Rapid Transition to Online Learning: Faculty Distance Training on LMS, Synchronous/Asynchronous Learning, and Computer-Assisted Assessment

Yaron Ghilay[1]

[1] The NB School of Design and Education, Haifa, Israel

Correspondence: Yaron Ghilay, the Neri Bloomfield School of Design and Education, Haifa, Israel.

Abstract

This study examines the swift shift to online learning prompted by the Covid-19 pandemic, assessing the effectiveness of a faculty distance training program based on the TMOC (Training for the Management of Online Courses) model. The training program aimed to equip faculty with essential skills for online learning, emphasizing a blend of asynchronous learning materials and synchronous support. Key components included training in the Learning Management System (LMS), video capture tools, synchronous learning platforms, and Computer-Assisted Assessment (CAA). The research surveyed a sample of faculty members (n=38), assessing their views towards the training they received.

The findings highlight that faculty greatly valued personalized, real-time assistance, which proved instrumental in tackling immediate technical and pedagogical hurdles. High-quality asynchronous resources were also pivotal, offering flexibility and foundational knowledge. The training resulted in noticeable enhancements in faculty engagement and proficiency in online learning, particularly among those less familiar with digital educational methods. Qualitative feedback emphasized the significance of timely, customized support and collaborative assistance.

The study underscores the imperative of holistic training programs that blend technical and pedagogical aspects to facilitate a seamless transition to online learning. These insights offer valuable guidance for institutions seeking to bolster their online education capabilities during emergency situations.

Keywords: distance learning, emergency remote teaching, learning management system, online learning, higher education, asynchronous learning, synchronous learning, computer assisted assessment

1. Introduction

1.1 Literature Review

The sudden shift to online learning due to the Covid-19 crisis, often referred to as Emergency Remote Teaching (ERT), was implemented quickly and without adequate preparation in many institutions. The lack of time and resources for proper planning led to impromptu measures rather than a structured and effective transition to distance learning (Hodges et al., 2020; Rapanta et al., 2020). ERT largely replaced face-to-face instruction with online formats. Though it is recognized that pedagogy must be adapted, many academic staff simply transferred their traditional teaching styles to the online environment without ensuring quality. Many relied on video conferencing technologies, like Zoom, as an easier and quicker substitute for in-person teaching. However, transitioning from one medium to another does not always go smoothly. The pandemic's urgency didn't allow for a proper redesign of learning processes for the new medium (Cicha et al., 2021; Henriksen et al., 2020).

The transition from traditional to online teaching requires faculty to adapt new skills and change their previous teaching methods (Colaric & Taymans, 2004; Johnson, 2008; Kurzwiel & Marcellas, 2008; Panda & Mishra, 2007). To be successful in online courses, faculty need a deep understanding of course design and delivery, as well as the challenges and opportunities they face (Ginzburg, Chepya, & Demers, 2007; Pankowski, 2008). To support faculty, instructional guides, professional development opportunities, and relevant instructional materials are needed to address all aspects such as pedagogy, course management, and technology (Grant & Thornton, 2007; Keeler & Horney, 2007; McQuiggan, 2007).

Lecturers with varying backgrounds were challenged to provide online lectures from home, facing practical and technical difficulties, often without proper support (Hodges et al., 2020). Another challenge for higher education faculty was the insufficient Pedagogical Content Knowledge (PCK) for online teaching. PCK encompasses both the technical and administrative aspects of online instruction, as well as the pedagogical principles and knowledge necessary for creating meaningful online learning experiences (Baldwin, Ching, & Friesen, 2018; Shulman, 1987). This gap in PCK often led to suboptimal online teaching practices, as faculty were not adequately equipped to engage students and facilitate learning effectively in a virtual environment.

Bozkurt and Sharma (2020) provide a global perspective on the impact of the pandemic on education, highlighting the myriad challenges faced by educators and institutions. Their work underscores the necessity for rapid adaptation and the implementation of effective responses to maintain educational services during crises. The urgency of the pandemic response often resulted in impromptu measures rather than structured approaches, which affected the quality of the learning experience. This global perspective is crucial in understanding the widespread nature of the challenges and the varied responses required to address them effectively.

Supporting this, Bao (2020) offers a case study from Peking University, illustrating how rapid transitions can be managed effectively with strategic planning and robust support systems. The study details the strategies used by the university to facilitate the shift to online learning and emphasizes the importance of addressing both technological and pedagogical challenges to ensure successful implementation. Bao's work highlights the effectiveness of a well-coordinated response that integrates technological infrastructure with faculty support systems, thereby ensuring a smoother transition to online learning.

The significance of continuous professional development and support for educators is underscored by Johnson et al. (2020) and Marshall and Kostka (2020). These studies demonstrate that faculty development programs can significantly enhance instructors' confidence and competence in delivering online courses. They argue that ongoing support and professional development are critical for fostering effective online teaching practices, especially during periods of rapid change. This emphasis on continuous development aligns with the need for faculty to adapt to evolving educational technologies and methodologies.

Similarly, Graham et al. (2013) suggest that a combination of technical training and pedagogical support is essential for the successful implementation of online learning. Their research indicates that faculty need to be equipped not only with the necessary technological skills but also with an understanding of how to design and deliver effective online instruction. This dual approach ensures that faculty are not only comfortable with the tools they use but also capable of leveraging these tools to create engaging and effective learning experiences.

Engagement is another crucial factor in online education. Martin and Bolliger (2018) emphasize the importance of student engagement strategies in the online learning environment. Their findings suggest that effective engagement practices are vital for enhancing the learning experience and improving student satisfaction and outcomes. Engagement strategies can include interactive content, timely feedback, and active learning techniques, which help maintain student interest and participation in an online setting.

Reimers and Schleicher (2020) provide a comprehensive framework for educational institutions to respond to the Covid-19 pandemic, focusing on maintaining the quality of education during crises. Their guidelines highlight the need for integrated technology, robust teacher training, and comprehensive student support to adapt teaching methods and ensure continuous learning. These recommendations underscore the necessity of a holistic approach that addresses various aspects of the educational ecosystem to ensure resilience and continuity.

Overall, the literature converges on several critical points: the importance of strategic planning and intentional instructional design, the necessity of ongoing professional development and support for educators, and the crucial role of engagement strategies in enhancing online learning. These insights provide a valuable foundation for understanding the challenges and best practices in transitioning to online education during emergencies, reinforcing the need for structured approaches to ensure educational effectiveness and continuity.

The literature reviewed provides a comprehensive understanding of the multifaceted challenges and solutions associated with the rapid transition to online learning during the Covid-19 crisis. It underscores the importance of structured and well-supported training programs, the integration of technological and pedagogical strategies, and the continuous engagement and development of faculty to ensure a smooth and effective transition to online education. The insights gained from these studies highlight the need for a proactive and holistic approach to professional development, emphasizing both the technical and pedagogical aspects of online learning.

Reflecting on the broader implications, the necessity for educational institutions to prepare for unforeseen disruptions is clear. Establishing robust frameworks for professional development, investing in technological

infrastructure, and fostering a culture of adaptability and innovation among educators are essential steps in building resilience. Furthermore, the pandemic has shed light on the disparities in access to technology and the internet, prompting a call for more inclusive policies to ensure all students can benefit from online learning opportunities.

In conclusion, the shift to online learning during the Covid-19 pandemic has presented significant challenges and highlighted critical areas for improvement in the realm of education. The literature emphasizes the need for comprehensive professional development, strategic planning, and the integration of effective engagement strategies to enhance the quality of online education. As institutions continue to navigate the evolving landscape of education, these insights will be invaluable in guiding efforts to create resilient, inclusive, and effective online learning environments.

1.2 Study Aim

The TMOC (Training for the Management of Online Courses) model aims to effectively face the challenge of swiftly transitioning from traditional to online education (Ghilay & Ghilay, 2014; Ghilay, 2017; Ghilay, 2022). The model is based on two essential components:

1) Curriculum: Faculty must have knowledge of specific topics related to managing online courses, including LMS (Learning Management System), CAA (Computer-Assisted Assessment), video production, text and hypertext creation, and principles of online learning that can replace traditional face-to-face learning, such as the OTLA framework (Ghilay, 2017).

2) Learning Methods: The curriculum should be delivered through various methods. Due to time constraints, a combination of asynchronous distance learning and synchronous support was chosen to cater to the faculty's needs.

This study aims to explore a training program based on the TMOC model for the sudden transition to online learning. It assesses the effectiveness of an asynchronous distance learning approach, supplemented with synchronous distance support, in addressing requests and challenges. This approach is designed to be both effective in terms of knowledge transfer and also cost-effective in terms of time and location resources. By implementing this approach, it was possible to save on both time and location resources while also addressing the potential limitations of asynchronous learning through immediate responses to questions and requests.

The training was remotely conducted for all faculty members of the NB School of Design and Education, covering the following key areas:

① Learning Management System (LMS): Upload files to course website, file folder management, quick email & site management, user registration & role assignment, student support, content page (text, links, images, image embedding, video, texts/links), tab display, group creation, group communication & access control, manual course site establishment and course meta link.

② Asynchronous learning methods:

- ActivePresenter: Record both screen and audio by selecting the desired screen area, using a webcam, pausing/resuming recording, saving the project as a file, and editing the video afterwards. Edit by combining video segments with slides, inserting images, adjusting size and position, and making cuts, deletions, and other edits in the timeline.

- Camtasia studio: Produce videos adding callouts such as cover pages, shapes, arrows, and special signs. Edit the video by cutting and merging clips, adjusting display size and position, including rotation options, and creating zoom effects to focus the learner's attention. Separate video and audio tracks, change volume levels, and add sound effects, transitions, and animations. Lastly, publish the completed product.

- YouTube: Share videos on YouTube by opening an account, uploading and publishing videos, and creating playlists.

③ Synchronous learning methods:

- Zoom: Account setup, login, software operation, screen/tablet sharing, live video streaming, recording, group division, breakout rooms management, co-hosting, alternative hosting.

- FreeConferenceCall: Account setup, participant invitation, audio, screen sharing, participant list, camera/microphone activation, freehand writing, chat messaging.

④ Computer-Assisted Assessment (CAA): Define categories, different types of questions, and the characteristics of the test, select test questions and review the results.

By focusing on these areas, the training program aimed to offer a comprehensive solution to the sudden transition to online learning, ensuring that faculty are well-equipped to deliver effective and engaging online education.

2. Method

2.1 Study Framework

An analysis was conducted on the perceptions of lecturers who underwent training for the rapid transition to online distance learning during the 2020-2021 academic year. The training was conducted concurrently with their teaching responsibilities, allowing for an immediate transition to online learning.

2.2 Research Questions

The following research questions were developed to evaluate faculty members' perceptions of the effectiveness of their training in the transition to online learning:

1) What was the effectiveness of the training provided to faculty members regarding:

A. Asynchronous training materials (videos, texts, links).

B. Remote synchronous individual support.

2) Has there been significant improvement in faculty activity in online learning after the training?

2.3 Population and Sample

Population: All higher-education faculty members who needed to transition immediately to online learning.

Sample: 38 faculty members at the NB School of Design and Education who participated in the training and were asked to rapidly transition to online learning.

2.4 Tools

Before the main part of the questionnaire, respondents were asked to provide their previous and current levels of activity in online learning (before and after the training) on the following five-point Likert scale: 1—very low, 2—low, 3—medium, 4—high, 5—very high.

The survey tool, a five-point Likert scale questionnaire consisting of 21 items, was developed by the author through a multi-stage process:

1) *Literature Review*: Identifying key areas and factors relevant to faculty training for online learning.

2) *Drafting Items*: Creating an initial pool of items based on identified factors.

3) *Expert Review*: Consulting with experts in online education to refine the items.

4) *Pilot Testing*: Conducting a pilot test with a small group of faculty members to ensure clarity and reliability.

5) *Finalization*: Revising the questionnaire based on feedback from the pilot test.

The questionnaire was divided into four factors: Effectiveness of training videos, contribution of various topics, effectiveness of text items and links, and effectiveness of remote support. Additionally, one open-ended question was included to gather qualitative feedback.

For factors 1, 3, and 4, the Likert scale points are: 1—strongly disagree, 2—mostly disagree, 3—moderately agree, 4—mostly agree, 5—strongly agree.

For factor 2, the scale is: 1—very low, 2—low, 3—medium, 4—high, 5—very high.

The questionnaire examined respondents' attitudes toward the effectiveness of the training and professional support in the transition to full online learning as described in the research questions mentioned above.

The open-ended question was designed to accomplish the main data gathered from the quantitative part of the questionnaire, as follows:

> "In conclusion, please provide additional comments regarding the effectiveness of the training provided for transitioning to online learning".

The questionnaire was anonymous, and the response rate was 40% (38 out of 95).

2.5 Data Analysis

For each of the factors mentioned above, Cronbach's alpha was calculated to test the degree of homogeneity among the items within each factor. The four factors and their constituent items are as follows:

1) *Effectiveness of training videos*: This includes the effectiveness of the training videos for the transition to distance learning, their informative and accessible nature, the organized structure of the video library, the utility of video numbering, the level of clarity and illustration provided by the training videos on various topics, the value of video summaries and playlists, the suitable pace and brevity of the videos, the comprehensive coverage of

essential knowledge for transitioning to distance learning, and the overall impact of the training videos on the transition to distance learning.

2) *Contribution of various topics*: The Learning Management System (LMS), synchronous learning, asynchronous learning and Computer Assisted Assessment (CAA).

3) *Effectiveness of text items and links*: This includes the effectiveness of text items, software download links, and links designed to open accounts for software tools.

4) *Effectiveness of remote support*: The contribution to learning through personal remote support in exceptional cases, its assistance in resolving specific cases of ambiguity, and its importance for engaging with new topics.

Table 1 presents the four factors, their reliability (Cronbach's alpha), and the questionnaire items addressing each factor. Notably, the Cronbach's alpha for all factors is higher than 0.7; for two factors, it exceeds 0.8, and for one factor, it is greater than 0.9. These results indicate very high reliability.

Table 1. Four factors, reliability and questionnaire items

Factors	Questionnaire items
Effectiveness of training videos Cronbach's alpha=0.839	The training videos greatly assisted me in transitioning to online learning.
	The tutorial videos are highly informative and easy to understand.
	The organization of the videos in the library facilitated my exploration of various topics.
	The numbering system for the videos in the library effectively aids in orientation among different topics.
	The training videos effectively present and illustrate most of the topics I needed to learn.
	The video summaries enable me to quickly access relevant training materials.
	The playlists greatly enhance my learning process.
	The pace at which the videos present different topics is well-suited to my learning style.
	One advantage of the videos is their concise length.
	The videos clearly demonstrate the different components.
	The videos comprehensively cover the knowledge required for transitioning to online learning.
Contribution of various topics Cronbach's alpha=0.709	The Learning Management System (LMS).
	Synchronous learning.
	Asynchronous learning.
	Computer Assisted Assessment (CAA).
Effectiveness of text items and links Cronbach's alpha=0.925	The text items were effective for me.
	The software download links were effective.
	The links to open accounts for software tools helped me.
Effectiveness of remote support Cronbach's alpha=0.870	The personal remote support helped me in exceptional cases.
	The personal support assisted me in specific cases of ambiguity.
	The personal support helped me to engage with new topics.

For each factor, a mean score and standard deviation were calculated. In addition, a Paired Samples T-test was performed ($\alpha <= 0.05$) to check for significant differences between these four factors.

3. Results

Faculty were asked about the four factors characterizing the effectiveness of the remote training required for smooth rapid transition to online learning.

Table 2 shows the sample size, mean scores and standard deviations of the four factors.

Table 2. Factors' mean scores, sample size and standard deviations

No.	Factor	N	Mean	S.D
1	Effectiveness of training videos	38	4.632	.44
2	Contribution of various topics	38	4.627	.45
3	Effectiveness of text items and links	28	4.167	.94
4	Effectiveness of remote support	38	4.842	.40

The highest score (4.842) was attributed to factor 4 (Effectiveness of remote support). Paired Samples T-tests ($\alpha \le 0.05$) indicated significant differences between factor 4 and all other factors:

Factors 4 and 1: $t_{(37)} = 2.110, p = .011$

Factors 4 and 2: $t_{(37)} = 2.506, p = .017$

Factors 4 and 3: $t_{(27)} = 3.917, p = .001$

Factors 1 (Effectiveness of training videos – 4.632) and 2 (Contribution of various topics – 4.627) also had very high scores, and there was no significant difference between them: $t_{(37)} = .049, p = .961$.

Factor 3 (Effectiveness of text items and links) scored quite high (4.167) but was lower than all the other factors. There were significant differences between it and all the other factors:

Factors 3 and 1: $t_{(27)} = -3.174, p = .004$

Factors 3 and 2: $t_{(27)} = -2.034, p = .049$

Factors 3 and 4: $t_{(27)} = -3.917, p = .001$

Another comparison was made between faculty activity in online learning before and after the training. The comparison involved the following three subgroups:

- All faculty members.

- Faculty members with low activity (activity scores 1–3) in online learning prior to the training.

- Faculty members with high activity (activity scores 4–5) in online learning prior to the training.

Table 3 shows the sample size, mean scores, and standard deviations of these three subgroups' activities in online learning before and after the training.

Table 3. Faculty members activity in online learning – pre- and post-training

	Pre-training			Post-training			
Subgroup	N	Mean	S.D	N	Mean	S.D	Paired Samples T-Test
All faculty members	38	3.00	1.185	38	4.63	.589	$t_{(37)} = -10.675, p = .000$
Low activity prior to training	26	2.38	.852	26	4.46	.647	$t_{(25)} = -14.239, p = .000$
High activity prior to training	12	4.33	.492	12	5.00	.000	$t_{(11)} = -4.690, p = .001$

Based on the paired samples t-tests, all differences between pre- and post-training activity are statistically significant. The highest difference (2.08: 4.46–2.38) relates to the subgroup with low activity prior to training. However, the gap for the full group (all faculty members) is also substantial (1.63: 4.63–3.00), whereas the third subgroup (high activity prior to training) shows the smallest gap (0.67: 5.00–4.33) but remains statistically significant.

These findings indicate that, according to faculty members, the training greatly contributed to the transition to online learning. The following quotes from lecturers, in response to the open-ended question, underscore the quantitative research findings:

"The training content for transitioning to distance learning was highly effective, especially due to the personalized support provided."

"I want to highlight the collaborative spirit among all involved. The instructor's prompt and supportive responses were instrumental in swiftly resolving any technical issues, easing the transition to online teaching."

"I can't imagine navigating the rapid shift to distance learning without the invaluable support from the instructor."

"I am greatly satisfied with the transition to distance learning, particularly with how extensively I've been able to utilize the learning management system in my newly launched online courses."

"Every time I reached out, the instructor provided effective and immediate assistance, even during late hours. A big 'thank you' for that!"

"The training, especially the instructional videos and personalized assistance, was exceptionally beneficial."

"The guidance I received was immensely helpful, always delivered with patience and kindness. Thank you."

"Both the videos and personalized support were outstanding."

"The instructor's availability and readiness to assist ensured swift resolution of any issues that arose."

"Amidst the sudden transition to distance teaching, I opted to record my lectures instead of conducting live sessions for over 100 students via Zoom. This required me to quickly acquire new skills, particularly in video capture and online test preparation. Without the written and recorded explanations, as well as the instructor's

personal guidance, mastering these new tools would have been challenging. The training significantly expanded my expertise, which I continue to leverage."

4. Discussion

The research underscores the critical role that comprehensive distance training programs play in facilitating the rapid transition to online learning. The effectiveness of the Emergency Remote Teaching (ERT) model (Hodges et al., 2020; Rapanta et al., 2020), particularly when supplemented by the TMOC approach (Ghilay & Ghilay, 2014; Ghilay, 2017), was evaluated through faculty perceptions and activity levels. The study revealed several key insights into the effectiveness of various components of the training program, providing a nuanced understanding of how different forms of support contribute to successful online learning transitions.

Firstly, the high mean scores for the effectiveness of training videos (4.632) and the contribution of various topics published on the training site (4.627) indicate that asynchronous learning materials were highly valued by the faculty. These components provided foundational knowledge and resources that faculty could access at their convenience, enhancing their ability to adapt to online learning. The asynchronous nature of these materials allowed faculty to learn at their own pace, which is particularly important during a crisis when personal schedules can be highly variable. This flexibility likely contributed to the high effectiveness ratings, as faculty could fit training into their schedules without the constraints of synchronous sessions.

However, the standout component was the effectiveness of remote support, which received the highest score (4.842). This indicates that personalized, synchronous support was deemed exceptionally valuable. The significant difference between this factor and all other factors highlights the importance of immediate, tailored assistance in addressing specific challenges faced by faculty during the transition. This finding is corroborated by qualitative feedback, where faculty members praised the prompt and supportive responses from instructors, emphasizing the crucial role of real-time support in resolving technical issues and easing the transition. The immediacy of synchronous support helps to bridge the gap between understanding theoretical concepts and applying them in practice, providing a safety net for faculty as they navigate new technologies and learning methods.

The lower score for the effectiveness of text items and links (4.167), despite being relatively high, suggests that while these resources were helpful, they were less impactful compared to other forms of training. This may reflect the preference for more interactive and dynamic forms of learning support, which are better facilitated through videos and direct assistance. Text items and links, while useful for providing detailed information and references, may not engage learners as effectively as multimedia resources. This finding aligns with existing research that emphasizes the importance of interactive and engaging content in online learning environments (Martin & Bolliger, 2018).

The analysis of faculty activity in online learning before and after the training further supports the positive impact of the program. The significant increase in activity scores post-training across all subgroups demonstrates the training's effectiveness in enhancing faculty engagement with online learning. Notably, faculty members with initially low activity levels showed the most considerable improvement (2.08), indicating that the training was particularly beneficial for those less familiar with online learning methods. The overall increase for all faculty members (1.63) and the significant, albeit smaller, improvement for those with high initial activity (0.67) underscore the broad applicability and effectiveness of the training program. These results suggest that comprehensive training can elevate the baseline of online learning skills across a diverse group of educators, reducing disparities in digital literacy and pedagogical competence.

5. Conclusions

These findings have significant implications for higher education institutions and faculty development programs. Firstly, the high effectiveness of remote support highlights the need for real-time assistance as a critical component of online faculty training. Institutions should consider establishing dedicated support teams to address immediate technical and pedagogical issues.

Secondly, the value of high-quality asynchronous resources underscores the importance of well-designed instructional materials that faculty can access at their convenience. Institutions should invest in creating comprehensive video libraries and other resources that cover essential online learning skills.

Finally, the noticeable improvements in faculty engagement and proficiency suggest that targeted training programs can significantly enhance online learning effectiveness, particularly for those less familiar with digital tools. This indicates a need for continuous professional development and regular training updates to keep faculty adept at using evolving educational technologies.

By implementing these strategies, educational institutions can better support faculty in delivering high-quality

online education, thereby improving learning outcomes for students.

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