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# From the Adoption to the Implementation of Online Teaching in a Post-COVID World: Applying Ely's Conditions of Change Framework

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**Abstract:** The pivot to online and distance teaching during the COVID-19 pandemic in 2020 created a strong momentum for the establishment and integration of online learning and teaching opportunities in higher education on a global scale, and the Saudi higher education sector is no different. However, the adoption of online teaching during the pandemic was abrupt and sudden; the goal was to provide continued access to education during lockdowns rather than to ensure the effective and sustained use of online and distance courses and programs. The purpose of this study was to examine faculty members' perceptions regarding the presence or non-presence of eight conditions of change as suggested by Ely and to examine any differences in their perceptions based on various factors (e.g., college affiliations and number of online courses taught). According to Ely, the presence of these environmental conditions is necessary for the successful and sustained implementation of technological changes in educational institutions. The participants in this survey study were 168 faculty members at one public university in Riyadh, Saudi Arabia. The findings indicated that on average, only four out of the eight conditions were perceived as being present by the current sample. Analysis of variance also indicated significant differences in faculty members' perceptions regarding the presence of some of the conditions based on their reported knowledge of online teaching as well as the number of online courses taught. A discussion of these findings as well as recommendations for the improvement of institutional conditions to support online teaching is provided.

**Keywords:** Ely's conditions of change; online teaching; educational change; educational innovation; COVID-19



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## 1. Introduction

Online learning is becoming increasingly prominent in higher education globally. The shift from traditional classroom-based teaching toward more flexible online and blended learning opportunities is gaining momentum, especially in the wake of the COVID-19 pandemic [1–3]. The pivot to online and distance learning during the pandemic was not ideal; the goal during that period was to ensure the continuity of education as opposed to the careful planning and preparation that normally accompanies the design, development, and delivery of high-quality online courses and programs [4–6]. This abrupt adoption of distance learning not only provided the momentum for higher education institutions to rethink online and distance learning as an imbedded and integral part of their learning ecosystem but also highlighted the complexity of change required for an effective and sustainable implementation of online and distance courses and programs [1–9]. This is reflected in the shift in research publications on online and distance education since the onset of the pandemic toward research that examines the sustainability and effectiveness of online and distance learning provisions from an organizational and strategic perspective based on the lessons learned during the COVID-19 pandemic lockdowns [2,5,7–11].

Awareness is escalating about the need to reform higher education to meet the economic and social demands of an increasingly digital post-COVID-19 world, as is

our understanding of the complexity of the change required to create a robust learning ecosystem that takes advantage of the advances in online learning technology tools and research [3,7–11]. While the COVID-19 pandemic forced higher education systems and institutions to adopt online learning as the primary means of ensuring the continuity of education in a physically distanced world, attention now must turn to issues of the effective and sustained implementation of online learning at all levels of the educational system if we are to build on the efforts and leverage the experiences and skill sets gained during the emergency shift to online learning [3,5,7,11,12].

E-learning in Saudi higher education is not new; all universities in Saudi Arabia have distance and/or e-learning deanships that support and promote e-learning in their respective institutions, and faculty and students have access to a wide range of digital tools and platforms such as learning management systems and the Saudi Digital Library (SDL) that are mainly used to support face-to-face teaching, but the delivery of fully online and blended programs is not yet widespread. This is about to change post-COVID-19 as the Saudi National eLearning Center (NeLC), a government center established in 2005 with the aim of enhancing trust in e-learning by leading sustainable innovation in e-learning and providing lifelong equal access for all, has developed and, in mid- to late-2020, approved criteria and quality control standards as well as licensing regulations for online learning programs and courses in higher education, training, and K–12 education, in a clear move toward promoting and supporting online learning at the national level. As of September 2022, a total of 248 institutions and 458 programs and courses have been licensed by the NeLC for online delivery in Saudi Arabia [13]. However, while the adoption of online learning and support at the policy level are critical factors for online learning success, this is not sufficient to ensure effective, scalable, or sustainable implementation at the institutional or classroom level. Research at the intersection of change and online learning points to the challenges, barriers, and breakdowns that occur during online teaching implementation [5,8,11,14–18].

According to Serdyukov, for an innovation or change such as the adoption and implementation of online teaching to make an impact, “we need an army of implementers together with favorable conditions for the invention to spread and produce a result” [18] (p. 18). A number of educational change models and frameworks exist; however, these models address different elements of the change effort [19]. For instance, the diffusion of innovations model proposed by Rogers [20] addresses the innovation itself and its characteristics, while the concerns-based adoption model [21] addresses issues related to the intended adopter. There is also Fullan and Stiegelbauer’s model [22] with its focus on the change agent and, more recently, Salmon’s four-quadrant model for online and blended learning innovation [23] that addresses issues related to the innovation strategy and agenda. However, research examining educational reform in the Arab region specifically has suggested that change efforts in the region tend to neglect planning for the implementation process, leading to failed attempts at reform and sustained integration due to its incompatibility with the priorities and needs of local contexts [24,25].

One of the most widely cited change models that explicitly addresses the implementation process is Ely’s conditions of change model [26–28]. Ely [26–28] proposed and refined a series of eight external conditions that need to exist in the change environment or context to facilitate the effective and sustainable implementation of technological innovations in a variety of educational settings, including higher education. According to Ely [27], this framework can be used as a needs assessment or a diagnostic tool that can be applied at any stage during the change process to assess any gaps or hindrances to implementation, and initiate interventions to create or strengthen support conditions in the change environment.

The purpose of this paper is to contribute to the literature on the conditions that facilitate online teaching implementation at the institutional level. More specifically, this paper attempts to investigate faculty members’ perceptions of the presence or non-presence of Ely’s conditions of change at a large, public, female-only university in Saudi Arabia and to identify any differences in their perceptions based on several factors such as their age

group, college affiliation, and reported knowledge and experience with online teaching. Findings from this research can be used to formulate recommendations to support and enhance the implementation and institutionalization of online courses/programs, which in turn can be used to develop support and management plans to facilitate effective online teaching in higher education institutions. The research questions that this quantitative study addresses are:

Q1: To what extent do faculty members at a large public university in Saudi Arabia perceive the presence of Ely's eight conditions of change for online teaching?

Q2: Are there any differences in these perceptions among faculty members with different characteristics (i.e., college affiliation, academic rank, age group, reported knowledge about online teaching, and number of online courses taught)?

## 2. Literature Review

### 2.1. Moving Teaching Online

Researchers have been investigating online teaching and learning from a multitude of angles and perspectives for decades; however, it was in the pivot to online learning during the COVID-19 pandemic that the complex and cascading effects of moving teaching online became glaringly clear, from policy and regulations, quality assurance, pedagogical and technical support, and infrastructure issues to issues related to faculty and student readiness for online teaching and learning, faculty skills and knowledge, student engagement and interactions, and course design and assessment [5,11]. Littlejohn et al. [29] summarized four challenges faced by institutions and faculty in the sudden shift to online learning during the pandemic: the lack of time available to design and plan for online course delivery; the limited resources available to support faculty transition at scale, especially those lacking the skills for and experience with online teaching; the absence of clear policies and strong infrastructure to support online teaching; and, finally, the interaction and communication challenges faculty had to cope with as a result of working and teaching online. Similarly, Djidu et al. [10] identified three main challenges faced by faculty and students during the rapid transition to online teaching: insufficient resources such as devices and internet access; the lack of knowledge and experience with online teaching, such as finding and sharing learning resources, managing online teaching and learning, and online assessment; and, finally, difficulties with time management and workload. Others have also identified commitment from top management, clear strategies for online teaching and learning, social isolation, and changes to the nature and amount of work expected from faculty as being challenging during that time [1,10,12,29–31].

Moving from face-to-face to online teaching is without a doubt a challenging process. Effective online teaching requires transformative and systemic changes to the structure, tools, and practices of teaching, learning, and their management. It also requires a change in beliefs, attitudes, skills, teaching culture, and support provisions [5,12,14,18,29,31,32]. These challenges point to the fact that successful online teaching is not simply the utilization of online technologies to deliver face-to-face instructions, nor can it be reduced to instructor-related issues such as their attitudes and motivation to engage with online teaching or their acquisition of the skills and knowledge needed to perform such activities. Rather, it is innately different and marks a complete departure from the normal practices of face-to-face teaching and its management [5,14,17,18,33]. The COVID-19 pandemic accelerated the rate of adoption of online teaching on a global scale and provided a window into the barriers and breakdowns that could occur during online teaching implementation. It is crucial that we now translate those lessons learned into plans, strategies, and support provisions for a sustained and effective implementation of online courses and programs.

### 2.2. From Online Teaching Adoption to Sustained Implementation

The literature on educational innovation and change point to two distinct phases, adoption/diffusion and continuation/sustained implementation [18,19,26–28,34,35], yet most of the research on educational change has addressed implementation as an assumed

or implicit phase of the change process [28]. Implementation involves not only the introduction of the innovation or change into the change context—be it a new process/practice or tool—but extends to fostering its sustained, continued, and effective use [18–20,27,28]. In this sense, one can argue that while the COVID-19 pandemic provided the trigger for the adoption of online teaching and learning as a solution to the national health safety measures adopted globally during the pandemic, attention now must shift to understanding the conditions that influence its sustained implementation.

The effectiveness or characteristics of an innovation or a change (such as online teaching and learning) are not the only factors influencing its sustained implementation and continued use [18–20,26–28,36]. Ellsworth [19] contends that conditions within the change environment interact with the change process and influence its success or lack thereof. One of the most widely cited models addressing the change environment is Ely's conditions of change model.

Ely [26–28] argued that the environmental conditions in which a technological innovation or change is being introduced play a critical role in its successful and continued implementation within an organization. He attempted to identify the conditions that are common across many successful implementation efforts in a variety of educational contexts, and across different cultures, and proposed a series of eight conditions. These conditions are: (a) dissatisfaction with the status quo, which Ely [28] described as being an “emotion that calls for change”, whether it is innate or induced; (b) the existence of knowledge and skills by the ultimate users of the innovation; (c) the availability of resources needed to make the innovation work (e.g., hardware, software, teaching material, etc.); (d) the availability of time needed for the implementors to acquire the skills, plan for, integrate, and reflect upon the innovation being adopted, which Ely referred to as “company time” or “paid time”; (e) incentives and rewards in the form of an intrinsic (e.g., satisfaction) or extrinsic (e.g., higher salaries or more professional opportunities) stimulus offered to encourage behavioral change or something given for a good performance; (f) that participation is expected and encouraged, including communication among all parties and shared decision making on the part of the potential users and implementers of the innovation, (g) commitment by stakeholders that is expressed through tangible evidence of the endorsement of and visible and continued support for the implementation of the innovation, and (h) clear leadership by those who can facilitate the implementation of an innovation on a day-to-day basis by providing encouragement for new ideas and ensuring proper training and support are delivered and resources are accessible to users and who are available for consultation when failure or discouragement occurs. This framework has both descriptive and prescriptive applications and has been applied to understanding a variety of innovations in diverse educational settings [28,36–38].

While Ely [28] presents these environmental conditions independently, they are in fact interrelated, and understanding the relationships between these conditions, or the subsystems/dimensions being changed, is a necessary step in an effective strategy for sustained change [19]. Ely argues that any weakness or absence in any of these eight conditions is likely to hinder the successful implementation of the change or innovation and lessen the chances of its continuation [19,27]. This is in line with current research that describes online teaching and learning as an ecosystem and presents it as a complex planning space that extends beyond mere instructional or pedagogical considerations and requires systemic considerations and significant strategic operations and evaluation planning that is flexible and aligned across all levels of the institution [5,8,17,18]. Research conducted to examine the implementation of online teaching during the pandemic has highlighted many organizational gaps in online teaching implementation at scale and has identified the need to conduct organizational assessment and readiness evaluation of online courses and programs [8].

In this study, Ely's framework is applied as a diagnostic tool to assess the setting in which online teaching is being implemented. More specifically, this study investigates faculty members' perceptions regarding the presence or non-presence of these eight con-

ditions at a large female-only university in Saudi Arabia and identifies any differences in their perceptions based on several factors. Findings from this study can help shed light on any gaps in institutional conditions that need attention from leadership and policy makers at higher education institutions in Saudi Arabia from the perspective of faculty members teaching online, which policy and decision makers can then use to improve and enhance institutional conditions in ways that can support implementors and improve the chances for change efforts to succeed.

### 3. Methodology

For this descriptive study, a survey was adopted to gather data on faculty members' perceptions regarding the fulfillment of Ely's eight conditions of change and to analyze any differences in their perceptions based on their college affiliation, academic rank, age group, reported knowledge about online teaching, and number of online courses taught. In the following sections, details about population and sample, instrumentation, and data collection procedures and analysis are presented.

#### 3.1. Population and Sample

The population for the study comprised faculty members teaching at a female-only public university in Saudi Arabia. Faculty members from all colleges within the university were invited to participate; this includes the humanities (i.e., the College of Education, Arts, Social Work, Languages, Arts & Design, Law), the sciences (i.e., the College of Business Administration, Science, Computer & Information Sciences, Engineering), the health sciences (i.e., the College of Nursing, Health & Rehabilitation Sciences, Pharmacy, Dentistry, Medicine), and the Applied College. A total of 168 responses were included in the final analysis. Given that this is a female-only university, most of the respondents in this study were female (98%). Participants' demographics and characteristics are provided in Table 1.

**Table 1.** Participants' demographics and characteristics.

Variable	Frequency	Percentage	
College affiliation	Humanities	93	55.3%
	Sciences	48	28.6%
	Health Sciences	21	12.5%
	Applied College	6	3.6%
Academic rank	Professor	18	10.7%
	Associate Professor	25	14.9%
	Assistant Professor	81	48.2%
	Lecturer	44	26.2%
Age group	25–35 years	18	10.7%
	36–45 years	81	48.2%
	46–55 years	59	35.1%
	56 years and above	10	6%
Level of knowledge about online teaching	Novice	5	3%
	Intermediate	56	33.3%
	Advanced	86	51.2%
	Expert	21	12.5%
Number of online courses taught	None	7	4.1%
	1–4	109	64.9%
	5–10	40	23.8%
	More than 10	12	7.2%

### 3.2. Instrumentation

A questionnaire developed by Nawawi [39] based on Ely's framework [27,28] was adapted to fit the context of this study. The questionnaire was divided into two main parts. The first section solicited respondents' demographics and background information such as age, college affiliation, academic rank, knowledge about online teaching, and the number of online courses taught, while the second section solicited respondents' perceptions regarding the presence of conditions that facilitate online teaching at the university. This second section of the questionnaire contained 40 items, with five items aligned with each of Ely's eight conditions of change. Some of these 40 items were worded positively, while others were stated negatively in relation to the condition being measured. For each item, respondents were asked to indicate their level of agreement on a 5-point Likert scale (i.e., strongly disagree, disagree, undecided, agree, strongly agree). An internal consistency estimate of reliability was computed for the eight subscales using Cronbach's alpha coefficient. Using the current data ( $N = 168$ ), these ranged from 0.65 to 0.72 (Table 2) demonstrating acceptable reliability [40,41].

**Table 2.** Cronbach's alpha coefficient results for Ely's conditions.

Ely's Conditions	Cronbach's Alpha Coefficient
1. Dissatisfaction with the status quo	0.65
2. Knowledge and skills exist	0.70
3. Resources are available	0.71
4. Rewards or incentives exist	0.66
5. Time is available	0.72
6. Participation is expected and encouraged	0.68
7. Leadership is evident	0.67
8. Commitment by those involved	0.72

### 3.3. Data Collection Procedures and Analysis

After institutional review board approval was secured for this research, a recruitment message and a link to the electronic survey using Google Forms were sent out to all faculty members at the university via their university email accounts. Further, three reminders of the survey were sent out to participants over a period of three months. Participants were required to consent by clicking "I Agree" before proceeding to the survey. No identifiable information was collected to ensure the anonymity and confidentiality of responses.

Descriptive statistics such as percentages, frequency distributions, and cross tabulations were calculated to provide baseline data for faculty profiles as well as their perceptions regarding the existence of Ely's conditions of change at the university, which was calculated based on the sum of responses to the five items or subscale associated with each of Ely's eight conditions. For negatively worded items, responses were recorded in the reverse order prior to their inclusion in the analysis. The total score for each condition ranged between 5, indicating a perception of absence, and 25, representing a perception of being highly present at the university. The interpretation of the mean scores for each of the eight conditions is presented in Table 3 [37]. Additionally, item-level analysis is discussed for each of the eight subscales to provide a more detailed picture of the sample's perceptions regarding the presence of each of the eight conditions examined in this study.

To examine the differences among faculty members' perceptions of the presence of Ely's conditions of change at the university based on their age group, college affiliation, academic rank, reported level of knowledge about online teaching, and number of online courses taught, a one-way analysis of variance (ANOVA) was conducted. For significant  $F$ -values resulting from the ANOVAs, least significant difference (LSD) post hoc analysis was performed to identify significant differences among group means in their perceptions regarding the presence or non-presence of Ely's conditions at the university. All statistical tests were performed at the alpha level of 0.05.

**Table 3.** Interpretation of mean scores for Ely’s conditions.

Mean Score	Interpretation
Smaller than 12.5 (or 2.5 on a scale of 1 to 5)	Most respondents perceived that condition was not present at the university. The condition does not facilitate online teaching at the university.
Between 12.5 and 17.5 (or 2.5–3.5 on a scale of 1 to 5)	Most respondents were undecided as to the presence or non-presence of that condition at the university.
Greater than 17.5 (or 3.5 on a scale of 1 to 5)	Most respondents perceived that the condition was present at the university. The condition facilitates online teaching at the university.

## 4. Results

### 4.1. Mean Scores for Ely’s Conditions

Mean scores for each of Ely’s conditions are reported in Table 4. On the basis of the analysis described in Table 3, only four conditions were perceived by most participants as being present; furthermore, the perceived degree of presence of these conditions varied. These conditions (ordered from highest to lowest) were: (a) “knowledge and skills exist” ( $M = 18.87$ ,  $SD = 3.53$  or  $M = 3.77$ ,  $SD = 0.71$ ), (b) “commitment by those involved” ( $M = 18.37$ ,  $SD = 3.41$  or  $M = 3.67$ ,  $SD = 0.68$ ), (c) “dissatisfaction with the status quo” ( $M = 18.23$ ,  $SD = 2.71$  or  $M = 3.65$ ,  $SD = 0.54$ ), and (d) “resources are available” ( $M = 17.77$ ,  $SD = 3.68$  or  $M = 3.55$ ,  $SD = 0.74$ ). Only one condition was perceived by most respondents as being not present, namely “rewards and incentives exist” ( $M = 11.73$ ,  $SD = 3.18$  or  $M = 2.35$ ,  $SD = 0.64$ ).

**Table 4.** Mean scores ( $M$ ) and standard deviation ( $SD$ ) of respondents’ perceptions of the presence of Ely’s conditions ( $N = 168$ ).

Ely’s Condition	Mean Score (Scale: 5–25)		Equivalent Mean Score (Scale: 1–5)	
	$M$	$SD$	$M$	$SD$
1. Dissatisfaction with the status quo	18.23	2.71	3.65	0.54
2. Knowledge and skills exist	18.87	3.53	3.77	0.71
3. Resources are available	17.77	3.68	3.55	0.74
4. Rewards or incentives exist	11.73	3.18	2.35	0.64
5. Time is available	15.33	3.99	3.07	0.80
6. Participation is expected and encouraged	16.07	3.06	3.21	0.61
7. Leadership is evident	16.96	3.62	3.39	0.72
8. Commitment by those involved	18.37	3.41	3.67	0.68

The mean scores for the three remaining conditions fell within the range of 12.5 and 17.5 (or 2.5 and 3.5) and indicate that most participants were undecided as to the presence or non-presence of these conditions. These were: (a) “leadership is evident” ( $M = 16.96$ ,  $SD = 3.62$  or  $M = 3.39$ ,  $SD = 0.72$ ), (b) “participation is expected and encouraged” ( $M = 16.07$ ,  $SD = 3.06$  or  $M = 3.21$ ,  $SD = 0.61$ ), and (c) “time is available” ( $M = 15.33$ ,  $SD = 3.99$  or  $M = 3.07$ ,  $SD = 0.80$ ).

### 4.2. Differences in Perception of Ely’s Conditions

A one-way ANOVA was conducted to determine the effect of college affiliation (Humanities, Sciences, Health Sciences, or Applied College), academic rank (professor, assistant professor, associate professor, or lecturer), age group (25–35 years, 36–45 years, 46–55 years, or 56 years and above), level of knowledge about online teaching (expert, advanced, inter-

mediate, or novice), and number of online courses taught (none, 1–4 courses, 5–10 courses, or more than 10 courses) on respondents' perception of the presence of Ely's conditions, using an alpha level of 0.05.

The results indicated no significant differences between group means for college affiliation, academic rank, or age groups for any of Ely's eight conditions. However, statistically significant differences in group means for the perceptions of Ely's conditions were found for the reported level of knowledge about online teaching and the number of online courses taught.

#### 4.3. Level of Knowledge about Online Teaching

Statistically significant differences were found in the group means for the perceptions of five of Ely's conditions for reported level of knowledge about online teaching (expert, advanced, intermediate, novice). These conditions are (a) "dissatisfaction with the status quo" [ $F(3, 164) = 5.53, p = 0.001$ ], (b) "knowledge and skills exist" [ $F(3, 164) = 22.85, p = 0.000$ ], (c) "resources are available" [ $F(3, 164) = 9.85, p = 0.000$ ], (d) "participation is expected and encouraged" [ $F(3, 164) = 5.16, p = 0.002$ ], and (e) "commitment by those involved" [ $F(3, 164) = 5.71, p = 0.001$ ].

Overall, LSD post hoc analysis revealed that those who reported higher levels of knowledge with online teaching had significantly higher perceptions regarding the presence of these five conditions. More specifically, post hoc tests revealed that the expert ( $M = 19.29, SD = 2.33$ ) and advanced groups ( $M = 18.70, SD = 2.58$ ) reported significantly higher levels of "dissatisfaction with the status quo" compared with the intermediate group ( $M = 17.11, SD = 2.77$ ). With regard to the condition "knowledge and skills exist", significant differences in group means were found between the expert group ( $M = 22.29, SD = 3.16$ ) and all other groups (beginner  $M = 14.60, SD = 1.82$ ; intermediate  $M = 16.84, SD = 2.56$ ; advanced  $M = 19.60, SD = 3.24$ ) as well as between the advanced group and the beginner and intermediate groups. Similar results were found for the condition "resources are available", where the expert group had significantly higher perception regarding the availability of resources ( $M = 20.90, SD = 3.85$ ) compared with all other groups (beginner  $M = 14.80, SD = 2.17$ ; intermediate  $M = 16.50, SD = 2.90$ ; advanced  $M = 18.01, SD = 3.66$ ), as did the advanced group compared with the beginner and intermediate groups. The results of the post hoc analysis also revealed that the expert group ( $M = 17.86, SD = 3.50$ ) had significantly higher levels of perception regarding the condition "participation is expected and encouraged" compared with the beginner ( $M = 14.20, SD = 2.28$ ), intermediate ( $M = 15.18, SD = 2.80$ ), and advanced ( $M = 16.33, SD = 2.93$ ) groups, as did the advanced group compared with the intermediate group. Finally, the expert group ( $M = 19.71, SD = 3.52$ ) had significantly higher means regarding their perception of the "commitment by those involved" than the beginner ( $M = 16.20, SD = 2.86$ ) and intermediate ( $M = 17.12, SD = 3.21$ ) groups, as did the advanced group ( $M = 18.99, SD = 3.27$ ) compared with the intermediate group.

#### 4.4. Number of Online Courses Taught

Statistically significant differences were found between group means on the perceptions of three of Ely's conditions based on the number of online courses taught (none, 1–4 courses, 5–10 courses, more than 10 courses). These conditions are: (a) "dissatisfaction with the status quo" [ $F(3, 164) = 2.91, p = 0.036$ ], (b) "knowledge and skills exist" [ $F(3, 164) = 3.60, p = 0.015$ ], and (c) "commitment by those involved" [ $F(3, 164) = 3.67, p = 0.014$ ].

The results of the LSD post hoc test revealed that faculty who taught 5–10 courses reported significantly higher levels of "dissatisfaction with the status quo" ( $M = 19.03, SD = 2.97$ ) and "knowledge and skills exist" ( $M = 20.18, SD = 2.95$ ) than did faculty who taught 1–4 courses ( $M = 17.78, SD = 2.55$  and  $M = 18.37, SD = 3.65$ , respectively). Further, the analysis indicated that faculty who taught more than 10 courses had significantly higher perception with regards to the condition "commitment by those involved" ( $M = 21.42, SD = 3.09$ ) compared to those who taught no online courses ( $M = 18.00, SD = 2.58$ ), those

who taught 1–4 online courses ( $M = 18.07$ ,  $SD = 3.18$ ), and those who taught 5–10 courses ( $M = 18.33$ ,  $SD = 3.86$ ).

## 5. Discussion

### 5.1. Presence of Conditions Facilitating Online Teaching

The results of the analysis revealed that on average, only four of Ely's eight conditions of change were present in the university, with "knowledge and skills exist" ( $M = 18.87$  or  $3.77$ ) being the highest amongst the eight conditions. Individual item analysis indicated that the majority of faculty members felt they have the ability to implement online teaching (78%) and have sufficient skills to teach online (73.22%). This finding is not surprising if we consider the amount of experience and knowledge that instructors have accumulated over the last two years due to the sudden shift to online teaching and learning in response to the COVID-19 pandemic. While the pivot to online teaching in 2020 was forced and far from ideal [4,6], it did nonetheless enhance faculty members' experience with and understanding of online teaching and increased their sense of confidence in their ability to teach online [3,7,11,12]. However, the results also revealed that they needed further knowledge and skills about online teaching and the integration of specific technologies into the online teaching process (66%). This explanation is consistent with research that points to the developmental nature of learning to teach online and the changes to instructors' beliefs, attitudes, and practices as they gain more experience with online teaching [14,32].

The second highest score was for the condition "commitment by those involved" ( $M = 18.37$  or  $3.67$ ). An analysis of the individual items indicated that most respondents agreed or strongly agreed (70.83%) that they, as well as their fellow faculty members in their respective colleges, were committed to and supported online teaching. However, the analysis also revealed that the commitment from deans/department heads, university administration, and higher-level university leadership was not as high or visible, with only a little more than half of the respondents indicating that higher-level university leadership and administration endorsed (51%) or supported (58%) online teaching. Regarding this issue, Foulger et al. [14] highlight the critical role played by administrative commitment and dedication in the process of large-scale technological change. Further, Ely [27] argues that commitment to technological change must occur at all levels of the institution as it communicates endorsement and continuing support, which in turn encourages those who are reluctant to change or have less knowledge and experience to try out new or innovative tools, materials, and/or strategies. Ely asserts, "This is not blind commitment, but firm and visible evidence that there is endorsement and continuing support for implementation" [27].

The condition "dissatisfaction with the status quo" ( $M = 18.23$  or  $3.65$ ) appeared as the third highest condition present at the university according to the current sample. Individual item analysis revealed that while over half of the respondents indicated that they were satisfied with their own teaching methods, an overwhelming majority of them agreed or strongly agreed (87.5%) that teaching practices must adapt to changing times and that there is a need to change current approaches to teaching. Further, over 61% of them reported that they would like to see changes to the way online teaching is implemented at the university. Studies examining the impact of the pivot to online teaching during the pandemic found that the experience enhanced faculty members' confidence in and skills for teaching online and provided the context for faculty members to recognize new ways to support their students and plan for new teaching strategies and approaches in the future [12]. Thus, while most faculty members in this study felt satisfied with their current teaching methods and approaches, perhaps because of the changes they made to their own practices as a result of their experience with online teaching during the pandemic, they still felt that online teaching implementation at the institutional level could be improved and adjusted to meet current demands and the rapidly changing nature of online learning technologies and practices.

The fourth and final condition perceived to be present at the university is "resources are available" ( $M = 17.77$  or  $3.55$ ). A closer look at the responses to the individual items for

this condition indicates that while the majority of faculty reported having access to online technologies (70.83%) and the availability of appropriate software (62%) and technical support (69.64%) for online teaching, only 39.26% perceived that there were enough funds to support online teaching. Thus, while funding to obtain and secure access to tools, software, and technical support is visible at the university, most of the respondents still perceived funding as being inadequate, indicating that funding to support online teaching in other areas might be lacking (e.g., monetary incentives and rewards, professional opportunities to learn about online teaching, or paid time to plan for, integrate, and reflect on the implementation of online teaching). According to Ely [28], the condition “resources are available” is linked to “rewards and incentives exist”, which is the only condition out of the eight that was perceived by this sample as being non-present.

The one condition that was perceived by respondents as being not present at the university was “rewards and incentives exist” ( $M = 11.73$  or 2.35). Individual item analysis revealed that while most faculty felt satisfied with a job well done after teaching online (70.83%) and agreed that the university provides professional opportunities for them to learn about online teaching (60.72%), only 31.33% agreed that the university provides extra help and resources for teaching online, approximately 28% agreed that the university gives official recognition for faculty who teach online, and a mere 10.71% agreed that the university provides financial incentives to faculty members participating in online teaching implementation projects. This finding should be of concern to university administration and leaders. Given the additional time and effort required from faculty to plan, prepare, and implement online teaching effectively, providing rewards and incentives to faculty who engage in such activities is one of the most effective ways to motivate faculty and sustain such practices [33]. According to Ely [27], rewards and incentives can be intrinsic or extrinsic. Based on the individual analysis of items for this sample, it is clear that establishing a framework of extrinsic rewards and incentives for teaching online is an area worthy of consideration at the university, whether in the form of monetary incentives and stipends, official recognition, tenure and promotion policies, reduced workloads, or the devotion of additional support and resources for online teaching [33,42].

The mean scores for the three remaining conditions indicate that most participants were undecided as to the presence or non-presence of these conditions. These were: (a) “leadership is evident” ( $M = 16.96$  or 3.39), (b) “participation is expected and encouraged” ( $M = 16.07$  or 3.21), and (c) “time is available” ( $M = 15.33$  or 3.07). For the condition “leadership is evident”, individual item analysis revealed that over half of the respondents agreed that the administrative leadership at their college provided continuous support for online teaching and that there is enough guidance in the university for online teaching (61.3%). In addition, a little over half the sample agreed that administrators such as deans and directors facilitate online teaching (58.33%) and that higher-level university leadership provides the necessary encouragement to teach online. However, fewer faculty members (44.64%) agreed that university leadership is available for consultation when failures in online teaching occur. Ely [26–28] emphasizes the role that strong leadership plays in accepting and sustaining technological changes. The role that leadership plays is not limited to the endorsement of the change and encouragement to use it but also extends to the availability of leaders who can support and guide faculty in their day-to-day activities and help them overcome obstacles and challenges as they occur. Strong leadership backing through dedicated resources and personnel who can provide support and guidance based on individual needs through direct training, just-in-time, and one-on-one support, especially for less experienced faculty, is one of the most critical success factors for technological change and implementation [14,43].

For the condition “participation is expected and encouraged”, results indicated that this condition was either lacking or was not readily visible to faculty in the university. An analysis of individual items representing this condition provides a clearer picture as to the status of this condition in the university from faculty members’ perspective. Most faculty agreed that they have communicated their experiences in teaching online with other

faculty members (73.81%) and discussed online teaching implementation issues with other colleagues (79.17%). However, fewer faculty members reported discussing issues related to online teaching implementation with university administration (41.66%), and even fewer indicated that they have input into decisions about online teaching implementation (30.95%) or that they are involved in decision-making concerning online teaching in the university (23.81%). The participation of all stakeholders in the change process, especially those who are in charge of implementing the change, has been stressed in research and models addressing educational and technological change [28,33]. Ely [27] explains that participation must be encouraged at both the policy and the practice levels. In other words, unless the perspectives and concerns of those involved in implementing the change are heard and considered when formulating decisions that impact their work, the shift to online teaching is less likely to succeed and be sustained [36].

Finally, for the condition “time is available”, the overall undecided response may mean that faculty members on average are not aware of or are unsure about the presence or non-presence of this condition. After looking at the individual items comprising this condition, only half the respondents seemed to agree that university administration provides time for professional development related to online teaching or time to work with colleagues or technical assistants who can assist them in their online teaching, and even fewer (41.07%) agreed they have time to integrate new techniques in their online classes. Furthermore, only 33.33% of faculty reported that they have received university supported time (i.e., release time or paid time) to learn new online teaching techniques, and only 29.76% agreed that they have enough time to create new materials to use in their online classes. This finding should be of serious concern to university leadership and management. According to Ely [27], while time can be considered a resource, it is such a significant factor in the process of educational change that it warrants its own consideration. Faculty not only need time to learn about and teach online, but, more critically, they need the time to practice what has been learned, plan and develop new strategies and material, integrate and experiment with new techniques, engage in discussions with colleagues and stakeholders, and reflect on the changes they make as they teach online. Without this time, leadership endorsement and encouragement, funding, professional development, and other resources poured into advancing and enhancing online courses and programs at the university will not successfully bring about or sustain the intended change.

### *5.2. Differences in Perceptions of Conditions Facilitating Online Teaching*

Only two out five factors examined in this study (i.e., college affiliation, age group, academic rank, knowledge about online teaching, and number of online courses taught) were found to affect faculty perceptions regarding the presence of facilitating conditions for online teaching at the university, namely reported knowledge about online teaching and number of online courses taught. These conditions are: “knowledge and skills exist”, “commitment by those involved”, “dissatisfaction with the status quo”, “resources are available”, “leadership exists”, and “participation is expected an encouraged”. In general, those who reported more knowledge about online teaching and those who taught more courses online had significantly higher perceptions regarding the presence of these conditions. This finding has important implications for university leadership and management as it relates to support systems and professional development opportunities for faculty teaching online. Studies examining the implementation of technological change and innovation in academic institutions have consistently suggested the need to consider the variations in implementers’ technological proficiency and experience when designing implementation plans, through, for instance, personalized support and different approaches to professional development for faculty depending on their level of experience with online teaching [5,12,36,43].

No significant differences were found between groups in mean scores for “rewards or incentives exist” and “time is available”. However, these two conditions scored the lowest in terms of perceived presence by the current sample, suggesting that faculty members in general, regardless of their individual characteristics, perceived these two conditions as

being non-present or inadequate in the university. This indicates that these two conditions in particular might require extra attention from university leadership and administration.

### 5.3. General Discussion

Overall, findings from this study indicate that while faculty members possess knowledge and skills related to online teaching, are committed and internally motivated to teach online, and are engaging in discussions with their colleagues who teach online, more can be done at the level of the day-to-day support for and management of online teaching from university administration. This is an organizational level that Eradze et al. [5] refer to as the meso-level, a level that sits between the higher macro level of an organization or an institution where fixed patterns and frameworks for collective activity are organized and offered (e.g., procedures and routines, expectations, roles, rights and duties, strategies) and the micro level that is mainly concerned with the individuality of and variations across all actors involved: in our case, faculty members. They describe the meso-level as the level of an organization that mediates the tension between the “anticipatory” macro and “generative” micro levels by dealing with the “contingencies and unexpected occurrences, which characterize teaching and learning activities, and their management” (p. 5) in a flexible and adaptive manner. It is at this level where the “enabling conditions” are organized and reorganized to accommodate the variation in the micro level (e.g., individual needs, preferences, development level) within the stable structures of the macro level (i.e., organized forms of teaching and learning) and to ensure the viability and sustainability of the system, especially during times of institutional change and transformation. Similarly, Warren and Churchill [8] argue that the successful and sustained implementation of distance and online programs requires strategic planning in which strategy and operations are aligned and continuously evaluated to ensure that actions, initiatives, and the allocation of resources and activities support the successful and sustained change to meet the institution’s strategic outcomes.

In the specific context of this study, enhancing the day-to-day management of activities and resources by providing faculty with sufficient time to create new material and practice new online teaching techniques; establishing lines of communication and dialogue between faculty members teaching online and university administration, where faculty concerns, failures, perspectives, and opinions are not only heard but encouraged; motivating faculty through a stronger rewards and incentive system; and considering the variation and diversity in online teaching knowledge and experience among faculty members when designing and implementing professional development and support plans for online teaching [36] are critical activities for university/college administration and leadership (meso-level) to reevaluate in order to facilitate effective online teaching at the university and ensure successful implementation over time.

## 6. Conclusions

The purpose of this study was to investigate faculty members’ perception of the presence of Ely’s eight conditions of change in relation to online teaching at a large female-only university in Saudi Arabia and to examine any significant differences in their perceptions based on several characteristics and demographic factors. According to Ely [26–28], the presence of all eight conditions would signify a high probability of successful implementation and institutionalization of change and innovation, while the absence or reduction in any of these conditions would lessen the likelihood of sustained implementation and continued use.

Findings from this study indicate that on average, faculty members perceived the presence of only four of Ely’s eight conditions for online teaching in the university, namely “knowledge and skills exist”, “commitment by those involved”, “dissatisfaction with the status quo” and “resources are available”, while they perceived “rewards and incentives exist” as being absent. As for the remaining conditions, “leadership is evident”, “participation is expected and encouraged”, and “time is available”, the results revealed that faculty were unclear or undecided as to their presence or non-presence in the university

environment. The ANOVAs revealed that the only characteristics that significantly influenced faculty members' perception regarding the presence of some of the conditions were reported knowledge about online teaching and the number of online courses taught.

The results of this study point to several areas worthy of consideration by university administration and decision makers, especially with regard to the facilitation of day-to-day activities and resources to support faculty teaching online, such as supported time, financial incentives, and official recognition; extra help and support, especially for those with less knowledge and less experience with online teaching; and strengthening and enhancing dialogue between faculty members teaching online and university administrators and leadership [5,12,36,43]. As for researchers, this study points to the need to expand our research and understanding of online teaching in Saudi higher education to investigate in more depth the effectiveness of university management and operations in supporting faculty as they shift to and implement online programs and courses [5,8].

With that said, the results of this study should be interpreted with caution. Data for this study was collected from a small sample in one female-only higher education institution in Saudi Arabia; thus, results may not be reflective of or generalizable to other institutions and samples in the region. However, item-level analysis was also provided and discussed to compensate for any methodological limitations. This study nonetheless represents an early effort to examine institutional conditions supporting online teaching in Saudi Arabia at a critical stage of its development and expansion. The replication of this study in different institutions, using more diverse samples, is needed to support the findings and expand our understanding of facilitating conditions for online teaching in higher education institutions in the region.

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