training faculty members in using online technology is one of the obstacles in online learning. Designing course content and assessments that are aligned with learning outcomes, teachers implementing these courses, and conducting assessments at the end of each module as well as the course are the key components in any online course. Furthermore, creating video lectures and online assessments using simple and free digital tools will enable continuous learning during, as well as after, the pandemic.

We received an invitation to train nurse educators via online teaching methods in July 2020. Based on the need for remote learning and in consultation with the head of the institute involved, an online course was designed for nurse educators through Google Classroom to train these educators to conduct online teaching.

This study aims to evaluate the effects of an online faculty development course on nursing educators' competencies in creating and delivering online content using Google Classroom and other freely available digital tools for the nurse educators of an affiliated nursing college. The level of nurse educators' competencies in online teaching was assessed using a retro-pre-questionnaire.

Materials and Methods

The study used a pre-experimental design. A total of 24 nurse educators of an affiliated nursing college participated in the eight-day online faculty development course. On the ninth day, a synchronous online session was conducted using Google Meet to debrief and discuss the process and probable outcomes of conducting online teaching using Google Classroom.

The course objectives were as follows:

- Discuss the advantages, disadvantages, and challenges of digital teaching and learning methods
- Select and use appropriate digital tools to improve learner engagement
- Create online learning content using the digital tools
- Create an online teaching module in Google Classroom

The Google Classroom created for this workshop included the modules described in the lesson plan (Table 1). Participants were enrolled in the class two days before the commencement of the course. The first online interactive session was conducted using Google Meet. The participants were introduced to the basic concepts of online teaching followed by an online live discussion. Instructions

on the ways to navigate the classroom were provided during the online session. Each session was released as per the schedule prepared and participants were provided access to the learning materials sequentially. Feedbacks on the assignments were provided promptly.

A WhatsApp group was created to communicate with the participants, wherein reminder messages were posted in and participants were encouraged to voice their doubts. Tutorials were created using freely available tools to introduce the tools to the participants. PowerPoint recording and Screencast-O-matic were used to create the tutorials.

A retro-pre-questionnaire was created to identify the participants' perception of their competency in using Google Classroom and other digital tools for online teaching. The questionnaire was designed based on the Google Classroom components and consensus regarding the questions was reached through an online meeting with all the authors. There were four levels of perceived competence in the 10-item questionnaire, with scores ranging from 0 to 3 (0-not at all competent, 1-somewhat competent, 2-competent, and 3-highly competent). The designed questionnaire assessed the participants' perceived level of competence at Kirkpatrick level 2b which demonstrates knowledge and skills.⁸ The questionnaire was shared with the participants at the end of the ninth day of the course through the same Google Classroom format. Participants provided consent and were informed that the analysis of this questionnaire would be used for scholarly activities.

The collected data were assessed for completeness and exported in Microsoft Excel format from Google Forms for further analysis. Frequency and percentage were calculated for each component. The significant difference regarding the educators' levels of competency for online teaching before and after the online faculty development programme was calculated by Wilcoxon signed-rank test using SPSS version 18.

Results

Out of 24 participants, 18 (75%) completed the post-evaluation questionnaire. Fifteen (83.3%) of them communicated that they became highly competent in creating a Google Classroom after the online faculty development course. When asked about their competence in creating video lectures, 66.7% of the participants believed that they were highly competent compared to their competence before the course.

The self-reported perceived competencies for 10 components pertaining to conducting online classes were analysed in four categories (not at all competent, somewhat competent, competent, and highly competent). The details of the participants' perceived competency levels in various components of Google Classroom before and after the online course are in Table 2. The Wilcoxon signed-rank test shows that the online faculty development course elicited a statistically significant change in educators' perceived competency

Table 1: Outline of the online faculty development course.

S.no	Topic	Objectives	Method	Assessment
1	Introduction to online teaching	<ul style="list-style-type: none"> • Discuss the advantages and challenges of online teaching • Reflect on previous experience in online teaching/learning 	Interactive synchronous online lecture using Google Meet	Online discussion forum using GoSoapBox
2	Preparing a lesson plan for an online session	<ul style="list-style-type: none"> • Prepare a lesson plan using the principles of constructive alignment 	Video tutorial (Asynchronous)	Online assignment on creating a lesson plan, graded using a predetermined rubric
3	Creating Google Classroom	<ul style="list-style-type: none"> • Create a Google Classroom 	Video tutorial	Online creation of a sample classroom and the enrolment of a facilitator as a student, graded using a checklist
4	Creating online content	<ul style="list-style-type: none"> • Create video lectures using Microsoft PowerPoint • Create screen recordings • Create google quiz • Create a discussion forum 	Video tutorials	Participants prepare video lectures and assessments for the defined learning outcomes, graded using a predetermined rubric
5	Scheduling Google Meet for synchronous online session	<ul style="list-style-type: none"> • Create Google Meet 	Video Tutorial	Participants schedule a Google Meet in the classroom, graded using a checklist
6	Using gamification Apps to engage learners	<ul style="list-style-type: none"> • Create a Kahoot quiz 	Video Tutorial	Participants created a Kahoot quiz, graded using a checklist

Table 2: Perceived competency level of nurse educators for conducting online classes before and after an online faculty development programme (n = 18).

S. No	Online Classroom Component	Not at all Competent		Somewhat Competent		Competent		Highly Competent	
		Before	After	Before	After	Before	After	Before	After
1	Creating Google Classroom	1 (5.6%)	0 (0%)	8 (44.4%)	0 (0%)	9 (50.0%)	3 (16.7%)	0 (0%)	15 (83.3%)
2	Preparing a lesson plan for an online class	1 (5.6)	0 (0%)	9 (50.0%)	0 (0%)	7 (38.9)	5 (27.8%)	1 (5.6%)	13 (72.2%)
3	Creating video lectures	9 (50.0%)	0 (0%)	4 (22.2%)	0 (0%)	5 (27.8%)	6 (33.3%)	0 (0%)	12 (66.7%)
4	Creating an online quiz	3 (16.7%)	0 (0%)	9 (50.0%)	0 (0%)	6 (33.3%)	6 (33.3%)	0 (0%)	12 (66.7%)
5	Creating an online discussion forum	3 (16.7%)	0 (0%)	11 (61.1%)	1 (5.6%)	4 (22.2%)	8 (44.4%)	0 (0%)	9 (50.0)
6	Online grading of assignments	3 (16.7%)	0 (0%)	4 (22.2%)	0 (0%)	11 (61.1%)	5 (27.8%)	0 (0%)	13 (72.2%)
7	Creating an online announcement	2 (11.1%)	0 (0%)	8 (44.4%)	2 (11.1%)	8 (44.4%)	2 (11.1%)	0 (0%)	14 (77.8%)
8	Creating a Kahoot quiz	9 (50.0%)	0 (0%)	9 (50.0%)	0 (0%)	0	11 (61.1%)	0 (0%)	7 (38.9%)
9	Creating a Google Meet link in Google Classroom	0 (0%)	0 (0%)	10 (55.6%)	0 (0%)	8 (44.4%)	5 (27.8%)	0 (0%)	13 (72.2%)
10	Using an online grade book	3 (16.7%)	0 (0%)	8 (44.4%)	2 (11.1%)	7 (38.9%)	4 (22.2%)	0 (0%)	12 (66.7%)

Table 3: Comparisons of the participants' perceived competency before and after the online faculty development programme (n = 18)*.

Online Classroom Components	Online Faculty Development Programme				Z value	p- value
	Before		After			
	Mean	SD	Mean	SD		
Creating Google Classroom	1.4	±0.62	2.8	±0.38	-3.85	0.00**
Preparing a lesson plan for an online class	1.4	±0.70	2.7	±0.46	-3.58	0.00**
Creating video lectures	0.8	±0.88	2.7	±0.49	-3.77	0.00**
Creating an online quiz	1.2	±0.71	2.7	±0.49	-3.83	0.00**
Creating an online discussion forum	1.1	±0.64	2.4	±0.62	-3.85	0.00**
Online grading of assignments	1.4	±0.78	2.7	±0.46	-3.91	0.00**
Creating an online announcement	1.3	±0.69	2.7	±0.69	-3.87	0.00**
Creating a Kahoot quiz	0.5	±0.51	2.4	±0.50	-3.86	0.00**
Creating a Google Meet link in Google Classroom	1.4	±0.51	2.7	±0.46	-3.91	0.00**
Using an online grade book	1.2	±0.73	2.6	±0.70	-3.87	0.00**

Note: * Values are presented as Mean ± SD.

**Significant at $p < .001$.

levels in all 10 components of training. The results indicate that after the training programme, the perceived level of competency for online teaching increased among the nurse educators (see Table 3).

Discussion

The results indicate that after the online faculty development programme, the level of perceived competency in conducting online classes increased among the nurse educators ($p < .001$). This study identifies the effect of a training course for educators in online teaching using Google Classroom. An educator's ability to handle technical tools is one of the major challenges in implementing online teaching.⁹ The designed course consisted of components that are relevant for delivering regular teaching content. Training the nurse educators effectively was a crucial goal in the

successful implementation of this online faculty development programme. The participants perceived their competency in using various components of Google Classroom and other digital tools to have increased post training and they also demonstrated skills in utilising various components of Google Classroom and digital platforms such as Kahoot, Socrative, and GoSoapBox quiz. This was evident from the sample module created and assignments completed by the participants. The designed course enabled the learners to achieve level 2b of Kirkpatrick evaluation.⁸ This level is described in terms of an increase in knowledge, skills, or intellectual capability after a course. Google Classroom was selected as the platform since it is easy to adopt and free. Furthermore, this platform has proven to be effective in delivering online courses in developing countries.¹⁰ However, previous studies have found that instructors' skill in using the

learning management system may affect the learning experience significantly.⁹

Kassem and colleagues (2020) used Google Classroom for the online teaching of chemistry at Lebanese International University during the COVID-19 pandemic. Teachers were trained to use Google Classroom through video tutorials and their perceptions of delivering the online course were recorded using a questionnaire.⁵ Our study assessed the level of implementation at Kirkpatrick level 2b.

The improvement in the perceived competency level of the participants demonstrates the impact of this short online course. Designing an online course considering learners' needs and describing the intended learning outcomes clearly at the course's outset improves learner engagement.¹¹

The online course was designed based on previous experience and recommended guidelines.^{11–13} Moreover, the COVID-19 pandemic justifies the need for using Google Classroom. The faculty head was involved in drafting the learning outcomes and Google Classroom was used as a platform to deliver the course to stimulate the learners' experiences. Learning materials were prepared by the facilitator using free online tools. The facilitator discussed the intended learning outcomes and structure of the course through a synchronous online session at the commencement of the course.¹⁴ This session helped to gain mutual agreement and balance the expectations of the participants, faculty head, and the facilitator. Throughout the course, the facilitator provided immediate feedback through a WhatsApp group.¹⁵ Google Forms was used for the quiz, providing the immediate grading of results.

The retro-pre-questionnaire used in this study was similar to the other studies, where authors assessed the Kirkpatrick level 1.¹⁶ A study by Piryani et al.¹⁷ evaluated the effect of a teacher training programme using a retro-pre-questionnaire at the Kirkpatrick level 1 and found that the self-reported perceived confidence level of the participants improved after the training program ($p < 0.001$). However, the current study assessed the participants' perceived competency to conduct online teaching at the Kirkpatrick level 2b. A retro-pre-questionnaire allows the respondents to reflect on the changes that have occurred in terms of their learning behaviour. The questionnaire was administered once at the end of the course and the results suggest that online courses could be beneficial for a large population of health professional educators. Google Classroom provides various options for teachers in delivering online content and has helped to overcome the barrier created by COVID-19 between teacher and student. The success of this course might be attributed to the fact that this course was initiated by the institute's administration and because of the presence of the pandemic itself. Educators need to learn how to teach online using free tools. Limitations of this study include a small sample size with only 18 participants and a short course duration. The retro-pre-questionnaire used in this study had only the authors' consensus.

Conclusion

The design and delivery of the short course on Google Classroom are effective in improving the required

competency of nursing educators to deliver online teaching. Google Classroom can be used effectively to train faculty members.

Recommendations

For faculty members requiring training in using Google Classroom, online courses using the same platform can be considered. Further studies with larger samples and covering a longer duration are required to generalise the results.

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This study did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflict of interest

The authors have no conflict of interest to declare.

Ethical approval statement

Informed consent was obtained from the participants. This study was action research and does not require ethics approval.

Authors' contribution

NS conceived the idea, designed the online course, conducted the study, collected the data, interpreted the analysed data, and prepared the manuscript. PG analysed the data. NSJ created the online course content. LR peer reviewed the online course content. All the authors critically reviewed and approved the final draft and are responsible for the content and the similarity index of the manuscript.

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